

# **Handbook on** **Measuring International Migration** **through Population Censuses**



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## **Department of Economic and Social Affairs**

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## Preface

The present *Handbook* was initially prepared in response to repeated calls for hands-on guidance to produce international migration statistics to accompany the *Recommendations on Statistics of International Migration, Revision 1* (United Nations, 1998).

Elaborating on the statistical concepts and definitions related to international migration, the *Handbook* discusses how they can be measured through different data sources. A significant part of the *Handbook* is dedicated to practical guidance on how to better measure international migration through population censuses, focusing on different census phases such as planning, data collection, analysis and dissemination. Such guidance was produced based on a thorough review of national practices, including national census materials such as enumeration manuals and census questionnaires.

The particular focus of the *Handbook* on population and housing censuses is justified by the following considerations: (a) national censuses have been the most commonly available source of migration statistics; (b) migration-related concepts have been agreed in the *Principles and Recommendations for Population and Housing Censuses, Revision 3* (United Nations, 2017) and need to be integrated into practical guidance; and (c) objective 1 of the Global Compact for Safe, Orderly and Regular Migration (General Assembly resolution 73/195, annex) states the commitment to “collect and utilize accurate and disaggregated data as a basis for evidence-based policies” by integrating migration-related topics in national censuses.<sup>a</sup>

Moving forward, further guidance will be needed on how other data sources can be used and, more importantly, how to adopt an integrated approach to obtain accurate, disaggregated and timely data, that not only measure stocks of international migrants and international migration flows but also other types of mobility, as presented in the overarching conceptual framework for international migration and temporary mobility, adopted by the Statistical Commission in 2021,<sup>b</sup> which was the basis for the revision of the 1998 *Recommendations on Statistics of International Migration, Revision 1*.

Of course, what was not foreseeable at the time of preparation of this *Handbook* was the need to measure the impact of the coronavirus disease (COVID-19) on international migration and migrants. Methods for such measurement would be important not only to inform national migration policies during this difficult time but also to ensure that the statistical community is better equipped to respond to similar shocks in the future.

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<sup>a</sup> See [https://refugeesmigrants.un.org/sites/default/files/180713\\_agreed\\_outcome\\_global\\_compact\\_for\\_migration.pdf](https://refugeesmigrants.un.org/sites/default/files/180713_agreed_outcome_global_compact_for_migration.pdf).

<sup>b</sup> See <https://unstats.un.org/unsd/demographic-social/migration-expert-group/task-forces/TF2-ConceptualFramework-Final.pdf>.

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Special gratitude is extended to Grace Bediako, who was responsible for the project's conceptualization. Initial drafts were prepared by Graeme Hugo and Michel Poulain, consultants to the Statistics Division. The drafting process was overseen by Erlinda Go, who was also the lead author for several chapters of the *Handbook*. The following staff members in the Demographic and Social Statistics Branch of the Division conducted research and drafted individual chapters: Haoyi Chen, Meryem Demirci and Keiko Osaki-Tomita, with the support of Andrew Smith and Mekdelawit Bekele.

The *Handbook* was produced under the direction of Keiko Osaki-Tomita, Chief of the Demographic and Social Statistics Branch.

The *Handbook* was reviewed by the following experts, who provided substantive advice: Ann Singleton, Bristol University; Piotr Juchno, Eurostat; Mustafa Hakki Ozel, Department of Statistics, International Labour Organization; Frank Lazko, Global Migration Data Analysis Centre, International Organization for Migration; Vebjørn Aalandslid, Statistics Norway; Hyungseog Kim and Sabrina Juran, United Nations Population Fund; Bela Hovy, Population Division, Department of Economic and Social Affairs, United Nations; and Margaret Mbogoni, Statistics Division.

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# Chapter I

# Introduction: Need for a handbook on international migration statistics

## A. Calls for better statistics on international migration

1. The formulation of sound policies demands solid data and the adoption of those data for use in conducting balanced research. The international community has been concerned for some time, however, by the gaps in the data on international migration for evidenced-based decision-making. Governments have been urged on various occasions to regularly collect, compile and disseminate information in an internationally comparable manner on the cross-border movements of people and their situation in host societies. However, no satisfactory improvement has been observed to date with regard to the availability and standardization of international migration statistics.

2. Calls for improvement in international migration statistics go as far back as 1891, when the International Statistical Institute at its congress held in Vienna discussed the coordination of international migration statistics and emphasized the importance of establishing a uniform definition of the term “international migrant” (Kraly and Gnanasekaran, 1987). During the early decades of the twentieth century, the issue of internationally comparable migration statistics was taken up repeatedly at the conferences organized by international organizations, especially the International Labour Office, which was established to help secure social justice for workers, including migrant workers (ibid.). Often, the discussions at those conferences also focused on methods of collecting and compiling emigration and immigration statistics.

3. The mass displacement of people during and after the Second World War and the post-war reconstruction of Europe, which involved large numbers of migrant workers, caused the international community to realize that migration statistics continued to be fragmented and that reliable estimates with respect to the patterns and trends of migration were still largely lacking at both regional and global levels. Early activities of the United Nations regarding international migration statistics focused on documentation and analysis of statistical practices (Kraly and Gnanasekaran, 1987). In 1948, following the establishment of the United Nations, the Economic and Social Council, at its seventh session, considered the issue of improving international migration statistics.

4. In the publication entitled *International Migration Statistics*, issued in 1953, the United Nations proposed a new set of statistical standards with an explicit conceptualization of the demographic importance of migration, thereby addressing the criticism that previous standards had been pre-occupied with the manpower-related aspects of the migration process. The 1953 recommendations, which elaborated on the subject of collection of information on all arrivals in and departures from a given country, and proposed the standardization of the definition of “permanent immigrant” on the basis of intended duration of stay, served as an organizing framework for much of the subsequent documentation of international migration. However, the lack of adherence to those recommendations by countries – with, as a result, little evidence of an improvement in migration statistics – prompted the call for revision of the recommendations (Simmons, 1987). By then, it was also well acknowledged that the concept of residence had been a “complicating factor” with regard to the development of a satisfactory definition of the term “migrant” for statistical purposes (United Nations, 1980, para. 21).

5. In 1976, the United Nations developed new guidelines on international migration statistics, entitled *Recommendations on Statistics of International Migration* (United Nations, 1980). The salient features of the 1976 recommendations were their conceptual consistency with other statistical systems, notably international tourism statistics; the identification of a number of additional categories of international population movements; and a large set of model tabulations, which subsequently became a target of criticism for being overly complex (Kraly and Gnanasekaran, 1987; Simmons, 1987). In the spirit of the 1976 recommendations, the United Nations also scaled up data-collection efforts, as attested in the publication of *Demographic Yearbook 1977* (United Nations, 1978), which was the first issue to feature international migration statistics as its special topic. However, persistent slow improvement in international migration statistics caused the United Nations Statistical Commission, at

its twenty-seventh session in 1993, to request the Statistics Division (then called the Statistical Division) to initiate work on the review of the 1976 recommendations (United Nations, Economic and Social Council, 1993, paras. 128 and 129 (d)), which led eventually to the first revision of the recommendations on statistics of international migration. It became apparent that while there had been growing recognition on the part of the international community that international migration was an issue of global concern, countries continued to gather data on international migration in accordance with their own definitions. They then made minimal adjustments so that the data would fit into the categories suggested by the United Nations.

6. The first revision of the 1976 recommendations (hereinafter referred to as the 1998 Recommendations) – submitted to and adopted by the Statistical Commission at its twenty-ninth session in 1997 and published in 1998 (United Nations, Economic and Social Council, 1997, para. 61 (a)) – sought to provide practical guidance on how to collect statistics on migrant stocks and flows. In pursuit of that goal, the publication reviewed the major types of data sources that collect information on international migration, suggested various ways through which that information could be used to produce statistics and presented a reporting framework as a means of integrating the various types of available information. The revision, however, resulted neither in the widespread application of the recommendations by countries nor in the provision of international migration statistics to the Statistics Division. Amid concern that the 1998 Recommendations continued to be largely neglected, two expert group meetings were organized by the Statistics Division in 2006 and 2007.<sup>1</sup> At those meetings, it was concluded that a practical methodological handbook was needed to (a) clarify the philosophical basis for the concepts and definitions underpinning the 1998 Recommendations and (b) provide guidance on how population censuses and surveys could be used to collect international migration statistics, which would include the sharing of examples derived from national practices.

7. As a result of the resurgence at the beginning of the present century of political debates on international migration within the international community, there have been renewed calls for States to invest in improving data on migration. The perception exists that in this new era of globalization, significant increases in the exchange of knowledge, trade and capital worldwide, often driven by technological innovation, will stimulate the mobility of people more than ever. The phenomenon of international migration now involves virtually almost every country in the world, whether as a country of origin, destination or transition. The discussion on international migration has been fueled particularly by concerns regarding the critical interrelationships between development and international migration, which remain unclear and consequently call for data that can elucidate them objectively. At the High-level Dialogues on International Migration and Development, held in New York on 14 and 15 September 2006 and on 3 and 4 October 2013, countries voiced their concern over the scantiness of the findings regarding the migration-development nexus and emphasized the need for reliable, accurate, disaggregated, nationally relevant and internationally comparable statistical data and indicators on international migration to facilitate the design of evidence-based policymaking for development.

8. With the adoption of the 2030 Agenda for Sustainable Development<sup>2</sup> by the General Assembly on 25 September 2015, international migration and its multidimensional relationship with development became an integral focus of the global development agenda. Unlike the Millennium Development Goals which did not address migration issues, the Sustainable Development Goals, as the anchor for the 2030 Agenda, include several targets directly related to migrants, migration and mobility, and call for increased support for strengthening data collection so as to better inform the measurement of progress towards achieving clear numerical targets (2030 Agenda, para. 57). Further, a key feature of the 2030 Agenda – as reflected by the pledge to ensure that “no one will be

<sup>1</sup> See the report of the Expert Group Meeting on Measuring International Migration: Concepts and Methods, held in New York from 4 to 7 December 2006 (ESA/STAT/AC.119/L.3), available at <http://unstats.un.org/unsd/demographic/meetings/egm/migrationegm06/FINAL%20REPORT%2013.pdf>; and the report of the Expert Group Meeting on the Use of Censuses and Surveys to Measure International Migration, held in New York from 24 to 28 September 2007 (ESA/STAT/AC.132/L.3), available at <http://unstats.un.org/unsd/demographic/meetings/egm/migrationegmse07/>.

<sup>2</sup> General Assembly resolution 70/1.

left behind” on the collective journey to shift the world onto a sustainable and resilient path – is the commitment to follow up its implementation, informed by high-quality data, disaggregated, among other characteristics, by migratory status, wherever relevant, in order to analyse the vulnerabilities of migrants and certain types of mobility (Ibid., para. 74 (g)). The new global development framework therefore presents national statistical offices with the enormous challenges of reviewing the existing concept of migration, exploring the possible sources of information, generating migration-relevant indicators and reporting on those indicators regularly, and in a timely fashion.

9. Most recently, the crisis associated with large movements of asylum seekers and irregular migrants into Europe further established migration issues as a critical item in the global agenda. On 19 September 2016, in New York, the General Assembly convened the high-level plenary meeting on addressing large movements of refugees and migrants to reaffirm existing obligations of States towards refugees and migrants. At that meeting, the Assembly adopted the New York Declaration for Refugees and Migrants,<sup>3</sup> in which it was recognized that there are many gaps in our knowledge of migration due to the lack of data. It is essential in that regard, that international migration statistics be strengthened to better inform the public debate, and to address migration challenges effectively. The Declaration also underlines the importance of improving migration data collection at the national level and the need for enhanced international cooperation to achieve that objective (New York Declaration, para. 40).

## B. Purpose and scope of the *Handbook*

10. The present *Handbook* was prepared in response to repeated calls for better international migration statistics, and especially to requests made at the two Expert Group Meetings discussed in the previous section.<sup>4</sup> Building on the 1998 Recommendations, it has been designed for use by countries as a practical reference guide to the collection and production of international migration statistics..

11. The *Handbook* focuses in particular on the use of population and housing censuses as a source of information for international migration statistics. The overwhelming majority of countries in the world conduct a population and housing census at least once in 10 years, and the censuses have been the most commonly available source of migration statistics.<sup>5</sup> While such statistics can be also generated from other sources such as population registers, administrative sources and sample surveys, true comparability of migration statistics across countries remains a distant goal. As will be discussed further in the *Handbook*, the population and housing census enables migrant stock and migrant flow to be estimated in an internationally comparable manner through the inclusion in the census questionnaire of a few key questions, for example, on country of birth, country of citizenship, country of residence one or five years ago and year of arrival in the country. Accordingly, *Principles and Recommendations for Population and Housing Censuses, Revision 3* (United Nations, 2017) (hereinafter referred to as *Principles and Recommendations*) urges the inclusion of such questions for the measurement of international migration. The present *Handbook* was released as an unedited background document in early 2017, in the hope that its guidance could be applied in a timely manner to the preparation of the 2020 World Population and Housing Census Programme, which spans the period 2015–2024.

12. The attempt has been made to produce a handbook that is as comprehensive as possible, so as to encompass current practices in collecting and producing international migration statistics, without overloading the reader with too much detail. Wherever appropriate, examples of country

<sup>3</sup> General Assembly resolution 71/1.

<sup>4</sup> See the report of the Expert Group Meeting on Measuring International Migration (ESA/STAT/AC.119/L.3), para. 104; and the report of the Expert Group Meeting on the Use of Censuses and Surveys to Measure International Migration (ESA/STAT/AC.132/L.3), sect. IV.

<sup>5</sup> During the 2010 round of world population and housing censuses, which spanned the period 2005–2014, 214 countries or areas conducted at least one census. In this regard, see the 2020 World Population and Housing Census Programme web page on the Statistics Division website (<http://unstats.un.org/unsd/demographic/sources/census/wphc/censusclockmore.htm>).

practices are included to illustrate various points of the discussion and to facilitate application of recommendations at the country level. It is expected that the present *Handbook* will be widely used by census experts and data production, and other subject-matter specialists.

## C. Organization of the *Handbook*

13. The publication comprises 10 chapters: the present introduction (chapter I), followed by nine chapters and an annex. Chapter II presents the concepts and definitions associated with international migration as applied to statistical measurement, clarifies the concept of international migrant as it relates to the concept of country of usual residence and discusses the two commonly used measures of international migration, namely, stocks and flows.

14. Chapter III examines the major sources of data for international migration: population censuses, sample surveys, and administrative registers and other administrative sources, as well as other data sources such as border collection. The advantages and limitations of each data source are discussed.

15. Chapter IV breaks down the three key types of information vital to the collection and compilation of statistics on international migration: (a) defining characteristics needed to identify international migrants based on the definitions introduced in chapter II; (b) relevant characteristics required to distinguish and characterize international migrants; and (c) descriptive characteristics essential to assessing the situation of different groups of international migrants and the situation of migrants in relation to that of non-migrants, including sociodemographic and socioeconomic characteristics. The ability of different sources of information to capture these characteristics is also discussed.

16. The subsequent chapters provide detailed guidelines on how to measure international migration through the use of population censuses. Chapter V covers aspects of the planning and design of population censuses that are of importance in measuring international migration. Chapters VI and VII, respectively, lay out the means of collecting immigration and emigration data. Chapter VIII focuses on estimation of recent and net international migration. Chapter IX considers the tabulations, statistics and indicators of international migration that may be produced from data collected in a population census. Chapter X examines how combining international migration data from censuses with data from other sources can yield a more comprehensive picture of a country's international migration situation.

17. The annex contains examples and sets out, in step-by-step illustrative detail, how either of two techniques – the intercensal component method and intercensal cohort component method – can be applied to the estimation of the net international migration rate, based on the use of population census data.



# Chapter II

# Concepts and definitions related to international migration

## A. Concepts and definitions

### 1. Definition of “international migrant”

18. As outlined in chapter I, not only are international migration statistics crucial as a demographic input into the compilation of the population count for a country, but given the impact of international migration on different countries at the same time, the comparison of those statistics has become essential. Since 1953, the United Nations has issued a series of sets of recommendations on international migration statistics whose aim is to promote international comparability. Each set of recommendations dedicates a significant part of its discussions to the harmonization of the concept and definition of “international migrant” for statistical purposes.<sup>6</sup>

19. In *Recommendations on Statistics of International Migration, Revision 1*, the definition of “international migrant” is associated with the concept of country of usual residence: “any person who changes his or her country of usual residence” (United Nations, 1998, para. 32). Therefore, an immigrant is not considered a usual resident of, and will establish usual residence in, the country he or she has entered. An emigrant is considered a usual resident of the country from which he or she is departing, and will be establishing usual residence in another country.

#### Country of usual residence

20. The concept of country of usual residence appears in a number of statistical frameworks. It should be noted, however, that in some other frameworks and disciplines, the word “usual” is not being used. In the *System of National Accounts 2008* (2008 SNA), for example, an institutional unit (a person, a group of persons in the form of a household or a legal or social entity) is said to be resident within the economic territory of a country “when it maintains a centre of predominant economic interest in that territory, that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year” (European Commission, IMF, OECD, United Nations and World Bank, 2009, para. 1.48), which is the same concept as that used in the *Balance of Payments and International Investment Position Manual*, 6th ed. (IMF, Washington, D.C., 2009, para. 4.114). The *Manual* further specifies that “[a]ctual or intended location for one year or more is used as an operational definition”, noting that “although the choice of one year as a specific period is somewhat arbitrary, it is adopted to avoid uncertainty and facilitate international consistency”. Similar to the two frameworks mentioned previously, the *International Recommendations for Tourism Statistics 2008* determined that a duration of more than one year/one year or more was the criterion for determining whether a person was a resident of a country (United Nations and World Tourism Organization, 2010, glossary of terms).

21. For the purpose of defining the usual residence of an enumerated person at the time of the census, a similar approach was adopted in *Principles and Recommendations for Population and Housing Censuses, Revision 3* (United Nations, 2017, paras. 2.48–2.50), entailing the use of the actual or intended duration of stay of that person, with two thresholds for the duration of stay being provided. More specifically, it was recommended that countries use one of the following two criteria for determining a person’s place of usual residence:

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<sup>6</sup> The definition of “international migrant” as set out in the present section, has been established for statistical purposes only and should not be confused with the administrative or legal definition used in any specific country. See section A.3 on the use of the term “immigrant” for statistical and legal/administrative purposes for an explanation of the difference between the statistical and the administrative/legal definition.

- (a) The place at which the person has lived continuously for *most of the last 12 months* (i.e., for *at least 6 months and one day*), not including temporary absences for holidays or work assignments, or intends to live for at least six months;
- (b) The place at which the person has lived continuously for *at least the last 12 months*, not including temporary absences for holidays or work assignments, or intends to live for at least 12 months.

22. It should be noted that for the purpose of compiling data on international migration, the criterion, *at least the last 12 months*, is considered more appropriate, while the criterion, *most of the last 12 months*, might be necessary for establishing usual residence in a geographical area within a country (United Nations, 2017, para. 4.55). Use of the criterion, *at least the last 12 months*, for establishing usual residence is also consistent with the approach taken in the following frameworks: 2008 SNA (paras. 19.9–19.11), Balance of Payments Manual (paras. 4.117–4.118) and International Recommendations for Tourism Statistics (paras. 2.16–2.18 and box 2.2).

23. The definition of “international migrant” in the 1998 Recommendations incorporated a time element with respect to the concept of country of usual residence. Therefore, according to those Recommendations (para. 36 and box 1), such a migrant was “a person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence”.<sup>7</sup> From the perspective of the country of departure, such a person is an emigrant, and from the perspective of the country of arrival, that same person is an immigrant.

24. Based on the definition, a straightforward example of an international migrant would be a person who was a usual resident of country A before moving to country B (i.e., an emigrant from country A and an immigrant to country B) and who has stayed in country B for at least 12 months. That person has changed his or her country of usual residence and is now a usual resident of country B and no longer a usual resident of country A. However, as simple as it may seem, this definition poses a number of challenges.

25. The first challenge arises from cases in which there is no change of usual residence even though the person has actually moved for a period of at least 12 months. For example, a person may have resided in a number of countries before moving to country A: in country Z1 for at least 12 months followed by country Z2 for 6 months, country Z3 for 3 months, and country Z4 for 6 months. Since that person was away from country Z1 for more than 12 months (thereby losing residency status there) and did not establish usual residence in Z2, Z3 or Z4 (owing to the shortness of the stays in those countries), he or she did not have a country of usual residence, according to the definition, before moving to country A. Hence, in that case, there is no change of usual residence per se. Similarly, a person might leave country B for longer than 12 months and stay in several other countries without establishing usual residence in any of them. In that case as well, there is no change of usual residence.

26. Strict adherence to the definition provided in paragraph 23 makes it impossible to classify the person in either case as an international migrant. However, operationally, the person entering country A is usually considered an immigrant from the perspective of country A as long as he or she was absent from country A for a period longer than 12 months before moving to country A. Similarly, the person leaving country B is usually considered an emigrant from the perspective of country B as long as he or she will be away from country B for 12 months or more.

27. To accommodate the group of persons who did not establish usual residence outside of the country to or from which they moved, as described above, the present *Handbook* has introduced operational criteria that must be met in order for those persons to be considered immigrants and emigrants (hence international migrants), as described below.

28. To be considered an *immigrant* to a country, a person must:
- Enter the country by crossing the border

<sup>7</sup> See para. 31 for further clarification with regard to this issue.

- Have been a usual resident of another country before entering or must not be a usual resident of the one he or she is entering
  - Stay or intend to stay in the country for at least one year
29. To be considered an *emigrant* from a country, a person must:
- Leave the country by crossing the border
  - Have been a usual resident of the country
  - Stay or intend to stay in another country or abroad for at least one year
30. These operational criteria: (a) clarify the definition of “international migrant” by spelling out the three key requirements for international migrant status; and (b) relax the requirement that the previous country of usual residence be established for immigrants and that the next country of usual residence be established for emigrants.
31. It should be noted that in the operational definition, the term “international migrant” (immigrant and emigrant) is used instead of “long-term migrant” as the concept of long-term migrant is in fact equivalent to that of international migrant, which will be used throughout this *Handbook*. The latter term was used in the 1998 Recommendations in contradistinction to “short-term migrant”, which refers to persons who move to another country for a period of at least 3 but less than 12 months and was introduced in recognition of the increasing movement of people for a shorter period less than 12 months. However, based on the definition of country of usual residence given in this section, “short-term migrants” should not be regarded as changing their country of usual residence and should therefore not be considered international migrants.<sup>8</sup>
32. The second challenge to be confronted in applying the definition of “international migrant” is related to the nature of different data sources and their ability to capture comparable data on migrants. With respect to measurement of the duration of a person’s stay in a country, a *population census*, for example, is able to capture the amount of time a person has been staying at his or her current residence, that is, the actual duration – if that person lived abroad before moving into the current residence – of his or her stay in the country up to the date of census enumeration. It is not possible to determine how long a person will be staying in a country from a *population register*, which is used to register a person when he or she arrives in that country from abroad. While many countries do have residence rules for registration, the information obtained at the time of registration usually covers the intended rather than the actual duration of the stay. With regard to data collection at the border, recorded duration of stay could be either the intended duration or the legal duration, as recorded in the visa. A more detailed discussion on the dimensions of capture and measurement of the characteristics of international migrants by various data sources is provided in chapter III.
33. The third challenge associated with operationalizing the definition of international migrant is presented by people whose country of usual residence cannot be established unambiguously but who may have strong ties to their country of origin. This, according to the 1998 Recommendations (para. 42), validates their exclusion from international migration statistics. Those groups include:
- (a) Persons belonging to the diplomatic and consular corps, who are likely to maintain dwellings in two countries and may consider that their country of usual residence remains their country of citizenship, since their presence in the country where they are posted is strictly temporary and they continue to work for their own Government;
  - (b) Members of the armed forces stationed outside their country of citizenship, who are also unlikely to be viewed as changing country of usual residence, since they are usually

<sup>8</sup> See sect. A.2 below for further discussion on short-term migration.

posted abroad for limited periods and may not establish dwellings in the country of destination;

- (c) Nomads who, by the very nature of their mode of life, cannot have a fixed place of usual residence. Thus, even if they cross international boundaries, they cannot be regarded as changing their country of usual residence;
- (d) Border workers who are granted permission to be employed on a continuous basis in the receiving country provided they depart at regular, short intervals (daily or weekly) from that country. They should therefore not be treated as changing their country of usual residence.

34. The fourth challenge is associated with people who maintain residences in two or more countries in a given year. Those include students and workers who live away from home for a certain period of time each year, as well as seasonal workers who follow a circular pattern of border crossings. In those cases, it might be preferable to base determination of country of usual residence on the requirement that a person be present in that country for most of the previous 12 months.

35. In cases in which either of two countries may be considered the country of usual residence because the daily periods of rest are distributed equally between both (six months a year in each country; or part of each week in one country and an equal part in the other), some additional criteria may be introduced to address the issue, such as place of work, country where taxes are paid, country where most immediate family members and relatives are living, and country where most of a person's properties are owned. The same approach may be extended to people who reside in multiple countries, logging less than six months in each. A set of specific suggestions on who is to be included and who excluded in the usual resident count has been set out in *Principles and Recommendations*; those suggestions are examined in detail in chapter V.

36. It is recommended that, in the compilation of international migration statistics, countries use the most appropriate criterion when defining "country of usual residence". However, in order to ensure the comparability of data with those derived from other frameworks, countries are strongly encouraged to provide estimates using the *at least the last 12 months* criterion as specified in this *Handbook*.

## 2. Short-term international migrant: a misnomer

37. According to the 1998 Recommendations (para. 37 and box 1), "short-term migrants" are "persons who move to a country other than that of their usual residence for a period of at least 3 months but less than a year (12 months), except in cases in which the movement to that country is for purposes of recreation, holiday, visits to friends and relatives, business, medical treatment or religious pilgrimage". Also according to the 1998 Recommendations (para. 37 and box 1): "For purposes of international migration statistics, the country of usual residence of short-term migrants is considered to be the country of destination during the period they spend in it."

38. The term "short-term international migrant" is a misnomer. As a person's residence of at least 3 but less than 12 months is not regarded as establishing usual residence in a country, it cannot result in a change of country of usual residence and therefore does not enable that person to be considered an international migrant. In practice, treating people who move from one country to another for at least 3, but less than 12 months, as international migrants inflates the number of migrants compared with the number derived through application of the *at least the last 12 months* criterion.

39. The use of the *at least the last 12 months* criterion in defining the term "international migrant" is recommended, as it allows a better fit between the annual production of statistics on migration flows and population stocks. Shorter-term international movements and those who are moving need to be studied in conjunction with circular and non-permanent flows of international mobility. The term "international migrant" should be used exclusively within the context of the *at least the last 12 months* criterion, while the term "mover" may be used within the context of the *3 to 12 months* criterion.

### 3. Use of the term “immigrant” for statistical and legal or administrative purposes

40. The term “immigrant”, as used in this chapter, should not be confused with the same term when used for legal or administrative purposes in a specific country. For statistical purposes, the term “international migrant”, whether the migrant is an immigrant or an emigrant, is defined on the basis of a change of country of usual residence, that is, based on the duration of stay and of absence from the country (excluding the groups described in para. 33, among others). As long as the conditions outlined in paragraph 28 are met, a person can be considered an immigrant: citizenship and his or her purpose in entering the country are not considerations under the statistical definition.

41. On the other hand, the legal or administrative term “immigrant”, as used in specific countries, may have different meanings. For instance, “immigrant” may refer only to a foreigner but never to a citizen because of the right of abode which citizens in a country enjoy. In some cases, the term may refer, more restrictively, to a foreigner who has the right to settle in the country permanently. In that case, the person is granted the legal status required to enjoy most of the privileges enjoyed by citizens in the country and is entitled to acquire citizenship later on. In contrast, persons coming into a country to study or work for 12 months or more are considered temporary residents, and since they are expected to return eventually to their home country, they are also considered to be non-immigrants.

42. When a country is compiling statistics on international migration, there should be efforts made to avoid limiting the focus of data compilation to foreigners or foreign settlers. The statistics should also encompass other categories whose members may not be recognized as immigrants in the country either legally or administratively, such as foreign workers, students, asylum seekers and refugees, as well as citizens who left the country for more than 12 months and have re-entered to stay for at least 12 months. Provision of clear definitions of the migration-related terms used in the country is crucial for understanding the data.

## B. International migrants: flows versus stocks

43. The two measures of international migration most commonly used are flows and stocks of international migrants. The term “inflow of migrants” is defined as the number of international migrants who arrive in a given country over the course of a specific period, usually a calendar year. The outflow is equal to the number of international migrants who depart from a given country over the course of that period. The term “immigrant stock” is defined as the total number of international migrants present in a given country at a particular point in time, while the emigrant stock is equal to the total number of emigrants from a given country at a particular point in time. Migrant stock is a static measure of the number of persons who can be identified as international migrants at a given point in time.

### 1. Flows of international migrants

#### (a) Definitions

44. International migrant flow refers to the number of migrants entering or leaving a given country during a given period of time, usually one calendar year. More specifically:

- International immigrant flow represents the number of international immigrants entering a given country over the course of a specified period, usually a calendar year;
- International emigrant flow represents the number of international emigrants leaving a given country over the course of a specified period, usually a calendar year.

45. Information on migrants entering or leaving a country during a given time period is important for the estimation of the size and demographic structure of a country’s total population at the end of that period and also for the preparation of population projections. In addition, statistics on international migrant flows are required for an examination of the characteristics and magnitude of the flows and for designing the population policies and, in particular, the migration-relevant policies that are needed to address specific needs of the population and to facilitate means of coping with any significant changes occurring during a specific period.

## (b) Categorizing international migrant flows

46. International migrants enter and leave a country for different reasons. The present section introduces categories of cross-border flows that are relevant to the study of international migration. The types of migrant flows identified are those most likely to be reflected in the statistics provided by existing data-collection systems and that are relevant from a policy perspective.

47. The most basic classification distinguishes eight groups of inflows and outflows along three dimensions: arriving/departing; usual resident/non-usual resident; and citizen/non-citizen (table 2.1). Usual residents of a country are persons who have established usual residence status in that country, regardless of their citizenship status. Citizens are persons who hold the citizenship of that country when crossing the border, including both citizens at birth and naturalized citizens. In the special cases in which a person holds more than one citizenship, that person is considered to be a citizen of the country concerned as long as he or she holds the citizenship of that country. Usual residence in a country is a key facet of the definition of the term "international migrant" statistically (see the definition of "usual residence" above), while citizenship plays an important role from a policy perspective, as citizens and non-citizens are usually subject to different degrees of scrutiny at a national border.

**Table 2.1**  
**Categories of inflows and outflows by usual residence and citizenship**

	Usual residence status in the country concerned	Citizenship status when crossing the border	Categorization of flows
Inflows of	Non-residents	Citizens	Immigrating citizens (Group A)
		Foreigners	Immigrating foreigners (Group B)
	Residents	Citizens	Residents returning from a short stay abroad
		Foreigners	Residents returning from a short stay abroad
Outflows of	Non-residents	Citizens	Visitors departing after a short stay
		Foreigners	Visitors departing after a short stay
	Residents	Citizens	Emigrating citizens (Group C)
		Foreigners	Emigrating foreigners (Group D)

48. For the purpose of the discussion on the categories of immigrants and emigrants in the present section, it is assumed that with respect to duration of stay or absence, the *at least the last 12 months* criterion has been met. That is to say, (a) immigrating citizens and foreigners (Group A and Group B) are considered non-residents of the country concerned when they enter and intend to stay (or have stayed) in the country for 12 months or more; and (b) emigrating citizens and foreigners (Group C and Group D) are considered residents of the country when they leave and intend to be away (or have been away) from the country for 12 months or more.

49. The policy relevance of each of the four categories of migrants (Groups A to Group D), including further categorizations that are relevant for data collection, is discussed in the following paragraphs. It should be noted that arriving residents and departing non-residents are not considered in international migrant flow statistics (see the relevant cells in table 2.1) and are therefore not further categorized.

### Immigrating citizens (Group A)

50. Immigrating citizens include citizens who are returning after having been abroad for at least 12 months and foreign-born citizens entering for the first time. Theoretically, those belonging to this group of persons can be categorized according to their purpose in staying abroad (table 2.2). However, such a categorization is usually not undertaken, since, by convention, citizens are free to enter their country for the first time and are therefore not asked about the purpose of their stay abroad.

Policies focused on returning citizens (i.e., returning migrants) usually aim towards facilitating the return of those who are highly skilled and ensuring the utilization of the knowledge and resources that they bring back to the country. Reintegration of returning migrants within the country of origin is also of interest. A possible source of data would be the population register, which can provide information, disaggregated by some basic characteristics, on the total number of returning citizens and foreign-born citizens entering for the first time. On the basis of the information captured through their inclusion of a question on whether a citizen has ever lived abroad and when he or she came to live in the country, population censuses are able to secure a partial picture of the immigration of citizens. However, the fact that those censuses identify citizens at the time of enumeration rather than at the time of their entry into the country raises an issue with respect to the data produced: people who were not citizens at the time of immigration but acquired citizenship before the time of census enumeration are counted as immigrating citizens (see chap. VI for further discussion of this issue).

### **Immigrating foreigners (Group B)**

51. Immigrating foreigners are usually subject to the highest level of administrative scrutiny in the country receiving them. Consideration of the reason for their admission into the country (see table 2.2) is a useful basis for support of migration-management policies. The migration policies of the European Union, for example, include specific provisions for people seeking asylum, migrants for family reunification and labour migrants, all of which are covered in table 2.2 (Poulain, Perrin and Singleton, 2006). Use of a comprehensive population register would be the best means of capturing data for that group. Special registers of foreigners, foreign workers, foreign students and asylum seekers could provide information on specific categories of immigrants. Population censuses have limitations and provide only a partial picture of the flow of immigrating foreigners. For one thing, assessment of the reasons for migration usually poses a challenge in censuses and is therefore not a common practice (for further consideration of these issues, see chap. VI). While border collection could be a potential data source, identification of migrants in that context is extremely challenging, owing to the magnitude of cross-border movements. Information collected at the border is also rather limited in scope.

### **Emigrating citizens (Group C)**

52. It is important that countries for which emigration is a concern possess information on the total number of their citizens who emigrate as well as on those citizens' purpose in emigrating, whether it be, for example, for study, training, work or family reunification (for a detailed presentation of the categories of emigrating citizens, see table 2.2). Data on the number and key characteristics of emigrating citizens such as age, sex and education, in addition to information on the purpose of emigration, can be useful in the formulation of policies designed to address the challenges posed by the loss of skilled citizens. Once data on these key characteristics are collected and an extensive record-matching system is in place to identify emigrants and distinguish them from all other persons who travel abroad, then such information can be compiled, either through border collection or through a registration system that requires the recording of emigrating citizens. For most countries, however, the information required to place emigrants in detailed categories is not readily available. In the 2010 census round, a number of countries did make efforts to collect data on emigrants, including their basic characteristics. That approach, which has serious limitations, is discussed further in chapter VII.

### **Emigrating foreigners (Group D)**

53. As regards emigration of foreigners who are usual residents of the country, information on the legal status of the migrant when leaving the country may also be considered. However, such distinguishing information is less policy-relevant, as a foreigner's leaving the country is usually not a concern. On the other hand, it may be important to know which groups of foreigners have left the country, for example, foreign students who completed their studies, foreign workers whose work permits expired, asylum seekers who had been in the country for a period longer than 12 months but were no longer allowed to remain, and undocumented persons who had been identified as such and deported (see table 2.2 for a detailed presentation of the categories of emigrating foreigners).

**Table 2.2**  
**Taxonomy of international migrants according to entry and exit status, as established by the receiving State**

Immigrating		Emigrating		
A. Citizens	B. Foreigners <sup>a</sup>	C. Citizens	D. Foreigners <sup>a</sup>	
1	Citizens returning from studying abroad (plus their dependants)	Arriving foreigners admitted as students (plus their dependants)	Citizens departing to study abroad (plus their dependants)	Departing foreign students (plus their dependants)
2	Citizens returning from training abroad (plus their dependants)	Arriving foreigners admitted as trainees (plus their dependants)	Citizens departing for training abroad (plus their dependants)	Departing foreign trainees (plus their dependants)
3	Citizens returning from working abroad (plus their dependants)	Arriving foreigners admitted as migrant workers (plus their dependants, if allowed)	Citizens departing to work abroad (plus their dependants)	Departing foreign migrant workers (plus their dependants)
4	Citizens returning from a country where they exercised their right to free establishment	Arriving foreigners having the right to free establishment	Citizens departing to establish themselves in a country where they have the right to free establishment	Foreigners departing after having exercised their right to free establishment
5	Citizens returning after having settled abroad	Arriving foreigners admitted for settlement without limits on duration of stay	Citizens departing to settle abroad	Foreign settlers departing
6	Citizens returning after having migrated for family formation or reunification	Arriving foreigners admitted for family formation or reunification	Citizens departing to form a family or join their immediate relatives abroad	Departing foreigners originally admitted for family formation or reunification
7	Repatriating refugees	Foreigners admitted as refugees	Citizens departing to seek asylum	Departing refugees
8	Returning former asylum seekers	Foreigners seeking asylum	Citizens departing to seek asylum	Departing former asylum seekers (not granted refugee status)
9	Citizens being deported from abroad	Foreigners whose entry is not sanctioned	Citizens departing without the necessary admission permits	Deported foreigners

*Source:* Adapted in part from *Recommendations on Statistics of International Migration, Revision 1* (United Nations, 1998), para. 38, and table 1, entitled "Revised taxonomy of international inflows and outflows according to entry status established by receiving State.

<sup>a</sup> Including stateless persons.

54. The detailed categorization presented in table 2.2 reflects not only the administrative control exercised at the border or at registration but also how data are collected. In countries where a central registration system covering the total population does not exist, separate administrative agencies with unconnected systems may be responsible for certain segments of the migrating population. For example, the administration responsible for labour might be in charge of registering all foreign workers

who are issued a work permit; the administration responsible for education may have information on foreign students; and the administration responsible for regularization of asylum seekers and refugees could have information on the people who seek asylum, as well as on those who are refugees.

55. Added value is generated through the presentation of statistics on migrant flow for the various categories of migrants listed in the taxonomy. Such an approach facilitates the interpretation of those statistics and leads to improvements in the international comparability of national data.

56. The categories presented in table 2.2 are intended to be mutually exclusive, which signifies that the receiving country assigns a single status to a foreigner at the time of entry. That status is based on the main reason for admission of that foreigner. For example, if a person admitted as a student is also granted permission to work to support his or her studies, that person should be classified under category 1 as a foreign student and not as a migrant worker under category 3 since the main reason for admission was to enable pursuit of a course of study and not employment. Similarly, if a person seeking asylum is permitted to work while his or her case is being considered, that person should be classified as an asylum seeker and not as a migrant worker since the main reason for admission was to fulfil the person's request for protection. In the case of asylum seekers, categories 7 and 8 are also mutually exclusive since the former encompasses individuals who are granted refugee status as soon as – if not before – they arrive in the country of destination. The latter category includes persons who are permitted to file an application for asylum in the country of destination and who must then wait for that application to be adjudicated in order to acquire another status.

57. The groups belonging to each of the categories presented in table 2.2 are described in box 2.1. As they are described in the box from the perspective of the receiving country, each group is made up of *immigrating foreigners* of a specific type. However, as noted previously, every foreigner arriving in one country can be considered, inversely, a citizen departing from another. Thus, to each of the nine types of immigrating foreigner described in box 2.1, there corresponds a type of emigrating citizen of the reporting country.

### Box 2.1

#### Description of the categories of immigrating foreigners included in the taxonomy of international migrants

1. *Foreign students*: Foreigners admitted under special permits or visas allowing them to undertake a specific course of study in an accredited institution of the receiving country. Their dependants, if admitted, are also included in this category.
2. *Foreign trainees*: Foreigners admitted under special permits or visas allowing them to undertake training that is remunerated from within the receiving country. Their dependants, if admitted, are also included in this category.
3. *Foreign migrant workers*: Foreigners admitted by the receiving State for the specific purpose of exercising an economic activity remunerated from within the receiving country. Their length of stay is usually restricted as is the type of employment that they can engage in. Their dependants, if admitted, are also included in this category.
4. *Foreigners having the right of free establishment*: Foreign persons who have the right to establish residence in the receiving country because of special treaties or agreements between their country of citizenship and the receiving country. Their dependants, if admitted, are also included in this category.
5. *Foreigners admitted for settlement*: Foreign persons granted permission to reside in the receiving country without limitations regarding duration of stay or exercise of an economic activity. Their dependants, if admitted, are also included in this category.
6. *Foreigners admitted for family formation or reunification*: This category includes the foreign fiancés, foreign fiancées and foreign adopted children of citizens, the foreign fiancés and fiancées of other foreigners already residing in the receiving country and all foreign persons allowed to join their immediate relatives already established in the receiving country.

## Box 2.1 (continued)

7. *Refugees*: Foreign persons granted refugee status either at the time of admission or before admission. This category includes foreign persons granted refugee status while abroad and entering the receiving country to be resettled, as well as persons granted refugee status on a group basis upon arrival in the country. In some cases, refugee status may be granted when the persons involved are still in their country of origin through “in-country processing” of requests for asylum. Refugee status may be granted on the basis of the 1951 Convention relating to the Status of Refugees<sup>a</sup> and the 1967 Protocol thereto,<sup>b</sup> other pertinent regional instruments or humanitarian considerations.
8. *Foreigners seeking asylum*: This category encompasses both persons who are eventually allowed to file an application for asylum (asylum seekers proper) and those who do not enter the asylum adjudication system formally but are nevertheless granted permission to stay until they can return safely to their country of origin (foreigners granted temporary protected status).
9. *Foreigners whose entry or stay is not sanctioned*: This category includes foreigners who violate the rules of admission of the receiving country and are deportable, and foreign persons attempting to seek asylum but who are not allowed to file an application and are not permitted to stay in the receiving country on any other grounds.

<sup>a</sup> United Nations, *Treaty Series*, vol. 189, No. 2545.

<sup>b</sup> *Ibid.*, vol. 606, No. 8791.

## 2. Population stocks related to international migration

58. Based on the definition of “international migrant”, the term “stock of international migrants” may be considered to comprise “all persons who have changed their country of usual residence” (see para. 19 above). More specifically:

- The stock of immigrants is the number of immigrants present in a given country at a particular point in time, or the stock of persons who have spent at least one year of their lives abroad in a country other than the one in which they have been present for at least one year or intend to live for at least one year at the time data are gathered.
- The stock of emigrants is the number of persons who have emigrated out of the country and are currently living abroad, or the stock of persons who have spent at least one year of their lives in the reporting country and who are currently absent from that country for at least one year or intend to be absent for at least one year.

59. It is common to find that the information needed is associated not with the generality of international migrants as defined previously but rather with subgroups of migrants or even people who are not migrants themselves but are related to migrants (e.g., children of migrant parents). Subgroups of immigrant stock that are of policy interest are created generally based on two migrant-related characteristics: country of citizenship and country of birth. Those subgroups – for example, stocks of foreigners and stocks of foreign-born population – can be further divided: in the latter case into, for example, stocks of foreign-born citizens and stocks of foreign-born foreigners. The stock of returning migrants is another subgroup of immigrant stocks related to citizens. Policymakers are also interested in the stock of second-generation immigrants, that is, the group of people who may not be immigrants themselves but were born to immigrant parents.

60. Similarly, for emigrants the most relevant question is related not to the generality of stock of emigrants as defined above but rather to citizens living abroad. On the other hand, the stock of foreigners who left the country is usually not of particular interest to policymakers.

61. Presented in the following paragraphs are the separate frameworks developed to identify the population groups that are a common focus in the study of immigration and emigration. The frameworks also illustrate how those population stocks are related or correspond to the stock of international migrants, as defined paragraph 58.

**(a) Population stocks related to immigration**

62. As noted previously, the most widely used immigration-related population stocks are identified by two variables, namely, country of birth and country of citizenship, which constitute two of the dimensions of the framework for those stocks (see table 2.3). A third dimension, reflecting whether or not a person is an immigrant, is incorporated in the framework to illustrate how closely different population stocks correspond to the theoretical concept of immigrant stock. The framework includes only usual residents of a country; persons who are present temporarily in that country are excluded, while persons who are abroad temporarily but are part of the usual resident population of the country are included.

**Table 2.3**  
**Framework for population stocks related to immigration**

	Usual resident population			
Native- or foreign-born	Immigrants		Non-immigrants	
	Citizens	Foreigners	Citizens	Foreigners <sup>a, b</sup>
Native-born	A. Citizens born in the country who emigrated and returned thereafter	B. Foreigners born in the country who emigrated and returned thereafter	C. Citizens born in the country who never emigrated	D. Foreigners born in the country who never emigrated
Foreign-born	E. Citizens born abroad who immigrated	F. Foreigners born abroad who immigrated	Not applicable	

<sup>a</sup> Including those who are stateless.

<sup>b</sup> Countries that are under free movement agreements with others may wish to divide the category further, into foreigners who have the right to free establishment and those who do not.

63. The framework identifies the stock of (a) the foreign- and native-born populations on the basis of the variable “country of birth”; (b) foreigners and citizens based on the variable “country of citizenship”; and (c) immigrants and non-immigrants based on the variable identifying whether or not a person is an immigrant. Many other population stocks related to international immigrants can also be identified from the framework, such as the stocks of foreign-born citizens and foreign-born foreigners, through consideration of multiple dimensions. Each cell within the framework is described in the following paragraphs.

64. As foreign-born usual residents should, by their very nature, always be treated as immigrants to the country, the space at the intersection of “foreign-born” and “non-immigrants” is occupied not by cells but by the phrase “not applicable”. The only exceptions in that regard are babies who left their country of birth before reaching 1 year of age. While theoretically speaking, they were not away from the reporting country for at least one year, they should nonetheless be treated as immigrants to the reporting country.

*Stocks of immigrants*

65. The stock of immigrants, as defined in paragraph 58, consists of the four subgroups (A, B, E and F) listed under the left column heading “Immigrants” in table 2.3. This means that, among usual residents of a country, the totality of immigrant stock comprises (a) all native-born persons, whether citizens or foreigners, who emigrated and returned thereafter; and (b) all foreign-born persons, including citizens born abroad who immigrated. That formulation is closely linked to the basic concept of international migration. Although not of particular policy-related interest, the notion of the stock of

immigrants provides a theoretical basis and point of reference for comparing the scopes of other population stocks considered in the following paragraphs.

#### *Stocks of foreign-born persons*

66. The term “stock of foreign-born persons” refers to the stock of population born abroad. Foreign-born persons were not part of the population of a country at the beginning of their lives. Those belonging to this group may not speak the language of the country and may have a different educational or training background from that of persons born in the country, which may affect their integration. Such persons make up Group E and Group F in table 2.3. Most foreign-born usual residents are immigrants, that is to say, they have lived at least a year of their lives outside the country in which they are enumerated and are now usual residents of that country. The only exceptions are persons who were under 1 year of age before settling in the country where they are enumerated and therefore cannot strictly speaking be considered immigrants, but who are usually nonetheless treated as immigrants to the reporting country.

67. The immigrant stock should not be equated with the stock of foreign-born population, since the immigrant stock also includes native-born persons who have lived at least a year of their lives outside the country and returned to live in their country of birth (represented by groups A and B in table 2.3). Those persons are, by definition, part of the immigrant stock. The exclusion of native-born immigrants, however, is not necessarily a drawback for most purposes, and depending on the policy questions being addressed, may in fact be desirable. Indeed, at present, the foreign-born population is one of the most commonly used measures of immigrant stock.

#### *Stocks of foreigners*

68. The term “stock of foreigners” refers to the stock of population whose members do not hold the citizenship of the country of enumeration (Group B, Group D and Group F in table 2.3). The stock of foreigners is also widely used in countries to represent the stock of immigrants. Whereas, by definition, virtually all foreign-born persons can be considered immigrants, many foreigners are not immigrants, as represented by Group D in table 2.3. For example, in some countries, children born to foreign parents are accorded the citizenship of their parents and are thus considered foreigners even if they were born and have always been living in the same country. These children are foreigners but not immigrants. On the other hand, not all immigrants belong to the stock of foreigners. For example, a citizen who emigrated from his or her country of citizenship and has come back to become a usual resident of the country again is an immigrant yet is not included in the stock of foreigners.

69. Citizenship is indeed a fundamental determinant of the rights enjoyed by a person in the country in which he or she resides. Countries exercise greater control over foreigners than over citizens, not just with respect to their movements but in other spheres as well. Thus, for purposes of assessing the integration of immigrants or the effects of differential rights and entitlements, taking account of the distinction between the citizen and the foreigner is basic. Comparing the labour-market outcome of foreigners with citizens, for example, would provide an indication of to what degree foreigners are integrated into the society. For those reasons, the stock of foreigners figures prominently in the study of international migration.

#### *Stocks of returning migrants*

70. The stock of returning migrants refers to citizens of the country of enumeration who emigrated and subsequently came back to live in the country (Groups A and Group E in table 2.3). Returning foreigners, however, are not included. This group of persons is important to countries that experience the return of their citizens in large numbers, as the knowledge and resources brought back by those returning migrants as well as their reintegration are usually subjects of policy interest.

71. It should be noted that the citizens in this category include both citizens by birth and citizens by naturalization. Among the latter, strictly speaking, only those who were citizens at the time of return should be counted as returning migrants. However, obtaining information on whether a person is a citizen at the time of return is not always possible, since that depends on the source of data. Population registers are capable of collecting information on the citizenship status of a person immediately after his or her arrival in the country, while censuses and surveys usually collect that information at the

time of enumeration. Therefore, when data are collected through censuses and surveys, a definition of “returning migrant” is applied that is less strict and that covers all immigrants who are citizens at the time of data collection; the figure obtained would then include those who acquired their citizenship after entering the reporting country.

72. In another divergence from the definition of “returning migrant” as applied in some countries, native-born persons who have lived abroad for a period of at least 12 months before returning to their native country are considered returning migrants (see chap.VI on collecting data on returning migrants through censuses).

#### *Stocks of foreign-born citizens*

73. The term “stock of foreign-born citizens” refers to the group of persons who were born abroad and hold the citizenship of a given country (Group E in table 2.3). This group includes those who acquired citizenship of that country at the time of birth (probably through native parents) or through naturalization.

#### *Stocks of foreign-born persons who are currently foreigners*

74. The term “stock of foreign-born persons who are currently foreigners” refers to the stock of population who were born abroad and do not hold the citizenship of the country of enumeration (Group F in table 2.3). This group is sometimes considered to be the “real” foreign population.

#### *Stocks of second-generation immigrants*

75. The term “stock of second-generation immigrants” refers to the stock of persons who were born in a given country and both of whose parents were born abroad. The framework for the stock of immigrants has been expanded to incorporate this specific population stock through the introduction of an additional dimension: country of birth of parents (see table 2.4). The group of second-generation immigrants corresponds to the third row of table 2.4.

76. It should be noted that second-generation immigrants are not immigrants as defined in this chapter unless they were away from the country for at least 12 months and subsequently returned to live in (or had the intention of living in) the country for at least 12 months. However, identification of second-generation immigrants as one important population stock associated with immigration is necessary for the assessment of their socioeconomic situation, including their level of education and employment status, compared with that of persons who are born abroad to foreign-born parents (first-generation immigrants) – this group corresponds to row 4 of table 2.4 – and persons who are native- or foreign-born to at least one parent who is native-born (these groups correspond, respectively to rows 1 and 2 of the table).

77. The group that includes both first- and second-generation immigrants is sometimes referred to as the stock of persons with foreign background (United Nations, Economic Commission for Europe, 2015a). The two spaces in the table that are occupied not by cells but by the phrase “not applicable” reflect the fact that in this context, persons born abroad cannot be non-immigrants.

**Table 2.4**  
**Extended framework for identifying the stock of persons with foreign-born parents**

		Usual resident population			
Country of birth of parents	Native- or foreign-born	Immigrants		Non-immigrants	
		Citizens	Foreigners	Citizens	Foreigners
At least one parent born in the country	Native-born	Citizens born in the country who emigrated and returned thereafter; at least one parent born in the country	Foreigners born in the country who emigrated and returned thereafter; parents born in the country	Citizens born in the country who never emigrated; at least one parent born in the country	Foreigners born in the country who never emigrated; at least one parent born in the country
	Foreign-born	Citizens born abroad who immigrated; at least one parent born in the country	Foreigners born abroad who immigrated; at least one parent born in the country	Not applicable	
Both parents born abroad	Native-born	Citizens born in the country who emigrated and returned thereafter; both parents born abroad	Foreigners born in the country who emigrated and returned thereafter; both parents born abroad	Citizens born in the country who never emigrated; both parents born abroad	Foreigners born in the country who never emigrated; both parents born abroad
	Foreign-born	Citizens born abroad who immigrated; both parents born abroad	Foreigners born abroad who immigrated; both parents born abroad	Not applicable	

**(b) Population stocks related to emigration: stock of citizens living abroad**

78. The most policy-relevant population stock associated with emigration is the stock of citizens living abroad. Information on the size and composition of that stock of citizens (disaggregated by sex, age, education, labour-force status and duration of residence abroad), as well as on the purpose of their living abroad is of relevance to the country of origin for a number of reasons including its need to assess the magnitude of emigration of highly-skilled personnel (i.e., the brain drain) and develop policies designed to retain citizens and encourage citizens living abroad to return. In countries where the volume of emigrating migrant workers is large, assessment of the total size of the population of citizens living abroad can also be used to provide some indication of the situation with regard to remittances.

79. The focus within the framework for identifying the stock of citizens living abroad differs from that of the framework constructed for the study of immigration. The starting point for the study of immigration is the usual residents in a country, while the study of emigration concentrates on the non-usual residents of that country, since, by their very nature, usual residents of the country cannot at the same time be emigrants.

80. Table 2.5 presents a framework for dividing the stock of citizens of a country living abroad along the dimensions of usual residence of the country, ever usual residence and citizenship status. It is to be noted that the term "citizens living abroad" refers to citizens who are not usual residents of the country in which they hold citizenship (represented by Group C in the table).

**Table 2.5**  
**Framework for identifying the stock of citizens living abroad**

Ever usual resident of the country concerned	Usual residents of the country concerned (at time of data collection)	Citizens	Foreigners
<b>Yes</b>	Yes	A. Citizens, usual residents of the country at the time of data collection (also considered ever usual residents of the country)	B. Foreigners, usual residents of the country at the time of data collection (also considered ever usual residents of the country)
	No	C. Citizens, not usual residents of the country concerned at the time of data collection, ever usual residents of the country	D. Foreigners, not usual residents of the country concerned at the time of data collection, ever usual residents of the country
<b>No</b>	Yes	Not applicable	
	No	E. Citizens, never usual residents of the country concerned	F. Foreigners, never usual residents of the country concerned

81. Not all citizens of a country who are living abroad are emigrants of that country. Neither a citizen who has never been in the country but obtained citizenship through his or her parents – nor a citizen born abroad who makes short visits to the country of citizenship – can be considered an emigrant of that country (see Group E in the table).

# Chapter III

# Sources of data for measuring international migration

82. Data sources for international migration statistics can be grouped in two main categories: “major data sources” and “other data sources”. Major data sources include (a) population censuses, (b) sample surveys and (c) administrative registers, while other data sources include border collections and other administrative sources.

## A. Major sources of data on international migration

### 1. Population censuses

83. A population census encompasses the entirety of the process of planning, collecting, compiling, evaluating, disseminating and analysing demographic, economic and social data at the smallest geographical level pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country (United Nations, 2017, para. 1.4).

84. Population censuses are perhaps the most widely available source of internationally comparable information on international migration in the world; and despite the fact that they cannot capture all the dimensions of migration flows in their entirety, censuses are, thus far, still the only source of international migration statistics for many countries of the world.

85. Population censuses are a major source of data on the stock of foreign-born and the stock of foreigners in a country. Population censuses also have the capacity to capture information on place of residence one or five years before enumeration, so that a figure may be obtained for the number of international migrants who arrived during the relevant period before the time of enumeration and remained in the country until that time. Some countries use population censuses to generate data on the stock of immigrants through questions related to whether the respondent has ever lived abroad and, if so, the length of the period during which he or she was away. In addition, estimates of net immigration can often be derived for the intercensal period through use of census data on the total population, taking into account births and deaths that occurred during that period.

#### (a) Advantages

86. The most distinct strength of the population census is its universal coverage. A census includes all residents, hence all international migrants are covered. Universal coverage enables the generation of summary statistics at a fine level of geographical detail and for small population groups, and the production of extensive and detailed cross-tabulations of migrant characteristics. This is a highly important feature of the census in cases in which migrants, or certain categories of migrants, constitute a small proportion of the population.

87. Because of its universal coverage, the census also includes undocumented migrants. And even if the census is not able to reach some segments of that population, it is still the best source of information available, given that administrative sources such as population registers and residence permit systems by their very nature exclude undocumented migrants.

88. Another strength of the census is its ability to collect a substantial amount of information on each individual, which accounts for its potential to delineate international migrants based on certain demographic and socioeconomic characteristics. It is therefore possible to cross-tabulate migrant characteristics such as citizenship, duration of stay and place of residence in the receiving country against a combination of demographic and socioeconomic variables including age, sex, educational attainment, marital status, labour-force participation and occupation. In fact, it is possible to cross-tabulate migrant characteristics with any of the variables collected in the census, which allows for the investigation and analysis of a wide range of policy-relevant issues.

89. Censuses collect geographical information on place of residence that can be used to determine where international migrants live. Those location data allow for analysis of and reporting on the concentration of migrant groups within the country of destination.

90. Because censuses are able to accommodate only a small number of questions with the capacity to elicit straightforward answers, they cannot introduce much variation in the range of questions or concepts used (Bilsborrow and others, 1997, p. 52). There is therefore greater uniformity across countries in the type of data on international migration produced by censuses compared with any other data-collection system.

91. This feature of census data facilitates the possible sharing of international migration data among countries as a means of estimating the volume of emigration. Information on emigration is rarely collected by border control systems, for example. While data on emigration from censuses and population registers are acknowledged to be insufficient in most countries and while the use of censuses will not yield information on emigration in its entirety, censuses of destination countries can nonetheless be used to put together a picture of the emigrant population of a country of origin. That approach was taken in Latin America and has recently been tested in some countries in Europe (see chap. VII, sect. D).

92. While data from two successive censuses can be used to estimate net international migration, the estimate obtained through the application of such a method is an approximation that would also require reasonable estimates of mortality and fertility. However, for countries that have no other means of estimating migration flow, this represents a viable means of obtaining information on long-term net migration.

93. A final point: since population censuses are taken at regular time intervals (usually every 10 years), Governments can monitor shifts in the migration regime by examining long-term trends through comparisons of statistics from two or more censuses.

#### **(b) Disadvantages**

94. On the other hand, it is necessary to weigh a number of disadvantages against the above-mentioned advantages of using census data to analyse international migration. First, since censuses are generally carried out only once every decade (or once every five years in a few countries), they cannot capture many of the current trends in international migration in a timely fashion.

95. Second, because census questions are very limited in number and restricted to eliciting easily quantifiable facts, it is generally not possible to include direct, probing questions related to the causes and consequences of migration, which would need to be detailed in nature.

96. Third, some countries employ sampling in their population census. In those cases, countries administer a long form on a sample basis (for instance, to 1 in 10 households) in order to investigate certain topics in greater depth, while a short form is provided to the rest of the population. Census data collected for a sample have limitations similar to those associated with any other type of sample survey. As regards the measurement of international migration, the problem arises from the fact that the spatial distribution of migrants throughout the population might not be random – indeed, it is often highly clustered – so that accurate sampling of those migrants becomes difficult. Moreover, in cases in which certain migrant groups constitute a very small proportion of the national population, sampling may yield insufficient data for those groups. The usefulness of the information gathered will be limited when estimates for such small populations are not reliable enough to contribute to detailed analysis and cross-tabulation.

97. Fourth, while censuses seek to cover the whole population, people are inevitably missed, and migrants are especially susceptible to not being enumerated. That is especially the case when international migrants have a vested interest in avoiding enumeration or misreporting their migrant status. Moreover, there can be elements of census design that foster the systematic exclusion of particular types of migrants.

98. Fifth, because of the scale of censuses, it is likely that some enumerators will not be aware of the issues associated with migrant enumeration and therefore may not detect reporting errors during the census-taking process.

99. Finally, many international migration-related questions require responses regarding events that occurred within a specified period in the distant past, thus relying on the respondent's ability in the area not only of event recall but also of temporal recall. Recall errors and telescoping effects could lead to errors in determining migration status.

100. Notwithstanding those disadvantages, the census remains an important source of international migration data, especially for countries that do not have reliable population registers or related administrative registers. Indeed, for some countries, the census is the only source of data on international migration. The 2020 round of population censuses opens a significant window of opportunity to substantially enhance the viability of those data and thus contribute to an enlarged understanding of the scale and policy implications of international migration.

## **2. Household sample surveys**

101. Household sample surveys collect information from households as units of consumption, production, income sharing and decision-making. These surveys also collect information on particular members of a household and on persons linked to the household in special ways. Household surveys include both specialized international migration surveys and other-purpose household surveys whose main focus is not international migration.

102. As specialized international migration household surveys can be designed to fit their objective and target the right population, they are more flexible compared with other-purpose household surveys. Many specialized migration surveys study not only the flows of migrants but, more importantly, the causes and consequences of migration. Some of those surveys are conducted simultaneously in both the sending and receiving countries. Longitudinal surveys designed to monitor the changes in the situation of immigrants over time have also been carried out.

103. Other-purpose surveys focus on specific topics such as labour-force participation and employment, fertility and mortality, and income and expenditure. Surveys of this type with a large sample size have been used to collect some information on the topic of international migration through the addition of a few questions or a question module related to that topic.

104. The strength of household sample surveys compared with other data sources, as related to the study of international migration, lies in their ability to collect a wealth of information allowing for in-depth analysis of the likely causes of international migration and of its consequences for the persons involved. For example, household sample surveys can collect information on the situation of migrants prior to migration, which is vital to understanding the determinants and consequences of migration for international migrants. Another advantage of household surveys, as compared with other sources, is their above-mentioned flexibility, which enables them to capture information on the group of migrants of most interest as a focus of study.

105. However, those who use sample surveys to study international migration are confronted, with a major challenge, namely, the sample size requirement and the associated trade-off with respect to sampling errors. Given the small proportion of international migrants in most countries, the sample size for a survey needs to be reasonably large if that survey is to identify enough migrants for meaningful analysis. The sample size required would further increase if the interest of the study was a subgroup of migrants, for example, recent or returning migrants. As for measurement of the magnitude of migrant flows and stocks, that would necessitate the conduct of large-scale sample surveys.

106. With respect to the study of international migration, specialized international migration surveys and other-purpose household surveys exhibit advantages and limitations relative to each other. Specialized international migration surveys enjoy flexibility in identifying the target population and including the required number of questions – a flexibility that may not be easily achieved by other-purpose surveys. On the other hand, the conduct of specialized surveys tends to be highly expensive, which accounts for the fact that they are conducted less frequently in some countries, if they are conducted at all. In contrast, many other-purpose surveys, such as demographic and health surveys, labour-force surveys and living standards surveys, are usually conducted on a regular basis. Moreover, few resources are required for the addition to those surveys of a certain number of questions on international migration.

## **3. Administrative registers**

107. Administrative registers include population registers and special types of registers covering foreigners and other specific groups of persons such as asylum seekers. A register is a data system

assembled to record, on a continuous basis, selected information regarding each member of the target population. Although the main purpose of registration is administrative in nature, a register can still be used for the compilation of up-to-date statistical information on the size and characteristics of that population. The registers of interest for the generation of international migration statistics are those in which changes of country of residence are recorded for the target population.

#### **(a) Population registers**

108. For countries that derive statistics on international migration flows from national population registers, the identification of international migrants depends on the rules in place with regard to inscription in, or deregistration from, the register. If, for example, a person – citizen or foreigner – is registered when he or she intends to stay in the country for at least one year, then all persons so registered could be considered immigrants. Similarly, when the rule for deregistration applies specifically to someone who is leaving the country for at least one year, then all persons so deregistered are considered emigrants. In a context in which general compliance with the rules of registration and deregistration can be assured, national population registers are one of the best sources of comprehensive statistics on international migration. They generate statistics on both inflows and outflows and as long as foreigners are subject to registration rules similar to those that apply to citizens, those registers can produce comparable statistics covering the movements of both foreigners and citizens. Population registers can also produce annual data on migrant stocks.

109. On the other hand, there are certain constraints associated with the use of population registers as a source of statistics on international migration. First, a population register is not established for statistical purposes and, as a result, derivation of statistics from the register depends on the rules and regulations regarding registration and deregistration. Second, the citizenship of the person being registered or deregistered is a factor responsible for considerable variation in those rules and regulations not only among but also within countries. As a result of the such variation among countries, the data produced are not strictly comparable at the international level. At the national level, when differences in the citizenship status of persons calls for the application of different rules, compilation of international migration statistics for the country as a whole requires additional estimation procedures. Third, the rules, especially on deregistration, are not always followed. For example, a person may remain registered even after having left the country for a lengthy period, either because that person departed with the intention of returning in the near future and then delayed his or her return, or because the person was not aware of the deregistration rules. Consequently, emigration statistics derived from population registers are often biased downward owing to the failure to deregister of persons leaving the country for a lengthy period.

#### **(b) Registers of foreigners**

110. The operation of registers of foreigners is similar to that of population registers but, unlike population registers, they cover only foreigners who are residents of a country legally. The conditions under which foreigners are inscribed in, or deregistered from, the register of foreigners serve – as in the case of national population registers – to characterize persons who can be considered international migrants. Registers of foreigners usually accord priority to the recording of the migration-related characteristics of each person registered, including the type of residence permit and the duration of its validity.

111. In principle, registers of foreigners can be used to obtain statistics on both the inflows of foreigners into and their outflows from a country and on the number of foreigners who are residing legally in a country at a given point in time (a measure of stock). Registers of foreigners also have the potential to yield information on the inflows of foreigners by type and duration of validity of residence permit, and to produce statistics on the number of foreigners admitted during a given year who are still registered a year later. However, the latter set of statistics may be biased upward as a result of the failure of departing foreigners to deregister.

112. Although registers of foreigners have the capacity to achieve fairly comprehensive coverage of inflows of foreigners who are granted permission to reside in a country, their coverage of those leaving the country for a long period – or for good – is less complete. This lower level of coverage is due mainly to a lower level of compliance by foreigners with the rules of deregistration.

### (c) Registers of asylum seekers

113. Registers of asylum seekers – or more precisely, registers of the cases of asylum seekers – have been or are being set up in some countries to permit the follow-up of the status of each case over time. To the extent that such registers are successful in recording the entry of asylum seekers into the country and their departure, they also have the potential to produce statistics on both the stock and the net inflow of asylum seekers. Statistics on the stock of asylum seekers can be derived from the register in which their presence is recorded by length of stay. Statistics on the net inflow of asylum seekers can be derived from the number filing applications for asylum during a given year who are still present in the country one year later.

### (d) Summary

114. Population registers, registers of foreigners and registers of asylum seekers all have the potential to produce information on certain groups of persons who change their country of usual residence and can be considered international migrants. Population registers have the potential to provide the most comprehensive coverage of those persons, since they register changes of residence of both citizens and foreigners. However, allowance must be made for variations in the rules for registration and deregistration associated with the citizenship of the person registering. Because those rules also vary considerably among countries, comparability of the statistics obtained can be achieved most easily through the identification of international migrants based on follow-up one year after registration or deregistration. Persons who remain registered one year after registration can be considered immigrants according to the definition provided in chapter II. Similarly, emigrants are identified as persons who deregister and do not register again over the course of a year. However, such a strategy impacts the timeliness of the statistics, and its adoption means that statistics on international migration derived from population registers can be produced, at the earliest, a year later. A similar strategy can be used to derive comparable flow statistics on migrant foreigners from registers of foreigners.

## B. Additional sources of data on international migration

115. In addition to the major data sources described previously, there are others that have been used by certain countries to collect data on international migration. Although those other sources are appropriate in specific contexts, their limitations have stood in the way of their use by a broader group of countries.

### 1. Border collection

116. The term “border collection” refers to the collection of information at ports of entry into and departure from a country, regardless of whether they are actually at the border. They usually include land borders, airports, seaports and other sites at which persons formally enter or leave a national territory. The sources of data collected at the border include legal documents through which the status of persons arriving and departing is established (e.g., passports, visas and residence permits) and statistical forms, specifically the embarkation and disembarkation cards filled out by arriving and departing passengers.

117. Statistics derived from border collection have the advantage of capturing actual movements with a high degree of accuracy with regard to timing, mode of transport and port of entry or departure. However, gathering information from all persons arriving in and departing from a national territory is a task that is usually well beyond the capabilities of many countries in terms of the means at their disposal. Errors in coverage of the overall number of arrivals or the overall number of departures can result in very sizeable errors in the calculation of the difference between the two totals, a figure that provides a measure of net migration. That attests to the importance of devising criteria that permit the identification of international migrants apart from the larger volume of travellers so that data-collection efforts can be better targeted.

118. In practice, unless a system is in place for distinguishing migrants from visitors by matching the records of inflows and outflows at the border so as to enable measurement of the actual duration of their stay, statistics derived from border collection rarely provide the best assessment of interna-

tional migration flows. That stems from the difficulties associated with gathering reliable information on a large volume of people who are subject to different degrees of control, as determined by their citizenship, mode of transport and port of entry. If the use of embarkation and disembarkation cards is such that verification of what passengers have filled in on the forms is minimal, then the information gathered may suffer from a low level of reliability. If, on the other hand, there is an attempt by the authorities in charge of border control to corroborate the information provided by passengers through comparison with other documentary evidence, then the independence of the statistical information from administrative considerations might be compromised. In any case, it is unlikely that a foreigner requested to indicate intended duration of stay would affirm it to be considerably longer than what is allowed under the visa or residence permit held by that foreigner.

119. Another specific type of border collection entails the administration of sample surveys to passengers crossing national borders. The respondents are selected through sampling based on port or route of entry and time. Within each selected time period, certain passengers are systematically chosen for an interview, according to the order in which they cross the border. The interviews, which are conducted by trained interviewers, are designed to capture much more detailed information than can be derived from the embarkation and disembarkation cards within a limited time frame.

120. A few countries have been fairly successful in their use of passenger surveys to identify international migrants. For example, since 1961, the Office for National Statistics of the United Kingdom of Great Britain and Northern Ireland has been conducting the International Passenger Survey for the purpose of deriving data on the size and characteristics of migrant flows as well as on travel and tourist expenditure. However, as data are collected from a sample of travellers, that type of border survey is subject to both sampling and non-sampling errors; and establishing appropriate sampling frames is another challenge. Moreover, the cost of such a survey can be large, as it is often run continuously and requires very well-trained interviewers.

## 2. Other administrative sources

121. Administrative sources other than the registers also produce data that are indicative of inflows or outflows of particular groups of international migrants. For example, through the issuance of residence permits, statistics can be derived on the inflows of foreigners; through the issuance of work permits, data can be obtained on the inflows of foreign migrant workers; and through official clearances of departing migrant workers, statistics can be derived on citizens whose contracts to work abroad must be scrutinized before departure.

122. There are certain administrative sources that cover even more specific groups of persons. For example, data on the number of applications for asylum filed over a given period are an indicator of the inflow of asylum seekers. Records kept by tax or social security authorities are a potential source of information on the numbers of foreigners who pay taxes or are covered by social security. Data derived from those sources, as well as information obtained from reports by establishments – namely, enterprises, firms and manufacturing facilities – on the number of foreign workers that they employ, are indicative of the size of the population of employed foreigners.

123. Along the same lines, the number of deportations occurring during a given year provides information regarding only a segment of the undocumented migrant population, as do registration forms filled out at the time of regularization drives. In countries of origin where special insurance schemes have been set up for citizens who migrate to work abroad, the records for those schemes can be used to derive information on those departing annually. In addition, reports from agencies engaged in the recruitment and placement of citizens for employment abroad can yield statistics that may be indicative of the number of citizens who have left to work abroad over a specific period of time.

124. A wide variety of possible administrative sources clearly exist. While those sources may differ considerably, with regard to (a) their mode of operation; (b) the segment of the migrant population covered; and (c) the types of statistics produced, the statistics they provide all share a common drawback. They usually refer to administrative records (e.g., residence permits, deportation records and asylum applications) rather than directly to the persons concerned. As a consequence, within a

specific context, the numbers derived from administrative records may not reflect the actual number of persons concerned. For example, if, in a country, a person can receive several residence permits in a given year or if the permit granted to the head of a family also covers his or her dependants, then the number of residence permits issued may not be equivalent to the number of persons admitted to the country over the course of that year. Similarly, with respect to deportations, if those deported over a given period return repeatedly and are sent back several times during that period, then the number of deportations carried out over the period may be higher than the actual number of persons involved. Or, when a single asylum application can be filed on behalf of a family, that one application would clearly understate the number of asylum seekers involved.

125. Another drawback associated with use of those administrative sources involves permits, which are sometimes issued in a given country not only to newly arrived foreigners or newly arrived foreign workers but also to those foreigners and foreign workers who have resided in the country for a certain period of time so as to enable them either to renew or to change the type of visa that they hold. Therefore, in that case, the statistics generated from the administrative records would not reflect the real inflow of migrants.

126. Although none of the administrative sources reviewed are capable of producing information on all international migrants, the information they yield is valuable nevertheless and should not be discarded simply because it is partial. It is therefore important that the compilation and dissemination of the various types of available data be conducted in such a way as to bring their meaning, coverage and limitations clearly into focus.

# Chapter IV

## Key information and measurements

127. The types of information relevant to the collection and compilation of statistics on international migrants are divided into three categories: (a) defining characteristics needed to identify international migrants based on definitions provided in chapter II; (b) distinguishing characteristics, such as country of birth and country of citizenship, duration of stay in the receiving country and reasons for migrating that can be used to differentiate and categorize migrants; and (c) descriptive characteristics that can be used to assess the settlement-related experience of international migrants and that include (i) sociodemographic variables such as sex, age and education; (ii) economic characteristics such as labour-force status and occupation; and (iii) housing-related characteristics, health status and civic status entailing, for example, acquisition of citizenship and participation in elections.

128. The ability to capture the three types of important information varies among different data sources, given that, as described in chapter III, each source has its own strengths and limitations. The aim of the present chapter is to analyse how well the data sources capture that information. For example, information on reasons for migration is rarely asked for in population censuses. As for measurement of a migrant's actual duration of residence in a country presents a challenge no matter what data source is used, unless extensive matching of records is carried out for all cross-border movements.

### A. Defining characteristics of immigrants and emigrants

129. The definitions of "immigrant" and "emigrant" have been formulated on the basis of three elements: (a) entry into or departure from a country by crossing a national border; (b) duration of stay in the country of destination; and (c) under the concept of usual residence, duration of absence from the country of origin (see chap. II, paras. 28–29). In the following discussion of these three elements, immigrants and emigrants are considered separately. In the discussion on duration of stay in the country of destination, three types of duration – actual, intended and legal – are defined and explored, and the means of capturing them through use of different data sources are examined.

#### 1. Defining the term "immigrant"

##### (a) Entry into the country of destination

130. First and foremost, an immigrant has to enter the country of destination by crossing a national border. How information in that regard is gathered varies and depends on the data source that is used. Border collection can capture the entry of persons into the country. When registers are the data source, a person is considered to have entered the country once his or her arrival in the country has been declared and registered. Population censuses and sample surveys usually derive that information indirectly. For example, a person might be asked whether he or she has ever lived abroad. If the answer is yes, then it may be inferred that the person engaged in a cross-border movement in the past. A question on country of birth could also identify foreign-born persons who obviously crossed the border at some point in time after birth.

##### (b) Duration of absence from the country

131. The second condition that a person must satisfy to be identified as an immigrant is the following: he or she is not already a usual resident of the country at the time of entry into the country. Therefore, to be considered an immigrant to the country for a specific period, the person should have been absent for at least one year before entering the country. How the duration of absence from the country is captured varies by the data source used.

*Population registers and registers of foreigners.* Registers, including population registers and the registers of foreigners, usually have specific rules for registering and deregistering a person and covering everyone in the country. If the registration and deregistration rules are strictly followed, anybody who is not on the current register would be considered a non-usual resident of the country, hence someone who has been away from the country for at least 12 months.

*Population censuses.* Population censuses often include questions on place of usual residence a fixed number of years ago, or on the place of previous usual residence. If a foreign country was reported as the place of usual residence in the past, then the person would not be considered a usual resident of the country in which he or she is currently residing.

*Sample surveys.* Sample surveys have the flexibility to pose an extensive number of questions that may enable the construction of a migration history. That can be used to assess whether the person was a usual resident of the country before entering.

*Border collection.* On the embarkation card, it is possible to ask for the permanent residence of the person entering the country. Although the term “permanent resident” is not equivalent to “usual resident”, the information on permanent residence can be used as a proxy. Therefore, a person can be treated as a non-usual resident of the country if the embarkation card shows that he or she is not a permanent resident of the country.

### (c) Duration of stay in the country of destination

132. The third condition that needs to be satisfied if a person is to be identified as an immigrant is the following: he or she will stay in the country for at least one year. One would like to determine the actual duration of stay. When, ideally, it is possible to identify actual duration of stay, then it will also be possible to determine the flow or stock of international immigrants, which includes everyone who was not a usual resident of a country who entered that country and stayed in it for at least 12 months.

133. However, it is not always possible to collect information on actual duration of stay, as the availability of the data on actual duration depends largely on several factors: how the immigration process, including recording, is administered in a country; the time at which the information is captured; and the type of data source from which the information is obtained. There are two points in time at which an immigrant to the country can be identified:

- (a) *Time of immigration*, either when the person is crossing the border or when he or she is registering with designated local authorities at the new place of residence immediately, or soon after, entering the country. Data sources relevant in that context include border collection and, in some countries, population registers and registers of foreigners;
- (b) *Any time after immigration*, on an ex post basis through population censuses, household surveys, investigation of retrospective data extracted from administrative registers or comparison of embarkation and disembarkation cards. With respect to population censuses and household surveys in particular, a person’s actual duration of stay in a country can be derived from questions asked by either source regarding when the person entered the country.

134. Gathering information on the actual duration of stay in a country is not possible, however, at the time of immigration. On the other hand, as noted directly above, it is possible to obtain information on the actual duration of stay on an ex post basis at some time after immigration has occurred. Still, even when it is possible to gather such information, compiling data on immigrants based on actual duration of stay is not always the preferred approach because of the time required to obtain complete information on that element. For example, obtaining complete information on the duration of stay for everyone who entered the country in a given year for which data on immigrant flow are being compiled entails a waiting period of one year.

135. Given the challenges associated with identifying immigrants using the criterion on actual duration of stay, many countries resort to using a combination of both the actual and the intended duration of stay. While “intended duration of stay” is not defined explicitly in chapter II or in the 1998 Recommendations, the recommended definition of “place of usual residence” in fact adopts both criteria for the reasons stated previously (United Nations, 2017, paras. 2.48–2.50). The intended duration of stay, which is usually self-declared, is reported in the population census, a sample survey or on the embarkation form at the border.

136. In addition to actual and intended duration of stay, there exists what is known as legal duration of stay, which comes into play when administrative sources are used to identify international immigrants. As rules and regulations are usually in place for administration of the admission of immi-

grants, especially foreigners, the statistical definition of “immigrant” cannot be separated completely from the legal definition of the term. Under those rules and regulations, most foreigners do not have the right to live in a country for more than a limited period of time without specific authorization or a visa; therefore, the concept of intention to stay, as incorporated in the definition of “international immigrant”, is not sufficient. In fact, even when the intended duration of stay is captured through non-administrative sources such as censuses or surveys, the respondent may still report what is recorded in an official document such as the entry visa. For example, persons are less likely to declare that they will stay for a period that is longer than that allowed under their visa.

137. This is especially true when, as noted above, administrative sources are used in the collection of international migration statistics. Rarely is the intended duration of stay in the country reflected in the collected data even if the intention is implicitly reflected in the rules on duration of stay allowed under the type of visa or under the residence permit. One means of identifying an international immigrant that takes into consideration the effect of the legal system on data collection, is to use different criteria for people based on their legal status in a country, namely:

- Citizens entering the country after being absent for at least one year are considered immigrants if they intend to live in the country for at least one year.
- Non-citizens who do not need a residence permit or any kind of specific authorization to live in the country can be treated similarly to citizens of that country, and are considered immigrants if they enter the country with the intention to live in the country for at least one year.
- Non-citizens for whom a residence permit or a specific authorization is required are considered immigrants if they have been granted one or more residence permits or specific authorizations valid for a total duration of at least one year, and enter the country with the intention to live in the country for at least one year.
- Other non-citizens who do not have a residence permit but are seeking asylum are considered immigrants after one year of residence in the country.<sup>9</sup> However, in contrast to members of all the above categories of international immigrants, an asylum seeker will be considered an immigrant (a) only after one year of actual residence as an asylum seeker in the country or (b) only at the time when he or she is recognized as a refugee or is being granted a temporary residence permit for humanitarian reasons, and only if he or she intends to live in the country for the remaining part of the year.

138. Other undocumented foreigners, clandestine migrants, rejected asylum seekers and foreigners with expired residence permits can theoretically be considered immigrants if they have been living in a country for at least one year starting from the date of their arrival in that country.

139. The above approaches might not suit the needs of some countries, which may, in practice, be applying their own criteria for identifying immigrants. When a country does use its own criteria, it is important that those criteria be documented and provided whenever the country’s statistics on international migration are made available. Efforts to assess the impact of using a different set of criteria will help to ensure a better understanding of the statistics released and improve data comparability at the international level.

## 2. Defining the term “emigrant”

### (a) Departure from the country of origin

140. The first condition that a person must satisfy to be identified as an emigrant is the following: he or she needs to leave the country by crossing the national border. How such information is gathered depends on the source that is used. While border collection can capture the exit from the country,

<sup>9</sup> Accordingly, in the case in which administrative registers are used to count the number of immigrants, but asylum seekers or foreigners with temporary residence permits are not included in the population register, the register of asylum seekers or the register of aliens should be used to count those who have been living in the country for one year or more.

other sources of information, including administrative registers, population censuses and sample surveys, can also be used.

141. Population registers and registers of foreigners have a multiplicity of ways to verify whether a person has left the country. While deregistration is usually required when a registered person is going to leave the country for an extensive period of time, such a practice is not always strictly followed for various reasons, such as unawareness of deregistration rules or lack of incentives to deregister. Some countries use information from other administrative sources, such as tax records, to verify the absence of a person who is registered in the system but has been abroad for a certain period of time.

142. In theory, population censuses and sample surveys cannot collect information from emigrants who are not present at the time of enumeration. Yet, many countries have asked for information from households regarding those household members who were not present at the time of enumeration. That information can then be used to establish the absence of those household members from the country.

#### **(b) Was the person a usual resident of the country of origin before leaving?**

143. A person can be an emigrant only when he or she has been a usual resident of a country before departure; and duration of stay in the country plays a major role in defining that person's usual residency. The present discussion focuses on when a person can be identified, through use of different sources of data collection, as an emigrant, when going abroad or when already abroad. At the border, when a person is leaving the country, information on duration of stay in the country before going abroad might be collected directly through a question. This is not, however, a customary practice in all countries. The use of registers is a more viable means of obtaining information on duration of stay. In censuses and sample surveys, when an emigrant is identified through questions posed to the remaining household members present in the country, it is very rare that the following question is asked: how long was that person present in the country before going abroad? Instead, it is questions such as: is a member of the household abroad? that are usually asked. The latter type of question, by referring to a *member of the household*, implicitly attributes usual residence to the absent household member.

144. The above discussion suggests that the only precise way of identifying an emigrant is through the use of registers. While it is theoretically possible to identify emigrants through sources such as border collection, censuses and sample surveys, implementation of that method poses practical difficulties.

#### **(c) Duration of absence from the country of origin**

145. The third condition that must be met in order for a person to be identified as an emigrant of a country is the following: absence from the country for at least one year. Duration of absence from a country is therefore a crucial element. As in the case of identification of immigrants, information on the actual duration of absence from the country would be ideal. When it is not possible to obtain information on actual duration of absence, information on intended duration of absence may be used instead.

146. The type of duration of absence that is considered depends on the sources used to capture the information needed, namely:

*Border collection.* One possible means of obtaining information on the duration of a person's absence from a country entails the use of a question on the disembarkation card. In this case, the information elicited would be on the intended duration of stay abroad.

*Population registers and registers of foreigners.* Depending on when the deregistration process occurs, the duration of a person's absence might be either actual or intended. If a person deregisters before leaving the country, duration of absence can be only the intended duration. However, if the decision to deregister a person who has left the country is based on other information (e.g., tax records), then the type of duration of absence can be established.

*Population censuses and sample surveys.* Censuses and surveys have the potential to collect information on household members who are absent from the country. Many censuses ask the head of the household how long the absent member has been away from the country. In that case, the

duration of stay abroad refers to the actual duration of that stay. Sometimes, censuses and surveys ask not only how long the person has been away, but also how much longer the person plans to stay abroad. In that case, information on both the actual and intended durations of stay abroad is available.

## B. Distinguishing characteristics

147. Distinguishing characteristics, as noted previously, are characteristics that can be used to differentiate and categorize international migrants. While those characteristics are not defining characteristics of international migrants per se, they are nonetheless often of strong policy interest. The following variables are considered distinguishing characteristics:

- Country of birth
- Country or countries of citizenship; statelessness
- Acquisition of citizenship
- Reason for admission into the country (for immigrating foreigners)
- Status before leaving the country (for emigrating foreigners)
- Purpose of emigration (for emigrating citizens)
- Purpose of stay abroad (for immigrating citizens)
- Previous or next country of residence
- Country of birth of parents

### 1. Country of birth

148. Country of birth is of relevance because it is a means of distinguishing, among immigrants, persons born in another country from those who are native-born. Through data on country of birth, it is also possible to derive statistics on foreign-born persons by their country of birth, which are often of policy interest.

149. Country of birth is the criterion most often used, as a proxy, to identify international migrants in population censuses and is also commonly used in other data sources such as household surveys. It is quite common to use the stock of foreign-born to estimate, for example, a country's stock of immigrants. Unlike other characteristics that are also used to derive estimates of international migrant stock, such as citizenship, country of birth does not change over time.

### 2. Country of citizenship

150. A key feature of international migration which sets it apart from other types of population mobility entails the fact that it links two distinct sovereign States, and that persons who have moved from one State to the other are not all treated equally. Citizenship is a factor that is decisive in determining a person's rights in a country and has been used traditionally to establish who is to be subject to control when crossing international boundaries (Bilsborrow and others, 1997).

151. Citizenship is also relevant when considering the consequences of international migration for the migrants themselves, since persons who are allowed to stay in a country other than their own on a conditional basis may be subject to discriminatory practices in the context of employment, access to services or freedom of movement. Their country of citizenship is also used to make distinctions among international migrants.

152. Country of citizenship, like country of birth, is often used, as a proxy, to identify international migrants in population censuses and sample surveys.

### 3. Acquisition of citizenship

153. For countries whose population includes a significant proportion of naturalized citizens, there might be an interest in studying the difference between naturalized and native-born citizens. In that

case, information pertaining to the acquisition of citizenship – possibly including information on previous citizenship and the method and year of acquisition of citizenship – would be needed.

154. Administrative sources often provide information on acquisition of citizenship. If population censuses and sample surveys include questions related to the acquisition of citizenship, they may also serve as a source of information on this subject.

#### **4. Reason for admission of immigrating foreigners into a country**

155. The reason for admission into the country is a variable of importance in determining the nature of the inflow of foreign immigrants. Based on reason for admission, people entering the country can be categorized under such rubrics as “exercising economic activity”, “study”, “joining family” and “seeking asylum”. From the perspective of the receiving country, it may be important to know, for example, the size of labour migration flows into the country. Depending on labour-market conditions, data on the level of labour migration might be used in the formulation of immigration policy.

156. Information on the reason for admission of immigrating foreigners into the country can be collected through use of various data sources. The embarkation cards collected at the border sometimes contain a question regarding the reason a person seeks to enter the country, and population registers and registers of foreigners may ask similar questions. Other administrative sources may also be used to gather data on foreigners who are immigrating for specific reasons. For example, a country’s department of labour may maintain information on immigrating foreign workers and its department of education, on immigrating foreign students. In addition, population censuses and sample surveys may include questions on the reasons for immigration.

#### **5. Status of emigrating foreigners before leaving a country**

157. Status before leaving a country is relevant for emigrating foreigners. When foreign immigrants are leaving the receiving country, information collected on what these foreigners were doing before leaving may be used to compile the size of outflows of different groups of immigrating foreigners.

158. Information on the status of emigrating foreigners before leaving can be derived from various data sources. Population registers and registers of foreigners may have information already on file regarding what a foreigner was doing in the country. Other administrative sources, such as visa applications and permits issued to residents, may also provide relevant information in that regard.

#### **6. Departing citizen’s purpose for emigrating**

159. Purpose for emigrating is relevant for departing citizens. Countries are usually interested not only where their citizens are but also in what they are doing abroad. Information collected on purpose in emigrating may be used to formulate a policy intended either to increase or to decrease the size of a particular group of emigrating citizens.

160. Information on the purpose of emigration may be collected from different sources. When a citizen is deregistered from a population register, information may be collected on why the person is leaving the country. Population censuses and sample surveys may also include questions on what the emigrated citizens are doing abroad. Border collection is not very useful in some parts of the world, however, in respect of obtaining information on departing citizens, owing to the limited control exercised over citizens crossing national borders.

#### **7. Immigrating citizen’s purpose for staying abroad**

161. Information on the purpose for staying abroad is relevant, in particular for immigrating citizens (or returning citizens). That information can be used to categorize citizen inflows on the basis of size. Headings of categories for “purpose in staying abroad” could include “exercising economic activity”, “study”, “joining family” and “seeking asylum”.

162. Information on purpose for staying abroad may be collected from several sources. Embarkation cards collected at the border from arriving citizens may contain responses to questions on their

activities abroad, although inclusion of such questions is not a common country practice. Other channels for the collection of such information include population censuses and sample surveys, which may contain questions on the reason for migrating back to a country. Data for immigrating citizens on the purpose of staying abroad are scarce, however, owing to the fact (as noted previously) that control over the movement of citizens crossing national borders is limited.

## 8. Country of previous or next residence

163. Characterization of international migrants by previous or next country of residence provides a picture of the direction of migrant flows. Data related to country of previous residence may also be used by receiving countries to estimate emigration flows from sending countries.

164. Information on a person's previous or next country of residence can be collected at the border from embarkation and disembarkation cards, which may contain questions on this topic. Such questions, when included in population registers, may be asked at the time of registration or deregistration. Questions on country of previous residence have been asked in the population censuses and sample surveys of many countries. Information on country of previous residence can be derived from all these sources. Furthermore, population censuses and sample surveys may contain questions for emigrated household members on next country of residence.

## 9. Country of birth of parents

165. Countries with a significant number of immigrants may wish to collect information on the country of birth of parents. Such information enables groups of second-generation descendants to be distinguished on the basis of the country of birth of their parents. Those groups are often used to study integration processes and outcomes.

166. Country of birth of parents may be derived from population registers, as well as from population censuses and sample surveys.

## C. Descriptive characteristics

167. Descriptive characteristics of migrants, which are studied by countries to assess the situation of international migrants in relation to that of non-migrants, typically reflect the nature of the migrant settlement and adjustment experience. Those characteristics are often closely linked to the level of migrant integration in the receiving countries. The integration of migrants and their children is crucial to promoting social cohesion and economic growth in receiving countries, and fostering the ability of migrants to become self-reliant and productive citizens (OECD, 2015). Measurement of migrant integration over time also provides the kind of evidence that can be used in monitoring and evaluating integration policies.

168. Descriptive characteristics relevant for migrant integration and policy evaluation encompass many dimensions. Recent publications have focused upon sociodemographic characteristics such as sex, age, proficiency in the language of the receiving country, education and household composition; economic characteristics including labour-market outcomes (employment, unemployment, job characteristics, skills mismatch) and income; housing conditions; health status and health care; civic engagement, including through acquisition of citizenship; and social inclusion, including the impact of perceived discrimination against migrants (Eurostat, 2011; OECD, 2015; United Nations, Economic Commission for Europe, 2015b).

169. Data disaggregated by those descriptive characteristics can be used in a variety of ways, including for identification of migrants, assessment of how they settle in comparison with non-migrants and determination of whether a national policy can have any impact on immigrants. For example, understanding of the language of the receiving country is an important indicator of whether migrants are able to integrate into the labour market and into the larger society, and a person's educational attainment is closely associated with that person's labour-force participation and the type of job that he or she takes. An assessment of how labour-market outcomes differ for migrants and non-migrants who have attained similar levels of education provides an indication of how well migrants are

integrated into the labour market. It has been shown that the employment rate of foreign-born persons with tertiary education was lower than the rate for those at the same level of education who were born in the country (Eurostat, 2014).

170. Further disaggregation of data by variables such as the year or period of arrivals of migrants enables analysis of their changing characteristics over time. Data compiled for migrants and non-migrants born to migrant parents could be used to analyse the changes of certain characteristics over generations. For example, data on migrants by educational attainment and year of arrival in the United Kingdom of Great Britain and Northern Ireland revealed that recent migrants who had arrived in the previous 5 years were more likely to have a university degree than those who had been in the United Kingdom for more than 30 years (United Nations, Economic Commission for Europe, 2015b). According to Spain's 2011 census, among women and men aged 25–54, the group of non-immigrants born to immigrant parents (second-generation migrants) had the highest proportion of persons with a tertiary education, compared with the group of immigrants (first-generation migrants) and the group of non-immigrants (*ibid.*).



# Chapter V

# Important aspects of population census planning and design in measuring international migration

## A. Introduction

171. The most fundamental distinction to be made in measuring international migration is between measures of stocks of international migrants and measures of flows. Chapter II distinguishes between these two types of measures as follows:

The term “inflow of migrants” is defined as the number of international migrants who arrive in a given country over the course of a specific period, usually a calendar year; the outflow is equal to the number of international migrants who depart from a given country over the course of that period.

The term “immigrant stock” is defined as the total number of international migrants present in a given country at a particular point in time. The emigrant stock is equal to the total number of emigrants from a given country at a particular point in time. Migrant stock is a static measure of the number of persons who can be identified as international migrants at a given point in time.

172. Since the stock of international migrants is a static measure taken at a given point in time, the population census, which represents a snapshot of a population at a single point in time, is best suited to the measurement of that stock. Most countries already produce statistics derived from their censuses on the stock of the foreign-born population and the stock of foreigners (see chap. VI for details); and some countries collected data on emigrants in the 2010 round of censuses (see chap. VII).

173. In contrast to migrant stock, migration flows constitute a dynamic process entailing the continuous movements of people into and out of a country. Accordingly, they are best measured through a continuous reporting system that captures all the relevant movements. Nevertheless, it is still possible to derive specific indicators of net international migration flow from a population census. That issue, along with the use of data from two consecutive censuses to estimate net migration flow in the intercensal period, is covered in chapter VIII.

174. It should be made clear at the outset that because there are limits to the number of questions that can be included in a census, it is not a suitable means of obtaining (a) statistics on, for example, the causes or consequences of international migration, which would require detailed, probing questions or (b) statistics on the more dynamic modalities of spatial mobility such as circular migration.<sup>10</sup>

## B. Census planning and design

175. Several aspects of census planning and design have a bearing on the coverage and quality of international migration data. Many of the decisions taken on issues at the various stages of census planning and operations impact data on international migration and collection of those data. Those issues that call for decision-making are listed below and elaborated further on in the present chapter.

*At the initial planning stage*

- Type of population count
- Use of sampling in the census

<sup>10</sup> Under the general statistical definition proposed by the Economic Commission for Europe Task Force on Measuring Circular Migration, a circular migrant is “a person who has crossed the national borders of the reporting country at least three times over a 10-year period, each time with duration of stay (abroad or in the country) of at least 12 months” (United Nations, Economic Commission for Europe, 2016, para. 84).

*At the preparatory stage*

- Communications and publicity campaign
- Training of interviewers
- The issue of confidentiality

*In preparation of the questionnaire*

- Selection of topics to be included
- Formulation of questions
- Use of pre-coded response categories
- Provision of the questionnaire in different languages

*In the plan of enumeration*

- Enumeration methods
- Enumerating persons in unconventional living situations
- Issues of coverage and response

*In the plans for data processing and dissemination*

- Data processing and dissemination

## 1. Type of population count

176. The decision regarding who will be included in the enumeration is of primary importance in the planning and design of a population census. Censuses may aim at counting the *usual resident population* or the *population present* at the time of the census. The approach chosen will have consequences for the total population count and will impact the statistics of international migration, since under either approach, many of the subgroups that might not be enumerated would be precisely those whose members are mobile or have a residency status in the country concerned that is not clearly defined.

177. Under the *usual resident population* approach, only the country's usual residents, some of whom may not be physically present in that country on the reference date, are counted. Visitors and other persons staying in the country on a short-term basis, however, are excluded from the enumeration. The enumerated population thus provides a useful basis for identifying international migrants according to the definition provided in chapter II.

178. Under the *population present* approach, all persons physically present in the country on the reference date are enumerated. While that approach excludes usual residents of the country who are absent at the time of the census, usual residents of other countries who are in the country at the time of the census will be enumerated. The *population present* approach establishes a population base encompassing different types of movers present in the country at the time of enumeration, including visitors, temporary and short-term movers and circular movers, among others. In a census, asking each enumerated person a question on place of usual residence enables persons who are present temporarily to be differentiated from members of the usual resident population. A country that, in addition, collected information on the usual residents who are absent at the time of the census would potentially be able to obtain both the *population present* and the *usual resident population* counts.

179. Conceptually, both these approaches may seem straightforward, but strict conformity to either is not always common practice. In particular, exclusion of groups of persons – and, potentially, groups of international migrants – from, or their inclusion in, census counts may be contrary to the stated approach followed by the country. For example, some censuses that use the *population present* approach may nevertheless exclude foreign military, naval or diplomatic personnel and their accompanying family members and servants who are present in the country, while at the same time including merchant seamen or fishermen who are outside the country at the time of enumeration. On the other hand, censuses that use the *usual resident population* approach may include groups of persons

in the country whose members are not identified as usual residents, such as short-term or temporary foreign workers (see United Nations, 1998, para. 193).

180. As uncertainty may arise regarding the inclusion of various population subgroups in – or their exclusion from – the usual resident population, the Statistics Division of the United Nations has issued guidelines on the subject (United Nations, 2017, para. 2.53), which are provided in box 5.1. According to the guidelines, persons belonging to either of two categories: persons of minor age studying abroad to attain the primary or secondary level of education, regardless of the frequency of return to the family home located in the country (category (h)), and persons who regularly live in more than one country during a year and who are present in the country at the moment of the enumeration (category (i)) – would generally be considered to be in the usual resident population, regardless of the duration of their stay in the country where they are studying. Also according to the guidelines, persons belonging to either of two other categories: persons of minor age being schooled at the primary or secondary level of education whose family home is located abroad, regardless of the duration of their stay, (category (b)) and persons who regularly live in more than one country during a year and who are not present in the country at the moment of the enumeration (category (d)) need to be considered for being excluded from the usual resident population. Those in categories (b) and (d) are automatically assigned usual residence in the country where they are found at the moment of the enumeration.

181. While the treatment of population subgroups (h) and (i) versus subgroups (b) and (d) as considered in box 5.1 – with respect to their inclusion in or exclusion from the usual resident population – does not necessarily reflect the concept of the country of usual residence adopted by the present *Handbook*, there is valid justification for a census’s employment of such an approach. Hence, it is recommended that countries undertaking a population census follow those guidelines. And it is urged that they include, in their metadata on the usual resident population, complete information on how each of those various population subgroups were treated in their census.

182. Most countries adopt one of the two approaches to population counting described previously. While a *present population* count is simpler, increasingly, countries show a preference for a *usual resident population* count, since it offers better information for planning and policy purposes on the demand for services, households, families and internal migration (United Nations, 2017, paras. 4.30 and 4.36). In the 2010 round of censuses, a United Nations survey revealed that a greater number of countries employed the *usual resident population* approach than the *present population* approach (see box 5.2).

183. Whichever census enumeration approach is used, however, undocumented migrants are generally included in that enumeration. The census therefore allows for the estimation, often in combination with other data sources, of the magnitude of undocumented migration.

#### **Box 5.1**

#### **Groups of persons that are either included in or excluded from the usual resident population**

##### **Persons generally considered usual residents:**

- (a) Persons found at the moment of enumeration that cannot identify their place of usual residence, such as those who move often;
- (b) National military, naval and diplomatic personnel and their families located outside the country;
- (c) Foreign persons working for international organizations, not including foreign diplomats or military forces, provided that they meet the criteria for usual residence in the country;
- (d) Merchant seamen and fishermen usually resident in the country but at sea at the time of the census, including those who have no place of residence other than their quarters aboard ship;
- (e) Persons who may be illegal, irregular or undocumented migrants, as well as asylum seekers and persons who have applied for or have been granted refugee status or similar types of international protections, provided that they meet the criteria for usual residence in the country;

**Box 5.1**  
(continued)

- (f) Persons who cross a frontier daily or weekly to work or study in another country, provided that they meet the criteria for usual residence in the country;
- (g) Children born in the 12 months before the census reference time and whose families are usually resident in the country at the census reference time;
- (h) Persons of minor age studying abroad for one year or more to attain primary or secondary level of education, regardless of the frequency of return to the family home located within the country. If the person is also working abroad, the same rules as for cross-border workers apply;
- (i) Persons who regularly live in more than one country during a year, if they are present in the country at the moment of the enumeration.

**Persons generally excluded as usual residents:**

- (a) Foreign military, naval and diplomatic personnel and their families located in their country, regardless of their place of usual residence;
- (b) Persons of minor age being schooled at the primary or secondary level of education whose family home is located abroad, regardless of the duration of their stay. However, if these persons are also working in the country, then the identification of the place of usual residence follows the same rules as for cross-border workers;
- (c) Third-level students who are absent from the country for one year or more;
- (d) Persons who regularly live in more than one country during a year, if they are not present in the country at the moment of the enumeration.

*Source:* *Principles and Recommendations for Population and Housing Censuses, Revision 3* (United Nations, 2017), para. 2.53.

**Box 5.2**

**Utilization by countries of the usual resident population, population present and legal or permanent address approaches in the 2010 round of population and housing censuses**

A United Nations survey revealed that, in the 2010 round of population and housing censuses, more countries employed the *usual resident population* approach than the *population present* approach. Of the 127 countries that responded to the survey, 82 indicated that they had used, or intended to use, the *usual resident population* approach compared with 65 countries indicating use or intended use of the *population present* approach and 22 indicating use or intended use of the legal or permanent address approach.

The *usual resident population* approach is widely practised in Europe and is also the more common approach in Asia, Northern and Central America and the Caribbean. The *population present* approach appears to be more common in Africa, Oceania and South America. A considerable number of countries (35) indicated that they had produced, or could produce, both types of population counts.

**Number of countries, by region, utilizing the usual resident population, population present and legal or permanent address approaches in the 2010 round of population and housing censuses**

**Box 5.2**  
**(continued)**

Region	Approaches to population counting			Number of countries
	Usual resident population	Population present	Legal or permanent address	
Africa	14	22	4	28
Northern and Central America and the Caribbean	15	6	0	18
South America	3	5	0	7
Asia	22	17	2	31
Europe	25	10	15	36
Oceania	3	5	1	7
<b>Total</b>	<b>82</b>	<b>65</b>	<b>22</b>	<b>127</b>

*Source:* Survey conducted by United Nations Statistics Division in connection with a programme review of the 2010 World Population and Housing Census Programme, undertaken at the request of the Statistical Commission at its forty-second session, held from 22 to 25 February 2011.

*Note:* Multiple answers were given by some countries.

184. In the 2010 round of population and housing censuses, an increasing number of countries moved away from traditional census enumeration (i.e., from a full field enumeration). The alternative approaches include a register-based census, a large-scale continuous sample survey or a combination of the two. Some countries conduct a bi-census between two decennial censuses, through which they cover a large sample of the population (for example, 10 per cent in China, Hong Kong Special Administrative Region). The alternative approaches to traditional census enumeration vary considerably in their ability to cover the entire population and consequently the population groups that comprise international migrants (see chap. III).

## 2. Use of sampling

185. Some countries obtain information on certain topics for only a sample of the population enumerated in the census. In general, sampling may be useful in collecting information on topics that need not be tabulated for small areas or small population subgroups. Topics that require some degree of probing are candidates for coverage on a sampling basis. The decision on questions related to migration (both international and internal) entail determining which, if any, of them should be incorporated in the short form (to be addressed to the entire population) and which should be included in the long form (to be administered to a sample of the population). Such a decision, which would depend on many factors, including the importance of internal and international migration in the country, should reflect inputs from experts on internal and international migration and users of migration statistics representing the Government, the research community, non-governmental institutions and special interest groups.

186. Sampling should usually be avoided when the aim is to cover population groups that are small in relation to the country's overall population. International migrants usually constitute one such group. In major receiving countries where international migrants constitute a sizeable proportion of the total population (over 5 per cent) and where census samples are also large (covering 10 to 20 per cent of the total population), information on the international migrant stock obtained from a census sample may be adequate enough to characterize international migrants. Nevertheless, in the context

of analysing the results, it is important to recognize that, as the full population was not covered, the data obtained are subject to sampling error.

187. Sampling, if used, is usually carried out during the data-collection phase or, more rarely, at the stage of processing the census results. Sampling during the data-collection phase is carried out using either of two broadly differing approaches: (a) collection of data for all persons in selected households or (b) collection of data for all households in selected enumeration areas or census blocks. Although the latter type of sampling during the data-collection phase is the simplest to administer in the field and may result in the greatest cost saving, it usually yields estimates with larger standard errors (for a given sample size) because of the added complexities in sample design introduced by the issue of clustering. This approach is less desirable in the case of international migration, especially in situations in which there is geographical clustering of migrant populations.

188. Sampling during the data-processing stage has been used to produce advance tabulations or to control costs. With the advent of modern processing technology, however, the past rationale for the use of sampling in processing census data is no longer as strong, although certain populous countries still engage in this type of sampling. Other countries use sampling during the processing stage only when producing preliminary results.

### 3. Communication and publicity campaigns

189. Wide-scale communication and publicity campaigns are a major component of any national census programme. The general aim of the campaigns is to provide the public with information on census objectives, content and methods, as well as the rights and obligations of every person with respect to the census (United Nations, 2017, para. 2.9). Public information campaigns typically utilize a multiplicity of types of media ranging from traditional print and broadcast media to the Internet and social networks. Many countries also carry out specialized campaigns targeting hard-to-enumerate groups. With respect to improving data on international migrants, identifying clusters of immigrants and tailoring communication and publicity to those groups is a strategy that merits strong consideration.

190. Undocumented migrants or those whose status in the country of destination is ambiguous may seek to avoid detection stemming from participation in the census enumeration process. It is therefore crucial that undocumented migrants have their possible fears allayed and be made to feel confident that they will not be so identified based on their participation. That can be achieved, for example, through the clear message imparted by a publicity campaign that the census is not linked with the immigration authorities.

191. Non-familiarity with the national or predominant language may be another factor contributing to the non-participation in the census of more recent immigrant groups or certain ethnic groups. Some countries have found that engaging local cultural groups, migrant groups and ethnic community leaders in transmitting the census messages can help improve the participation of those groups in the census. Making campaign messages, promotional materials and pre-enumeration information available in the languages of migrant and minority ethnic groups has been found to be helpful as well.

### 4. Training of enumerators

192. The emphasis in training must be on asking migration-related questions, understanding the major skip patterns and recording the answers properly with the appropriate level of detail. Training should be included on how to list all eligible household members and when to apply prompts or probes. When absentee members are part of the enumeration, it is crucial that the enumerators have a full understanding of the criteria for inclusion of such members. Most importantly, enumerators should have a full understanding of the enumeration approach, whether it is the *present population* or the *usual resident population* approach, and its impact on the enumeration of the population. Enumerators should also be thoroughly trained on how to treat the specific subgroups listed in box 5.1 and any other groups that may be of particular concern in the country holding the census.

193. Phenomena about which enumerators must be thoroughly knowledgeable include a country's break-up into separate countries and the formation of a new country through the union of two or more countries. Enumerators have to ensure that, when the name of, for example, country of birth is recorded, it is the present national borders that apply, not those that existed at the time of the respondent's birth. They should therefore be trained to probe when responses refer to countries that no longer exist (for example, the Union of Soviet Socialist Republics (USSR) and the former Yugoslavia). In that situation, enumerators should attempt to elicit the specific name of the country based on current national borders. For reference in the field, they could be provided with a list of former countries that broke up together with the names of the new countries formed through the break-up, or with a list of the names of all countries of the world as at the time of the census.

194. It is crucial that interviewers who are assigned to areas with disproportionately large migrant populations acquire training on how to allay respondents' unfounded fears and to elicit truthful responses. Some migrants deliberately withhold responses or provide misleading ones when they suspect that truthful responses may impact their ability to stay or work in the country.

## 5. Confidentiality

195. It is highly important that confidentiality of an individual's information be strongly and clearly addressed in census legislation and that such confidentiality be guaranteed by adequate sanctions, so as to inspire the trust of the public as the basis for its cooperation in the census process (United Nations, 2017, para. 2.69). Data protection and statistical confidentiality must be maintained throughout all phases of that process, extending from data collection to data dissemination. It is the responsibility of the statistical office to safeguard all personal data against disclosure or exploitation for non-statistical purposes.

196. Those guarantees are particularly crucial with respect to securing the trust and cooperation of members of population subgroups who fear or distrust the government or question its need to collect particular kinds of detailed personal information. International migrants, especially those who are undocumented, may fear that the data collected could be used to identify them. Reinforcement of a belief in the confidential nature of the census and an explanation of how the data are to be used may help to allay the fears of those groups and improve their level of participation (United Nations, 2017, para. 3.285).

## 6. Topics for inclusion

197. The *Principles and Recommendations for Population and Housing Censuses, Revision 3* (United Nations, 2017) provides a list of internal and international migration topics that may be included in a census undertaking (para. 4.21 and table 3). Many of the core topics listed under internal migration (table 3, sect. A), for example, place of birth or place of previous residence, are relevant to international migration when that place is outside the country of enumeration. Other core topics for internal migration listed in *Principles and Recommendations* that are relevant to international migration as well include: (a) place of usual residence; (b) duration of residence; and (c) place of residence at a specified date in the past. The core topics listed specifically for international migration are: (a) country of birth; (b) country of citizenship; and (c) year or period of arrival. Other topics, although not considered core topics in that publication, that could be deemed relevant to international migration include acquisition of citizenship, language that is usually spoken at home, ethnicity, religion and country of birth of parents. Language, ethnicity and religion are known to be sensitive topics in certain cultures and the issue of their inclusion should be deliberated carefully. The addition of any of those topics in the census should be guided by considerations such as policy needs, cost, data quality and availability of alternative data sources.

198. Most population censuses will not cover all the above-mentioned topics. For many countries, the census is the major, if not the only, source of information on several important population characteristics. Thus, users of statistics and special interest groups often compete to ensure that topics of interest to them are included in the census. International migration topics are assessed against other

topics considered to be significant in the country. During that process, the inputs of stakeholders and the insights gained from consultation with them are highly important.

199. International migration-related topics on which information is most frequently collected pertain to country of birth and country of citizenship. As noted earlier, topics for which information is collected mainly for studying internal migration are also relevant and useful within the context of international migration. Those include (a) duration of residence; (b) place (including country) of previous residence; and (c) place (including country) of residence at a specified date in the past. Information on topics (b) and (c) is particularly useful when there is enough space in the census to record the name of the country rather than to just enter “abroad”.

200. A general basis for selecting a topic for inclusion in the census is to consider both whether other sources of statistics on the topic exist and the quality of those data. For example, countries with a reliable population register, register of foreigners and/or other administrative sources that can generate statistics on international migration may choose to limit the number of corresponding topics covered in their population census. For countries in that situation, limiting the number of topics on international migration should be balanced against the fact that the census collects a wide range of data on the demographic and socioeconomic characteristics of international migrants that is not collected in other sources. One option for addressing cases in which alternative sources are not available would be to decide that some questions could be investigated on a sampling basis, if the short- and long-forms approach was adopted for the census.

201. Another general basis for the selection of topics for inclusion in the census is to consider only those for which data having a reasonable degree of accuracy can be assured with the resources available for the census operations, as demonstrated through testing and experience. A larger body of experience and knowledge is available on topics that have traditionally been included in censuses, such as place of birth and country of citizenship. For newer topics for which there is limited experience regarding the relevant questions that should be asked in order to ensure a reasonable degree of accuracy and quality in census responses, more testing would be required to ultimately determine whether their inclusion in the basic census questionnaire might be worthwhile. That reflects the case, for example, of the topic of emigration of household members. Questions on that topic were asked by many more countries in the 2010 round of censuses compared with past rounds.

202. In summary, when considering topics to be included, planners should be realistic and maintain a perspective that takes census limitations into account. Topics whose investigation require a sequence of complex questions are not suitable for censuses. For example, while the population census can be used effectively to derive the stock of foreign-born population, it cannot be used to identify and accurately classify the various types of migrants and movers within a country.

## 7. Formulation of questions

203. In a census operation, enumerators and respondents are not expected to be familiar with the concepts and definitions underpinning migration-related topics. That being the case, the emphasis should therefore be on formulating clear and simple questions which reflect those underlying concepts without directly referring to – or incorporating an explanation of – the concepts themselves. Technical words and terms with a complex meaning should be avoided. Terms such as “international migrant” or “immigrant” should not be used in the questions or response categories, as respondents are likely to interpret those terms differently. The questions, which need to be kept short, should be phrased in such a way as to operationalize technical concepts through the use of words and terms that are meaningful to a broad range of respondents.

204. The fundamental concepts associated with the topics and questions relevant to international migration may seem straightforward. But that doesn’t mean that careful attention should not still be paid to the formulation of the questions that are based on those concepts (for example, the concept of *country of usual residence*). That would ensure that the wording of those questions is correspondingly straightforward and that misinterpretation by respondents and enumerators is minimized.

## 8. Use of pre-coded response categories

205. Pre-coding functions best in cases in which there is a relatively small number of possible answers to a clear and precise question. When the list of possible answers is long, pre-coding of responses should not be the preferred option. Similarly, when the answer to a question is the name of a geographical place – country of birth, for example, or country of citizenship – pre-coding should be discouraged, since in this case it would entail generating a long list of place names. And the longer the list, the more crowded the questionnaire, and hence the more difficult it will be for respondents to locate their desired answer.

206. However, when it is expected that responses will be focused on a handful of countries, a pre-coded list can be beneficial – that is, if utilized appropriately. In that situation, the category “other, please specify” must follow the list of geographical names to allow for the recording of responses that do not appear on the given list (for further discussion, see, e.g., chap. VI).

## 9. Provision of a questionnaire in different languages

207. For immigrant groups having a significant presence in the host country that are not conversant with the language of that country, provisions should be made by the country to ensure that participation in the census is not hindered by an inability to understand the questions. Either a separate questionnaire should be prepared for each major language group (under the self-enumeration method) or a print translation of the entire questionnaire in the various languages should be available in the enumerator’s manual (under the enumerator method).

208. Census authorities that provide a helpline or hotline should ensure that operators and representatives are available to respond to the questions of immigrants in the relevant foreign languages. It is to be expected that immigrants, in particular those participating for the first time in the national census of the host country, will have queries of a legislative or methodological nature and might need assurance and clarification related to the information sought by the population and housing census.

## 10. Enumeration methods

209. The use of enumerators is recommended for population groups in which there is a significant clustering of migrants, because the migrants in those groups tend to be unwilling to participate in the census or to complete the census forms themselves, and even if they are willing to participate in the census, they may find it difficult to complete the forms. The presence of an enumerator ensures that, to the extent possible, every household is contacted and every eligible member is enumerated. The enumerator facilitates the process by screening each person to determine whether that person is to be included in the enumeration, although determination of which persons are to be included in the enumeration may not be a straightforward endeavour in the case of persons tending to be more mobile. During the enumeration proper, the completion of the questionnaire by an enumerator helps ensure that the respondent understands the questions and that all necessary items are addressed as completely as possible.

210. Even when countries use the self-enumeration method, it is beneficial, for the above-mentioned reasons, to designate areas with high concentrations of migrants and related population groups as appropriate for enumeration using the enumerator method.

## 11. Enumerating people in unconventional living situations

211. A disproportionate number of international migrants may be found in unconventional living situations, especially during the period immediately following arrival. They may be accommodated in temporary living spaces and overcrowded dwellings or in barracks, dormitories and other work-place-related habitations. Or they may be homeless. Others may live for short periods with relatives or friends or in boarding houses, being obliged in consequence to move about frequently. In countries with large migrant populations living in contexts such as those, it is crucial that steps be taken to reach and enumerate them.

212. One means of inducing persons in unconventional living situations to participate in the census is through the setting up of special “census stations” in places where they gather, such as markets and railway stations. Before the event, information may be disseminated through announcements on local radio stations or flyers distributed in the area, for the purpose of providing potential respondents with reassurances with respect to confidentiality and privacy, and imparting other messages as appropriate, including such as allay respondents’ fear of detention or deportation.<sup>11</sup> For those practices to be effective, the cooperation and assistance of government agencies outside of the national statistical office are often crucial. The national statistical office is responsible for ensuring confidentiality and putting in place measures to capture the correct place of residence and prevent multiple counting of persons.

213. Counting of refugees in refugee camps presents censuses with a challenge. Special attention and strategizing should be focused on enumerating refugees living in open camps, which are often characterized by makeshift shelters and fluctuating boundaries. When camp refugees interact heavily with the local population and both groups are of the same ethnic origin, differentiating between them becomes particularly problematic. A highly experienced local enumerator would likely achieve better results than an outside enumerator in that setting.

214. While in *Principles and Recommendations*, it is recognized that refugees in camps constitute a “difficult to enumerate” group, it is recommended nonetheless that they be enumerated in the census. If the group has been enumerated, its magnitude should be given; if it was not enumerated, an estimate of its size should be provided, if possible.<sup>12</sup> Once obtained, the number of refugees should be presented separately to allow for the calculation of the country’s population excluding refugees, when such a count is required for non-demographic purposes (United Nations, 2017, paras. 4.48 (d) and 4.84–4.85).

## 12. Coverage and response

215. In many countries, the level of coverage of migrant groups in the population census is generally lower than the level of coverage of the general population. The low level of coverage of migrants by the census has been attributed to such factors as fear and mistrust of government, living situations characterized by unconventional housing arrangements and inadequate knowledge of the language or languages of the host country, as well as a lack of understanding of the objectives of the census. Suggestions for improving the coverage of migrant groups are given under the relevant sections of the current chapter.

216. Migrants covered in the census tend to have lower item response rates. In self-completed questionnaires, language difficulties and cultural misconceptions contribute to the lower response rate and unreliable responses to certain items in the questionnaire. Language may also be a barrier to communicating with the interviewer and providing the correct responses in an interviewer-assisted enumeration.

217. Some migrants may deliberately withhold information out of a fear that it will jeopardize their continued stay or their ability to work in the country. Interviewers must therefore be sensitive to any perceptible hesitation on the part of the respondent and capable of responding in such a situation by providing assurance.

218. With a view to improving the reliability of item responses, information on the kinds of questions that will be asked might be transmitted in advance of the census, possibly during the publicity campaign or at an appropriate time closer to the census date. Having prior knowledge of what is to

<sup>11</sup> The measures devised and implemented by the Russian Federation to ensure a complete enumeration of the population, including the most difficult-to-count categories thereof, were applied in a trial census held in 2000 and in the All-Russian Population Census held in 2002. That experience was discussed in a document submitted by the Federal State Statistical Service of the Russian Federation to the Joint ECE/Eurostat Meeting on Population and Housing Censuses, held in Geneva from 13 to 15 May 2008 (United Nations, ECE, Conference of European Statisticians, 2008).

<sup>12</sup> A possible estimate of refugee populations may be provided by government agencies, international organizations or non-governmental organizations that maintain a register of families or persons receiving assistance.

be asked of them, households can prepare their responses so that information may be given for all household members, even if some of them are not present at the time of the enumerator's visit. In that way, households could be prepared with regard to types of information that may not be available for every member, which could include country of birth, country of citizenship, year or period of arrival in the country, multiple citizenships and method of acquisition of citizenship.

### 13. Processing and dissemination of data

219. Care should be taken during the data-processing stage to preserve the detailed information collected in the census. For text variables like country name, name of country of birth, name of country of citizenship and name of country of previous residence, automatic coding should be used, as appropriate. *Principles and Recommendations* (paras. 3.163–3.202) provides general guidance on methods of processing, coding, data capture, data editing and other issues related to data processing.

220. With regard to the dissemination of data on international migration, it is good practice to provide as much detail as possible and to enable multilayered cross-tabulations, giving due regard to fulfilment of confidentiality requirements. For example, when presenting characteristics such as education and labour-market participation of immigrant populations, cross-tabulating immigrants by country of citizenship against duration of residence in the destination country allows for study of differences in the characteristics of the various subgroups of migrants. All disseminated statistics should be disaggregated by sex and age to the extent possible.

221. The importance of including metadata whenever statistics are disseminated cannot be over-emphasized, especially international migration statistics, which are associated with vastly different sources and methods both within and across countries. Indeed, countries, as well as government agencies within countries, vary greatly with respect to the concepts, definitions, duration thresholds and other tools that they deploy in distinguishing among migrant groups such as immigrants, foreigners and return migrants. The rules applied by countries along many dimensions of international migration – for example, when they record or code the country of citizenship of persons with multiple citizenships or stateless persons – also vary. It is important that countries include, so as to ensure proper interpretation of data, information on the source and coverage of the data, definitions and any other pertinent information together with the statistics that they publish and disseminate. That is relevant regarding not only rules that are fixed at the data-collection stage, but also those set at the stage of data processing. For example, with respect to the use of sampling in data processing, it is imperative that, at a minimum, the sampling fraction and the sampling errors be specified in the disseminated data

222. As noted, in the dissemination of data to the public, information on the source and coverage should always accompany all the statistics provided. In addition, the text must provide a very clear indication in layman's terms, of whether the reported statistics refer to stocks or flows so as to prevent confusion. Examples abound of government officials' and journalists' confusing one type of measure with the other when referring to published national or international statistics. Clearly, statisticians have a responsibility to ensure that such confusion and the resulting lack of credibility do not arise.

223. Provision of international migration statistics in various formats (print, website, online database), including free public access, is an important part of the dissemination process (see also chap. IX, sect. F). Most important, widespread utilization of the data on international migration should be encouraged, for it is only through utilization that the high cost of the collection and production of those data can be justified. Moreover, it is often through such widespread utilization that data limitations are identified, modifications are made, existing methods are adjusted and new and improved methods are cultivated.

224. While widespread dissemination, analysis and usage of the data are generally beneficial to all, caution must be exercised with regard to how statistics pertaining to migrant and minority populations, refugees and undocumented immigrants are presented. Dissemination of such statistics requires consultation with users, which is a highly significant means of ensuring that the presentation is culturally sensitive and respectful and does not offend.

# Chapter VI

# Collecting data on population stocks related to immigration

## A. Who is eligible to be counted in the census?

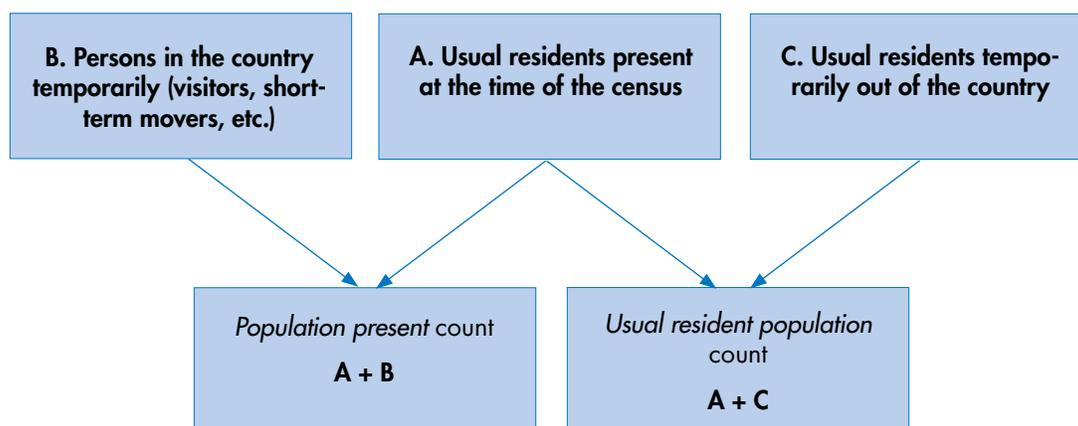
225. A population census is designed to gather information on all the persons who compose the population of the country. However, as countries differ in respect of whom they enumerate in the census, persons who belong to certain population subgroups may or may not be enumerated, even if they are living in the country (see chap. V, sect. B.1 on the types of population count). Knowledge of the rules employed by the country in its census enumeration is therefore necessary for a proper understanding and interpretation of the international migration statistics that are derived from the census

226. The present chapter demonstrates that before the various immigrant stocks can be considered, it is important to establish the *base population* from which the stocks are to be drawn. To be classified in some way as an international migrant, a person must first of all be eligible for inclusion in the census enumeration. After entry into the first stage of enumeration (i.e., the listing of persons in the dwelling), the fundamental question then becomes, who qualifies for inclusion in the census enumeration. That is decided through the application of filters to the initial listing.

227. In accordance with the rules established by the country, the filters exclude some persons from the enumeration process. How filters are applied depends on the enumeration approach adopted by a country for its census. Most countries used the *usual resident population count* in the 2010 round of censuses, while others used the *population present count*.

228. A *usual resident population count* includes the group of usual residents who are temporarily abroad at the time of the census, a group excluded from a *population present count* (see figure 6.1). On the other hand, a *usual resident count* excludes some groups that would be included in a *population present count*, for example, transients, visitors, short-term movers and others who are in the country temporarily at the time of the census. While short-term movers may make up a significant proportion of the non-usual resident population, they are considered not to be international migrants and are therefore not within the scope of this *Handbook*.

**Figure 6.1**  
*Usual resident population versus population present approach*



229. In some countries, the excluded group of persons (Group B under the *usual resident population* approach and Group C under the *population present* approach) is nevertheless listed in the census and some basic information is collected on that group.

230. Within the context of the types of international migrants covered in this *Handbook*, the usual resident population constitutes a convenient base for identifying immigrants (to be discussed in this chapter), since the definition of "immigrant" is tied to the concept of usual residence (see chap. II).

231. It is evident that in countries that enumerate all population present, foreign-born and foreigners who are temporarily present in the country, such as seasonal workers, students, trainees and businessmen, inflates the stock of foreign-born and foreigners. At the same time, the exclusion of usual residents who are abroad at the time of the census biases the count of usual residents downward.

232. Perhaps more problematic is the case in which a country's definition of "usual residence" does not conform with the criterion of 12 months, as recommended in *Principles and Recommendations* (see chap. II for discussion). Indeed, in the 2010 round of censuses, the concept of residence has been associated with periods as short as "three months or more" or even "more than two months" (United Nations, Department of Economic and Social Affairs, Statistics Division, 2013). Use of such low thresholds for residence invites inclusion of the population of short-term movers and temporary residents, of which foreign-born and foreign short-term workers, students and trainees may constitute a considerable proportion, thereby introducing a bias upward for the various types of immigrant stocks derived for the country.

## B. Population stocks related to immigration

233. It is widely acknowledged that a census cannot differentiate among the many types of movers that are of concern to a Government. However, the population census is the best source of data on certain population stocks related to international migration, in particular immigration. The key advantage of identifying those population stocks in censuses is the opportunity it offers to cross-tabulate migrant characteristics against the wide range of social, demographic and economic variables collected in the census enumeration, even for fairly small migrant groups in the country. To be sure, such an extensive body of information on migrants is rarely available from administrative data sources.

234. This chapter examines the means of collecting the information necessary for the compilation of data on the stock of immigrants (chap. VII undertakes a corresponding analysis of data collection as related to emigrants). The focus is on the formulation of questions to be used in identifying and characterizing the different types of population stocks related to immigration. The effectiveness of actual country examples derived from the 2010 round of censuses is assessed and good practices are highlighted. The chapter concludes with the presentation of sets of proposed questions that are tailored to demonstrate how data may be best derived for each type of population stock.

235. As recognized in chapter II, often, the need for information is generated not by the totality of international migrants, as characterized theoretically in accordance with the definition of immigrant stock, but rather by certain population stocks that are of policy-related interest. The present chapter focuses on four of those policy-relevant population stocks related to immigration, as identified in chapter II, namely:

- (a) Stock of foreign-born persons;
- (b) Stock of foreigners;
- (c) Stock of returning migrants;
- (d) Stock of second-generation migrants.

236. Data on the population stocks can be compiled from information collected on specific topics covered in the population census. Table 6.1 presents, for each population stock, the topics for which data should be collected so as to enable identification of the stock, as well as additional topics that could be explored to enable the stocks to be further distinguished or further characterized.

**Table 6.1**  
**Topics that provide the required data on four policy-relevant population stocks**

Population stock	Topics required to identify the stock	Topics useful in characterizing the stock
Foreign-born persons	<b>Country of birth</b>	<b>Date or period of arrival</b> Reason for migration
Foreigners	<b>Country of citizenship</b>	Date or period of arrival Acquisition of citizenship
Returning migrants	Ever lived abroad for at least 12 months <b>Country of citizenship/country of birth</b>	Date of last arrival Country of previous residence Reason for return
Second-generation migrants	<b>Country of birth</b> Country of birth of father Country of birth of mother	

*Note:* Boldface type indicates that a topic is designated as a “core” population census topic in the list in *Principles and Recommendations for Population and Housing Censuses, Rev.3* (United Nations, 2017). Other topics shown may or may not be found in that list.

237. The extent to which it is possible to measure and characterize each of the above stocks depends on whether a number of relevant questions are included in the census schedule, as well as on how and about whom the questions are asked. These details are considered in the following section.

## 1. Foreign-born persons

238. At present, the stock of foreign-born persons, or the foreign-born population, is one of the most widely used measures of immigrant stock. It should be noted that the stock of foreign-born persons derived from a census reflects net immigration of the foreign-born population. All foreign-born persons who have died or emigrated before the census date are excluded.

239. The census question used to identify a foreign-born person is his or her place of birth. That question serves the data requirements for both internal and international migration. In *Principles and Recommendations*, it is recommended both that that question be asked of all persons as a means of distinguishing between native- and foreign-born persons and that, for the foreign-born, the specific country of birth be recorded to permit the classification of the foreign-born population by that characteristic.

240. Of all international migration-related questions, the one most often asked in population censuses is that on place of birth (see box 6.1). In a national census, that question typically takes the following form: “Where were you/was (name) born?” or “What is your/(name)’s place of birth?” and is accompanied by the instruction to record the name of district and province (or details on another geographical division), for those born within the country; or to enter the name of the country for those born abroad. A significant difference among countries lies in the way the responses are captured. Many countries simply leave a space where the names of district and province can be filled in; or, in the case of the foreign-born, the name of the country. Other countries include a response set of geographical names to be marked by enumerators or respondents.

**Box 6.1****Inclusion/non-inclusion of a question on place or country of birth in national censuses in the 2010 round of population censuses**

Of the 119 countries examined in the 2010 round of population censuses, 99 (or 83 per cent) included a question on place or country of birth.

**Inclusion/non-inclusion of a question on place or country of birth in questionnaires in the 2010 round of population censuses (number and percentage of countries by region)**

Region	Included		Not included		Total	
	No.	%	No.	%	No.	%
Africa	22	81	5	19	27	100
Northern and Central America	13	93	1	7	14	100
South America	7	88	1	12	8	100
Asia	21	68	10	32	31	100
Europe	24	89	3	11	27	100
Oceania	12	100	0	0	12	100
<b>Total</b>	<b>99</b>	<b>83</b>	<b>20</b>	<b>17</b>	<b>119</b>	<b>100</b>

*Source:* United Nations, Statistics Division, Census questionnaire database, as of March 2014.

*Note:* For the 2010 round of censuses, questionnaires were available in the Statistics Division census questionnaire database for 151 countries or areas, as of 1 March 2014. Census questionnaires for the 31 areas that were neither sovereign States nor Member States of the United Nations were screened out and one country, which had enumerated only its citizens in its census, was excluded, which left a total of 119 questionnaires. All counts and analyses on census questions provided in the present box and elsewhere in this *Handbook* are based on data from the national census questionnaires of those 119 United Nations Member States.

241. A significant number of countries<sup>13</sup> include a question on the place of usual residence of the mother when a person was born, rather than the place of birth per se. That practice is followed to avoid assigning that person's place of birth to the locality where his or her mother actually gave birth (i.e., where the hospital or health facility was located, usually in a bigger town or a city). In countries where it is common for women to travel to a different locality to give birth, inclusion of that question offers a logical solution to the problem, as it eliminates a possible bias towards urban birthplaces. More significantly, in cases in which an international border is crossed, that question could yield a country of birth, which is an item that is crucial in identifying international migrants and a determinant of the rights and obligations of the child going forward, that is erroneous. Countries should take that issue into consideration when formulating the question on place of birth.

<sup>13</sup> Nineteen out of 99 questionnaires from United Nations Member States in the 2010 round of censuses included a question on place of birth.

242. The two types of questions are illustrated in the examples of good practice below.

#### Example A

D6. Where did .....’s mother reside when she gave birth to him/her?

Municipality/community: \_\_\_\_\_

District: \_\_\_\_\_

Don’t know municipality/community...[19]

Abroad (specify country): \_\_\_\_\_

Don’t know country...[29]

#### Example B

I-5. What is your place of birth?

1. In (this country) District code \_\_\_\_\_  
Town/village \_\_\_\_\_

2. Abroad

1 – Italy

2 – Greece

3 – United States of America

4 – Canada

5 – Turkey

6 – Other (specify): \_\_\_\_\_

243. For the recording of responses to the question on place of birth, the majority of countries provided a space to be filled in with the name of a geographical division or foreign country. Other countries provided a list of provinces (or other major divisions) and/or a list of country names. Use of some degree of pre-coding saves processing time and works best when the list in question is short yet exhaustive. In most cases, the category “Other (specify): \_\_\_\_\_” is needed at the very end to accommodate responses that are not on the list, as shown in example B.

244. A counterproductive practice adopted in some censuses entails inclusion of a pre-coded list of several countries followed by a selection of regions, which is intended for use in cases in which the country of birth does not appear on the pre-coded list. That practice should be avoided, as it results in a loss of country detail that is not recoverable once data have been collected. In *Principles and Recommendations* (para. 4.106), it is recommended that coding of information on country of birth be conducted in sufficient detail to allow for the identification of all countries of birth that apply to the individual members of the population of the country.

245. Since the number of countries is not large, individual country names entered on the questionnaire are suitable for computerized data capture and coding. For the purpose of coding countries, it is recommended that the publication entitled “Standard country or area codes for statistical use” (the M49 standard) (United Nations, 2016b) be employed to enhance the usefulness of the data. Those data can contribute, for example, to the international exchange of foreign-born population statistics among countries (see chap. VIII, sect. D). If a need exists to assign countries to broad categories, the grouping process should be carried out at the data-dissemination stage rather than during data collection. The standard regional and subregional classifications set out in M49 are recommended for use in this process.

#### (a) General data quality issues on country of birth

246. While collection of information on country of birth is one of the most straightforward census activities (since, strictly speaking, each person has only one country of birth, which does not change over time), in practice, problems can still arise when data on this item are being collected. Problems include:

- Confusion arising from changes in the national boundaries of countries
- High rates of non-response or responses categorized as “unknown”

247. When the boundaries of a country change, there arises the question whether the country of birth that is recorded should be the country that existed at the time of birth or the one that exists at the time of the census. For the purpose of internal consistency and international comparability, it is recommended in *Principles and Recommendations* that the place of birth recorded be determined on the basis of the national boundaries existing at the time of the census (para. 4.70). That recommendation

should apply to the successor States of the Union of Soviet Socialist Republics (USSR), the successor States of the former Yugoslavia and all other States formed upon the formal dissolution of a country, and should apply as well as to countries that merged to form a single State.

248. Enumerators trained to follow this recommendation can help elicit the requisite response from the respondent. However, in censuses in which questionnaires are self-completed, this issue needs to be clarified for the respondent in the census instructions. The following examples illustrate how that instruction can be phrased:

- (a) "Where was this person born? Specify one response only, according to present borders."  
 (b) "Which country were you born in, according to current borders?"  
 [A person whose answer is "USSR" or "former USSR" will proceed to the next question:  
 "15. Which country in the former USSR were you born in (according to current borders)?"]

249. One problem associated with the question on place of birth is reflected by the level of non-response and the number of responses categorized as "unknown". In some countries, the magnitude of the problem increases with the number of persons who declare that they are foreign-born. One reason for the prevalence of the problem lies in a failure to determine during data collection whether persons whose place of birth was "unknown": (a) were in fact born in the country of enumeration but do not know the name of the province of their birth; (b) were in fact born abroad but do not know their country of birth; or (c) do not know whether they were born in the country of enumeration or abroad. The statistics would be more meaningful if each instance of a non-response/"unknown" response could be distinguished based on one of those three clarifications and shown separately.

250. Part of the problem lies in the lack of "Don't know" as a response category in the census questionnaire for cases in which it is not known whether the person was born in the country or abroad. That is characteristic of the census questionnaires of many countries, including those from which examples A and B are derived. It is worth noting, however, that example A does include two of the three "Don't know" response options ((a) and (b)) mentioned in the preceding paragraph, lacking only option (c). Example C constitutes the rare type of a question in which "Don't know/Not stated" is a response option for place of birth.

#### Example C

9.1a. Were you/was (name) born in (this country) or abroad?

- (This country)
- Abroad (specify below)  
Country (specify) \_\_\_\_\_
- Don't know/Not stated

#### (b) Distinguishing among foreign-born persons through use of information on year of arrival

251. If data on place of birth are to become more useful to policymakers in countries of immigration, there needs to be a means of distinguishing between recent migrants and those of long standing, since most of the issues related to migrants' adjustment to society in general – in particular, to local labour conditions and housing markets – occur in the early years of immigration. Another area of policy-related study encompasses the differences in terms of migration outcomes related to integration between those who entered the country at an early age and those who entered later in life.

252. Securing statistics that can inform the above-mentioned policy interests requires the inclusion of a question on year or period of arrival, and on country of birth. In *Principles and Recommendations* (table 3, entry B (4)), it is recommended that year or period of arrival be investigated as a core topic

in a population census, and that both the calendar year and month of arrival be collected to allow the calculation of completed years between the time of arrival in the country and the time of enquiry (para. 4.117). The information thus gathered can be used to calculate the number of completed years between a foreign-born person's date of arrival in the country and the census date, to establish his or her length of stay in the country. The information can also be used with the respondent's date of birth as a means of calculating his or her age at immigration.

253. The question on year of arrival was not included in many national censuses, in spite of the topic's having been identified as "core" in *Principles and Recommendations*. Less than half of all countries included the question on year or month/year of arrival.<sup>14</sup> The categories of persons for whom that information was gathered varied among countries. Some censuses directed the question to foreign-born persons only, while others directed it to all persons who had ever lived abroad for at least one year, or to all persons who had not lived continuously since birth in the place of enumeration.<sup>15</sup> For countries interested in measuring return migration, directing the question on year or period of arrival to all persons who have ever lived abroad serves a dual purpose: it enables information to be obtained on (a) the time spent by a native-born person (returning migrant) in the country since his or her return and (b) the time spent by a foreign-born person in the host country.

254. For the purpose of differentiating among foreign-born persons based on the length of their stay in the host country, direct questioning of those persons to elicit arrival-related information results in better coverage than that achieved through direct questioning of all persons who have ever lived abroad for one year or more to secure the same information. Under the first approach, all foreign-born persons are covered and the question on arrival is short, simple and direct; under the second, the question on arrival is typically part of a suite of from two to four questions intended primarily to capture returning migrants. The suite opens with a question designed to ascertain whether the respondent has ever lived abroad for a certain period of time, which is usually "at least one year", although a duration as short as six months or as long as five years has been specified by a few countries. While a few of the questions in the suite may be highly relevant to the study of topics related to return migration (for example, the question on the country in which the person last resided), they may not necessarily be relevant to policy aimed at the generality of foreign-born persons in the country. Moreover, some countries are interested only in persons who lived abroad in the previous 5, 10 or 30 years instead of all persons who have ever lived abroad. In such cases, foreign-born persons who have been in the host country for a longer period will be screened out of the question, which will result in missing data on year of arrival. Further, a foreign-born person who was less than a year old when he or she entered the country would also be filtered out by the following opening question, i.e., ever lived abroad for at least one year?

255. Another disadvantage of obtaining information on the date of arrival of foreign-born persons through a suite of questions intended primarily for returning migrants lies in the fact that the question on arrival invariably refers to the last arrival into the country. Depending on a country's policy-related interests, date of first arrival of a foreign-born person, as opposed to her or his date of last arrival, may be the more relevant piece of information.

256. For the reasons given above, the context of the question on year of arrival, the population subgroup to which it is directed and the manner in which the question is phrased are subjects for decision-making that require careful consideration, as those factors have implications for the results of data gathering. The level of importance conferred by a country on the gathering of statistics on returning migrants is also factored into the decision-making process (see subsect. 3).

<sup>14</sup> Of the 119 countries/questionnaires in the 2010 round of censuses entered in the Statistics Division census questionnaire database, only 38 included a question on year or month/year of arrival.

<sup>15</sup> The breakdown of the 38 countries that included a question on year or month/year of arrival in relation to the categories of persons to which that question was directed: 22 countries directed the question to foreign-born persons only; 14 directed the question to all persons who, at some time in their life, had lived abroad for at least one year; and 2 directed the question to all persons who had not lived continuously since birth in the place of enumeration.

257. When return migration is not a census topic, the question on year of arrival is typically asked only of persons born abroad and is invariably placed immediately after the response to the question on country of birth. Although, intuitively, the question on year of arrival appears to be a very simple one, there is in fact wide variation in terms of how it is framed. The following are three examples of clear and simple wording of the question, posed after it has been established that the respondent was born abroad:

- (a) "In what year did you/did \_\_\_\_ come to live in (this country)?"
- (b) "In which year did the person first arrive in (this country) to live here for one year or more?"
- (c) "In which year did (name) move to this country?"

258. The most commonly used formulation in the 2010 round of censuses is the one found in the first—and simplest—of the above options (a). The fact that the wording in the second example (b) is more precise would be associated with a lower probability of varying interpretations. Within the group of countries that directed the question on year of arrival only to persons born abroad, 3 asked for information on first arrival, while 18 made no such specification, although 2 of the 18 did ask the respondent to record the date of last arrival if he or she had moved into or entered the country more than once. In *Principles and Recommendations* (para. 4.118) whether to collect information on the year of first arrival, or on the year of most recent arrival in the country, is viewed as a choice that should be left to countries and should depend on their information (policy and user) needs. The information on year of first arrival is relevant in receiving countries where immigrants have the right to free movement in and out of the country after having obtained permanent or legal residence status. On the other hand, information on year of last arrival is generally more relevant for countries to which people migrate more than once, whether at different life stages or in a circular pattern as rendered necessary by work; for example, such information is particularly relevant for statistics on returning migrants (see also subsect. 3).

259. The question on year or period of arrival as part of a suite of questions asked of all persons who have ever lived abroad is covered in subsection 3, which focuses on returning migrants. When the same question is used to determine length of stay of both returning migrants and foreign-born persons, the alternatives "return to" and "come to" may be incorporated in the same question. While a few examples in that regard are given below, commentary thereon is reserved for subsection 3. It should be reiterated that the questions given below were asked of all persons, whether foreign- or native-born, who had ever lived abroad for at least a year.

- (a) "When did you return or actually move to (this country)?"
- (b) "In what year did you/(name) return to/last come to live in (this country)?"
- (c) "In which year did you come to or return to (this country) for the last time?"

260. The response options for the question on year or period of arrival are quite similar. The vast majority of countries ask respondents to record the year of arrival, while others ask for the month and year. While information on year of arrival may be sufficient for most purposes, it is best if both month and year are recorded, as is recommended in *Principles and Recommendations*. However, given the problems of recall related to events in the distant past, a compromise is advisable and entails asking for month and year of arrival only if the arrival was within one year from the census date. This enables the separation of durations of less than one year from all other durations.

261. Information on time since arrival can also be collected through a question on the number of years that have elapsed since arrival, or on the duration of stay or residence in the country. In *Principles*

and *Recommendations* (para. 4.119), the use of such a question is not recommended, however, because it is likely to yield information of a lesser degree of accuracy.

### (c) Distinguishing among foreign-born persons by reason for migration

262. Reason for migration is a topic of primary interest to Governments. In the absence of a specialized sample survey on immigrants – the vehicle best suited to eliciting this information – a number of countries have adopted a more modest approach to obtaining this information through their census.

263. The question to be asked in this regard would be on “reason for coming or returning to the country”.<sup>16</sup> It is typically addressed to persons who have ever lived abroad for at least 12 months. While it is apparent that in some countries, where the target respondents are returning migrants, in others the range of target respondents appears to be broader so as to include foreign-born persons.

## 2. Foreigners

264. Another type of population stock widely used in the study of international migration is that of foreigners. A foreigner is a person who is not a citizen of the country of enumeration. As defined, the country of citizenship is the country with which a person enjoys a particular legal bond, but unlike country of birth, a person’s country of citizenship can change during her or his lifetime. Persons who are not citizens of the receiving country by birth may acquire the receiving country’s citizenship through naturalization, marriage or some other mechanism. Because persons born abroad can become citizens of their country of residence and because persons do not automatically acquire the citizenship of their country of birth, it is recommended in *Principles and Recommendations* (para. 4.110) that information on both items (country of birth and country of citizenship) be collected in a population census.

265. With regard to obtaining information from a census on the stock of foreigners, the relevant question to be asked is one on country of citizenship. The majority of countries do include a question on country of citizenship in their census (see box 6.2), although not as many as those that include a question on country of birth.

266. When a question on a person’s country of citizenship is asked in the English language, “country of citizenship” is preferred to “nationality”.<sup>17</sup> The latter term, given its ethnicity-related connotations in certain cultures, can cause confusion.

### Box 6.2

#### Is a question on country of citizenship asked in national censuses?

Of the 119 countries/questionnaires in the Statistics Division’s census questionnaire database, 86 included a question on country of citizenship in the 2010 round of censuses. It should be noted that a large proportion of countries in the Americas did not include a question on country of citizenship in their census questionnaire. Moreover, a considerable number of countries in Asia – including two of the world’s largest countries, China and India – did not include that question in their questionnaires. On the other hand, the census questionnaires of most of the countries in Africa and Europe had a question on country of citizenship in the 2010 round.

<sup>16</sup> In the 2010 round of censuses, 9 out of 119 countries included a question on reason for coming or returning to the country.

<sup>17</sup> For the purposes of the present publication, this caveat applies only to the English language.

**Box 6.2 (continued)****Inclusion/non-inclusion of a question on country of citizenship in questionnaires in the 2010 round of population censuses (number and percentage of countries by region)**

Region	Included No. %	Not included No. %	Total No. %
Africa	24 89	3 11	27 100
Northern and Central America and the Caribbean	3 21	11 79	14 100
South America	2 25	6 75	8 100
Asia	22 71	9 29	31 100
Europe	27 100	0 0	27 100
Oceania	8 67	4 33	12 100
<b>Total</b>	<b>86 72</b>	<b>33 28</b>	<b>119 100</b>

*Source:* United Nations, Statistics Division, Census questionnaire database, as of March 2014.

*Note:* All English-language questionnaires with a question on nationality are considered to have included a question on citizenship.

267. There is wide variation among countries with regard to how the question on country of citizenship is asked and how the response space is designed. Some countries (Australia, the Democratic People's Republic of Korea, Maldives and South Africa) asked only whether a person was a citizen or not a citizen (i.e., a foreigner) (example A). The vast majority of countries, on the other hand, asked for the person's country of citizenship if he or she was not a citizen of the country of enumeration, as suggested in *Principles and Recommendations*. In the latter case, either of two general approaches are adopted: recording the name of the country directly (example B) or choosing from a pre-coded list of countries (example C). In some cases, the pre-coded list also includes regions and subregions, which is not a recommended practice. The examples given below illustrate the various ways of recording the response.

i. *Only whether citizen or not:*

**Example A**

P-09. Is (name) a citizen of (country)?

1=Yes 2=No

ii. *Name of country of citizenship to be recorded:*

**Example B**

4. Country of citizenship

- (This country)

- Other [If you have citizenship in another country, indicate country] \_\_\_\_\_

- No citizenship

iii. Pre-coded list for country of citizenship:

**Example C**

- P9. Citizenship
- 01 (from this country)
- 02 Ethiopian
- 03 Somalian
- 04 Yemenite
- 05 Eritrean
- 06 Other African
- 07 French
- 08 Other European
- 09 Asian
- 10 American (United States of America)
- 11 Other American
- 12 Other

268. Example B is straightforward, with the country of citizenship to be written in if it is not the country of enumeration. Including the “no citizenship” option is good practice.

269. In example C, the pre-coded list contains countries (including this country) and regions as well as “Others”. The use of regional categories does not, however, allow for specification of individual countries. As noted previously, such a practice is not recommended, as it results in loss of country detail that is not recoverable once data have been collected.

270. Also in example C, names of countries of citizenship are pre-coded as adjectives rather than country names, which is not good practice. When pre-coding responses on country of citizenship, it is recommended that each country be designated by name, and not by adjective, since some of those adjectives also designate ethnic groups (see *Principles and Recommendations*, para. 4.111). For example, use “China”, “Malta”, “Mongolia”, “Netherlands” and “United States of America”, rather than “Chinese”, “Maltese”, “Mongolian”, “Dutch” and “American”, respectively. Other pre-coding and coding issues associated with country of citizenship are the same as those related to country of birth (see subsect. 1 on stock of foreign-born persons).

**(a) Stateless persons**

271. More than one fourth<sup>18</sup> of the countries that include a question on country of citizenship also include the category “stateless” or “without citizenship” in the pre-coded list of responses (as in example B above) so as to ensure that members of that group of persons are categorized correctly. This is good practice, in view of the increased attention being paid to the issue of preventing and reducing statelessness. When data on stateless persons are collected, a category of stateless persons should also be presented in the tabulations.

**(b) Multiple citizenships**

272. As the phenomenon of international migration becomes more complex and as the circularity of international movement increases, attachment of a person to multiple countries is becoming more common. With expansion of the prevalence of cross-national marriages and other consequences of globalization, there has been an increase in the prevalence of multiple citizenships.

<sup>18</sup> Twenty-three out of 86 countries.

273. In *Principles and Recommendations* (para. 4.115), it is suggested that, in cases in which people have more than one citizenship and when there is a need for that information – for example, in decision-making – details may be collected on whether a person holds one or multiple citizenships. It is recommended that, if this information is to be published, readers should be made aware of how the possibility of counting people with multiple citizenships more than once affects the marginal totals in a table.

274. Many countries (mostly in Europe) allow for the recording of the name of a second country in cases in which their citizens hold dual citizenship, through their provision of a space reserved for entry of the name of the other country of citizenship (see example D). In most cases, there is no allowance made for indicating more than one country of citizenship unless one of the countries is the country of enumeration. The inclusion of the option “without citizenship” in the response set of example D is good practice.

#### Example D

##### 16. Citizenship

1. (This country)
2. (This country) and other country \_\_\_\_\_
3. Other country \_\_\_\_\_
4. Without citizenship

275. A few countries allow the entry of the names of two or more countries of citizenship, even if none of those countries is the country of enumeration. In example E, the number of countries is limited to two, while in example F, there is no restriction on that number. If, in the recording of country of citizenship, the names of two or more countries are accepted, information on that practice should be incorporated in the data-processing specifications.

#### Example E

53. Of which country (countries) are you a citizen? [List up to two countries.]
1. \_\_\_\_\_
  2. \_\_\_\_\_

#### (c) Information on acquisition of citizenship

276. It may be useful for countries whose population includes a significant proportion of naturalized citizens to collect data on country of citizenship which would permit classification of citizens as (a) citizens by birth or (b) citizens by naturalization. In *Principles and Recommendations* (para. 4.116) it is noted that, depending on their information needs, countries may find it useful to ask questions on method of acquisition of citizenship, previous country of citizenship, country of citizenship at birth and year of naturalization.

277. A number of countries include a separate question in their census questionnaires that allows a distinction to be made between citizens by birth and citizens by naturalization.<sup>19</sup> While the practice is not recommended, some countries fuse the question on acquisition of citizenship with the question on country of citizenship, so that the response to the latter question in its simplest form can no longer be “this country” or “other”, but rather “this country by birth”, “this country by naturalization” or “other” (see examples F and G below).

<sup>19</sup> In the 2010 round of censuses, 18 countries included such a question in their questionnaire.

### Example F

10. Of what country is this person a citizen? Indicate more than one citizenship if applicable.
1. [This country] by birth
  2. [This country] by naturalization
  3. Other (specify) \_\_\_\_\_

### Example G

- P03. What is (name)'s nationality?
- 01 (From this country) by birth
  - 02 Dual nationality
  - 03 (From this country) by naturalization
  - 04 Nigerian
  - 05 Liberian
  - 06 etc.

278. In the above examples, two (or more) questions are combined into one. That should be avoided. In example F, the response categories are not mutually exclusive: a person with more than one citizenship (allowed based on the instructions) may choose (or write) at least two answers. In example G, it is unclear whether the foreign country in question is to be specified when a person has dual citizenship. Also, the question example G uses the term “nationality”, whereas it has been suggested above that the term “country of citizenship” be used instead. Furthermore, in the same example G, the country/countries of citizenship should be expressed in adjectival form, whereas it has been suggested that nouns (name of country), rather than adjectives, be used for pre-coded response categories.

279. The best way to distinguish citizens at birth from naturalized citizens, or to obtain information on acquisition of citizenship in greater detail from censuses, is to introduce an additional question, or even two, on the channel through which citizenship has been acquired,<sup>20</sup> after it has been ascertained that the person does indeed hold the citizenship of the country of enumeration (see example H). The question(s) can be very short, being designed simply to distinguish between citizens at birth and citizens by naturalization; still, if desired, the question(s) could be formulated to elicit more detailed information on the method of acquisition of citizenship. The number and the choice of methods of acquisition of citizenship that are included in the response set depend on the information needs of the country, as well as the relative prevalence of those methods. If so desired, other, related questions – on, for example, previous country of citizenship (see example I) – could follow the question on acquisition of citizenship.

<sup>20</sup> Those channels include standard naturalization, which is usually subject to fulfilment of criteria related, for example, to age or residency; declaration of intent; and choice (based on marriage, adoption, descent, etc.).

### Example H

P20. If you are a (from this country) citizen, by what method did you acquire citizenship?

1. Born to (from this country) parents
2. Born in (this country) to non-(from this country) parents
3. Adopted by (from this country)
4. Married to (from this country) husband
5. Other naturalization

### Example I

[If citizenship is (from this country)]

3.2. Have you had (from this country) citizenship since birth?

- 1 – Yes – Go to question 3.4
- 2 – No

3.3. How did you obtain (from this country) citizenship?

- 1 – By marriage
- 2 – Other

Specify the foreign country of your previous citizenship \_\_\_\_\_

#### (d) Distinguishing among non-citizens through use of information on year of arrival

280. Through use of the question on year or period of arrival, foreigners, like foreign-born persons, may be distinguished from one another according to the length of time they have lived in the country. However, there is a notable difference between foreign-born and foreigners. For the former, all of whom were born abroad, there would be a year of arrival. In contrast, not all foreigners were born abroad (for example, native-born persons who by law acquired the citizenship of their foreigner parents). Nevertheless, there is interest from a policy perspective in the study of integration and migration outcomes of citizens who entered the country a long time ago versus those who entered recently (see paras. 251–261 on the corresponding issue for foreign-born persons).

#### (e) General data quality issues on country of citizenship

281. A data-quality issue on country of citizenship arises with respect to the situation of persons whose citizenship status has changed, having been transformed, for example, into statelessness, as a result of territorial changes or the emergence of newly independent States. As in some of those cases, the reliability of what is reported as country of citizenship of persons in such situations may be doubtful, notations indicative of the possible causes of misstatements should accompany tabulations on country of citizenship.

282. Because censuses rely on self-reporting, the information on country of citizenship reported by respondents is not verified by legal documents. Some doubt might also be cast on the reliability of what is reported as country of citizenship by long-term foreign residents of a country, some of whom may declare themselves to be citizens.

283. There can be confusion regarding the country of citizenship of persons born in other countries, stateless persons and persons with multiple citizenships. Enumerators should therefore be fully trained to detect and deal with those issues. In cases in which self-enumeration is utilized, the questions in that regard should be clear and, if necessary, accompanied by instructions, as illustrated by some of the examples.

### 3. Returning migrants

284. Many countries are interested in determining the magnitude and characteristics of the stock of returning migrants. Returning migrants are citizens of the country of enumeration who emigrated and subsequently returned to live in their country of citizenship (see chap. II), and who are citizens at the time of return. Indeed, the literature on migration and development is strengthening its emphasis on the factor of return migration as an increasingly significant contributor to enhancement of the development of countries of origin.

285. However, the definition formulated by some countries diverges from that set out in this publication. Those countries consider returning migrants to be native-born persons who have lived abroad for a period of at least 12 months before returning to their native country. The important challenge for countries is to determine which group – returning citizens or returning native-born persons – is of more significance and relevance to the crafting of national policy.

286. While the census may not be the best vehicle for the collection of data related to returning migrants, some countries lacking any other reliable source have attempted to incorporate questions in their censuses geared towards identification of returning migrants.<sup>21</sup> Most of those countries are located in Eastern Europe and the Caribbean.

287. Returning migrants can be identified through a census question, directed at all persons, on whether they have ever lived abroad for at least one year and, if so, has it been at least one year since they returned to live in the country. Based on the definitions in chapter II, if a person (a) is a usual resident of the country (i.e., has been in the country for at least a year); (b) has ever been away from the country for 12 months or longer; and (c) is a citizen of the country at the time of return, then he or she is a returning migrant. Information on whether criterion (c) has been met may be obtained through a census question on country of citizenship and on mode and year of acquisition of citizenship. However, questions on acquisition of citizenship are rarely included in a census. Without that information, persons who are citizens at the time of return cannot be identified. One solution to the problem entails use of citizenship at the time of enumeration as a proxy variable, whereby those persons who were not citizens at the time of return but acquired citizenship at some point after their return would count as returning migrants.

288. As noted in paragraph 285, countries may choose to consider only native-born persons, regardless of their country of citizenship, to be returning migrants, in which case criterion (c) would be “was born in the country of enumeration”. In a census, it is easier to collect information related to that criterion than information related to “is a citizen of the country at the time of return”. And in the 2010 round of censuses, the “was born in the country of enumeration” criterion was in fact used by four countries, where only native-born persons were asked whether they have ever lived abroad for at least one year. An example of that approach is found further on in this chapter.

289. Another divergence from the definition provided in this publication entails the designation of a finite time frame within which the returning migrant’s stay abroad occurred. The specific question asked in the census was on whether the person has lived abroad within the last 5, 10 or 30 years. That variation in the question in the number of years allows for a progressive narrowing of the scope of coverage of returning migrants’ stay abroad compared with the scope designated under the definition given in this publication, which put no restrictions on the time frame within which the stay abroad occurred. It is apparent that countries whose census question included the 5- and 10-year intervals are interested in migrants who returned more recently. That kind of filtering may also be achieved through use of a question on the date of last arrival in the country in addition to the question on whether the person has ever lived abroad for at least 12 months.

290. What becomes immediately apparent from the many examples that follow is that some countries use a common suite of questions for all persons who have ever lived abroad for at least 12 months. The persons responding to those questions could include both returning migrants and foreign-born persons who migrated to the country of enumeration before the census (see also paras. 251–257).

<sup>21</sup> In the 2010 round of population censuses, 24 out of 119 countries (i.e., about one fifth) included questions that would enable identification of citizens (or native-born population) who had returned after having lived abroad.

In contrast, there are countries that direct the suite of questions only to the native-born population who have ever lived abroad for at least 12 months.

### (a) Distinguishing among returning migrants by year of return and country of previous residence

291. Through their inclusion of a question on the respondents' most recent year or period of return, most countries differentiate between migrants returning recently and those who returned at a more distant time in the past. The year of return can also be matched with the date of birth of the returning migrant to permit calculation of the age at which he or she returned to live in the country. While the characteristics so derived are very basic, they are nevertheless of great value as a means of informing research and policy. The subject of another commonly asked question is the country in which the person last resided before returning or coming to the country of enumeration.

292. The following examples encompass a suite of questions on return migration, which opens with a filter question on "ever lived abroad for at least 12 months". In example A, the census aims to include only native-born persons as returning migrants, since the question on "ever lived outside country" is asked only of members of that population group. In examples B to D, the question is asked of all persons, whether native- or foreign-born. In order for the desired subgroup of returning migrants to be reached, the answers to the suite of questions presented need to be combined with the answer to either the question on country of birth, which is directed only towards the native-born, or the question on country of citizenship, which is directed only towards citizens.

#### Example A

##### A24. QUESTION TO BE ASKED ABOUT PERSONS BORN IN (THIS COUNTRY)

Have you ever lived outside (this country) for 12 or more months consecutively?

Current borders of (this country) shall apply.

1. Yes      2. NO → Question A27

*Note:* Continuous residence outside (this country) shall not include:

- Employment in a foreign country, if the respondent stays most non-work days with own household living in (this country)
- Studies in general education school (upper secondary school, gymnasium, basic school, etc.) or secondary vocational school in a foreign country if parents' home is in (this country)
- Compulsory military service in the foreign country and participation in a war

*Studies in an institution of higher education or higher vocational school in a foreign country are considered to entail continuous residence outside (this country).*

A25. When did you recently arrive to settle in (this country)? Indicate the year.

Current borders of (this country) shall apply.

Year: \_\_\_\_\_

#### Example B

D14. (a) Did..... ever have his/her permanent residence (for more than 12 months) abroad?

1 Yes    2 No → D15

(b) In which country?      Specify country: \_\_\_\_\_

(c) When did ..... come to (this country) for permanent settlement?

Month \_\_\_\_ Year \_\_\_\_

### Example C

P9. Have you lived outside (this country) for a continuous period of one year [Answer if aged 1 year or over and living in (this country).]

1. Yes      2. No

If "Yes", indicate YEAR that you last took up residence in (this country) and the COUNTRY of last previous residence.

Year \_\_\_\_ Country \_\_\_\_\_

### Example D

16. Have you ever resided abroad for a continuous period of at least 12 months?

[Note: Applicable only if you are aged one (1) year or over.]

1. Yes  
2. No → Q18

17. Enter the year of your most recent arrival in (this country).

\_\_\_\_\_

[Enter the year in which you arrived most recently with the intention of spending at least 12 months]

293. As the examples show, the type and wording of the questions can vary greatly. While there are many possible formulations, the most important considerations when the questions are being designed are (a) that they be capable of eliciting policy-relevant answers and (b) that the definition of "returning migrant" be clear and unambiguous. At a minimum, the question on "whether ever lived abroad" should specify the length of absence to prevent any ambiguity. The criterion in this publication is a period of absence of at least 12 months, which most countries have indicated in their first question (on "ever lived abroad"). In the question on arrival, however, usually no mention of an intended stay of 12 months is made. Instead, other formulations of the question are used which imply an intention to stay for a long period, albeit one not quantified.

294. In example A (A25), the language used by the country in the question on arrival implies that its concept of returning migrants is tied to that of permanent settlement; similarly, example B uses the term "permanent settlement". C uses "taking up residence", but neither B nor C makes specific mention of any specific duration of stay in the country of arrival. Only one country referred to a duration of stay lasting at least 12 months (example D), as consistent with the definition presented in this publication (see chap. II). The most widely used type of wording is simply "arrived/returned to (country)" or "arrived/returned to live in (country)", with no specification of length of stay.

295. The imprecision of those terms, as utilized by countries, is manageable to some extent. After all, it is possible to calculate a migrant's length of stay in a country from the answer to the question on year/month of arrival. Furthermore, persons who are asked the suite of questions are for the most part already established as usual residents, which signifies that they have stayed, or intend to stay, for at least 12 months.

296. It is worth drawing attention to the helpful instruction provided in example A, which is intended to provide guidance to respondents on how to treat the stay abroad of workers, students and military personnel. As indicated in chapter II, the treatment of those groups requires special attention and documentation. Another good practice in the same example entails the reminder that, with regard to recent arrival to settle in the country, the current borders of the country shall apply. (The country in question is a successor State of the USSR). Guidance and instructions like those are particularly helpful in the context of self-enumeration.

### (b) Distinguishing among returning migrants by reason for return

297. A few countries have also included a question on reason(s) for return migration. While it is recognized that the reasons for migration, being complex and multifaceted, are better investigated through surveys, a single question can nevertheless provide some indication of the motivations underlying return migration. For practical purposes, answers for the main reason should be pre-coded and the responses limited to just one. What follows are some examples of question-and-answer sets actually used by countries in the 2010 round of censuses. In example E, the questions are addressed to returning migrants specifically, whereas in examples F and G, the questions appear to be addressed to both returning migrants and immigrants.

#### Example E

48. What is the main reason why you/..... returned to live in (this country)?

1. Regard it as home
2. Family is here
3. Involuntary return/deported
4. To start a business/employment
5. Retired
6. Homesick
7. Other (specify) \_\_\_\_\_

#### Example F

II-12. What was the main reason for arrival in or return to (this country)?

- Work
- Studies
- Family reasons
- Wish to live in the native land
- Other

#### Example G

17. What was the main reason for coming to live in (this country)?

1. Employment opportunities in (this country)
2. Finished job abroad
3. Study opportunities in (this country)
4. Finished study abroad
5. Family reasons
6. Other reasons

298. While the various kinds of wording of the question are very similar, the pre-coded responses are quite varied, reflecting the specific situation in each country. Reasons for arrival in, return to or coming to live in the country that are related to work, study and family are almost always present in the response sets of countries that include that question in their census questionnaires. Other notable reasons that are listed in some questionnaires include medical/health issues, asylum seeking, forced migration and personal safety. As already mentioned, the reasons offered differ according to the situation of the country.

## 4. Second-generation migrants

299. There is growing interest in the economic, cultural and social experience of so-called second-generation migrants, or children who are born in the destination country of immigrant parents. It should be noted that persons in that group are by definition not international migrants, unless they left their country of birth for a period of at least 12 months (i.e., emigrated) and subsequently returned to live in it (or with the intention of doing so) for at least 12 months.

300. As defined in chapter II, the stock of second-generation migrants consists of persons born in the country and whose parents were both born abroad. Study of the integration processes and outcomes for immigrants and their descendants is often characterized by a strong interest in comparing second-generation with first-generation migrants, as well as with members of the native-born population having native-born parents.

301. The identification of second-generation migrants requires that questions be asked on the place of birth of each respondent as well as on the place of birth of his or her parents (see box 6.3). The decision to collect information on place of birth of parents in a census should take into consideration (a) issues of sensitivity and suitability that, for a country's population, may be associated with asking such a question; and (b) the country's information needs.

### Box 6.3

#### Is a question on place of birth of parents included in national censuses?

The inclusion in the 2010 round of censuses of a question on the place of birth of parents was not common. The question was asked in only 10 of the 119 censuses examined. Australia and Canada are among the larger countries of immigration that included the question in their census (in 2006).

*Source:* United Nations, Statistics Division, census questionnaire database, as of 1 March 2014.

302. Once the decision has been taken to include a question on place of birth of parents in a census, the actual formulation of the question, which is asked separately for each parent, becomes a straightforward matter. While most countries ask for the name of the country of birth (see example A), that is not always the case (see example B).

### Example A

Where was each of this person's parents born?

[Mark "x" or specify country according to present boundaries.]

(a) Father

- 1 Born in (this country)
- 2 Born outside (this country)
- 3 Specify country \_\_\_\_\_

(b) Mother

- 1 Born in (this country)
- 2 Born outside (this country)
- 3 Specify country \_\_\_\_\_

### Example B

6. Where were your parents born?

(a) Your mother

1 (This country)

2 Abroad

3 Unknown

(b) Your father

1 (This country)

2 Abroad

3 Unknown

303. Questions as in example A are preferred, as they yield a larger amount of information than do those in example B. That is, only when the name of the specific country of birth of each parent (as in example A) is elicited, can the origin-specific migration-related background of the respondent be identified. Information that is derived on this topic also facilitates identification of members of the group of foreign-born children of native-born parents, which can be of importance in countries that experience significant return migration.

304. In *Principles and Recommendations* (paras. 4.105 and 4.108), it is recommended that collection of information on country of birth of parents through a census question should follow the same guidelines as those applicable to country of birth, including specification of the name(s) of the individual country/countries,

## C. Other census topics relevant to immigration

305. A range of other topics relevant to immigrants have been included in population censuses, some of which are of importance to many countries, especially those that are experiencing a significant level of immigration. Two topics that are of particular significance are ethnicity and language. It should be noted that, in some countries, both topics are sensitive ones and should be explored with caution.

306. This having been said, valuable insights can be gleaned through the inclusion in the census of questions on ancestry and/or ethnicity. Of course, not all ethnic diversity in a country is attributable to contemporary migration. Some countries are home to a large number of ethnic groups of long standing and can lay claim to a national population exhibiting a high degree of ethnic diversity. Nevertheless, such questions may be useful in establishing the dimensions of some significant populations of migrant origin, which cannot be differentiated through use of the model questions presented above, and are of particular utility in countries that have adopted models of multiculturalism and wish to identify the size and characteristics of particular groups of migrant origin in their societies in order to pursue and better target policies with a multicultural focus.

307. Language is another topic of crucial significance in the context of migration. It can strongly impact a migrant's ability to interact within the destination society and to participate in the local labour and housing markets. Language is also of crucial significance with respect to immigrant identity and identification with the origin country. Accordingly, it would be of benefit for the censuses of countries with substantial numbers of immigrants in their population to include:

- A question on the usual language spoken in the migrant's home.
- A question on the migrant's (or another family member's) ability to speak the dominant language(s) in the country of destination.

The second – subjective – question is not an easy one to answer, since it requires the respondent or informant to gauge his or her own language ability or the language ability of another household member.

## D. Proposed questions for use in collecting data related to immigrant stock

308. The present section proposes questions designed to enable the compilation of data on each of the four population stocks covered in this chapter. The process of formulation of those questions benefited from a review of questions actually utilized by countries in the 2010 round of population censuses, and they were framed with particular consideration given to their ability to identify and distinguish the characteristic features of the selected population stock.

309. As is normally the case, newly proposed questions must be thoroughly tested by individual countries before they are used in a census.

### 1. Country of birth (for foreign-born persons)

310. For identification of the stock of foreign-born persons, the associated topic is country of birth. The topic "year/period of arrival" can serve to distinguish among persons in that group. The following are proposed questions for testing.

**For countries that designate place of birth to be the geographical unit within which the birth actually occurred:**

Where was (person) born?

- This country, specify province [or State, region] and municipality [or nationally relevant second-level civil division]
  - Province: \_\_\_\_\_  province unknown
  - Municipality: \_\_\_\_\_  municipality unknown
- Another country, specify country according to present borders:
  - Country: \_\_\_\_\_
  - Unknown
- Country of birth unknown

**For countries that designate place of birth to be where the mother of the individual resided at the time of that individual's birth:**

Where did \_\_\_\_\_'s mother reside when she gave birth to him/her?

- This country; specify province [or State, region] and municipality [or nationally relevant second-level civil division]
  - Province: \_\_\_\_\_  province unknown
  - Municipality: \_\_\_\_\_  municipality unknown
- Another country; specify country according to present borders:
  - Country: \_\_\_\_\_
  - Unknown
- Country of birth unknown

### 2. Country of citizenship (for foreigners)

311. For identification of the stock of foreigners, the associated topic is country of citizenship. The topics "year/period of arrival" and "acquisition of citizenship" can serve to distinguish among persons in that group. The proposed questions for testing are set out directly below.

What is (person's) country of citizenship?

- (This country) \_\_
- (This country) and another country (or other countries); specify according to present borders:
  - The other country (countries) \_\_\_\_\_

- Another country (or countries); specify country according to present borders:
  - Country \_\_\_\_\_
  - Unknown
- Country of citizenship unknown
- No citizenship (stateless)

If desired, the following (optional) questions on method of acquisition of citizenship can be added:

**FOR CITIZENS OF (THIS COUNTRY) INCLUDING DUAL CITIZENS:**

1. Have you had the citizenship of (this country) since birth?

\_\_ Yes    \_\_ No → Skip next 3 questions

2. How did you obtain the citizenship of (this country)?

\_\_ By marriage

\_\_ By naturalization

\_\_ By option

\_\_ Other (specify) \_\_\_\_\_

[Note: The above response categories should be adjusted to include those appropriate to the country.]

3. What was your previous citizenship [specify according to present borders.]

Country \_\_\_\_\_    \_\_ Country unknown

4. In what year did you acquire the citizenship of this country?

Year \_\_\_\_\_    \_\_ Year unknown

312. Also proposed in this chapter are questions designed to enable identification of returning migrants and second-generation migrants. For countries that may wish to compile data on either population stock, see the following sets of sample questions. The sample questions should be tested before they are included in a census questionnaire.

### 3. Ever resided abroad (for returning migrants)

313. The country has the option of directing the suite of questions to (a) citizens only; (b) native-born persons only; or (c) all persons. The choice depends on which population subgroup's return is most relevant to policy, and on whether a topic on country of birth or country of citizenship has been included in the census.

**ASK OF PERSONS WHO ARE OVER 1 YEAR OF AGE OR WHO ARE CITIZENS OF THE COUNTRY WHERE DATA ARE BEING COLLECTED**

1. Has (person) ever lived outside (this country) for a period of at least 12 months\*?

\_\_ Yes

\_\_ No → Skip next 2 questions

\_\_ Don't know → Skip next 2 questions

2. When did (person) last arrive to live in (this country) for 12 months or more\*?

Year \_\_\_\_\_ Month \_\_\_\_\_    \_\_ Don't know

3. In which country did (person) last live? [Specify country according to present borders.]

Country \_\_\_\_\_    \_\_ Don't know

\*In their efforts to collect data on returning migrants, countries may also choose to use other duration thresholds pursuant to national practice.

#### 4. Country of birth of parents (for second-generation migrants)

314. Identification in the census of second-generation migrants first requires the inclusion of a question on country (place) of birth. Questions on country of birth of parents (see the following examples proposed) are then considered together with the question on country of birth.

##### ASK OF PERSONS WHO WERE BORN IN THE COUNTRY

1. Where was each of (person's) parents born?

(a) (Person's) father

\_\_ (This country)

\_\_ Another country [Specify name of country according to present borders.] \_\_\_\_\_

\_\_ Country of birth unknown

(b) (Person's) mother

\_\_ (This country)

\_\_ Another country [Specify name of country according to present borders.] \_\_\_\_\_

\_\_ Country of birth unknown

#### 5. Year or period of arrival in the country (for foreign-born persons or returning migrants)

315. Information on the year of arrival in the country of members of the foreign-born population helps distinguish, in that population, recent arrivals from those who arrived many years before. For the population of returning migrants, the question helps distinguish recent returning migrants from those who returned earlier.

**For countries where immigrants have the right to free movement in and out of the country after having obtained permanent or legal residence status:**

##### ASK OF PERSONS BORN IN ANOTHER COUNTRY

In which year and month did (person) first arrive in (this country) to live for a year or more?

Year \_\_\_\_\_ Month \_\_\_\_\_  Unknown

**For countries to which people migrate more than once, whether at different life stages or in a circular pattern such as for work:**

##### ASK OF PERSONS BORN IN ANOTHER COUNTRY OR OF RETURN MIGRANTS

In which year and month did (person) last arrive in (this country) to live for a year or more?

Year \_\_\_\_\_ Month \_\_\_\_\_  Unknown

#### 6. Main reason for migration

316. The question on main reason for migration is addressed typically to persons who have ever lived abroad for at least 12 months (see the example directly below). While it is apparent that in some countries, the target respondents are returning migrants, in others, the range of target respondents appears to be broader and includes foreign-born persons. A similar question may be asked of emigrants from the country, i.e., on main reason for emigrating abroad. More information on emigration is provided in chapter VII.

What was the main reason (name) came to live in this country?

- Employment (including military service)
- Education or training
- Marriage, family reunification or family formation
- Forced displacement (refugees, asylum seekers, temporary protection, etc.)
- Other reason (specify) \_\_\_\_\_

# Chapter VII

# Challenges in measuring emigration

## A. Issues associated with measuring emigration in population censuses

317. From the perspective of national census-taking, measuring emigration is similar to collecting data on deaths for demographical purposes in that, information on the persons concerned cannot be obtained from them directly because they are not living within national boundaries at the time the census is taken. While information on members of either group can be obtained directly from other household members still residing in the country, that information will encompass neither all emigration nor all mortality. Hence, it is not possible for a country to identify through a national census the stock of all emigrants who have left the country. The best that can be achieved is a partial picture.

318. In order for emigrants to be recorded in a population census, there must be someone left behind in the country to report on them. When the entire household has emigrated, which is often the case in long-term emigration, there is obviously nobody left behind to report on their emigration.

319. Even when there is someone in the country to report on persons who left, those who left a long time before may end up being omitted from the count. When there is a long period between the time of the emigrant's departure and the time of census enumeration, the emigration event may be forgotten; and even if it has not been forgotten, the accuracy of recall is often greatly diminished. Furthermore, the family members left behind (especially parents) may have died or emigrated themselves.

320. On the other hand, an emigrant might be double-counted, which would be the case if the emigrant belonged to more than one household while in the country of enumeration. One means of preventing this is to specify that an emigrant is to be enumerated only by the last household of which he or she was a member before leaving the country. However, the emigrant may still be double-counted if the members of the household of which that person was a member split up after his or her departure.

321. The census relies on a household member to be present at the time of the census to report information on emigrants. If the informant lacks knowledge regarding an emigrant and information on the details of his or her emigration, it will be difficult to obtain the missing information, since the emigrant him- or herself is not in the country at the time of enumeration. Under the self-enumeration method, consultations among household members might yield an optimal response; under the enumerator method, however, the possibility of achieving such a result is greatly reduced.

322. It is clear, then, that any approach to counting emigrants in population censuses will have significant limitations and will need to be utilized with caution. Further, any counts that is obtained is likely to be a lower bound.

## B. Collecting information on emigrants through an emigration module

### 1. Current practices

323. Countries with high emigration rates need data on the levels, trends and characteristics of emigration in order to develop an appropriate management policy. While indications of the extent of emigration may be extracted from administrative sources and other statistical repositories, that information is often limited to specific subgroups or is otherwise fragmented, deficient or non-existent. Thus, in spite of the above-mentioned challenges associated with the measurement of emigration through use of population censuses, countries that experience extensive emigration are increasingly including questions on emigration in their own censuses.

324. A significant number of countries attempt to collect data on emigration in their censuses through deployment of a short module of questions.<sup>22</sup> On the basis of that module, the head or other reference member of a household is asked to name (former) household members who have left the country to live abroad (i.e., emigrants). However, only a few countries specify the period of absence as a criterion for determining whether or not a person is to be listed as an emigrant. It is noted that, in contrast, in the present publication, it is stipulated that an absence from the country of a year or more as a condition that must be satisfied for a person to be considered an emigrant (see chap. II, para. 29).

325. After identifying emigrants according to the country's specifications (which may or may not coincide with the specifications set out in this publication), the module gathers a limited amount of relevant information on each emigrant. Information on the demographic characteristics age and sex is almost always obtained, as well as information on two distinguishing characteristics relevant to emigration, namely, year of departure and destination country (and/or country of current residence). Some countries include additional questions, for example, on reason for migration (or for staying abroad) and on an emigrant's educational attainment and occupation.

326. Through the question on year of departure, it is possible to obtain information on how long the emigrants have been away from the country and thereby identify those absent from the country for less than 12 months. Through the question on country of destination and/or country of current residence, the country conducting the census can determine the destinations of their emigrants. This information also provides the opportunity to evaluate the data so obtained by comparing them with receiving countries' immigration data. However, as stated in the previous subsection, the count of emigrants obtained from the census can be but a partial one.

327. Among the data of greatest value to be garnered from this collection process are perhaps those on emigrant characteristics such as age and sex, and educational attainment and occupation at the time of emigration. Information on educational attainment and occupation, which provides a basis for analysing the propensity to emigrate, is of interest to countries concerned about losing their highly educated and highly skilled citizens through emigration. These data are not without bias, however, as members of entire households that emigrated without leaving anyone behind to report on them often have characteristics that are different from those of individual household members who emigrated but did leave household members behind to report. The former category consists of household members who exhibit a wide range of demographic and social characteristics, while the latter category may include household members who represent a concentration of age groups (for example, those of prime working age) or skill sets (for example, construction workers and nurses).

328. The examples provided below illustrate some of the good practices derived from countries that collected emigration data in the 2010 round of population censuses. Other examples illustrate practices that are not likely to secure satisfactory results. Because of their critical importance, the or criteria used by countries to identify emigrants is dealt with in detail below.

329. The remainder of the present section is divided into five subsections, each corresponding to a topic, namely: (a) identifying emigrants; (b) demographic and social characteristics of emigrants; (c) year of departure of emigrants; (d) country of emigration; and (e) reason for emigration.

#### **(a) Identifying emigrants**

330. It is to be noted that of the 35 countries that included an emigration module in their census questionnaire, only six specified length of absence in the question used to identify emigrants. Three countries specified a period of absence of "12 months or more", consistent with the criterion established in this publication (chap. II); and the other three specified a period of "six months or more". With regard to the countries that recorded all former household members who have been living abroad for 6 months or more as emigrants, it would be possible to trim down their count to include only those who have been abroad for 12 months or more, and thereby attain consistency with the definition in this publication, if the month and year of departure were also requested.

<sup>22</sup> In the 2010 round of censuses, 35 out of the 119 censuses examined included a short emigration module.

### Example A

#### LIST 2. PERSONS THAT LIVE ABROAD

Is any previous member of this household living abroad for 12 months or more?

[Do not include children born abroad who have not lived in this household.]

Yes – (Fill in the table)

No – Go to LIST 3.

### Example B

#### EMIGRATION OUTSIDE THE COUNTRY

[Answer for all former household members aged 15 or over who have been living continuously for 6 months or more outside (country) (or intend to do so).]

E01. Has any former member of this household been living continuously for 6 months or more outside (country)?

Yes – Record the following information (for each person listed) ...

No – Go to P00.

331. In examples A and B, a question is asked about former household members who have been away for a period of time specified as a minimum. The period given in example A is in line with the criterion of a stay abroad of at least 12 months as established in chapter II of this publication. It is good practice for this period of absence to be specified in the question so as to ensure that those who have been away for less than 12 months are not listed. In example B: (a) the period specified is only 6 months, or longer, which obviously falls short of the 12-month threshold; and (b) persons who are under 15 years of age are excluded, which means that the count of former household members who are away will be incomplete. As noted in the previous paragraph, it would be possible to obtain a count of those who have been living abroad for 12 months or more if the month and year of departure of each emigrant were also requested.

332. In their questions, most countries do not specify the period of the stay abroad but, instead, employ wording that implies that the stay is a long one, or even permanent. A question may ask for information on persons who, for example, “used to live in your household and are currently abroad”, who “are living permanently in another country” or who, simply, “are living abroad” Questions could be phrased, *inter alia*, as follows:<sup>23</sup>

- (a) “Was any person who used to live with you living in another country on July 31, 2010?”
- (b) “Is any person who was a member of this household currently living in another country?”
- (c) “Has any member of this household left to live permanently in another country?”

333. All three questions seek to determine whether the person concerned fulfils the criteria of no longer being a member of the household and of living currently in another country (although it would not be possible to determine whether the second criterion has been fulfilled based on the response to question (c)). While the questions may seem clear-cut, without specification of the 12-month period of absence, they remain susceptible of different interpretations by different respondents.

<sup>23</sup> The date given in question (a) is the date of the country’s census.

334. These sample questions designed to report on emigration leave the time frame open, thereby implying that everyone who has ever left the household to live abroad and is still abroad is to be listed as an emigrant. The farther back the data go – with no time frame imposed – the less complete and accurate those data will be, owing to attrition of memory and problems related to recall (see sect. A). More than half of the countries that used emigration modules dealt with this issue by specifying a time frame as a basis for listing persons as emigrants, which entailed asking for information on persons who left the country in the last [X] years (see examples C to E below). The most widely used time frame is the last 10 years (used by eight countries) followed by the last five years (used by only five countries), although limiting the time frame to a short period like five years generally improves the quality of the data. Another important reason for limiting the time frame in the question to the last [X] years is that current or recent emigration is generally of more interest to countries. In the following examples, the question does indicate a time frame.

### Example C

SECTION 2: EMIGRATION. This section will collect basic information on persons who have permanently moved abroad in the past 10 years.

2.1 Between the year 2000 and now, did anyone in your household move to live abroad and is he or she still living there?

- Yes
- No → Go to SECTION 3
- DK/NS → Go to SECTION 3

### Example D

TE 5. DEPARTURES ABROAD DURING THE LAST FIVE YEARS

DEP1. Are there persons who were members of the household who settled abroad (emigration) during the last five years?

### Example E

4.1 Did anyone from this household go to live abroad since January 1, 2010?

- Yes
- No → Go to Q4.3
- Not stated

335. The examples above present three different time frames for reporting emigration of household members: 10 years, 5 years and 15 months, respectively. Most countries that indicated a time frame used 5 or 10 years, although five countries sought to list emigrants over a longer time frame, the longest (not counting the open time frame) being “the last 15 years”.

336. In example E, the question refers to a particularly short time frame of slightly over one year – 1 January 2010 to date of census, which was 4 April 2011. If those who departed in the year 2011 could be filtered out, the result would be the number who emigrated in the year 2010, constituting a one-year “emigrant flow”. Any result obtained is of course subject to the drawbacks already stated in section A, regarding emigrant information obtained from household members who remain in the country of enumeration.

337. In summary, the wording of the question aimed at identifying emigrants should specify: (a) an absence of at least 12 months from the country; and (b) the period within which emigration is to be reported. For the emigration reporting, a period of five years represents a reasonable span of

time, since it captures recent emigration and yields better quality data than those that cover a long period. On the other hand, a period of 10 years may be more suitable for countries with a low level of emigration, since it potentially captures a greater number of emigrants. Use of open (i.e., unspecified) time periods and periods exceeding 10 years should be avoided. The more distant the time of the emigrant's departure from the country, the greater the likelihood that departure will have been forgotten or will be inaccurately reported, owing to problems of recall or to the fact that nobody is left to report the departure.

### (b) Demographic and social characteristics of emigrants

338. Identification of an emigrant is followed by straightforward questions on his or her sex and age. Those questions were asked by all countries that included an emigration module in their census. A number of countries also included questions on social characteristics like highest educational attainment, occupation and marital status in their census.<sup>24</sup>

339. An important facet of the collection of data on the characteristics of emigrants that needs to be addressed is the time reference for those characteristics. For example, is it more useful to know the emigrant's age, educational attainment, occupation and marital status at the time of emigration or at the time of the census? (It is reasonable to assume that, usually, sex does not change.) For most countries concerned about losing their young and skilled citizens, information on the characteristics possessed by the emigrant at the time of emigration would be of greater relevance. However, in the 35 national census questionnaires that included an emigration module, a time reference of this type was explicitly specified in only 16. In the remainder, either it was the time of the census that was specified or there was no specification, which was taken to mean that the time in question was the time of the census.

340. Age at departure can be calculated from current age if information on the year or month of departure was also obtained. No such arithmetical operation is possible, however, for educational attainment and other social characteristics.

341. Examples F and G below contain questions on emigrant characteristics at the time of departure. A contrasting example will present a question on emigrant characteristics at the time of the census. As already noted, information on the characteristics of an emigrant at the time of departure is more useful to a country concerned about losing its skilled workers, as that information provides a better indication of the types of persons who have been leaving the country.

#### Example F

M5. Sex

1. Male
2. Female

M6. Age when moved \_\_\_\_

M7. Marital status when moved

1. Never married
2. Married
3. Widowed
4. Divorced
5. Legally separated
9. Not stated

<sup>24</sup> In the 2010 census round, of the 35 countries that included an emigration module in their census, 13 countries asked for highest educational attainment, 8 for occupation and 3 for marital status, of each emigrant.

**Example F (continued)**

## M8. Educational attainment

1. None
2. Preschool/Kindergarten
3. Primary
4. Secondary
5. Post-secondary/Technical/Vocational (non-tertiary)
6. College/University
7. Other \_\_\_\_\_ (Specify)
9. Not stated

## M9. Occupation when moved

[Please enter the occupation of the person who moved on the line below.]

\_\_\_\_\_

**Example G**

## 58 (a). Was (Person) male or female?

- 01 Male
- 02 Female

## 58 (b). What was (Person's) age when (Person) last left to live abroad?

- Age: \_\_\_\_
- 08 Don't know

## 59. What was (Person's) educational level when moved?

- 00 None (N)
- 01 Early Childhood Care and Education/Nursery School/Kindergarten (ECCE/N/K)
- 02 Primary (P)
- 03 Secondary (S)
- 04 Post-Secondary (PS)
- 05 Tertiary/Non-University (T/NU)
- 06 Tertiary/University (T/U)
- 07 Other (O)
- 08 Don't know (DK)
- 09 Not stated (NS)

## 60. What was (Person's) occupation? [For persons aged 15 or over]

- Occupation: \_\_\_\_\_
- 08 Don't know (DK)

342. Example H consists of a question on the emigrant's current characteristics. While age at the time of departure can be derived from information on year of departure, characteristics such as educational attainment and occupation at the time of departure cannot be derived in that way. Some of those characteristics – for example, the educational attainment of a person who went abroad to pursue higher education – may have changed after the emigrant left his or her country of origin, and the household member serving as the informant may not have knowledge of the current characteristics of the emigrant.

343. Information contained in responses to questions on characteristics at the time of enumeration reflects current characteristics of emigrants. For the country of enumeration, current information on emigrants serves a different purpose from that of information on characteristics at the time of departure. The capture of current emigrant profiles would be more helpful to, say, a country whose desire is to facilitate the participation of its diaspora in that country's economic and social development.

## Example H

EM2. Name and surname \_\_\_\_\_

EM3. What is (name)'s sex?

1. Female
2. Male

EM4. How old was (name) at his/her last birthday? \_\_\_\_

[If less than one year enter 00, if 95 years or over enter 95. Enter 99 for don't know.]

EM5. What is (name)'s highest grade/standard or level of education completed?

[Enter codes from code list 3.] \_\_\_\_

EM6. What is (name)'s professional training/occupation?

[Describe the type of work in the space provided.] \_\_\_\_\_

### (c) Year of departure of emigrants

344. An important piece of information on emigrants is the length of their stay abroad, which is typically obtained from responses to a question on the year of their departure. Almost all countries that include a question on emigrants also include one on the year – in some cases, both the year and the month – of their departure from the country. The question or question space is simple, as illustrated in the following examples:

(a) What was (person's) year of departure? \_\_\_\_

(b) Year of departure: \_\_\_\_

(c) Date of departure: [Enter the month and year of departure for abroad.]

345. Some countries ask for the date of the emigrant's last departure to live abroad. Information on last departure is particularly relevant in countries where people tend to emigrate multiple times, including in a circular pattern. For example, a contract worker may return home for a period of at least 12 months before accepting another contract to work abroad for at least a year. However, without accompanying instructions in the questionnaire – stating that the term “last departure to live abroad” refers specifically to the last departure that was preceded by a stay of at least 12 months in the country of origin – the term can be misinterpreted as signifying the departure following the last visit to or vacation in the home country. Below are two examples of a question on last departure.

(a) In what year did (person) last move to live abroad? \_\_\_\_

(b) In what year and month did (name) go to live in another country the last time? \_\_\_\_

### (d) Country of emigration

346. A question on country of emigration may refer to country of destination or country of current residence. In possible recognition of the fact that emigrants can and do move from their first destination country to another, half of all countries with a census question on country of emigration referred to country of current residence, while the other half asked for country of destination or country migrated to (see the examples directly below):<sup>25</sup>

<sup>25</sup> In the 2010 round of censuses, 32 countries included a question on country of emigration in their questionnaire (see Statistics Division census questionnaire database, as of 1 March 2014). Sixteen out of those 32 countries included a question on the current country of residence, while 15 included a question on “country of destination”, without specifying whether it was the first or final destination. On the other hand, one country asked for both first and final destination.

(a) Please write the name of the country migrated to on the line below:

\_\_\_\_\_

(b) In which country is his/her current residence?

(c) Where is this person currently residing?

347. Countries that wish to include this question should carefully determine whether it is information on the country of destination at the time of departure that is more useful to them or information on the current country of residence.

**(e) Reason for emigration**

348. Having a strong interest in knowing why their citizens emigrate, countries include a question in their questionnaire on the emigrant's reason for leaving the country or staying abroad.<sup>26</sup> One problem associated with that question stems from the fact that the informant may not be aware of the emigrant's main reason for leaving. Some countries include a question on the emigrant's current activity abroad; however, that question has the same drawback as the question on reason for emigration, as the informant is not necessarily kept abreast of the emigrant's current activity abroad. Hence, information derived through either question should be interpreted with caution.

349. The following are examples of the wording used by countries to elicit responses to the question on reason for emigration:

- (a) Reason for leaving
- (b) Main reason for migrating
- (c) Activity abroad

350. It is suggested that this question ask for the main reason for emigration and that only one response be recorded. The response categories may be pre-coded, and an "other, specify" category may be included. The reasons most frequently included in countries' pre-coded lists are the same as those for immigration, namely:

- Employment (or work)
- Study
- Family reasons/family reunification

351. There may be other reasons more specific to the country concerned which are related, for example, to a (high) crime rate, business, marriage, medical/health issues and work in mining or in domestic service.

## 2. How good are data obtained from emigration modules?

352. There is an expectation that (a) the information gathered through census emigration modules can be exploited for the purpose of compiling statistics on population stocks related to emigration, including on their composition, disaggregated by age and sex, as subject to the caveats mentioned earlier; and (b) that an important use of the data gathered through the application of the emigration module lie in their shedding light on the characteristics, destinations (including location of major

<sup>26</sup> About half of the 35 countries that included an emigration module in their census asked a question on the emigrant's reason for leaving the country or staying abroad.

destinations) and motives of emigrants, encompassing their qualifications, length of stay abroad, place of residence and, to some extent, reasons for leaving.

353. For the countries that included an emigration module in the 2010 round of censuses, there is, as yet, not a great deal of information on the quality and usefulness of the data gathered. Indeed, based on the drawbacks already pinpointed, it is not expected that the data obtained will paint a complete picture of emigration. For better identification and understanding of the limitations of those data, they should be evaluated against other available sources of data on emigration such as administrative records and specialized surveys. Another means of evaluating the quality of the data is through detailed comparisons of the emigration data collected from the censuses with the immigration data of at least the major receiving countries.

354. One example of such an evaluation is the comparative analysis conducted by the Economic Commission for Europe (ECE) of the quality of data collected through the emigration modules used in their population censuses by four countries (Georgia (2002), Poland (2002), Republic of Moldova (2004), and Tunisia (2004)) in the period 2002–2004 (Chudinovskikh and Bisogno, 2008). The data were compared with statistics produced by the main countries of destination (Canada, Germany, Israel, Italy, Russian Federation, Spain, Ukraine and United States of America). Comparative analysis involving various sources often confronts the problem of non-congruence in respect of population universe, method of data collection, definitions and reference period. Those complications were indeed encountered in the ECE study, which had to deal with the added disadvantage of, among others, a lack of detail in the emigration data (for example, inadequate disaggregation of demographic characteristics by country of destination). Nevertheless, the exercise showed that emigration data obtained from the censuses, for the most part, largely underestimated overall size of emigration, as compared with data from the receiving countries. The study concluded (see executive summary, para. 7) that, while the emigration modules are not able to provide an accurate count of the total number of emigrants residing abroad, certain emigrant groups can be relatively well covered, namely:

- Emigrants who left the country in recent years (up to five years before the census).
- Emigrants who are more likely to keep close ties with their country, mainly because of close family ties and/or geographical proximity.
- Emigrants who are still in the registration system of the country of origin, where such administrative registers exist.

355. The difficulty of obtaining a reliable estimate of the size of emigrant populations has prompted some scholars in the areas of demography and migration to develop indirect estimation techniques for emigration. Although those exercises were conducted in the early 1980s, they can be a subject for consideration by countries that rely on censuses for statistics on migration, and already include questions in their census on children ever born alive and children surviving. The methods are described in the following section.

### C. Indirect estimation of emigrant stock from a population census

356. Indirect estimation techniques for measuring emigration are not new. They were first proposed by the International Union for the Scientific Study of Population (IUSSP) Working Group on the Methodology for the Study of International Migration to complement existing methods for the measurement of emigration. Two approaches were developed. The first method, developed by Jorge L. Somoza and described in his contribution to the IUSSP publication entitled *Indirect Procedures for Estimating Emigration* (Somoza, 1981), is based on information obtained from mothers on the place of residence of their surviving children. The second method, developed by Kenneth Hill, is based on information obtained from all respondents on the place of residence of their siblings (Hill, 1981). That method has not been recommended for use in censuses because of the complications involved in gathering the data and the significant added cost for data that have no other significant use. Therefore, only the method based on the residence of children is described below.

## Residence of children method

357. The *residence of children* method arose out of the development of the substantial demographics literature on indirect estimation of mortality in countries with poor death registration systems. In the aforementioned IUSSP publication (IUSSP Working Group on the Methodology for the Study of International Migration, 1981), it was indicated that questions in their censuses that had been formulated to elicit information on the survivorship of children could be readily modified to provide indirect estimates not only of mortality but also of emigration. For those countries that already include questions in their census on survivorship of children, utilization of that method entails a modification, that is, the addition of questions on the current residence of surviving children. Although the question on the whereabouts of surviving children has its limitations, the difficulty of obtaining reliable data on emigration might make its inclusion worthwhile for some countries.

358. The approach is based on a question directed at the members of the adult female population of a country on the number of surviving children who currently reside outside of the country. Somoza argues that that is a reasonable approach, since most recent emigrants are young and their mothers are likely to still be alive and therefore able to report on them. Moreover, in that case, there is only one possible informant.

359. One of the major advantages of an approach based on the topic of the residence of children is that it relies on data that reflect the demographic ties between individuals rather than their socio-economic ties, such as through household membership. The estimation methods used can therefore be based on demographic models that are susceptible of testing.

360. The conventional question in the census on mortality asked of all adult women is: "How many children have you ever born alive and how many are still living?". For the estimation of emigration, each surviving child needs to be placed in one of three separate categories according to his or her whereabouts at the time of the census, i.e., "in the country of census enumeration", "abroad" or "unknown"; and each category of children needs to be subdivided by sex. The question should be asked of all females aged 15 or over, and not just those aged 15–49.

361. On the basis of the number of children living abroad classified by sex, and age of mother, it is possible to estimate the total number of persons living abroad. That estimate requires an adjustment so as to include two categories of emigrants: persons who are abroad but whose mother is dead and therefore cannot report their absence from the country, and persons whose mother cannot report them because she herself is an emigrant.

362. The aim is to provide an estimate of the total number of emigrants and their distribution by age and sex. The process, which is elaborate, relies heavily on models and implicit assumptions regarding the relationships among fertility, mortality and migration.

363. In a critical review (Zaba, 1987), it was noted that the estimates of total emigration yielded by that indirect method (entailing the required adjustments mentioned in para. 361) are about twice the number of emigrant children as reported and counted in the census. This suggests that the adjustments for orphanhood and maternal emigration result in twice the number of emigrants reported by mothers.

## D. Using immigration data from receiving countries to estimate emigration

364. The limitations of the census conducted by the country of origin in terms of its ability to measure stocks of emigrants has led to the use of the census data produced by the receiving country. The concept is simple. Since an emigrant leaving a country is an immigrant in the receiving country, his or her immigration can be counted in the receiving country. If all emigrants from a country can be traced and counted in a receiving country, then the receiving country can supply the country of origin with the data on emigrants.

365. This approach is by no means new. It has been used extensively by the Latin American and Caribbean Demographic Centre (CELADE) and academic researchers since the inception of the Project on Investigation of International Migration in Latin America (IMILA) in the early 1970s

(United Nations, Economic Commission for Latin America and the Caribbean, Latin American and Caribbean Demographic Centre, 2002). Further, the Organization for Economic Cooperation and Development (OECD) has extensively analysed immigrant and emigrant data compiled from censuses for OECD and non-OECD countries, and housed in the Database on Immigrants in OECD Countries (DIOC) and non-OECD receiving countries (DIOC-E) (United Nations, ECE, Conference of European Statisticians, 2014a). More recently, ECE and Eurostat conducted a data exchange exercise with the participation of 19 countries organized into four data-exchange groups in order to assess the feasibility of using immigration data of destination countries to improve emigration estimates in countries of origin (United Nations, ECE; and Statistical Office of the European Union (EUROSTAT), 2010). In the ECE/Eurostat study, both stocks and flows were examined, and guidelines were provided for exchanging data.

366. The following are some of the limitations and challenges associated with utilization of this approach (taking into consideration only census data exchange):

- The different undercount rates for total population and international migrants, with respect mainly to undocumented immigrants. It is generally believed that such immigrants, even if enumerated, often conceal their true origin by declaring in the census that their place of birth is the receiving country.
- Information on immigrants cannot be obtained from all receiving countries, but rather only from those that have held a census and separately tabulated the number of persons originating from each country. The irregular periodicity of censuses in many countries is a drawback.
- International comparability is poor: censuses are conducted in different years, countries use different approaches in enumerating their population and the definitions used for “immigrant” and “emigrant” also vary. Furthermore, classifications used are not the same across countries for many characteristics of the population, for example, education and occupation.
- Information required by sex and age is not always available, since some countries publish global data on the immigrant population according to country of birth. Data on duration of residence and field of study are also not provided or, when they are provided, are sometimes aggregates.

367. The challenges identified are significant. However, with increasing interest in data exchange and international cooperation, there is reason to hope that the potential of that approach with respect to measuring emigration will improve. The gathering of immigration data can complement the increasing efforts by countries to include emigration questions in censuses.

368. To facilitate and promote data exchange and sharing, there needs to be a well-equipped clearinghouse for collection and storage of the data. Regional cooperation is already evident in Latin America and Europe. Since international migration extends beyond regional borders, establishment of a global clearinghouse with regional tie-ins may be the next goal.

369. At the level of the individual country, the approach calls for countries to provide their data on immigration to the countries from which the immigrants originate. Countries can then assemble the sets of census data from each of the destination countries to which their nationals have emigrated. With that information, they can synthesize a census of emigrants that would provide a snapshot of their emigrant population at around the same time that their own national census provides a picture of their resident national populations.

370. Receiving countries need to make separate data sets available for each country of origin with whom they have a data-sharing arrangement. It is crucial that the data be available by individual country so that censuses of emigrants can be compiled for separate countries. It may well be that a minimum population size needs to be specified in order for the full data set to be provided. However, the actual numbers should be provided for all countries of birth.

371. Although the approach may impose some burdens on the receiving countries participating in the data exchange, it generates benefits for both parties – the sending countries and the receiving countries. The data compiled by the receiving countries can be used to analyse their own immigrant

population; and with data exchange, they will benefit from the information on their own emigrants that they obtain from the countries of destination.

372. In the exchange of data, those compiled by the receiving countries can be based on either the variable of country of birth or the variable of country of citizenship. There needs to be an awareness, however, that when data for the country of citizenship are used, cases of dual citizenship could become a complicating factor, that is, a citizen of the sending country might also be a citizen of the receiving country, in which case, data on the person in question will not be included with the data on foreigners.

373. Also important is the disaggregation of data for exchange based on duration of residence in the receiving country. Certain socioeconomic characteristics of migrants are also crucial, such as sex, age, level of education, labour-force status and occupation.

## E. Proposed questions for use in collecting emigrant-related data

374. *Principles and Recommendations for Population and Housing Censuses, Revision 3* does not cover the collection of information that may identify or distinguish emigrants. Given the intrinsic problem of capturing data on emigrants in their country of origin (see sect. A), the value of the data collected has not been established and needs to be assessed in the years to come. In the meantime, more and more countries appear to be interested in requesting information from members of their resident population on former household members who have emigrated.

375. Sample questions are provided in the following subsections to help countries formulate their own questions for identifying and characterizing emigrants. The educational attainment levels listed in subsection 3 follow the classification of educational attainment levels (ISCED-A) introduced in 2011 into the International Standard Classification of Education (ISCED), developed by the United Nations Educational, Scientific and Cultural Organization (UNESCO).<sup>27</sup> As with any new questions, they must be thoroughly tested by individual countries and modified to fit their situation.

### 1. Identification

376. The following question could be asked to identify if former household members have emigrated:

#### HEAD OF HOUSEHOLD OR REFERENCE PERSON

In the last five\* years, has any former member of this household left to live abroad for at least 12 months and is he or she still living abroad now?

Yes → Please list them by name and proceed to the next questions for each.

No → End of emigration module.

\* *Note:* If emigration is a relatively rare event, a period of 10 years could be used, although it should be kept in mind that the longer the reference period, the greater the likelihood that people will make recall-related errors.

How many have left to live abroad for at least 12 months and are still living abroad now?

<sup>27</sup> Details on the classification are available at [uis.unesco.org](http://uis.unesco.org).

And a table can be constructed to record information on each person identified as having emigrated, for example, with the following headings:

Person's name				
Sex				
Age (in years) at departure				
Year and month of departure	Year		Month	
Country to which the person moved to live for at least 12 months <sup>a</sup> (specify country according to present borders)				
Person's main reason <sup>b</sup> for leaving the country to live abroad?				
Educational attainment <sup>c</sup> at departure (for persons 10 years of age or over at departure), optional				
Occupation at departure				

<sup>a</sup> A pre-coded list of countries may be used if only a few countries are primary destinations. In that case, "Other, specify \_\_\_\_" should be included in the list.

<sup>b</sup> Response categories for reasons should encompass the main reasons applicable to the country. Categories should be consistent with those utilized in the question on main reason for migration.

<sup>c</sup> Response categories should be derived from the national standard classification.

## 2. Year of departure

377. The following question could be asked about when a person emigrated:

### ASK FOR EACH PERSON IDENTIFIED AS AN EMIGRANT

In what year and month did (name) leave the country to live abroad for at least 12 months?

[Enter the year and month if emigrant departed this year or last year. Otherwise, enter only the year.] \_\_\_\_\_

*Note:* If the emigrant left the country more than once to live abroad for 12 months or more, the year to be recorded is that of the departure after the last stay of at least 12 months in the country of enumeration. It should not be the year of departure after the last short visit to the country of enumeration.

### 3. Demographic and social characteristics

378. The following questions may be asked to obtain information on the demographical and social characteristics of emigrants:

#### ASK FOR EACH PERSON IDENTIFIED AS AN EMIGRANT

1. Is (name) male or female? \_\_ Male \_\_ Female
2. How old was (name) when he/she left the country to live abroad for at least 12 months?  
[Record the age in completed years.] \_\_

Questions 3 and 4 directly below are optional. The response categories for educational attainment should be adjusted to reflect appropriately the situation of the country.

#### IF EMIGRANT WAS AGED 10 OR OVER AT DEPARTURE, ASK:

3. What was the highest level of education attained by (name) when he/she left the country to live abroad for at least 12 months?
  - Less than primary education
  - Primary education
  - Lower secondary education
  - Upper secondary education
  - Post-secondary non-tertiary education
  - Short-cycle tertiary education
  - Bachelor's or equivalent level
  - Master's or equivalent level
  - Doctoral or equivalent level
  - Other, specify \_\_\_\_\_
  - Don't know
4. What was (name)'s occupation when he/she left the country to live abroad for at least 12 months? \_\_\_\_\_

379. If a country is more interested in the current characteristics of its citizens who are abroad, all the above questions on demographic and social characteristics at the time of departure can be replaced with questions on those characteristics at the time of enumeration.

### 4. Country of emigration

380. The following question may be asked about the country of emigration:

#### ASK FOR EACH PERSON IDENTIFIED AS AN EMIGRANT

To which country did (name) move to live for at least 12 months?

[Specify country according to present borders.] \_\_\_\_\_

*Note:* A pre-coded list of countries may be used if destinations are concentrated in a few countries. In such cases, the category "Other, specify \_\_\_\_\_" should be included in the list.

## 5. Main reason for emigration

381. The following question may be asked about the reason for emigration:

### ASK FOR EACH PERSON IDENTIFIED AS AN EMIGRANT

What is (name)'s main reason for leaving the country to live abroad?

- Settlement (long-term/permanent stay)
- Employment (including military service)
- Education or training
- Marriage, family reunification or family formation
- Forced displacement (e.g., of refugees, asylum seekers, those seeking temporary protection)
- Other reason (specify) \_\_\_\_\_

*Note:* Response categories for reasons should be adjusted to reflect the main reasons that are applicable to the country concerned.

## 6. Residence of surviving children

382. Questions aimed at assessing emigration based on information relating to residence of children still living, using an indirect method, are set out below. It should be noted that questions about children ever born alive and children who are still alive may have already been included in the census questionnaire. The country should determine through testing how and where the question on residence of surviving children should be placed in the questionnaire.

### ASK OF ALL WOMEN AGED 15 OR OVER

1. How many children born alive have you had? Please indicate the number of male and female children separately.

Number of males \_\_ Number of females \_\_

2. How many of your children are still alive and living in this country? Please indicate the number of males and female children separately.

Number of males \_\_ Number of females \_\_

3. How many of your children are still alive and living in another country? Please indicate the number of male and female children separately

Number of males \_\_ Number of females \_\_

[To be filled in by enumerator] Not known whether the children are living in this country or abroad.

Number of males \_\_ Number of females \_\_

383. Alternatively, a small table can be used to record the information, as shown below.

### Children ever born alive, children still living and residence of living children

	Male	Female	Total
Number of children born alive			
Number of children still living, <i>of which:</i>			
Living in this country			
Living in another country			
Not known whether living in this country or abroad			

# Chapter VIII

## Estimating recent migration and net international migration from population censuses

384. Population censuses are widely recognized as the major source of statistics on international migrant stock (see chaps. VI and VII). However, data collected in population censuses through use of the census question on place of usual residence at a specified time in the past can be exploited to produce rough estimates of recent international migration. The most common time frames utilized in that regard are five years and one year prior to the census.

385. Net international migration can also be estimated for an intercensal period, that is, the period between two censuses. The method adopted uses population data from the two censuses, which, in most cases, are 10 years apart. Net migration trends over decades may be examined through the estimation of migration in a series of successive intercensal periods.

386. Indications of recent international migration are treated in section A, and the estimation of net international migration through use of the data from two censuses is elaborated in section C.

### A. Indications of recent international migration

387. From a question included in the population census for the purpose of studying internal migration, it is possible to derive an estimate of recent international migration, although there are some limitations. The resulting statistics do not provide an estimate of migration flow but, rather, constitute a rough “net measure” of recent immigration. This measure is more appropriately described as the count of surviving immigrants aged 5 or over (or aged 1 or over) at the time of the census (see subsect. 1 (a) on limitations of the data and statistics).

388. The relevant question in the census is on place of residence at a specified date in the past. Alternatively, the relevant question is in fact a pair of questions: on duration of residence and place of previous residence, both of which are core topics in *Principles and Recommendations* and are recommended for inclusion in every population census.

#### 1. Use of data on place of residence at a specified time in the past

389. Many countries include in their census a question on each person’s place of residence at a specified time in the past, usually five years ago or one year ago,<sup>28</sup> which is, of course, inapplicable if the person was not yet born. While responses are routinely recorded according to territorial divisions within the country, most censuses allow a foreign country to be specified if the reported residence was abroad.

390. If a person is a usual resident in the country of enumeration at the time of the census but reported a foreign country as his or her place of usual residence five years (or one year) ago, he or she is considered to have immigrated within the last five years (or within the one year) before the census. That person may have stayed in the country for only a few months at the time of enumeration; however, as long as he or she was enumerated as a usual resident in the census, it is assumed that the person’s status as such had been established, for example, through ascertaining the intended period of stay.

391. Information on residence at a specified date in the past provides an important tool for examining immigration over the previous period. To some extent, it also allows for the identification of returning migrants, since citizens who were living abroad five years ago or one year ago but are usual residents in their home country at the time of the census are in fact returning migrants. When the foreign country is specified in the response to the question on place of usual residence five years ago or one year ago, the number of immigrants or of returning migrants can be estimated by country of previous residence (see also box 8.1)

<sup>28</sup> In some cases, the question asks about place of residence five years and one year ago.

**Box 8.1****Is a question on place of usual residence at a specified time in the past included in national censuses?**

In the 2010 round of censuses, 71 out of the 119 countries whose questionnaires were available for examination included a question on place of residence at a specified time in the past. Of those 71 countries, 59 asked for the name of the foreign country if residence was abroad.

The number of countries that asked for information on place of residence five years ago was greater than the number that asked for information on place of residence one year ago (44 versus 28). Eleven countries asked for information on residence both five years and one year ago, and nine asked for information on place of residence at the time of the last census.

*Source:* United Nations, Statistics Division, Census questionnaire database, as of 1 March 2014.

392. The question on place of residence five years ago can provide a useful estimate of the number of recent immigrants, while the question on place of residence one year ago can provide an indication of net migration for the 12 months leading up to the census. However, as mentioned earlier, some important caveats are in order with regard to the viability of those estimates (again, see subsect. 1 (a) on limitations of the data and statistics). On the other hand, there are advantages to that approach: the question needed is very simple and detailed sociodemographic characteristics are available for these immigrants, since information on them is collected in the census.

393. The question on place of residence one year ago facilitates a more precise timing of the migration, although the representativeness of that short period is sometimes called into question. The use of the five-year period not only mitigates that problem, but also allows capture of a larger number of immigrants, which is especially advantageous for countries with low levels of immigration. The disadvantage is that the migration period stretches over a longer period with the accompanying risk of an increase in the number of recall errors made by the respondent.

394. Some countries peg the question on place of residence in the past to the time of their last census, which, in most cases, was around 10 years prior, although in one case, the length of time was 22 years. With regard to estimating recent immigration, data on place of usual residence at the last census would be of less practical value compared with data from a more recent time, such as one or five years ago.

**(a) Limitations of the data and statistics**

395. Within the context of international migration, the question on place of usual residence at a specified date in the past identifies usual residents, at the time of the census, who were living outside the country on the specified past date, that is to say, immigrants who entered the country during the specified 5-year (or 1-year) period. However, that count is deficient as an estimate of the number of immigrants who entered in the specified period, because it covers only persons who were alive both on the census date and the specified date in the past, and are residents of the country of enumeration on the census date. The following immigrants are excluded:

- Children under 5 years of age (or 1 year of age) who were born abroad and immigrated during the specified period.
- Immigrants who entered and died (in the country of enumeration) before the census date.
- Immigrants who entered and departed before the census date.

396. Still, the count cannot be considered an estimate of net migration for that period because it excludes only a fraction of the emigration that occurred in the specified period – namely, the departure of those who entered during the period (named in the third bullet point directly above) – since the count also excludes departures during the period of persons who were living in the country *prior* to the specified period. It would be more correct to regard the count of immigrants based on the above approach as comprising surviving immigrants aged 5 or over (or 1 year or over) at the time of the census.

397. Finally, it should be emphasized that the data obtained through the question on usual residence at a specified date in the past is not an estimate of *migration flow*, which is better collected through administrative registers that count migration *events*. An immigrant count derived from the census question on usual residence one year ago is expected to be lower than that based on annual migration flow data from reliable population registers. The factors discussed in paragraph 395 contribute to this disparity, along with the fact that the census does not capture multiple migrations by the same individual. In a study undertaken by the Swiss Federal Statistical Office (United Nations, Economic Commission for Europe, Conference of European Statisticians, 2014b), it was found that, compared with register-based annual flow data, stock data from register surveys on the question “place of residence one year ago” underestimated annual international inflows by as much as 43 per cent in 2011 and by 30 per cent in 2012 (para. 22). For the many countries that do not have migration flow data, however, the data need may be filled by an estimate of the number of immigrants from the response to the question on place of residence one year ago.

**(b) Examples of questions on residence at a specified time in the past**

398. The following two examples show how countries framed the questions on place of usual residence five years ago and one year ago, and worded the response options in the 2010 round of censuses. The questions in example A are highly precise. They use the phrase “usual place of residence” and provide a specific date. In example B, the (simpler) phrase “where did you live” is used in the question proper, but the question is immediately followed by a detailed explanation. Such elaboration is helpful especially when the questionnaire is to be self-administered, as is the case for example B.

**Example A**

QII-4.2. Where was your usual place of residence one year ago (9 October 2010)?

- 1) In this dwelling
- 2) In this municipality but in a different dwelling
- 3) In a different municipality. Specify the municipality and abbreviation for the province \_\_\_\_\_
- 4) Abroad. Specify the country \_\_\_\_\_

QII-4.3. Where was your usual place of residence five years ago (9 October 2006)?

- 5) In this dwelling
- 6) In this municipality but in a different dwelling
- 7) In a different municipality. Specify the municipality and abbreviation for the province \_\_\_\_\_
- 8) Abroad. Specify the country \_\_\_\_\_

**Example B**

P15. Where did you live one year ago? [Applicable only if 1 year of age or over.]

[Information should be based on last year’s place of usual residence where you normally spent most nights, regardless of temporary absences for recreation, work, school and so on]  
(Check one only)

1. In this dwelling
2. In another dwelling in the same locality in (country)
3. In another locality in (country)/in another country. State where \_\_\_\_\_

399. Since the question is on place of residence at a specified time in the past, it is relevant only to persons already living at the previous specified date. In other words, the question is to be asked only of persons aged 5 or over (or aged 1 or over) on the date of the census. It is recommended that this cue be included together with the question (as is the case in example B), especially if the questionnaire is to be self-administered.

400. As already noted, example B includes a clarification of the question, Where did you live one year ago? Since the country's census reference date was 20 November 2011, by definition usual residence one year ago would be the place where the person lived continuously for most of the 12-month period ending on 20 November 2010. The instruction refers, however, to last year's place of usual residence, effectively shifting the reference period from the 12-month period ending on 20 November 2010 to calendar year 2010 (i.e., the 12-month period ending on 31 December 2010). While simplification of the instruction through use of the phrase "last year" instead of "the last 12 months" may make the respondent's task of recall easier, the results could end up differing slightly from those obtained when that task is guided by a correct explanation of the question.

## 2. Use of the question on duration of residence and place of previous residence

401. Some countries collect information on duration of residence in combination with information on the place of previous residence. Like the question on place of residence at a specified time in the past, that pair of questions is intended mainly to obtain information on internal migration. The use of those questions, taken together, can be similar to that of the question on place of usual residence  $x$  years ago, with much the same effect and subject to the same limitations. In addition to the limitations, however, that pair of questions has a serious drawback with respect to identifying either lifetime or recent immigrants. If a person who moved into the country of enumeration subsequently made an internal movement, that person's previous residence would be recorded as the residence within the country; and his or her status as an international migrant would be overlooked.

402. Compared with the approach that entails asking the question on usual residence  $x$  years ago, that approach requires two questions. Because of its economy and simplicity, the single-question approach is preferred for the analysis of international migration.

## B. Proposed questions for use in collecting data related to recent international migration

403. As described in the previous section, a question on place of residence at a specified date in the past can be exploited to obtain an estimate of the number of recent immigrants, with those dates being, typically, one or five years ago. A brief discussion of the advantages and disadvantages associated with use of each specified date is provided in paragraphs 387–388 with a view to assisting countries in choosing the period most suitable for their purpose.

404. Questions on place of residence (a) one year ago and (b) five years ago are recognized as being applicable to identification of both internal and international migration. The present (short) section therefore proposes two such questions for consideration. And, as previously noted, countries should choose the period that they deem most appropriate for their particular situation. The formulation of the questions proposed benefited from a review of actual questions fielded by countries in the 2010 round of censuses. Like any new questions, they should be tested by the individual country before their use in the census.

## 1. Place of residence one year ago

ASK OF ALL PERSONS OVER 1 YEAR OF AGE

What was (person's) place of usual residence one year ago, that is, on (day/month/year)?

- 1) In this dwelling
- 2) In a different dwelling in this municipality
- 3) In a different municipality. Specify municipality and province  
Municipality \_\_\_\_\_ Province \_\_\_\_\_
- 4) In a different country. Specify the country \_\_\_\_\_

## 2. Place of residence five years ago

ASK OF ALL PERSONS OVER 5 YEARS OF AGE

What was (person's) place of usual residence five years ago, that is, on (day/month/year)?

- 1) In this dwelling
- 2) In a different dwelling in this municipality
- 3) In a different municipality. Specify municipality and province  
Municipality \_\_\_\_\_ Province \_\_\_\_\_
- 4) In a different country. Specify the country \_\_\_\_\_

## C. Methods for estimating net international migration from two censuses

405. Data from two consecutive censuses can be used to estimate net international migration in the intercensal period, that is, the period between those censuses, which may be an interval of 10 years or some other interval. The net international migration flow, as the name indicates, is a *net flow*; but because the census counts persons rather than events, a more accurate term might be *net international migrant flow*. For simplicity's sake, in the present section, the term used in this regard will be either *net migration* or *net immigration*. Roughly, it may be interpreted as referring to the number of persons who entered the country to reside therein during the intercensal period minus the number who left the country during the same period to reside abroad.

406. The most common method for estimating net migration employs the intercensal component equation, which demonstrates that the change in total resident population between the first and second census dates results from natural increase and migration. Natural increase is the difference between the number of births and the number of deaths that occurred in the country during the intercensal period. Net migration is calculated as a residual (see subsects. 1 and 2).

407. It is possible to estimate the intercensal net migration of foreign-born persons (i.e., the change in the count of the foreign-born population between two successive censuses), a measure that is also of interest to policymakers. The estimation method is similar to the one used to estimate the change in total population between two census dates. Addition of the total number of deaths that occurred in the total foreign-born population during the intercensal period to the number of persons associated with the change in the count of the foreign-born population between the two census dates yields an approximation of net migration of foreign-born persons in the intercensal period. The approximation excludes native-born persons who may have returned to live in their birth country (native-born immigrants), as well as native-born persons who have emigrated. An elaboration of this method is given in subsection 3.

## 1. Intercensal component method

408. As previously noted, census data on total population serve as the basis for estimating net migration in the intercensal period (i.e., the period between two censuses). An estimate of the magnitude of net international migration can be derived from the aforementioned standard intercensal component equation, also known as the population balance equation. It demonstrates that the difference in total population between two census dates is the combined result of natural increase (births minus deaths) and net migration (immigration minus emigration) during the intercensal period. Hence,

$$P^1 - P^0 = (B - D) + (I - E) \quad (1)$$

where  $P^0$  is the total resident population at the time of the first census,  $P^1$  is the total resident population at the time of the second census, and  $B$ ,  $D$ ,  $I$  and  $E$  are, respectively, the estimated numbers for births, deaths, immigration and emigration, that occurred in the intercensal period

In the equation,  $P^1 - P^0$  is the net change in population,  $B - D$  is the estimated natural increase and  $I - E$  is the estimated net international migration.

409. Rearranging the terms of equation (1) yields the following general formula for estimating net international migration in an intercensal period:

$$I - E = (P^1 - P^0) - (B - D) \quad (2)$$

As noted, net international migration is derived as a residual. Neither immigration nor emigration can be obtained separately from the census. A positive value for  $I - E$  indicates that more people entered the country than left it; a negative value, that more people left the country than entered it.

### (a) Data quality issues

410. As net immigration is calculated as a residual, estimates may be subject to substantial error. That is because the population counts derived from censuses and the number of births and deaths derived from recorded vital statistics are all subject to unknown degrees of error, and errors inherent in each of the four components, if not corrected, can have a considerable additive impact. For example, the fact that population figures derived from each census are subject to coverage error can result in an undercount or in an overcount. If the population counts in the two successive censuses are skewed in the same direction (e.g., both are undercounts) and are of about the same magnitude, then the errors may offset each other to some degree. On the other hand, if the errors in the population counts from the successive censuses are skewed in opposite directions, then the problem will be amplified. It is therefore important that there be an adjustment made for the errors in each component, if known.

411. For the same percentage error, errors in population statistics have a greater effect on the estimate of net migration than errors in vital statistics. When the magnitude of migration is small, the relative error of net migration estimated by the intercensal component method can be quite substantial (Siegel and Swanson, 2004).

### (b) Evaluation of data quality

412. A number of methods can be used to evaluate the quality of the data required by the intercensal component method (for the variables  $P^1$ ,  $P^0$ ,  $B$  and  $D$ ). While those methods, which make use of data from household surveys, population registers and other administrative sources, are not covered in the present *Handbook*, they are discussed in a number of reference materials.<sup>29</sup>

413. *Census coverage*: Coverage error in a population census refers to an undercount or to an overcount, owing, respectively, to omission of persons who should have been included; or to duplicate enumeration or erroneous inclusion of persons. It must be pointed out, however, that coverage errors in a population census are inevitable and can be introduced at any of the various stages of

<sup>29</sup> See, for example, United States Bureau of the Census (1985); Moultrie and others (2013); United Nations (1955; 2010).

the census including design, data collection and data processing. Coverage error may be estimated through demographic methods or a post-enumeration survey. It is important to stress that, since the intercensal component method uses data from two censuses, the undercount or overcount level for each should be assessed.

414. *Coverage of births and deaths:* A complete count of births and deaths has been achieved when every event that has occurred within a specific time period is registered in the national system (United Nations, 2014). In a significant number of developing countries, however, birth and death events are not completely covered in the civil registration system, with the problem of undercoverage being particularly serious with respect to deaths. The quality of birth and death statistics derived from the registration system, if available, may be evaluated by comparing them with data collected through household surveys and censuses. Under the intercensal component method, it is important that birth and death statistics derived from deficient registers be adjusted for undercoverage.

## 2. Intercensal cohort component method

415. For countries that do not generate reliable vital statistics, one practical approach to estimating net migration in the intercensal period that has proved attractive is the intercensal cohort component method. Through application of that method, estimates of net migration for each age cohort are produced for both sexes, without there being a need for death statistics by age and sex. Instead, what is required are survival rates for each sex and age group, which may be derived from an appropriate life table or from the population census itself. Choice of such a life table would require knowledge of the infant or child mortality rate and the age pattern of mortality of the population. Those can be estimated from a recent household survey or from the census (see also subsect. 2 (a) on data quality issues).

416. For age (birth) cohorts whose members were already born by the date of the first census, the conventional forward survival procedure is encapsulated in the following formula:

$$I_a - E_a = P_a^1 - S \times P_{a-t}^0 \quad (3)$$

where  $I_a - E_a$  is the estimated intercensal net migration for the cohort aged  $a$  at the end of the period (i.e., at the time of the second census),  $P_a^1$  is the population aged  $a$  at the time of the second census  $P_a^1$  and is the population aged  $a - t$  at the time of the first census, with  $t$  being the number of years in the intercensal period. The factor  $S$  is the survival rate for this age cohort for the intercensal period of  $t$  years, that is, the probability of the cohort's surviving  $t$  years. If 5-year age groups are used, as is often the case,  $S$  may be represented more precisely as  $5S_{t(a-t)}$  for the cohort aged  $a$  to  $a+5$  years.

417. Net migration is calculated for each age cohort through application of equation (3). The calculations are carried out separately for each sex. In the case of the newborn cohort, for which the calculation is also carried out separately for each sex, the equation becomes

$$I_a - E_a = P_a^1 - S \times B \quad (4)$$

where  $B$  is the number of births that occurred in the intercensal period.

418. As indicated in equations (3) and (4), the  $t$ -year survival rates are applied to the population aged  $a-t$  at the time of the first census  $P_{a-t}^0$ , or to births in the intercensal period ( $B$ ), to obtain an estimate of the expected survivors  $t$  years older (i.e., aged  $a$ ) at the time of the second census. The difference between this expected population and the population counted at the time of the second census  $P_a^1$  is an estimate of net migration for the cohort aged  $a$ .

419. However, the value of  $I_a - E_a$  obtained from formula (3) reflects a tendency to overestimate the implied deaths in the intercensal period, since the average population exposed to the risk of death is lower than the initial population so exposed in the presence of emigration. In the case of newborn

cohorts, the level of exposure to risk is lower than in the full intercensal period, since births are spread over the entire intercensal period and are not clustered in the initial period. The remedy for the biases entails the introduction of an adjustment factor equal to the square root of the survival rate, which represents survival for approximately one half of the period (Siegel and Swanson, 2004). Thus, formulas (3) and (4) become, respectively,

$$I_{\alpha}-E_{\alpha}=(P_{\alpha}^1-S \times P_{\alpha-t}^0) / \sqrt{S} \quad (5)$$

and

$$I_{\alpha}-E_{\alpha}=(P_{\alpha}^1-S \times B) / \sqrt{S} \quad (6)$$

The calculated values are summed across all sex-age groups to obtain the value of total net migration for the intercensal period.

420. The above methods are explained in detail and illustrated by examples in the annex to this publication. The intercensal cohort component method may be applied not only to populations disaggregated by age group and sex but also to population segments that are fixed over time, such as those disaggregated by country of birth.

#### (a) Data quality issues

421. The data quality issues associated with births in the intercensal period and with coverage in the two censuses involved, as presented in the above subsection on the intercensal component method, also apply to the intercensal cohort component method. Inaccuracies in the number of births calculated (or in the birth rates used for estimating the number of births in the intercensal period) will compromise the reliability of the net migration results. In the case of population data, errors in age reporting, in addition to coverage error, affect the reliability of net migration estimates based on the cohort component method.

422. Under the intercensal cohort component method, the rates used for forward survival of the population in each age cohort are often derived from an existing life table. Care should be taken to obtain an appropriate life table which accurately reflects the level and age pattern of mortality for the population, and period involved. Any disjunction between the mortality (or survival) rates used and the actual mortality situation would introduce a potential bias or error in the resulting estimate of net migration.

#### (b) Evaluation of data quality

423. The observations regarding the evaluation of the coverage of the census and coverage of births and deaths (paras. 408–409) are relevant here as well. In addition, since population data disaggregated by sex and age derived from the census are used in the intercensal cohort component method, an evaluation of the quality of those data are needed.

424. *Population data by age and sex.* The presence of digit preference, as well as of coverage error in a certain sex and age group or in some sex and age groups, has significant impacts on the estimates of net migration by sex and age group. In that regard, an assessment of the quality of age and sex data should be undertaken for the purpose of identifying and analysing those age groups that are more susceptible to the effects of coverage errors and age misreporting. If age misreporting distorts the population distribution by age group and/or if there is a coverage error for specific age group(s), the census results should be adjusted for the known errors.

### 3. Intercensal component method for estimating net international migration of foreign-born population

425. Some countries have an interest in deriving estimates not only of total net migration but also of the net migration of certain subgroups, most notably the foreign-born population. The method for estimating the net migration of the foreign-born population through use of data from two successive censuses is discussed in the following paragraph.

426. This method is somewhat simpler than that adopted to estimate total net migration (see sect. 2), since births do not factor into the equation as components of change. The general formula for estimating net immigration of the foreign-born population in an intercensal period is

$$I_f - E_f = (P_f^1 - P_f^0) + D_f \quad (7)$$

where  $I_f - E_f$  is the estimated intercensal net migration of the foreign-born population,  $P_f^0$  is the total foreign-born population at the time of the earlier census,  $P_f^1$  is the total foreign-born population at the time of the later census and  $D_f$  is the number of deaths that occurred among the foreign-born population in the country of enumeration during the intercensal period.

427. The same data-quality issues that impact total net migration apply to net migration of foreign-born persons. The number of deaths among the foreign-born population may be large, if there are large numbers of the elderly foreign-born in the country as a result of significant levels of immigration over decades. In an extreme case, the method could give an erroneous indication of net emigration when in fact it was net immigration that occurred during that period.

# Chapter IX

## Statistics, tabulations and indicators related to international migration that are obtainable from a census

428. The present chapter considers statistics, tabulations and indicators for international migration that may be generated from data collected in a population census. The lists presented, while extensive, are in no way exhaustive. Not every census can produce all the statistics listed, nor are all of them recommended for utilization by every country. Determining which specific statistics, tabulations and indicators are to be produced depends on the priorities of the individual country. Whether it is possible to produce them depends on the types of question and response sets incorporated in the country's population census, as well as the country's statistical capacity.

429. The current chapter comprises four sections: section A considers immigrant stocks; section B, recent migration; section C, emigration; and section D, net international migration. Each section begins with the presentation of a list of statistics and indicators that can potentially be derived from a population census, followed by a list of suggested tabulations. The tabulations are required for the production of relevant statistics and indicators, including the sample statistics and indicators provided.

### A. Proposed statistics and tabulations related to immigrant stocks

430. The population census is the main source of statistics on stocks of immigrants. Four population stocks of policy-related interest that are measurable in a census (see chap. VI) are:

- Stock of foreign-born persons
- Stock of foreigners
- Stock of returning migrants
- Stock of second-generation migrants

431. While not all censuses include the questions required to produce statistics on the magnitude of all four stocks, most censuses generally are able to provide estimates of at least the stock of foreign-born persons or the stock of foreigners.

432. The characteristics of immigrants, in addition to the magnitude of immigrant stocks, are a source of strong policy and research-related interest and feature prominently among the suggested indicators and tabulations. Countries have found it useful to distinguish between international migrants on the basis of the following characteristics:

- Country of birth
- Country of citizenship (including statelessness)
- Mode of acquisition of citizenship
- Year or period of arrival
- Country of previous or last residence (in the case of returning migrants)
- Country of birth of parents

433. No country collects information on all these characteristics. The level of detail of the information on a country's immigrants is dependent on the breadth of the topics and questions that are included in its census.

434. Socioeconomic characteristics of international migrants, which provide information that is valuable for policymaking, are important variables within the suggested tabulations. Information on socioeconomic characteristics is collected from all usual residents enumerated in the census, including immigrants, and is therefore available for use in the study of the composition and characteristics of migrants, and the comparison of migrants and non-migrants. The most common demographic and socioeconomic characteristics that are utilized in the analysis of the composition of immigrant stock are:

- Sex
- Age
- Marital status
- Educational attainment
- Labour-force status
- Main occupation
- Industry
- Status in employment
- Language usually spoken at home

435. All the above characteristics, except language usually spoken at home, are topics that have been recommended in *Principles and Recommendations* (table 3) for inclusion in a population census.

## 1. Statistics and indicators

436. The most basic statistics to be derived are the counts of each type of immigrant stock (I) identified in paragraph 430:

- Indicator I-1. Total number of foreign-born persons by sex
- Indicator I-2. Total number of foreigners (non-citizens) by sex
- Indicator I-3. Total number of returning migrants by sex
- Indicator I-4. Total number of second-generation migrants (native-born persons with foreign-born parents)

437. Some common indicators relevant to the immigrant stocks (I) identified in paragraph 430, representing a modest sampling of indicators that can potentially be produced, are listed below. Determination of which indicators are of interest will depend on the information needs of the country. The following indicators may also be calculated, as needed, for subgroups of interest, for example, major countries of birth, major countries of citizenship and periods of arrival:

- Indicator I-5. Percentage of the total population that are foreign-born
- Indicator I-6. Proportion female among the foreign-born population
- Indicator I-7. Percentage of the total population that are foreigners
- Indicator I-8. Percentage of the total population that are stateless
- Indicator I-9. Percentage of foreign-born population that are citizens of the country of residence
- Indicator I-10. Percentage of citizens that are foreign-born
- Indicator I-11. Percentage of the foreign-born population whose language usually spoken at home is the dominant language in the country of residence
- Indicator I-12. Percentage of returning migrants whose main reason for returning is retirement
- Indicator I-13. Percentage of the total population that are second-generation migrants
- Indicator I-14. Percentage of second-generation migrants that hold foreign citizenship

438. Table 9.1 identifies, for each of the 14 statistics and indicators listed in paragraphs 436 and 437, the numerator, denominator and relevant tabulation (see subsect. 2 below) that serve as the basis for provision of data. All indicators should be calculated for each sex separately and for both sexes taken together.

**Table 9.1**  
**Numerator, denominator and source tabulations for statistics and indicators 1 to 14 relating to immigrant stock**

Statistics or indicator number	Numerator	Denominator	Tabulation number
Indicator I-1	Foreign-born population	–	Table I-1
Indicator I-2	Foreigners (persons who are not citizens of the country of residence)	–	Table I-19
Indicator I-3	Returning migrants	–	Tables I-38, I-39
Indicator I-4	Second-generation migrants (native-born persons - both parents are foreign-born)	–	Table I-49
Indicator I-5	Foreign-born population	Total population	Table I-1
Indicator I-6	Female foreign-born persons	Foreign-born population	Table I-1
Indicator I-7	Foreigners	Total population	Table I-19
Indicator I-8	Stateless persons (i.e., do not have a country of citizenship)	Total population	Table I-19
Indicator I-9	Foreign-born persons who are citizens of the country of residence	Foreign-born population	Table I-36
Indicator I-10	Citizens of the country who are foreign-born	All citizens of the country	Table I-36
Indicator I-11	Foreign-born persons whose language at home is the dominant language of the country of residence	Foreign-born population	Table I-9
Indicator I-12	Returning migrants whose main reason for returning is retirement	Total number of returning migrants	Table I-40
Indicator I-13	Total number of second-generation migrants	Total population	Tables I-1, I-50
Indicator I-14	Second-generation migrants who are not citizens of the country	Total number of second-generation migrants	Table I-52

*Note:* A dash (–) indicates that the item is not applicable.

439. Additionally, study of cultural assimilation and integration of migrants and their impact on the host country involves (a) comparison of socioeconomic characteristics of immigrant populations with those of the native-born population; and (b) observation of changes in immigrant characteristics over time through (i) comparison of recent immigrants with those who have been in the country for a longer period or (ii) comparison of data on recent immigrants with data from previous censuses, if available. The differential pace or pattern of integration among immigrants from different countries is another topic of interest to policymakers and researchers.

440. The impact of immigrants on the demographic and social structure of the country can be studied through the analysis of basic demographic characteristics, such as age, sex and marital status. Demographic characteristics are also used as control variables in the comparison of important socioeconomic characteristics, among which immigrants' educational attainment, labour-force status, occupation, fertility and mortality elicit some of the strongest interest. Again, the indicators listed, which represent only an illustrative sampling of the innumerable socioeconomic indicators on immigrant stocks that can be produced, cover the foreign-born population and are to be compared with the corresponding indicators for the native-born population. Indicators can be similarly constructed for foreigners, returning migrants and second-generation immigrants.

- Indicator I-15. Percentage of foreign-born persons aged 25 or over with tertiary-level education
- Indicator I-16. Percentage of foreign-born persons aged 15 or over in the labour force
- Indicator I-17. Employment rate among foreign-born persons aged 15 or over
- Indicator I-18. Unemployment rate among foreign-born persons aged 15 or over

441. It is also possible to construct indicators to enable (a) comparison of characteristics of immigrants born in different countries, if the census includes a question on their country of birth; or (b) comparison of more recent immigrants with those who have been in the receiving country for a longer period, if the census includes a question on the year or period of arrival of each foreign-born person. That method entails calculation of the desired indicator by country of birth, by length of stay in the receiving country or by any other variable of interest to the country, as illustrated by the following examples:

- Indicator I-19. Percentage of foreign-born persons aged 25 or over with tertiary-level education, by country of birth
- Indicator I-20. Percentage of foreign-born persons aged 15 or over in the labour force, by length of time since immigration
- Indicator I-21. Employment rate among foreign-born persons aged 15 or over, by length of time since immigration (e.g., less than 5 years, 5 to less than 10 years, 10 to less than 20 years, etc.)
- Indicator I-22. Percentage of professional and related workers among employed foreign-born persons aged 15 or over, by length of time since immigration

442. Table 9.2 identifies, for each of the eight indicators listed in paragraphs 440 and 441, the numerator, denominator and specific tabulation (see subsect. 2) which serve as the basis for the provision of data. In addition, a “comparison variable” or category is specified, signifying that the indicator is to be calculated for each variable or (in the case of a category, in this case, country of birth) for each member of the category. All indicators should be calculated for each sex separately and for both sexes taken together.

**Table 9.2**  
**Numerator, denominator, comparison variable or category, and source tabulation for indicators 15 to 22 relating to immigrant stock**

Indicator number	Numerator	Denominator	Comparison variable or category	Tabulation number
Indicator I-15	Foreign-born persons aged 25 or over with tertiary-level education	Foreign-born persons aged 25 or over	Native-born population	Table I-2
Indicator I-16	Foreign-born persons aged 15 or over in the labour force	Foreign-born persons aged 15 or over	Native-born population	Table I-3
Indicator I-17	Foreign-born persons aged 15 or over who are employed	Foreign-born persons aged 15 or over	Native-born population	Table I-3
Indicator I-18	Foreign-born persons aged 15 or over who are unemployed	Foreign-born persons aged 15 or over	Native-born population	Table I-3
Indicator I-19	Foreign-born persons aged 25 or over with tertiary-level education	Foreign-born persons aged 25 or over	Country of birth <sup>a</sup>	Table I-6
Indicator I-20	Foreign-born persons aged 15 or over in the labour force	Foreign-born persons aged 15 or over	Country of birth <sup>a</sup>	Table I-10

**Table 9.2 (continued)**

Indicator I-21	Foreign-born persons aged 15 or over who are employed	Foreign-born persons aged 15 or over	Length of time since immigration	Table I-10
Indicator I-22	Foreign-born persons aged 15 or over employed in the "professional and related workers" group	Foreign-born persons aged 15 or over who are employed	Length of time since immigration	Table I-12

<sup>a</sup> Indicator to be calculated for each country of birth.

443. The requisite tabulations have to be made available to enable the calculation of statistics and indicators for all population subgroups of interest. To ensure that analytical needs can be fulfilled, data-processing and tabulation plans should be laid out early on and taken into full consideration in the course of decision-making related to data capture.

444. A set of suggested tabulations for immigrant stocks is presented below (see subsect. A.2). The type of statistics that can be obtained and the level of analysis that can be achieved differs widely among countries, since this depends on the topics covered by, and the questions included in, their census. All countries should nevertheless aim towards producing those tabulations to the extent possible in order to maximize the usefulness of the data that they have collected.

## 2. Suggested tabulations

445. Information on demographic and socioeconomic characteristics of the resident population, including foreign-born persons and foreigners, is collected through the census and recorded in the database. The main data (i.e., on the population stocks) are then broken down by various distinguishing socioeconomic and other characteristics to enable meaningful analysis and study of the situation of migrants. A comprehensive analysis requires cross-tabulations encompassing several variables at one time. As the number of possible combinations and permutations is enormous, it is not possible to list them all. Presented below are the tabulations that can be produced based on responses to the questions on international migration most commonly included in national censuses worldwide. The number of tabulations that can be produced by a country and their level of detail will depend on the information collected in the census, and the country's capacity to process that information.

446. The suggested tabulations reflect a consideration of the possible utility in countries that are attempting to estimate the volume of their emigrants. While the main purpose of producing tabulations is to benefit the country itself, sharing and exchange of data with other countries are beneficial as well, constituting, as they do, a step towards improving the availability and quality of emigration data worldwide. When properly conducted, sharing and exchange of data on international migration ultimately facilitate their accessibility. An additional objective of data sharing should be to motivate participating countries to improve the quality of their statistics and work towards the goal of ensuring international comparability, the lack of which is particularly conspicuous in the area of international migration statistics.

447. All population-related tabulations should be disaggregated by sex. When age groups are called for, five-year age groups with an open-ended interval set at 85 years and over are recommended (or 65 years and over if the numbers are small for the older age groups). Marginal totals should be included in all tabulations.

448. In the classification of data by country, whether it is the country of birth, of citizenship or of previous residence, it is important that as much detail as possible be provided, and that a comprehensive list of countries and areas of the world be used that is accurate at the time of data collection. The practice of grouping countries should be kept to a minimum and limited to those countries from which only a very small number of persons originate.

449. While all the suggested tabulations are relevant, those in boldface are deemed to be of high priority.

## Tabulations on the stock of foreign-born persons

<b>Table I-1.</b>	<b>Population by sex, age group and place of birth (native-born, foreign-born)<sup>a</sup></b>
Table I-2.	Population by sex, age group, educational attainment and place of birth <sup>a</sup>
Table I-3.	Population by sex, age group, labour-force status and place of birth <sup>a</sup>
<b>Table I-4.</b>	<b>Foreign-born population by sex, age group and country of birth</b>
<b>Table I-5.</b>	<b>Foreign-born population by sex, age group, year or period of arrival<sup>b</sup> and country of birth</b>
<b>Table I-6.</b>	<b>Population of foreign-born persons aged _ years or over, by sex, age group, educational attainment and country of birth</b>
Table I-7.	Foreign-born population by sex and single year of age
Table I-8.	Foreign-born population by sex, State or province of usual residence and country of birth
Table I-9.	Foreign-born population by sex, age group, country of birth and language usually spoken at home
<b>Table I-10.</b>	<b>Population of foreign-born persons aged 15 years or over by sex, year or period of arrival and labour-force status</b>
<b>Table I-11.</b>	<b>Population of foreign-born persons aged _ years or over by sex, age and labour-force status</b>
<b>Table I-12.</b>	<b>Population of employed foreign-born persons aged 15 years or over by sex, year or period of arrival and main occupation</b>
<b>Table I-13.</b>	<b>Population of employed foreign-born persons aged _ years or over by sex, age group and main occupation</b>
<b>Table I-14.</b>	<b>Population of employed foreign-born persons aged _ years or over by sex, age group and industry</b>
<b>Table I-15.</b>	<b>Population of employed foreign-born persons aged _ years or over by sex, age group and status in employment</b>
Table I-16.	Population of employed foreign-born persons aged _ years or over by sex, main occupation and country of birth
Table I-17.	Population of employed foreign-born persons aged _ years or over by sex, industry and country of birth
Table I-18.	Population of employed foreign-born persons aged _ years or over by sex, industry and main occupation

<sup>a</sup> For Tables I-1 to I-3, there are only two categories for place of birth: native-born and foreign-born.

<sup>b</sup> Alternatively, in Table I-5, year or period of arrival may be tabulated based on duration of residence in the country of immigration.

### Tabulations on the stock of foreigners

<b>Table I-19.</b>	<b>Population by sex, age group and citizenship status (citizen by birth, citizen by naturalization or foreigner)<sup>c</sup></b>
Table I-20.	Population by sex, age group, educational attainment and citizenship status <sup>c</sup>
Table I-21.	Population by sex, age group, labour-force status and citizenship status <sup>c</sup>
<b>Table I-22.</b>	<b>Foreigners by sex, age group and country of citizenship</b>
<b>Table I-23.</b>	<b>Foreigners by sex, age group, year or period of arrival<sup>d</sup> and country of citizenship</b>
<b>Table I-24.</b>	<b>Foreigners aged _ years or over by sex, age group, educational attainment and country of citizenship</b>
Table I-25.	Foreigners by sex and single year of age
Table I-26.	Foreigners by sex, State or province of usual residence and country of citizenship
Table I-27.	Foreigners by sex, age group, country of citizenship and language usually spoken at home
<b>Table I-28.</b>	<b>Foreigners aged _ years or over by sex, age group and labour-force status</b>
<b>Table I-29.</b>	<b>Employed foreigners aged _ years or over by sex, age group and main occupation</b>
<b>Table I-30.</b>	<b>Employed foreigners aged _ years or over by sex, age group and industry</b>
<b>Table I-31.</b>	<b>Employed foreigners aged _ years or over by sex, age group and status in employment</b>
Table I-32.	Employed foreigners aged _ years or over by sex, main occupation and country of birth
Table I-33.	Employed foreigners aged _ years or over by sex, industry and country of citizenship
Table I-34.	Employed foreigners aged _ years or over by sex, industry and main occupation

<sup>c</sup> For Tables I-19 to I-21, citizenship status is divided into three categories: citizens by birth, citizens by naturalization and foreigner. If it is not possible to separate citizens by birth from citizens by naturalization, then only two categories, citizen and foreigner, should be presented. A category for stateless citizens may be added, if necessary.

<sup>d</sup> Alternatively, in Table I-23, year or period of arrival may be tabulated based on duration of residence in the country of immigration. *Tabulations on the stock of foreigners.*

### Tabulations using information on both country of birth and country of citizenship

<b>Table I-35.</b>	<b>Population by sex, age group, country of birth and citizenship category<sup>e</sup></b>
<b>Table I-36.</b>	<b>Population by sex, place of birth (native-born and foreign-born) and citizenship status (citizen by birth, citizen by naturalization and foreigner)<sup>f</sup></b>
<b>Table I-37.</b>	<b>Population by sex, country of birth and country of citizenship</b>

<sup>e</sup> Citizenship status is divided into three categories: citizen of the country of enumeration, citizen of a person's country of birth and citizen of a country other than the country of enumeration or country of birth. For some countries, a category for stateless citizens may be added, if necessary.

<sup>f</sup> Citizenship status is divided into three categories: citizens by birth, citizens by naturalization and foreigners. If it is not possible to separate citizens by birth from citizens by naturalization, then only two categories should be shown, citizens and foreigners. A category for stateless citizens may be added, if necessary.

### Tabulations on stock of returning migrants

<b>Table I-38.</b>	<b>Stock of returning migrants by sex, age group and country of previous residence</b>
<b>Table I-39.</b>	<b>Stock of returning migrants by sex, age group and year or period of last return</b>
Table I-40.	Stock of returning migrants by sex, age group and reason for emigration
Table I-41.	Stock of returning migrants by sex, age group and reason for return
Table I-42.	Stock of returning migrants by sex, year or period of last return and country of previous residence
Table I-43.	Stock of returning migrants by sex and State or province of usual residence in the country
Table I-44.	Stock of returning migrants aged 15 years or over by sex, age group and marital status
Table I-45.	Stock of returning migrants aged 15 years or over by sex, age group and labour-force status
Table I-46.	Employed returning migrants aged 15 years or over by sex, age group and main occupation
Table I-47.	Employed returning migrants aged 15 years or over by sex, age group and industry
Table I-48.	Employed returning migrants aged 15 years or over by sex, age group and status in employment

### Tabulations on stock of second-generation migrants

Table I-49.	Stock of second-generation migrants by sex and age group
Table I-50.	Stock of second-generation migrants by sex and country of birth of parents
Table I-51.	Stock of second generation migrants by sex and citizenship status (citizen by birth, citizen by naturalization or foreigner) <sup>9</sup>
Table I-52.	Stock of "second-generation migrants" by sex, age group and citizenship status <sup>9</sup>
Table I-53.	Stock of second-generation immigrants aged 15 years or over by sex, age group, educational attainment and country of birth of parents
Table I-54.	Stock of second-generation immigrants aged 15 years or over by sex, age group and labour-force status
Table I-55.	Stock of second-generation immigrants aged 15 years or over by sex, age group and main occupation

<sup>9</sup> For Tables I-52 and I-53, citizenship status is divided into three categories: citizen by birth, citizen by naturalization and foreigner. If it is not possible to separate citizens by birth from citizens by naturalization, then only two groups should be presented, citizens and foreigners. A category for stateless citizens may be added, if necessary.

## B. Proposed statistics and tabulations related to recent migration

### 1. Statistics and indicators

450. Recent migration (R) is captured in the census through the question on place of usual residence one year ago or the question on place of residence five years ago (see chap. VIII). Responses to those questions provide an estimate of migration, with qualifications, before the census, more specifically, during the one year or the five years leading up to the date of the census. The indicators typically produced are:

- Indicator R-1. Number of international migrants aged 1 year or over who immigrated within the last 12 months, by sex
- Indicator R-2. Number of international migrants aged 5 years or over who immigrated within the last five years, by sex

451. Through use of the above types of statistics on recent migrants, those persons who are citizens can be distinguished from those who are not. The number of citizens in the count constitutes a rough estimate of the number of recently returning migrants. If a country considers only native-born persons in determining the number of returning migrants (R), then a rough estimate of the number of that country's recently returning migrants would be the number of native-born persons who were residing abroad one or five years ago.

- Indicator R-3. Estimated number of returning migrants aged 1 year or over who returned within the last 12 months, by sex
- Indicator R-4. Estimated number of returning migrants aged 5 years or over who returned within the last five years, by sex

452. Table 9.3 identifies, for the statistics on international and returning migrants listed in paragraphs 450 and 451 above, the data item and specific tabulation (see subsect. B.2) that serve as the basis for the provision of data.

**Table 9.3**  
**Data item and source tabulation for statistics 1 to 4 on international and returning migrants**

Statistics number	Data item	Tabulation number
Indicator R-1	Number of persons aged 1 year or over, whose usual residence one year ago was outside the country, by sex	Table R-1
Indicator R-2	Number of persons aged 5 years or over, whose usual residence five years ago was outside the country, by sex	Table R-6
Indicator R-3	Number of persons aged 1 year or over, whose usual residence one year ago was outside the country and who are citizens [alternatively, who are native-born], by sex	Tables R-2, R-3
Indicator R-4	Number of persons aged 5 years or over, whose usual residence five years ago was outside the country and who are citizens [alternatively, who are native-born], by sex	Tables R-7, R-8

## 2. Suggested tabulations

453. All tabulations carried out on the population should be disaggregated by sex. When age groups are called for, 5-year age groups with an open-ended interval set at 85 years and over are recommended (or 65 years and over if the numbers are small for the older age groups). Marginal totals should be included in all tabulations.

454. In the classification of data by country, whether data on birth, citizenship or previous residence, it is important that those data be presented in as much detail as possible and that a comprehensive list of the countries and areas of the world be used that is accurate at the time of data collection. The practice of grouping countries should be kept to a minimum and should be limited to those countries from which very a small number of persons originate.

455. While all the recommended tabulations below are relevant, those in boldface are deemed to be of high priority.

### Tabulations on migration in the one year preceding the census

<b>Table R-1.</b>	<b>Population of persons aged 1 year or over by sex, age group and country of usual residence one year ago</b>
Table R-2.	Population of persons aged 1 year or over by sex, age group, citizenship status (citizen or foreigner) <sup>a</sup> and country of usual residence one year ago
Table R-3.	Population of persons aged 1 year or over by sex, age group, place of birth (native-born or foreign-born) <sup>b</sup> and country of usual residence one year ago
Table R-4.	Population of persons aged 1 year or over by sex, country of birth and country of usual residence one year ago <sup>c</sup>
Table R-5.	Population of persons aged 1 year or over by sex, country of citizenship and country of usual residence one year ago <sup>c</sup>

<sup>a</sup> Through the separation of citizens from foreigners returning migrants (citizens who lived abroad for at least a year) may be identified. A category for stateless citizens may be added, if necessary.

<sup>b</sup> Through the separation of native-born persons from foreign-born persons, returning migrants, based on the alternative definition: native-born persons who lived abroad for at least a year, may be identified.

<sup>c</sup> Tables R-4 and R-5 are also useful to other countries, namely, those that wish to measure emigration. If made available, the numbers pertaining to their country will provide them with an estimate of the magnitude of emigration into the country of enumeration (the receiving country) in the one-year period preceding the census.

### Tabulations on migration in the five years preceding the census

<b>Table R-6.</b>	<b>Population of persons aged 5 years or over by sex, age group and country of usual residence five years ago</b>
Table R-7.	Population of persons aged 5 years or over by sex, age group, citizenship status (citizen or foreigner) <sup>d</sup> and country of usual residence five years ago
Table R-8.	Population of persons aged 5 years or over by sex, age group, place of birth (native-born or foreign-born) <sup>e</sup> and country of usual residence five years ago
Table R-9.	Population of persons aged 5 years or over by sex, country of birth and country of usual residence one year ago <sup>f</sup>
Table R-10.	Population of persons aged 5 years or over by sex, country of citizenship and country of usual residence one year ago <sup>f</sup>

<sup>d</sup> Through the separation of citizens from foreigners, returning migrants (citizens who lived abroad for at least a year) may be distinguished. A category for stateless citizens may be added, if necessary.

<sup>e</sup> Through the separation of native-born from foreign-born persons, returning migrants (based on the alternative definition: native-born persons who lived abroad for at least a year) may be distinguished.

<sup>f</sup> Tables R-9 and R-10 are also useful to other countries, namely, those that wish to measure emigration. If made available, the numbers pertaining to their country will provide them with an estimate of the magnitude of emigration into the country of enumeration (the receiving country) in the one-year period preceding the census.

## C. Proposed statistics and tabulations related to emigration

### 1. Statistics and indicators

456. It is widely recognized that any statistics on emigration (E) derived from censuses will exhibit deficiencies. Those deficiencies are due in large part to the difficulty of counting persons who no longer reside in the country that has an interest in counting them, as well as to the lack of clarity associated with the definition of the term "emigrant", which results in a level of errors of coverage and content that is substantial but often undetectable (see chap. VII). The statistics so derived should therefore be utilized with great caution, and producers should make clear the limitations of the data that are being disseminated.

457. The most basic statistics to be produced from the census emigration module are:

- Indicator E-1. Estimated number of emigrants by sex

458. The types of indicators that can be produced on emigrants (E) with respect to their numbers and characteristics depends on the questions on emigrated persons included in the census. If questions in the emigration module of some recent censuses reflect topics of policy interest, indicators on emigrants that may be useful might include:

- Indicator E-2. Sex ratio of emigrants
- Indicator E-3. Number and percentage of emigrants who emigrated to work abroad
- Indicator E-4. Number and percentage of emigrants who emigrated to study abroad
- Indicator E-5. Percentage of emigrants aged 15–34 at the time of emigration
- Indicator E-6. Percentage of emigrants with a tertiary education at the time of emigration

459. Table 9.4 identifies, for each of the statistics/indicators listed in paragraphs 457 and 458, the numerator, denominator and the specific tabulation that can provide the data (see subsect. C.2). If constructed, the indicators should be calculated for each sex separately and for both sexes taken together.

**Table 9.4**  
**Numerator, denominator and source tabulation for statistics/indicators 1 to 6 relating to emigrants**

Statistic or indicator number	Numerator	Denominator	Tabulation number
Indicator E-1	Estimated number of emigrants	–	Table E-1
Indicator E-2	Estimated number of male emigrants	Estimated number of female emigrants	Table E-1
Indicator E-3	Number of emigrants who emigrated to work abroad	Total number of emigrants	Table E-6
Indicator E-4	Number of emigrants who emigrated to study abroad	Total number of emigrants	Table E-6
Indicator E-5	Emigrants aged 15–34 at the time of departure	Total number of emigrants (all ages)	Table E-1
Indicator E-6	Emigrants with tertiary education at the time of departure	Total number of emigrants	Table E-4

*Note:* A dash (–) indicates that the item is not applicable.

460. If information on the demographic and socioeconomic characteristics of emigrants is also collected in the census, emigrants can be compared with non-emigrants (i.e., the resident population of the country) along the dimensions of those variables: age, sex, marital status, education and occupation, among others. Emigrant profiles can also be constructed and compared according to country of destination or year of departure. However, given the deficiencies associated with emigration data collected from the census, the quality of those data should be evaluated to determine if more elaborate tabulations or analyses are warranted.

## 2. Suggested tabulations

461. It should be noted that tabulations can be constructed for migrant demographic and socio-economic characteristics (e.g., age, sex, education, occupation) at the time of emigration or at the time of the census. Tabulations constructed for characteristics at either time have their particular

purpose. Information on age and other demographic or socioeconomic characteristics at the time of departure is useful if the purpose is to study the propensity to emigrate, whereas information on such characteristics at the time of the census better captures current emigrant profiles (see chap. VII).

462. All tabulations related to the emigrant population should be disaggregated by sex. In cases in which age groups are called for, five-year age groups with an open-ended interval set at 85 years and over are recommended (or 65 years if the numbers are small for the older ages). Marginal totals should be included in all tabulations.

463. With respect to the classification of data by country, whether of emigration, destination or current usual residence, it is important that as comprehensive a list as possible of countries and areas of the world at the time of data collection be provided. The practice of grouping countries should be kept to a minimum and limited to those countries to which only a very small number of persons emigrate.

464. The following are suggested tabulations.

<b>Table E-1.<sup>a</sup></b>	<b>Number of emigrants by sex, age group (at departure) and country of destination [or number of emigrants by sex, age group (on census date) and country of usual residence (on census date)]</b>
Table E-2.	Number of emigrants by sex, age group (at departure) and number of years since departure [or number of emigrants by sex, age group (at census date) and number of years since departure]
Table E-3. <sup>b</sup>	Number of emigrants by sex, number of years since departure and country of destination [or number of emigrants by sex, number of years since departure and country of residence on census date]
Table E-4.	Number of emigrants aged 15 or over by sex, age group (at departure) and educational attainment (at departure)
Table E-5.	Number of emigrants aged 15 or over by sex, age group (at departure) and main occupation before departure
Table E-6. <sup>c</sup>	Number of emigrants by sex, age group (at departure) and main reason for emigrating

*Note:* While all the tabulations are relevant, those in boldface are deemed to be of high priority.

<sup>a</sup> For Table E-1, depending on the information collected in the national census, the variables to be cross-tabulated are either age at departure and country of destination or current age and country of current residence.

<sup>b</sup> For Table E-3, depending on the information collected in the census, the variable to be cross-tabulated is either country of destination or country of current residence.

<sup>c</sup> For Table E-6, main reason for emigrating should include, at the minimum, the following choices: work, study, family issues/family reunification and other.

## D. Proposed statistics and tabulations related to net international migration

### 1. Statistics and indicators

465. As demonstrated in chapter VIII, data from two consecutive censuses may be used to estimate net migration (N) in the intercensal period. Statistics and indicators relating to net migration that may be constructed include:

- Indicator N-1. Total net international migration in the intercensal period
- Indicator N-2. Sex ratio for total net international migration
- Indicator N-3. Net foreign-born migration in the intercensal period
- Indicator N-4. Sex ratio for net foreign-born migration

## 2. Suggested tabulations

466. The following are suggested tabulations. Step-by-step procedures including detailed examples are set out in the annex to guide users in calculating net migration.

<b>Table N-1.</b>	<b>Total net migration in the period (census year 1) to (census year 2), by sex</b>
<b>Table N-2.</b>	<b>Total net migration in the period (census year 1) to (census year 2), by sex and age group</b>
Table N-3.	Net migration of foreign-born persons in the period (census year 1) to (census year 2), by sex

*Note:* While all the tabulations are relevant, those in boldface are deemed to be of high priority.

## E. Degree of subnational spatial detail

467. International migrants are universally characterized by the fact that they are not drawn randomly from the total population in their country of origin. They tend to come from particular sub-areas within the country. Nor do they disperse randomly in the country of destination. Indeed, their pattern of geographical distribution in the destination country is different from that of the general or the native population. Their impact in both the origin and destination countries tends to be spatially concentrated. From a policy perspective, it is therefore important for sending countries to determine from which parts of the country emigrants originate, and for receiving countries to determine in which parts of the country immigrants settle. Hence, it is also important that, in the course of production of census-based statistics for immigrants, data be provided for subnational spatial units. While the extent to which this can be achieved will vary among countries, a few general principles do apply:

- Basic data disaggregated by sex need to be available down to the smallest areas possible.
- The recommended tabulations provided in sections A to D should be made available for major metropolitan cities, especially the very large cities and megacities, where immigrant populations have come to play a significant role.

## F. Dissemination strategies

468. Statistics are increasingly being disseminated electronically. Countries should take advantage of advances in information technology and improve the accessibility of international migration statistics by using their website as a medium of dissemination. Census-based statistics and tabulations on international migration, which include large multivariate tabulations as presented in this chapter, are best made available through the website of the national statistical office. A searchable online database, which allows users to build their own tables, should be available if possible, or the establishment of such a database could be a subject for future consideration.

469. As they work in close cooperation, the national statistical office and the government agencies that produce migration statistics would do well to also include on their websites data on international migration that are derived from other sources. For example, results of recent specialized migration surveys, current migration flow statistics, labour migration statistics, and refugee and asylum statistics could be made available together with migration statistics derived from the census. At a minimum, provision of active links to other agencies' migration statistics would be helpful to users in general.

# Chapter X

# Using international migration data from the census together with data from other sources

## A. Introduction

470. Thus far, the entire focus of this *Handbook* has been on national population censuses as a source of information on international migration. However, censuses are only one of several sources available for measuring international migration and identifying the characteristics of migrants. In general, censuses are best suited for producing comprehensive data on population stocks; sample surveys, for studying in greater depth the determinants and consequences of migration; and administrative sources, for capturing migration flows on a continuous basis. The nature, strengths and limitations of the various sources of data on international migration are detailed in chapters III and IV.

471. It is generally the case that each of those sources provides only a partial picture of international migration as it unfolds in its totality in an individual country, but it is often possible to acquire a more comprehensive perspective on a country's situation in that regard through the synthesis of data from a number of sources. Bringing together several sources can serve two purposes. First, it leads to an expansion of overall coverage through the inclusion (a) of a larger number of types of international migration; and (b) of those very migrants who would be overlooked if only a single source were utilized. Second, application of a triangulation approach through the use of several sources can fulfil an oversight function with regard to the overall level of accuracy of migration estimates. In the present chapter, some of the opportunities for aligning international migration data derived from censuses with those from other sources are explored, following a few much-needed preliminary comments.

## B. Issues to be considered when using other sources of data together with the census

### 1. Alignment of concepts and definitions

472. Importantly, facilitation of the comparability of international migration information from different sources requires that the concepts and definitions employed by those sources be the same. The process of adopting uniform standards to formulate the definition of the term "migrant" is often complicated by the fact that different government entities are responsible for different sources and outputs: the national statistical office, for censuses and surveys, immigration officials, for border statistics; the labour department, for labour migration statistics; the department of the interior, for population registers; and so on. Hence, initially, there is a need to harmonize the relevant definitions and concepts, preferably within the structure presented in chapter II.

473. It is a well-known fact that administrative agencies exist to serve their own important needs. National statistical offices, for example, are typically not in a position to alter the definitions or coverage particular to their administrative data-collection system, nor to influence its modes of operation. In that context, the best approach entails both (a) a recognition of the differences in concepts and definitions and the deficiencies of the data collected by different government agencies; and (b) simultaneous efforts to achieve the common goal of harmonization.

474. However, the harmonization of the concepts underpinning the definition of the term "migrant" is only one facet of the task. Ensuring that common classifications of migrant characteristics are employed across the spectrum of sources is advisable, and is especially crucial for the classifications related to the labour force, industry, occupation and education, since a large volume of international migration is associated with work and, to a lesser extent, with study. Additionally, the adoption of a common classification of, for example, countries of origin and languages enables the different sources of data on international migration to be brought together. Similarly, there is a need for the adoption of the same classification of areas by region within a country so as to align information on where migrants within that country are living.

## 2. Establishing a mechanism for cooperation among government agencies

475. There is a need for an efficient cooperation mechanism structured to facilitate data sharing among government agencies engaged in the collection of data and production of specific migration statistics. In cases in which census data are to be used together with administrative data, the national statistical agency may take the lead in enabling an administrative agency or agencies to transmit aggregate data for use by the national statistical office in the exercise of its function of compiling, consolidating, analysing and disseminating statistics. For that purpose, the national statistical agency and the administrative agencies concerned would need to have framed an agreement on data requirements on how data and metadata are to be transferred, how data are to be used, and on the issue of aggregate statistics versus individual-level data. In cases in which the law allows the national statistical office to have access to individual-level administrative data, provisions have to be made at both ends for safeguarding data privacy and confidentiality.

## C. Other sources of data on international migration for use with the census

### 1. Border control

476. Most countries possess at least some data on international migration derived from their national censuses and from information collected at the borders of or points of entry into the country, although there is considerable variation in the degree of coverage of international migration by both sources. Those sources, in combination, have the potential to create a powerful tool for investigation of the scale, patterns and impact of migration. That is because censuses can provide – theoretically at least – a comprehensive and detailed snapshot of the stock of immigrants in a country (and of emigrants in other countries) at a particular point in time, while border statistics data can provide – again, theoretically at least – a total picture of the inflow and outflow of international migrants for a particular country. Both types of data, which have their own particular strengths and weaknesses, possess utility for policymaking and planning (see chaps. III and IV). In that regard:

- Border flow data can provide a total picture of the documented movements into or out of a country over a specified period of time (one year, five years, etc.), and can include details on the type and nature of migration (e.g., visa category and country of citizenship), especially if those are verified through document checks at a country's border or at a point of entry or exit.
- Census data cannot convey the quantity of movement over a particular period of time because people who have moved in and then out are not counted. Further, it is very difficult for the census to capture persons who have moved out. In addition, people who have moved in during the period and subsequently died are missed. On the other hand, the census can convey the cumulative impact of migration. It also has other advantages: because the census collects data on a wide range of topics, it can often provide information on the characteristics of migrants in greater detail than is possible in border statistics. Moreover, because the census covers migrants who have lived for a period of time in the destination country, it enables some degree of analysis of the nature of the adjustment of migrants to life in that country.

477. Hence, the two sources, with their particular strengths, can, in combination, contribute to the construction of a more comprehensive picture of international migration within a country than is possible through examination of their data separately. Further, additional analysis-related benefits will accrue if the two data sources can be in some way linked.

478. When combined, census and border control migration statistics can be used to estimate the scale of undocumented migration. Provided that undocumented migrants are enumerated in censuses, it is possible to compare arrivals of particular birthplace groups during the period between two census dates with stocks of those birthplace groups at the time of the two censuses, adjusted for deaths (see chap. VIII, sect. C). Calculation of the difference between the census count and the population

count in the population register yields an estimate of net undocumented migration. Undocumented migration is increasing in significance globally, and the method described is becoming one of the most effective means of estimating its scale.

479. The example of Australia attests to the benefits that can accrue from the formal linkage of data on individuals derived from the census and the corresponding data derived from border statistics (see United Nations, Economic Commission for Europe, 2019; United Nations, Economic and Social Council, Statistical Commission; United Nations, Economic Commission for Europe; and Eurostat (2008)). Comparison of the data from the 2006 census on all foreign-born persons who arrived in that country between 2001 and 2006 with data derived from the records of the Department of Immigration and Citizenship<sup>30</sup> enables an array of information on the immigration process to be matched against information on the characteristics of migrants after a period of residence in Australia. Through identification of the assigned category (e.g., “skilled migrant”, “business migrant”, “family migration”, “refugee”, “special category”) to which a migrant belonged when granted the status of permanent resident under Australia’s immigration policy, an assessment can be made of how the migrants in the various visa categories differ in terms of their adaptation to conditions in the labour market, the housing market and so on. That information, which will be fed back into the migration selection process, would clearly be of especial relevance to policymakers.

480. Still, a word of caution is in order with regard to such exercises, which have been made possible through the development in recent years of technical capabilities in data linking. In response to confidentiality issues arising through operationalization of those capabilities, legal barriers to individual data linking may need to be erected. In a word, whenever data linking is being considered, safeguarding the confidentiality of the data becomes of the utmost importance.

## 2. Sample surveys

481. One of the advantages offered by national censuses as a source of international migration data is their coverage of the entire population, except in cases in which it is determined that certain questions on international migration-related topics are best incorporated in a long-form questionnaire and administered to a sample of the population. However, employment of a sample for the collection of information, to be used in generating migration data and especially in estimating the stock or flow of migrants, can be problematic, owing to the fact that migrants can be over- or underrepresented in samples. That can be attributed to the following factors:

- Migrants, compared with other groups, are often concentrated in particular areas of a country. Hence, use of block sampling or other area-based sampling techniques can lead to significant over- or undercounting of the number of migrants. It should be noted that that is more of a problem for sample surveys than for censuses in which the long form of the questionnaire is administered to a sample of the population.
- As the size of the migrant population – particularly of some migrant subgroups – is often relatively small compared with that of the total population, migrants can be overlooked by surveys.

482. Consequently, both censuses in which the long form of the questionnaire is administered to a sample of the population and national household sample surveys tend to have serious limitations as instruments for determining the size of migration streams and stocks. In only a few countries are national surveys and the stocks of international migrants both large enough to enable the provision of representative data on migrants (Bilsborrow and others, 1997, pp. 197 and 238–41).

483. In general, however, it is mainly in the form of specialized surveys targeting international migrants that sample surveys are of value in building an understanding of international migration. Specialized migrant surveys can provide more information, and at a greater level of detail, than can be derived from censuses and most other standard forms of national data collection – information

<sup>30</sup> The Department of Immigration and Citizenship (Australia) existed from 2007 to 2013, when the name was changed to Department of Immigration and Border Protection.

not only on the characteristics of migrants but also on their motivations, attitudes, sense of identity, behaviour, perceptions, experiences and culture. Surveys of that kind are necessary for the exploration in greater depth of the causes and consequences of migration, including of the context in which migration-related decisions are made.

484. A major constraint on the conduct of representative surveys of migrants is the absence of comprehensive and accurate listings of migrants or subgroups of migrants, which exist only in countries that have complete population registers. In most countries, extant listings are partial, which forces survey takers to use incomplete sampling frames, expensive screening procedures or snowballing techniques. One of the most important roles that census migration data can play with respect to specialized migration surveys is to serve as the basis for comprehensive sampling frames that are adequate for such surveys. Opportunities therefore exist for the census, with its potentially comprehensive coverage of the stock of immigrants to assist in the derivation of samples of the immigrants to be surveyed.

485. Census data can serve as the basis for a migrant survey sampling frame in either of two ways. If it is possible to access census household listings, and use them to create a sampling frame, then a comprehensive listing of migrant households could be established as the basis for a representative survey at national, regional or local level. When such access is not possible, small-area data can be used to indicate the areas of concentration of migrants of particular backgrounds. In such cases, a systematic stratified sampling of areas can be conducted to ensure that migrants are well represented in the sample. Either a screening strategy could then be employed, or all sampled households could be interviewed regardless of migrant status, with the non-migrant households being used as a comparator against which the characteristics, perceptions, experiences, and so on of the migrant groups would be analysed.

486. In the context of analysing the characteristics of migrants, it is valuable to be able to compare those characteristics with the characteristics of non-migrants in order to establish degrees of difference. That can be achieved through inclusion of non-migrants in the sample or selection of a set of key variables from the migrant survey followed by comparison of the values of those variables for migrants with the values of the same variables (as derived from a census) for non-migrants.

487. Census data can also be used to assess, to some degree, the extent of the representativeness of a sample survey on migrants through a comparison of the survey data for a specific migrant group on key characteristics such as age, sex, occupation and education, among others, with census data for the same migrant group. The comparison would enable an estimation to be made of the extent and direction of bias in the sample survey towards that migrant group.

### 3. Population registers and other administrative sources

488. Several countries maintain population registers that include the total resident population, while others maintain registers of foreigners. Checking census data against such registration data is clearly an important means of assessing the magnitude of the population of foreigners. Frequently, registers overstate the size of that population because they fail to fully record the emigration of foreigners. In such cases, it is important that the census be used periodically to evaluate the accuracy and degree of coverage of the registers of foreigners. Indeed, in some countries, members of certain categories of foreigners – not only undocumented migrants but also foreigners who are documented but not required to register under particular conditions – may be omitted from registers entirely.

489. An array of policies have been adopted in various countries under which foreigners are required to hold residence permits. Statistics on the numbers of foreigners in a country at a given time, as derived from information on the number of permits held at that time, vary greatly in terms of their accuracy and coverage. As explained by Bilsborrow and others (1997):

“Ideally, the number of valid residence permits at a given time can be equated with the number of foreigners residing legally in a country at that time. In practice, however, problems in capturing the change in status of foreigners over time prevent residence permit statistics from reflecting accurately the size of the legally resident foreign population in a country” (pp. 128–129).

490. Clearly, those data cannot be used in general to estimate the size of stocks of migrants at a particular point in time. However, if they are used, they need to be checked periodically against census data so that the extent of their coverage and accuracy may be assessed and validated.

491. It may be noted that the comprehensiveness of immigrant profiles can potentially be expanded through the linkage of census records with administrative sources of data on migrants, for example, income tax records, immigration records and population registers. In cases in which data sets are being linked, data confidentiality must be ensured and compliance with developing standards on protection of the privacy of individuals needs to be robust.

## D. Special categories of international migrants

### 1. International labour migration

492. One of the main drivers of the global increase in international migration has been the globalization of labour markets, attested by the increased extent to which countries have sought to compensate for deficits or address surpluses in their labour supply, as national circumstances dictate. In developed countries, persistent low fertility has led to a decline in the labour force, and their admittance of foreign migrant workers is often regarded as a measure designed to mitigate the labour shortage in certain economic sectors. In contrast, the burgeoning of the working-age population in high-fertility countries may compel people in those countries to seek employment opportunities elsewhere, thereby easing unemployment at home. The lack of economic development, poverty, environmental degradation, war and a climate of disorder, among other challenges, as well as the attraction exerted by more developed countries, with their promise of a better life, a better income and prospects of work, are also major drivers of international labour migration.

493. International labour migration is a rising policy priority that requires equitable consideration of the interests of countries of origin and countries of destination, as well as the interests of migrant workers. To be effective, policies must be based on strong evidence, regarding, for example, the number of international migrant workers concerned, their characteristics and their employment patterns. International labour migration may take the form of international labour mobility, entailing the temporary or short-term movement of persons across countries for employment-related purposes within the context of the free movement of workers in regional economic communities.

494. On 18 October 2018, the Twentieth International Conference of Labour Statisticians (International Labour Organization, 2018) endorsed the guidelines concerning statistics of international labour migration (appendix 4, sect.1).<sup>31</sup> The guidelines aim to support countries in their development of national statistics on international labour migration and to encourage them to test the conceptual framework suggested in the guidelines. *International labour migration* is used as a generic term in the guidelines to refer to concepts related to the process and outcome of international labour migration, in general, and to the following three concepts, in particular:

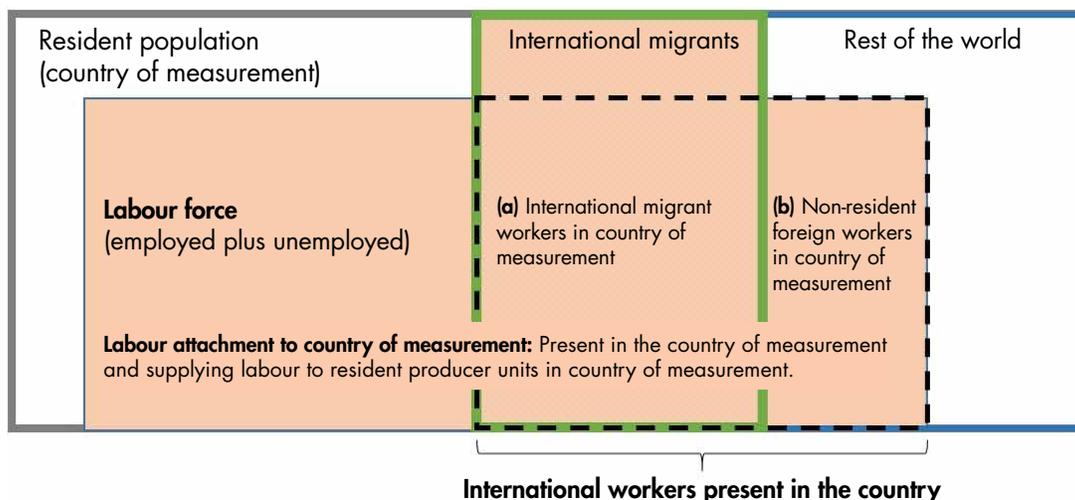
- (a) International migrant worker;
- (b) For-work international migrant;
- (c) Return international migrant worker.

495. The concept of “international migrant worker” has been formulated to enable the measurement of the current labour attachment of international migrants in a country, irrespective of the initial purpose of migration, and of others who are not usual residents of the country but have current labour attachment in the country of measurement. In that context, the terms *international migrant workers* and *international migrant and non-resident foreign workers* are equivalent. Those terms are defined, for statistical purposes, as referring to all persons of working age present in the country of measurement who belong to one of the following two categories (see figure 10.1):

<sup>31</sup> Available at [www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms\\_651209.pdf](http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_651209.pdf).

- (a) *Usual residents*, namely, international migrants who, during a specified reference period, were in the labour force of the country of their usual residence, either in employment or in unemployment;
- (b) *Not usual residents*, or *non-resident foreign workers*, namely, persons who, during a specified reference period, were not usual residents of the country but were present in the country and had labour attachment to the country. That is to say, they were either in employment supplying labour to resident producer units of that country or were seeking employment in that country.

**Figure 10.1**  
**Conceptual framework for measuring international migrant workers**



496. Workers belonging to the following categories, which are neither exhaustive nor mutually exclusive, and not meant to be measured separately in all circumstances, are also classified as international migrant workers:

- (a) Frontier workers, who are not usual residents of the country of measurement but have been granted permission to be employed on a continuous basis in that country, provided they depart at regular short intervals (daily or weekly) from the country;
- (b) Seasonal workers, who are not usual residents of the country of employment, and whose work, by its very character, is dependent on seasonal conditions and performed during part of the year;
- (c) Itinerant workers, who are not usual residents of the country of measurement but travel to the country for short periods for work-related purposes;
- (d) Project-tied workers, who are admitted to the country of employment for a defined period solely to work on a specific project which is being carried out in that country by their employer;
- (e) Specific-employment workers, who have been sent for a restricted and defined period of time to the country of employment by their employer, for example, a multinational enterprise, to undertake a specific assignment or duty, or to undertake work that requires professional, commercial, technical or other highly specialized skills or work that is transitory or brief, and who are required to depart from the country of employment either at the expiration of their authorized period of stay or earlier if they no longer undertake that specific assignment or duty or engage in that work;
- (f) Self-employed workers, who are engaged in a remunerated activity other than under a contract of employment and who earn their living through that activity that normally

entails working alone or together with members of their family, and including any other migrant workers recognized as self-employed under applicable legislation of the country of employment or bilateral or multilateral agreements;

- (g) Seafarers, including fishermen, employed on a vessel that is registered in the country of measurement, of which the workers are not nationals;
- (h) Workers employed on an offshore installation that is under the jurisdiction of the country of measurement, of which those workers are not nationals;
- (i) Foreign domestic workers engaged by resident employers;
- (j) Foreign students who have entered a given country for the declared purpose of studying but then go on to work, seek work or combine work and study;
- (k) International travellers on tourism trips whose main purpose is to be employed in the country of visit and receive compensation for the labour input provided;
- (l) Refugees and asylum seekers who are working or seeking work, irrespective of the authorization to work during the processing of their refugee status or their request for sanctuary;
- (m) Persons forcibly displaced across borders, owing to natural or human-made disasters, who are working or seeking work in the country of displacement;
- (n) Persons trafficked across international borders for forced labour or labour exploitation.

497. *Excluded* as international migrant workers are:

- (a) Foreign military and diplomatic personnel;
- (b) International travellers on tourism trips undertaking work in the country visited that is incidental to the trip (i.e., the work is not the main purpose of the trip);
- (c) Staff of call centres in non-resident production units and others providing services from a foreign location.

498. The concept of “for-work international migrant” has been formulated to enable the measurement of the movements of persons from one country to another for the purpose of undertaking or seeking work. For statistical purposes, for-work international migrants are all international migrants, as defined in paragraph 496 (a) – frontier workers, and (b) – seasonal workers, who entered the country of measurement during a specific reference period for the purpose of undertaking or seeking employment, and whose intention was documented or declared at the time of entry into the country.

499. The concept of “return international migrant worker” has been formulated to provide a basis for measuring the work experience of persons returning after having been international migrant workers abroad. For the country of measurement, the term *return international migrant worker* is defined as referring to all current residents of the country who were previously international migrant workers in another country or other countries.

500. The concepts of “working-age population”, “labour force”, “employment” and “unemployment” are defined in line with the latest international standards concerning statistics of work, employment and labour underutilization, as follows:

- (a) The working-age population is determined on the basis of a specified lower age limit – taking into consideration the minimum age for employment or the age of completion of compulsory schooling – with no upper age limit. When relevant, the lower age limit

may be extended to separately measure the labour attachment of international migrant children and of non-resident children below the working age;

- (b) The labour force comprises all persons of working age who were either in employment or in unemployment during the specified reference period;
- (c) Person in employment are all those of working age who were engaged in any activity to produce goods or provide services for pay or profit during the specified reference period;
- (d) Person in unemployment are all those of working age who were not in employment, carried out activities to obtain employment during the specified reference period and were currently available to take up employment, given a job opportunity.

501. Depending on policy objectives, countries may wish to also include among international migrant workers, all persons who, during the specified reference period, were in the potential labour force or were engaged in unpaid forms of work, as defined in paragraph 6 of the resolution concerning statistics of work, employment and labour underutilization, adopted by the Nineteenth International Conference of Labour Statisticians (International Labour Organization, 2013) (see appendix III, resolution 1). The extension of the scope of labour attachment to the potential labour force may be particularly relevant in cases in which some international migrants are not allowed to work for pay or profit or are subject to restrictions limiting the type or location of work. For the purpose of international comparisons, data on different categories of labour attachment and data on different forms of work of international migrant workers should be presented separately.

502. The main sources of data on international labour migration include population censuses and household surveys; population-based registers, including general population and social security registers; and other administrative sources, such as registers of migrants and work permits. Population censuses and household surveys are conducted in nearly all countries of the world, while administrative sources serve as important sources of data related to the capture of labour migration in Europe and Central Asia. Border statistics are available in many countries, however, the use of such information to derive data on international migrant workers presents a challenge, owing to the fact that information on duration of stay in or absence from the country, as well as on employment status, country of birth, country of citizenship and last country of residence, is not always available from the records collected at national borders.

503. There is a significant advantage associated with the use of the population census to measure the stock of migrant workers, which stems from the fact that data reflecting the three aforementioned concepts underpinning the definition of “migrant” are usually collected in national censuses, along with data on labour-force status, which enables the identification of labour migrants as described under the more restrictive definition given above. In addition, information on characteristics of employment such as sector of economic activity, employment status, status in employment and occupation is almost always collected in censuses, which facilitates further analysis, covering subgroups of labour migrants in the country.

504. There are certain complicating factors, however, that reduce the utility of censuses in providing insights into labour migration. For example:

- In some countries, a high proportion of migrant workers are systematically excluded from census enumerations because their residence in the country of destination is non-permanent, temporary or of short duration (i.e., less than 12 months).
- Even if migrant workers can be identified in a census, the count of those workers reflects the stock of migrant workers – a net and lifetime cumulative figure that is not as useful as flow statistics in studying current trends. A question on year of arrival in the country would greatly increase the potential of the census to facilitate the analysis of the socio-economic situation of labour migrants, and would enable the more recent arrivals to be distinguished from the others.

505. Use of censuses as a source of information on migrant workers in conjunction with administrative sources as a source of statistics could have the following advantages:

- Theoretically, it would allow for an assessment of the size and characteristics of undocumented labour migration through comparisons with the flow data derived from those administrative sources.
- It could yield a better estimate of the stock of migrant workers than that provided by registration data, given that, in some countries, registers are not maintained fully enough to be able to cover, for example, change of status of workers, premature departure of workers from the country and worker deaths.

However, those benefits can accrue only if labour migrants are included in national censuses and, through identification, distinguished from other types of migrants.

## 2. Refugees and asylum seekers

506. Refugees and asylum seekers constitute a highly specific group within the context of international migration. The term “refugee” can be defined under a number of international and regional legal frameworks. An “asylum seeker” is defined as a person who is claiming or applying for protection as a refugee but who has not yet received a final decision on his or her claim. For measurement purposes, a statistical framework on refugees and refugee-related populations is proposed in *International Recommendations on Refugee Statistics* (Expert Group on Refugee and Internally Displaced Persons Statistics, 2018, chap. 3). The framework covers three distinct groups of persons referred to as refugee and refugee-related populations: (a) the population in the country in need of international protection (refugees, asylum seekers, those admitted for subsidiary and complementary or temporary forms of protection, and others in a refugee-like situation); (b) persons who are not themselves refugees but who have a refugee background (naturalized former refugees, children or descendants of refugee parents and grandparents and reunified refugee family members from abroad); and (c) persons who have returned to their home country after seeking international protection abroad (*ibid.*, para. 74, subsect. 3.A.3 and figure 3.1).

507. Stocks and flows of refugee and refugee-related populations can be measured through administrative sources, population censuses and household surveys. As a source of data on refugees, the census has its own advantages. First, the complete coverage of censuses, compared with that of sample surveys, can encompass refugees and refugee-related groups which tend to constitute but a small proportion of the population. Second, in the case of censuses, rich and comprehensive data on the demographic and living conditions of the population are produced from a single source, thus enabling study of the integration of refugees and asylum seekers in comparison with that of labour migrants and non-migrants, among other groups. Censuses, which are ideal for establishing the population stocks of refugee and refugee-related populations, can serve as a frame for more specific surveys.

508. For the stock of refugee and refugee-like populations to be established effectively through censuses, several other questions – besides the typical ones related to international migration (e.g., country of birth and country of citizenship) – need to be incorporated in the census questionnaire. For example, in order that the country’s population stock that is in need of international protection (group (a) in para. 494 above) may be established, a question on the reasons for migration should be included. For respondents belonging to group (b), the question on those reasons needs to be asked of their parents and grandparents. Persons belonging to group (c) need first to be identified as returning migrants and then asked a question on the reason for return.<sup>32</sup>

509. As previously indicated, incorporation in a census of a question on the reasons for migration is key to identifying the stock of refugee and refugee-like populations. However, inclusion of such a question in an already densely packed census questionnaire is, understandably, not a common practice in countries. And even if the question is asked, the number of refugees might still be undercounted, owing to its sensitive nature or to the language barriers by which many refugees are typically confronted.

<sup>32</sup> See chap. VI of this *Handbook* for a discussion on how returning migrants are identified through censuses.

510. Key recommendations are found in *International Recommendations on Refugee Statistics* on how the usefulness of the census can be improved with regard to measuring refugee and refugee-related populations. Means of improvement include enumeration in censuses of persons living in refugee camps, reception centres and other collective accommodations; incorporation of migration-related questions on country of birth, country of citizenship and year or period of arrival in the country as well as on the reasons for migration; use of harmonized census questions and response categories to enable comparison of data among countries; increased dissemination of census microdata with geospatial referencing so as to facilitate analysis at a more detailed level and integration with other data sources; and improvement in the use of census data as a sampling framework for refugee-related specialized surveys.

## E. Conclusion

511. A unique characteristic of the national census, which is relevant to its alignment with other sources of information on international migration, is, as already noted, universal coverage of the national population at a specific point in time. That feature invests data from the census with the potential to serve as a benchmark against which other data on international migration, which are derived predominantly from continuous registers, could be checked at that specific point in time in a completely independent manner. Continuous registers have the advantage that they can provide timely information at any point in time, while the census can provide such information only once every 5 or 10 years. However, those registers are affected by a number of factors that can reduce, over time, their level of accuracy and coverage. Those include:

- The growing volume of undocumented migrants who may make a deliberate effort to avoid being recorded in those registers.
- The high level of back-and-forth movement among migrants in a globalizing world, including a shift in global international migration systems away from the dominant patterns of one-off permanent migration towards types of movement that are often temporary or circular. That situation, in which some movers can be misclassified or missed altogether, has presented registration systems with a huge challenge.
- Increased blurring of the distinction between short-term or temporary movers and immigrants as a result of which many temporary movers end up becoming immigrants (permanent residents) in their country of destination (Hugo, 2006).

512. Accordingly, it is crucial that there be a periodically available set of benchmark international migration data against which the level of accuracy and coverage of register data can be checked. Moreover, through that practice, future data derived from registers could be calibrated to indicate the margin of error in those future data.

513. However, the basic function of the national census as related to international migration data can be carried out only if:

- The census includes all international migrants.
- The census differentiates among the key types of international migrants.
- At the time of the census, complete coverage of the population that is to be enumerated is achieved.



**Annex**

# Methods for estimating net international migration from population censuses

1. As described in chapter VIII, section C, data from two consecutive censuses can be used to estimate net international migration in the intercensal period. The present annex provides practical examples which illustrate, step by step, the application of the intercensal component method and the intercensal cohort component method to the estimation of net international migration.
2. Technically speaking, the application of neither method is complicated as long as the censuses provide appropriate information of reasonable quality. Countries that maintain reliable vital statistics can use the intercensal component method. On the other hand, for those countries that do not maintain accurate statistics on births and deaths, as derived from data collected from the civil registration system, the intercensal cohort component method is the more reliable of the two, if estimates of fertility and mortality levels are available from other statistical sources and model life tables.<sup>1</sup>

## A. Intercensal component method

3. Information on the total population obtained for two points in time and the number of births and deaths that occurred during the period between those two points in time can be used to estimate net international migration, through application of equation (A.1) directly below. A reliable estimate of net migration can be obtained for countries with relatively complete birth and death statistics through civil registration or other sources. According to the equation,

$$I-E=(P_1-P_0)-(B-D) \quad (\text{A.1})$$

In other words:

Net migration = Population change (growth) – natural growth,

where  $I-E$  is net international migration (immigrants minus emigrants),  $P_1$  is the total population at the time of the second census,  $P_0$  is the total population at the time of the first census,  $B$  is the total number of births that occurred during the intercensal period, and  $D$  is the total number of deaths that occurred during that same period.

### Data required

4. The following data are required for application of the intercensal component method:
  - (a) Population for two points in time: the time of the first census and the time of the second census;
  - (b) Reliable number of births and deaths that occurred during the intercensal period obtained from civil registration or other sources.

### Application of the method

#### Step 1: Compiling, from civil registration, the total number of births and deaths that occurred during the intercensal period

The total number of births and deaths that occurred during the intercensal period is calculated by adding up the annual numbers of births and deaths registered during the period. However, if information in the registration system on birth and death events is incomplete, then the number of births and deaths should be estimated for the intercensal period through use of other reliable data sources.

<sup>1</sup> Model life tables for developing countries provide sets of age-sex patterns of mortality that are based on reliably documented developing-country data, thus supplementing the Coale-Demeny model life tables extracted mainly from data reflecting the historical experience of Europe. Both the United Nations model life tables for developing countries (United Nations, 1982) and the Coale-Demeny model life tables are available in the United Nations software package MORTPAK. Further information is available at [www.un.org/en/development/desa/population/publications/manual/model/life-tables.asp](http://www.un.org/en/development/desa/population/publications/manual/model/life-tables.asp).

## Step 2: Calculating net international migration

Equation (A.1) is used to calculate net international migration as the difference between the population at the time of the second census and the population at the time of the first census (population change) minus the difference between the number of births and the number of deaths during the intercensal period (natural growth), as calculated in step 1.

### Example: Canada

5. Application of this method is illustrated through the use of data from Canada for the five-year periods between 1976 and 2001. Data on population for each census year is provided in column 2 of table A.1 (the intercensal periods are listed in column 3). The number of births and the number of deaths for the intercensal period are listed in columns 4 and 5, respectively.

6. Following preparation of data for each census period, two components of net international migration, namely, population growth and natural growth, are calculated. Population growth, that is, population change, between two censuses is calculated as the difference between the population at the time of a census and the corresponding population at the time of the previous census. Total population growth between the two censuses is provided in column 6. Natural growth for the same period, which is calculated by subtracting the number of deaths from the number of births, is provided in column 7. Net migration is estimated through calculation of the difference between total population growth and natural growth.

**Table A.1**  
Canada: estimating total net migration, 1976–2001

Year of census	Census population	Intercensal period	Number of births in the period	Number of deaths in the period	Total population growth between two censuses <sup>a</sup>	Natural growth	Estimation of net international migration
(1)	(2)	(3)	(4)	(5)	(6)	(7) = (4) – (5)	(8) = (6) – (7)
1976	23 450						
1981	24 820	1976–1981	1 820	843	1 370	977	393
1986	26 101	1981–1986	1 872	885	1 281	987	294
1991	28 031	1986–1991	1 933	946	1 930	987	943
1996	29 611	1991–1996	1 936	1 024	1 580	912	668
2001	31 021	1996–2001	1 705	1 089	1 410	616	794

Source: Statistics Canada, Census of Population. Data available at [www150.statcan.gc.ca/n1/en/type/data?MM=1](http://www150.statcan.gc.ca/n1/en/type/data?MM=1).

<sup>a</sup> Population growth for Canada is calculated by subtracting the population at the time of the first census from the population at the time of the second census using data from column (2). For example, population growth from 1976 to 1981 is calculated as the difference between the census population in 1981 (24,820) and the population in 1976 (23,450), which is 1,370.

## B. Intercensal cohort component method

7. The intercensal cohort component method can be used to estimate net international migration for age (birth) cohorts and for the total population. That method forward-estimates the population observed in the first census to the date of the second census based upon estimated level and pattern of fertility and mortality during the intercensal period.

8. In any population, exposure to the risks of mortality and fertility vary by age and sex; therefore, the procedures are applied separately to each age cohort (Preston, Heuveline and Guillot, 2001). The method comprises three steps:

- (a) **Surviving population enumerated in the first census to the reference date of the second census:** This step entails the estimation, using intercensal survival rates, of the number

of persons still alive in each age group at the time of the second census, based on the number of persons enumerated at the time of the first census.

- (b) **Surviving intercensal births at the time of the second census:** This step entails the calculation, using the intercensal fertility level, of the number of births for each sex over the intercensal period, followed by the estimation, using survival rates, of those births that have survived to the end of the intercensal period.
- (c) **Estimating net international migration by age and sex:** This step entails the subtraction of the population estimated at the time of the second census from the population enumerated at the time of the second census.

### Data required

9. The following data are required for the application of the intercensal cohort component method to the estimation of net international migration:

- (a) Population by sex and age (in five-year age groups), for two points in time: the time of the first census and the time of the second census;
- (b) Appropriate life table survival rates for males and females, reflecting mortality level during the intercensal period;
- (c) Age-specific fertility rates for women aged 15–49, reflecting the level and age structure of fertility during the intercensal period;
- (d) Sex ratio at birth.

### Application of the method

#### Step 1: Surviving population enumerated in the first census to the reference date of the second census

Under this step, there are two procedures: (a) determination of cohort survival rates; and (b) estimation of the population at the reference date of the second census.

##### (a) Determination of cohort survival rates

Cohort survival rates for the intercensal period are derived from the life table reflecting mortality conditions in the country. The life table survival rates can be computed directly from a country's death statistics, as collected through death registers. However, as reliable death statistics do not exist in many countries, the life table survival rates are usually estimated from appropriate model life tables.<sup>2</sup>

Cohort survival rates are calculated through use of life table measurements and equation (A.2):

$${}_nS_x = \frac{{}_nL_{x+t}}{{}_nL_x}, \quad (\text{A.2})$$

where  ${}_nS_x$  is the life table survival rate for cohort aged  $x$  to  $x+n$ ;  
 ${}_nL_x$  is the number of life table person-years lived in the age interval  $x$  to  $x+n$ ;  
 ${}_nL_{x+t}$  is the number of life table person-years lived in the age interval  $x+t$  to  $x+t+n$ ;  
and  $t$  is the interval between the two censuses.

For a 10-year census interval, equation (A.2) would read as follows:

$${}_5S_x = \frac{{}_5L_{x+10}}{{}_5L_x}, \quad (\text{A.3})$$

For a 5-year interval, equation (A.2) would read as follows:

<sup>2</sup> For information on the use of model life tables to estimate life tables, see Moultrie and others (2013).

$${}_5S_x = \frac{{}_5L_{x+5}}{{}_5L_x}, \quad (\text{A.4})$$

Equation (A.5) is used to calculate the survival rate for the oldest (open-ended) age category:

$${}_wS_x = \frac{{}_wT_{x+t}}{{}_wT_x}, \quad (\text{A.5})$$

where  $w$  is the oldest age;  ${}_wS_x$  is the life table survival rate for the cohort aged  $x$  and over;  ${}_wT_x$  is the number of life table person-years lived from age  $x$  and over; and  ${}_wT_{x+t}$  is the number of person-years lived from age  $x+t$  and over.

Equation (A.6) is used to calculate the survival rate of children born during the intercensal period:

$${}_nS_0 = \frac{{}_nL_0}{n \times I_0}, \quad (\text{A.6})$$

where  ${}_nS_0$  is the life table survival rate from birth to age 0–4 (for a five-year age interval);

${}_nS_0$  is the life table survival rate from birth to age 5);

${}_nL_0$  is the number of life table person-years lived from birth to age  $n$  (usually calculated by adding  ${}_1L_0$  and  ${}_4L_1$  for the first age group (0–4);

$I_0$  is the number of births per year in the life table population, which is referred to as the radix of the life table and ordinarily is equal to 100,000;

and  $n$  is the age interval.

*(b) Estimating population at the time of the second census*

The cohort survival rates obtained in the first step are multiplied by the cohort population in the first census to forward- estimate the population at the time of the second census, as illustrated by equation (A.7):

$$P^1_{x=n} = {}_nS_x \times {}_n P^0_{x-n}, \quad (\text{A.7})$$

where  ${}_nS_x$  is the life table survival ratio for ages  $x$  to  $x+n$ ;  ${}_n P^0_{x-n}$  is the population enumerated in the first census for age group  $x-n$  to  $x$ ; and  $P^1_x$  is the estimated population of age group  $x$  in the second census.

## Step 2: Surviving intercensal births at the time of the second census

As explained earlier, the intercensal cohort component method is usually adopted by countries that do not possess reliable birth and death statistics from civil registration systems. The following procedures can be carried out to estimate newborn cohorts at the time of the second census.

*(a) Calculating the average number of women of childbearing age during the intercensal period*

The childbearing ages in general cover females aged 15–49. As displayed in equation (A.8), the average number of women in any age group  $x$  to  $x+n$  in the intercensal period can be calculated as the average of the female population in the first census and the estimated female population in the second census, obtained under step 1:

$$\overline{{}_n P_x} = \frac{{}_n P^1_x + {}_n P^0_x}{2}, \quad (\text{A.8})$$

where  $\overline{{}_n P_x}$  is the average number of women in age group  $x$  to  $x+n$  in the intercensal period;

${}_n P^0_x$  is the number of females aged  $x$  to  $x+n$  at the time of the first census;

and  ${}_n P_x^1$  is the estimated number of females aged  $x$  to  $x+n$  at the time of the second census.

*(b) Estimating the number of births that occurred in the intercensal period*

The total number of births that occurred in the intercensal period can be estimated by multiplying the average number of women in each age group by the age-specific fertility rate representing the level for the intercensal period, as shown in equation (A.9)

$$B = 5 \times \sum_{15}^{49} {}_n P_x \times ASFR_{x, x+n}, \quad (\text{A.9})$$

where  $B$  is the estimated total number of births in the intercensal period;

and  $ASFR_{x, x+n}$  is the age-specific fertility rate for women aged  $x$  to  $x+n$  during the intercensal period.

*(c) Distributing the estimated number of births by sex*

The estimated total number of births can be divided into male and female births through use of the sex ratio at birth, as shown, respectively, in equations (A.10) and (A.11):

$$\text{Proportion for male births} = \frac{\text{Sex ratio at birth}}{1 + \text{Sex ratio at birth}}, \quad (\text{A.10})$$

$$\text{Proportion of female births} = 1 - \frac{\text{Sex ratio at birth}}{1 + \text{Sex ratio at birth}}, \quad (\text{A.11})$$

where sex ratio at birth is calculated as the ratio of male births to female births.

For example, for a sex ratio at birth of 1.05, the proportion for male births is equal to  $1.05/(1+1.05) = 0.512$ , and the proportion for female births is equal to  $1 - 0.512 = 0.488$ .

The total number of male and female births can be estimated as follows: male births = total number of births  $\times$  0.512; and female births = total number of births  $\times$  0.488.

*(d) Surviving births that occurred in the intercensal period to the time of the second census*

An estimation of the population of the newly born cohort is obtained through use of equation (A.12) directly below:

$$P_a^1 = B_{m/f} \times {}_n S_0, \quad (\text{A.12})$$

where  $P_a^1$  is the estimated population of age group 0–4 within the context of a five-year intercensal period;

$B_{m/f}$  is the number of births, by sex, in the intercensal period; and  ${}_n S_0$  is the survival rate from birth to age 0–4.

**Step 3: Estimating net international migration**

Net migration is estimated as the difference between the enumerated and the estimated population at the time of the second census, as shown in equation (A.13):

$$I_x - E_x = P_x^1 - P_x^{1*}, \quad (\text{A.13})$$

where  $E_x$  is emigration;  $I_x$  is immigration;  $I_x - E_x$  is net international migration for age group  $x$ ;  $P_x^1$  is the total population of age group  $x$ , observed in the second census; and  $P_x^{1*}$  is the estimated population of age group  $x$ .

## Illustration of the application of the intercensal cohort component method

10. An example of a step-by-step application of the intercensal cohort component method is provided using data from Australia, Mexico and South Africa. Those three countries have had different experiences in international migration: Australia and South Africa are considered traditional immigration countries (having positive net migration), and Mexico is considered a net emigration country (having negative net migration) (United Nations, 2016a, table II.2).

11. The three countries are also at different levels of statistical development in terms of data availability and quality. As explained in chapter VIII, errors in the data used in applying the method affect the reliability of the results. More specifically, inaccuracies in the number of births or in the birth rates used to estimate the number of births in the intercensal period, errors in coverage of the census population and errors in age reporting affect the reliability of the estimates of net international migration. There should therefore be an assessment of how the factor of data quality impacts the reliability of the results obtained through use of that method. The present section also considers how errors in the data collected through population censuses may call into question the validity of the results.

12. The illustration focuses on two consecutive censuses for each country. Selection of those censuses was underpinned by the assumption that both censuses were conducted on the basis of the same methodology, inasmuch as methodological changes across two censuses would affect quality and coverage of data and hence their comparability.

### Example: Australia

#### Data used

13. The following data were used in producing this example:
- Population by sex and age (in 5-year age groups) for the 2006 and 2011 censuses;
  - Survival rates for each age group for the intercensal period 2006–2011, as derived from *World Population Prospects 2017* for the period 2005–2010, under the assumption that the rates given for the period 2005–2010 would be representative of the mortality level of Australia for the intercensal period 2006–2011. National data can be used as well, but the figures from the United Nations publication are used for illustrative purposes. Data are available at <https://population.un.org/wpp/Download/Standard/Mortality/>.
  - Age-specific fertility rates for the intercensal period, as derived from *World Population Prospects 2017*, under the assumption that the rates given for the period 2005–2010 would be representative of those for the intercensal period. Data are available at <https://population.un.org/wpp/Download/Standard/Fertility/>.

### Application of the method

#### Step 1. Surviving population enumerated in the first census to the reference date of the second census

Calculations under step 1 cover only the female population. The male population for the year 2011 can be estimated in a similar way, however.

The figures for the female population, as derived from the 2006 census, are presented in column (2) of table A.2. The interval between the two censuses is five years and the five-year survival ratios, calculated from the life table (see para. 13 (b)) using equation (A.2), are provided in column (3). The female population for the year 2011 is estimated using equation (A.7), for each age group starting from age 5. The estimates for the female population for 2011 are presented in column (5).

**Table A.2****Australia: estimating the female population for 2011, using the survival ratios for the period 2005–2010**

Age group, 2006	Female population, 2006 census <sup>a</sup>	Survival ratio (2005–2010) <sup>b</sup>	Age group, 2011	Estimated female population, 2011
(1)	(2)	(3)	(4)	(5) = (2)×(3)
0–4	612 993	0.99935	0–4	–
5–9	637 469	0.99956	5–9	612 597
10–14	665 413	0.99926	10–14	637 187
15–19	661 111	0.99870	15–19	664 918
20–24	665 710	0.99852	20–24	660 250
25–29	641 129	0.99817	25–29	664 725
30–34	714 207	0.99744	30–34	639 955
35–39	751 017	0.99621	35–39	712 381
40–44	749 587	0.99419	40–44	748 172
45–49	735 526	0.99115	45–49	745 228
50–54	666 907	0.98701	50–54	729 020
55–59	619 039	0.98014	55–59	658 243
60–64	477 509	0.96868	60–64	606 743
65–69	383 783	0.94865	65–69	462 553
70–74	321 203	0.91060	70–74	364 076
75–79	296 103	0.83820	75–79	292 486
80+	457 333	0.55413	80–84	248 193
			85+	253 423
<b>Total</b>	<b>10 056 039</b>			

<sup>a</sup> Source of data: results of the 2006 and 2011 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

### Step 2. Surviving intercensal births at the time of the second census

The procedure for estimating the female and male populations aged 0–4 years from the number of births that occurred during the intercensal period is set out step by step in table A.3. The average number of women in a particular age group in the reproductive ages at risk of childbearing in the period 2006–2011 is calculated by adding the figure for the female population in that age group enumerated in the 2006 population census and the estimated female population in that age group for the year 2011, according to the instructions in step 1 above, and then dividing the sum by the 2006 figure.

The number of births in the intercensal period for each age group is estimated by (a) multiplying the average number of women in each childbearing age group by the corresponding age-specific fertility rate; and (b) multiplying that product by 5, because of the five-year interval between the two censuses. The estimated number of births for the period 2006–2011 in each age group is given in column (6).

**Table A.3**  
**Australia: estimating the female and male populations aged 0–4 in 2011**

Age group	Female population, 2006 census <sup>a</sup>	Estimated female population 2011	Women of childbearing age (2006–2011)	Age-specific fertility rate (2005–2010) <sup>b</sup>	Estimated number of births (2006–2011)
(1)	(2)	(3)	(4) = [(2)+(3)]/2	(5)	(6) = [(4)×(5)]×5
15–19	661 111	664 918	663 014	0.01603	53 124
20–24	665 710	660 250	662 980	0.05379	178 295
25–29	641 129	664 725	652 927	0.10319	336 884
30–34	714 207	639 955	677 081	0.12373	418 863
35–39	751 017	712 381	731 699	0.06689	244 706
40–44	749 587	748 172	748 880	0.01307	48 939
45–49	735 526	745 228	740 377	0.00063	2 347
Total births (2006–2011)					1 283 158
Proportion of female births (sex ratio=1.05)					0.488
Total female births (2006–2011)					626 181
Total male births (2006–2011)					656 977
Five-year survival ratio (for the period 2005–2010) of female newborns, from birth to ages 0 to 4 <sup>c</sup>					0.99571
<b>Female population for age group 0–4, 2011</b>					<b>623 494</b>
Five-year survival ratio (for the period 2005–2010) of male newborns, from birth to ages 0 to 4 <sup>c</sup>					0.99475
<b>Male population for age group 0–4, 2011</b>					<b>653 525</b>

<sup>a</sup> Source of data: results of the 2006 and 2011 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

<sup>c</sup> Source of data: *World Population Prospects: The 2012 Revision*.

The estimated total number of female births is obtained by adding the numbers of births estimated for all female age groups. Through application of the sex ratio at birth, which is assumed to be 1.05 in this example, the total number of births can be subdivided into the total numbers of female and male births. In order for the female population for age group 0–4 to be estimated, the five-year survival ratio for female newborns for age group 0–4 must first be calculated, through use of equation A.11. The survival ratio for male newborns can be calculated using equation A.10. The female population for age group 0–4 (2011) can then be estimated by multiplying the total number of female births (2006–2011) by the survival ratio from birth to ages 0–4.

### Step 3. Estimating net international migration

Estimation of net international migration (2006–2011) for the female population entails subtraction of the estimated female population for 2011 from the female population as enumerated in the 2011 census, for each age group. The estimated net migration of females by age group (2006–2011) is presented in column 7 of table A.4 below. Total net migration of the female population is estimated by adding the figures for total net migration within each age group. Estimated net international migration for the female population is 550,000 for the period 2006–2011, or, on average, about 110,000 per year.

**Table A.4**  
**Australia: estimating net international female migration in the period 2006–2011**

Age group, 2006	Female population, 2006 census <sup>a</sup>	Survival ratio (2005–2010) <sup>b</sup>	Age group, 2011	Estimated female population, 2011	Female population, 2011 census <sup>a</sup>	Estimated net international female migration (2006–2011)
(1)	(2)	(3)	(4)	(5) = (2)×(3)	(6)	(7) = (6)-(5)
0–4	612 993	0.99935	0–4	623 494	691 077	67 583
5–9	637 469	0.99956	5–9	612 597	657 359	44 762
10–14	665 413	0.99926	10–14	637 187	667 748	30 561
15–19	661 111	0.99870	15–19	664 918	683 421	18 503
20–24	665 710	0.99852	20–24	660 250	719 555	59 305
25–29	641 129	0.99817	25–29	664 725	758 771	94 046
30–34	714 207	0.99744	30–34	639 955	734 122	94 167
35–39	751 017	0.99621	35–39	712 381	773 019	60 638
40–44	749 587	0.99419	40–44	748 172	788 310	40 138
45–49	735 526	0.99115	45–49	745 228	763 180	17 952
50–54	666 907	0.98701	50–54	729 020	735 660	6 640
55–59	619 039	0.98014	55–59	658 243	659 406	1 163
60–64	477 509	0.96868	60–64	606 743	608 228	1 485
65–69	383 783	0.94865	65–69	462 553	463 901	1 348
70–74	321 203	0.91060	70–74	364 076	365 398	1 322
75–79	296 103	0.83820	75–79	292 486	292 334	-152
80+	457 333	0.55413	80–84	248 193	248 694	501
			85+	253 423	263 521	10 098
<b>Total</b>	<b>10 056 039</b>			<b>10 070 221</b>	<b>10 873 704</b>	<b>550 061</b>

<sup>a</sup> Source of data: results of the 2006 and 2011 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

Application of the method for the male population, following the same procedures, is illustrated in table A.5. Total net international migration for the male population is about 546,000 for the period 2006–2011, with average annual net migration being about 109,000.

**Table A.5**  
**Australia: estimating net international male migration in the period 2006–2011**

Age group, 2006	Male population, 2006 census <sup>a</sup>	Survival ratio (2005–2010) <sup>b</sup>	Age group, 2011	Estimated male population, 2011	Male population, 2011 census <sup>a</sup>	Estimated net male immigration (2006–2011)
(1)	(2)	(3)	(4)	(5) = (2)×(3)	(6)	(7) = (6)-(5)
0–4	647 413	0.99917	0–4	653 525	729 971	76 446
5–9	671 397	0.99943	5–9	646 878	694 561	47 683
10–14	702 528	0.99869	10–14	671 014	703 306	32 292
15–19	695 795	0.99688	15–19	701 604	722 378	20 774
20–24	681 654	0.99610	20–24	693 622	741 119	47 497
25–29	635 796	0.99547	25–29	678 998	754 467	75 469
30–34	685 262	0.99452	30–34	632 915	719 654	86 739
35–39	715 168	0.99303	35–39	681 508	747 118	65 610
40–44	722 074	0.99021	40–44	710 182	754 567	44 385
45–49	711 203	0.98565	45–49	715 004	740 962	25 958
50–54	648 880	0.97860	50–54	700 995	711 742	10 747
55–59	615 558	0.96714	55–59	634 991	637 839	2 848
60–64	480 573	0.94690	60–64	595 330	597 886	2 556
65–69	373 601	0.91371	65–69	455 053	455 420	367
70–74	294 849	0.85586	70–74	341 363	342 691	1 328
75–79	247 502	0.75935	75–79	252 349	252 929	580
80+	269 995	0.49866	80–84	187 939	188 242	303
			85+	134 637	139 163	4 526
<b>Total</b>	<b>9 799 248</b>			<b>10 087 908</b>	<b>10 634 015</b>	<b>546 107</b>

<sup>a</sup> Source of data: results of the 2006 and 2011 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

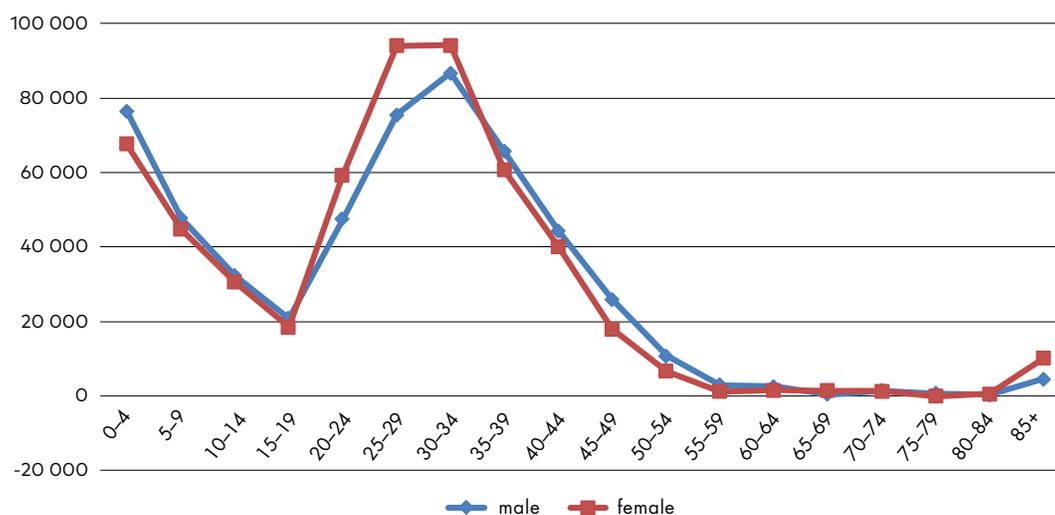
### Interpretation of the results

14. Figure A.1 illustrates the age distribution of net international migration by sex. The above calculations confirm that Australia is a country having net immigration, and that net migration for males and females has a similar age pattern, with immigration peaking in working ages and in childhood (ages 0–4). That age pattern is similar to the standard age pattern for immigration discussed in chapter VIII. Concentration of migration in the young adult ages – between 20 and 40 for both sexes – is an indication of labour migration. Net migration for the population aged 50 and over is almost zero, which could be a sign that no significant in- and outmigration occurs at older ages, that is, there is no significant return migration around retirement age. A second peak is observed in the very young ages 0–4, which decreases gradually until 15 years of age. While that pattern indicates that some of the movements would be movements of families rather than individuals, assessment of the magnitude of those movements is not possible with the type of basic analysis presented here.

15. The total figure for net migration for the five-year period from 2006 to 2011 is about 1 million, or about 200,000 per year, which is similar to the figure of 181,000 for annual net migration (for the period 2000–2010).<sup>3</sup>

<sup>3</sup> See *International Migration Report 2015* (United Nations, 2016a).

**Figure A.1**  
**Australia: estimated net international migration, 2006–2011**



**Example: Mexico**

16. Application of the intercensal cohort component method is presented below for Mexico, using data from the country’s 2000 and 2005 censuses, following the same procedures examined in the previous country example. The results achievable through application of this method by following the steps below are illustrated in tables A.6 to A.9.

**Application of the method**

**Step 1. Living population enumerated in the first census to the reference date of the second census**

**Table A.6**  
**Mexico: estimating the female population for 2005, using the survival ratios for the period 2000–2005**

Age group, 2000	Female population, 2000 census <sup>a</sup>	Survival ratio (2000–2005) <sup>b</sup>	Age group, 2005	Estimated female population, 2005
(1)	(2)	(3)	(4)	(5) = (2)×(3)
0–4	5 343 102	0.99680	0–4	
5–9	5 653 203	0.99858	5–9	5 326 012
10–14	5 411 403	0.99861	10–14	5 645 157
15–19	5 188 578	0.99812	15–19	5 403 855
20–24	4 867 051	0.99748	20–24	5 178 836
25–29	4 385 940	0.99668	25–29	4 854 797
30–34	3 831 510	0.99526	30–34	4 371 387
35–39	3 398 703	0.99282	35–39	3 813 347
40–44	2 756 423	0.98884	40–44	3 374 302
45–49	2 159 060	0.98255	45–49	2 225 666
50–54	1 770 114	0.97272	50–54	2 121 388
55–59	1 352 820	0.95748	55–59	1 721 827
60–64	1 176 804	0.93420	60–64	1 295 294
65–69	899 511	0.89922	65–69	1 099 376

**Table A.6 (continued)**

70–74	670 273	0.84792	70–74	808 854
75–79	463 551	0.75603	75–79	568 339
80+	563 112	0.50697	80–84	350 458
			85 +	285 481
<b>Total</b>	<b>49 891 159</b>			

<sup>a</sup> Data from United Nations, Source of data: results of the 2000 and 2005 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

### Step 2. Surviving intercensal births at the time of the second census

**Table A.7**

**Mexico: estimating the female and male populations aged 0–4 years for 2005**

Age group	Female population, 2000 census <sup>a</sup>	Estimated female population, 2005	Women of childbearing age (2000–2005)	Age-specific fertility rate (2000–2005) <sup>b</sup>	Estimated number of births (2000–2005)
(1)	(2)	(3)	(4)=[(2)+(3)]/2	(5)	(6)=[(4)×(5)]×5
15–19	5 188 578	5 403 855	5 296 216	0.07419	1 964 605
20–24	4 867 051	5 178 836	5 022 943	0.13725	3 447 095
25–29	4 385 940	4 854 797	4 620 369	0.13884	3 207 506
30–34	3 831 510	4 371 387	4 101 448	0.09295	1 906 148
35–39	3 398 703	3 813 347	3 606 025	0.05183	934 429
40–44	2 756 423	3 374 302	3 065 362	0.01134	173 837
45–49	2 159 060	2 725 666	2 442 363	0.00244	29 760
Total births (2000–2005)					11 663 381
Proportion of female births (sex ratio=1.05)					0.488
Total female births (2000–2005)					5 691 730
Total male births (2000–2005)					5 971 651
Five-year survival ratio (for the period 2005–2010) of female newborns, from birth to ages 0–4 <sup>c</sup>					0.98046
<b>Female population for age group 0–4, 2005</b>					<b>5 580 516</b>
Five-year survival ratio (for the period 2005–2010) of male newborns, from birth to ages 0–4 <sup>c</sup>					0.97544
<b>Male population for age group 0–4, 2005</b>					<b>5 824 959</b>

<sup>a</sup> United Nations, Source of data: results of the 2006 and 2011 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

<sup>c</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

### Step 3. Estimating net international migration

**Table A.8**  
Mexico: estimating net international female migration, 2000–2005

Age group, 2000	Female population, 2000 census <sup>a</sup>	Survival ratio (2000–2005) <sup>b</sup>	Age group, 2005	Estimated female population, 2005	Female population, 2005 census <sup>a</sup>	Estimated net female migration (2000–2005)
(1)	(2)	(3)	(4)	(5) = (2)×(3)	(6)	(7) = (6)-(5)
0–4	5 343 102	0.99680	0–4	5 580 516 <sup>c</sup>	5 146 685	-433 832
5–9	5 653 203	0.99858	5–9	5 326 012	5 313 382	-12 630
10–14	5 411 403	0.99861	10–14	5 645 157	5 553 341	-91 816
15–19	5 188 578	0.99812	15–19	5 403 855	5 252 267	-151 588
20–24	4 867 051	0.99748	20–24	5 178 836	4 839 403	-339 434
25–29	4 385 940	0.99668	25–29	4 854 797	4 414 593	-440 204
30–34	3 831 510	0.99526	30–34	4 371 387	4 301 952	-69 435
35–39	3 398 703	0.99282	35–39	3 813 347	3 842 968	29 622
40–44	2 756 423	0.98884	40–44	3 374 302	3 231 329	-142 973
45–49	2 159 060	0.98255	45–49	2 725 666	2 698 602	-27 064
50–54	1 770 114	0.97272	50–54	2 121 388	2 188 923	67 535
55–59	1 352 820	0.95748	55–59	1 721 827	1 663 153	-58 674
60–64	1 176 804	0.93420	60–64	1 295 294	1 416 209	120 915
65–69	899 511	0.89922	65–69	1 099 376	1 063 657	-35 719
70–74	670 273	0.84792	70–74	808 854	815 007	6 152
75–79	463 551	0.75603	75–79	568 339	572 647	4 308
80+	563 112	0.50697	80–84	350 458	370 475	20 018
			85 +	285 481	328 842	43 361
<b>Total</b>	<b>49 891 159</b>			<b>54 524 891</b>	<b>53 013 433</b>	<b>-1 511 458</b>

<sup>a</sup> Source of data: results of the 2000 and 2005 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

<sup>c</sup> Number taken from table A.7.

**Table A.9**  
**Mexico: estimating net international male migration, 2000–2005**

Age group, 2000	Male population, 2000 census <sup>a</sup>	Survival ratio, (2000–2005) <sup>b</sup>	Age group, 2005	Estimated male population 2005	Male population, 2005 census <sup>a</sup>	Estimated net male migration (2000–2005)
(1)	(2)	(3)	(4)	(5) = (2)×(3)	(6)	(7) = (6)-(5)
0–4	5 521 224	0.99580	0–4	5 824 959	5 324 926	-500 033
5–9	5 803 765	0.99751	5–9	5 498 043	5 492 839	-5 204
10–14	5 556 419	0.99638	10–14	5 789 309	5 705 575	-83 734
15–19	5 018 650	0.99404	15–19	5 536 296	5 139 737	-396 559
20–24	4 399 147	0.99140	20–24	4 988 715	4 375 895	-612 819
25–29	3 947 213	0.98890	25–29	4 361 321	3 915 290	-446 031
30–34	3 458 472	0.98633	30–34	3 903 414	3 853 820	-49 595
35–39	3 090 451	0.98307	35–39	3 411 203	3 468 433	57 230
40–44	2 550 159	0.97826	40–44	3 038 127	2 954 220	-83 907
45–49	2 000 629	0.97076	45–49	2 494 711	2 456 903	-37 808
50–54	1 660 089	0.95908	50–54	1 942 135	2 016 140	74 005
55–59	1 261 470	0.94119	55–59	1 592 154	1 541 107	-51 046
60–64	1 068 614	0.91439	60–64	1 187 282	1 279 596	92 314
65–69	796 976	0.87524	65–69	977 132	949 153	-27 979
70–74	602 185	0.81977	70–74	697 543	723 524	25 981
75–79	420 326	0.71539	75–79	493 655	504 971	11 316
80+	436 464	0.46557	80–84	300 698	304 883	4 185
			85 +	203 203	242 941	39 738
<b>Total</b>	<b>47 592 253</b>			<b>52 239 901</b>	<b>50 249 955</b>	<b>-1 989 946</b>

<sup>a</sup> Source of data: results of the 2000 and 2005 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

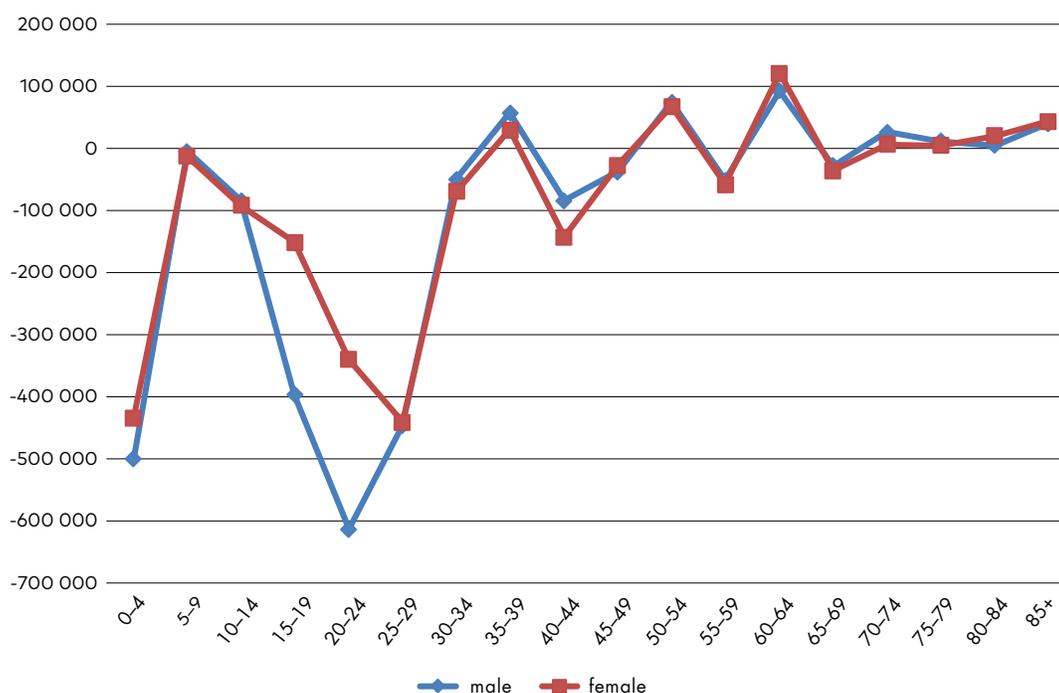
### Interpretation of the results

17. Results of the calculation indicate a very high level of emigration for young adults of both sexes. However, emigration is much higher among males than females, particularly at ages 25–35 (figure A.2).

18. The migration pattern for the population aged 40 and over does not provide a clear picture, owing to fluctuation at the level of zero net migration. That fluctuation is a strong indication of age misreporting, reflecting a preference for ages which, in written form, end in 0. Figures A.3 and A.4 present the distribution of population by sex and single years of age for the 2000 and 2005 censuses conducted by Mexico. It may be observed that misreporting of ages which, in written form, end in 0 or 5 disrupts the smooth distribution of population by single age. Further, the preference for ages which, in written form, end in 0 is much higher than that for ages which, in written form, end in 5. Age misreporting is also reflected in Whipple's index (by sex: both sexes), as calculated for those two censuses (116.7 for the 2000 census and 118.8 for the 2005 census) (United Nations, 2015, table 3a).<sup>4</sup>

<sup>4</sup> The values of Whipple's index with respect to data quality are to be interpreted as follows: Highly accurate, ≤ 105; fairly accurate, 105–109.9; appropriate, 110–124.9; rough, 125–174.9; and very rough, ≥ 175. The quality of data on age for the Mexico 2000 and 2005 censuses is therefore considered to be appropriate.

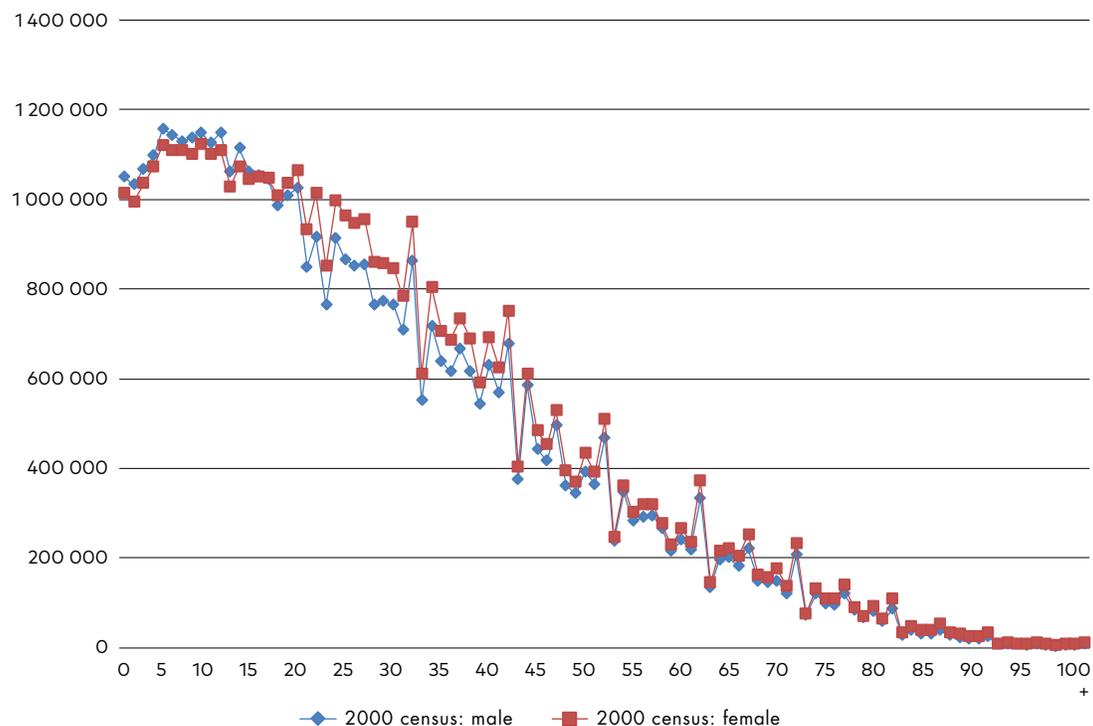
**Figure A.2**  
**Mexico: estimates of net international migration by age and sex, 2000–2005**



19. The migration pattern for very young ages (age groups 0–4 and 10–14) provides an indication of net emigration, particularly for age group 0–4. However, information on the level of net emigration may not be accurate for the population under 15 years of age because of issues related to quality of data on younger populations. Age distribution of population by single years of age offers a better perspective on the patterns of error in age structure (see figures A.3 and A.4 for, respectively, the 2000 and 2005 censuses of Mexico). The results of the two censuses show very similar patterns for the first two age groups, indicating a possibility of underenumeration of persons in age group 0–4 and overenumeration of persons in the following age groups. That type of error is relatively common for countries where age data is collected through a question on “completed age”, as was the case in Mexico’s 2000 and 2005 censuses. It should be noted that such irregularities with respect to age structure introduce a bias in the estimation of net migration. For example, if there is an undercount of the population aged 0–4 and an overcount of those aged 5–9, the result under the intercensal cohort component method entail an overestimation of net immigration for age group 5–9.

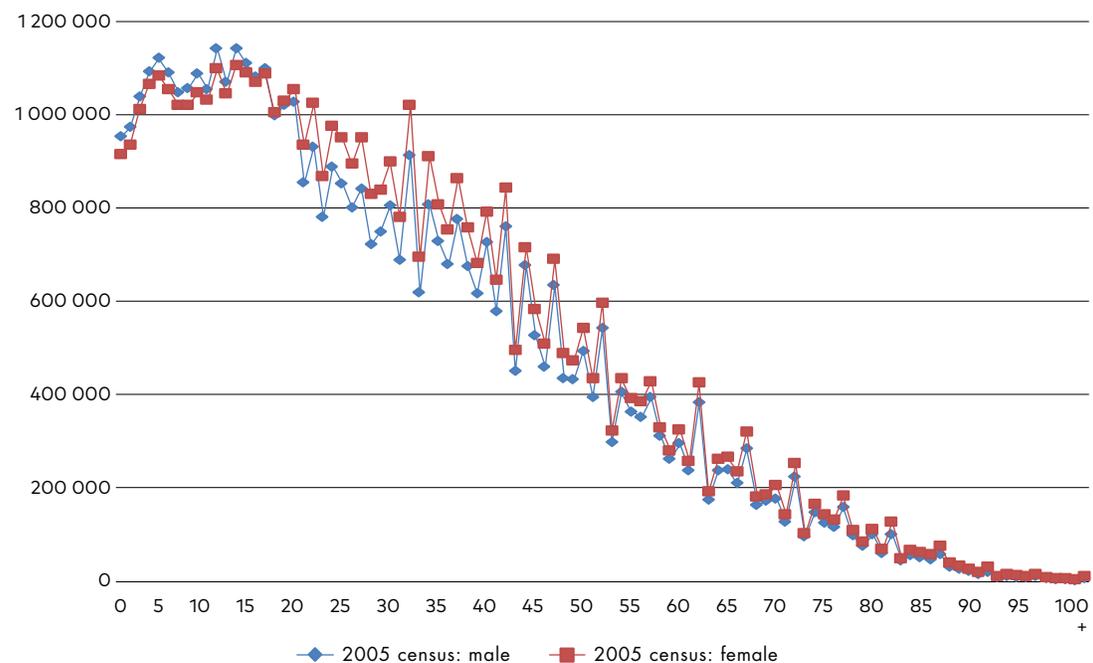
20. That seems to be the case in the example of Mexico. Although there is net emigration for age groups 0–4 and 10–14, the estimated net migration for age group 5–9 is close to zero, which is implausible. If age distribution is adjusted for under- and overenumeration of young age groups, the results will be more accurate. In the example of Mexico, although the results indicate net emigration for the young population, uncertainty nevertheless arises with regard to the level of net emigration.

**Figure A.3**  
Mexico: population by sex and single years of age, 2000 census



*Source:* Data on the results of the 2000 population and housing census of Mexico (maintained by United Nations).

**Figure A.4**  
Mexico: population by sex and single years of age, 2005 census



*Source:* Data on the results of the 2000 population and housing census of Mexico (maintained by the United Nations).

### Example: South Africa

21. In its population censuses, South Africa is experiencing a high undercoverage rate, which was assessed through the post-enumeration survey. In post-enumeration survey reports, Statistics South Africa has disseminated undercoverage rates by age groups of the population for the 2001 and 2011 censuses (Statistics South Africa, 2004; 2012). The intercensal cohort component method was applied to the adjusted population.

22. As South Africa conducts a census every 10 years, the cohort component method yields net international migration estimates for a 10-year interval. Given the fact that countries usually experience different levels of fertility and mortality during a period of that length, assuming a constant level of fertility and mortality may not be appropriate within this context.

23. The intercensal cohort component method can be applied in the case of a 10-year census interval by repeating all the calculation-related steps twice. For the purpose of this example, the female and male populations for the year 2006 will be estimated first and the same calculations will be repeated for an estimation of the male and female populations for the year 2011. Once the calculations have been completed, the estimated and enumerated populations for 2011 will be compared to obtain an estimate of net international migration. The application of the survival ratio method to the 10-year census interval is illustrated by the following sequence of calculations.

### Application of the method

#### Step 1. Living population enumerated in the first census to the reference date of the second census

**Table A.10**  
South Africa: estimating the female population for 2011, using the survival ratios for 2001–2006

Age group, 2001	Female population, 2001 census <sup>a</sup>	Survival ratio (2001–2006) <sup>b</sup>	Age group, 2006	Estimated female population, 2006	Survival ratio (2006–2011) <sup>c</sup>	Age group, 2011	Estimated female population, 2011
(1)	(2)	(3)	(4)	(5) = (2)×(3)	(6)	(7)	(8) = (5)×(6)
0–4	2 226 085	0.98611	0–4		0.98375	0–4	
5–9	2 427 751	0.99479	5–9	2 195 161	0.98844	5–9	
10–14	2 542 961	0.99625	10–14	2 415 104	0.99256	10–14	2 169 790
15–19	2 528 642	0.98869	15–19	2 533 433	0.98977	15–19	2 397 126
20–24	2 195 230	0.95869	20–24	2 500 034	0.96215	20–24	2 507 516
25–29	2 035 814	0.92521	25–29	2 104 552	0.92352	25–29	2 405 418
30–34	1 746 412	0.90750	30–34	1 883 558	0.89418	30–34	1 943 606
35–39	1 630 264	0.90060	35–39	1 584 874	0.88613	35–39	1 684 236
40–44	1 385 833	0.90393	40–44	1 468 221	0.89573	40–44	1 404 408
45–49	1 119 776	0.89692	45–49	1 252 697	0.89718	45–49	1 315 133
50–54	868 521	0.89814	50–54	1 004 349	0.90048	50–54	1 123 900
55–59	652 943	0.88809	55–59	780 056	0.88828	55–59	904 396
60–64	620 784	0.86264	60–64	579 873	0.86021	60–64	692 911
65–69	483 163	0.81507	65–69	535 512	0.81129	65–69	498 814
70–74	398 922	0.74587	70–74	393 810	0.74172	70–74	434 456
75–79	231 101	0.65144	75–79	297 545	0.64178	75–79	292 095
80 +	291 535	0.43998	80–84	150 549	0.43001 (for age 80+)	80–84	190 960
			85 +	128 271		85+	119 896
<b>Total</b>	<b>23 385 737</b>						

**Table A.10 (continued)**

<sup>a</sup> Source of data: results of the 2000 and 2005 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision*.

<sup>c</sup> Source of data: *World Population Prospects: The 2012 Revision*.

## Step 2. Surviving intercensal births to the time of the second census

**Table A.11**

**South Africa: estimating the female and male populations aged 0–4 for the year 2006**

Age group	Female population, 2001 census <sup>a</sup>	Estimated female population, 2006	Women of childbearing age (2001–2006)	Age-specific fertility rate, (2005–2010) <sup>b</sup>	Estimated number of births (2001–2006)
(1)	(2)	(3)	(4) = [(2)+(3)]/2	(5)	(6) = [(4)*(5)]*5
15–19	2 528 642	2 533 433	2 531 038	0.07072	895 000
20–24	2 195 230	2 500 034	2 347 632	0.13898	1 631 369
25–29	2 035 814	2 104 552	2 070 183	0.14184	1 468 143
30–34	1 746 412	1 883 558	1 814 985	0.10558	958 121
35–39	1 630 264	1 584 874	1 607 569	0.06736	541 429
40–44	1 385 833	1 468 221	1 427 027	0.02712	193 533
45–49	1 119 776	1 252 697	1 186 236	0.00880	52 183
Total births (2001–2006)					5 739 779
Proportion of female births (sex ratio=1.05)					0.488
Total female births (2001–2006)					2 801 012
Total male births (2001–2006)					2 938 767
Five-year survival ratio (for the period 2005–2010) of female newborns, from birth to ages 0–4 <sup>c</sup>					0.94035
<b>Female population for age group 0–4, 2006</b>					<b>2 633 943</b>
Five-year survival ratio (for the period 2005–2010) of male newborns, from birth to ages 0–4 <sup>c</sup>					0.92781
<b>Male population for age group 0–4, 2006</b>					<b>2 726 611</b>

<sup>a</sup> Source: results of the 2006 and 2011 population and housing censuses.

<sup>b</sup> Source: *World Population Prospects: The 2012 Revision* (United Nations, 2013). See <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>.

<sup>c</sup> Source: *World Population Prospects: The 2012 Revision*.

Table A.12

South Africa: estimating the female and male populations aged 0–4 years for 2011

Age group	Estimated female population, 2006	Estimated female population, 2011	Women of childbearing age (2006–2011)	Age-specific fertility rate (2005–2010) <sup>a</sup>	Estimated number of births (2006–2011)
(1)	(2)	(3)	(4) = [(2)+(3)]/2	(5)	(6) = [(4)×(5)]×5
15–19	2 533 433	2 397 126	2 465 279	0.05916	729 230
20–24	2 500 034	2 507 516	2 503 775	0.13168	1 648 510
25–29	2 104 552	2 405 418	2 254 985	0.13510	1 523 231
30–34	1 883 558	1 943 606	1 913 582	0.09588	917 371
35–39	1 584 874	1 684 236	1 634 555	0.05840	477 249
40–44	1 468 221	1 404 408	1 436 314	0.02264	162 620
45–49	1 252 697	1 315 133	1 283 915	0.00714	45 836
Total births (2006–2011)					5 504 047
Proportion of female births (sex ratio=1.05)					0.488
Total female births (2006–2011)					2 685 975
Total male births (2006–2011)					2 818 072
Five-year survival ratio (for the period 2005–2010) of female newborns, from birth to ages 0 to 4 <sup>b</sup>					0.94616
<b>Female population for age group 0–4, 2011</b>					<b>2 541 351</b>
Five-year survival ratio of male newborns from birth to ages 0 to 4 <sup>b</sup>					0.92781
<b>Male population for age group 0–4, 2011</b>					<b>2 614 629</b>

<sup>a</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013). <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>.

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision*.

### Step 3. Estimating net international migration

**Table A.13**  
South Africa: estimating net international female migration, 2001–2011

Age group, 2001	Female population, 2001 census <sup>a</sup>	Survival ratio (2001–2006) <sup>b</sup>	Age group, 2006	Estimated female population, 2006	Survival ratio (2006–2011) <sup>c</sup>	Estimated female population, 2011	Female population, 2011 census <sup>a</sup>	Estimated net female migration (2001–2011)
(1)	(2)	(3)	(4)	(5) = (2)×(3)	(6)	(7) = (5)×(6)	(8)	(9) = (8)-(7)
0–4	2 226 085	0.98611	0–4	2 633 943	0.98375	2 541 351	2 817 867	276 516
5–9	2 427 751	0.99479	5–9	2 195 161	0.98844	2 591 132	2 394 570	-196 562
10–14	2 542 961	0.99625	10–14	2 415 104	0.99256	2 169 790	2 250 611	80 821
15–19	2 528 642	0.98869	15–19	2 533 433	0.98977	2 397 126	2 504 905	107 779
20–24	2 195 230	0.95869	20–24	2 500 034	0.96215	2 507 516	2 679 896	172 380
25–29	2 035 814	0.92521	25–29	2 104 552	0.92352	2 405 418	2 516 635	111 217
30–34	1 746 412	0.90750	30–34	1 883 558	0.89418	1 943 606	1 992 804	49 198
35–39	1 630 264	0.90060	35–39	1 584 874	0.88613	1 684 236	1 758 420	74 184
40–44	1 385 833	0.90393	40–44	1 468 221	0.89573	1 404 408	1 546 291	141 883
45–49	1 119 776	0.89692	45–49	1 252 697	0.89718	1 315 133	1 424 543	109 410
50–54	868 521	0.89814	50–54	1 004 349	0.90048	1 123 900	1 206 940	83 040
55–59	652 943	0.88809	55–59	780 056	0.88828	904 396	985 458	81 062
60–64	620 784	0.86264	60–64	579 873	0.86021	692 911	773 404	80 493
65–69	483 163	0.81507	65–69	535 512	0.81129	498 814	556 256	57 442
70–74	398 922	0.74587	70–74	393 810	0.74172	434 456	454 832	20 376
75–79	231 101	0.65144	75–79	297 545	0.64178	292 095	315 984	23 889
80 +	291 535	0.43998	80–84	150 549	0.43001	190 960	222 222	31 262
			85 +	128 271		119 896	180 130	60 234
<b>Total</b>	<b>23 385 737</b>			<b>24 441 540</b>		<b>25 217 143</b>	<b>26 581 768</b>	<b>1 364 625</b>

<sup>a</sup> Source of data: results of the 2000 and 2005 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

<sup>c</sup> Source of data: *World Population Prospects: The 2012 Revision*.

**Table A.14**  
**South Africa: estimating net international male migration, 2001–2011**

Age group, 2001	Male population, 2001 census <sup>a</sup>	Survival ratio (2001–2006) <sup>b</sup>	Age group, 2006	Estimated male population, 2006	Survival ratio (2006–2011) <sup>c</sup>	Estimated male population, 2011	Male population, 2011 census <sup>a</sup>	Estimated net male migration (2001–2011)
(1)	(2)	(3)	(4)	(5) = (2)×(3)	(6)	(7) = (5)×(6)	(8)	(9) = (8)-(7)
0–4	2 223 731	0.98128	0–4	2 276 611	0.97859	2 214 629	2 867 585	252 956
5–9	2 425 804	0.99204	5–9	2 402 110	0.98551	2 368 238	2 425 181	-243 057
10–14	2 518 957	0.99328	10–14	2 506 493	0.98939	2 470 497	2 344 275	193 778
15–19	2 453 079	0.98749	15–19	2 420 042	0.98740	2 380 958	2 498 572	117 614
20–24	2 099 293	0.96840	20–24	2 022 402	0.97127	1 967 518	2 694 646	224 128
25–29	1 899 124	0.94136	25–29	1 782 960	0.94418	1 682 807	2 542 682	189 875
30–34	1 594 488	0.91682	30–34	1 461 758	0.91334	1 332 490	2 036 206	116 716
35–39	1 441 507	0.89896	35–39	1 296 862	0.89345	1 159 832	1 709 347	76 515
40–44	1 233 632	0.89290	40–44	1 098 855	0.88887	966 095	1 402 328	96 233
45–49	967 604	0.87755	45–49	846 506	0.87819	741 843	1 195 740	43 897
50–54	769 500	0.86580	50–54	666 125	0.86681	577 327	1 011 349	44 022
55–59	552 323	0.83097	55–59	458 232	0.83058	380 030	811 950	75 920
60–64	444 510	0.76958	60–64	340 963	0.76779	260 361	612 364	59 003
65–69	304 763	0.69228	65–69	211 086	0.68960	145 388	401 548	49 160
70–74	232 548	0.60163	70–74	140 981	0.59809	84 903	293 498	57 595
75–79	136 437	0.50229	75–79	68 908	0.49792	34 186	165 283	39 097
80+	136 744	0.34510	80–84	47 191	0.34012	16 264	100 694	31 030
			85 +	47 191		16 264	75 543	36 184
<b>Total</b>	<b>21 434 044</b>			<b>22 702 613</b>		<b>23 728 126</b>	<b>25 188 791</b>	<b>1 460 665</b>

<sup>a</sup> Source of data: results of the 2000 and 2005 population and housing censuses (United Nations).

<sup>b</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

<sup>c</sup> Source of data: *World Population Prospects: The 2012 Revision* (United Nations, 2013).

### Interpretation of the results

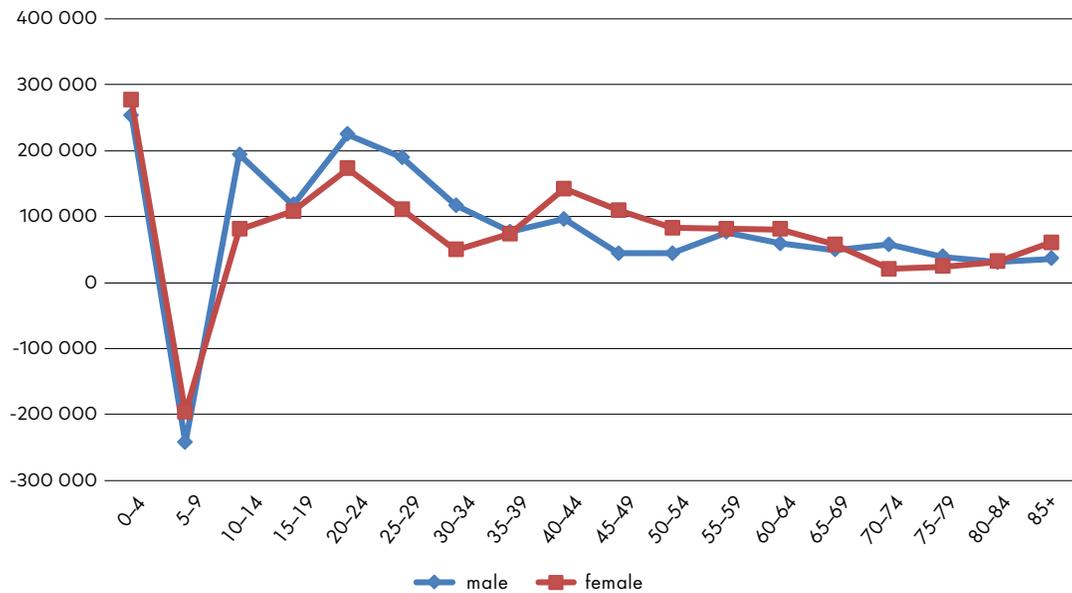
24. Figure A.5 presents estimates of net male and female migration by age groups, expressed as the number of net immigrants (i.e., immigrants minus emigrants). Through application of the intercensal cohort component method, it was found that the population of the country experienced a gain of 2.7 million persons in the period 2001–2011, which corresponds to an increase of about 270,000 persons per year.

25. The distribution of net immigration by age group tends to conform by and large to the general immigration pattern, with a peak concentrated in the group of young adults aged 15–30 and with the expected smooth decline among persons over age 60. The female distribution does, however, reveal a slight statistical bump in age group 40–49, which could perhaps be attributed to (a) the strong flow of women belonging to specific groups, for example, the group of those seeking employment after having raised their children or (b) a data quality-related issue associated with those cohorts.

26. On the other hand, net immigration of the population under age 15 does exhibit an unexpected pattern, particularly in age group 5–9, whose members were born during the period 2001–2006. Estimated net migration for age group 5–9 is calculated as the difference between the

population enumerated in 2011 and the population estimated using the fertility-related assumption for the period 2001–2006. The unexpectedness could be due (a) to a data quality-related issue such as age misreporting or (b) to the fact that the aforementioned fertility assumption does not reflect the real situation. For countries experiencing net immigration (e.g., Australia), the usual expectation is that it will hit another peak through the movement of very young children (see figure A.1). However, as was observed from the experience of Mexico (see para. 19), the data derived for the first two age groups might not be accurate and should therefore be used with caution.

**Figure A.5**  
**South Africa: estimates of net international migration by age and sex, 2001–2011**



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