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Handbook on Measuring International Migration through Population Censuses¹

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Handbook on Measuring International Migration through Population Censuses



Department of Economic and Social Affairs
Statistics Division

Handbook on Measuring International Migration through Population Censuses

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Department of Economic and Social Affairs

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Introduction

The need for handbook on statistics of international migration

A. Calls for better statistics on international migration

1. The formulation of sound policies demands solid data and balanced research using them. International community has been concerned for some time about the gaps in data on international migration for evidenced-based decision making. The governments have been urged at various occasions to regularly collect, compile and disseminate the information on cross border movements of people and their situation in a host society in an internationally comparable manner. However, no satisfactory improvement has been observed to date in terms of the availability and the standardization of international migration statistics.

2. One of the earliest pleas to improve international migration statistics goes back to as early as 1891, when the International Statistical Institute (ISI) at its congress in Vienna discussed about coordinating international migration statistics and emphasized the importance of having an uniform definition of an international migrant (Kraly and Gnanasekaran, 1987). During the early decades of the 20th century, the issue of internationally comparable migration statistics was taken up repeatedly at the conferences organized by international organizations, especially the International Labour Office (ILO), which was established to work for social justice for workers, including migrant workers (Kraly and Gnanasekaran, 1987). The discussions at those conferences often referred also to the methods of collecting and compiling emigration and immigration statistics.

3. The mass population displacement of people during and after the World War II and the subsequent post-war reconstruction of Europe that involved a large number of migrant workers, made an international community to realize that migration statistics continued to have been fragmented and reliable estimates on the patterns and trends of migration were still largely lacking both at regional and global levels. Hence, in 1948, shortly after the establishment of the United Nations, its Economic and Social Council considered the general issue of improving international migration statistics, whereas early activities of the United Nations regarding international migration statistics focused on documentation and analysis of statistical practices (Kraly and Gnanasekaran, 1987).

4. In 1953, the United Nations proposed a new set of statistical standards with explicit demographic conceptualization, against the criticism on the preoccupations of previous standards with manpower aspects of the migration process (United Nations, 1953). The 1953 United Nations recommendations, which elaborated on the collection of information on all arrivals to and departures from the country and proposed the standardization in definition of permanent immigrants 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 the recommendations by countries, with little resulting evidence in the improvement of migration statistics, prompted the call for revision of the

recommendation (Simmons, 1987). By then, it was also well acknowledged that a “concept of residence” had been a complicating factor in developing a satisfactory definition of a migrant for statistical purposes (United Nations, 1998).

5. In 1976, the United Nations developed new guidelines on international migration statistics. The salient features of the 1976 recommendation are the conceptual consistency with other statistical systems, notably international tourism statistics, and the identification of a number of additional categories of international population movements, and large set of model tabulations, which became later on as a reason for criticism against them as “overly complex” (Kraly and Gnanasekaran, 1987; Simmons, 1987). Following the spirit of 1976 recommendations, the United Nations also scaled up the data collection efforts, as seen in the publication of United Nations Demographic Yearbook 1977, featuring international migration statistics for the first time as its special topic (United Nations, 1978). Yet another slow improvement in international migration statistics made the United Nations Statistical Commission at its twenty-seventh session in 1993 request further work on implementing the 1976 recommendations, and eventually another revision (United Nations, 1998). It became apparent that while there had been a growing recognition in an international community that international migration was an issue of global concern, countries continued to gather data on international migration according to their own definitions and then made minimal adjustments to fit the data into the categories suggested by the United Nations.

6. Hence, while the 1976 recommendations are still in force, the first revision to the recommendations was submitted to and adopted by the Statistical Commission at its twenty-ninth session in 1997 and published in 1998 (hereafter called 1998 recommendation). The 1998 recommendation aimed at providing practical guidance on how to collect the statistics on migrant stock and flows relevant to the study of international migration (United Nations, 1998). It reviews the major types of data sources yielding statistics on international migration and suggests various ways in which they can be used to produce statistics, and provides a means of integrating the varied types of information available through the use of a framework for the reporting. However, the revision did not result in the wide application of the recommendations by countries nor the provision of international migration statistics to the United Nations Statistical Division. Concerned by the fact that the 1998 recommendations continued to be largely neglected, the two expert group meetings² organized consecutively by the Statistics Division in 2006 and 2007, concluded that there was a need for a practical methodological handbook that clarifies the philosophy of the concepts and definitions comprised in the 1998 recommendations and a guidance on how to use population censuses and surveys to collect international migration statistics and share examples from national practices.

7. In the meantime, the political debates on international migration resurged in the international community at the beginning of the twenty-first century and as a result, there have been renewed calls for States to invest in improving data on migration. There has been a perception that in a new era of globalization, significant increases in the exchange of knowledge, trade, and capital around the world, often driven by technological innovation, would stimulate the mobility of people than ever. By this time, international migration has become a phenomenon which virtually involves almost all countries in the world, as a country of origin, destination or transition. The discussion on international migration has been particularly fueled by the concerns about the unclear inter-linkages between development and international migration, hence calling for the data which can objectively attest the critical relationships. Through the United Nations High-level Dialogue on International Migration and Development in 2006 and 2013, countries voiced the concern about the scanty evidence on the nexus and emphasized the need for reliable, accurate, disaggregated, nationally relevant and

²The proceedings of the meetings are available at: <http://unstats.un.org/unsd/demographic/meetings/egm/migrationegm06/FINAL%20REPORT%20L3.pdf>, and <http://unstats.un.org/unsd/demographic/meetings/egm/migrationegmse07/>

internationally comparable statistical data and indicators on international migration in order to facilitate the design of evidence-based policy making for development.

8. With the adoption of the 2030 Agenda for Sustainable Development at the United Nations General Assembly in September 2015, international migration and its multidimensional relationship with development became an integral part of the global development agenda. Unlike the Millennium Development Goals (MDGs) which had no reference to migration issues, the Sustainable Development Goals (SDGs) which anchor the 2030 Agenda include several targets directly related to migrants, migration and mobility, and demand data to measure the progress towards the achievement of numerically specified targets (United Nations, 2015a). Furthermore, a key feature of the 2030 Agenda, as expressed by the pledge of “no one left behind” demands the disaggregation of data by migratory status, wherever relevant, in order to elucidate the vulnerability of migrants and certain types of mobility. Hence, the new global development framework has posed enormous challenges on national statistical offices to review the existing concept on migration, explore the possible sources of information, generate migration relevant indicators, and report them regularly in a timely fashion.

9. Most recently, the crisis associated with large movements of asylum seekers and irregular migrants into Europe furthered the issues of migration as a critical global agenda. In September 2016, the UN General Assembly convened the Summit for Refugees and Migrants in New York to reaffirm existing State obligations towards refugee and migrants. The New York Declaration for Refugees and Migrants adopted at the Summit recognizes there are many gaps in our knowledge about migration due to the lack of data on the subject (United Nations, 2016a). To better inform the public debate and to address migration challenges effectively, it is essential to strengthen international migration statistics. The declaration underlines the importance of improving migration data collection at the national level, and calls for enhanced international cooperation to achieve this objective.

B. Purpose and scope of the Handbook

10. In response to constant calls for better international migration statistics, especially to a request by the two United Nations expert group meetings organized in the 2000’s as mentioned in the previous section, the present publication is prepared, as a handbook, to assist countries by providing a practical reference guide on the collection and production of international migration statistics built on the 1998 recommendations on international migration statistics.

11. The present handbook places particular focus on the use of population and housing censuses as a source of information, while international migration statistics can be also generated from other sources such as population registers, administrative sources, and sample surveys. While a true harmonization of migration statistics remains a distant goal, the overwhelming majority of countries in the world conduct a population and housing census at least once in ten years and the censuses have been the most commonly available source of migration statistics.³ As will be discussed in this handbook, it allows an estimate of migrant stock and that of migrant flow in an internationally comparable manner through an inclusion of a few questions in a questionnaire. Indeed, the United Nations Principles and Recommendations for Population and Housing Censuses urges the inclusion of questions such as the country of birth, country of citizenship, country of residence once year ago or five years ago, and year of arrival in the country for the measurement of international migration (United Nations, 2016). The present handbook is released in early 2017, with the hope to timely

³During the 2010 round of World Population and Housing Censuses, which spanned the period between 2005 and 2014, two hundred fourteen (214) countries or areas have conducted at least one census. Available from: <http://unstats.un.org/unsd/demographic/sources/census/wphc/censusclockmore.htm>

serve for the preparation of the 2020 round of the World Population and Housing Census Programme, which spans the period from 2015 to 2024.

12. Attempts have been also made in this handbook to be as comprehensive as possible without overloading the reader with too much detail, but at the same time reflecting current practices in collecting and producing international migration statistics. Hence, wherever appropriate, the examples of country practices are included to illustrate the points of discussion and aid an easy application of recommendations at a country level. It is expected to be widely used by data production specialists, census experts and subject matter specialist.

C. Organization of the present Handbook

13. This publication is divided into nine chapters. It begins with the introduction of the concept and definitions on international migration applied for the statistical measurement. It clarifies the concept of international migrant in relation to the concept of country of usual residence, and discusses the two commonly used measures of international migrants: stocks and flows.

14. The second chapter describes major data sources for international migration, namely population censuses, sample surveys and administrative registers and other data sources. The advantages and limitations of each data sources are discussed.

15. The third chapter presents key information required to identify and characterize international migrants. These include the information to 1) define migrants based on the definition introduced in the first chapter, 2) differentiate and categorize migrants by migrant-relevant characteristics and 3) describe migrants according to their socioeconomic characteristics. The ability to capture these characteristics by different sources of information is also discussed.

16. The subsequent chapters provide detailed guidelines on how to measure international migration through population censuses: chapter four on aspects of planning and design of population censuses that are of importance in measuring international migration; chapters five and six on how to collect immigration and emigration data; chapter seven on estimating recent migration and net international migration; chapter eight on tabulations, statistics and indicators of international migration; and chapter nine on using international migration data from censuses with other data sources.

17. Lastly, the handbook contains the annex which details on how net migration rate can be estimated using censuses in an illustrative manner.

Chapter I

Concepts and definitions

A. Concepts and definitions related to international migration

1. Definition of an international migrant

18. As outlined in the Introduction, statistics on international migration are not only crucial as a demographic component for compiling the population count in a country, the nature of international migration also makes the international comparison of migration statistics essential. Since 1953, the United Nations has issued a series of Recommendations on International migration statistics which aim to promote international comparability. All of these recommendations dedicate a significant amount of discussion to the harmonization of the concept and definition of an international migrant for statistical purposes.⁴

19. The *United Nations Recommendations on Statistics of International Migration, Revision 1* (thereafter “the Recommendations”) associated the definition of an international migrant with the concept of country of usual residence, that is, an international migrant is “any person who changes his or her country of usual residence” (United Nations, 1998; IMF, 2009). Therefore, an immigrant must not have been a usual resident and will establish usual residence in the country he or she has entered. An emigrant should have been a usual resident of the country from which he or she is departing and is establishing usual residence in another country.

The concept of country of usual residence

20. The concept of usual residence exists in a number of statistical frameworks. In the 2008 System of National Accounts and the Balance of Payments and International Investment Position Manual, Sixth Edition, an institutional unit (persons, groups of persons in the form of households and legal or social entities) 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, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations and World Bank, 2009, Paragraph 1.48) The frameworks further state that “actual or intended location for one year or more” is used as an operational definition; although the choice of one year as a specific period is somewhat arbitrary, it is adopted to avoid uncertainty and facilitate international

⁴ The definition of international migrant outlined in this section is for statistical purposes and should not be confused with administrative or legal definition used in the country. See subsection on “The use of ‘immigrant’ for statistical and legal/administrative purposes” for the difference between the statistical definition and the administrative/legal definition.

consistency. The International Recommendations for Tourism Statistics also adopted the one year of more criterion for the duration of residence as is contained in the above two frameworks (United Nations and World Tourism Organization, 2010).

21. For the purpose of defining the usual residence of an enumerated person at the time of the census, a similar approach was adopted using the actual or intended duration of stay of the person, although two thresholds for the duration of stay were provided. More specifically, countries are recommended to use one of the following two criteria when considering a person's place of usual residence (United Nations, 2015b, paras. 2.48-2.50):

- a. *"The place at which the person has lived continuously for **most of the last 12 months** (that is, for **at least six 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. Note that for compiling data on international migration, the *"at least the last 12 months"* criterion is considered more appropriate, while the *"most of the last 12 months"* criterion could be necessary for defining usual residence of geographic areas within a country (United Nations, 2015b, para. 4.55). The criterion of *"at least the last 12 months"* for the concept of usual residence is also consistent with the one used in the System of National Accounts (European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations and World Bank, 2009, Paragraph 4.15), the Balance of Payment Framework (IMF, 2009, paras. 4.117-4.118), and in the International Recommendations for Tourism Statistics (United Nations and World Tourism Organization, 2010, paras. 2.16-2.18).

23. In connection with the country of usual residence concept, the Recommendations defined international migrant by incorporating a time element, which is reflected as follows:

"Long-term migrant is 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 (United Nations, 1998, para. 36)"

From the perspective of the country of departure the person will be an emigrant and from the perspective of the country of arrival the person will be an immigrant.

24. Following the definition, a straightforward example would be a person who was a usual resident of country A before moving to country B and has stayed in country B for at least 12 months. This person is then an international migrant – an emigrant from country A and an immigrant to country B. This 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. As simple as it seems to be, this definition does pose a number of challenges.

25. The first challenge applies to cases when, according to the definition, 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 the most recent move to country A. This person, according to the definition of country of usual residence, did not have a country of usual residence before moving to country A. Even though he or she establishes his or her country of usual residence (country A) by staying in country A for 12 months or more, there is no change of usual residence involved per se. Similarly, a person might leave country B for a period of time longer than 12 months but the person might be staying in several countries without establishing usual residence in any of the countries he or she is moving to. In this case, there is no change of usual residence either.

26. By strictly following the definition in paragraph 23 it will not be possible to define the person as an international migrant in either of the two examples presented above. 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 do not establish usual residence outside of the country as described in the above two paragraphs, the present Handbook introduced an operational definition of immigrant and emigrant (hence international migrant) as described in the next two paragraphs.

28. A person must satisfy the following conditions to be considered as an **immigrant** of a country:

- entering the country by crossing the border
- having been a usual resident of another country before entering or not a usual resident of the country when entering
- staying or intending to stay in the country for at least one year.

29. Similarly, a person must satisfy the following conditions to be considered as an **emigrant** of a country:

- leaving the country by crossing the border
- having been a usual resident of the country
- staying or intending to stay in another country or abroad for at least one year.

30. This operational definition (a) clarifies the definition of international migrant by spelling out the three key requirements and (b) relaxes the requirement to establish the previous country of usual residence for immigrants and the next country of usual residence for emigrants.

31. Note that in the operational definition the term “international migrant (immigrant and emigrant)” is used instead of “long-term migrant”. The use of the term “long-term migrant” in the Recommendations was to contrast with the concept of “short-term migrant” that refers to persons who move to another country for a period of at least 3 months but less than 12 months. The introduction of the term “short-term migrant” was to accommodate the increasing movement of people for a shorter period less than 12 months. However by definition of country of usual residence in this section, “short-term migrants” do not change their country of usual residence and should not be considered as an international migrant, while the “long-term migrant” is in fact equivalent to the concept of “international migrant”, which will be used throughout this Handbook.⁵

32. The second challenge in implementing the definition of an international migrant is related to the nature and capability of different data sources in capturing comparable data on migrants. In the case of measuring the duration of a person’s stay in the country, for example, population censuses are able to capture the amount of time a person has stayed at current residence, thereby the actual duration of stay in the country up to the date of census enumeration if this person lived abroad before moving into the current residence. When a population register is used, a person will be registered when he or she arrives at the country from abroad. It is not possible, therefore, to find out the actual period this person will be staying in the country. Many countries do have residence rules for registration but the duration information obtained at the time of registration is usually intended, rather than actual, duration of stay in the country. For data collection at the border, recorded duration of stay could either be intended duration or the duration recorded in the visa (legal duration).

⁵ See the subsection on “**Short-term international migrant**”: a misnomer? for more discussion on sub-term migration.

More detailed explanation is available in Chapter 3 on how each dimension of the definition of an international migrant is measured by different data sources.

33. The third challenge in applying the definition of international migrant lies with people whose country of usual residence cannot be established without ambiguity. Diplomats, armed forces, nomads and border workers, whom according to the Recommendations should never be considered as international migrants because of their strong ties to their country of origin and the difficulties in assigning their country of usual residence (United Nations, 1998, para. 42). These groups are enumerated below:

- (a) Persons belonging to the diplomatic and consular corps 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 are also unlikely to be viewed as changing usual residence since they are usually posted abroad for limited periods and may not establish dwellings in the country of destination.
- (c) Nomads, 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 the permission to be employed on a continuous basis in the receiving country provided they depart at regular and short intervals (daily or weekly) from that country. They should not be treated as changing their country of usual residence.

34. The fourth challenge in applying the definition of international migrant concerns people who maintain two or more residences in different countries in a given year. Examples include students and workers who live away from home for a certain period of time each year, as well as seasonal workers who cross borders in a circular way. In these cases, using a criterion that requires a person to be present in a country for most of the last 12 months might be preferred.

35. In cases where two countries may be considered as being the country of usual residence because the daily periods of rest are distributed equally between the two (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 considered, such as place of work, country where taxes are paid, where most family members and relatives are living, or country where the person owns most of his/her properties. The same approach may be extended to people who resided in multiple countries, logging less than 6 months in each. The United Nations census recommendations (United Nations, 2015b) have adopted a set of specific rules on who to include and exclude in the usual resident count and these rules are explained in detail in chapter 4.

36. While compiling international migration statistics, countries are recommended to use the most appropriate criterion when defining the country of usual residence. However, in order to have data comparable with those derived from other frameworks, countries are strongly encouraged to provide estimates using the *at least the last 12 months* criterion specified in the present Handbook.

2. “Short-term international migrant”: a misnomer?

37. According to the Recommendations, a “short-term migrant” is

“a person who moves to a country other than that of his or her usual residence for a period of at least 3 months but less than a year (12 months) except in cases where the movement to that country is for purposes of recreation, holiday, visits to friends and relatives, business, medical treatment or religious pilgrimage” (United Nations, 1998, para. 37).

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 concept of a “short-term international migrant” is a misnomer. A residence of at least 3 months but less than 12 months is not considered as the establishment of usual residence in a country, hence can not result in a change of country of usual residence and does not qualify someone as an international migrant. In practice, treating people moving from one country to another for at least 3 months but less than 12 months as international migrants inflates the number of migrants compared to the use of the *at least the last 12 months* criterion.

39. The use of the *at least the last 12 months* criterion to define 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 moving need to be studied in conjunction with circular and non-permanent flows of international mobility. The term international migrant should be used exclusively for the *at least the last 12 months* criterion, while the term mover may be used for the 3 to 12 month criterion.

3. The use of “immigrant” for statistical and legal/administrative purposes

40. The term immigrant covered in this chapter should not be confused with the same term used for legal and administrative purposes in the country. For statistical purposes, an international migrant, whether an immigrant or an emigrant, is defined based on the change of country of usual residence, i.e., the duration of stay and absence from the country, with the exception of some particular groups listed in paragraph 33. As long as the conditions outlined in paragraph 28 are met a person can be considered an immigrant; citizenship and the purpose for coming to the country are not considerations in the statistical definition.

41. The legal or the administrative term “immigrant” used in countries, however, may have different meanings. For instance, immigrants may refer to foreigners only but never for citizens because of the right of abode citizens have in the country. In a more restrictive way, the term “immigrant” in some cases refers to foreigners who have the right to settle in the country permanently. In this case, the person is given legal status to enjoy most of the privileges that citizens have in the country and is entitled to acquire citizenship later on, whereas persons coming into the country to study or work for 12 months or more are considered temporary residents, as they are expected to go back to their home country eventually. Therefore they are considered as “non-immigrants” in those countries.

42. When countries are compiling statistics on international migration, efforts should be made not to limit data compilation to foreigners or foreign settlers only. The statistics should also include other categories that may not be recognized as “immigrants” legally or administratively in the country such as foreign workers, students, asylum seekers and refugees as well as citizens who have left the country for more than 12 months and re-entered the country to stay for at least 12 months. Provision of clear definitions of the migration terminologies used in the country is crucial for understanding the data.

B. International migrants: flows versus stocks

43. The two types of measures of international migration most commonly used are: flows of international migrants and stocks of international migrants. The inflow of migrants is the number of international migrants arriving in a given country over the course of a specific period, usually a calendar year, and the outflow is the number of international migrants departing from a given country over the course of one year. The 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 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 that can be identified as international migrants at a given time.

1. Flows of international migrants

a. Definition

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.

- International immigrant flow is the number of international immigrants entering a given country over the course of a specified period, usually a calendar year.
- International emigrant flow is 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 period of time is important for the estimation of the size and structure of a country's total population at the end of the time period and also for the preparation of population projections. In addition, statistics on international migrant flows are necessary for examining the nature and magnitude of the flows and for designing migration relevant policies to cope with any significant change during a specific period.

b. Categorizing international migrant flows

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

47. The most basic categorization of inflows and outflows identifies eight groups based on three dimensions – arriving or departing; usual resident or non-usual resident; and citizens or non-citizens (Table 1.1). Usual residents of a country refer to persons who have established usual residence in the country, regardless their citizenship. “Citizens” refer persons who have the citizenship of the country when crossing the border, including both citizens at birth and naturalized citizens. In special cases when a person holds more than one citizenship, the person is considered to be a citizen of the country as long as he or she holds the citizenship of the country concerned. Usual residence in a country is a key element in defining international migrant statistically (see definition of usual residence above) while citizenship plays an important role from a policy perspective as citizens and non-citizens are usually scrutinized differently at a national border.

Table 1.1
Categories of inflows and outflows by usual residence and citizenship

	Usual residence status in the country concerned	Citizenship status when crossing border ⁶	Categorization of flows
Inflows of	Non-residents	Citizens	Immigrating citizens (<u>Group A</u>)
		Foreigners	Immigrating foreigners (<u>Group B</u>)
	Residents	Citizens	Residents returning from short stay abroad
		Foreigners	Residents returning from short stay abroad
Outflows of	Non-residents	Citizens	Visitors departing after short stay
		Foreigners	Visitors departing after short stay
	Residents	Citizens	Emigrating citizens (<u>Group C</u>)
		Foreigners	Emigrating foreigners (<u>Group D</u>)

48. When the categories of immigrants and emigrants are discussed in this section, it is assumed that the *at least the last 12 months* duration of stay or absence criterion is met. Therefore immigrating citizens and foreigners (Groups A and B) are non-residents of the country concerned when entering and intend to stay (or have stayed) in the country for 12 months or more. Emigrating citizens and foreigners (Groups C and D) are residents of the country when leaving and intend to be away (or have been away) from the country for 12 months or more.

49. The following four sections define policy relevance for each of the four categories of migrants (Groups A to D) and present further categorizations that are relevant for data collection. Arriving residents and departing non-residents are not considered in international migrant flow statistics (cells shaded in the table above) and therefore are not further classified.

Immigrating citizens (Group A)

50. Immigrating citizens include citizens who are returning after having been abroad for at least 12 months as well as foreign-born citizens entering for the first time. This group of persons can theoretically be categorized according to their purpose of staying abroad (Table 1.2). However, such categorization is not usually done since by convention citizens are free to enter their country and are not asked about their purpose of staying abroad. Policies around returning citizens (or

⁶ The foreigner category in the table includes stateless persons. This also applies to other instances whenever the term “foreigner” is used, unless stateless persons are listed as a separate category.

returned migrants) are usually on facilitating the return of highly-skilled migrants and the knowledge and resource they bring back to the country. Re-integration of returned migrants in the country of origin is also of interest. A possible source of data would be the population register, which can provide the total number of returning citizens or foreign-born citizens entering for the first time by some basic characteristics. Population censuses could capture a partial picture of immigrating citizens by asking whether a citizen has ever lived abroad and when he or she came to live in the country. One issue with these data is that censuses identify citizens at the time of enumeration rather than at the time of entering the country. 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 more discussion in chapter 5).

Immigrating foreigners (Group B)

51. The group “immigrating foreigners” are usually subject to the most administrative control in the country receiving these immigrants. Considering the reason for admission into the country (Table 1.2) is useful for supporting migration management policies. European Union migration policies, for example, have specific provisions for people seeking asylum, migrants for family reunification and labour migrants, all of which are covered in Table 1.2 (Poulain, Perrin and Singleton, 2006). A comprehensive population register would be the best source in capturing this group. Special registers of foreigners, foreign workers, foreign students or asylum seekers could provide information on specific categories of immigrants. Population censuses provide a partial picture of the flow of immigrating foreigners but have limitations (see Chapter 7 for more information) and assessing the reasons for migration is usually challenging in censuses and is not a common practice. Border collection could be a potential data source although the magnitude of cross-border movements makes it extremely challenging to identify migrants. Information collected at the border is also rather limited.

Emigrating citizens (Group C)

52. For countries concerned with emigration, it is important to have information on the total number of their citizens emigrating as well as the purpose for emigrating, such as study, training, work, family reunification. (See Table 1.2 for detailed categories of emigrating citizens). For example, data on the size and key characteristics such as age, sex and education of emigrating citizens as well as the purpose of emigration can help formulating policies to address the challenges related to the loss of skilled citizens. If these key characteristics are collected and an extensive record-matching system is in place to identify emigrants from all persons who travel abroad then such information can either be compiled from the border collections or through a registration system that requires emigrating citizens to be recorded. For most countries information required to categorize emigrants into detailed categories is not readily available. In the 2010 census round, a number of countries made efforts to collect data on emigrants and their basic characteristics. This approach has serious limitations and is discussed further in Chapter 6.

Emigrating foreigners (Group D)

53. For 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 but this distinction is less policy-relevant as a foreigner leaving the country is not usually a concern. Nevertheless it may be important to know which groups of foreigners left the country, for example, foreign students who left the country after completing their studies, foreign workers whose work permits expired, asylum seekers who have been in the country for a period longer than 12 months but are not allowed to stay in the country anymore and undocumented persons who have been found as such and are deported. (See Table 1.2 for detailed categories of emigrating foreigners.)

Table 1.2
Taxonomy of international migrants according to entry status established by receiving State ⁷

	Immigrating		Emigrating	
	A. Citizens	B. Foreigners	C. Citizens	D. Foreigners
1	Citizens returning from studying abroad (plus their dependents)	Arriving foreigners admitted as students (plus their dependents)	Citizens departing to study abroad (plus their dependents)	Departing foreign students (plus their dependents)
2	Citizens returning from being trained abroad (plus their dependents)	Arriving foreigners admitted as trainees (plus their dependents)	Citizens departing to be trained abroad (plus their dependents)	Departing foreign trainees (plus their dependents)
3	Citizens returning from working abroad (plus their dependents)	Arriving foreigners admitted as migrant workers (plus their dependents, if allowed)	Citizens departing to work abroad (plus their dependents)	Departing foreign migrant workers (plus their dependents)
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

⁷ The categories are extracted partially from the Recommendations on Statistics of International Migration, Rev. 1, United Nations, New York, 1998. Sales No. E.98.XVII.14, Para. 38 - "Revised taxonomy of international inflows and outflows according to entry status established by receiving State". The foreigner category in the table includes stateless persons

54. The detailed categorization presented in table 1.2 not only reflects the administrative control at the border or at registration but also mirrors 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 people migrating. 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 those who are refugees.

55. Presenting statistics on migrant flow by the various categories proposed in the taxonomy also provides added value because this clarifies the interpretation of figures on the different categories of migrants. This also improves international comparability of national data.

56. The different categories presented in table 1.2 are meant to be mutually exclusive, implying that the receiving country assigns to foreigners a single status at the time of entry. That status is based on the main reason for granting admission to the foreigner concerned. Thus, if a person admitted as a student is also granted permission to work to support his or her studies, the person should be classified under category 1 as a foreign student and not as a migrant worker (category 3) since the main reason for admission is 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 considered, the person should be classified as an asylum-seeker and not a migrant worker since the main reason for admission is the person's request for protection. In the case of asylum-seekers, categories 7 and 8 are also mutually exclusive since the former concerns 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 have to wait for the application to be adjudicated to obtain another status.

57. Definitions of each of the categories appearing in table 1.2 are presented in Box 1.1. These definitions are made from the perspective of the receiving country and thus refer to categories of immigrating foreigners. However, as noted earlier, every foreigner arriving in a country can be considered a citizen departing from another country. Therefore, the definitions presented also refer to the possible categories of emigrating citizens of the reporting country.

Box 1.1**Definitions of the categories included in the taxonomy**

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. If their dependents are admitted, they 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. If their dependents are admitted, they 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 they can hold. Their dependents, 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 dependents, if admitted, are included in this category.
5. *Foreigners admitted for settlement*: Foreign persons granted the permission to reside in the receiving country without limitations regarding duration of stay or exercise of an economic activity. Their dependents, if admitted, are also included in this category.
6. *Foreigners admitted for family formation or reunification*: This category includes the foreign fiancé(e)s and foreign adopted children of citizens, the foreign fiancé(e)s 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.
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 to be resettled in the receiving country 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^a relating to the Status of Refugees and the 1967 Protocol^b, other pertinent regional instruments, or humanitarian considerations.
8. *Foreigners seeking asylum*: A category that 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 the permission to stay until they can return safely to their countries of origin (in other words, 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, as well as 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.

a. United Nations, Treaty Series, vol. 189, No. 2545. a

b. Ibid., vol. 606, No. 8791. b

2. Population stocks related to international migration

58. Based on the definition of international migrant, a natural definition of stock of international migrants comprises of “all persons who have changed country of usual residence” (Para 2). 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 other than the one in

which they are present for at least one year or intend to live for at least one year at the time data is 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 the country for at least one year or intend to be absent for at least one year.

59. It is common to find that the need for information relates not to the generality of international migrants as defined above but rather to subgroups of migrants or even people who are not migrants themselves but are related to migrants (children of migrant parents for example). Subgroups of immigrant stock that are of policy interest are generally built around two characteristics of migrants: country of citizenship and country of birth. Examples are stocks of foreigners and stocks of foreign-born population as well as further-divided subgroups such as stocks of foreign-born citizens and foreign-born foreigners. The stock of returned migrants is another subgroup of immigrant stocks that relate to citizens. Policy makers are also interested in the stock of second generation immigrants – the group of people who might not be immigrants themselves but were born to immigrant parents.

60. Similarly for emigrants, the most relevant question relates to citizens living abroad rather than the generality of stock of emigrants as defined above. The stock of foreigners who left the country is usually not of particular concern to policy makers.

61. Separate frameworks are presented below to identify population groups that are commonly used for the study of immigration and emigration. The frameworks also illustrate how these population stocks relate, or correspond to, the stock of international migrants defined earlier in paragraph 58.

a. Population stocks related to immigration

62. As discussed earlier in this chapter, the most widely-used population stocks related to immigration are identified by two variables - country of birth and country of citizenship. These are therefore two of the dimensions used in the framework for population stocks related to immigration. A third dimension, whether a person is an immigrant or not, is included 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 the country. Persons who are temporary present in the country are excluded, while persons who are temporarily abroad but are part of the usual resident population of the country are included. (Table 1.3)

Table 1.3
Framework for population stocks related to immigration

	Usual resident population			
Native or foreign born	Immigrants		Non-immigrants	
	Citizens	Foreigners	Citizens	Foreigners ^{12,13}
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
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63. The framework identifies the stock of (1) foreign-born and native-born population based on the variable country of birth; (2) foreigners and citizens based on the variable country of citizenship; and (3) immigrants and non-immigrants based on the variable whether a person is an immigrant or not. Many other population stocks related to international immigrants can also be identified from the framework, such as the stock of foreign-born citizens, the stock of foreign-born foreigners and so on, by considering multiple dimensions. Descriptions are provided for each cell within the framework.

64. As foreign-born usual residents by nature should always be immigrants to the country, the categories under both foreign-born and non-immigrants are shaded in grey as not applicable. The only exceptions are babies who left their country of birth before reaching the age of one. Theoretically speaking they were not away from the reporting country for at least one year but 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 on the left-hand side of Table 1.3 (Groups A, B, E, and F). Thus among usual residents of the country, all native-born persons, whether citizens or foreigners, who emigrated and returned thereafter; plus all foreign-born persons, including citizens born abroad who immigrated, together constitute the totality of immigrant stock. This concept is closely linked to the basic tenet of international migration. Although not of particular policy interest, the “stock of immigrants” provides a theoretical basis and point of reference for comparing the scope of other population stocks considered later in this section.

Stocks of foreign-born persons

66. The stock of foreign-born persons refers to the stock of population born abroad. They were not part of the country at the beginning of their lives. This group of people may not speak the language of the country and may have different education and training context compared to those born in the country, which may affect their integration in the country. This group is represented by Groups E and F in Table 1.3. Most foreign-born usual residents are immigrants, that is, they have lived at least a year of their lives outside the country in which they are enumerated and they are now usual residents of the country. The only exception would be persons who were younger than one year of age before settling in the country where they are enumerated and would therefore not strictly qualify as immigrants but nonetheless are usually treated as immigrants to the reporting country.

67. The stock of foreign-born population should not be equated with the immigrant stock for the reason that it excludes 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 1.3). These 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, may be desired. At present, the foreign-born population is one of the most commonly used measures of “immigrant stock”.

Stocks of foreigners

68. The stock of foreigners refers to the stock of population who do not have the citizenship of the country of enumeration (Groups B, D and F in Table 1.3). The stock of foreigners is also widely used in countries to represent the stock of immigrants. Whereas by definition virtually all foreign-born persons qualify as immigrants, many foreigners are not (as illustrated in Group D in Table 1.3). For example, children born to foreign parents are accorded the citizenship of their parents in some countries and are thus foreigners even if they were born and have always been living in the same

countries. These children are foreigners but not immigrants. On the other hand, not all immigrants are covered by the stock of foreigners. A citizen who has emigrated from his or her country of citizenship and came back to become usual residents of the country again is an immigrant yet the person is not included in the stock of foreigners.

69. Nonetheless, citizenship is a fundamental determinant of the rights that a person has in the country in which he or she is located. Countries exercise more control over foreigners than citizens, not just in their movements but in other activities as well. Thus, for purposes of assessing the integration of immigrants or the effects of differential rights and entitlements, the distinction between citizen and foreigner is basic. Comparing the labour market outcome of foreigners with citizens, for example, would provide an indication of how foreigners are integrated into the society. For these reasons, the stock of foreigners figures prominently in the study of international migration.

Stocks of returned migrants

70. The stock of returned migrants refers to citizens of the country of enumeration who emigrated and subsequently came back to live in the country (Groups A and E in Table 1.3). Returned foreigners are not included. This group of persons is important to countries that experience a large number of citizens returning, as the knowledge and resources brought back by returned migrants as well as the re-integration of returned migrants are usually of policy interest.

71. Note that the citizens here 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 returned migrants. Depending on the source of data, obtaining information on whether the person is a citizen at the time of return is not always possible. Population registers are capable of collecting the citizenship of a person immediately after their arrival in the country, but censuses and surveys usually collect citizenship at the time of enumeration. Therefore a less strict definition of returned migrants, when data are collected through censuses and surveys, would cover all immigrants who are citizens at the time of data collection. The figure would then include those who acquired their citizenship after entering the reporting country.

72. Another deviation from the definition of returned migrants is to consider native-born persons who have lived abroad for a period of at least 12 months before returning to their native country as returned migrants (see chapter 5 on collecting data on returned migrants through censuses).

Stocks of foreign-born citizens

73. The stock of foreign-born citizens refers to persons who were born abroad and who have the citizenship of the country of concern (Group E in Table I-3). This group of people includes those who were born abroad but acquired citizenship of the country from the time of birth (probably from native parents) or obtained the citizenship through naturalization.

Stocks of foreign-born persons who are currently foreigners

74. The stock of foreign-born persons who are currently foreigners refers to the stock of population who were born abroad and who do not have the citizenship of the country of enumeration (Group F in Table I-3). This group sometimes is indicated as the real “foreign” population.

Stocks of “second-generation immigrants”

75. The stock of “second-generation immigrants” refers to the stock of persons who were born in the country and whose parents were both born abroad. To illustrate this particular population stock, an additional dimension is introduced to expand the framework for the stock of immigrants – country of birth of parents (Table 1.4). The group of “second-generation immigrants” corresponds to the third row of Table 1.4.

76. Note 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 intend to live in) the country for at least 12 months. However identifying the “second-generation immigrants” as one important population stock related to immigration is necessary to assess their socioeconomic situations such as their education level and employment status in comparison to people who are born abroad to foreign-born parents (first-generation immigrants, row 4 in Table 1.4) as well as to people who are native-born to at least one parent who is also native-born (row 1 and 2 in Table 1.4).

77. The group that includes both the “first-generation immigrants” and “second-generation immigrants” is sometimes referenced to as the “stock of persons with foreign background” (UNECE, 2015a). Note that cells labeled as “Not applicable” because people who are born abroad cannot be non-immigrants.

Table 1.4
Extended framework for population stocks related to immigration - stock of persons with foreign-born parents

Country of birth of parents	Native or foreign born	Usual resident population			
		Immigrants		Non-immigrants	
		Citizens	Foreigners	Citizens	Foreigners
At least one parent was 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 related to emigration is the stock of citizens living abroad. Information on the size and composition (by sex, age, education, labour force status and duration of residence abroad) of citizens living abroad as well as the purpose for citizens living abroad is relevant for the country of origin for a number of reasons, including assessing the magnitude of emigration of highly skill personnel (brain drain) and developing policies to retain citizens and to encourage citizens living abroad to return. In countries with a large volume of emigrating migrant workers, the total size of citizens living abroad can also be used to provide some indication of the remittances.

79. The framework for identifying the stock of citizens living abroad starts from a different position from the one used for immigration. For the study of immigration the focus is the usual residents in the country, while for the study of emigration the focus is non-usual residents of the country concerned since, by definition, usual residents of the country cannot be emigrants at the same time.

80. Table 1.5 below is the framework that demonstrates the division of the world by usual residence of the country concerned and by citizenship. Note that the term “citizens living abroad” refers to citizens who are not usual residents of the country they have citizenship with (shaded cells in Table 1.5).

Table 1.5
Framework for identifying the stock of citizens living abroad

Ever usual residents of the country	Usual resident of the country (at time of data collection)	Citizens	Foreigners
Yes	Yes	A. Citizens, usual residents of the country concerned at the time of data collection (also considered ever-usual residents of the country)	B. Foreigners, usual residents of the country concerned at the time of data collection (also considered ever-usual residents of the country)
	No	C. Citizens, not usual residents of the country at the time of data collection, ever usual residents of the country concerned	D. Foreigners, not usual residents of the country at the time of data collection, ever usual residents of the country concerned
No	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 abroad are emigrants of this country. A citizen who has never been in the country but obtained his or her citizenship through parents cannot be considered as an emigrant of this country. (Table I-5).

Chapter II

Data sources for measuring international migration

82. Data sources for international migration statistics can be grouped according to 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 data sources for data on international migration

1. Population census

83. A population census is the total process of planning, collecting, compiling, evaluating, disseminating and analysing demographic, economic and social data at the smallest geographic level pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country (United Nations, 2015b, para. 1.4).

84. Population censuses are perhaps the most widely available source of internationally comparable information on international migration in the world. Despite the fact that censuses cannot capture the entire picture of migration flows, they are still by far the only source of international migration statistics for many countries in the world.

85. Population census is a major source of data on the stock of foreign-born or foreigners in the country. It is also possible for population census to capture information on place of residence one or five years before enumeration, thus allowing the possibility of obtaining the number of international migrants who arrived during the relevant period prior to enumeration and remained in the country until the time of enumeration. For some countries, population censuses are also used to generate the stock of immigrants by asking questions on whether the respondent has ever lived abroad and the duration that he or she was away. In addition, estimates of net immigration can often be derived for the intercensal period by using census data on the total population, taking into account births and deaths that occurred during the same period.

a. Advantages

86. The most distinctive strength of the population census lies in its universal coverage. Because a census includes all residents, all international migrants are covered. Its universal coverage permits generation of summary statistics at a low geographical detail or for small population groups, and the production of extensive and detailed cross-tabulations of migrant characteristics. This feature of the census is a very important one where migrants, or certain categories of migrants, represent a small proportion of the population.

87. Because of its universal coverage, the census also covers undocumented migrants. Even if the census is not able to reach some portions of undocumented migrants, it is the best source available given that administrative sources like population registers and residence permit systems by definition exclude undocumented migrants.

88. Another advantage of the census is that it collects a substantial amount of information about each individual. Because of this, it has the potential of characterizing international migrants in terms of certain demographic and socio-economic characteristics. Thus, it is 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 socio-economic 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 the investigation and analysis of a wide range of policy relevant issues.

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

90. There is greater uniformity across countries in the type of data that censuses produce on international migration than in those from any other data collection system. Because censuses can accommodate only a small number of questions eliciting straightforward answers, they cannot introduce much variability in the range of questions or concepts used (Bilsborrow, Hugo, Oberai and Zlotnic, 1997).

91. This peculiarity of census data opens up the possibility of sharing of international migration data among countries to estimate the volume of emigration. Information on emigration is rarely collected in border control systems, and the completeness of data from censuses and population registers with respect to emigration is acknowledged to be insufficient in most countries. While it will not obtain information on all emigration, the use of censuses of destination countries to piece together a picture of the emigrant population of an origin country has been done in Latin America and was recently tried in some groups of countries in Europe (see chapter 6, section D).

92. Data from two successive censuses can be used to estimate net international migration. The estimate obtained with such method is an approximation which also requires reasonable estimates of mortality and fertility. For countries that have no other means of estimating migration flow, long-term net migration obtained by this method represents a viable source of information.

93. Finally, since population censuses are taken at regular time intervals (usually 10 years), there is the possibility of examining long-term trends through comparisons of statistics from two or more censuses to allow governments to monitor shifts in migration regime.

c. Disadvantages

94. Against the above advantages of using census data to analyse international migration it is necessary to weigh a number of disadvantages. First, because censuses are generally carried out only every decade (or five years in a few countries), they cannot capture many of the current trends in international migration in a timely way.

95. Second, because questions in censuses are very limited in number and restricted to those that are factual and easily quantifiable in nature, it is generally not possible to include direct questions relating to causes and consequences of migration, which would require detailed questioning and probing.

96. Third, some countries employ sampling in their population census. In these cases, countries administer long forms on a sample basis (say, one in 10 households) in order to investigate certain topics in greater depth. Thus, the long

form is applied to a sample of households, while a short form is applied to the rest. Data collected for a sample in the census have similar limitations as any sample survey data. For the measurement of international migration, the problem relates to the fact that migrants are not randomly spatially distributed throughout the population and are often highly clustered, so that sampling them accurately becomes difficult. Moreover, where particular migrant groups are a very small proportion of the national population, the use of sampling can result in insufficient numbers of certain groups of migrants being detected, which limits the use of the information gathered because estimates of these small populations are not reliable enough for detailed analysis and cross-tabulation.

97. Fourth, while censuses seek to cover the whole population, there are inevitably people missed, and migrants tend to be especially prone to not being enumerated in the censuses. This is especially the case if international migrants have a vested interest to avoid being counted or to misreport their migrant status. Moreover, there can be elements in census design which systematically exclude 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 surrounding migrant enumeration and therefore may not detect errors in reporting during the census taking process.

99. Finally, many of the questions involving international migration require responses that relate to events that took place within specified periods in the distant past, thus relying on the respondent's ability of not only event recall but also temporal recall. Recall errors and telescoping effects could lead to error in ascribing migration status.

100. Nevertheless, the census is an important source of international migration data, especially for countries that do not have reliable population 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 presents an important window of opportunity to significantly enhance the data and thus the understanding of the scale and policy implications of international migration.

2. Household sample surveys

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

102. Specialized household surveys on international migration focus on topics related to international migration. The survey is more flexible compared to the other-purpose household survey as the survey can be designed to fit its objective and to target the right population. Many specialized migration surveys study not only the flows of migrants but more importantly the causes and consequences of migration. Some surveys are done simultaneously in both the sending and receiving country. Longitudinal surveys were also carried out to monitor the changes over time in the situation of immigrants.

103. Other-purpose surveys focus on specific topics such as labour force and employment, fertility and mortality, or income and expenditure. Other-purpose household surveys that have large sample size have been used to collect some information on international migration by adding a few questions or a question module related to international migration.

104. The strength of household sample surveys in studying international migration is the wealth of information that can be collected relative to other data sources, which allows for in-depth analysis of the likely causes of international migration or of its consequences for the persons involved. For example, household sample surveys can collect information on the situation of the migrants prior to migration, which is vital to understanding the determinants and consequences of

migration for international migrants. Another advantage of household survey in comparison to other sources is its flexibility to capture the group of migrants of most interest to the study.

105. A major challenge in using sample surveys to study international migration is the requirement of sample size and the associated trade-off with sampling errors. Because of the low percentage of international migrants in most countries, the sample size of the survey needs to be reasonable large to identify enough migrants for meaningful analysis. The sample size requirements will further increase if the interest of the study is a sub-group of migrants, for example, recent migrants or returned migrants. In terms of measuring the magnitude of migrant flow or stock, large-scale sample surveys have to be conducted.

106. There are also relative advantages and limitations related to specialized international migration surveys and other-purpose household surveys in studying international migration. Specialized international migration surveys are flexible in identifying the target population and including the required number of questions, which may not be easily achieved by using other-purpose surveys. Specialized surveys, however, tend to be very expensive to conduct and are less frequent if they are ever conducted in a country. On the other hand, many other-purpose surveys such as demographic and health surveys, labour force surveys and living standard surveys are usually regularly conducted and it requires less resource to add some questions on international migration.

3. Administrative registers

107. Administrative registers include population registers, registers of foreigners and other special types of registers covering particular groups of persons, such as registers of asylum-seekers. A register is a data system for the continuous recording of selected information pertaining to each member of the target population. Although the main purpose of registration is administrative, a register can be used for the compilation of up-to-date statistical information on the size and characteristics of the target population. The registers of interest for the generation international migration statistics are those in which changes of country of residence are recorded for the target population.

a. Population register

108. For countries deriving statistics on international migration flows from national population registers, the identification of international migrants depends on the rules in place to determine inscription in, or deregistration from, the register. If for example, a person, citizen or foreigner is registered when they intend to stay in the country for at least one year, then all persons registered could be considered as immigrants. Similarly, when the rule to deregister is based on someone leaving the country for at least one year, then all persons deregistered are considered emigrants. Provided general compliance with the rules of registration and deregistration can be assured, national population registers offer one of the best sources of comprehensive statistics on international migration. They generate statistics on both inflows and outflows and, provided foreigners are subject to similar registration rules as citizens, they can produce statistics covering the movements of both foreigners and citizens in similar ways. Population registers can also produce annual data on migrant stocks.

109. There are certain limitations to the use of population registers for statistics on international migration. First, a population register is not established for statistical purposes and as a result, statistics derived from the register depend on the rules and regulations regarding registration and deregistration. Second, those rules vary considerably not only between countries but also within countries depending on the citizenship of the person being registered or deregistered. Variation of rules among countries yields data that are not strictly comparable at the international level. While at the national level, when different rules are used for people with different citizenship, additional estimation procedure is needed to compile international migration statistics for the country. Third, the rules, especially on deregistration, are not always followed. For example, a person may remain registered even when he or she has left the country for lengthy periods either because they

leave with the intention of returning in the near future and then delay their return, or because they are not aware of the deregistration rules. Consequently, emigration statistics derived from population registers are often downwardly biased because of the failure to deregister of persons leaving the country for lengthy periods.

b. Register of foreigners

110. Registers of foreigners operate in a manner similar to population registers but cover only foreigners who are residents of the country legally. Just as in the case of national population registers, the conditions under which foreigners are inscribed in, or deregistered from, the register of foreigners provide a characterization of persons who can be considered international migrants. Registers of foreigners usually accord priority to the recording of the migration characteristics of each person registered, including the type of residence permit and its duration of validity. Consequently, registers of foreigners have the potential to provide information on specific categories of international migrants.

111. In principle, registers of foreigners can be used to obtain statistics on both the inflows and outflows of foreigners from a country and on the number of foreigners 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 length 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 upwardly biased by virtue of the failure of departing foreigners to deregister.

112. Although registers of foreigners are likely to achieve fairly comprehensive coverage of inflows of foreigners granted permission to reside in the country, the coverage of those leaving the country for a long periods, or for good, is less complete. This lower coverage is mainly due to lower compliance with the deregistration rules.

c. Register 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 in the country and their departure, they also have the potential of producing statistics on the stock of asylum-seekers and the net inflow of asylum-seekers. Statistics on the stock of asylum-seekers can be derived from the number of asylum-seekers present on the register 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 a year later.

d. Summary

114. Population registers, registers of foreigners and registers of asylum-seekers all have the potential of producing information on certain groups of persons who change their country of usual residence and qualify as international migrants. Population registers have the potential of providing 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 between countries, comparability of the statistics obtained can most easily be achieved by identifying international migrants based on follow-up one year after registration or deregistration. Persons who remain registered one year after registration qualify as immigrants according to the definition presented in chapter 1. Similarly, emigrants are identified as persons who deregister and do not register again over the course of a year. Such a strategy impacts the timeliness of the statistics and implies 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. Other data sources of data on international migration

115. In addition to major data sources described above, there are some data sources that have been used by some countries in collecting data on international migration. Although appropriate in some contexts, these sources come with their limitations that have prevented them from being used by a broader number of countries.

1. Border collection

116. Border collection refers to the collection of information at ports of entry into and departure from a country, regardless of whether they are actually located at the border (they usually include airports and other sites at which persons formally enter or leave a national territory such as seaports or land borders). The collection of data at the border can be based on legal documents and statistical forms. Legal documents through which the status of persons arriving and departing is established include passports, visas, residence permits and so forth. Statistical forms, on the other hand, specifically refer to embarkation and disembarkation cards completed by arriving and departing passengers.

117. Statistics derived from border collection have the advantage of reflecting actual moves with a high degree of accuracy in terms of timing, mode of transport and port of entry or departure. However, the task of gathering information from all persons arriving and departing from a national territory is usually well beyond the means at the disposal of many countries. Errors in coverage of the overall number of arrivals or that of departures can result in very sizeable errors in the difference between the two which gives a measure of net migration and is usually several orders of magnitude smaller. This explains the importance of devising criteria that permit the identification of international migrants from among the larger volume of travelers so that data-collection efforts can be better targeted.

118. In practice, unless a system is in place to identify migrants from visitors by matching records of inflows and outflows at the border so their actual duration of stay is measured, statistics derived from border collection rarely provide the best measures of international migration flows. This is due to the difficulties involved in gathering reliable information from a large volume of people subject to different degrees of control depending on their citizenship, mode of transport and port of entry. If the embarkation and disembarkation cards are used in such a way that there is minimal verification of the forms filled in by passengers, the reliability of the information gathered may be low. If on the other hand, the information provided by passengers is corroborated by the authorities in charge of border control by comparison with other documentary evidence, the independence of the statistical information from administrative considerations may be compromised. In any case, it is unlikely that foreigners requested to report their intended length of stay would state that it is considerably longer than that allowed by the visa or residence permit that they hold.

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

120. A few countries have been fairly successful in using passenger surveys to identify international migrants. The International Passenger Survey in the United Kingdom, for example, has been used to derive data on size and characteristics of migrant flows as well as on travel and tourist expenditure. As data are collected from a sample of travelers, the border survey suffers from both sampling and non-sampling errors. Obtaining appropriate sampling frames is another challenge. The cost of such 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 either inflows or outflows of particular groups of international migrants. For example, statistics derived from the issuance of residence permits refer to inflows of foreigners; those obtained from the issuance of work permits refer to inflows of foreign migrant workers; and those obtained from the official clearance of departing migrant workers cover citizens whose contracts to work abroad must be scrutinized before departure.

122. Certain administrative sources refer to even more specific groups of persons. For example, data on the number of applications for asylum filed over a period is an indicator of the inflow of asylum-seekers. Also, records kept by tax or social security authorities are a potential source of information on the numbers of foreigners paying taxes or covered by social security. Data derived from those sources are indicative of the size of the employed foreign population as is information obtained from reports by establishments (namely, enterprises, firms and manufacturing facilities) on the number of foreign workers they employ.

123. Similarly, the number of deportations during a year provides information about only a segment of undocumented migration and so do registration forms filled at the time of regularization drives. In countries of origin where special insurance schemes have been set for citizens migrating to work abroad, the records of 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 maybe indicative of the number of citizens leaving to work abroad over a specific period of time.

124. Clearly, there is a wide variety of possible administrative sources, which differ considerably in terms of modes of operation, the segment of migrants covered and types of statistics produced. However, all of them share a common trait: statistics derived from these sources usually refer to administrative records rather than people. Thus, the number of residence permits issued over a year may not be equivalent to the number of persons admitted over that year if a person can receive several residence permits in a year or if the permit granted to the head of a family also covers his or her dependants. Similarly, the number of deportations carried out over a period may be higher than the number of persons involved if those deported keep on returning and are sent back several times during the period; or the number of asylum applications filed can understate the number of asylum-seekers involved when a single application can be filed on behalf of a family.

125. Another drawback of using the above administrative sources is that sometimes permits are issued not only to new arriving foreigners (or newly arrived foreign workers) in a country but also to those who have resided in the country for a period of time to either renew or change the type of visa held. Therefore, the statistics generated from those administrative records do not reflect the real inflow of migrants. Although none of the administrative sources reviewed is capable of producing information on all international migrants, the information they yield is nevertheless valuable and should not be discarded because it is partial. It is therefore important to provide a means of compiling and disseminating the various types of data available in ways that make clear their meaning, coverage and limitations.

CHAPTER III

Key information and measurement

126. Information relevant to the collection and compilation of statistics on international migrants are classified into 3 types: (a) defining characteristics that are needed for identifying migrants based on definitions provided in chapter 1; (b) distinguishing characteristics that can be used to differentiate and categorize migrants such as country of birth and citizenship, duration of stay in the receiving country and reasons for migrating; and (c) descriptive characteristics that can be used to assess the settlement experience of international migrants and include sociodemographic variables such as sex, age and education, as well as economic characteristics such as labour force status and occupation, plus housing characteristics, health status, and civic participation such as citizenship acquisition and participation in the election.

127. The ability to capture these three types of important information varies among different data sources as each has its own strength and limitation, as described in chapter two. For example, information on reasons for migration is rarely asked in population censuses while migrants' actual duration of residence in a country is challenging to measure by any data source unless extensive record matching is carried out for all the cross-border movements. Therefore, efforts have been made in this chapter to discuss how well each data source can be used to capture these three types of important information.

A. Defining characteristics

128. As described in chapter 1, immigrants and emigrants are defined by three elements: (a) entering or leaving the country by crossing national border; (b) the duration of stay in the country of destination and (c) the duration of absence from the country of origin. The following discussion covers these three elements for immigrants and emigrants separately. For the duration of stay in the country of destination element, three types of duration – actual, intended and legal – are explored, including their definitions and ways of capturing them in connection with different data sources.

1. Defining immigrants

a. Entering the country of destination

129. First and foremost, an immigrant has to enter the country by crossing a national border. How such information is gathered varies and depends on the source that is used. Border collection can capture the entry of persons into the country. For registers, a person is considered to have entered the country when he or she declares and registers his or her arrival into the country. When population censuses or sample surveys are used, this information is usually derived indirectly. For example, a question might be asked to a person on whether he or she has ever lived abroad. If this person indicates that they have lived abroad, then it can be inferred that a cross-border movement has been taken by the person in the past. A

question on country of birth could also identify foreign-born persons who have obviously crossed the border at some point in time after birth.

b. Duration of absence from the country

130. The second condition in identifying an immigrant is that the person, at the time of entry to the country, is not already a usual resident of the country. Therefore, to be considered as an immigrant to the country during 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 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 cover 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 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 was not a usual resident of the country in which they are currently residing.

Sample surveys. Sample surveys have the flexibility of asking an extensive number of questions which may enable migration history to be constructed. This migration history 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 the permanent residence of the person entering the country. Although 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 he or she is not a permanent resident of the country.

c. Duration of stay in the country of destination

131. The third condition in identifying an immigrant is that the person stays in the country for at least one year. Ideally and theoretically, one would like to identify the actual duration of stay. When it is possible to identify the duration of stay, the flow or stock of international immigrants includes everyone who was not a usual resident of a country that entered the country and stayed in the country for at least 12 months.

132. However, the information on the actual duration of stay is not always possible to collect. The availability of the data on actual duration depends largely on how immigration is administered or recorded in a country, the time the information is captured and the type of data source from which the information is obtained. There are two times to identifying an immigrant to the country:

at the time of immigration, either when crossing the border or when registering at the new place of residence with designated local authorities immediately, or soon after, entering the country. Data sources that fall into this category include border collection; and in some countries population register and/or register of foreigners.

at any time after the immigration, on an *ex post* basis through population censuses, household surveys, by investigating retrospective data extracted from administrative registers or by comparing embarkation and disembarkation cards. If population censuses and household surveys ask questions on when the person entered the country then the actual duration of stay in the country can be derived.

133. Gathering information on the actual duration of stay in the country is not possible at the time of immigration. It is, however, possible to obtain information on the actual duration of stay on an *ex post* basis at a time after the immigration occurs. However even when it is possible to gather information on the actual duration of stay, compiling data on immigrants based on the actual duration of stay is not always the preferred approach. The reason for this is the time required to obtain complete information on actual duration. For example, compilation of the immigrant flow for one particular year requires a waiting period of one year to have complete information on the duration of stay for everyone who entered the country in the year that data are compiled for.

134. Given the challenges in identifying immigrants using the actual duration of stay criterion, many countries resort to using a combination of both the actual and the intended duration of stay. In fact, the recommended definition of place of usual residence uses both criteria for the same reasons stated above (United Nations, 2015b, paras 2.48-2.50). The intended duration of stay is not defined explicitly in chapter 1 or in the UN Recommendations. However, it generally refers to a duration that reflects a person's intention. Such intention is usually self-declared and reported in the population census, a sample survey or at the border on the embarkation form.

135. Besides the actual and intended duration of stay, legal duration of stay comes into play when administrative sources are used to identify international immigrants. As rules and regulations are usually in place to administer the admission of immigrants, especially for foreigners, the statistical definition of immigrants cannot be separated completely from the legal definition. Under these rules, most foreigners do not have the right to live in a country for more than a limited period of time without a specific authorization or visa and therefore the concept of intention to stay used in defining an 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, a person is less likely to declare that he or she will stay for a period that is longer than what is allowed by his or her visa.

136. This is especially true when 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 this intention is implicitly reflected in the rules. One example of identifying an international immigrant, taking into consideration the effect of the legal system on the data collection, is to use different criteria for people according to their legal status in the country:

Citizens entering the country after being absent for at least one year are considered as 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 a country can be treated similarly as citizens of that country, and are considered as 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 as 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 without residence permits but seeking asylum are considered as immigrants after one year of residence in the country⁸. However, in contrast to all of the above-mentioned categories of international immigrants, asylum seekers will only be considered as such: (a) after one year of actual residence as asylum seeker in the country or (b) at the time of recognition as refugee or when being granted a temporary residence permit for humanitarian reasons, but only if they intend to live in the country for the remaining part of the year.

137. Other undocumented foreigners, clandestine migrants, rejected asylum seekers and foreigners with expired residence permits can theoretically be considered as immigrants if they have been living in the concerned country for at least one year from the date they arrived in the country.

138. The above example may not suit the needs of some countries that, in practice, are using their own criteria for identifying immigrants. When countries use their own criteria, it is important for them to document the criteria they have used and provide these criteria whenever the statistics on international migration are made available. Any attempt to understand the impact of using a different set of criteria will be helpful to ensure better understanding of the statistics and improve data comparability at international level.

2. Defining emigrants

a. Leaving the country of origin

139. The first condition to define an emigrant is that the person needs to leave the country by crossing the national border. How such information is gathered depends on the source that is used. Border collection can capture the exit from the country. Other sources of information include administrative registers, population censuses and sample surveys.

140. Population registers or registers of foreigners have multiple ways of verifying whether a person has left the country. De-registration is usually required when a registered person is going to leave the country for an extensive period of time. Although such practice is not always strictly followed for various reasons such as unawareness of de-registration rules or lack of incentives to de-register. 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.

141. Population censuses and sample surveys, in theory, can not collect information from emigrants who are not present at the time of enumeration. Yet many countries have asked for information about household members who were abroad at the time of enumeration. This information can then be used to derive that the household member is absent from the country.

b. Whether a usual resident of the country of origin before leaving

142. The person can only be an emigrant when he or she has been a usual resident of the country before departure. Duration of stay in the country plays a major role in defining the usual residency of a person. As we are identifying an emigrant, the discussion here relates to when a person is identified either when going abroad or as abroad already, through different sources of data collection. At border when a person is leaving the country, duration of stay in the country before heading abroad might be collected by asking the question directly. It is, however, not a customary practice used in all countries. The use of registers is a more plausible way of obtaining information on the duration of stay. For censuses and sample surveys, when an emigrant is identified through questions to household members present in the country, it is very

⁸ Accordingly, in the case where administrative registers are used, when foreigners with temporary residence permits or asylum seekers are not included in the population register, the aliens register or asylum database should be used to count those who have been living in the country for one year or more.

rare that a question is asked to the remaining household members regarding how long such person was present in the country before leaving abroad. Instead, questions such as “is a member of the household abroad?” are usually asked. Hence by referring to a member of the household, it implicitly associates usual residence to the absent household member.

143. From the above discussion, it seems that the only precise way of identifying an emigrant is through registers. While it is theoretically possible to identify emigrants through sources such as border collection, censuses and sample surveys, it is difficult to implement in reality.

c. Duration of absence from the country of origin

144. The third condition when identifying an emigrant of a country is that the person is absence from the country for at least one year. Therefore, for an emigrant, duration of absence from the country is a crucial element. As for the case of identifying immigrants, an ideal situation is to have information on the actual duration of absence from the country. When it is not possible to obtain information on actual duration, intended duration may be used.

145. The type of duration that should be used depends on the sources used to capture the information:

Border collection. A possible way to obtain some information on the duration of absence of a person while leaving the country is through the use of disembarkation card. Questions may be asked about how long the person intends to stay abroad. In this case, the intended duration of stay abroad can be obtained.

Population registers and registers of foreigners. Depending on when the de-registration process occurs the duration of absence for a person might be either actual or intended. If a person de-registers before leaving the country, the duration of absence can only be the intended duration. However, if the decision to de-register a person who has left the country is based on other information (such as tax records), the absence has become de-facto.

Population censuses and sample surveys. Censuses and surveys have the potential to collect information on household members absent from the country. Many censuses ask the head of the household how long the absent member has been away from the country. In this case, the duration of stay abroad refers to the actual duration of stay. Sometimes censuses or surveys not only ask how long the person has been away, but also query how much longer the person plan to stay abroad. In this case, both the actual and intended duration of stay abroad are available.

B. Distinguishing characteristics

146. Distinguishing characteristics refer to those that can be used to differentiate and categorize international migrants. These characteristics do not define international migrants but are related to international migration and are often of strong policy interest. The following variables are considered distinguishing characteristics:

- Country of birth
- Country of citizenship (single country, multiple countries and stateless people)
- Citizenship acquisition
- Reason for admission into the country for immigrating foreigners
- Status before leaving the country for emigrating foreigners

- Purpose for emigration for emigrating citizens
- Purpose of staying abroad for immigrating citizens
- Country of previous or next residence
- Country of birth of parents

1. Country of birth

147. Country of birth is relevant because it distinguishes, among those immigrants, persons born in another country from those that are native-born. Country of birth is also able to derive statistics of foreign-born persons by their country of birth, which is often of policy interest.

148. 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 sources such as household surveys. For example, it is quite common to use the stock of foreign-born to estimate the stock the immigrants in the country. Unlike other characteristics such as citizenship that is also used to derive estimates of international migrant stock, country of birth does not change over time.

2. Country of citizenship

149. A key attribute of international migration that sets it apart from other types of population mobility is that it links two distinct sovereign States and persons moving from one State to another are not all treated equally. Citizenship is a decisive factor determining a person's rights in a country and has traditionally been used to determine who is subject to control when crossing international boundaries (Bilsborrow, Hugo, Oberai and Zlotnic, 1997).

150. Citizenship is also relevant in 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 terms of employment, access to services or freedom of movement. Citizenship is also used to distinguish international migrants by their country of citizenship.

151. As is the case for country of birth, country of citizenship is also often used as a proxy to identify international migrants in population censuses and sample surveys.

3. Citizenship acquisition

152. For countries where the population includes a significant proportion of naturalized citizens, there might be an interest to study the difference between naturalized citizens and native-born citizens. In such case, information pertaining to the acquisition of citizenship would be needed and might include previous citizenship, the method of acquisition of citizenship and the year of naturalization.

153. Sources of information on citizenship acquisition often include administrative sources. In addition, population censuses and sample surveys may also be a source of information on citizenship acquisition if questions related to citizenship acquisition are asked.

4. Reason for admission into the country for immigrating foreigners

154. The reason for admission into the country is an important variable for determining the inflow of foreign immigrants. People entering the country can be categorized based on the reason for admission into categories such as exercising economic activity, study, joining family, or seeking asylum. From the perspective of the receiving country, it

may be important to know, for example, the size of labour migration into the country. Depending on the labour market, the level of labour migration might be used to formulate immigration policy.

155. The reason for admission into the country for immigrating foreigners can be collected through various data sources. Embarkation cards at the border collection sometimes ask question on why a person comes to the country. Population register and register of foreigners may ask similar questions. Other administrative sources may also be used to gather data on foreigners immigrating for specific reasons. For example, labour department may have information on the immigrating foreign workers and the education department on immigrating foreign students. Population censuses and sample surveys may also ask questions on the reasons for immigration.

5. Status before leaving the country for emigrating foreigners

156. Status before leaving the 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.

157. Various data sources can be used to collect information on status before leaving for emigrating foreigners. Population registers and registers of foreigners may have information on file already on what a foreigner was doing in the country. Other administrative sources such as visa applications or the issuance of permits to residents may also provide relevant information.

6. Purpose for emigration for emigrating citizens

158. The purpose for emigrating is relevant for departing citizens. Countries are usually interested in, not only where their citizens are, but also what they are doing abroad. Information collected on the purpose for emigrating may be used to formulate policy with the intention of either increasing or decreasing the size of a particular group of emigrating citizens.

159. The purpose for emigration may be collected in different ways. 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 pose questions on what the emigrated citizens are doing abroad. Border collection is not very useful in collecting information on departing citizens because, in some parts of the world, there is limited control over citizens crossing national borders.

7. Purpose of staying abroad for immigrating citizens

160. The purpose of staying abroad is specifically relevant to immigrating citizens (or returning citizens in common terms) and it is useful way to categorize the size of citizen inflows. Categories can include: exercising economic activity, studying, joining family, or seeking asylum.

161. The purpose of staying abroad may be collected by several sources. Through embarkation cards collected at the border, questions may be asked to arriving citizens on their activities abroad. This is, however, not a common practice in countries. Another way of collecting such information is through population censuses and sample surveys. Questions may be included on the reason for migrating back to the country. Data on the purpose of staying abroad for immigrating citizens are scarce due to the limited control over the movement of citizens crossing national borders.

8. Country of previous or next residence

162. Characterizing international migrants by country of next and previous residence provides a picture on the direction of migrant flows. Data related to country of previous residence may also be used in receiving countries to estimate emigration flows from sending countries.

163. Information on country of previous or next residence may be collected by border collection. Embarkation and disembarkation cards may contain questions on the person's previous or next residence. Population registers may also ask questions when registration and deregistration occur. In population censuses and sample surveys, many countries have asked questions on the place of previous residence. Country of previous residence can be derived from these collections. Questions on the country of next residence may also be asked in population censuses and sample surveys to emigrated household members.

9. Country of birth of parents

164. Countries with a significant number of immigrants may want to collect information on the country of birth of parents. Including this topic permits the distinction of groups of second generation decedents by the country of birth of their parents. This group is often used to study integration processes and outcomes.

165. The country of birth of parents may be derived from population registers. Population censuses and sample surveys can also collect the information.

C. Descriptive characteristics

166. Descriptive characteristics of migrants are investigated by countries to assess the situation of international migrants, and typically focus on the adjustment and settlement experience. These characteristics are often closely related to migrant integration in the receiving countries. The integration of migrants and their children is crucial in promoting social cohesion and economic growth in receiving countries and the ability of migrants to become self-reliant and productive citizens (OECD, 2015). Measuring migration integration over time also provides evidence to monitor and evaluate integration policies.

167. Descriptive characteristics relevant for migrant integration and policy evaluation cover many dimensions. Recent publications have touched upon sociodemographic characteristics such as sex, age, proficiency in the language of the receiving country, education and household composition; economic characteristics such as labour market outcome (employment, unemployment, job characteristics, skill-mismatch) and income; housing conditions; health status and health care; civic engagement such as citizenship acquisition and social inclusion such as perceived discrimination from migrants (Eurostat, 2011; OECD, 2015; UNECE, 2015b).

168. Data disaggregated by those descriptive characteristics can be used in many ways, including to assess who migrants are, how they settle compared with non-migrants, or whether a national policy has any impact on the immigration. For example, knowledge about the language of the receiving country is an important indication of whether migrants are able to integrate into the labour market and to the larger society. Educational attainment of a person is closely associated with the person's labour force participation and the type of job he or she takes. An assessment of how labour market outcomes differ for migrants and non-migrants who have similar education levels provide an indication on how well migrants are integrated in the labour market. An example based on statistics from Norway showed that, for those with tertiary education, foreign-born populations have a lower labour force participation rate than those born in the country (Henriksen, Østby and Ellingsen, 2010).

169. Further disaggregation of data by variables such as the year or period of arrival of migrants enables analysis of changing characteristics of migrants 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 instance, data on migrants by educational attainment and the year of arrival in United Kingdom showed that recent migrants, who arrived in the last five years, were more likely to have a university degree than those who have been in the UK for more than 30 years (UNECE, 2015b). Among women and men aged 25 to 54 in Spain, non-immigrants born to immigrant parents (second-generation) have the highest proportion with tertiary education, compared to immigrants (first-generation) and non-immigrants, according to the 2011 Spanish census (UNECE, 2015b).

CHAPTER IV

Aspects of planning and design of the census of importance in measuring international migration

A. Introduction

170. The most fundamental distinction in measuring international migration is between measures of stocks of international migrants and measures of flows. Chapter 1 distinguishes between these two types of measures as follows:⁹

“International migration flows are measured in terms of counts within a defined period. Thus, the inflow of migrants is defined as the number of international migrants arriving in a given country over the course of a specific period, usually a calendar year, and the outflow as the number of international migrants departing from a given country over the course of the same period. International migrant stock is defined as the total number of international migrants present in a given country at a particular point in time.”

171. Since the stock of migrants is a static measure 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 the stock of international migrants. Most countries already produce statistics on the stock of foreign-born population and stock of foreigners from their censuses (details are covered in chapter 5). Some countries also collected data on emigrants in the 2010 round of censuses (see chapter 6).

172. In contrast to migrant stock, migration flows are a dynamic process involving continuous movements of people into and out of a country. Accordingly, they are best measured through a continuous reporting system that captures all relevant moves into and out of a country. Nevertheless, it is possible to derive specific indicators of net international migration flow from a population census. This is covered in chapter 7, as is the use of data from two consecutive censuses to estimate net migration flow in the intercensal period.

173. It should be made clear at the outset that because there are limits on the number of questions a census can include, it is not a suitable collection method for obtaining statistics that would require detailed and probing questions such

⁹ Chapter 1, para. 43

as statistics on the causes or consequences of international migration. For the same reason, it is also not suitable for obtaining statistics on the more dynamic modalities of spatial mobility such as circular migration.¹⁰

B. Aspects of planning and design of population censuses of importance to the measurement of international migration

174. Several aspects of census planning and design have a bearing on the coverage and quality of international migration data. Many of the decisions made at the various stages of census planning and operations will impact data and data collection on international migration. These decisions and issues are listed below and expanded upon later in this chapter.

At the initial planning stage

1. The type of population count
2. The use of sampling in the census

At the preparatory stage

3. Communications and publicity campaign
4. The training of interviewers
5. The issue of confidentiality

In the questionnaire preparation

6. The selection of topics to be included
7. The formulation of questions
8. The use of pre-coded response categories
9. Provision of questionnaire in different languages

In the plan of enumeration

10. Enumeration methods
11. Enumerating people in unconventional living situations
12. Issues of coverage and response

In the plans for data processing and dissemination

13. Processing and dissemination of data

1. The type of population count

175. The decision on who will be included in the enumeration is of primary importance for a population census. Censuses may aim at counting the *usual resident population* or the *population present*. The choice of approach has consequences for the total population count and impacts on statistics of international migration, as many of the subgroups that may not be enumerated, in either approach, are precisely those that are mobile or whose residency status in the country is not clearly defined.

¹⁰ A statistical definition of circular migration is proposed by UNECE as “a person who has crossed the national borders of the reporting country at least 3 times over the past 10 years, each time with duration of stay (abroad or in the country) of at least 12 months.” See more at UNECE, 2016.

176. In the *usual resident population* approach, the count includes only the usual residents of the country in question, some of whom may not be physically present in the country on the reference date. Visitors and other persons staying in the country on a short-term basis are excluded from the enumeration. The enumerated population thus provides a useful base from which international migrants as defined in Chapter 1 may be identified.

177. In the *population present* approach, all persons physically present in the country at the census reference date are enumerated. This approach excludes usual residents of the country who are absent at the time of the census. On the other hand, usual residents of other countries who are in the country at the time of the census will be enumerated. The *population present* approach provides a population base that would encompass different types of movers present in the country at the time of enumeration, including visitors, temporary and short-term movers, circular movers and others. In a census, differentiating between these temporarily present persons and the usual resident population is made possible with a question on place of usual residence of each enumerated person. If a country additionally collects information on usual residents who are absent at the time of the census, it would have the potential to obtain both the count of *population present* and the *usual resident population* count.

178. Straightforward as these concepts may seem, strict conformity to either approach is not always the case. In particular, groups of persons and potential international migrants may be included or excluded from census counts in contradiction 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 present in the country, while at the same time including merchant seamen or fishermen outside the country at the time of enumeration. On the other hand, censuses that use the usual resident approach may include groups of persons that do not qualify as usual residents, such as short-term or temporary foreign workers in the country (United Nations, 1998).

179. With respect to the *usual resident population*, the United Nations provides guidelines on subgroups for which uncertainty may arise as to their inclusion or exclusion in the usually resident population (United Nations, 2015b, para. 2.53). These guidelines are reproduced in Box 5.1. Of note in these guidelines is the placement of two categories of persons: (h) and (i) among those included as usual residents and (b) and (d) among those excluded as usual residents. The first category are persons of minor age attending primary and secondary level of education abroad and the second, persons who regularly live in more than one country during a year. In the guidelines, persons in the first group (categories h and i) are considered to be usual residents of the country where their family resides, regardless of their duration of stay in the country where they are studying. Persons in the second group (categories b and d) are automatically assigned usual residence in the country where they are found at the moment of the enumeration.

180. While the treatment of the two population subgroups described above does not necessarily agree with the definition of country of usual residence adopted by the present Handbook, there are valid reasons in a census for ascribing their usual residence in the way shown in Box 5.1. It is recommended that countries follow these guidelines in a population census. Furthermore, countries are urged to include in their metadata on usual resident population complete information on how each of the population subgroups listed in Box 5.1 were treated in their census.

181. Most countries of the world adopt one of the two approaches described above in counting their population. While a *population present* count is the simplest form of population count, countries increasingly prefer a *usual resident population* count because it offers better information for planning purposes and on the demand for services (United Nations, 2015b, paras. 4.30 and 4.36). In the 2010 round of censuses, a United Nations survey revealed that more countries employed the usual residence approach than the population present approach (see Box 5.2).

182. Whichever enumeration approach is used, undocumented migrants are generally included in the census enumeration. Thus the census allows for estimating, often in combination with other data sources, the magnitude of undocumented migration.

Box 4.1**Inclusion or exclusion of certain groups of persons in the usual resident population**

Persons generally considered as usual residents:

- a) Persons found at the moment of enumeration that cannot identify their place of usual residence, such as those that 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 been granted refugee status or similar types of international protections, provided that they meet the criteria for usual residence in the country
- 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 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 attending 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 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: United Nations, 2015b. *Principles and Recommendations for Population and Housing Censuses Rev. 3*, para. 2.53.

Box 4.2**Approach utilized by countries for population count: usual residence approach versus population present approach**

In the 2010 round of censuses, a United Nations survey revealed that the usual residence approach was employed by more countries than the population present approach. Of the 127 countries that responded to the survey, 82 countries indicated that they used, or intended to use, the usual resident approach compared to 65 countries for the population present approach.

The usual resident approach is widely practiced 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 the more common approach in Africa, South America and Oceania. A considerable number of countries (35) indicated that they produced, or can produce, both types of population counts.

Table. Number of countries by approach adopted in their population census enumeration in the 2010 round (multiple answers were given by some countries)

Region	Usual resident	Population present	Legal/ permanent address	Total no. of countries
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
Total	82	65	22	127

Source: Survey conducted by the 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 United Nations Statistical Commission at its 42nd session.

183. In the 2010 round of censuses an increasing number of countries moved away from the traditional census enumeration (i.e., 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 by-census between two decennial censuses, for which they cover a large sample of the population (for example 10% in Hong Kong). The alternative approaches to the traditional census enumeration vary considerably in their ability to cover the entire population, and consequently the population groups that constitute international migrants (see chapter 3).

2. The use of sampling in the census

184. Some countries obtain information on certain topics for only a sample of the population enumerated in the census. In general, sampling may be usefully employed to collect information on topics that need not be tabulated for small areas or small population subgroups. Topics that require some probing are candidates for coverage on a sample basis. The decision on questions relating to migration (both international and internal) involves deciding which, if any, of the questions should be in the short form, and addressed to the entire population, and which should be in the long form, to be administered to a sample of the population. Such a decision rests on many factors including the importance of internal and international migration in the country and should be made with inputs from experts on internal and international migration and users of migration statistics from the Government, the research community, non-governmental institutions and special interest groups.

185. Sampling should usually be avoided when the aim is to cover population groups that are small in relation to the country's 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 or 20 per cent of the total population), information on the international migrant stock obtained from a census sample may be adequate to characterize international migrants. In analyzing the results, it is important nevertheless to recognize that the full population has not been covered and that the data are subject to sampling error.

186. Sampling, if used, is usually carried out during the data collection phase and more rarely at the processing stage of census results. Sampling at the data collection stage is carried out in two broadly different ways: (a) a sample of households (that is, data are collected for all persons in selected households), or (b) an area sample of some sort (that is, data are collected for all households in selected enumeration areas or census blocks). Although the latter type of sample is the simplest to administer in the field and may result in the greatest cost saving, it will usually yield estimates with larger standard errors (for a given sample size) because of the added sample design complexities of clustering. With international migration, this approach is also less desirable, especially in situations where there is geographical clustering of migrant populations.

187. Sampling in the data processing phase has been used in the past to produce advance tabulations or to control costs. With modern processing technology, there is not as strong a rationale as in the past for the use of sampling in processing census data, although certain populous countries still use it. Other countries use sampling only when producing preliminary results.

3. Communications and publicity campaign

188. Wide-scale communication and publicity campaigns are a major part of any national census programme. The general aim of the campaigns is to inform the public about census objectives, content and methods, as well as the rights and obligations of every person with respect to the census (United Nations, 2015b, para. 2.9). Public information campaigns typically utilize multiple 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 communications and publicity to these groups is a strategy strongly worth considering.

189. Migrants with undocumented or ambiguous status within the country of destination may seek to avoid detection in the census. It is crucial to give undocumented migrants the confidence to participate in the census. A publicity campaign imparting the message that clearly separates the census enumeration from any linkage with immigration authorities can allay fears that undocumented migrants may have of being detected if they participate in the census.

190. Non-familiarity with the national or predominant language may be another factor in the non-participation of more recent immigrants or certain ethnic groups in the census. Some countries have found that engaging local cultural or migrant groups and ethnic community leaders in transmitting the census messages can help improve the participation of these groups in the census. Making campaign messages available in the languages of migrant or minority ethnic groups has also been found helpful. Likewise, pre-enumeration information and promotional materials should be distributed to the relevant groups in the corresponding language.

4. The training of enumerators

191. For migration-related questions the training emphasis must be on asking the 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 cover when to apply prompts and probes. Where 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 of all, enumerators should have a full understanding of the enumeration approach, whether it is population present or usual resident population, and its implication for the enumeration of the population. Enumerators should also be thoroughly trained on how to treat the specific subgroups listed in box 5.1 above, and any other groups that may be of particular concern in their country.

192. Another detail about which enumerators must be thoroughly knowledgeable is the break-up of some countries into separate sovereign states (new countries) as well as the union of two or more countries to form a new country. Enumerators have to ensure that in recording the country names such as country of birth, it is the present national borders that apply, not those that existed at the time of birth of the respondent. Therefore, enumerators should be trained to probe when responses refer to countries that no longer exist (for example USSR or Yugoslavia). In this situation, enumerators should attempt to elicit the name of the specific countries based on current national borders. For reference in the field, enumerators might be provided with a list of former countries that have broken up showing the resulting new countries, or a list of the names of all countries in the world as of the time of the census.

193. It is crucial that interviewers who will be assigned to areas with disproportionately large migrant populations acquire training on how to allay unfounded respondent fears and to elicit truthful responses. Some migrants deliberately withhold or disguise responses when they fear that truthful responses may impact on their ability to stay or work in the country.

5. The issue of confidentiality

194. It is very important that the confidentiality of information at the individual level be strongly and clearly established in the census legislation and guaranteed by adequate sanctions so as to provide a basis for the confident cooperation of the public (United Nations, 2015b, para. 2.69). Data protection and statistical confidentiality must be maintained throughout all phases of the census process, 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.

195. These guarantees are particularly crucial in obtaining the trust and cooperation of population subgroups that fear or distrust the government or question their need to collect certain detailed personal information. International migrants, especially those who are undocumented, may fear that the collected data could be used to identify them. Reinforcing the confidential nature of the census and explaining the use of the collected data may help to allay fears and generate better participation by those groups (United Nations, 2015b, para. 3.285).

6. The selection of topics to be included

196. The United Nations *Principles and Recommendations for Population and Housing Censuses, Rev. 3* presents a list of internal and international migration topics that may be included in a census undertaking (United Nations, 2015b, para. 4.21). Many of the topics listed under internal migration, for example, place of birth or place of previous residence, are relevant for international migration when the place is outside the country of enumeration. Thus, for international migration, the following core topics listed in the *Principles and Recommendations* are relevant: (a) place of usual residence, (b) country of birth, (c) duration of residence, (d) place of previous residence, (e) place of residence at a specified date in the past, (f) country of citizenship, and (g) year or period of arrival. Other topics that could be related to international migration include the acquisition of citizenship, the language that is usually spoken at home, ethnicity, religion and the country of birth of parents. The latter are not considered core topics in the *Principles and Recommendations*. Language, ethnicity and religion are known to be sensitive topics in certain cultures and their inclusion should be deliberated carefully. The addition of any of these topics in the census should be guided by considerations such as policy needs, cost, data quality and the availability of alternative data sources.

197. Most population censuses will not cover all of 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 have their topics of interest included in the census. International migration topics are assessed against other topics considered important in the country. During this process, the inputs and insights gained from consultation with stakeholders are very important.

198. The topics related to international migration for which information is most frequently collected pertain to country of birth and country of citizenship. Topics for which information is collected mainly for studying internal migration are also useful for international migration. The latter include duration of residence, place (including country) of previous residence and place (including country) of residence at a specified date in the past. The last two pieces of information are particularly useful when there is space for recording the name of the country as opposed to just the entry 'abroad'.

199. A general principle for selecting topics for inclusion in the census is 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 migrants may limit the corresponding topics covered in their population census. For countries in this situation, the decision to limit topics on international migrants should be considered along with the fact that the census collects a wide range of data on demographic and socio-economic characteristics not collected in other sources. An option when alternative sources are not available would be to leave some of the questions to be investigated on a sample basis, if the short and long forms approach is adopted in the census.

200. Another general consideration for selecting topics is to include only those for which experience and testing have demonstrated that a reasonable degree of accuracy can be assured with the resources available for the census operations. More experience and knowledge are available on topics that have traditionally been included in censuses, such as place of birth and country of citizenship. For new topics on which there is limited experience on the relevant questions to ask in order to ensure a reasonable degree of accuracy and quality of responses in censuses, more testing would be required to know whether it is worthwhile to include them in the basic census questionnaire. This would be the case, for instance, with questions on emigration of household members, which are asked by many more countries in the 2010 round of censuses compared to the past.

201. In summary, when contemplating topics to be included, planners should be realistic and keep perspective of census limitations. Topics that would require a complex sequence of 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 detect and accurately classify the various types of migrants and movers in a country.

7. The formulation of questions

202. In a census operation, it is not expected that enumerators and respondents know the concepts and definitions underlying the migration topics. Thus, emphasis should be on formulating simple and clear questions based on the underlying concepts, without using or explaining the concept itself. Technical or complex words should be avoided. Words such as "international migrant" or "immigrant" should not be used in the questions or response categories as respondents are likely to have different interpretations of the terms. The questions should be put in language that operationalises the technical concepts, using words and terms that make sense to a broad range of respondents. Questions should be kept short.

203. While the concepts associated with the topics or questions relevant to international migration may seem straightforward, careful attention should be paid to the wording of the questions to minimize misinterpretation by either respondents or enumerators. This is true, for example, of a fundamental concept in migration- the country of usual residence.

8. The use of pre-coded response categories

204. Pre-coding functions best when there is a relatively small number of possible answers to a clear, precise question. When there is a long list of possible answers, it is best not to pre-code the responses. For questions answerable by geographical place, for example, country of birth or country of citizenship, pre-coding should be discouraged as it results in a long list of place names. The longer the list, the more crowded the questionnaire becomes and the more difficult it is for the respondent to locate his answer.

205. In situations where responses are expected to concentrate on a handful of countries, however, a pre-coded list can be beneficial if applied appropriately. In this case, a category "other, please specify____" must follow the list of geographic names to allow the recording of responses outside of the given list. (See for example chapter 5.)

9. Provision of questionnaire in different languages

206. Countries with significant immigrant groups that are not conversant in the language of the host country should make provisions to ensure that participation in the census is not impeded by an inability to understand the questions. For each major language group, either a separate questionnaire is prepared (for the self-enumeration method) or a translation of the entire questionnaire is printed in the enumerator's manual (for the enumerator method).

207. Census authorities that provide a census help line or hot line should ensure that foreign language operators and representatives are available to respond to any question that immigrants may have. It can be expected that immigrants, in particular those participating for the first time in the national census of their host country, would have legislative and methodological queries and would need assurances and clarifications relating to the information sought by the population and housing census.

10. Enumeration methods

208. The use of enumerators is recommended for population groups with a large migrant composition, because these groups tend to be unwilling to participate in the census or to complete the census forms themselves. Even if they are willing to participate in the census, migrants may find it difficult to complete the forms. Having an enumerator ensures

that, to the extent possible, every household is contacted and eligible members enumerated. The enumerator facilitates the process by screening each person as to whether he or she is to be included in the enumeration. The determination of persons to be included in the enumeration may not be straightforward with more mobile persons. In the enumeration proper, the completion of the questionnaire by an enumerator helps ensure that questions are understood by the respondent and that all necessary items are answered as completely as possible.

209. Even when countries use the self-enumeration method, it will be beneficial to allocate areas with high concentrations of migrant and related population groups for enumeration using the enumerator method, for the above-mentioned reasons.

11. Enumerating people in unconventional living situations

210. International migrants may live disproportionately in unconventional living situations, especially in the period immediately after arrival. They may be accommodated in temporary living spaces, overcrowded dwellings, barracks, dormitories or other workplace-related contexts, or they may be homeless. Others may live for short periods with relatives or friends or in boarding houses, moving about frequently. In countries with large migrant populations living in contexts such as these, it is crucial that steps are taken to reach and enumerate them.

211. One way to induce persons in unconventional living situations to participate in the census is to set up special “census stations” in places where they gather, such as markets and railway stations. Prior to the event, information may be spread via announcements on the local radio or flyers distributed in the area, with the intention of providing reassurance to potential respondents of confidentiality and privacy, and imparting other messages as appropriate. For example, allaying respondents’ fear of detention or deportation.¹¹ To be effective, the cooperation and assistance of government agencies outside of the NSO are often crucial. The NSO is responsible for ensuring confidentiality and putting in place measures to capture the correct place of residence and prevent multiple counting of persons.

212. Counting refugees in refugee camps presents a challenge for censuses. Special attention and strategy should be given to enumerating refugees living in an open camp, which are often characterized by makeshift shelters and fluctuating boundaries. When camp refugees interact heavily with the local population and both are of the same ethnic origin, differentiating them is particularly problematic. A highly experienced local enumerator would likely get better results in this setting.

213. The United Nations recognizes that refugees in camps constitute a “difficult to enumerate” group but recommends that they be enumerated in the census. If the group was enumerated, its magnitude should be given; if it was not enumerated, an estimate¹² of its size should be given if possible. Once obtained, the number of refugees should be presented separately to allow calculation of country population excluding refugees, when such count is required for non-demographic purposes (United Nations, 2015b, paras 4.48 and 4.84-4.86).

¹¹ See for example the experience of the Russian Federation during their last two censuses in Federal State Statistical Service of the Russian Federation, 2008.

¹² A possible estimate of refugee populations may be provided by government agencies, international organizations or non-governmental organizations who keep a register of families or persons receiving assistance.

12. Issues of coverage and response

214. In many countries, coverage of migrant groups in the population census is generally lower than that of the general population. Factors that have been attributed to low coverage of migrants in the census include fear and mistrust of government, living in unconventional housing arrangements and inadequate knowledge of host country language(s). Lack of understanding of the objectives of the census is also a factor. Suggestions for improving the coverage of migrant groups are given under the relevant sections in the current chapter.

215. 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. Likewise, in an interviewer-assisted enumeration, language may be a barrier to communicating with the interviewer and providing the correct responses.

216. Some migrants may deliberately withhold information for fear that it would impact on their continued stay or ability to work in the country. Interviewers must be sensitized to perceive any hesitance on the part of the respondent and to handle the situation by giving assurances.

217. To improve the reliability of item responses, information about the kinds of questions that would be asked in the census 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 will be asked of them, households could prepare the responses so that information may be given for all members even if some of them were not present at the time of the enumerator's visit. Some examples of information that may not be known about every member and thus would benefit from preparation include country of birth, country of citizenship, year or period of arrival into the country, multiple citizenship and method of acquisition of citizenship.

13. Processing and dissemination of the data

218. Care should be taken during data processing to preserve the detailed information collected in the census. For text variables like country names (country of birth, country of citizenship, country of previous residence) automatic coding should be used as appropriate. The United Nations *Principles and Recommendations* provide general guidance on methods of processing, coding, data capture, data editing and other issues related to data processing (United Nations, 2015b, paras. 3.163-3.202).

219. In the dissemination of data on international migration, it is good practice to provide as much detail as possible and to allow multi-layered cross-tabulations giving due regard to maintaining confidentiality requirements. For example, when showing characteristics such as education or labour market participation of immigrant populations, cross-tabulating immigrants by country of citizenship by duration of residence in the destination country allows differences in the characteristics of the various subgroups of migrants to be studied. As much as possible, all statistics should be disseminated by sex and age.

220. The importance of including metadata whenever statistics are disseminated cannot be overemphasized, especially with respect to international migration statistics with its vastly different sources and methods both within and across countries. Countries (as well as government agencies within countries) vary greatly with respect to concepts, definitions, duration thresholds and other criteria they apply in distinguishing migrant groups such as immigrants, foreigners, and return migrants. The rules applied by countries on many aspects of international migration also vary, for example when recording or coding the country of citizenship of persons with multiple citizenships or of persons who are stateless. To ensure proper interpretation of data, it is important that countries include the source and coverage of the data, definitions and any other relevant information in the statistics they publish and disseminate. This is relevant not only regarding rules

that are fixed at the data collection stage but also at the data processing stage. An example of the latter is the use of sampling in data processing, in which case it is imperative to specify, at the minimum, the sampling fraction and sampling errors in the disseminated data.

221. In disseminating data to the public, the source and coverage should always accompany all statistics given. In addition, the text must be very clear as to whether the reported statistics refer to stocks or flows, expressed in layman's terms, to avoid confusion. Examples abound of government officials and journalists misquoting one for the other when referring to published national or international statistics. Clearly, statisticians have a job to do in this regard if incredulity and confusion are to be avoided.

222. Provision of international migration statistics in its various forms (print, website, online database) is an important part of the dissemination process (see also chapter 8, section E). Free public access and widespread use of the data should be encouraged; for only through the wide utilization of the data can the high cost of the collection and production of data on international migration be justified. In addition, often it is through wide usage that data limitations are identified, modifications made, existing methods adjusted or improved and new methods considered.

223. While wide usage, analysis and dissemination of the data are generally beneficial to all, caution must be exercised as to how the results are presented. Consultation with users is very important when disseminating results that pertain to migrant and minority populations, refugees or undocumented immigrants, to ensure that the statistics being shown about these groups are not offensive and are presented in a culturally sensitive manner.

CHAPTER V

Collecting data on stocks of population related to immigration

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

224. A population census is designed to gather information on all persons that constitute the population of the country. However, countries differ in who they enumerate in the census, and persons belonging to certain population subgroups, although living in the country, may or may not be enumerated in a census.¹³ To properly understand and interpret international migration statistics derived from the census, it is necessary to know the rules employed by the country in its census enumeration.

225. Before looking at the various immigrant stocks covered in this chapter, it is important to ascertain the *base* population from which the stocks are drawn. The fundamental question then is: after getting into the first stage of enumeration (the listing of persons in the dwelling), who subsequently qualifies to be included in the census enumeration? To be classified in some way as an international migrant, a person must first of all be eligible for inclusion in the census enumeration. This process is decided by filters applied to the initial listing.

226. Based on the rules decided by the country, the filters will exclude some persons from being enumerated. The filters depend on the enumeration approach adopted by the country for its census. Most countries use the *usual resident population* count (see chapter 4) in the 2010 round of censuses while others use the *population present* count.

227. A *usual resident* count includes usual residents who are temporarily abroad at the time of the census, a group that is excluded from a *population present* count (see diagram below). On the other hand, a *usual resident* count excludes some groups that a *population present* count would include. Examples of some groups excluded from the *usual resident* count but included in the *population present* count are transients, visitors, short-term movers and others who are temporarily in the country at the time of the census. It may be that a significant part of these groups is short-term movers, which are not considered to be international migrants and therefore not within the scope of the handbook.

¹³ See chapter 4, B, 1: the type of population count.

A. Usual residents present at the time of the census	C. Usual residents temporarily out of the country	<i>Usual resident count</i> $= A + C$
B. Persons temporarily in the country (visitors, short-term movers, etc)		
<i>Population present count</i> = $A + B$		

228. In some countries, the “excluded” group of persons - group B in the case of *usual residence* approach and group C in the case of *population present* approach- are nevertheless listed in the census and some basic information collected on them. One of the reasons for doing so is to round out the data so that both types of population counts can be produced.

229. For the types of international migrants covered in this handbook, the *usual resident* population constitutes a convenient base for identifying immigrants, the definition of which is tied to the concept of usual residence (see chapter 1).

230. It is evident that in countries that enumerated all population present, foreign-born and foreigners who are temporarily present in the country such as seasonal workers, students, trainees, businessmen, etc. would inflate the stock of foreign-born and foreigners. At the same time, the exclusion of usual residents who were abroad at the time of the census would bias downward the count of usual residents.

231. Perhaps more problematic is the non-conformity of a country’s definition of usual residence with the United Nations criterion of 12 months (see definition in chapter 1). Residence for periods as short as “3 months or more” or even “more than 2 months” have been used in the 2010 round of censuses (United Nations Statistics Division, 2013). Using such short thresholds for residence amounts to including short-term movers and temporary residents, of which foreign-born and foreign short-term workers, students and trainees can constitute a considerable proportion, thereby introducing an upward bias to the different types of immigrant stocks derived for the country.

B. Population stocks related to immigration

232. It is widely acknowledged that a census cannot differentiate among the many types of movers that concern Government. However, the population census is the best source for collecting data on certain population stocks relating to international migration, in particular immigration. The key advantage of identifying these population stocks in censuses is that it is possible 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. Such an extent of information about migrants is rarely available from administrative data sources.

233. The collection of information necessary for the compilation of data on the stock of immigrants will be described in this chapter, and that related to emigrants in chapter 6. The focus in this chapter will be on questions used to identify and characterize the different types of population stocks related to immigration, using actual country examples from the 2010 round of censuses and assessing their effectiveness. Good practices will be highlighted. A set of questions will be proposed for each type of population stock at the end of the chapter as examples of how questions may be asked.

234. As recognized in chapter 1, the need for information often relates not to the totality of international migrants as characterized by the theoretical definition of immigrant stock, but rather to certain population stocks that are of policy

concern. This chapter will focus on four of these policy-relevant population stocks related to immigration and identified in chapter 1, namely:

- (a) The stock of foreign-born persons
- (b) The stock of foreigners
- (c) The stock of returned migrants
- (d) The stock of second generation migrants

235. The above population stocks can be compiled from data collected on certain topics covered in the population census. The population groups can be further distinguished and characterized based on data collected on additional topics. Table 6.1 shows, for each population group, the topics on which data should be collected to enable identification of the population stock; as well as additional topics to be investigated to allow the population stocks to be distinguished or further characterized.

Table 5.1
Topics that provide the data required for four policy-relevant population stocks

Population stock	Topics required to identify the stock*	Topics useful for characterizing the stock*
Foreign-born persons	Country of birth	Date or period of arrival Reason for migration
Foreigners	Country of citizenship	Date or period of arrival Citizenship acquisition
Returned migrants	Ever lived abroad for at least 12 months Country of citizenship or Country of birth	Date of last arrival Country of previous residence Reason for return
Second generation migrants	Country of birth Country of birth of father Country of birth of mother	

Note: Bold type indicates that the topic is designated as a “core topic” in the *Principles and Recommendations for Population and Housing Censuses Rev 3* (United Nations, 2015b). Other topics shown may or may not be in the list of population topics in the *Principles and Recommendations*.

236. The extent to which it is possible to measure and characterize each of the above stocks will depend on the inclusion of a number of relevant questions in the census schedule. It will also depend on how and about whom the questions are asked. These details will be considered in the subsections that follow.

1. The stock of foreign-born persons

237. 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 represents net immigration of the foreign-born population. All foreign-born persons who have died or emigrated prior to the census date are excluded.

238. The question used to identify a foreign-born person is his or her place of birth. The question on place of birth serves both the data requirements for internal migration and international migration. The United Nations recommends that this census question be asked of all persons to distinguish between native-born and foreign-born persons. For the foreign-born, it further recommends that the specific country of birth be recorded to permit the classification of the foreign-born population by country of birth.

239. Of all questions related to international migration, the one most often asked in population censuses is place of birth (for counts of countries, see box 6.1). In a national census, the question on place of birth typically takes the form: “Where were you/ was (name) born?” or “What is your/ (name’s) place of birth?” accompanied by instructions to record the district and province (or other geographic division detail) if born within the country or, if born abroad, to enter the name of the country. A bigger difference among countries lies in the way the responses are captured. Many countries simply leave a space for filling in the names of district and province; and, if foreign-born, the name of the country. Others include a response set with geographic names for enumerators or respondents to mark.

Box 5.1**Is a question on place or country of birth asked in national censuses?**

Of 119 countries whose questionnaires from the 2010 round of censuses were examined, 99 (or 83%) included a question on place or country of birth.

Number of countries by whether or not a question on place or country of birth is included in the 2010 round of population censuses, by region

Region	Included No. (%)	Not included No. (%)	Total No. (%)
Africa	22 (81)	5 (19)	27 (100)
North 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)
Total	99 (83)	20 (17)	119 (100)

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

Note: From the 2010 round of censuses, questionnaires were available for 151 countries or areas in the United Nations Statistics Division census questionnaire database as of 1 March 2014. Census questionnaires of areas that are neither sovereign states nor UN member States, numbering 31, were screened out. One country enumerated only its citizens in its census and was excluded, resulting in 119 questionnaires. All counts and analyses on census questions presented in this box and elsewhere in this handbook are based on national census questionnaires from these 119 member States of the United Nations.

240. A significant number of countries¹⁴ ask the place of usual residence of the mother when the person was born, rather than the place of birth per se. This practice is followed to avoid ascribing the place of birth of the person to the locality where his or her mother actually gave birth (where the hospital or health facility is located, usually in a bigger town or a city). In countries where it is common for women to go to a different locality to give birth, this type of questioning is a logical solution, as it avoids a bias towards urban birthplaces. However, when international borders are crossed, this question could yield an erroneous identification of the country of birth, which is a crucial item in identifying international migrants and a determinant of the rights and obligations of the child going forward. Countries should take this point into consideration when formulating the question on place of birth.

¹⁴ 19 of the 99 countries that included the question on place of birth in their census during the 2010 round of censuses.

241. The two question types 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 - USA

4 - Canada

5 - Turkey

6 - Other (specify): _____

242. For recording responses to the question on place of birth, the majority of countries offered a space for filling in the geographic divisions or the name of the foreign country. Others provided a list of provinces (or other major division) and/or a list of country names. Using some pre-coding saves processing time and works best if the list is short and exhaustive. In most cases, a category “Other (specify): _____” will be needed at the end to allow responses that are not on the list, as shown in example B above.

243. A detrimental practice used in some censuses is to have a pre-coded list of several individual countries followed by selected regions, intended for use when the country of birth does not appear on the pre-coded list. This practice should be avoided as it results in the loss of country detail that is not recoverable once data have been collected. The United Nations recommends that coding of information on the country of birth be done in sufficient detail to allow the individual identification of all countries of birth that are represented in the population of the country.

244. Since the number of countries is finite and not large, individual country names entered on the questionnaire are amenable to computerized data capture and coding. For purposes of coding countries, it is recommended that the UN standard numerical coding system (United Nations, 2016b) be used to enhance the usefulness of the data. One use of this data is for international exchange of foreign-born population statistics among countries (see chapter 6 section D). If there is a need to combine countries into broad groups, the grouping should be done at the data dissemination stage and not during data collection. The use of UN standard regional and subregional classifications given in the above-referenced publication is recommended for grouping countries.

a. General data quality issues on country of birth

245. Country of birth is one of the most straightforward pieces of information to collect in a census since theoretically each person has only one country of birth and it does not change over time. In practice, problems can occur when collecting data on place of birth. Some of the problems are:

- Confusion arising from changes in national boundaries of countries
- High rates of non-response or unknown responses

246. When the boundaries of a country change, the question arises as to whether the country of birth recorded should be the country that existed at the time of birth or at the time of the census. For internal consistency and international comparability, the United Nations Principles and Recommendations for Population and Housing Censuses, Rev. 3 recommends recording place of birth according to national boundaries existing at the time of the census. This

recommendation should be followed in reference to all the former states of the USSR, Yugoslavia and other former countries that have succeeded into separate sovereign countries; as well as countries that have merged to form one new single country.

247. Enumerators trained to follow this recommendation can help exact the required response from the respondent. However, in censuses where questionnaires are self-completed, this point has to be made clear in the instructions to the respondent. Two examples illustrate how this instruction was 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 who answered ‘USSR’ or ‘former USSR’ will go to the next question, “15. Which country in the former USSR were you born in (according to current borders)?”]

248. Another problem with the question on place of birth is the level of non-response or the number of responses categorized as ‘unknown’. In some countries, this level is large relative to the number of persons who declare they are foreign-born. One reason is that during data collection, it was not differentiated whether persons that ended up with “place of birth unknown” were in fact (a) born in the country of enumeration but did not know their province of birth, (b) born abroad but did not know their country of birth or (c) did not know whether they were born in the country of enumeration or abroad. The statistics would be more meaningful if the three types of non-response/unknown response can be distinguished and shown separately.

249. Part of the problem lies in not having a “Don’t know” as a response category in the census questionnaire for cases where it is not known whether the person was born in the country or abroad. This is true of census questionnaires of many countries, including examples A and B given above. It is worth noting, however, that example A includes two separate unknown items in its response set, missing only the last item listed in the preceding paragraph. A rare example where the category “Don’t know/not stated” is an option for place of birth is shown in example C below.

Example C

9.1a. Were you/ Was (Name) born in (this country) or abroad?

- ◉ (This country)
- ◉ Abroad (Specify below)
Country (specify) _____
- ◉ DK/NS

b. Distinguishing among the foreign-born using information on year of arrival

250. For data on place of birth to be more useful to policy makers in countries of immigration there needs to be a way of distinguishing between recent migrants and those of longstanding since most of the issues relating to the adjustment of migrants to local labour and housing markets and society in general occur in the early years of immigration. Another area of policy interest is in studying the differences in integration and migration outcomes of those who entered the country at an early age versus those who entered later in life.

251. For statistics to inform the aforementioned policy interests, a question on year or period of arrival is required in addition to country of birth. The United Nations recommends 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 (United Nations, 2015b). 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 to calculate his or her age at immigration.

252. The question on year of arrival was not included in many national censuses, in spite of the topic having been recommended as a "core topic" by the United Nations. Less than half of all countries included the question on year or month/year of arrival.¹⁵ The persons of whom this information was gathered varied among countries. Some censuses directed the question to foreign-born persons only, while others directed it to all persons who have ever lived abroad for at least one year or to all persons who did not live continuously since birth in the place of enumeration.¹⁶ For countries interested in measuring return migration, asking the year or period of arrival question to all persons who have ever lived abroad serves a dual purpose: obtaining the time spent by a native-born person (returned migrants) since his or her return to the country as well as the time spent by a foreign-born person in the host country.

253. For the purpose of differentiating foreign-born persons by the length of their stay in the host country, arrival information asked directly of foreign-born persons will have a better coverage than the same information collected from all persons who have ever lived abroad for one year or more. In the former, all foreign-born persons are covered and the question is short, simple and direct. In the latter, the arrival question is typically part of a suite of 2-4 questions intended to primarily capture returned migrants. It opens with a question to ascertain whether the respondent has ever lived abroad for a certain period of time, usually "at least one year" (although durations as short as 6 months and as long as five years have been specified by a few countries). Some of the questions in the suite may be very relevant for studying return migration, for example the country where the person last resided in, but they are not necessarily relevant for policy directed at the generality of foreign-born persons in the country. Furthermore, some countries only ask about persons who have lived abroad in the last 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 long period would be screened out of the question, resulting in missing data on year of arrival. Finally, a foreign-born person who was less than a year old when entering the country would also be filtered out by the opening question "ever lived abroad for at least one year".

254. Another disadvantage of obtaining information on the date of arrival of foreign-born persons through a suite of questions intended primarily for returned migrants is that the arrival question invariably refers to the last arrival into the country. Depending on a country's policy interest, date of first arrival (as opposed to the last arrival) of a foreign-born person may be the more relevant information.

255. For the above reasons, the context of the question on year of arrival, to which subgroup within the population it is asked and the way the question is phrased are decisions to be considered carefully as they have implications on the resulting data gathered. The importance to the country of gathering statistics on returned migrants will factor into this decision (see subsection 3).

¹⁵ Of the 119 countries in the UNSD census questionnaire database from the 2010 round of censuses, only 38 included a question on year or month/year of arrival.

¹⁶ The 38 countries break down as follows on whom the question on year of arrival was directed to: 22 directed the question to foreign-born persons only, 14 directed it to all persons who have ever lived abroad for at least one year and two directed it to all persons who did not live continuously since birth in the place of enumeration.

256. When return migration is not a topic on the census, the question on year of arrival is typically asked only of persons born abroad and invariably placed right after the response to the country of birth. Although intuitively a very simple question, there is wide variation in the ways it is asked. Three examples of simple but clear wording of the question, after establishing that the person was born abroad, follow.

- 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?”

257. The most commonly used formulation in the 2010 round of censuses is the simplest one shown in the first example. The second example is more precise and would have a lower probability of varying interpretations. For the group of countries that asked the year of arrival question only to persons born abroad, three asked about first arrival and 18 made no such specification, although two of them asked the respondent to record the last arrival if he/she moved into or entered the country more than once. The United Nations *Principles and Recommendations, Rev. 3*, left the choice of asking the year first arrival or most recent arrival to the country, depending on its information needs. The information on 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. The information on year of last arrival is generally more relevant for countries where people migrate into more than once, whether at different life stages or in a circular way such as for work. It is particularly relevant for statistics on returned migrants. (See also subsection 3).

258. 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 the subsection that focuses on returned migrants. When the same question is used to distinguish length of stay of both returned migrants and foreign-born persons, the words “return” and “come to” may appear together in the question. Some examples are given below, but commentary is withheld until the subsection on returned migrants. It should be reiterated that in the examples below the question was asked of all persons, whether foreign-born or native-born, who have 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/last come to live in (this country)?”
- c) “In which year did you come to or return to (this country) for the last time?”

259. 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 year and month. Although the year of arrival may be sufficient for most purposes, it is best if both year and month are recorded, as recommended by the United Nations. However, given recall problems of events long past, a compromise would be to ask for month and year only if the arrival was within one year from the census date. Doing so would enable the separation of durations of less than one year from the rest.

260. Information on time since arrival can also be collected in terms of number of years that have elapsed since arrival, or duration of stay or residence in the country. The use of such a question, however, is not recommended because it is likely to yield less accurate information (United Nations, 2015b).

c. Distinguishing among the foreign-born by reason for migration

261. Reason for migration is a topic of primary interest to Government. A specialized sample survey on immigrants would provide this information best, but in its absence a number of countries have tried to obtain this information in a modest way in their census.¹⁷

262. The question asked would be “reason for coming or returning to the country”. It is typically addressed to persons who have ever lived abroad for at least 12 months. While it is apparent that in some countries the target respondents are returned migrants, in others the target respondents appear to be broader and include foreign-born persons.

2. The stock of foreigners

263. Another type of population stock widely used in the study of international migration is the stock of foreigners. A foreigner is a person who is not a citizen of the country of enumeration. Country of citizenship is defined as the country with which a person enjoys a particular legal bond. Unlike country of birth, a person’s country of citizenship can change during his lifetime. Persons who were not citizens by birth may acquire the receiving country’s citizenship by 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 that both items (country of birth and country of citizenship) be collected in a population census (United Nations, 2015b, para. 4.110).

264. To obtain the stock of foreigners from a census, the relevant question to ask is country of citizenship. The majority of countries ask a question on country of citizenship in their census (see box 6.2), although not as many as those that ask the question on country of birth.

265. When asking about a person’s country of citizenship in the English language, the term citizenship is preferred over the term nationality.¹⁸ The latter has ethnicity connotations in certain cultures and can cause confusion.

¹⁷ In the 2010 round of censuses, 9 out of 119 countries included a question on “reason for coming or returning to the country”.

¹⁸ Note that this applies only to the English version, and not to other languages.

Box 5.2**Is a question on country of citizenship asked in national censuses?**

Of the 119 countries in the UNSD census questionnaire database, 86 included a question on country of citizenship in the 2010 round of censuses. Notable is the large proportion of countries in the Americas that do not include a country of citizenship question in the census. A considerable number of countries in Asia, including two of the world's largest countries, China and India, also do not have a question on country of citizenship. Most of the countries in Africa and Europe have a country of citizenship question in their 2010 round census.

Number of countries by whether or not a question on country of citizenship is included in the 2010 round of population censuses, by region

Region	Included	Not included	Total
	No. (%)	No. (%)	No. (%)
Africa	24 (89)	3 (11)	27 (100)
North 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)
Total	86 (72)	33 (28)	119 (100)

Note: All English language questionnaires with a question on nationality have been considered as having a question on citizenship.

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

266. There is wide variation among countries in the way in which the question on country of citizenship is asked and in the design of response space. Some countries (Australia, DPR Korea, Maldives and South Africa) asked only whether the person is a citizen or not (i.e., a foreigner). The vast majority of countries ask for the person's country of citizenship if he or she is not a citizen of the country of enumeration, as recommended by the United Nations. For the latter, two general styles are used: recording the name of the country directly or choosing from a pre-coded list of countries. In some cases, the pre-coded list also includes regions and subregions. This is not recommended. Examples are given below showing different ways of recording the response.

i. Only whether citizen or not:

Example A

P-09. Is (name) a (from this country, adjective) citizen?

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 other state citizenship, write the name of the state] _____
- No state 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 Africans
- 07 French
- 08 Other Europeans
- 09 Asians
- 10 Americans from the United States
- 11 Other Americans
- 12 Others

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

268. In Example C the pre-coded list starts with five countries (including own country) followed by regions and a country, and finally “Others”. Using regional categories does not allow for specification of individual countries. Such practice is not recommended as it results in the loss of country detail that is not recoverable once data have been collected.

269. In the same example, countries of citizenship are pre-coded as adjectives rather than as country names. This is not a good practice. When pre-coding responses on country of citizenship, it is recommended that the country be recorded by its name, and not as an adjective, since some of those adjectives are also used for ethnic groups (United Nations, 2015b). For example, it is recommended to use China, Mongolia, Malta, Netherlands and USA, as opposed to Chinese, Mongolian, Maltese, Dutch and American. Other pre-coding and coding issues with regard to country of citizenship are the same as for country of birth (see subsection 1 the stock of foreign-born persons).

a. Stateless persons

270. More than a fourth¹⁹ of the countries that ask the question on country of citizenship include a category “stateless” or “without citizenship” in the pre-coded responses (as in example B above) to ensure that this group of persons is categorized correctly. This is good practice, in view of the increased attention to prevent and reduce statelessness. When data on stateless persons are collected, a category of stateless persons should also be presented in the tabulations.

b. Multiple citizenships

271. As international migration becomes more complex and there is increased circularity in international movement, attachment to multiple countries is becoming more common. With expanding cross-national marriages and other elements of globalisation there has been increased prevalence of multiple citizenships.

272. The United Nations recognizes the existence of multiple citizenships and suggests, for countries where there is need for this information, the collection of information on whether a person holds one or multiple citizenships. If the information is published, readers should be made aware of the possibility of counting people with multiple citizenships more than once and how it affects the marginal totals in the table (United Nations, 2015b, para. 4.115).

273. In many countries (mostly in Europe), the citizenship question allows the recording of a second country in the case of dual citizenship of its citizens by providing a space for entering the name of the other country of citizenship, as in example D below. In most cases, there is no allowance for writing in 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 category of example D is a good practice.

Example D

16. Citizenship

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

274. A few countries allow the entry of two or more countries of citizenship, even if none of them is of the country of enumeration. Two examples are shown, the first (example E) limiting the number of countries to two and the second (example F) without restriction. The acceptance of two or more countries in the recording of country of citizenship 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

275. For countries where the population includes a significant proportion of naturalized citizens, it may be useful to collect data on country of citizenship that would permit classification of citizens into (a) citizens by birth and (b) citizens by naturalization. Depending on their information needs, countries may also find it useful to ask questions on method of

¹⁹ 23 out of 86 countries.

acquisition of citizenship, previous country of citizenship, country of citizenship at birth and year of naturalization (United Nations, 2015b, para. 4.116).

276. Some countries include a question to allow distinction between citizens by birth and citizens by naturalization.²⁰ A practice used by some is to incorporate this distinction (by birth, by naturalization) into the response choices in the question on country of citizenship (see examples F and G). This practice is not recommended.

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
- etc.

277. In the above examples, the question is actually two (or more) questions rolled into one and should be avoided. In example F, the response categories are not mutually exclusive. A person with more than one citizenship (allowed per instructions) will choose (or write in) at least two answers. In example G, it is not clear whether the foreign country is to be specified when a person has dual citizenship. This example uses the term nationality in the question and countries of citizenships in adjective form. It is suggested to use instead the term “country of citizenship” and to use country names rather than country adjectives in the pre-coded response categories.

278. The best way to separate citizens at birth from naturalized citizens, or to obtain more detail on acquisition of citizenship from censuses, is to introduce an additional question, or even two, on the method²¹ by which citizenship has been acquired, after having ascertained that the person has citizenship of the country of enumeration. The question can be very short, simply to distinguish between citizens at birth and citizens by naturalization or, if desired, can inquire in more detail about the method of citizenship acquisition. The number and choice of methods of acquisition to include in the response categories depend on the information needs of the country as well as the relative prevalence of the methods of citizenship acquisition. Other related questions such as previous country of citizenship can be asked, if desired, after the citizenship acquisition question. See two examples below.

²⁰ In the 2010 round of censuses, 18 countries included such a question. (Source: UNSD census questionnaire database, as of 1 March 2014)

²¹ Some of the methods are standard naturalization that is usually subject to criteria such as age or residency, declaration and option (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 naturalisation

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 using information on year of arrival

279. As with foreign-born persons, foreigners may be distinguished from one another according to the amount of time they have lived in the country using the question on year or period of arrival. However, a notable difference exists between foreign-born and foreigners; the former were all born abroad and would have a year of arrival, whereas not all foreigners were born abroad (for example, native-born persons who by law acquired the citizenship of their foreign parents). Nevertheless, there is policy interest in studying integration and migration outcomes of citizens who entered the country long ago versus those who entered recently (see paragraphs 250-260 on the corresponding issue for the foreign-born).

e. General data quality issues on country of citizenship

280. A data quality issue on country of citizenship relates to the case of persons whose citizenship has changed as a result of territorial changes or of the emergence of newly independent States, including becoming stateless in some cases. In some cases, the reliability of reported country of citizenship of persons in those situations may be doubtful. Where this is the case, notations indicative of these possible causes of misstatements should accompany tabulations on country of citizenship.

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

282. There can be confusion about the country of citizenship of people born in other countries, stateless persons, and persons with multiple citizenships. Enumerators should be fully trained to detect and deal with these issues. Where self-enumeration is to be carried out, the questions should be clear and if necessary accompanied by instructions, as shown in some of the examples already given.

3. The stock of returned migrants

283. In the migration and development literature there is increasing significance placed on return migration as being a factor in enhancing the development of origin countries. Many countries are interested in knowing the magnitude and characteristics of returned migrants. Returned migrants have been defined as citizens of the country of enumeration who emigrated and subsequently returned to live in their country of citizenship (see chapter 1). They have to be citizens at the time of return.

284. However, some countries deviate from the United Nations definition and consider as returned migrants native-born persons who have lived abroad for a period of at least 12 months before returning to their native country. The important question for the country is to determine which group is of more interest and relevance to national policy, returned citizens or returned native-born persons.

285. While the census may not be the best source for collecting data relating to returned migrants, some countries with no other reliable source have attempted to include questions in their censuses to detect returned migrants.²² Most of these countries are in Eastern Europe and the Caribbean.

286. Returned migrants can be detected through a question in the census that asks all persons if they have ever lived abroad for at least one year, and if so, when they returned to live for at least one year. Based on the United Nations definition (see chapter 1), 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 returned migrant. The information for criterion (c) may be obtained if a question on country of citizenship as well as mode and year of acquisition of citizenship are asked in the census. Citizenship acquisition questions, however, are rarely asked in a census. Without this information, it is not possible to identify persons who are citizens at the time of return. One solution would be to use citizenship at the time of enumeration as a proxy variable. This solution would count as returned migrants those who were not citizens at the time of return but acquired citizenship at some point after their return.

287. As noted in paragraph 284, countries may choose to consider as returned migrants only native-born persons, regardless of their country of citizenship. In this case, the third criterion would be (c) born in the country of enumeration. This criterion is easier to collect in a census than the criterion “citizen at the time of return”. This in fact was used by a few countries²³, where only native-born persons were asked whether they have ever lived abroad for at least one year. One such case appears among the examples to be shown later.

288. Another deviation from the United Nations definition was to designate a finite time frame in which the returned migrant’s stay abroad occurred. Specifically, the question asked in the census was whether the person has lived abroad within the last 5, 10 or 30 years. This question variation will narrow the scope of coverage of returned migrants compared to the international definition, which gave no restrictions on when the stay abroad occurred. It is apparent that countries who asked the 5-year and 10-year questions are interested in more recent returned migrants. This filter may also be achieved by asking the date of last arrival in addition to the question on whether the person has ever lived abroad for at least 12 months.

²² In the 2010 round of population censuses, a fifth of countries (24 out of 119) included questions that would allow identification of their citizens (or native-born population) who had returned from having lived abroad.

²³ Four countries in the 2010 round of censuses. (Source: United Nations census questionnaire database as of 1 March 2014)

289. Immediately apparent from the many examples that will follow is the fact that some countries use a common suite of questions for all persons who have ever lived abroad for at least 12 months. Respondents to these questions could include both returned migrants and foreign-born persons who have migrated to the country of enumeration prior to the census. (See also paragraphs 250-256 in subsection B.1). In contrast, there are countries that ask the suite of questions only to the native-born population who have ever lived abroad for at least 12 months.

a. Distinguishing among returned migrants by year of return and country of previous residence

290. Most countries differentiate recent returned migrants from those who returned a longer time ago by including a question on their most recent year or period of return. The year of return can also be matched with the date of birth of the returned migrant to calculate the age at which he or she returned to live in the country. The characteristics so derived are very basic but are of great value in informing research and policy. Another question commonly asked is the country wherein the person last resided before returning/coming to the country of enumeration.

291. The examples that follow show the suite of questions on return migration, which opens with the filter question “ever lived abroad for at least 12 months”. In example A, the census aims to include as returned migrants only native-born persons, since the question on “ever lived outside country” is asked only of this population group. In the examples B to D, the question is asked of all persons, whether native-born or foreign-born. To arrive at the desired subgroup of returned migrants, the answers to the suite of questions presented need to be combined with the answer to either country of birth (and choosing native-born only) or country of citizenship (and choosing citizens only).

Example A

A24. QUESTION TO BE ASKED ABOUT PERSONS BORN IN (THIS COUNTRY) Have you ever lived outside (this country) for 12 or more consecutive months?

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 of vacant 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 was 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 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 or more?

[Answer if aged 1 year or over and living in (this country).]

1 Yes 2 No

If 'Yes', write in the YEAR of last taking 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 one (1) year old or over.]

1. Yes

2. No → Q18

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

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

292. As shown by the examples, the type and wording of the questions can vary greatly. There are many possible formulations, but the most important considerations when designing the questions are that they are able to answer the policy questions, and that the definition of returned migrant is clear and unambiguous. At the minimum, the question on “whether ever lived abroad” should specify the length of absence to avoid ambiguities. The United Nations definition is a period of absence of at least 12 months. Most countries have indicated it in their first question (ever lived abroad). In the arrival question, however, usually no mention of an intended stay of 12 months is made. Instead, other question formulations are used that imply an intention to stay for a long period, albeit not quantified.

293. In the first example, the language used by the country in the arrival question implies that their concept of returned migrants is tied to permanent settlement. The second and third examples use the terms “take up residence” and “settle”, both without specific mention of any duration of stay in the country of arrival. Only one country made reference to a duration of stay lasting at least 12 months (example D), consistent with the United Nations definition (see chapter 1). The most widely used wordings are simply “arrived/returned to (country)” or “arrived/returned to live in (country)” with no specification of length of stay.

294. This laxity of terms on the part of the countries may be tolerated to some extent. After all, it is possible to calculate a migrant’s length of stay in the 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 to be usual residents, confirming that they have stayed, or intend to stay, for at least 12 months.

295. Worth pointing out is the helpful instruction provided in example A to guide respondents on how to treat the stay abroad of workers, students and military personnel. As indicated in chapter 1, the treatment of these groups requires special attention and documentation. Another good practice in the same example is a reminder to apply the current borders of the country. (This country is a former republic of the USSR). Guides or instructions like these are particularly helpful with self-enumeration.

b. Distinguishing among returned migrants by reason for return

296. A few countries have also included a question on reason(s) for return migration. While it is recognized that the reasons to migrate, being complex and multi-faceted, are better studied through surveys, a single question can nevertheless provide some indication of the motivations for return migration. For practical reasons, answers should be pre-coded and the response be limited to just one—the main reason. Some examples of question and answer sets actually used by countries in the 2010 round of censuses follow. In the first example, the questions are addressed to returned migrants specifically, whereas in the next two examples the questions appear to be addressed to both returned 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

297. While the wording of the question is very similar, the pre-coded responses are quite varied, reflecting the specific situation in each country. Work, study and family reasons are almost always present in the response sets of countries that offered this question. Other notable reasons that appear in some census questionnaires are “medical/ health reasons”,

“asylum seeking”, “forced migration” and “personal safety”. As already mentioned, the reasons offered will differ according to the situation of the country.

4. The stock of second generation migrants

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

299. As defined in chapter 1, the stock of second generation migrants consists of persons born in the country whose parents were both born abroad. In studying the integration processes and outcomes of immigrants and their descendants, there is often a strong interest in comparing second generation migrants with first generation migrants, as well as with the native-born population with native-born parents.

300. The identification of second generation migrants requires that questions be asked on the place of birth of each respondent as well as place of birth of his or her parents (see box 6.3). The decision to collect the information on place of birth of parents in a census should take into consideration the suitability and sensitivity of asking such a question among the country’s population, in addition to the information needs of the country.

Box 6.3

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

In the 2010 round of censuses, the inclusion of the question on place of birth of parents in the census was not common. Of the 119 censuses examined, only 10 asked this question. Australia and Canada are among the bigger immigration countries to include this question in their census (in 2006).

Source: UNSD census questionnaire database as of 1 March 2014.

301. Once it is decided to include the question on place of birth of parents in a census, the formulation of the question is straightforward. It is asked for each parent separately. Most countries ask for the name of the country of birth (as in example A below), but it 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

Born in (this country)

Born outside (this country)

Specify country _____

(b) Mother

Born in (this country)

Born outside (this country)

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

302. Example A is preferred as it yields more information than example B. Only when the specific country of birth of the parents is asked for, as in example A, can the information be used to identify the origin-specific migration background of the respondent. Information from this topic also allows the group of foreign-born children of native-born parents to be identified, information that can be important in countries that have significant return migration.

303. The United Nations recommends that parents' country of birth, when asked, follow the same guidelines for country of birth, including specifying the individual country.

C. Other topics in censuses relevant to immigration

304. A range of other topics relevant to immigrants have been included in population censuses. Some will be important for many countries, especially those that are experiencing a significant level of immigration. Two topics are particularly worth mentioning: ethnicity and language. It should be noted that both are sensitive topics in some countries and should be investigated with caution.

305. Nevertheless, valuable insights can be gained in the application of ancestry and/or ethnicity questions. Of course not all ethnic diversity in a country is attributable to contemporary migration. Some countries have a large number of ethnic groups of longstanding and a high degree of ethnic diversity in the national population. Nevertheless such questions can be useful in establishing the dimensions of some significant migrant-origin populations that are not

differentiated by the questions discussed so far. These questions will be of particular utility in countries that have adopted multiculturalism models and wish to identify the size and characteristics of particular migrant origin groups in their societies in order to better target and pursue multicultural policies.

306. Language is another topic of crucial significance in migration. It can strongly impact upon a migrant's ability to interact with the destination society and to participate in the local labour and housing markets. Language is also crucially significant in immigrant identity and identification with the origin country. Accordingly it is useful for countries with substantial numbers of immigrants to include two types of language questions:

- One which asks the usual language spoken in the home of the immigrant
- Another which asks about the ability of the migrant to speak the dominant language(s) in the country of destination

The latter, however, is not an easy question to answer. The answer is subjective and requires the respondent or informant to gauge his or another household member's ability.

D. Proposed questions for collecting data relating to stocks of immigrants

307. This section proposes questions to be asked to enable the compilation of data on each of the four population stocks covered in the chapter. The questions proposed benefited from a review of actual questions fielded by countries in the 2010 round of population censuses. The questions were formulated with particular consideration to their ability to identify and distinguish the selected population stock.

308. As with any new questions, the proposed questions have to be thoroughly tested by individual countries prior to their use in a census.

1. For the stock of foreign-born persons

309. For identifying the stock of foreign-born persons, the associated topic is the country of birth. The topic year/period of arrival can serve to distinguish among persons in this group. The proposed questions for testing follow.

ASK OF ALL PERSONS

1. Where was (person) born? or
What was the usual place of residence of (person's) mother when (person) was born?
_____ (This country) [Specify province and municipality.]
Province _____ ___ Unknown
Municipality _____ ___ Unknown
_____ Another country [Specify country according to present borders.]
Country _____ ___ Unknown
_____ Country of birth unknown

ASK OF PERSONS BORN IN ANOTHER COUNTRY

2. On which year and month did (person) first arrive in (this country) to live for a year or more?
Year _____ Month _____ ___ Unknown

2. For the stock of foreigners

310. For identifying the stock of foreigners, the associated topic is the country of citizenship. The topics year/period of arrival and citizenship acquisition can serve to distinguish among persons in this group. The proposed questions for testing follow.

ASK OF ALL PERSONS

1. Of what country is (person) a citizen? or
What is (person's) country of citizenship?
☐ (This country)
☐ (This country) and another country [Specify according to present borders.]
 The other country _____
☐ Another country [Specify country according to present borders.]
 Country _____ ☐ Country unknown
☐ Country of citizenship unknown
☐ No citizenship (Stateless)

If desired, the following questions on method of citizenship acquisition can be added. These questions are optional.

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 declaration
☐ 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

311. This chapter also considered questions for identifying returned migrants and second generation migrants. For countries that may wish to compile either population stock, the sets of sample questions are given below. These sample questions should be tested before use in a census.

3. For the stock of returned migrants

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

ASK OF PERSONS OVER ONE YEAR OLD

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

4. For the stock of second generation migrants

313. To enable identification of second generation migrants, a question on country (place) of birth has to first be included in the census. The questions on country of birth of parents proposed below are then considered 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
 - ☐ Stateless
 - (b) (Person's) mother
 - ☐ (This country)
 - ☐ Another country [Specify name of country according to present borders.] _____
 - ☐ Country of birth unknown
 - ☐ Stateless

CHAPTER VI

The challenges of measuring emigration

A. Issues in measuring emigration in population censuses

314. From the perspective of national census taking, emigrants are demographically similar to deaths in that information on the people involved cannot be obtained directly from them because they are not living within national boundaries at the time the census is taken. In the case of both, information can be obtained directly from other household members still residing in the country but this will not obtain information on all emigration or all mortality. Hence it is not possible for a country to identify through a national census the stock of all emigrants who have left that country. The most that can be achieved is a partial picture.

315. First of all, for emigrants to be recorded in a population census there must be someone left behind in the country to report them. In cases when the entire household emigrated, which is often the case for long-term emigration, there is nobody left behind to report the emigration.

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

317. On the other hand, there is the possibility of double counting an emigrant. Such would be the case if the emigrant belonged to more than one household while in the country of enumeration. One way to avert this is to specify that an emigrant is to be enumerated only by the last household that he or she was member of before leaving the country. Even so, if the household of which the emigrant was a member splits up after his or her departure, the emigration may be double-counted.

318. The census relies on a household member present at the time of the census to report information about emigrants. If the informant lacks knowledge about the emigrant and details about his or her emigration, it will be difficult to obtain the missing information since the emigrant is not in the country at the time of enumeration. With the self-enumeration method there is a possibility of consultations among household members to get the best response, but with the enumerator method this possibility is greatly reduced.

319. In summary, the attempt to count emigrants in population censuses has important drawbacks and need to be used with caution. Any counts obtained are likely to be lower bounds.

B. Collecting information on emigrants through an emigration module

1. Current practices

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

321. A significant number of countries attempt to collect data on emigration through a short module of questions.²⁴ In the censuses of these countries, 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 when listing emigrants. It will be noted that the United Nations stipulates an absence from the country of a year or more in its definition of emigrant (see chapter 1).

322. After identifying the emigrants according to the country’s specifications (which may or may not coincide with the United Nations definition), the module gathers a limited amount of relevant information on each emigrant. The demographic characteristics age and sex are almost always obtained, as are two distinguishing characteristics relevant to emigration---the year of departure and the destination country (and/or country of current residence). Additional questions asked by some countries include reason for migration (or for staying abroad) and the educational attainment and occupation of emigrants, among others.

323. From 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 weed out absentees away from the country for less than 12 months. From the question on country of destination and/or country of current residence, the country conducting the census can find out the destinations of their emigrants. This information also provides the possibility of evaluating the data so obtained by comparing them against receiving countries’ immigration data. It is reiterated that, as stated in the previous subsection, the count of emigrants obtained from the census can be but a partial count.

324. Perhaps the more valuable data to be garnered from this collection is that on the characteristics of the emigrants, such as their age and sex composition and their educational attainment or occupation at the time of emigration. The latter provides a basis for analyzing the propensity to emigrate and is of interest to countries concerned with losing their highly-educated and highly-skilled citizens through emigration. This data are not without bias, however, as members of entire households that emigrated leaving no one to report on them have characteristics that are often different from individual household members who emigrated but have household members left behind to report on them. The former consists of households whose members cover a wide range of demographic and social characteristics whereas the latter may be a group with a concentration of ages (for example, prime working age) or skill sets (for example construction workers or nurses).

325. The examples provided below show some of the good practices from countries that collected emigration data in the 2010 round of population censuses. Other examples are used to illustrate practices that are not likely to get satisfactory

²⁴ In the 2010 round of censuses, 35 of the 119 censuses examined include a short emigration module. All 35 are from less developed regions, of which 12 are from Africa, 13 from Latin America and the Caribbean, and 5 from Asia.

results. Because of its critical importance, the definition (or criteria) used by countries to identify emigrants is dealt with in detail.

326. The remainder of this 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

327. Of note is that of the 35 countries that included an emigration module in their census questionnaire, only six specified the 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 United Nations definition (see chapter 1); the other three specified “six months or more”. In the case of countries that listed as emigrant all former household members who have been living abroad for six months or more, it is possible to trim the count to include only those who have been abroad for 12 months or more, attaining consistency with the United Nations definition, if the month and year of departure were also asked.

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.]

1 ☐ Yes – (Fill in the table)

2 ☐ No – Go to LIST 3.

Example B

EMIGRATION OUTSIDE THE COUNTRY

[Answer for all former household members 15 years or older who have been living continuously for 6 months or more outside (country) (or intends 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.

328. The first two examples ask about former household members who have been away for at least a specified period. The first example is in line with the United Nations definition of at least 12 months’ stay abroad (chapter 1). It is good practice to specify this period of absence in the question to prevent those who have been away less than 12 months from being listed. The second example specifies only 6 months or more, short of the 12-month threshold. It also excludes persons who are less than 15 years old, thereby obtaining an incomplete count of former household members who are away. As noted in the previous paragraph, it is 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 was also asked.

329. Most countries do not specify a period of stay abroad but use wording that implies a long stay abroad, or even a permanent stay. Thus, the question may ask about persons “who used to live in your household and are currently abroad”, “living permanently in another country” or simply “living abroad”. Some examples follow:

- 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?”

330. The date given in the first example is the census date for this country. In all three examples, the criteria are that the person is no longer a member of the household and is currently living in another country (albeit only implied in example c). The questions may seem clear, but without specifying the 12-month absence, they are prone to different interpretations by different respondents.

331. The examples given so far leave open the time frame for reporting emigration. It implies that everyone who has ever left the household to live abroad and is still abroad is to be listed. The farther back the data go---and when no time frame is imposed---the less complete and accurate they will be, due to problems of attrition and recall (see section A). More than half of the countries with emigration modules avoided this by specifying a time frame for emigration to be listed, asking about persons who left the country in the last X years (examples C to E below). The most widely used time frame is the last ten years (used by 8 countries) and the last five years (by 5 countries). An important reason for limiting the question to the last X years is because current or recent emigration is generally of more interest to countries. Limiting the time frame to a short period like five years generally improves the quality of the data. The following are examples where a time frame is indicated in the question.

Example C

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

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

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

Example D

TE 5. DEPARTURES ABROAD DURING THE LAST 5 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

332. The examples above show three different time frames for reporting emigration of household members: 5 years, 10 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”.

333. Example E uses a particularly short time frame---from January 1, 2010 to the date of the census (April 4, 2011), or slightly over a year. If those who departed in the year 2011 can be filtered out, the result would be the number who emigrated in the year 2010, a one-year “emigrant flow”. Any result is of course subject to the drawbacks already stated in section A of this chapter regarding emigrant information obtained from household members remaining in the country of enumeration.

334. In summary, the wording of the question to identify emigrants should specify (i) an absence of at least 12-months from the country and (ii) the period within which emigration is to be reported. For reporting emigration, five years represent a reasonable period since it captures recent emigration and yields data of better quality than those covering a long period. However, 10 years may be more suitable to countries with a low level of emigration since it potentially captures more emigrants. Open periods (i.e., time period not specified) and periods exceeding 10 years should be avoided. The longer ago the emigrant has left the country, the higher the likelihood that his departure will be forgotten or inaccurately reported due to problems recall, or that nobody is left to report his departure.

b. Demographic and social characteristics of emigrants

335. Once the emigrants are identified, the next questions concern the emigrant’s sex and age. These questions are straightforward and were asked by all countries that included an emigration module. A number of countries also asked about social characteristics like highest educational attainment, occupation and marital status.²⁵

336. An important point that needs to be addressed regarding the collection of data on characteristics of emigrants is the time reference of those characteristics. 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 usually safe to assume that sex does not change.) For most countries concerned with losing their young and/or skilled citizens, information on the characteristics possessed by the emigrant at the time of emigration would be more relevant. From the 35 national census questionnaires that included an emigration module, however, such time reference was explicitly specified in only 16. The rest either specified the time of the census or did not specify anything (and taken to mean the time of the census).

337. In the case of age, the age at departure can be calculated from the current age if information on the year/month of departure was also obtained. For educational attainment and other social characteristics, no conversion is possible.

338. The two examples immediately following ask about characteristics of the emigrant at the time of departure. For contrast, an example will also be shown that asks about emigrant characteristics at the time of the census. As already mentioned, the characteristics of the emigrant at the time of departure are more useful to a country concerned with losing their skilled workers, as they give a better indication of the types of persons who have been leaving the country.

²⁵ In the 2010 census round, of the 35 countries that included an emigration module in their census, 13 asked for the highest educational attainment, 8 for the occupation and 3 for the marital status of each emigrant.

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
- M8. Educational attainment
 1 None
 2 Pre-school/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 write the occupation of the person that 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 15 years and over]
 Occupation: _____
 08 Don't know (DK)

339. Example H below asks about current characteristics of the emigrant. While age at departure can be derived from the information on year of departure, educational attainment and occupation at the time of departure cannot. Some of these characteristics may have changed after the emigrant left his/her country of origin, for example the educational attainment of persons who went abroad to pursue higher education. However, the household member (informant) may not know the current characteristics of the emigrant.

340. Responses to questions on characteristics at the time of enumeration represent the current characteristics of the emigrants. Having current information on the emigrants serves a different purpose to the country of enumeration. If a country is interested in engaging their diaspora in the economic and social development of their country, capturing current emigrant profiles would be more helpful.

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 and above 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

341. An important piece of information on emigrants is their length of stay abroad, typically obtained from responses to a question on the year of their departure. Almost all countries that have a question on emigrants included a question on their year (both the year and month in some cases) of departure from the country. The question or question space is simple, such as:

- a) What was (person's) year of departure? ____
- b) Year of departure: ____
- c) Date of departure: [Write in the month and year of departure for abroad.]

342. Some countries ask the respondent for the date of the emigrant's last departure to live abroad. Asking for last departure is particularly relevant in countries where people tend to emigrate multiple times, including in a circular way. An example would be contract workers who return home for a period of at least 12 months before accepting another contract to work abroad for at least a year. Without accompanying instructions, however, the question on last departure can be misinterpreted as the departure after the last visit or vacation to the home country. To avert this, instructions should state that the last departure to live abroad refers to that preceded by a stay of at least 12 months in the origin country. Examples of the question referring to last departure follow.

- 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

343. Country of emigration may be asked in two ways: as country of destination or country of current residence. Perhaps recognizing that emigrants can and do move from their first destination country to another, half of all countries

with a question about country of emigration posed the question as country of current residence. The other half asked for country of destination or country migrated to.²⁶ Actual examples follow:

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 in?

344. Countries that wish to include this question should deliberate carefully on which information is more useful for them: the country of destination at the time of departure or the current country of residence.

e. Reason for emigration

345. Countries have strong interest in knowing why their citizens emigrate and ask about the emigrant's reason for leaving the country or staying abroad.²⁷ A problem with this question is that the informant may not know the emigrant's main reason for leaving. Some countries ask the question on current activity of the emigrant abroad. This question has the same drawback as the question about reason for emigration, as the informant is not necessarily kept abreast of what the emigrant is currently doing abroad. For this reason, information obtained from either question should be interpreted with caution.

346. Below are examples of the phrasing or 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

347. When asking this question, it is suggested to ask for the main reason and to record only one response. The response categories may be pre-coded, with a category for "other, specify". The reasons most frequently included in the countries' pre-coded lists are the same as those for immigration, namely:

Employment (or Work)

Study

Family reasons/family reunification

348. Other reasons are more specific to the country. Some examples are (high) crime rate, business, marriage, medical/health reasons, working in mines and working as domestic (or personal service).

²⁶ In the 2010 round of censuses, 16 out of the 32 countries with a question on country of emigration asked for the current country of residence, while 15 asked for the country of destination without specifying whether it refers to the first or final destination. One country asked for both. (Source: UNSD census questionnaire database as of 1 March 2014)

²⁷ About half of the 35 countries that included an emigration module in their census ask about the emigrant's reason for leaving the country or staying abroad.

2. How good are data obtained from emigration modules?

349. It is expected that the information gathered through emigration modules in the census can be exploited to compile population stocks related to emigration, subject to the caveats mentioned before. It is also expected that an important use of the data gathered through the emigration module is to shed light on the characteristics, destination and motives of emigrants---their age and sex composition, qualifications, length of stay abroad, where they live and to some extent their reasons for leaving. The data gathered can be used to locate the major destinations of emigration.

350. For the countries that included an emigration module in the 2010 round of censuses, there is as yet not much information on the quality and usefulness of the data gathered. From the drawbacks already pointed out about such data, it is not expected that the data obtained will paint a complete picture of emigration. To better identify and understand the limitations of the data, they should be evaluated against other available sources of data on emigration such as administrative records or specialized surveys. Another way to evaluate the quality of the data is to carry out detailed comparisons of the emigration data collected from the census with immigration data of at least the major receiving countries.

351. An example of such evaluation is a comparative analysis of data completed by UNECE for four countries (Georgia, Republic of Moldova, Poland and Tunisia) that collected data through emigration modules in population censuses in the period 2002-2004 (Bisogno and Chudinovskikh, 2008). Comparative analysis involving various sources often meets with the problem of non-congruence of the population universe, the method of data collection, the definition and the reference period. These complications were indeed encountered by the UNECE study, which also had the added disadvantage of the lack of detail (for example, inadequate disaggregation of demographic characteristics by country of destination) in the emigration data, among other things. Nevertheless, the exercise showed that emigration data obtained from the census is, for the most part, largely underestimated when compared to data from the receiving countries. The conclusions of the study are that the emigration modules are not able to provide an accurate count of the total number of emigrants residing abroad, but that certain groups of emigrants can be relatively well-covered, namely:

- Emigrants who left the country in recent years (up to 5 years before the census)
- Emigrants who are more likely to keep close ties with their country, mainly because of close family ties and/or geographic proximity
- Emigrants who are still in the registration system of the country of origin, if registers exist

352. The difficulty in getting a reliable estimate of the size of emigrant populations has prompted some scholars of demography and migration to develop indirect estimation techniques for emigration. Although this exercise was done in the early 1980s, it can be considered by countries that rely on censuses for statistics on migration and already include questions on children ever born and children surviving in their census. The methods are described in the section immediately following.

C. Indirect estimation of emigrant stock from a population census

353. Indirect estimation techniques for measuring emigration are not new. They were first proposed by the IUSSP Working Group for the Study of International Migration to complement methods then existing for measuring emigration. Two approaches were developed. The first, by Somoza, is based on information obtained from mothers on the place of residence of their surviving children (Somoza, 1977) and the second, by Hill, is based on information obtained from all respondents on the place of residence of their siblings (Hill, 1981). The second 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 has no other significant use. Thus, only the method based on the residence of children is described below.

Residence of children method

354. The method described here arose out of the substantial literature that has developed in demography on indirect estimation of mortality in countries with poor death registration systems. The IUSSP volume indicated that questions which have been developed to detect the survival of children can be readily modified so that they are able to provide not only indirect estimates of mortality but also of emigration (International Union for the Scientific Study of Population, 1981). For those countries which already include questions on survivorship of children, it entails a modification by adding 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 to some countries.

355. The approach is based on asking the adult female population of a country a question about the number of surviving children who currently reside outside of the country. Somoza argues that this is a reasonable approach since most recent emigrants are young and their mothers are likely to still be alive to report on them (Somoza, 1981). Moreover there is only one possible informant.

356. One of the major advantages of the approach based on the residence of children is that it relies on data that reflect the demographic ties between individuals rather than socio-economic ties (such as “household membership”). The estimation methods used can therefore be based on demographic models that are amenable to testing.

357. The conventional question in the census for mortality asks all adult women how many children they have ever borne and also how many are still living. For the estimation of emigration the surviving children need to be grouped into three separate categories according to their whereabouts at the time of the census – in the country of census enumeration, abroad and unknown. Each category of children needs to be classified by sex. The question should be asked of all females aged 15 and over, and not just those aged 15-49.

358. 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. This estimate requires an adjustment 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 who do not have a mother to report them because the mother herself is an emigrant.

359. The aim is to provide an estimate of the total number, and distribution by age and sex, of emigrants. The process is elaborate, relying heavily on models and implicit assumptions about the relationships between fertility, mortality and migration.

360. A critical review of this indirect method noted that the estimates of total emigration yielded by this method (i.e., with the adjustments mentioned in paragraph 358) are about twice the number of reported emigrant children (as counted in the census). It suggests that the adjustments for orphanhood and maternal emigration result in twice the number of emigrants reported by mothers (Zaba, 1987).

D. Using immigration data from receiving countries to estimate emigration

361. The limitation in the ability of the census of the country of origin to measure stocks of emigrants has led to the use of 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 data on emigrants to the country of origin.

362. 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 its Project on Investigation of International Migration in Latin America (IMILA) in the early 1970s. (United Nations Economic Commission for Latin America and the Caribbean, 2002) The OECD has also extensively analyzed 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 DIOC-E (OECD, 2014). More recently, the UNECE and Eurostat conducted a data exchange exercise involving 19 countries organized into four data-exchange groups to assess the feasibility of using immigration data of destination countries to improve emigration estimates in countries of origin. The ECE/Eurostat study examined both stocks and flows and provided guidelines for exchanging data (UNECE and Eurostat, 2010).

363. Some of the limitations and challenges encountered with this approach (considering only the census data exchange) are:

- The different undercount rates for total population and international migrants, mainly concerning undocumented immigrants. It is generally believed that such immigrants, even if enumerated, often conceal their real 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 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. 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 for education and occupation.
- Information as 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 provided, are sometimes aggregates.

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

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

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

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

368. Although the approach may impose some burdens on the receiving countries involved in the data exchange, it brings benefits to 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. With data exchange, they benefit from the information they will obtain on their own emigrants from the countries of destination.

369. In the data exchange, data compiled by the receiving countries can be based on either the country of birth or country of citizenship variables. One has to be aware that when country of citizenship data are used, dual citizenship could become a complicating factor. A citizen of the sending country might also be a citizen of the receiving country. In this case, the person will not be included in the data on foreigners.

370. Disaggregation of the data for exchange based on duration of residence in the receiving countries is also important. Certain socio-economic characteristics of migrants are also crucial, such as sex, age, level of education, labour force status and occupation.

E. Proposed questions for collecting data relating to emigrants

371. The *Principles and Recommendations for Population and Housing Censuses Rev. 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 section 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 asking their resident population about former household members who have emigrated.

372. Sample questions are provided below to help countries formulate their own questions for identifying and characterizing emigrants. The educational attainment levels shown in (c) follow the 2011 ISCED-A classification of UNESCO.²⁸ As with any new questions, these have to be thoroughly tested by individual countries and modified to fit their situation.

1. Identification of emigrants

ASK OF THE 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 still living abroad now?

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

No → End of emigration module.

* Note: Countries with a low level of emigration may want to use 10 years.

²⁸ Details on the classification may be found on uis.unesco.org.

2. Year of departure of emigrants

ASK FOR EACH PERSON IDENTIFIED AS 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 the year only.] _____

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

3. Demographic and social characteristics of emigrants

ASK FOR EACH PERSON IDENTIFIED AS 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.] ____

The next two questions (#s 3 and 4) are optional. The response categories for educational attainment should be adjusted to reflect what is appropriate for the country.

IF EMIGRANT WAS AGED 10 OR MORE 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? _____

Alternatively, a small table with 4-6 rows can be constructed for recording the information about emigrants.

Name	Sex	Age at departure	Educational attainment at departure (optional question)	Occupation at departure (optional question)

373. If a country is more interested in the current characteristics of its citizens abroad, all of the questions above on demographic and social characteristics at the time of departure can be changed to characteristics at the time of enumeration.

4. Country of emigration

ASK FOR EACH PERSON IDENTIFIED AS 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 the destination is concentrated in a few countries. In such a case, a category “Other, specify _____” should be included in the list.

5. Reason for emigration

ASK FOR EACH PERSON IDENTIFIED AS EMIGRANT

What is (Name’s) main reason for leaving the country to live abroad?

- Work
- Study
- Family reasons/family reunification
- Business
- Other, specify _____

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

6. Residence of surviving children

374. To use indirect techniques to estimate emigration from the information on residence of surviving children, the proposed questions are shown below. It should be noted that the questions on children ever born and children surviving may already be on the census questionnaire. The country should determine through testing where and how the question on residence of living children should be placed on the questionnaire.

ASK OF ALL WOMEN AGED 15 AND ABOVE

1. How many children have you ever borne alive? Please state the number of male and female children separately.

Number of males ____ Number of females ____

2. How many of them are still alive and living in this country? Again, please separate males from females.

Number of males ____ Number of females ____

3. How many are alive and living in another country?

Number of males ____ Number of females ____

[To be filled in by enumerator] Not known whether living in this country or abroad:

No. of males ____ No. of females ____

375. Alternatively, a small table can be used for recording the information, as shown below.

Table. Children ever born, children living and residence of living children

	Male	Female	Total
Number of children ever 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 VII

Estimating recent migration and net international migration from population censuses

376. Population censuses are widely recognized as the major source of statistics for international migrant stock (see chapters 5 and 6). However, certain data collected in population censuses can be exploited to produce rough estimates of recent international migration. The census question place of usual residence at a specified time in the past serves this purpose. The most common time frames specified are five years and one year prior to the census.

377. Net international migration can also be estimated for the period between two censuses (the intercensal period). The method uses population data from two censuses, in most cases ten years apart. Net migration may be estimated for a series of successive census pairs to examine trends of net migration over the decades.

378. Indications of recent international migration are treated in Section A. The estimation of net international migration from two censuses is elaborated in Section C.

A. Indications of recent international migration

379. 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, albeit with some limitations. The resulting statistics is not an estimate of migration flow. Rather, it is a rough “net measure” of recent immigration. A more appropriate description is the count of surviving immigrants aged 5 years or over (or aged one year or over) at the time of the census (see *Limitations of the data and statistics* below).

380. The relevant question in the census is place of residence at a specified date in the past or, alternatively, the pair of questions on duration of residence and place of previous residence. Both are “core topics” that have been recommended for inclusion in every population census (United Nations, 2015b).

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

381. 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 (in some cases, both), unless the person was not yet born. Responses are recorded in terms of territorial divisions within the country, but most censuses allow a foreign country to be specified if the reported residence was abroad.

382. 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/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) prior to the census. At the time of enumeration, such person may have stayed in the country for only a few months; however, as long as he or she has been 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 his/her intended period of stay.

Box 7.1

Is a question on place of usual residence at a specified time in the past asked in national censuses?

In the 2010 round of censuses, 71 out of 119 countries whose questionnaires were available for examination included a question on place of residence at a specified time in the past. Of these 71 countries, 59 asked for the foreign country if residence was abroad while 12 did not.

Place of residence five years ago was asked by more countries than place of residence one year ago (44 for the former versus 28 for the latter), with 11 countries having asked for a person's residence both five years and one year ago. Another nine countries asked the place of residence at the time of the last census.

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

383. Information on residence at a specified date in the past provides an important benchmark to examine immigration over the previous period. It also allows the detection of returned migrants to some extent, 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 returned 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 returned migrants can be estimated by country of previous residence. (see also Box 7.1)

384. The five-year ago question can provide a useful estimate of the number of recent immigrants, and the one-year ago question an indication of net migrants for the 12 months leading up to the census. As mentioned earlier, these estimates are not without important caveats (see *Limitations of the data and statistics* below). The advantages of the method are that the question needed is very simple and that detailed socio-demographic characteristics are available for these immigrants since they are collected in the census.

385. The one-year ago question yields a more precise timing of the migration, although the representativeness of this short period sometimes comes into question. The five-year period reduces this problem and 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 consequence of increased recall errors by the respondent.

386. 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 it was as long as 22 years prior). In terms of estimating recent immigration, data on place of usual residence at the last census would be of less practical value compared to those of a more recent time frame such as one or five years ago.

a. Limitations of the data and statistics

387. For 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; in other words, immigrants who entered the country during the specified five-year (or one-year) period. However, this count is deficient as an estimate 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 below five years old (or one year old) 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

388. Yet, the count cannot be considered an estimate of net migration for that period because it excludes only a fraction of the emigration that took place in the specified period---namely the departure of those who entered during the period (third bullet in previous paragraph). The count does exclude 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 surviving immigrants aged 5 years or over (or one year or over) at the time of the census.

389. Finally, it should be emphasized that the data obtained from 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*. Compared to annual migration flow data from reliable population registers, an immigrant count derived from the census question on usual residence one year ago is expected to be lower. In addition to the factors listed in paragraph 387, the fact that the census does not capture multiple migrations by the same individual contributes to the discrepancy. In a recent study, the Swiss Federal Statistical Office compared their register-based annual flow data with register-based stock data from register surveys on the question “place of residence one year ago” and found the latter to underestimate annual inflows by as much as 43 per cent.²⁹ For the many countries that do not have migration flow data, however, an estimate of the number of immigrants from the one-year ago question may fill the data need.

b. Examples of questions on residence at a specified time in the past

390. Two examples are given of how countries framed the question and response categories for the five- and one-year ago usual residence questions in the 2010 round of censuses. Example A is very precise, using the phrase “usual place of residence” and specifying a date in the questions on past residence. Example B uses the simpler phrase “where did you live” in the question proper but included a detailed explanation right after the question. Such elaboration is helpful especially when the questionnaire is to be self-administered, as is the case in example B.

Example A

QII-4.2. Where was your usual place of residence one year ago (9th 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 (9th 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 _____

²⁹ This point is illustrated in: Swiss Federal Statistical Office, 2014

Example B

P15. Where did you live one year ago? [Applicable only if you are one year old or over.]

[Information should be based on last year's place of usual residence where you have normally spent most nights, regardless of temporary absences for purposes of recreation, work, school, etc.] (Mark one circle 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 _____

391. 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 five or older (or aged one or older) on the date of the census. It is recommended that this cue be included with the question, as done in example B, especially if the questionnaire is to be self-administered.

392. As already noted, example B included a clarification for the phrase “where person lived 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 months ending 20 November 2010. The instruction, however, refers to last year's place of usual residence, effectively shifting the reference period from the 12 months ending on 20 November 2010 to the calendar year 2010 (i.e., the 12 months ending on 31 December 2010). Simplifying the instruction to “last year” instead of “the last 12 months” may make it easier for the respondent to recall, but the results could differ slightly from that obtained with a correct explanation of the question.

2. Using the question on duration of residence and place of previous residence

393. Some countries collect information on duration of residence in combination with the place of previous residence. Like place of residence at a specified time in the past, this pair of questions is intended mainly for detecting internal migration. Together the pair of questions can be used similarly as the question on place of usual residence x years ago with much the same effect and subject to the same limitations. In addition, this pair of questions has another serious drawback for detecting either lifetime or recent immigrants. If a person who moved into the country of enumeration subsequently made an internal movement, his or her previous residence would be recorded as being the one within the country. His or her status as an international migrant would be concealed.

394. Compared to the question on usual residence x years ago, this approach requires one additional question. Because of its simplicity and economy, the single question version is favored for the analysis of international migration.

B. Proposed questions for collecting data relating to recent migration

395. 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. The specified date in the past is typically one year ago or five years ago. Advantages and disadvantages of each specified period are given briefly in paragraphs 384-385 to assist countries in choosing the period most suitable for their purpose.

396. This short section proposes questions to be asked regarding place of residence (a) one year ago and (b) five years ago, recognizing their use for detecting both internal and international migration. Countries should choose the period that they deem appropriate for their situation. The questions proposed benefited from a review of actual questions fielded by

countries in the 2010 round of censuses. As with any new questions, the questions proposed below should be tested by the individual country prior to their use in the census.

1. Place of residence one year ago

ASK OF ALL PERSONS OVER ONE YEAR OLD

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 5 years ago

ASK OF ALL PERSONS OVER FIVE YEARS OLD

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. Estimating net migration from two censuses

397. Data from two consecutive censuses may be used to estimate net migration in the intercensal period, that is, the period between the censuses. The intercensal period may be ten years or some other interval. The net international migration flow, as the name indicates, is a *net* flow. Because the census counts persons rather than events, a more accurate terminology might be the *net international migrant flow*. For simplicity, it will be referred to as net migration or net immigration in this chapter. Roughly, it may be interpreted as the number of persons who entered to reside in the country during the intercensal period minus the number who left during the same period to reside abroad.

398. The most common method uses the intercensal component equation, which stipulates that the difference in total resident population between the first and the second census dates is the result of 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 subsections 1 and 2 that follow).

399. It is possible to estimate the intercensal net migration of foreign-born persons, a measure that is also of interest to policy makers. The method is similar to the one for total population, but focuses on the foreign-born population counted in two successive censuses. The difference in the foreign-born population counts at the two census dates is increased by the total number of deaths that occurred to all foreign-born population in the intercensal period to arrive at an approximation of net migration of the foreign-born in the intercensal period. It 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. Net international migration using intercensal component method

400. Census data on total population serve as the basis for estimating net migration in the intercensal period (the period between two censuses). An estimate of the magnitude of net international migration can be derived from the standard intercensal component equation (or the population balance equation). It stipulates 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. It is shown by the equation (1) below.

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

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 the estimated births, deaths, immigration and emigration that occurred in the period between the two censuses (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.

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

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

Net international migration is derived as a residual. Immigration and emigration cannot be obtained separately from the census. A positive value for $(I - E)$ indicates that more people entered the country than left it; a negative result, that more people left the country than entered it.

a. Data quality issues

402. Being calculated as a residual, estimates of net immigration may be subject to substantial error. This is because the population counts from censuses and the number of births and deaths from recorded vital statistics are all subject to unknown degrees of error, and errors inherent in the four components, if not corrected, can add up considerably. Population figures from each census, for example, are subject to coverage error, resulting in an undercount or an overcount. If the population counts at the two successive censuses are in the same direction (say, both undercounts) and about the same magnitude, then the errors may offset each other to some degree. In contrast, the problem is amplified if the errors in the population counts from the successive censuses happen to be in opposite directions. It is therefore important to adjust for the errors in each component if known.

403. For the same percentage error, errors in the population statistics have more effect on the estimate of net migration than errors of 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

404. A number of methods can be used to evaluate the quality of the data required by the intercensal component method (P^1 , P^0 , B and D). These methods, which make use of data from household surveys, population registers and other administrative sources, are not covered in the present handbook but are available in a number of reference materials.³⁰

³⁰ For example: Baldrige, Brown, and Jones 1985; Moultrie, Dorrington, AG Hill, K Hill, Timæus and Zaba (eds), 2013; United Nations, 1955; United Nations, 2010.

405. *Census coverage:* Coverage error in a population census refers to either an undercount or an overcount of the population owing to omissions of persons or duplication/erroneous inclusion of people. At the outset, it must be pointed out that coverage errors in a population census are inevitable and can occur due to errors introduced during the various phases of the census including the design, data collection and data processing phases. Coverage error may be estimated using demographic methods or a post-enumeration survey. Since the intercensal component method uses data from two censuses, it is important to assess the level of undercount or overcount for each of the two censuses.

406. *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, 2015b). In a significant number of developing countries, birth and death events are not completely covered in the civil registration system. The problem of undercoverage is particularly serious for deaths. The quality of birth and death statistics derived from the registration system, if available, may be evaluated by comparing their numbers with data collected through household surveys and censuses. For the intercensal component method, it is important that birth and death statistics derived from deficient registers are adjusted for undercoverage.

2. Net migration using the intercensal cohort component method

407. For countries that do not have reliable vital statistics, a method for estimating net migration for the intercensal period that has proven appealing and practical is the intercensal cohort component method. With this method, estimates of net migration for each age cohort are made for each sex, without the need for death statistics by age and sex. Instead what is required are survival rates for each sex and age group, which may come from an appropriate life table or from the census itself. To obtain an appropriate choice of life table, infant or child mortality rate and age pattern of mortality of the population should be known. These can be estimated from the population census itself or a recent household survey. (see also Data quality issues)

408. For age (birth) cohorts that were already born by the date of the first census, the conventional forward survival procedure is given by the below formula:

$$(I_a - E_a) = P_1(a) - S \cdot P_0(a-t) \quad (3)$$

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), $P_1(a)$ is the population aged a at the time of the second census, $P_0(a-t)$ is population aged $(a-t)$ at the time of the first census, 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 cohort's probability of surviving t years. If 5-year age groups are used, as is often the case, S may be represented more precisely as $5St(a-t)$ for the cohort aged a to $a+5$ years.

409. Using formula (3), net migration is calculated for each age cohort. The calculations are done separately for each sex. In the case of the newborn cohort, also calculated separately for each sex, the formula is:

$$(I_a - E_a) = P_1(a) - S \cdot B \quad (4)$$

where B is the number of births that occurred in the intercensal period.

410. As indicated in equations (3) and (4), the t -year survival rates are applied to the population aged $(a-t)$ at the first census ($P^0_{(a-t)}$), 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 second census. The difference between this expected population and the population counted at the time of the second census ($P^1_{(a)}$) is an estimate of net migration for the cohort aged a .

411. The result from formula (3), however, has 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 in the presence of emigration. In the case newborn cohorts, exposure to risk is less than the full intercensal period, since births are spread over the entire intercensal period and not bunched up in the initial period. The remedy to the biases is to introduce an adjustment of a 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:

$$(I_a - E_a) = [P_1(a) - S \cdot P_0(a-t)] / \sqrt{S} \quad (5)$$

$$(I_a - E_a) = [P^1_{(a)} - S \cdot B] / \sqrt{S} \quad (6)$$

The calculated values are summed across all sex-age groups to obtain total net migration for the intercensal period.

412. The above methods are explained and illustrated in detail by examples in Appendix 1. Besides age group and sex, the intercensal cohort component method may also be applied to population segments that are fixed over time, such as country of birth.

a. Data quality issues

413. The data quality issues pertaining to births in the intercensal period and to census coverage for the two censuses involved, presented in the subsection on intercensal component method, also apply to the intercensal cohort component method. Inaccurate number of births (or 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, in addition to coverage error, errors in age reporting will affect the reliability of net migration estimates based on the cohort component method.

414. In the intercensal cohort component method, the survival rates used for forward surviving the population of each age cohort are often derived from an existing life table. Care should be taken to obtain an appropriate life table that accurately reflects the level and age pattern of mortality for the population and period involved. Any deviation of mortality (or survival) rates used from the actual mortality situation introduces a potential bias or error in the resulting estimate of net migration.

b. Evaluation of data quality

415. The remarks regarding the evaluation of the coverage of the census and of births (paragraphs 405-406) in subsection 1 are relevant here as well. In addition, since population data by sex and age from the census are used in the intercensal cohort component method, an evaluation of the quality for this data is needed.

416. *Population data by age and sex:* The presence of digit preference as well as of coverage error in a certain sex-age group or in some sex-age groups will have significant impacts on the estimates of net migration by sex and age group. In this regard, an assessment of the quality of age-sex data should be undertaken to analyze and identify what age groups are more affected by coverage errors and age misreporting. If age misreporting distorts the population distribution by age group and/or there is a coverage error for specific age group(s), the census results should be adjusted for the known errors.

3. Net migration of foreign-born population using the intercensal component method

417. In addition to total net migration, some countries have an interest in knowing net migration of certain subgroups, most notably the foreign-born population. Estimation of net migration of the foreign-born population using data from two successive censuses is shown below.

418. The method for estimating net migration for the foreign-born is somewhat simpler than for total net migration (subsection 2), since births do not factor into the equation for 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 for 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.

419. The same data quality issues as in total net migration apply. In addition, it is noted that the number of deaths among the foreign-born population may be large if there are large numbers of elderly foreign-born people in the country as a result of decades of substantial immigration. At the extreme, it could have the spurious result of indicating net emigration when in fact a net immigration occurred in the period.

CHAPTER VIII

Tabulations, statistics and indicators of international migration obtainable from the census

420. The current chapter suggests statistics, indicators and tabulations on international migration that may be produced from data collected in a population census. The lists presented are extensive, but in no way exhaustive. Not all censuses can produce all of the listed statistics, nor are all of them recommended for every country. The specific statistics, indicators and tabulations to be produced will depend on the priorities of each country. The possibility of producing them rests on the question and answer sets covered in their population census, as well as the statistical capacity of the country.

421. The current chapter contains four sections. Section A considers immigrant stocks, section B recent migration, section C emigrants, and section D net international migration. Each section begins with a list of statistics and indicators that can be potentially derived from a population census, followed by a list of suggested tabulations. These tabulations are required to produce relevant statistics and indicators, including the sample statistics and indicators listed.

A. Proposed statistics and tabulations relating to immigrant stocks

422. The population census is the main source of statistics on stocks of immigrants. Four population stocks of policy interest and measurable in a census, as described in chapter 5, are:

- Stock of foreign-born persons
- Stock of foreigners
- Stock of returned migrants
- Stock of second generation migrants

423. While not all censuses include the requisite questions to produce statistics on the magnitude of all four listed stocks, most censuses are generally able to provide estimates of at least the stock of foreign-born persons or the stock of foreigners.

424. In addition to the magnitude of immigrant stocks, the characteristics of migrants elicit strong policy and research interest and feature prominently in the suggested indicators and tabulations. Countries have found it useful to distinguish international migrants on the basis of the following characteristics:

- Country of birth
- Country of citizenship (including stateless)

- Mode of citizenship acquisition
- Year or period of arrival
- Country of previous or last residence (in the case of returned migrants)
- Parents' country of birth

425. Not all of the above migrant characteristics are collected by every country. The extent of detail that can be known about a country's immigrants is dependent on the breadth of topics and questions that were included in their census.

426. Finally, socio-economic characteristics of international migrants provide valuable information for policy making and are important variables in the suggested tabulations. Socio-economic characteristics are collected from all usual residents enumerated in the census including immigrants, and are therefore available for studying the composition and characteristics of migrants and for comparing migrants to non-migrants. The most common demographic and socio-economic characteristics used when analyzing immigrant composition are:

- Sex
- Age
- Marital status
- Educational attainment
- Labour force status
- Main occupation
- Industry
- Status in employment
- Language usually spoken at home

427. All of the above characteristics, except language usually spoken at home, are topics that have been recommended for inclusion in a population census (United Nations, 2015b).

1. Statistics and indicators relating to immigrant stocks

428. The most basic statistics to be derived are the counts of each type of immigrant stock identified earlier. The corresponding statistics are:

- 1) Total number of foreign-born persons by sex
- 2) Total number of foreigners (non-citizens) by sex
- 3) Total number of returned migrants by sex
- 4) Second generation migrants (total number of native-born persons with foreign-born parents)

429. Some common indicators relevant to the four immigrant stocks are listed below. These indicators represent a modest sample of indicators that can be potentially produced. The desired indicators will depend on the information needs of the country. As needed, the indicators below may also be calculated for subgroups of interest, such as for major countries of birth or countries of citizenship, for different periods of arrival, etc.

- 5) Percentage of the total population who are foreign-born
- 6) Proportion female among the foreign-born
- 7) Percentage of the total population who are foreigners
- 8) Percentage of the total population who are stateless

- 9) Percentage of foreign-born population who are citizens of the country of residence
- 10) Percentage of citizens who are foreign-born
- 11) Percentage of foreign-born population whose language usually spoken at home is the dominant language in the country of residence
- 12) Percentage of returned migrants whose main reason for returning is retirement
- 13) Percentage of total population who are “second generation migrants”
- 14) Percentage of “second-generation migrants” who have foreign citizenship

430. For each of the above 14 statistics and indicators, table 8.1 identifies the numerator, denominator and specific table in subsection 2 that can provide the data. All indicators should be calculated for each sex and the total of both sexes.

Table 8.1
Numerator, denominator and source table for statistics and indicator numbers 1 -14

Statistics or indicator no.	Numerator	Denominator	Table no.
1	Foreign-born population (FB)	N.A.	(1)
2	Foreigners (persons who are not citizens of the country of residence)	N.A.	(19)
3	Returned migrants	N.A.	(38) or (39)
4	“Second generation migrants” (native-born persons whose parents are both foreign-born)	N.A.	(49)
5	FB	Total population	(1)
6	Female FB	FB	(1)
7	Foreigners	Total population	(19)
8	Persons who are stateless (do not have a country of citizenship)	Total population	(19)
9	FB who are citizens of the country of residence	FB	(36)
10	Citizens of the country who are foreign-born	All citizens of the country	(36)
11	FB whose language at home is the dominant language of the country of residence	FB	(9)
12	Returned migrants whose main reason for returning is retirement	Total number of returned migrants	(40)
13	Total number of “second generation migrants”	Total population	(50) and (1)
14	“Second generation migrants” who are not citizens of the country	Total number of “second generation migrants”	(52)

431. Additionally, studying cultural assimilation and integration of migrants and their impact on the host country involves comparing socio-economic characteristics of immigrant populations versus the native-born population. It also involves observing changes in immigrant characteristics over time, by comparing recent immigrants with those who have been in the country for a longer period or by comparing with data from previous censuses, if available. Also of interest to policy makers and researchers is the differential pace or pattern of integration among immigrants from different countries.

432. Basic demographic characteristics, such as age, sex and marital status, can be analyzed to study the impact of immigrants on the demographic and social structure of the country. Demographic variables are also used as control variables when comparing important socio-economic characteristics, of which educational attainment, labour force status, occupation, fertility and mortality of immigrants garner some of the strongest interest. Again, the indicators shown are but an illustrative sample of the innumerable socio-economic indicators that can be produced on immigrant stocks. The examples given below are for the foreign-born population, to be compared with corresponding figures for the native-born population. In the same way, indicators can be constructed for the foreign population, returned migrants and second generation immigrants.

- 15) Percentage of foreign-born population aged 25 and over with third-level education (compare this to the corresponding figure for native-born population)
- 16) Percentage of foreign-born persons aged 15 and over in the labour force
- 17) Employment rate among the foreign-born aged 15 and over
- 18) Unemployment rate among the foreign-born aged 15 and over

433. It is also possible to construct indicators to compare characteristics of immigrants born in different countries if a question has been asked on their country of birth; or to compare more recent immigrants with those who have been in the receiving country for a longer period, if year or period of arrival has been asked of each foreign-born person. The method is to calculate 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. This is illustrated below.

- 19) Percentage of foreign-born persons aged 25 and over with third-level education, by country of birth (country A, country B, country C, etc.)
- 20) Percentage of foreign-born persons aged 15 and over in the labour force, by country of birth
- 21) Employment rate among foreign-born persons aged 15 and 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.)
- 22) Percentage of professional and related workers among employed foreign-born persons aged 15 and over, by length of time since immigration

434. For each of the above eight indicators, table 8.2 identifies the numerator, denominator and specific table in subsection 2 that can provide the data. In addition, a “comparison variable” is indicated, signifying that the indicator is to be calculated for each value or category of the comparison variable given. All indicators should be calculated for each sex and for the total of both sexes.

Table 8.2
Numerator, denominator, comparison variable and source table for indicator numbers 15 -22

Indicator no.	Numerator	Denominator	Comparison variable or category	Table no.
15	Foreign-born population (FB) aged 25 and over with third-level education	FB aged 25 and over	Native-born population	(2)
16	FB aged 15 and over who are in the labour force	FB aged 15 and over	Native-born population	(3)
17	FB aged 15 and over who are employed	FB aged 15 and over	Native-born population	(3)
18	FB aged 15 and over who are unemployed	FB aged 15 and over	Native-born population	(3)
19	Foreign-born population (FB) aged 25 and over with third-level education	FB aged 25 and over	Country of birth (i.e., indicator is to be calculated for each country of birth)	(6)
20	FB aged 15 and over who are in the labour force	FB aged 15 and over	Country of birth	(10)
21	FB aged 15 and over who are employed	FB aged 15 and over	Length of time since immigration	(10)
22	Employed FB aged 15 and over whose occupation falls under the major group “professional and related workers”	Employed FB aged 15 and over	Length of time since immigration	(12)

435. To enable the calculation of statistics and indicators for all population subgroups of interest, the requisite tabulations have to be available. To ensure that analytical needs can be fulfilled, data processing and tabulation plans have to be laid down early and taken into full consideration during data capture decisions.

436. A set of suggested tabulations for immigrant stocks are given in subsection 2. The type of statistics and level of analysis that can be obtained will differ widely among countries, depending on the topics covered and questions asked in their census. Each country should nevertheless aim to produce the tabulations to the extent possible in order to maximize the usefulness of data they have collected.

2. Suggested tabulations relating to immigrant stocks

437. To enable meaningful analysis and study of migrants, the main data (i.e. the population stocks) are broken down by various distinguishing migrant and socio-economic characteristics. It is assumed that demographic and socio-economic characteristics of the resident population, including the foreign-born and foreign populations, have been collected in the census and recorded in the database. A comprehensive analysis would require cross-tabulations involving several variables at a time. The number of possible combinations and permutations is enormous and it is not possible to list all of them. The tabulations presented in the pages that follow are those that can be produced from responses to questions most commonly asked about international migration in censuses around the world. The number of tabulations and extent of detail that can be produced by a country will depend on the information collected in the national census and the country’s capacity to process the information collected.

438. The suggested tabulations take into consideration their utility to outside countries attempting to estimate the volume of their emigrants. While the main purpose of producing tabulations is for the benefit of the country itself, sharing or exchanging data with other countries is a step towards improving the availability and quality of emigration data

worldwide. When done properly, data sharing and exchange ultimately leads to the accessibility and international comparability of data on international migration. Data sharing as an additional objective should motivate participating countries to improve the quality of their statistics and work towards the goal of international comparability, which is particularly wanting in statistics of international migration.

439. All tabulations on the population should be disaggregated by sex. Where age groups are called for, five-year age groups with an open-ended interval set at 85 years and over (65 years if the numbers are small at the older age groups) are recommended. Marginal totals should be included in all tabulations.

440. In classifying data by country (whether of birth, of citizenship or of previous residence), it is important to present as much detail as possible and to use a comprehensive list of countries and areas constituting the world at the time of data collection. The practice of grouping countries should be kept to a minimum and be limited to those countries from which very small numbers of persons originate.

441. The suggested tabulations follow. While all tabulations are relevant, those judged to be of high priority are shown in bold face.

Tabulations on the stock of foreign-born persons

(1). **Population by sex, age group, and place of birth (native-born, foreign-born)^a**

(2). Population by sex, age group, educational attainment and place of birth^a

(3). Population by sex, age group, labour force status and place of birth^a

^aFor Tables (1) to (3), place of birth will have only two categories: native-born and foreign-born.

(4). **Foreign-born population by sex, age group and country of birth**

(5). **Foreign-born population by sex, age group, year or period of arrival^b and country of birth**

^bAlternatively, in Table (5) year or period of arrival may be tabulated in terms of duration of residence in the country of immigration

(6). **Foreign-born population aged _ years and over by sex, age group, educational attainment and country of birth**

(7). Foreign-born population by sex and single year of age

(8). Foreign-born population by sex, state or province of usual residence and country of birth

(9). Foreign-born population by sex, age group, country of birth and language usually spoken at home

(10). **Foreign-born population aged 15 years and over by sex, year or period of arrival and labour force status**

(11). **Foreign-born population aged _ years and over by sex, age and labour force status**

(12). **Employed foreign-born population 15 years of age and over by sex, year or period of arrival and main occupation**

(13). **Employed foreign-born population _ years of age and over by sex, age group and main occupation**

(14). **Employed foreign-born population _ years of age and over by sex, age group and industry**

(15). **Employed foreign-born population _ years of age and over by sex, age group and status in employment**

(16). Employed foreign-born population _ years of age and over by sex, main occupation and country of birth

(17). Employed active foreign-born population _ years of age and over by sex, industry and country of birth

(18). Employed foreign-born population _ years of age and over by sex, industry and main occupation

Tabulations on the stock of foreigners

- (19). **Population by sex, age group, and citizenship status (citizens by birth, citizens by naturalization, foreigners)^c**

(20). Population by sex, age group, educational attainment and citizenship status^c

(21). Population by sex, age group, labour force status and citizenship status^c

^c For Tables (18) to (20): Citizenship status will have three categories: citizens by birth, citizens by naturalization, foreigners. If it is not possible to separate citizens by birth from citizens by naturalization, show only two categories---citizens and foreigners. A “stateless citizens” category may be added if necessary.

- (22). **Foreign population by sex, age group and country of citizenship**

(23). **Foreign population by sex, age group, year or period of arrival^d and country of citizenship**

^d Alternatively, in Table (22) year or period of arrival may be tabulated in terms of duration of residence in the country of immigration

- (24). **Foreign population aged _ years and over by sex, age group, educational attainment and country of citizenship**

(25). Foreign population by sex and single year of age

(26). Foreign population by sex, state or province of usual residence and country of citizenship

(27). Foreign population by sex, age group, country of citizenship and language usually spoken at home

(28). **Foreign population aged _ years and over by sex, age group and labour force status**

(29). **Employed foreign population _ years of age and over by sex, age group and main occupation**

(30). **Employed foreign population _ years of age and over by sex, age group and industry**

(31). **Employed foreign population _ years of age and over by sex, age group and status in employment**

(32). Employed foreign population _ years of age and over by sex, main occupation and country of birth

(33). Employed foreign population _ years of age and over by sex, industry and country of citizenship

(34). Employed foreign population _ years of age and over by sex, industry and main occupation

Tabulations using information on both country of birth and country of citizenship

- (35). **Population by sex, age group, country of birth and citizenship category^e**

^e Three citizenship categories are distinguished: citizen of the country of enumeration; citizen of person’s country of birth; and citizen of a country other than the country of enumeration or country of birth. For some countries, a “stateless citizens” category may be needed.

- (36). **Population by sex, place of birth (native-born, foreign-born) and citizenship status (citizens by birth, citizens by naturalization, foreigners)^f**

^f Citizenship status will have three categories: citizens by birth, citizens by naturalization, foreigners. If it is not possible to separate citizens by birth from citizens by naturalization, show only two groups---citizens and foreigners. A “stateless citizens” category may be added if necessary.

- (37). **Population by sex, country of birth and country of citizenship**

Tabulations on stock of returned migrants

- (38). **Stock of returned migrants by sex, age group and country of previous residence**

(39). **Stock of returned migrants by sex, age group and year or period of last return**

(40). Stock of returned migrants by sex, age group and reason for emigration

(41). Stock of returned migrants by sex, age group and reason for return

(42). Stock of returned migrants by sex, year or period of last return and country of previous residence

(43). Stock of returned migrants by sex and state or province of usual residence in the country

(44). Stock of returned migrants aged 15 years and over by sex, age group and marital status

(45). Stock of returned migrants aged 15 years and over by sex, age group and labour force status

(46). Employed returned migrants aged 15 years and over by sex, age group and main occupation

(47). Employed returned migrants aged 15 years and over by sex, age group and industry

(48). Employed returned migrants aged 15 years and over by sex, age group and status in employment

Tabulations on stock of “second generation migrants”

- (49). Stock of “second generation migrants” by sex and age group
- (50). Stock of “second generation migrants” by sex and country of birth of parents
- (51). Stock of “second generation migrants” by sex and citizenship status (citizens by birth, citizens by naturalization, foreigners)^g
- (52). Stock of “second generation migrants” by sex, age group and citizenship status^g

^g For Tables (52) and (53): Citizenship status will have three categories: citizens by birth, citizens by naturalization, foreigners. If it is not possible to separate citizens by birth from citizens by naturalization, show only two groups---citizens and foreigners. A “stateless citizens” category may be added if necessary.

- (53). Stock of “second generation immigrants” aged 15 years and over by sex, age group, educational attainment and country of birth of parents
- (54). Stock of “second generation immigrants” aged 15 years and over by sex, age group and labor force status
- (55). Stock of “second generation immigrants” aged 15 years and over by sex, age group and main occupation

B. Proposed statistics and tabulations relating to recent migration

1. Statistics relating to recent migration

442. Recent migration is captured in the census through the question on place of usual residence one year ago or five years ago (see chapter 7). Responses to these questions provide an estimate of migration, with qualifications, immediately prior to the census; more specifically, during the one year or the five years leading up to the date of the census. The statistics typically produced are:

- 1) Number of international migrants aged one year and over who immigrated within the last 12 months, by sex
- 2) Number of international migrants aged five years and over who immigrated within the last five years, by sex

443. From the above statistics on recent migrants, a distinction can be made between those who are citizens and those who are not. The number of citizens in the count provides a rough estimate of the number of recently returned migrants. If a country considers native-born persons when defining returned migrants, then a rough estimate of their recently returned migrants would be the number of native-born persons who were residing abroad one (or five) years ago.

- 3) Estimated number of returned migrants aged one year and over who returned within the last 12 months, by sex
- 4) Estimated number of returned migrants aged 5 years and over who returned within the last 5 years, by sex

2. For each of the above four statistics, table 8.3 identifies the data item and specific table in subsection 2 that can provide the data.

Table 8.3

Data item and source table for statistic numbers 1-4

Statistic no.	Data item	Table no.
1	Number of persons aged one year and over whose usual residence one year ago was outside the country, by sex	(1)
2	Number of persons aged 5 years and over whose usual residence five years ago was outside the country, by sex	(6)

3	Number of persons aged one year and over whose usual residence one year ago was outside the country and who are citizens [alternatively, and who are native-born], by sex	(2) or (3)
4	Number of persons aged 5 years and over whose usual residence five years ago was outside the country and who are citizens [alternatively, and who are native-born], by sex	(7) or (8)

2. Suggested tabulations relating to recent migration

444. All tabulations on the population should be disaggregated by sex. Where age groups are called for, five-year age groups with an open-ended interval set at 85 years and over (65 years if the numbers are small at the older age groups) are recommended. Marginal totals should be included in all tabulations.

445. In classifying data by country (whether of birth, of citizenship or of previous residence), it is important to present as much detail as possible and to use a comprehensive list of countries and areas constituting the world at the time of data collection. The practice of grouping countries should be kept to a minimum and be limited to those countries from which very small numbers of persons originate.

446. The recommended tabulations follow. While all tabulations are relevant, those judged to be of high priority are shown in bold face.

Tabulations on migration in the one year preceding the census

- (1). **Population aged one year and over by sex, age group and country of usual residence one year ago**
- (2). Population aged one year and over by sex, age group, citizenship status (citizen, foreigner)^a and country of usual residence one year ago

^a By separating citizens from foreigners, returned migrants (citizens who lived abroad for at least a year) may be distinguished. A “stateless citizens” category may be added if necessary.

- (3). Population aged one year and over by sex, age group, place of birth (native-born, foreign-born)^b and country of usual residence one year ago

^b By separating native-born persons from foreign-born persons, returned migrants (based on alternative definition: native-born persons who lived abroad for at least a year) may be distinguished.

- (4). Population aged one year and over by sex, country of birth and country of usual residence one year ago^c
- (5). Population aged one year and over by sex, country of citizenship and country of usual residence one year ago^c

^c Tables (4) and (5) are also useful to other countries—namely, those wishing to measure emigration. If made available, the numbers pertaining to their country will provide them with an estimate the magnitude of emigration into the country of enumeration (the receiving country) in the one-year period preceding the census.

Tabulations on immigration in the five years preceding the census

- (6). **Population aged 5 years and over by sex, age group and country of usual residence five years ago**
- (7). Population aged 5 years and over by sex, age group, citizenship status (citizen, foreigner)^d and country of usual residence five years ago

^d By separating citizens from foreigners, returned migrants (citizens who lived abroad for at least a year) may be distinguished. A “stateless citizens” category may be added if necessary.

- (8). Population aged 5 years and over by sex, age group, place of birth (native-born, foreign-born)^e and country of usual residence five years ago

^e By separating native-born persons from foreign-born persons, returned migrants (from alternative definition: native-born persons who lived abroad for at least a year) may be distinguished.

- (9). Population aged 5 years and over by sex, country of birth and country of usual residence one year ago^f
 (10). Population aged 5 years and over by sex, country of citizenship and country of usual residence one year ago^f

^f Tables (9) and (10) are also useful to other countries—namely, those wishing to measure emigration. If made available, the numbers pertaining to their country will provide them with an estimate 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 relating to emigration

1. Statistics and indicators relating to emigration

447. It is widely recognized that any statistics on emigration derived from censuses are deficient. This deficiency is due in large part to the difficulty of counting persons who are no longer resident in the country interested in counting them, as well as the lack of clarity surrounding its definition, resulting in substantial but often unknown degrees of errors of coverage and content (see chapter 6). Resulting statistics should therefore be treated with great caution, and producers should make known the limitations of the data that are being disseminated.

448. The most basic statistics to be produced from the census emigration module is:

- 1) Estimated number of emigrants by sex

449. The types of indicators that can be produced on emigrants in terms of their numbers and characteristics will depend on the questions asked in the census about emigrated persons. If questions included in the emigration module of some recent censuses reflect topics of policy interest, indicators on emigrants that may be useful might include the following:

- 2) Sex ratio of emigrants
- 3) Number and percentage of emigrants who emigrated to work abroad
- 4) Number and percentage of emigrants who emigrated to study abroad
- 5) Percentage of emigrants aged 15-34 at the time of emigration
- 6) Percentage of emigrants with a third-level education at the time of emigration

450. For each of the above six statistics and indicators, table 8.4 identifies the numerator, denominator and the specific table in subsection 2 that can provide the data. If constructed, the indicators should be calculated for each sex and the total of both sexes.

Table 8.4
Numerator, denominator and source table for statistics and indicator numbers 1-6

Indicator no.	Numerator	Denominator	Table no.
1	Estimated number of emigrants	N.A.	(1)
2	Estimated number of male emigrants	Estimated number of female emigrants	(1)
3	Number of emigrants who emigrated to work abroad	Total number of emigrants	(6)
4	Number of emigrants who emigrated to study abroad	Total number of emigrants	(6)
5	Emigrants aged 15-34 at the time of departure	Total number of emigrants (all ages)	(1)
6	Emigrants with third-level education at the time of departure	Total number of emigrants	(4)

451. If information on demographic and socio-economic 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 those variables; for example, age, sex, marital status, education and occupation. Emigrant profiles can also be constructed and compared according to emigrant's country of destination or year of departure. However, given the deficiency of emigration data from the census, the quality of the collected data should be evaluated to determine if more elaborate tabulations or analyses are warranted.

2. Suggested tabulations relating to emigration

452. It should be noted here that tabulations can be constructed for migrant demographic and socio-economic characteristics (age, sex, education, occupation) at the time of emigration or at the time of the census. Each has its particular purpose. Information on age and other demographic or socio-economic characteristics at the time of the departure is useful if the purpose is to study the propensity to emigrate, whereas information on age and other characteristics at the time of the census better captures current emigrant profiles (see chapter 6).

453. All tabulations related to the emigrant population should be disaggregated by sex. Where age groups are called for, five-year age groups with an open-ended interval set at 85 years and over (65 years if the numbers are small at the older ages) are recommended. Marginal totals should be included in all tabulations.

454. In classifying data by country (whether of emigration, destination or current usual residence), it is important to present as comprehensive a list of countries as possible, adopting countries and areas constituting the world at the time of data collection. The practice of grouping countries should be kept to a minimum and be limited to those countries to which very small numbers of persons emigrate.

455. The suggested tabulations follow. While all tabulations are relevant, those judged to be of high priority are shown in bold face.

- (1). **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]**
Note: For Table (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.
- (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]
- (3). 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]
Note: For Table (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.
- (4). Number of emigrants aged 15 and over by sex, age group (at departure) and educational attainment (at departure)
- (5). Number of emigrants aged 15 and over by sex, age group (at departure) and main occupation before departure
- (6). Number of emigrants by sex, age group (at departure) and main reason for emigrating
Note: Main reason should include, at the minimum, the following: Work, Study, Family reasons/family reunification, and Other.

D. Proposed statistics and tabulations on net international migration

1. Statistics and indicators on net international migration

456. As shown in chapter 7, data from two consecutive censuses may be used to estimate net migration in the intercensal period. Statistics and indicators relating to net migration that may be constructed include:

- 1) Total net international migration in the intercensal period
- 2) Sex ratio of total net international migration
- 3) Net foreign-born migration in the intercensal period
- 4) Sex ratio of net foreign-born migration

2. Suggested tabulations on net international migration

457. The suggested tabulations follow. To guide users in calculating net migration, step-by-step procedures are shown with detailed examples in the Appendix. While all tabulations are relevant, those judged to be of high priority are shown in bold face.

- (1). **Total net migration in the period (census year 1) to (census year 2), by sex**
- (2). **Total net migration in the period (census year 1) to (census year 2), by sex and age group**
- (3). Net migration of foreign-born persons in the period (census year 1) to (census year 2), by sex

E. Degree of sub-national spatial detail

458. One of the universal characteristics of international migration is that migrants are not randomly selected from the total population at their origin, nor are they randomly dispersed in destination country. They are not drawn randomly from across their country of origin and tend to come from particular sub-areas within the country. In addition, geographically they are not distributed at the destination country in the same way as the general population or the native population. Accordingly their impact both in the origin and destination country tends to be spatially concentrated. From a policy perspective, therefore, it is important for sending countries to know from which parts of the country emigrants originate; and for receiving countries to know in which parts of the country immigrants have settled. Hence in the production of census-based statistics for immigrants, it is important to provide data for sub-national spatial units. While the extent to which this can be achieved will vary between countries there are a few general principles:

- Basic numbers by sex need to be available down to the smallest areas possible.
- The recommended tabulations provided in sections A to C should be made available for major metropolitan cities, especially the very large global cities and megacities where immigrant populations have come to play a significant role in.

F. Dissemination strategies

459. Statistics are increasingly being disseminated electronically. Countries should take advantage of the 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 shown in this chapter, are best made available through the national statistics office's website. If possible, or as a consideration for the future, a searchable online database should be available that allows users to build their own tables.

460. The national statistics office, in close cooperation with government agencies that produce migration statistics, would do well to also include on their website data on international migration that derive 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 with migration statistics from the census. At the minimum, active links to other agencies' migration statistics would be helpful to users in general.

CHAPTER IX

Using international migration data from the census with other data sources

A. Introduction

461. The focus of this handbook has thus far been totally 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 more in-depth study of 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 2 and 3.

462. It is generally the case that each source provides a partial picture of the totality of international migration taking place in an individual country. Hence it is often possible to gain a more comprehensive picture of a country's international migration situation by putting together data from a number of these sources. Combining sources can serve two purposes. First, it expands the overall coverage by including more types of international migration as well as including additional migrants missed were only one source utilized. Second, the use of several sources can fill a triangulation function which provides a check on the overall accuracy of estimates of migration. In this chapter some of the opportunities for aligning international migration data derived from censuses with that from other sources are explained. At the outset it is necessary to make a few preliminary comments.

B. Considerations when using other sources of data with the census

1. Aligning concepts and definitions

463. In order to facilitate the comparability of international migration information from different sources it is important for the concepts and definitions of international migration which are employed in the various sources to be the same. The adoption of uniform standards in the definition of migrants is often complicated by the fact that different government agencies are responsible for the various collections on international migrants – national statistical offices (NSOs) for censuses and surveys, immigration officials for border statistics, labour departments for labour migration statistics, department of interior for population registers, etc. Hence, there is an initial need to harmonize the definitions and concepts employed in each national collection, preferably within the structure provided in chapter 1 of the current report.

464. It is a known fact that administrative agencies exist to serve their own important needs. NSOs are typically not in a position to change the definitions or coverage of the administrative data collection system, nor to influence its modes of operation. The best that can be done is to recognize the differences in concepts and definitions and deficiencies of the data collected by different government agencies, while at the same time working towards the goal of harmonization.

465. The harmonization of concepts relating to defining and conceptualising migrants is however only part of the story. It is also advisable to ensure that common classifications of the characteristics of migrants are employed across the different sources. This is especially crucial for the classifications of labour force, industry, occupation and education, since a large amount of international migration is related to work and, to a lesser degree, study. Additionally, the adoption of a common classification of countries of origin, language, etc. facilitates the bringing together of different data sources on international migration. Similarly the same regional classification of areas within the country needs to be adopted with respect to where the migrants are living within a country.

2. Mechanism for cooperation among government agencies

466. An efficient mechanism for cooperation is necessary to facilitate data sharing among government agencies involved in the collection and production of specific migration statistics. In cases involving the use of census data with administrative data, the NSO may take the lead whereby administrative agencies transmit aggregate data to the NSO for the latter's use in its statistical function of compilation, consolidation, analysis and dissemination. The NSO and the administrative agency involved would need to have an agreement about the data requirements, how data and metadata are to be transferred, and how data are to be used---whether it is aggregate statistics or individual level data. In cases where the law allows the NSO to have access to individual level administrative data, provisions have to be made at both ends to safeguard privacy and confidentiality of the data.

C. Using census data with other sources of international migration

1. Border control data

467. Most countries have at least some data on international migration from their national censuses and from the information collected at the borders or points of entry into a country, although there is considerable variation in the degree of coverage of international migration in both sources. Potentially the bringing together of these sources provide a powerful tool to investigate the scale, patterns and impact of migration. This is because, potentially at least, censuses can provide a comprehensive detailed snapshot of the stock of immigrants in a country (and emigrants in other countries) at a particular point in time. The border statistics data on the other hand provide, potentially at least, a total picture of the inflow and outflow of international migrants for a particular country. Both types of data have utility in policy making and planning and have their own particular strengths and weaknesses. (See chapters 2 and 3)

- 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. It can also supply some details on the type and nature of migration, such as the visa category and country of citizenship, especially if these are verified by the checking of documents at the border or point of entry/exit of the country.
- Census data cannot show the amount of movement over a particular period of time because people who have moved in and then out are not counted. It is also very difficult for the census to capture people who have moved out. In addition, people who have moved in during the period and subsequently died are missed. However the census can show the cumulative impact of migration. It also has other advantages in that because the census collects data on a wide range of topics it can often provide greater detail on the characteristics of migrants than is possible in border statistics. Moreover because the census covers migrants

who have lived for a period of time in the destination it allows some analysis to be made on the adjustment of migrants to life in the destination country.

468. Hence the two sources have particular strengths which when taken together can assist in building up a more comprehensive picture of international migration in a country than is possible by examining them separately. There are additional benefits for analyses if the two data sources can be linked in some way.

469. The first use which can be made of combining census and border control migration statistics relates to the estimation of the scale of undocumented migration. Provided 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 two censuses, adjusted for deaths (see chapter 7, section C, Estimating net migration from two censuses). The difference represents an estimate of net undocumented migration. As undocumented migration increases in significance globally this is becoming one of the most effective ways of estimating its scale.

470. A second use of combined census and border statistics is where the data for individuals is formally linked allowing a combination of data collected by the border control and that collected in the census enumeration. This for example is occurring in Australia where the 2006 census results for all foreign-born persons who had arrived in Australia between 2001 and 2006 are being combined with the Department of Immigration and Citizenship records. This will allow an array of information on the immigration process to be matched with the characteristics of migrants after a period of residence in Australia. This is especially relevant to policy makers since the immigration policy category by which a migrant has been given permanent residence in Australia can be identified – skilled migrant, business migrant, family migration, refugee, special category, etc. This allows an assessment to be made of the differences among migrants of different visa categories in their adjustment to the labour market, housing market, etc. This information will feed back into the migration selection process.

471. Data-linking capabilities in recent years have made exercises like the above example possible, but again a word of caution is in order. Even if technical capabilities are there, legal barriers to individual data linking may be present due to concerns about confidentiality issues. Whenever data linking is being considered, safeguarding the confidentiality of the data is of utmost importance.

2. Sample survey data

472. One of the advantages of national censuses as a source of international migration data is that they cover the entire population, except where questions on topics related to international migration are applied in the long form questionnaires and administered to a sample of the population. The use of a sample to collect information for generating migration data and especially to estimate the stock or flow of migrants can be problematic. This is due to the fact that migrants can be over- or under-represented in samples for the following reasons:

- Migrants often concentrate in particular areas of the country compared with the entire population. In cases where block sampling or other area-based sampling technique is used, it can lead to a significant over or undercount of the number of migrants. This is more of a problem in sample surveys than in censuses applying the long form for a sample of the population.
- The numbers of migrants are often relatively small in relation to the total population so that they are missed in surveys. This is particularly the case with some subgroups of migrants.

473. As a result long form sample censuses and national household sample surveys tend to have serious limitations for determining the size of migration streams and stocks. Only in a few countries are national surveys large enough and the stocks of international migrants large enough for the surveys to provide representative data on migrants (Bilsborrow, Hugo, Oberai and Zlotnik, 1997, pp. 197, 238-41).

474. In general, however, the main way in which sample surveys are of value in understanding international migration is through specialised surveys which target international migrants. Specialised surveys of migrants can provide more detailed information not only on the characteristics of migrants but also on their motivations, attitudes, identity, behaviour, perceptions, experience and culture than is possible from censuses and most other standard national data collections on migration. Moreover it allows the context of migration decisions to be explored. Surveys are necessary if the causes and consequences of migration are to be explored in greater depth.

475. One of the most important roles that census migration data can play in relation to specialized migration surveys is in providing comprehensive and adequate sampling frames for such surveys. A major barrier to carrying out representative surveys of migrants is the absence of comprehensive and accurate listings of migrants or subgroups of migrants. Only in countries that have complete population registers do such listings exist but in most countries extant listings are partial and survey takers are forced to use incomplete sampling frames, expensive screening procedures or snowballing techniques. The census, with its potential comprehensive coverage of the stock of immigrants, provides some opportunities to assist in deriving samples of immigrants to be surveyed.

476. There are two ways in which censuses can be the basis for a sampling frame for a survey of migrants. First, if it is possible to access census household listings as a sampling frame a comprehensive listing of migrant households could be assembled as the basis for a representative survey at national, regional or local levels. Second, where such access is not possible, small area data can indicate areas of concentration of migrants of particular backgrounds. In these cases areas can be sampled in a stratified, systematic way to ensure that migrants are well represented in the sample. Either a screening strategy could then be employed or all households sampled can be interviewed regardless of migrant status and the non-migrant households can be used as comparator group against which to analyse the characteristics, perceptions, etc, of the migrant groups.

477. In analysing the characteristics of migrants it is valuable to be able to compare them with non-migrants to establish degrees of difference. This can be done either by including non-migrants in the sample or by selecting a set of key variables derived from the survey for migrants and comparing them to non-migrants' values on the same variables derived from a census.

478. Census data can also be used to assess the representativeness of a survey on migrants. The extent of representativeness of the sample survey can be assessed to some degree by comparing the survey results on a specific migrant group with respect to key characteristics such as age, sex, occupation, education, etc. to data from the census for the same migrant group. The result will allow an estimate to be made of the extent and direction of bias in the sample survey for that migrant group.

3. Population registers and other administrative sources

479. Several countries maintain population registers which include the total resident population while others have registers of foreigners. Census data are clearly an important check against such registration data to verify the magnitude of the foreign population. Frequently, registers overstate the size of the foreign population because they fail to fully record the emigration of foreigners. In such cases it is important to use the census to periodically check the accuracy and degree of coverage of the registers of foreigners. Moreover in some countries certain types of foreigners may be missing from

registers. This would be true not only of undocumented migrants but also of foreigners who are documented but not required to register under particular conditions.

480. There is an array of policies in different countries which require foreigners to have residence permits. The statistics derived from these vary greatly in their accuracy and coverage.

“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.” (Bilsborrow, Hugo, Oberai and Zlotnik, 1997, pp. 128-129)

481. Clearly these data cannot generally be used to estimate the size of stocks of migrants at a particular point in time. They need to be periodically checked against census data to validate their coverage and accuracy.

482. Finally, there is the potential to expand the comprehensiveness of immigrant profiles by linking census records with administrative data sources regarding migrants – income tax records, immigration records, population registers, etc. In such instances, data confidentiality must be ensured. The developments in protecting the privacy and confidentiality of individuals while linking data sets need to be diligently observed.

D. Special categories of international migrants

1. Migrant workers

483. One of the main elements in the global increase in international migration has been the globalization of labour markets, characterized by the increase in the extent to which countries have sought to make up deficits or to release surpluses in their supply of labour as national circumstances dictate. As demographic differentials widen between countries and ageing and low fertility lead to a stabilisation or decline in the labour force of developed countries, their dependence on foreign migrant workers increases. In parallel, a burgeoning of the working age population in high fertility countries have motivated these countries to “export” their excess workers to ease unemployment at home; at the same time, their citizens are drawn to the potential for better work and a “better life” in more attractive economies.

484. Governments give a high priority to statistics of labour migration, given their importance for economic planning and development of migration policy. The main sources of data for labour migration tend to be work permits issued by the receiving country, population registers and other administrative records as well as sample surveys, with administrative sources being favoured for migration flow statistics.³¹ However, the census can measure many aspects of labour migration, especially those relating to stock.

485. Certain factors reduce the utility of censuses in providing insights into labour migration, including the following:

- 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 (less than 12 months).

³¹ For a comprehensive treatment of statistics of labour migration, see Bilsborrow, Hugo, Oberai and Zlotnik, 1997, chapter 4, Data collection systems concerning labour migration. pp.161-212. Additional information relating to the Eastern European and Central Asian region is provided in United Nations Economic Commission for Europe and United Nations Population Fund, 2011, pp. 49-52.

- Where countries include migrant workers in the census enumeration they are not identified as such and are therefore thrown together with the other migrants who have settled more or less permanently at the destination.
- Even if migrant workers can be identified in a census, the count derived therefrom represents the stock of migrant workers, a net and lifetime cumulative figure not as useful for studying current trends as flow statistics. It is a decided advantage if a census is able to segregate recent migrants given the census' universality and wide range of socio-economic variables available for analysis.

486. If censuses can be developed as sources of information on the stock of migrant workers it can be a useful adjunct to registration statistics for the following reasons:

- It theoretically allows an assessment of the size and characteristics of undocumented labour migration to be made by making comparisons with the flow data.
- It can provide a better estimate of the stock of migrant workers than registration data in the sense that registers in some countries are not fully maintained especially for things like change of status of workers, workers leaving the country prematurely, death of workers, etc.

These benefits however can only occur if labour migrants are included in national censuses and if they are identified so that they can be separated from other migrants.

2. Refugees and asylum seekers

487. Refugees and asylum seekers are a highly specific group of international migrants who satisfy particular conditions. An extensive review of data collection systems providing information on asylum seekers and refugees³² makes little reference to censuses as a significant source. The main types of sources are registers associated with the provision of assistance and the United Nations High Commissioner for Refugees' (UNHCR) collection of statistics on refugees which is part of its mandate. In the case of asylum seekers the main sources are individual countries' records of pending applications for asylum.

488. Censuses of individual countries generally do not ask whether a respondent is a refugee or asylum seeker. However, the census can be a useful adjunct source of information on refugees by virtue of related questions included in the census. Questions on country of birth and country of citizenship are asked in most censuses. Some countries also collect data on ethnicity, language and religion. The responses to these questions will identify respondents as being of a particular origin, and in select cases most of the immigrants of a particular origin have come into the host country as refugees or asylum seekers. This, for example, would apply to many of the Afghans in Iran and Pakistan. In such cases censuses can be an adjunct to register data to estimate the stock of refugees. This count will become less accurate over time as initial refugee settlers are joined by family members and other migration streams are set up. Of course once refugees are settled at a destination they may lose their designation as refugees by becoming citizens of the host country or taking up usual or permanent residence there.

E. Conclusion

489. The unique characteristic of national censuses which is of note in relation to aligning it with other sources of information on international migration is its universal coverage of the national population at a specific point in time. This provides the potential for the census to act as a benchmark against which other data on international migration, which are

³² Bilsborrow, Hugo, Oberai and Zlotnik, 1997, chapter 5. Data collection systems providing information on asylum-seekers and refugees. pp. 213-236.

predominantly derived from continuous registers, can be checked at that specific point in time in a completely independent way. Continuous registers have the advantage that they can provide information in a timely way at any point in time while the census can only provide it once every ten or five years. However continuous registers suffer from a number of shortcomings which over time can reduce their accuracy and coverage. These include:

- The growing volume of undocumented migration where migrants deliberately avoid being recorded on those registers.
- The fact that in a globalizing world there is a great deal of coming and going among migrants. There has been a shift in global international migration systems away from the dominance of one-off permanent migrations toward movements which are often temporary or circular. This has greatly challenged registration systems so that some of these movers can be misclassified or missed altogether.
- There is increased blurring of short-term or temporary movers and immigrants so that many temporary movers end up becoming immigrants (permanent residents) at their country of destination (Hugo, 2006).

490. Accordingly it is crucial that there is a set of benchmark international migration data which is made available periodically to check the accuracy and coverage of register data. Moreover this can be used to calibrate future data derived from registers to indicate the margin of error in such data.

491. This basic function of the census in relation to international migration data however is only possible if the national census:

- includes all international migrants
- differentiates between the key types of international migrants.
- is a complete coverage of the population to be enumerated in the country at the time of the census.

Appendix

Estimating net international migration from population censuses

As described in chapter 7 section C, data from two consecutive censuses can be used to estimate net international migration in the inter-censal period. The appendix provides practical examples describing step by step the application of the intercensal component method and the intercensal cohort component method to estimate net international migration.

Application of the two methods is not technically complicated under the condition that censuses provide appropriate information with reasonable quality. Countries that have reliable vital statistics can use the intercensal component method. For those countries that do not have accurate statistics on births and deaths data collected from civil registration system, the intercensal cohort component method is more reliable if estimates of the fertility and mortality levels are available from other statistical sources and model life tables.³³

A. Intercensal component method

Information on total population obtained from two points of time and the number of births and deaths that occurred during the period between the two points of time can be used to estimate net migration by applying the following formula (A.1). A reliable estimate of net international migration can be obtained for countries with relatively complete birth and death statistics through civil registration or other sources.

$$(I - E) = (P_1 - P_0) - (B - D) \quad (A.1)$$

This formula can be interpreted as:

Net migration = Population change (growth) – Natural growth

Where

- (I-E) represents net international migration (immigrants-emigrants)
- P1 represents total population at the time of the second census,
- P0 is the total population at the time of the first census
- B is the total number of births occurred during the intercensal period
- D is the total number of deaths during the intercensal period

³³ Model life tables for developing countries gives sets of age-sex patterns of mortality which are based on reliably documented developing country data, thus supplementing the Coale-Demeny model life tables extracted mainly from historical European experience. Both the United Nations model life tables for developing countries and the Coale-Demeny model life tables are available in the United Nations software package [MORTPAK](http://www.un.org/esa/population/publications/Model_Life_Tables/Model_Life_Tables.htm).
http://www.un.org/esa/population/publications/Model_Life_Tables/Model_Life_Tables.htm

Data required:

- a. Population for two points of 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 from civil registration or other sources

Application of the method**Step 1: Compiling total births and deaths occurred during the intercensal period from civil registration**

Number of births and deaths occurred during the intercensal period is calculated by adding up annual births and deaths registered during the period. However, if birth and death events are incomplete in the registration system, then the number of births and deaths should be estimated for the intercensal period by using other reliable data sources.

Step 2: Calculating net international migration

Net international migration is calculated by using equation (A.1), as the difference between the population of the second census and population of the first census (population change) minus the difference between the numbers of births and deaths during the intercensal period (natural growth), calculated in Step 1.

Country example: Canada

Application of this method is illustrated using data from Canada for the five-year periods between 1976 and 2001. Data on population for each census year is given in the column 2 of Table A.1. The number of births and deaths for the intercensal period are presented in columns 3 and 4, respectively.

After preparing data for each census period, two components of net migration, population growth and natural growth are calculated. Population growth - or population change- between two censuses is calculated as the difference between the population at the time of the census and the corresponding population of the previous census year. The results are given in column 5. The results of natural growth for the same period calculated by subtraction the number of deaths from the number of births is given in column 6. Finally, estimation of net migration is calculated by taking the difference between total population growth and natural growth.

Table A.1
Estimating total net migration, Canada, 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 ^a	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

^a Population growth is calculated using data from column (2) by subtracting the population of the first census from the population of the second census. For example, the population growth from 1976 to 1981 for Canada is calculated as the difference between the census population in 1981 and the census population in 1976 as 1,370 (24,820-23,450).

Source of data: Statistics Canada, Census of Population, <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/demo03-eng.htm>

B. Intercensal cohort component method

Intercensal cohort component method can be used to estimate net international migration for age (birth) cohorts and for total population. This 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.

In any population, exposure to the risks of mortality and fertility varies by age and sex; therefore the procedures are applied separately to each age cohort (Preston, Heuveline and Guillot, 2001). The method consists of three steps:

1. **Surviving the population enumerated in the first census to the reference date of the second census:** this step estimates the number of population still alive in each age group at the time of the second census from the population enumerated in the first census using intercensal survival rates;
2. **Surviving intercensal births to the second census:** in this step, the number of births for each sex over the intercensal period is calculated using the intercensal fertility level, then those births who survive to the end of the intercensal period is estimated using survival rates;
3. **Estimating net international migration:** Net international migration by age and sex is estimated by subtracting the estimated population for the time of the second census from the population enumerated at the time of the second census.

Data required:

492. The following data are required to apply the intercensal cohort component method for estimating net international migration:

- a. Population by sex and age (in five-year age group), for two points of time, one for at the time of the first census and one for the at the time of the second census;

- b. Appropriate life table survival rates for males and females, representing mortality level during the intercensal period;
- c. Age-specific fertility rates for women aged 15 to 49, representing the level and age structure of fertility during the intercensal period;
- d. Sex ratio at birth.

Application of the method

Step 1: Surviving the population enumerated in the first census to the reference date of the second census

In this step, there are two procedures: a) determining cohort survival rates and b) estimating the population for the reference date of the second census.

(a) Determining cohort survival rates

493. 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 death statistics collected through death registers in a country. However, reliable death statistics do not exist in many countries, therefore the life table survival rates are usually estimated from appropriate model life tables.³⁴

Cohort survival rates are calculated by using the measurements of life tables with the following general formula:

$${}_nS_x = \frac{{}_nL_{x+t}}{{}_nL_x} \quad (\text{A.2})$$

Where

${}_nS_x$ is the life table survival rate for the cohort ages 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.

This formula can be illustrated as follows for five-year and ten-year census interval:

For ten-year interval:

$${}_5S_x = \frac{{}_5L_{x+10}}{{}_5L_x} \quad (\text{A.3})$$

For five-year interval:

$${}_5S_x = \frac{{}_5L_{x+5}}{{}_5L_x} \quad (\text{A.4})$$

For the oldest (open-ended) age category, the following formula is used to calculate the survival rate:

$${}_wS_x = \frac{{}_wT_{x+t}}{{}_wT_x} \quad (\text{A.5})$$

Where

w is the oldest age;

${}_wS_x$ is the life table survival rate for the cohort age x and above;

${}_wT_x$ is the number of life table person years lived from age x and above;

³⁴ For information on use of model life tables in estimation of life table, see Moultrie TA, RE Dorrington, AG Hill, K Hill, IM Timæus and B Zaba (eds), 2013.

${}_wT_{x+t}$ is the number of person years lived from age $x+t$ and above

Calculation of survival rates for children born during the intercensal period also requires different formula:

$${}_nS_0 = \frac{{}_nL_0}{{}_n \times I_0} \quad (A.6)$$

Where

- ${}_nS_0$ is the life table survival rate from birth to age 0-4 (for five-years age interval, it 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 (it is 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, referred to as the "radix" of the life table and ordinarily equal to 100,000;
- 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 cohort population in the first census to forward estimate the population at the time of the second census by using the following formula:

$$P_{(x)}^{1*} = {}_nS_x \times {}_nP_{(x-n)}^0 \quad (A.7)$$

Where

- ${}_nS_x$ is the life table survival ratio for the ages $x, x+n$;
- ${}_nP_{(x-n)}^0$ is the population enumerated in the first census at age group from age $(x-n)$ to age x ;
- $P_{(x)}^{1*}$ is the estimated population of age x in the second census.

Step 2: Surviving intercensal births to the second census

As explained earlier, this method is usually applied by countries that do not have reliable birth and death statistics from civil registration systems. The estimate newborn cohorts for the time of the second census, the following procedures can be applied:

(a) Calculating the average number of women in childbearing age during the intercensal period

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 in Step 1 above. Childbearing ages in general cover the female from 15 to 49.

$$\overline{nPx} = \frac{{}_nP_x^1 + {}nP_x^0}{2} \quad (A.8)$$

Where

- \overline{nPx} refers to the average number of women in the age group $(x, x+n)$ in the intercensal period
- ${}_nP_x^0$ refers to the number of females aged x to $x+n$ at the first census
- ${}_nP_x^1$ refers to the estimated number of females aged x to $x+n$ at the time of the second census.

(b) Estimating the number of births occurred in the intercensal period

The total number of births 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:

$$B = 5 \times \sum_{15}^{49} \overline{nPx} \times ASFR_{x,x+n} \quad (A.9)$$

Where

B is the estimated total number of births in the intercensal period;

ASFR_{x,x+n} refers age-specific fertility rate for women of age between x and x+n during the intercensal period

(c) Distributing the estimated number of births by sex

The estimated total number of births can be distributed into male and female births using sex ratio at birth.

$$\text{Proportion for male births} = \frac{\text{Sex ratio at birth}}{1 + \text{Sex ratio at birth}} \text{ and} \quad (\text{A.10})$$

$$\text{Proportion of female births} = 1 - \frac{\text{Sex ratio at birth}}{1 + \text{Sex ratio at birth}} \quad (\text{A.11})$$

Where sex ratio at birth is calculated as the ratio of male births and female births. For example, for the sex ratio at birth of 1.05:

The proportion of male births is equal to $(1.05/(1+1.05))=0.512$ and

The proportion female births is equal to $(1-0.512) = 0.488$

The total number of female births and male births can be estimated as:

$$\text{Male births} = \text{total number of births} \times 0.512$$

$$\text{Female births} = \text{total number of births} \times 0.488$$

(d) Surviving births occurred in the intercensal period to the time of the second census

Population of the newly born cohort is estimated as

$$P_a^1 = B(m/f) \times {}_nS_0 \quad (\text{A.12})$$

Where

P1a represents the estimated population of the age group 0-4 in the case of five-year intercensal period

B(m/f) indicates number of births by sex in the intercensal period

${}_nS_0$ represents survival rate from birth to the age group 0-4.

Step 3: Estimating net international migration

Net migration is estimated as the difference between the enumerated and estimated population at the time of the second census:

$$(I_x - E_x) = P_x^1 - P_x^{1*} \quad (\text{A.13})$$

Where

$(I_x - E_x)$ represents the net international migration (I_x and E_x are immigration and emigration respectively) for age group x;

$P1_x$ represents total population for age group x observed in the second census;

$P1^*_x$ is the estimated population for the age group x.

Illustration of the method

A step-by-step application of the intercensal cohort component method is provided using data from three countries, namely Australia, Mexico and South Africa. The three countries have different experiences in international migration: Australia and South Africa are considered as traditional immigration countries (having positive net migration) and Mexico is considered as net emigration country (having negative net migration) (United Nations, 2016c, Table II-2).

The illustration also covers countries that have different levels of statistical development in terms of data availability and quality. As explained in chapter 7, errors in data used for the method will affect the reliability of the results. More specifically, accuracy of number of births (or birth rates used for estimating the number of births in the intercensal period), coverage of the census population and reliability of age reporting will affect the reliability of the estimates on net international migration. Therefore how quality of data figures in the reliability of the results of this method should be assessed. The section also discusses validity of the results taken into consideration possible errors in the data collected through population censuses.

For this illustration, two consecutive censuses for each country were selected considering that these censuses were carried out with same methodology. Methodological changes across two censuses would affect data comparability in terms of quality and coverage.

Country Example: Australia

Data used:

- a. Population by sex and age (in five-year age group) for 2006 and 2011 censuses
- b. Survival rates for each age group for the intercensal period (2006-2011), derived from the UN World Population Prospects, Revision 2012 for the period of 2005- 2010 assuming that they represents the mortality level of Australia for the intercensal period of 2006 and 2011 (national data can be used as well but the UN figures are used for illustration purposes)
- c. Age-specific fertility rates for the intercensal period, from the UN World population prospects, the 2012 revision assuming that the rates given for the 2005-2010 period is representing the intercensal period

Step 1. Surviving the population enumerated in the first census to the reference date of the second census

In this step, we will demonstrate the calculation for female population only. Male population for the year 2011 can be estimated in a similar way. Female population from the 2006 census is presented in column 2 (table A.2). The interval between the two censuses is five-year, therefore the five-year survival rates are calculated from the life table using equation (A.2), provided in Column 3. Estimated female population for the year 2011 is calculated using equation (A.7), for each age group starting from age 5 and over. The results of the estimated female population for 2011 are provided in column 5.

Table A.2
Estimating female population using survival ratio for the year 2011, Australia

Age group in 2006	Female Population 2006 Census ^a	Survival ratio ^b	Age group in 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
Total	10,056,039			

Source of data:

^aUnited Nations, UN data for the results of 2006 and 2011 Population and housing Censuses

^bUnited Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period

Step 2. Surviving intercensal births to the time of the second census

Procedures for estimating female and male population at ages 0 to 4 from the number of births that occurred during the intercensal period are explained step by step in Table A.3. To estimate the population at ages 0 to 4, first of all, average

number of women in the reproductive ages is calculated by using the number of female population enumerated in the 2006 population census and estimated for 2011, calculated in step 1 above. Average number of women for the intercensal period is calculated to estimate women at risk of childbearing in this period.

Estimated number of births for intercensal period is calculated by multiplying age-specific rates by the average number of women and then by 5, because of five-year interval between the two censuses. Estimated number of births for the period of 2006 and 2011 is given in column 6 (table A.3).

Table A.3
Estimating population of age 0-4 for the year 2011, Australia

Age group	Female population 2006 census ^a	Estimated female population 2011	Women at risk of childbearing (2006-2011)	Age specific fertility rates ^b	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
5-year survival ratio of newborns for females (from birth to ages 0 to 4) ^c					0.99571
Female population for the age group (0-4) , 2011					623,494
5-year survival ratio of newborns for males (from birth to ages 0 to 4) ^c					0.99475
Male population for the age group (0-4), 2011					653,525

^a United Nations, UN data for the results of 2006 and 2011 Population and housing Censuses

^b Age-specific fertility rate for the period of 2005-2010 from the United Nations, World Population Prospects, The 2012 Revision. <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>

^c United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period

Total estimated number of births is obtained by adding the number of births estimated for each age group of women (table A.3). Using the sex ratio at birth, which is assumed as 1.05 in this example, the total number of births is distributed into female births and male births (formula. To estimate female population for the age group 0-4, survival rate from birth to the ages 0 to 4 is calculated by the formula A.10 and A.11. Estimated female population is calculated by number of female births multiplied by the survival rate from birth to the age group 0-4.

Step 3. Estimating net international migration

For estimating net international migration for female population, female population enumerated in the 2011 census is subtracted from the estimated female population for the same year, for each group. The estimated net migration by age for females is presented in the column 7 of table A.4. Total net migration estimate for female population is calculated by taking the total of net migration obtained for each age group. Estimated net international migration for female population is 550,000 for the 2006 - 2011 period, which means it is about an average of 110,000 per year.

Table A.4
Estimating net international migration in the period of 2006 and 2011, Females, Australia

Age group	Female Population 2006 Census ^a	Survival ratio ^b	Age group	Estimated Female Population 2011	Female Population 2011 Census ^a	Estimated net immigration for females (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
Total	10,056,039			10,070,221	10,873,704	550,061

^a United Nations, UN data for the results of 2006 and 2011 Population and housing Censuses

^b United Nations, *World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period*

Application of the method for male population is presented in Table A.5 following the same procedures. Total net international migration for male population is around 546,000 for period between 2006 and 2011. The average annual net migration is about 109,000.

Table A.5
Estimating net international migration in the period of 2006 and 2011, Males, Australia

Age group	Male Population 2006 Census ^a	Survival ratio ^b	Age group	Estimated Male Population 2011	Male Population 2011 Census ^a	Estimated net immigration for males (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
Total	9,799,248			10,087,908	10,634,015	546,107

^a United Nations, UN data for the results of 2006 and 2011 Population and housing Censuses

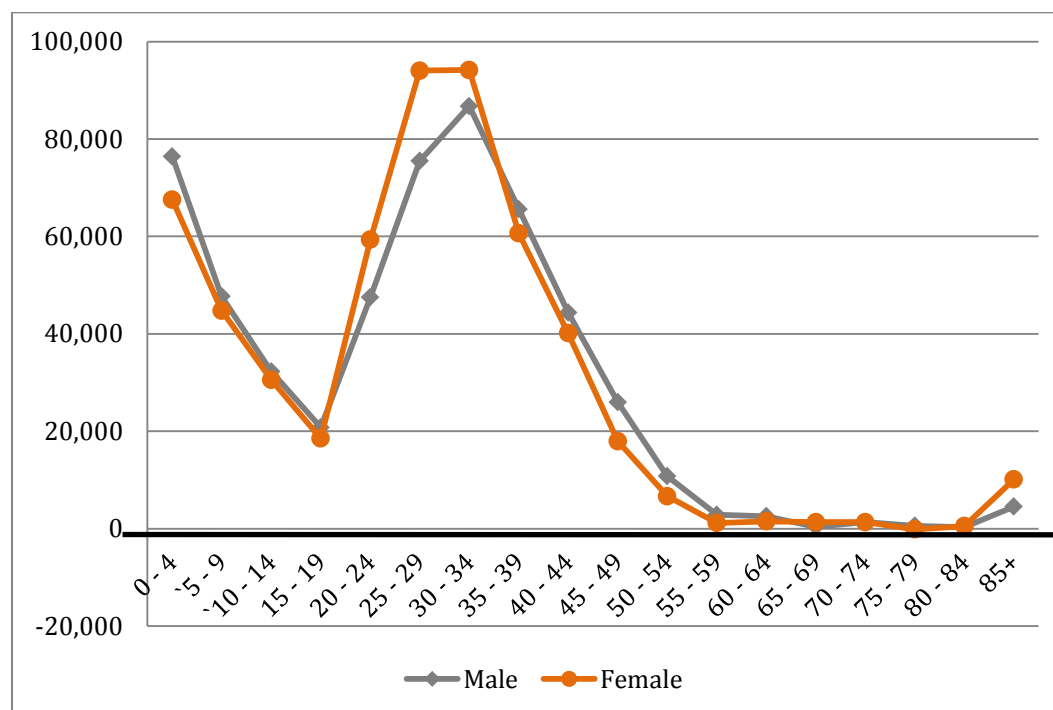
^b United Nations, *World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period*

Interpretation of the results

Figure A.1 illustrates age distribution of net international migration by sex. Our calculation confirms that Australia is a country with net immigration. We also showed the net migration for males and females has a similar age pattern, with immigration peak in working age and at childhood (0-4). Such age pattern of net migration is similar to the standard age pattern of immigration discussed earlier (chapter 7). Migration concentrated in the young adult ages between age 20 and 40 for both sexes is an indication of labour migration. Net migration for the population aged 50 years and over is almost zero which could be a sign of no significant in- and out-migration at older ages. In other words, there is no significant return migration around retirement age. A second peak is observed among the very young ages 0 to 4, and then gradually decreasing until age 15. This pattern indicates that some of movements would happen as family rather than individuals, but it is not possible to assess its magnitude with the basic analysis.

Total number of net migration is about 1 million for the five-year period (2006 to 2011), which is about 200,000 per year. This figure is similar to the figure that is given as annual net migration in the UN International Migration Report (annual net migration 181 thousand for the period of 2000 and 2010, United Nations 2016c).

Figure A.1
Estimated net international migration, Australia, 2006-2011



Country Example: Mexico

Application of the intercensal cohort component method is presented below for Mexico using the 2000 and 2005 censuses data, following the same procedures explained in the previous country example. The results of the method can be seen for each step in tables A.6, A.7, A.8 and A.9 below.

Step 1. Surviving the population enumerated in the first census to the reference date of the second census

Table A.6
Estimating female population using survival ratio for the year 2005, Females, Mexico

Age Group in 2000	Female population 2000 Census ^a	Survival ratio (2000-05) ^b	Age Group in 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	2,725,666
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
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
TOTAL	49,891,159			

^aData from United Nations, UN data for the results of 2000 and 2005 Population and Housing Censuses

^bData from United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2000- 2005 period

Step 2. Surviving intercensal births to the time of the second census

Table A.7
Estimating population of age (0-4) for the year 2005, Mexico

Age group	Female population 2000 census ^a	Estimated Female population 2005	Women at risk of childbearing (2000-2005)	Age specific fertility rates 2000-2005 period ^b	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	1964605
20 - 24	4,867,051	5,178,836	5,022,943	0.13725	3447095
25 - 29	4,385,940	4,854,797	4,620,369	0.13884	3207506
30 - 34	3,831,510	4,371,387	4,101,448	0.09295	1906148
35 - 39	3,398,703	3,813,347	3,606,025	0.05183	934429

40 - 44	2,756,423	3,374,302	3,065,362	0.01134	173837
45 - 49	2,159,060	2,725,666	2,442,363	0.00244	29760
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
5-year survival ratio of newborns for females (from birth to ages 0 to 4) ^c					0.98046
Female population for the age group (0-4) , 2005					5,580,516
5-year survival ratio of newborns for males (from birth to ages 0 to 4) ^c					0.97544
Male population for the age group (0-4), 2005					5,824,959

^a United Nations, UN data for the results of 2006 and 2011 Population and housing Censuses

^b Age-specific fertility rate for the period of 2005-2010 from the United Nations, World Population Prospects, The 2012 Revision. <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>

^c United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period

Step 3. Estimating net international migration

Table A.8
Estimating net international migration, 2000-2005, Females, Mexico

Age Group	Female population 2000 Census ^a	Survival ratio (2000-05) ^b	Age Group	Estimated Female Population 2005	Female population 2005 Census ^a	Estimated net migration for females (2000-05)
(1)	(2)	(3)	(4)	(5)=(2)×(3)	(6)	(7)=(6)-(5)
0-4	5,343,102	0.99680	0-4	5,580,516	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
TOTAL	49,891,159			54,524,891	53,013,433	-1,511,458

^a Data from United Nations, UN data for the results of 2000 and 2005 Population and Housing Censuses

^b Data from United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2000- 2005 period

Table A.9
Estimating net international migration, 2000-2005, Males, Mexico

Age Group	Male population 2000 Census ^a	Survival ratio (2000-05) ^b	Age Group	Estimated male Population 2005	Male population 2005 Census ^a	Estimated net migration for males (2000-05)
(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
TOTAL	47,592,253			52,239,901	50,249,955	-1,989,946

^a Data from United Nations, UN data for the results of 2000 and 2005 Population and Housing Censuses

^b Data from United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2000- 2005 period

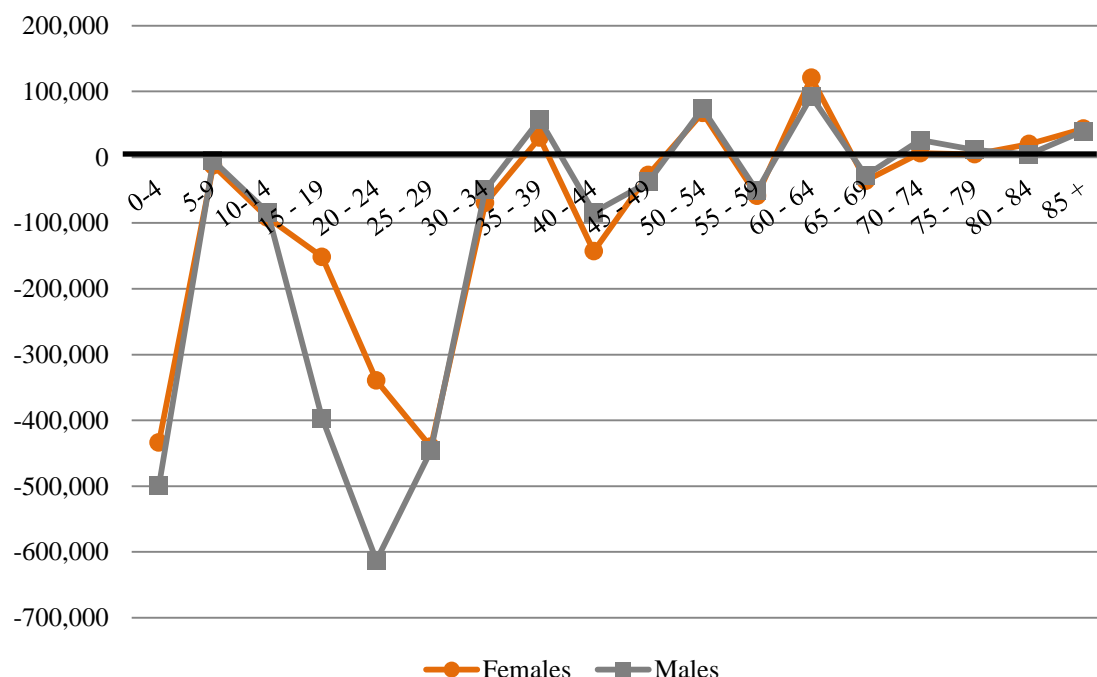
Interpretation of the results

Results of the calculation indicate very high emigration for young adults for both sexes. However, emigration is much higher among males than females particularly for the ages from 25 to 35 (figure A.2).

Migration pattern for population age 40 and over does not give a clear picture because of fluctuation at the level of “zero” net migration. This fluctuation is a strong indication of age misreporting with preference of ages ending with “0”. Figures A.3 and A.4 present distribution of population by single year of age for the 2000 and 2005 censuses. It can be observed that age misreporting for the ages ending with “0” and “5” disrupts smooth distribution of population by single age. The preference for the ages ending with “0” is also much higher than the preference for the ages ending with “5”. Age misreporting is also reflected in the Whipple’s index that is calculated for the two Mexican censuses (116.7 for the 2000 census and 118.8 for the 2005 census) (United Nations, 2015c, table 3.8).³⁵

³⁵ Value of Whipple’s index is interpreted as following: Highly accurate data ≤ 105 ; Fairly accurate data 105-109.9; Appropriate data 110-124.9; Rough data 125-174.9; and Very rough data ≥ 175 . Therefore the quality of data on age for Mexico 2000 and 2005 censuses is considered “appropriate”.

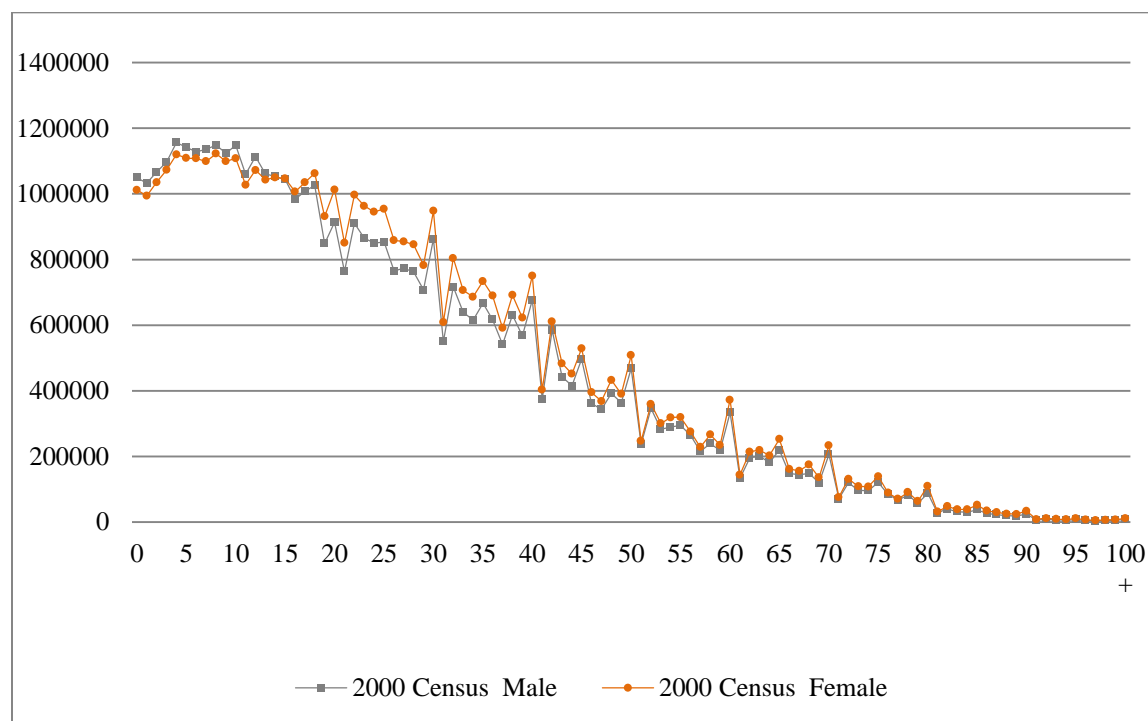
Figure A.2
Estimates of net international migration by age and sex, Mexico, 2000-2005



Migration pattern for very young ages (age groups 0-4 and 10-14) shows an indication of net emigration particularly for the age group 0-4. However the level of net emigration may not be accurate for population less than 15 because of data quality issues for younger population. Age distribution of population by single years of age provides a better look at the patterns of error in age structure (see figures 3.a. and 3.b for 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 under-enumeration of people in the 0-4 age group and over-enumeration for the following ages. This type of error is relatively common for countries collecting age data by asking “completed age”, as in the 2000 and 2005 censuses of Mexico. It should be noted that such irregularity in age structure will introduce a bias in estimating net migration. For example, if there is an undercount of population of age 0-4 and an overcount of those of age 5-9, the result of the intercensal cohort component method will overestimate net immigration for the 5-9 age group in Mexico.

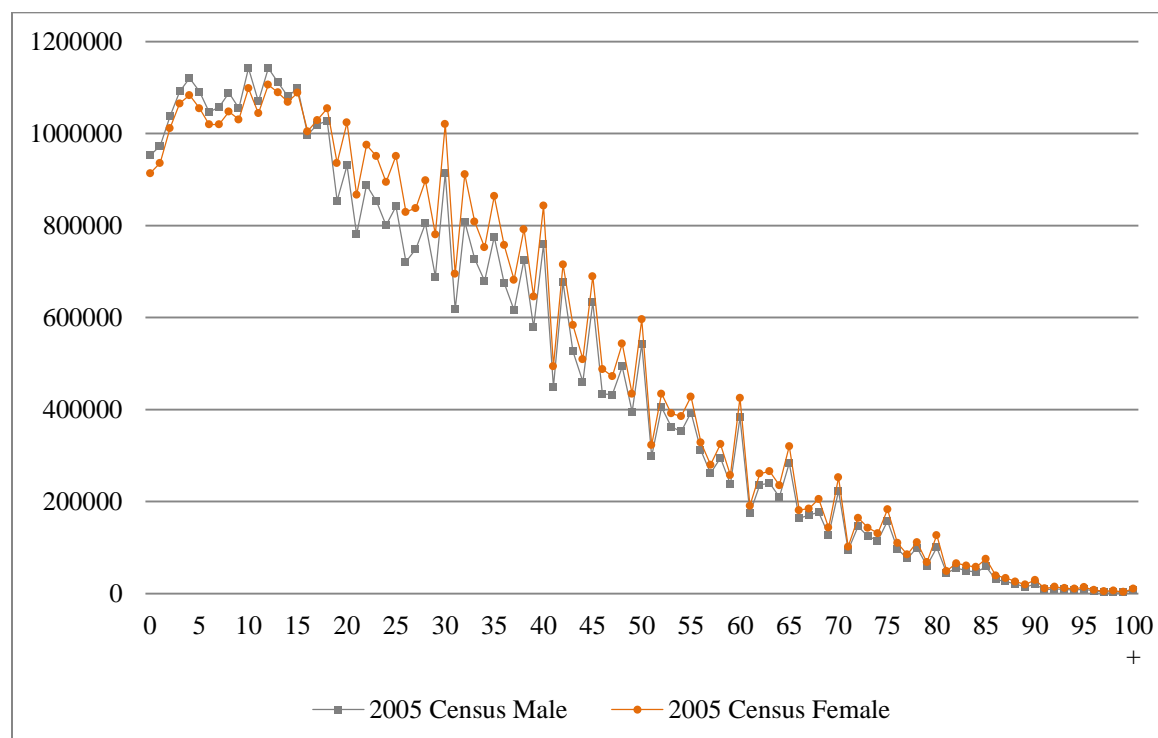
This seems to be the case in our example. Although there is net emigration for age groups 0-4 and 10-14, the estimated net migration for the age group 5-9 is close to zero, which is not plausible. If age distribution is adjusted for under and over enumeration of young age groups, the results would be more accurate. In the example of Mexico, although the results indicate net emigration for young population, but uncertainty arises for the level of net emigration.

Figure A.3
Population by sex and single years of age, Mexico, 2000 census



Source of data: United Nations, UN data for the results of 2000 Mexico Population and Housing Census

Figure A.4
Population by sex and single years of age, Mexico, 2005 census



Source of data: United Nations, UN data for the results of 2000 Mexico Population and Housing Census

Country Example: South Africa

South Africa is a country experiencing high under-coverage rate in population censuses and the under-coverage was assessed through the post enumeration survey. Statistics South Africa has disseminated under coverage rates by age groups of the population for the 2001 and 2011 censuses in the post enumeration surveys reports (Statistics South Africa, 2001 and 2011). The adjusted population was used for application of the intercensal cohort component method.

South Africa conducts a census every ten years. In this case, the cohort component method yields net international migration estimates for a ten-year interval. Given the fact that countries usually experience different levels of fertility and mortality during ten-year interval, it may not be appropriate to assume a constant fertility and mortality for that period.

The intercensal cohort component method for a ten-year census interval can be applied by repeating all the calculation steps two times. For this example, female and male population for the year 2006 will be estimated first and the same calculation steps will be repeated to estimate the male and female population for the year 2011. Once this is completed, the estimated and enumerated population for 2011 will be compared to estimate net international migration. The following calculation illustrates application of survival rate method to the ten-year census interval.

Step 1. Surviving the population enumerated in the first census to the reference date of the second census

Table A.10
Estimating female population using survival ratio for the year 2011, Females, South Africa

Age Group in 2001	Female population 2001 Census ^a	Survival ratio (2001-06) ^b	Age Group in 2006	Estimated Female Population 2006	Survival ratio (2006-11) ^c	Age Group in 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
TOTAL	23,385,737						

^a Data from United Nations, UN data for the results of 2000 and 2005 Population and Housing Censuses

^b Data from United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2000- 2005 period

^c Data from United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period

Step 2. Surviving intercensal births to the time of the second census

Table A.11

Estimating population of (0-4) age for the year 2006, South Africa

Age group	Female population 2001 census ^a	Estimated Female population 2006	Women at risk of childbearing (2001-2006)	Age specific fertility rates ^b	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	895000
20 - 24	2,195,230	2,500,034	2,347,632	0.13898	1631369
25 - 29	2,035,814	2,104,552	2,070,183	0.14184	1468143
30 - 34	1,746,412	1,883,558	1,814,985	0.10558	958121
35 - 39	1,630,264	1,584,874	1,607,569	0.06736	541429
40 - 44	1,385,833	1,468,221	1,427,027	0.02712	193533
45 - 49	1,119,776	1,252,697	1,186,236	0.00880	52183
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
5-year survival ratio of newborns for females (from birth to ages 0 to 4) ^c					0.94035
Female population for the age group (0-4) , 2006					2,633,943

5-year survival ratio of newborns for males (from birth to ages 0 to 4) ^c	0.92781
Male population for the age group (0-4), 2006	2,726,611

^a United Nations, UN data for the results of 2006 and 2011 Population and housing Censuses

^b Age-specific fertility rate for the period of 2005-2010 from the United Nations, World Population Prospects, The 2012 Revision. <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>

^c United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period

Table A.12

Estimating population of (0-4) age for the year 2006, South Africa

Age group	Estimated female population 2006	Estimated Female population 2011	Women at risk of childbearing (2006-2011)	Age specific fertility rates ^a	Estimated number of births (2006-2011)
(7)	(8)	(9)	(10)= [(8)+(9)]/2	(11)	(12)=[(10)×(11)]×5
15 - 19	2,533,433	2,397,126	2,465,279	0.05916	729230
20 - 24	2,500,034	2,507,516	2,503,775	0.13168	1648510
25 - 29	2,104,552	2,405,418	2,254,985	0.13510	1523231
30 - 34	1,883,558	1,943,606	1,913,582	0.09588	917371
35 - 39	1,584,874	1,684,236	1,634,555	0.05840	477249
40 - 44	1,468,221	1,404,408	1,436,314	0.02264	162620
45 - 49	1,252,697	1,315,133	1,283,915	0.00714	45836
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
5-year survival ratio of newborns for females (from birth to ages 0 to 4) ^b					0.94616
Female population for the age group (0-4) , 2011					2,541,351
5-year survival ratio of newborns for males (from birth to ages 0 to 4) ^b					0.92781
Male population for the age group (0-4), 2011					2,614,629

^a Age-specific fertility rate for the period of 2005-2010 from the United Nations, World Population Prospects, The 2012 Revision. <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>

^b United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period

*Step 3. Estimating net international migration***Table A.13****Estimating net international migration, 2001-2011, Females, South Africa**

Age Group in 2001	Female population 2001 Census ^a	Survival ratio (2001-06) ^b	Age Group in 2006	Estimated Female Population 2006	Survival ratio (2006-11) ^c	Estimated Female Population 2011	Female Population 2011 Census ^a	Estimated net migration for females
(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
TOTAL	23,385,737			24,441,540		25,217,143	26,581,768	1,364,625

^a Data from United Nations, UN data for the results of 2000 and 2005 Population and Housing Censuses^b Data from United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2000- 2005 period^c Data from United Nations, World Population Prospects, The 2012 Revision for the survival ratios of 2005- 2010 period

Table A.14
Estimating net international migration, 2001-2011, Males, South Africa

Age Group	Male Population 2001 Census ^a	Survival ratio (2001-06) ^b	Age Group	Estimated Male Population 2006	Survival ratio (2006-11) ^c	Estimated Male Population 2011	Male Population 2011 Census ^a	Estimated net migration for males (2001-11)
(1)	(2)	(3)	(4)	(5)=(2)*(3)	(6)	(7)=(5)*(6)	(8)	(9)=(8)-(7)
0-4	2,223,731	0.98128	0-4	2,726,611	0.97859	2,614,629	2,867,585	252,956
5-9	2,425,804	0.99204	5-9	2,182,110	0.98551	2,668,238	2,425,181	-243,057
10-14	2,518,957	0.99328	10-14	2,406,493	0.98939	2,150,497	2,344,275	193,778
15 - 19	2,453,079	0.98749	15 - 19	2,502,042	0.98740	2,380,958	2,498,572	117,614
20 - 24	2,099,293	0.96840	20 - 24	2,422,402	0.97127	2,470,518	2,694,646	224,128
25 - 29	1,899,124	0.94136	25 - 29	2,032,960	0.94418	2,352,807	2,542,682	189,875
30 - 34	1,594,488	0.91682	30 - 34	1,787,758	0.91334	1,919,490	2,036,206	116,716
35 - 39	1,441,507	0.89896	35 - 39	1,461,862	0.89345	1,632,832	1,709,347	76,515
40 - 44	1,233,632	0.89290	40 - 44	1,295,855	0.88887	1,306,095	1,402,328	96,233
45 - 49	967,604	0.87755	45 - 49	1,101,506	0.87819	1,151,843	1,195,740	43,897
50 - 54	769,500	0.86580	50 - 54	849,125	0.86681	967,327	1,011,349	44,022
55 - 59	552,323	0.83097	55 - 59	666,232	0.83058	736,030	811,950	75,920
60 - 64	444,510	0.76958	60 - 64	458,963	0.76779	553,361	612,364	59,003
65 - 69	304,763	0.69228	65 - 69	342,086	0.68960	352,388	401,548	49,160
70 - 74	232,548	0.60163	70 - 74	210,981	0.59809	235,903	293,498	57,595
75 - 79	136,437	0.50229	75 - 79	139,908	0.49792	126,186	165,283	39,097
80+	136,744	0.34510	80 - 84	68,531	0.34012	69,664	100,694	31,030
			85 +	47,191		39,359	75,543	36,184
TOTAL	21,434,044		TOTAL	22,702,613		23,728,126	25,188,791	1,460,665

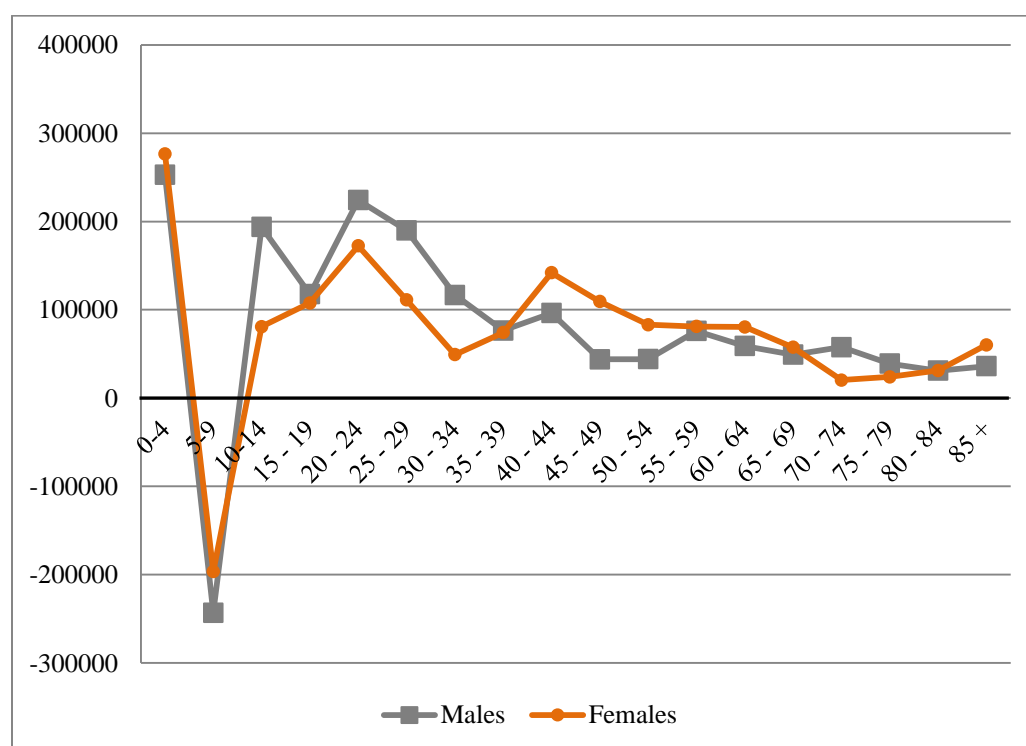
Interpretation of the results

Figure 4 illustrates estimates of net migration by age groups for males and females, expressed as number of net immigrants (immigrants minus emigrants). According to the intercensal cohort component method, the country gained 2.7 million population in the period of 2001 and 2011 which is corresponding to about 270 thousand persons a year.

Distribution of net immigration by age groups tends to conform general pattern of immigration, with a peak in the young adults concentrating in the 15-30 year age range. There is a slight hump for females in the 40-49 years old that could be due to strong flow for specific groups of women such as women looking a job after raising children or there might be a problem of data quality affecting those cohorts. However, after age 50s, the age pattern of net immigration seems to highly conform to the expected shape with smooth decline in net immigration by increasing age.

Net immigration pattern for population less than 15 years old shows unexpected result particularly for the 5-9 age group. This is new cohort born during the period of 2001-2006. Net migration estimate for the age group 5-9 is the difference between the enumerated population in 2011 and the estimated population using the fertility assumption for the 2001-2006 period. This unexpected pattern could be due to two reasons, either there is a data quality problem such as age misreporting or the fertility assumption used for that period is not reflecting real situation. For countries experiencing net immigration, it is usually expected that net immigration will have another peak through very young children (see the figure A.1 for Australia). However, as it was observed for Mexico, the results of first two age groups might not be accurate and should be used in caution.

Figure A.4
Net international migration estimates by age and sex, 2001-2011, South Africa



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