ILO Global Estimates on International Migrant Workers

Results and Methodology

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Second edition (reference year 2017)

INTERNATIONAL LABOUR OFFICE GENEVA

Preface

Along with study, family reunification and humanitarian relief, international migrants seek economic opportunity and decent work. Labour migration can be a vehicle for responding in a timely and effective manner to shifts in labour supply and demand, for stimulating innovation and sustainable development, and for transferring and updating skills, if the right policies are in place.

In recent years, in many regions, there have been large inflows of both migrant workers and refugees fleeing conflicts and poverty, resulting in increased economic and social tensions. In order to build public confidence in migration issues, making strong evidence available is of the utmost importance for both informed public opinion and effective policy-making. That is why providing capacity-building for data collection and analysis should be an integral part of overall efforts to improve labour market information systems at the national, regional and global levels.

In order to address the above challenges, the ILO has recently developed Guidelines concerning statistics of international labour migration, which were adopted at the 20th International Conference of Labour Statisticians (ICLS), in October 2018. The Guidelines are intended to address the absence of international standards regarding concepts, definitions and methodologies for the measurement of labour migration data, which continues to be a major obstacle to the production of harmonized statistics. These efforts will also assist both origin and destination countries to have more effective and coherent labour migration, employment and training policies.

As countries prepare to adopt in December 2018 a Global Compact for Safe, Orderly and Regular Migration, the collection and utilization of accurate and disaggregated data as a basis for evidence-based policies has become the primary objective of the draft Compact. The present ILO global and regional estimates aim to contribute to the above effort and represent the second edition in the series *ILO global estimates on international migrant workers: Results and methodology*. The estimates chart the current state of labour migration and the key characteristics of migrant workers in the world today. They are also intended to contribute to achieving Sustainable Development Goals (SDGs) target 8.8 (Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment) and target 10.7 (Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies).

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Data sources

This report is based in part on data from the United Nations Department of Economic and Social Affairs (UN/DESA), the Organisation for Economic Co-operation and Development (OECD) and EUROSTAT.

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Acronyms and abbreviations

ASEAN   Association of Southeast Asian Nations

GCC   Gulf Cooperation Council

ICLS   International Conference of Labour Statisticians

ILMS   International Labour Migration Statistics (database)

KOSTAT   Statistics Korea (Republic of Korea)

ILOSTAT   ILO database on international labour statistics

LFPR   Labour force participation rate

LFS   Labour force survey

OECD   Organisation for Economic Co-operation and Development

SDGs   Sustainable Development Goals

UN/DESA   United Nations/Department of Economic and Social Affairs

UNHCR   Office of the United Nations High Commissioner for Refugees

UNRWA   United Nations Relief and Works Agency for Palestine Refugees in the Near East

Executive summary

The ILO estimates that 164 million people are migrant workers

Based on figures for 2017 provided by the United Nations/ Department of Economic and Social Affairs (UN/DESA), which are adjusted for the number of refugees, there are 277 million international migrants[1], 234 million migrants of working age (15 and older) and 164 million migrant workers worldwide. For the purposes of this report, the term "international migrants" refers to persons who are foreign-born (or foreign citizens when place-of-birth information is not available), while the term "migrants of working age (15 years of age and over)" is a subset of international migrants. The term '"migrant worker", on the other hand, refers to international migrant individuals of working age and older who are either employed or unemployed in their current country of residence. Overall, migrants of working age constitute 4.2 per cent of the global population aged 15 and older, while migrant workers constitute 4.7 per cent of all workers. In destination countries, the higher share of migrant workers among the global workforce than among the global population of working age is due to the higher labour force participation rate of migrants (70.0 per cent) compared to non-migrants (61.6 per cent).

The previous ILO global estimates on international migrant workers (ILO, 2015), which were also based on UN/DESA estimates and for which the reference year was 2013, reported that there were 232 million international migrants, 207 million migrants of working age and 150 million migrant workers, suggesting increases from 2013 to 2017 of nearly 20 per cent for international migrants, 13 per cent for migrants of working age and 9 per cent for migrant workers. The substantially higher number of international migrants in 2017 could be attributed to migrant population growth as well as other factors.[2]

Global estimates of the stock of international migrants and migrant workers, 2017[3]

Among migrant workers, 96 million are men and 68 million are women

Men constitute a larger proportion of migrant workers. In 2017, the stock of male migrant workers was estimated to be 95.7 million, while the corresponding estimate for female migrant workers was 68.1 million, or 58.4 and 41.6 per cent, respectively, of all migrant workers. The larger presence of men among migrant workers is likely explained by their larger share among international migrants of working age (54.2 per cent compared to 45.8 per cent for women) and their higher labour force participation (75.5 per cent compared to 63.5 per cent for women).

Moreover, between 2013 and 2017, the share of men among migrant workers increased from 55.7 per cent to 58.4 per cent (ILO, 2015), which is consistent with the increased share of men among migrants of working age from 51.9 per cent in 2013 to 54.2 per cent in 2017. At the same time, the share of women among migrant workers fell from 44.3 per cent to 41.6 per cent over the same time period.

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1   277 million international migrants have been calculated based on 258 million international migrants (UN, 2017) plus about 19 million refugees (UNHCR, 2018).

2   The population estimates for this report were obtained from UN/DESA. Not all countries include refugees in their population estimates; for those that do not, a correction factor has been applied based on migrant populations aged 15 and older (explained in Part II of this report), resulting in an estimate of about 19 million refugees. That is why this ILO estimate is slightly different from the Office of the United Nations High Commissioner for Refugees (UNHCR) estimate of 19.9 million refugees (of all ages). In the 2013 ILO global estimates on migrant workers, refugees were also included, as covered by UN DESA and national sources used. In this 2nd edition, a more systematic approach has been used. The inclusion of refugees in the usual resident population (provided they meet the usual residency criteria) and the migrant workforce was in accordance with the Principles and Recommendations for Population and Housing Censuses, Revision 3, issued by the United Nations in 2015, and the Guidelines concerning statistics of international labour migration, adopted by the 20th ICLS in October 2018. Thus, the estimates are able to better capture refugees in the workplace.

3   In contrast to the global and regional estimates produced in 2013, the estimates for 2017 included about 19 million refugees in its population based on UNHCR data: http://popstats.unhcr.org/en/overview. For methodological explanations, see part II.

The higher proportion of men among migrant workers may also be explained by other factors, including the higher likelihood of women to migrate for reasons other than employment (for instance, for family reunification), as well as by possible discrimination against women that reduces their employment opportunities in destination countries. Societal stigmatization, the discriminatory impacts of policies and legislation and violence and harassment not only undermine women's access to decent work but can also result in low pay, the absence of equal pay and the undervaluation of female-dominated sectors (ILO, 2018a).

Global distribution of migrant workers, by sex, 2017

41.6%

58.4%

■ Male   ■ Female
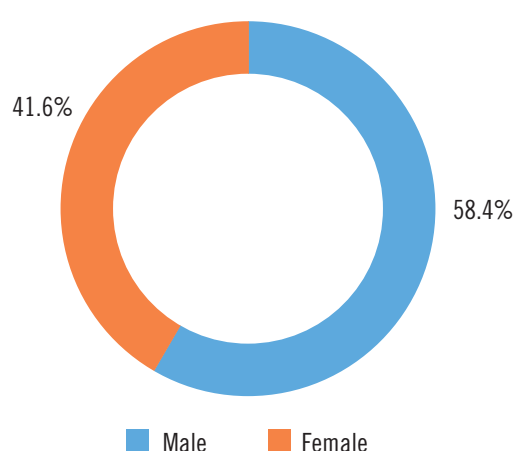
Migrants tend to have higher labour force participation than non-migrants

Migrants of working age have higher labour force participation than non-migrants of working age, primarily due to the significantly higher labour force participation rates of migrant women compared to non-migrant women. While the participation rates of male migrants and non-migrants were both at par in 2017 (75.5 per cent and 75.2 per cent, respectively), a gap of 15.4 percentage points was found between the participation rates of migrant and non-migrant women (63.5 per cent and 48.1 per cent, respectively).

Compared to the 2013 global estimates, the migrant labour force participation rates of both men and women were lower in 2017. More precisely, the participation rate of migrant men fell from 78.0 to 75.5 per cent,

while that of migrant women fell from 67.0 to 63.5 per cent (ILO, 2015). Over the same time period, approximately similar reductions were observed for the non-migrant population (both men and women). These findings coincide with the general global trend of falling labour force participation, which is likely the result of various demand and supply-side factors, ranging from changes in technology, international trade and demographics to labour market and immigration policies (ILOSTAT, 2018).

Global labour force participation rates of migrants and non-migrants, by sex, 2017

75.5%   75.2%
70.0%
61.6%
                63.5%
                48.1%

Both sexes   Male   Female

■ Migrants   ■ Non-migrants
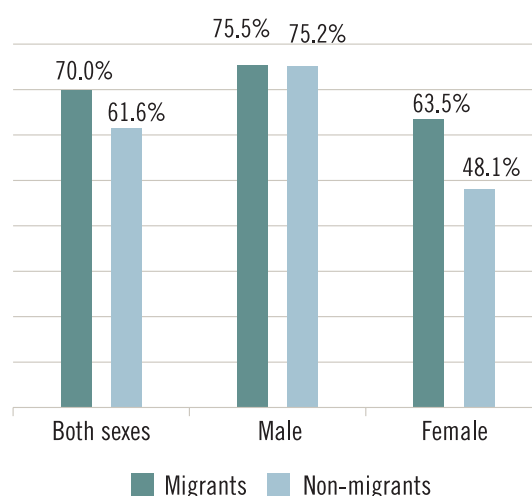
Prime-age adults (ages 25-64) constitute nearly 87 per cent of migrant workers

When disaggregating migrant workers by age group, it is found that while youth workers (aged 15-24) and older workers (aged 65 plus) constitute 8.3 per cent and 5.2 per cent, respectively, of migrant workers, prime-age adults constitute 86.5 per cent. This age composition holds for male and female migrant workers alike. The fact that the overwhelming majority of migrant workers consist of prime-age adults suggests that some countries of origin are losing the most productive part of their workforce, which could have a negative impact on their economic growth. On the other hand, destination countries benefit from receiving prime-age workers as they are increasingly faced with demographic pressures. It is important to note, however, that the emigration of prime-age individuals may provide a source of remittances for countries of origin (ILO, 2016a).

Global distribution of migrant workers, by age group and sex, 2017

Legend: ■ 15-24 ■ 25-64 ■ 65+
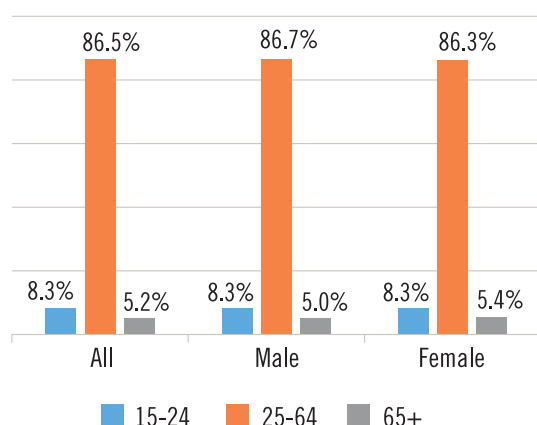
Migrant workers are concentrated in high-income countries

Of the 164 million migrant workers worldwide, 111.2 million (67.9 per cent) are employed in high-income countries, 30.5 million (18.6 per cent) in upper middle-income countries, 16.6 million (10.1 per cent) in lower middle-income countries and 5.6 million (3.4 per cent) in low-income countries. As a proportion of all workers, migrant workers constitute 18.5 per cent of the workforce of high-income countries, but only between 1.4 to 2.2 per cent of the labour force of lower-income countries. The relatively large proportion of migrants in the workforce of high-income countries may be a result of (a) the higher concentration of migrants in those countries and (b) the substantially higher labour force participation rate of migrants in those countries, estimated at 71.9 per cent compared to 58.1 per cent for non-migrants.

Furthermore, it is found that the overall gender composition of migrant workers in high-income countries is in accordance with the overall gender composition of migrant workers across the globe. In low-income and lower middle-income countries, this composition is more in favour of men. Findings also show that migrant women, compared to their male counterparts, have lower labour force participation rates and a larger variation in participation rates by country income group. The former may possibly be the result of women's higher likelihood of being tied-movers and their relatively higher barriers to mobility. On the other hand, the larger variation in participation may likely be the result of the selective nature of migration.

In contrast to the conclusions drawn for high-income countries, labour force participation rates for non-migrants are higher than those of migrants in low-income countries (75.2 per cent versus 68.5 per cent, respectively). This can be potentially attributed to more pervasive informal employment among migrants (OECD/ILO, 2018).

Considering this overall gender composition, young and older female migrant workers are slightly more likely to be found in low-income countries than their male counterparts. In addition, it was found that prime-age adults are more likely to migrate to higher-income countries than to lower-income ones, possibly as a result of higher employment opportunities in the former. This conclusion was also drawn for prime-age male and female migrant workers.

From 2013 to 2017, the concentration of migrant workers in high-income countries fell from 74.7 to 67.9 per cent, while their share in upper middle-income countries increased, suggesting a shift in the number of migrant workers from high-income to lower income countries. This growing number could possibly be attributed to the economic development of some lower income countries, particularly if these countries are in close proximity to migrant origin countries with close social networks between migrant origin and destination countries (OECD/ILO, 2018).

Over time, the share of migrant workers in the labour force of destination countries has increased in all income groups except for lower middle-income countries. In high-income countries, falling numbers of migrant workers were observed simultaneously with a higher share in the labour force as a result of the sharp fall in the labour force participation of non-migrants, due to a variety of factors such as changes in demographics, technology, immigration policies, etc.[4] Stricter migration policies in high-income countries and stronger economic growth among upper middle-income countries may also contribute to the trends observed.

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4   However, caution should be exercised in making comparisons across years by country income group, because countries in a given income group may change over time, which may partly explain the observed trends.

Migrant workers, by income level of countries, 2017

- 3.4%
- 10.1%
- 18.6%
- 67.9%

■ Low-income   ■ Lower middle-income
■ Upper middle-income   ■ High-income

Distribution of migrant workers, by broad subregion, 2017

- 7.2%
- 13.9%
- 5.2%
- 3.6%
- 8.1%
- 2.7%
- 0.7%
- 23.0%
- 23.9%
- 7.1%
- 4.5%

■ Arab States
■ Central and Western Asia
■ Eastern Asia
■ Eastern Europe
■ Latin America and the Caribbean
■ Northern Africa
■ Northern America
■ Northern, Southern and Western Europe
■ South-Eastern Asia and the Pacific
■ Southern Asia
■ Sub-Saharan Africa
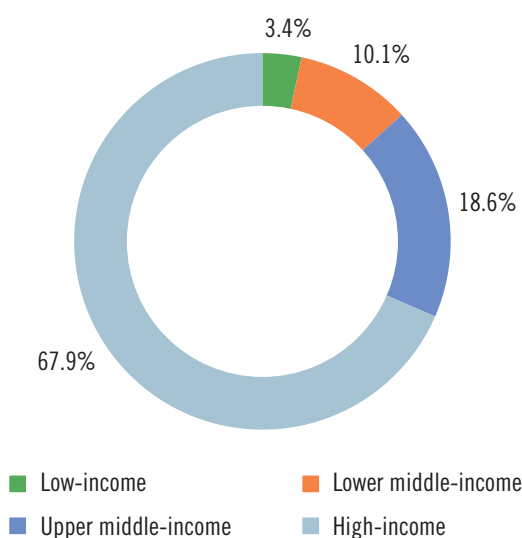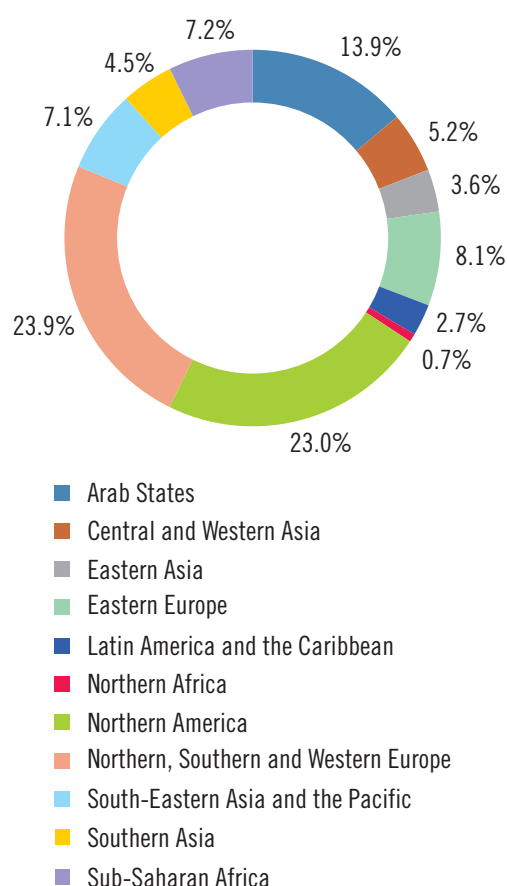
Migrant workers are geographically concentrated

60.8 per cent of all migrant workers are found in three subregions: Northern America (23.0 per cent), Northern, Southern and Western Europe (23.9 per cent) and the Arab States (13.9 per cent). The other subregions that host non-negligible numbers of migrant workers (above 5 per cent) are Eastern Europe, Sub-Saharan Africa, South-Eastern Asia and the Pacific, and Central and Western Asia. The lowest number of migrant workers is hosted by Northern Africa (less than 1 per cent).

The subregion with the largest share of migrant workers as a proportion of all workers is the Arab States (40.8 per cent), followed by Northern America (20.6 per cent) and Northern, Southern and Western Europe (17.8 per cent). Other subregions with significant numbers of migrants in the labour force include Eastern Europe (9.1 per cent) and Central and Western Asia (11.1 per cent).

In 9 out of 11 subregions, the labour force participation rate of migrants is higher than that of non-migrants. The largest difference is in the Arab States, where the labour force participation rate of migrants (75.4 per cent) is substantially higher than that of non-migrants (42.2 per cent), followed by Northern, Southern and Western Europe (17 percentage point difference). These estimates are slightly lower than those found in 2013.

The shares of migrants in each region's workforce in 2017 were estimated to be very similar to 2013 levels, with at most a 1 per cent increase in all regions, except for the Arab States and Northern, Southern and Western Europe (5.2 and 1.4 percentage points, respectively). The demand for (male) workers in the Arab States explains the sharp increase in the share of migrant workers in this region. Many of these workers are manual labourers, located mostly in the construction sector (ILO, 2016b; ILO, 2017). However, possible other reasons for the increase in the high share of migrant workers may include the increasing demand for domestic workers, both male and female, as well as for migrant workers in the hospitality sector.

1. Introduction

High-quality and up-to-date labour migration statistics are a key prerequisite for designing, implementing and monitoring evidence-based labour migration policies. However, there is still a lack of comprehensive official statistical data on migrant workers at the national, regional and global levels. Two main obstacles to the collection and comparability of labour migration statistics are:

- the absence of international statistical standards on concepts and definitions and lack of a common methodology
- inadequate data collection systems in developing countries

The present report is part of a broader ILO effort to address these two obstacles and to improve the global harmonization, collection and production of labour migration statistics. It will contribute to the implementation of the ILO Guidelines concerning statistics of international labour migration[5], adopted by the 20th ICLS in October 2018. The purpose of the Guidelines is to help countries to develop their national statistical systems by collecting comparable statistics on international labour migration in order to provide an improved information base for the various users, taking account of specific national needs and circumstances.

Paragraph 14 of the new Guidelines provides that:

"The concept of international migrant workers is meant to measure the current labour attachment of international migrants in a country, irrespective of the initial purpose of migration, and of others who are not usual residents of the country but have current labour attachment in the country of measurement. In this context, the terms 'international migrant workers' and 'international migrant and non-resident foreign workers' are equivalent. They are defined, for statistical purposes, as all persons of working age present in the country of measurement who are in one of the following two categories:

(a) *usual residents*: international migrants who, during a specified reference period, were in the labour force of the country of their usual residence, either in employment or in unemployment;

(b) *not usual residents, or non-resident foreign workers*: persons who, during a specified reference period, were not usual residents of the country but were present in the country and had labour attachment to the country, i.e., were either in employment supplying labour to resident producer units of that country or were seeking employment in that country."

The current global estimates cover part (a) but do not cover part (b) of the above definition due to the lack of availability of data. Refugees were added to this new edition of the estimates in accordance with the *Principles and Recommendations for Population and Housing Census*es*, Revision 3,* issued by the United Nations in 2015, which recommend their inclusion among usual residents provided that they meet the criteria for usual residency. However, it should be noted that national data sources did not allow for the development of separate analyses of migrant workers and refugees.

As countries start implementing the new ICLS Guidelines and more data become available, future global estimates

5   See: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/
meetingdocument/wcms_648922.pdf.

may be aligned accordingly and different categories of migrant workers may be included and analysed, such as frontier workers, seasonal workers, etc. In addition, statistics on different aspects of labour migration, such as quality of work, wages, labour rights (linked with the ICLS resolution on SDG indicator 8.8.2)[6] and the informal economy may be collected to provide more comprehensive insight for evidence-based policy-making.

The present report has benefited from ongoing ILO technical assistance on improving labour migration statistics and the creation of the International Labour Migration Statistics (ILMS) database. The ILO, through its Association of Southeast Asian Nations (ASEAN) TRIANGLE project, funded by Canada, produced the ILMS database to cover the 10 countries of the ASEAN region: Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam. Following six successful rounds of data collection (in November 2013 and July 2014), the data were disseminated in the ILO's ILOSTAT database on international labour statistics as a unique source freely available to users online. The number of countries included in the ILMS database was later extended to include 6 Arab States (Bahrain, Jordan, Kuwait, Lebanon, Oman and Yemen) and, thanks to a memorandum of understanding signed between the ILO and Statistics Korea (KOSTAT), the number of countries in the database was further increased from 16 to 27 with the inclusion of Australia, Azerbaijan, Fiji, Georgia, Kazakhstan, Mongolia, Nepal, Papua New Guinea, the Republic of Korea, Sri Lanka and Turkey.

The ILMS database is based on 19 standardized tables defined across three separate modules:

A. INTERNATIONAL MIGRANT STOCK
B. INTERNATIONAL MIGRANT FLOW
C. NATIONALS ABROAD

The relevant data is collected through focal points identified by each Member State. The content and format of the questionnaire has recently been revised and improved so as to render the data-collection system more user-friendly. The questionnaire that forms the basis of the ILMS database has been integrated into the annual ILO questionnaire completed by national statistical offices of Member States. Eventually, the ILMS database will continue to contribute to the regular generation of global estimates on migrant workers.

This is the second report prepared by the ILO on global and regional estimates of migrant workers. The first report, *ILO global estimates on migrant workers: Results and methodology* (ILO, 2015) used 2013 data. The data since then have been updated, so that this report takes 2017 as the reference year for all estimates. From 2013 to 2017, some methodological changes in the approach to improving the global and regional estimates have also been introduced. However, as a result of those methodological changes (fully explained in Part II), caution should be exercised in comparing the 2013 and 2017 estimates.

Originally, the intention was to include sector data in the 2017 estimates, as was done in the 2013 estimates, as well as age distribution data; however, countries were not able to provide sector data. They provided only age data and as a result, no new figures could be generated on the branches of economic activities. The ILO has already launched a questionnaire to collect data on different aspects of labour migration, including sector data. In future, the ILO will be in a position to provide regular estimates in this area.

In addition, in 2013 the ILO generated estimates on domestic workers as a special topic. For the present 2017 edition, however, the focus was on streamlining the methodological approach; future editions will cover different aspects of labour migration as a special focus.

The report is organized in two parts: Part I, Main results, and Part II, Estimate methodology.

Part I. Following this introduction, section 2 presents the main results of the global and regional estimates of international migrant workers, as well as estimates by country income group, disaggregated by sex and age.

Part II. Section 3 covers phase 1 of the statistical methodology, which describes the international and national data sources used for the global and regional estimates and the structure of the input data obtained from them. Section 4 covers phase 2 of the methodology, which describes procedures for data imputation and the production of the global and regional estimates. Section 5 discusses data quality issues.

Annexes A, B and C provide supplementary information on the geographical and country income classifications and on the availability of data used to compile the material presented in the main body of the report.

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6   See: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648636.pdf.

PART I
MAIN RESULTS

2. Global and regional estimates

This section of the report presents the global and regional estimates of the number of migrant workers for 2017. Detailed analyses by sex, age, country income groups and broad regional categorizations are presented. For the purposes of this report, the term "international migrants" refers to persons who are foreign-born (or foreign citizens when place-of-birth information is not available), while the term "migrants of working age (15 and older)" is a subset of international migrants. The term "migrant worker" refers to international migrants of working age (15 and older) who are either employed or unemployed in their current country of residence.

2.1 Global estimates

2.1.1 Overall picture

There were an estimated 277 million international migrants worldwide in 2017, including about 19 million refugees (figure 2.1).[7] International migrants of working age (15 and older) constituted 234 million of this group. The stock of migrant workers is estimated at 164 million. Hence, international migrant workers in 2017 constituted 59.2 per cent of all international migrants and 70.1 per cent of all working age migrants. Overall, migrants of working age constituted 4.2 per cent of the world's population aged 15 and older, while migrant workers constituted 4.7 per cent of all workers. The higher share of migrants

among the global workforce than among the global population is due to the higher labour force participation rate of migrants (70.0 per cent) compared to the overall rate of non-migrants in destination countries (61.6 per cent) (table 2.3).

The previous *ILO global estimates on migrant workers: Results and methodology* (ILO, 2015), providing data as of 2013, reported that there were 232 million international migrants, 207 million migrants of working age and 150 million migrant workers, indicating increases from 2013 to 2017 of nearly 20 per cent for international migrants, 13 per cent for migrants of working age and 9 per cent for migrant workers. The substantially higher number of international migrants in 2017 could be attributed to migrant population growth as well as other factors.[8]

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7   277 million international migrants have been calculated based on 258 million international migrants (UN, 2017) plus about 19 million refugees (UNHCR, 2018). The population estimates for this report were obtained from UN/DESA. Not all countries include refugees in their population estimates; for those that do not, a correction factor has been applied based on migrant populations aged 15 and older, resulting in an estimate of about 19 million refugees. That is why this ILO estimate is slightly different from the Office of the United Nations High Commissioner for Refugees (UNHCR) estimate of 19.9 million refugees (of all ages).

8   Another potential reason for the substantially higher numbers of migrants in 2017 is the inclusion of about 19 million refugees in the 2017 population estimates, which was partially done for the 2013 estimates. The population estimates for this report were obtained from UN/DESA. Not all countries include refugees in their population estimates; for those that do not, a correction factor has been applied based on migrant populations aged 15 and older (explained in Part II of this report), resulting in an estimate of about 19 million refugees. That is why this ILO estimate is slightly different from the Office of the United Nations High Commissioner for Refugees (UNHCR) estimate of 19.9 million refugees (of all ages). In the 2013 ILO global estimates on migrant workers, refugees were also included, as covered by UN DESA and national sources used. In this 2nd edition, a more systematic approach has been used. The inclusion of refugees in the usual resident population (provided they meet the usual residency criteria) and the migrant workforce was in accordance with the Principles and Recommendations for Population and Housing Censuses, Revision 3, issued by the United Nations in 2015, and the Guidelines concerning statistics of international labour migration, adopted by the 20th ICLS in October 2018 (see https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648922.pdf). Since refugees often migrate for reasons other than to find work and given they also face employment restrictions depending on their refugee status, they often have a lower labour force participation rate than other migrant groups. Thus, the estimates are able to better capture refugees in the workplace. For other methodological differences between the 2013 and 2017 estimates, see part II.

Figure 2.1 Global estimates of the stock of international migrants and migrant workers, 2017[9]

Migrants
(277 million)

Migrants 15+
(234 million)

Migrant workers
(164 million)

2.1.2 Gender composition

Men constitute a larger proportion of migrant workers. While in 2017 the stock of male migrant workers aged 15 and older was estimated at 95.7 million (58.4 per cent), the corresponding estimate for women was 68.1 million (41.6 per cent) (table 2.1 and figure 2.2). The larger share of men among migrant workers reflects their larger share among migrants of both sexes and their higher labour force participation compared to women in general; indeed, men constituted 54.2 per cent of the stock of migrant population aged 15 and

older in 2017 (table 2.2). Although migrant women tend to have higher labour force participation rates than non-migrant women, both groups lag behind men. In 2017, the average labour force participation was estimated at 63.5 per cent for migrant women and 48.1 per cent for non-migrant women (figure 2.3), while the average labour force participation was estimated at 75.5 per cent for migrant men and 75.2 per cent for non-migrant men. The higher proportion of men among migrant workers may also be explained by the higher likelihood of women to migrate for reasons other than employment (for instance, for family reunification or humanitarian reasons), as well as by possible discrimination against women that reduces their employment opportunities. Furthermore, societal stigmatization, the discriminatory impacts of policies and legislations, and violence and harassment not only undermine a female's access to decent work but can also result in low pay, the absence of equal pay and the undervaluation of female-dominated sectors (ILO, 2018a).

Overall in 2017, male migrants of working age and male migrant workers each constituted 4.5 per cent of the world's male population of working age and male population of workers. The corresponding figures for female migrants were 3.8 per cent and 5.0 per cent, respectively (table 2.3). The equal share of male migrants in both populations relates to their labour force participation rate being equal to that of male non-migrants, while the higher share of female migrants of working age in the female population of workers relates to their higher labour force participation rate compared to female non-migrants.

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9   In contrast to the global and regional estimates produced in 2013, the estimates for 2017 included 19 million refugees in its population based on UNHCR data: http://popstats.unhcr.org/en/overview. For methodological explanations, see part II.

TABLE **2.1**

GLOBAL ESTIMATES OF MIGRANT WORKERS, 2017 (MILLIONS OF PERSONS AGED 15+)			
	Total	Male	Female
Total population aged 15+	5,591	2,796	2,795
Migrant population aged 15+	234.0	126.8	107.2
Non-migrant population aged 15+	5,357	2,670	2,688
Total workers	3,465	2,103	1,362
Migrant workers	163.8	95.7	68.1
Non-migrant workers	3,301	2,007	1,294

Note: Numbers are in millions. Workers and migrant workers include both the employed and unemployed.

TABLE **2.2**

SEX COMPOSITION OF MIGRANT WORKERS, 2017 (PERCENTAGE)	Total	Male	Female
Total population aged 15+	100	50.0	50.0
Migrant population aged 15+	100	54.2	45.8
Non-migrant population aged 15+	100	49.8	50.2
Total workers	100	60.7	39.3
Migrant workers	100	58.4	41.6
Non-migrant workers	100	60.8	39.2

Note: Includes persons aged 15+; workers and migrant workers include both the employed and unemployed.

Figure 2.2 Global distribution of migrant workers, by sex, 2017
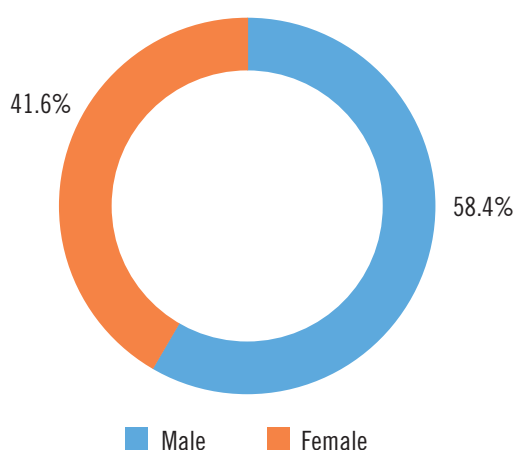
Figure 2.3 Global labour force participation rates of migrants and non-migrants, by sex, 2017
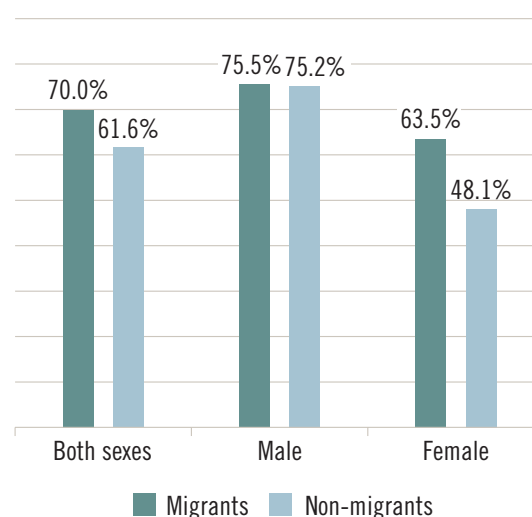
TABLE **2.3**

POPULATION RATIOS AND LABOUR FORCE PARTICIPATION RATES OF MIGRANT WORKERS, BY SEX, 2017 (PERCENTAGE)	Total	Male	Female
Migrants as a proportion of population 15+	4.2	4.5	3.8
Migrant workers as a proportion of all workers	4.7	4.5	5.0
Labour force participation rate for total population	62.0	75.2	48.7
Labour force participation rate for migrant population	70.0	75.5	63.5
Labour force participation rate for non-migrant population	61.6	75.2	48.1

Note: Includes persons aged 15+; workers and migrant workers include both the employed and unemployed; labour force participation rate is the ratio of the number of workers (employed plus unemployed) to the working age population (population aged 15+).

From 2013 to 2017, the share of men among migrant workers increased: while in 2013, 55.7 per cent of migrant workers were men (ILO, 2015), this figure increased to 58.4 per cent in 2017. This is consistent with the increased share of men among the stock of migrants of working age from 51.9 per cent in 2013 to 54.2 per cent in 2017. The labour force participation rates of both men and women migrants were lower in 2017 as compared to 2013, falling from 78.0 to 75.5 per cent for men and from 67.0 to 63.5 per cent for women (ILO, 2015). Approximately similar reductions were observed for non-migrant men and women over the same time period. These findings concur with the general global trend of falling labour force participation (ILOSTAT, 2018). Countries that are influential in determining the global average, such as India, China and the United States, have been experiencing falling rates although divergent patterns have also been observed.[10] A variety of demand and supply-side factors may be at play, ranging from changes in technology, international trade and demographics to labour market and immigration policies. In the case of developing countries, urbanization, a shift away from agriculture, adverse climatic conditions and insecurity have contributed to falling rates (AUC, 2017). Migrants, on the other hand, tend to display higher labour force participation than non-migrants, so that even among countries experiencing falling participation rates, such as the United States, migrants have maintained their rates of labour force participation (ILO, 2015; Krause and Sawhill, 2017; OECD/ILO, 2018a).

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10 Labour force participation rate by sex and age -- ILO modelled estimates, July 2017 (%). See: https://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page27.jspx?subject=ILOEST&indicator=EAP_2WAP_SEX_AGE_RT&datasetCode=A&collectionCode=ILOEST&_afrLoop=2480208046534547&_afrWindowMode=0&_afrWindowId=s5yswg1vp_1#!%40%40%3Findicator%3DEAP_2WAP_SEX_AGE_RT%26_afrWindowId%3Ds5yswg1vp_1%26subject%3DILOEST%26_afrLoop%3D2480208046534547%26datasetCode%3DA%26collectionCode%3DILOEST%26_afrWindowMode%3D0%26_adf.ctrl-state%3Ds5yswg1vp_78

2.1.3 Age composition

Of the 164 million migrant workers, 141.7 million (86.5 per cent) consist of prime-age adults (aged 25-64). Youth workers (aged 15-24) make up 8.3 per cent and older workers (aged 65 plus) make up 5.2 per cent of migrant workers. The age compositions of male and female migrant workers are very similar (figure 2.4).

Prime-age adults are more able to migrate to a foreign country and stand to gain more than younger (less years of experience) and older (less economically active years remaining) migrants. Individuals tend to move in their most productive years, which could be a great advantage for destination countries, as well as for origin countries in terms of remittances. The fact that the great majority of migrant workers consist of prime-age adults suggests that some countries of origin are losing part of their workforce, which could have negative growth implications.

Figure 2.4 Age composition of migrant workers, 2017 (percentage)
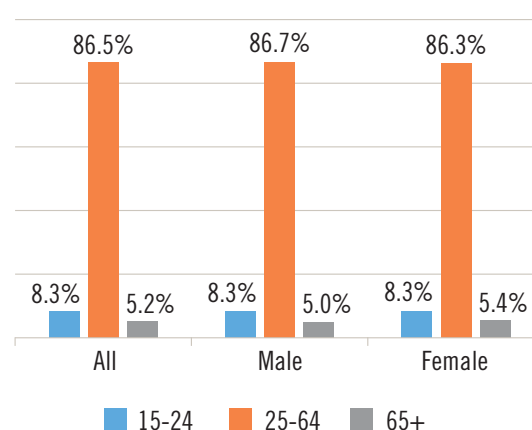
TABLE **2.4**

GLOBAL ESTIMATES OF MIGRANT WORKERS BY AGE, 2017 (MILLIONS)			
Age	Total	Male	Female
15-24	13.6	7.9	5.7
25-64	141.7	82.9	58.8
65+	8.5	4.8	3.7
All (15+)	163.8	95.7	68.1

Note: Migrant workers include both the employed and unemployed.

2.2 Estimates by income level of countries

2.2.1 Overall picture

Countries are classified into four groups, according to their per capita income level: low-income, lower middle-income, upper middle-income and high-income countries;[11] a list of the countries in each income group is given in Annex A, table A.1.1. In 2017, the number of workers worldwide was estimated at 3.5 billion, 17.3 per cent of whom were in high-income countries, 39.1 per cent in upper middle-income countries, 35.1 per cent in lower middle-income countries and 8.4 per cent in low-income countries. The variations in the number of workers in the four income groups depends mainly on the differences in the number and population size of the countries in each group. Labour force participation rates also differ across income groups. However, this variation is smaller than the variation in the distribution of workers and is therefore unlikely to be a source of variation for the distribution of workers. Furthermore, lower labour force participation rates are observed for higher income countries. The lowest labour force participation rate is estimated for lower middle-income countries (57.4 per cent), while the highest rate is estimated for low-income countries (75.0 per cent) and the global average is estimated at 62.0 per cent.

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11 Using World Bank classification (based on per capita gross national income, calculated using the Atlas method.); see https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=XM-XD-XT-XN.

Migrant workers are heavily concentrated in high-income countries. Of the estimated 163.8 million migrant workers in 2017, 111.2 million (67.9 per cent) were found in high-income countries, 30.5 million (18.6 per cent) in upper middle-income countries, 16.6 million (10.1 per cent) in lower middle-income countries and 5.6 million (3.4 per cent) in low-income countries (table 2.5). The large presence of migrant workers in high-income countries is reflected in their share of all workers in those countries, at 18.5 per cent, whereas in lower-income countries their share varies between 1.4 and 2.2 per cent.

From 2013 to 2017, the share of migrant workers in high-income countries declined from 74.7 to 67.9 per cent while their share in upper middle-income countries increased (table 2.6), suggesting a shift in the number of migrant workers from high-income to lower income countries. However, the share of migrant workers in the labour force of host countries increased in all income groups except lower middle-income countries, where there was minimal change. In high-income countries, falling numbers of international migrant workers were observed simultaneously with their higher share in the labour force as a result of the sharp fall in the labour force participation of non-migrants. Caution should, however, be exercised in making comparisons across years by country income group, as countries in a given income group may change over time, which may partly explain the observed trends (Annex A). Higher economic growth in some upper middle-income

TABLE **2.5**

MIGRANT WORKERS BY INCOME LEVEL OF COUNTRIES, 2017					
	Low-income	Lower middle-income	Upper middle-income	High-income	All
Total workers	292.6	1,216.7	1,355.9	599.5	3,464.7
Total workers in %	8.4	35.1	39.1	17.3	100
Labour force participation rate for total population	75.0	57.4	65.0	60.3	62.0
Migrant population aged 15+	8.1	27.7	43.6	154.6	234.0
Migrant population aged 15+ in %	3.5	11.8	18.6	66.1	100
Migrants as a proportion of population aged 15+	2.1	1.3	2.1	15.5	4.2
Migrant workers	5.6	16.6	30.5	111.2	163.8
Migrant workers in %	3.4	10.1	18.6	67.9	100.0
Labour force participation rate for migrant population	68.5	59.9	69.9	71.9	70.0
Migrant workers as a proportion of all workers	1.9	1.4	2.2	18.5	4.7

Note: Numbers are given in millions for the following categories: total workers, migrant population aged 15+ and migrant workers; workers and migrant workers include both the employed and unemployed; the labour force participation rate is the ratio of workers (employed plus unemployed) to working age population (population aged 15+).

TABLE **2.6**

MIGRANT WORKERS, RATIOS BY INCOME LEVEL OF COUNTRIES, 2013 AND 2017					
	Low-income	Lower middle-income	Upper middle-income	High-income	All
Migrant workers in % - 2017	3.4	10.1	18.6	67.9	100
Migrant workers in % - 2013	2.4	11.3	11.7	74.7	100
Migrant workers as a proportion of all workers - 2017	1.9	1.4	2.3	18.5	4.7
Migrant workers as a proportion of all workers - 2013	1.4	1.5	1.4	16.3	4.4

Note: Workers and migrant workers include both the employed and unemployed.

countries may have contributed to the trends observed along with changes in high-income country migration regulations.[12]

The distribution of migrant workers across countries of various incomes is determined by the size of migration flows to these countries and the labour force participation of migrants. The distribution of migrants of working age across the four income groups is rather uneven, with the majority of migrants of working age (66.1 per cent) found in high-income countries (table 2.5). Consequently, migrants of working age constitute 15.5 per cent of the population (15 and older) of high-income countries but only 1 to 2 per cent of the populations of lower-income countries.

The difference between the share of migrants in the working-age population and their share in the labour force of host countries is slight, except for the highest income group, and is related to the difference in the labour force participation rates of migrants and non-migrants. As noted above and demonstrated in figure 2.6, migrants tend to have higher labour force participation rates than non-migrants. However, the gap is particularly large in upper middle-income and high-income countries, where non-migrants have greater access to various forms of social assistance and private transfers, and where migrants may earn higher wages than in their countries of origin that make them more likely to take up work (Krause and Sawhill, 2017). In low-income countries, non-migrants have a higher participation rate (75.2 per cent) than migrants (68.5 per cent), this may be due to more pervasive levels of informal employment among migrants that go unrecorded (OECD/ILO, 2018).

Figure 2.5 Migrant workers by income level of countries, 2017
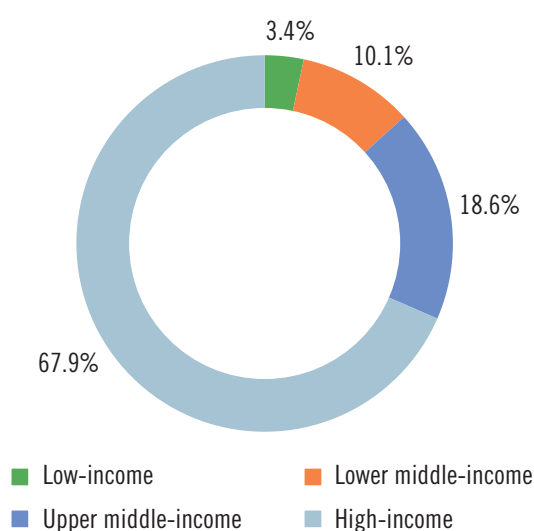
Figure 2.6 Labour force participation rates of migrants and non-migrants, by income level of countries, 2017

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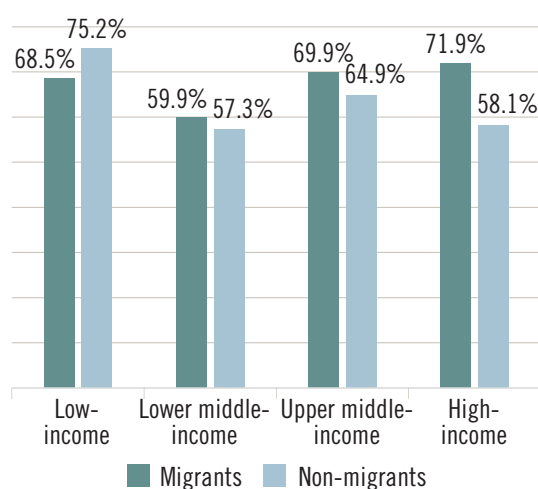
12 For GDP growth, see World Bank figures at https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=XT.

2.2.2 Gender composition

Male and female migrant workers are heavily concentrated in high-income countries. Of the 95.7 million male migrant workers, 63.7 million (66.6 per cent) are in high-income countries, 17.4 million (18.2 per cent) in upper middle-income countries, 10.9 million (11.4 per cent) in lower middle-income countries and 3.6 million (3.8 per cent) in low-income countries (table 2.7). Similarly, of the 68.1 million female migrant workers, 47.5 million (69.7 per cent) are in high-income countries, 13.1 million (19.2 per cent) in upper middle-income countries, 5.6 million (8.3 per cent) in lower middle-income countries and 1.9 million (2.8 per cent) in low-income countries. In terms of the share of the workforce in host countries, male and female migrant workers make up 19.0 per cent and 18.0 per cent, respectively, of the workforce in high-income countries, but only 1 to 2 per cent of the workforce in lower-income countries.

The heavy concentration of male and female migrant workers in high-income countries reflects the share of migrants of working age in those countries: indeed, 66.6 per cent of migrant men of working age and 65.3 per cent of migrant women of working age are in high-income countries, each constituting 14.0 per cent of the population of working age in those countries but only 1 to 2 per cent of the population of working age in lower-income countries.

The labour force participation rates of migrant men in various income groups tend to be either higher than or similar to those of non-migrant men (figure 2.8); the largest gap between migrant and non-migrant men, at nearly 9 per cent, is observed in high-income countries, where the rates of migrant and non-migrant men are 75.3 per cent and 66.7 per cent, respectively. The labour force participation rates of migrant women, on the other

TABLE **2.7**

MIGRANT WORKERS BY SEX AND INCOME LEVEL OF COUNTRIES, 2017					
Panel A **Male**	Low-income	Lower middle-income	Upper middle-income	High-income	All
Total workers	**155.2**	**829.0**	**782.8**	**335.8**	**2,102.8**
Total workers in %	7.4	39.4	37.2	16.0	100.0
Labour force participation rate for total population	81.1	77.4	75.1	68.2	75.2
Migrant population aged 15+	4.2	14.6	23.4	84.5	126.8
Migrant population aged 15+ %	3.3	11.5	18.5	66.6	100.0
Migrants as a proportion of population aged 15+	2.0	1.2	1.9	14.0	4.5
Migrant workers	3.6	10.9	17.4	63.7	95.7
Migrant workers in %	3.8	11.4	18.2	66.6	100
Labour force participation rate for migrant population	86.8	75.0	74.3	75.3	75.5
Migrant workers as a proportion of all workers	2.3	1.3	2.2	19.0	4.5
Panel B **Female**	Low-income	Lower middle-income	Upper middle-income	High-income	All
Total workers	**137.4**	**387.7**	**573.2**	**263.7**	**1,361.9**
Total workers in %	10.1	28.5	42.1	19.4	100.0
Labour force participation rate for total population	69.2	36.9	54.9	52.5	48.7
Migrant population aged 15+	3.9	13.1	20.2	70.1	107.2
Migrant population aged 15+ %	3.6	12.2	18.8	65.3	100.0
Migrants as a proportion of population aged 15+	2.0	1.2	1.9	14.0	3.8
Migrant workers	1.9	5.6	13.1	47.5	68.1
Migrant workers in %	2.8	8.3	19.2	69.7	100.0
Labour force participation rate for migrant population	48.7	43.1	64.7	67.8	63.5
Migrant workers as a proportion of all workers	1.4	1.5	2.3	18.0	5.0

Note: Numbers are given in millions for the following categories: total workers, migrant population aged 15+ and migrant workers; workers and migrant workers include both the employed and unemployed; labour force participation rate is the ratio of the number of workers (employed plus unemployed) to working age population (population aged 15+).

hand, increase with the income level of countries, the highest rate being estimated in high-income countries at 67.8 per cent. In all groups except low-income countries, female migrants have higher rates than non-migrant women (figure 2.8). Compared to men, migrant women have lower labour force participation rates and a larger variation in rates by income group.

The lower labour force participation rate of women, as noted above, may reflect their higher likelihood of being tied movers due to social, cultural and economic reasons and the higher barriers to women's mobility compared to men's (ILO, 2016c). The larger variations in women's rates among country income groups may be related to the selective nature of migration; women who migrate to higher-income countries are less likely to be tied movers and more likely to migrate with an intention to work than women migrants to lower-income countries (OECD/ILO, 2018). The availability of more employment opportunities for women migrants in higher-income countries may be another reason for their higher labour force participation rates in those countries.

TABLE **2.8**

LABOUR FORCE PARTICIPATION RATES OF MIGRANTS AND NON-MIGRANTS, BY SEX AND INCOME LEVEL OF COUNTRIES, 2017 (PERCENTAGE)	Migrants			Non-migrants		
	Total	Male	Female	Total	Male	Female
Low-income	68.5	86.8	48.7	75.2	81.0	69.6
Lower middle-income	59.9	75.0	43.1	57.3	77.5	36.8
Upper middle-income	69.9	74.3	64.7	64.9	75.1	54.7
High-income	71.9	75.3	67.8	58.1	66.7	50.0
Total	**70.0**	**75.5**	**63.5**	**61.6**	**75.2**	**48.1**

Note: Labour force participation rate is the ratio of the number of workers (employed plus unemployed) to working age population (population aged 15+).

Figure 2.7 Migrant workers, by sex and income level of countries, 2017
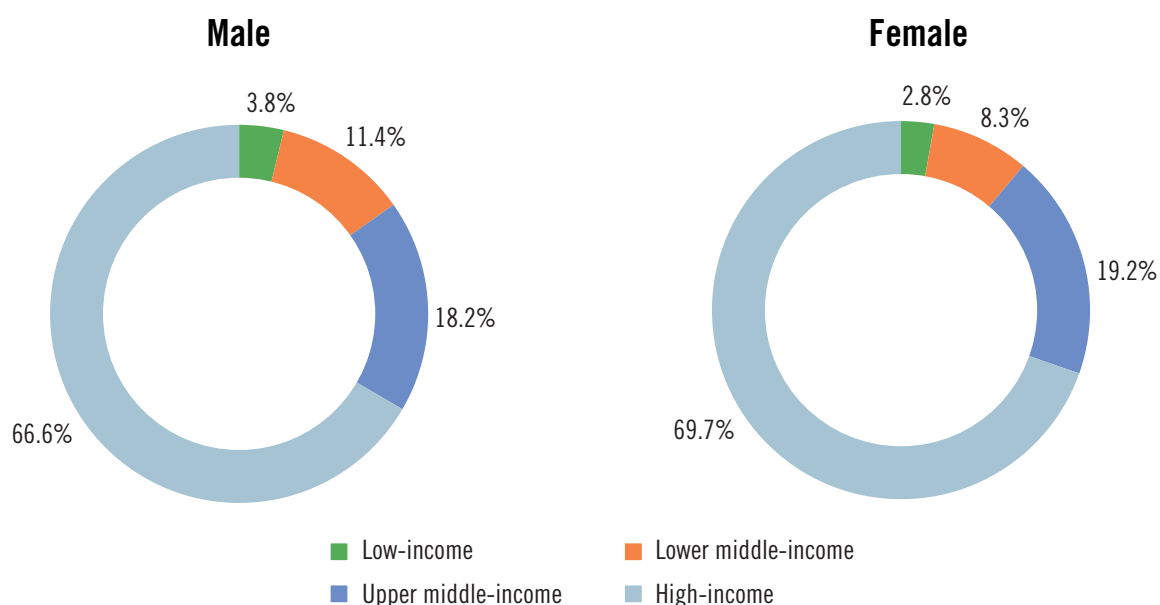
Figure 2.8 Labour force participation rates of migrants and non-migrants, by sex and income level of countries, 2017

Male

86.8% 81.0% 75.0% 77.5% 74.3% 75.1% 75.3% 66.7%

Low-income | Lower middle-income | Upper middle-income | High-income

Female

69.6% 48.7% 43.1% 36.8% 64.7% 54.7% 67.8% 50.0%

Low-income | Lower middle-income | Upper middle-income | High-income

■ Migrants ■ Non-migrants
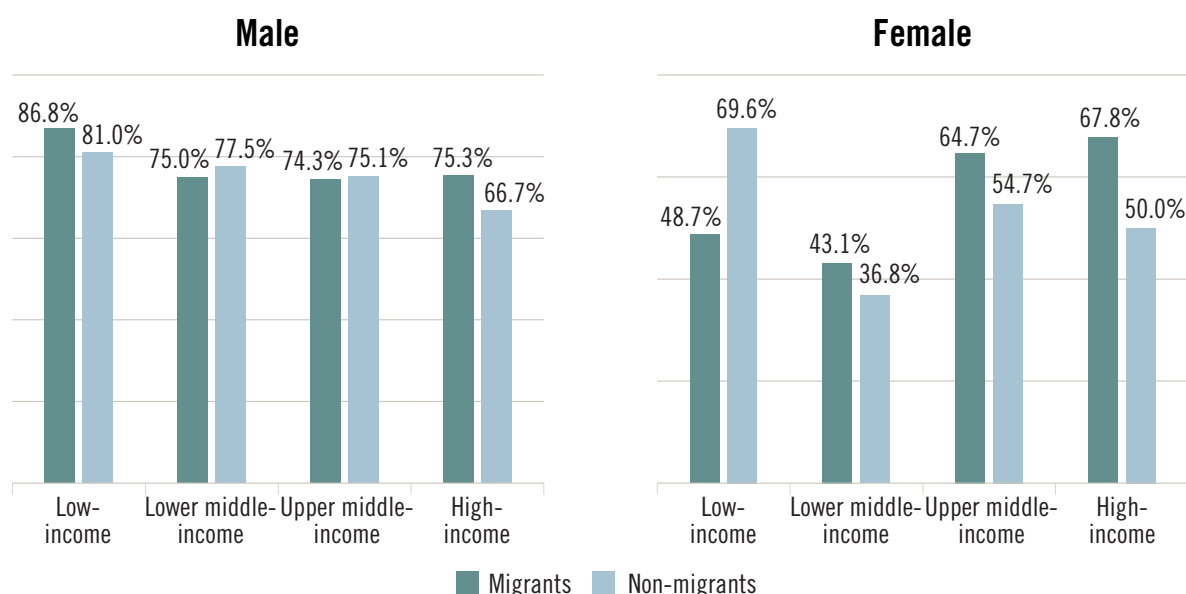
2.2.3 Age composition

Among migrant workers, prime-age adults aged 25-64 constitute the largest age group in all country income groups (table 2.9), while at the same time a higher share of prime-age adults among migrant workers is found in higher-income destinations (table 2.10). For instance, while in low-income countries that boast 4.2 million migrant workers, 75.5 per cent of migrant workers are prime age adults, this ratio increases to 88.0 per cent among high-income countries, where 97.8 million out of 111.2 million migrant workers are adults aged 25-64. By contrast, it is relatively more likely for youth workers

(aged 15-24) and older workers (aged 65 plus) to be found in lower income countries. For instance, while only 3.0 per cent of prime-age migrant workers are in low-income countries, this percentage is twice as high, at 5.9 and 7.1 per cent, among migrant youth workers and migrant workers aged 65 years and over, respectively. These findings may suggest that prime-age adults tend to choose higher income countries over lower income countries as their destination, possibly due to greater employment opportunities in the former.

The age composition of male and female migrants in countries with different income levels is broadly similar,

TABLE **2.9**

MIGRANT WORKERS BY AGE, SEX AND INCOME LEVEL OF COUNTRIES, 2017 (MILLIONS)					
	Low-income	Lower middle-income	Upper middle-income	High-income	All
All (Male+Female)					
Age 15-24	0.8	1.7	3.2	7.9	13.6
Age 25-64	4.2	13.6	26.1	97.8	141.7
Age 65+	0.6	1.3	1.1	5.4	8.4
Male					
Age 15-24	0.5	1.1	1.9	4.4	7.9
Age 25-64	2.8	8.9	14.9	56.5	83.1
Age 65+	0.4	1.0	0.6	2.8	4.8
Female					
Age 15-24	0.3	0.5	1.3	3.5	5.6
Age 25-64	1.4	4.7	11.2	41.4	58.7
Age 65+	0.2	0.4	0.5	2.6	3.7

Note: Migrant workers include both the employed and unemployed.

TABLE **2.10**

AGE COMPOSITION OF MIGRANT WORKERS, BY SEX AND INCOME LEVEL OF COUNTRIES, 2017 (PERCENTAGE)					
	Low-income	Lower middle-income	Upper middle-income	High-income	All
All (Male+Female)					
Age 15-24	14.6	10.0	10.7	7.1	8.3
Age 25-64	75.5	81.9	85.6	88.0	86.5
Age 65+	9.9	8.1	3.7	4.9	5.2
Male					
Age 15-24	14.6	10.2	10.9	6.9	8.3
Age 25-64	75.6	80.9	85.4	88.7	86.7
Age 65+	9.8	8.9	3.7	4.4	5.0
Female					
Age 15-24	14.7	9.7	10.3	7.4	8.3
Age 25-64	75.1	83.7	86.0	87.1	86.3
Age 65+	10.1	6.6	3.7	5.5	5.4

Note: Migrant workers include both the employed and unemployed.

in that prime-age adults constitute the main migrant group, whose share ranges between 75.5 per cent in low income countries and 88.0 per cent in high-income countries. However, it is slightly more likely for young and older female migrant workers to be found in low-income countries than their male counterparts. Nevertheless, female migrant labour force participation rates in low-income countries remain considerably lower than those of male migrant workers. Limited job opportunities and age discrimination may be among the possible reasons.

2.3 Regional estimates

2.3.1 Overall picture

Countries are categorized into 11 broad geographic subregions (table 2.11), the sizes of which differ according to the number and population sizes of their component countries. For instance, of the 3.5 billion global workforce, nearly 50 per cent are located in two subregions: 928.2 million (26.8 per cent) in Eastern Asia and 721 million (20.8 per cent) in Southern Asia, the former including China and the latter including India, the two most populous countries in the world.

In terms of the distribution of migrant workers, three subregions stand out: the Arab States, Northern, Southern and Western Europe, and Northern America (figure 2.9). Of the 163.8 million migrant workers, 23 per cent are in Northern America, 23.9 per cent are in Northern, Southern and Western Europe and 13.9 per cent are in the Arab States. The other regions that host sizeable numbers of

migrant workers (between 5 and 7 per cent) include Eastern Europe, Sub-Saharan Africa, South-Eastern Asia and the Pacific, and Central and Western Asia. By contrast, Northern Africa hosts less than 1 per cent of migrant workers.[13]

The subregion with the largest share of migrant workers as a proportion of all workers is the Arab States (40.8 per cent), followed by Northern America (20.6 per cent) and Northern, Southern and Western Europe (17.8 per cent). Other subregions with significant numbers of migrants in the labour force include Central and Western Asia (11.1 per cent) and Eastern Europe (9.1 per cent).

The number of migrants of working age and their labour force participation rates help determine the share of migrant workers in a region's workforce. The three regions that are home to 60.8 per cent of migrant workers are also home to about the same proportion of migrants of working age. Of the 234 million migrants of working age, 23.4 per cent are in Northern America, 23.2 per cent are in Northern, Southern and Western Europe and 12.9 per cent are in the Arab States. They constitute 27.8 per cent of the population of the Arab States, 18.7 per cent of the population of Northern America and 14.2 per cent of the population of Northern, Southern and Western Europe. The population share of migrants in other regions ranges between 0.6 and 8.6 per cent. The global average, as noted above, is 4.2 per cent.

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13 Regions also differ in terms of the origin of migrants; in Africa, for instance, international migration largely takes the form of intra-regional migration (AUC, 2017), as does migration in Northern, Southern and Western Europe (IOM, 2017), but this is not the case in North America, which attracts migrants from various regions, especially Latin America and the Caribbean, Asia and Europe.

TABLE **2.11**

MIGRANT WORKERS BY BROAD SUBREGION, 2017											
	Northern Africa	Sub-Saharan Africa	Latin America and the Caribbean	Northern America	Northern, Southern and Western Europe	Eastern Europe	Central and Western Asia	Arab States	Eastern Asia	South-Eastern Asia and the Pacific	Southern Asia	All
Total workers	**73.6**	**404.5**	**309.9**	**182.9**	**219.6**	**145.4**	**77.2**	**55.7**	**928.2**	**346.3**	**721.2**	**3,464.7**
Total workers (percentage)	2.1	11.7	8.9	5.3	6.3	4.2	2.2	1.6	26.8	10.0	20.8	100
Labour force participation rate for total population	46.8	69.2	64.1	62.2	57.7	59.5	59.1	51.4	68.0	68.0	54.1	62.0
Migrant population aged 15+	2.0	17.3	7.4	54.8	54.2	19.3	11.2	30.2	8.5	16.8	12.1	234.0
Migrant population aged 15+ (percentage)	0.9	7.4	3.2	23.4	23.2	8.3	4.8	12.9	3.7	7.2	5.2	100
Migrants as a proportion of population aged 15+	1.3	3.0	1.5	18.7	14.2	7.9	8.6	27.8	0.6	3.3	0.9	4.2
Migrant workers	1.1	11.9	4.5	37.7	39.2	13.2	8.5	22.7	6.0	11.6	7.4	163.8
Migrant workers (percentage)	0.7	7.2	2.7	23.0	23.9	8.1	5.2	13.9	3.6	7.1	4.5	100
Labour force participation rate for migrant population	56.7	68.6	60.3	68.8	72.2	68.5	76.0	75.4	69.9	68.8	60.7	70.0
Labour force participation rate for non-migrant population	46.7	69.2	64.2	60.7	55.2	58.7	57.6	42.2	68.0	68.0	54.1	61.6
Migrant workers as a proportion of all workers	1.6	2.9	1.4	20.6	17.8	9.1	11.1	40.8	0.6	3.3	1.0	4.7

Note: Numbers are given in millions for: total workers, migrant population aged 15+ and migrant workers; workers and migrant workers include both the employed and unemployed; labour force participation rate is the ratio of the number of workers (employed plus unemployed) to working age population (population aged 15+).

Figure 2.9 Distribution of migrant workers, by broad subregion, 2017 (total male + female)

- Arab States
- Central and Western Asia
- Eastern Asia
- Eastern Europe
- Latin America and the Caribbean
- Northern Africa
- Northern America
- Northern, Southern and Western Europe
- South-Eastern Asia and the Pacific
- Southern Asia
- Sub-Saharan Africa
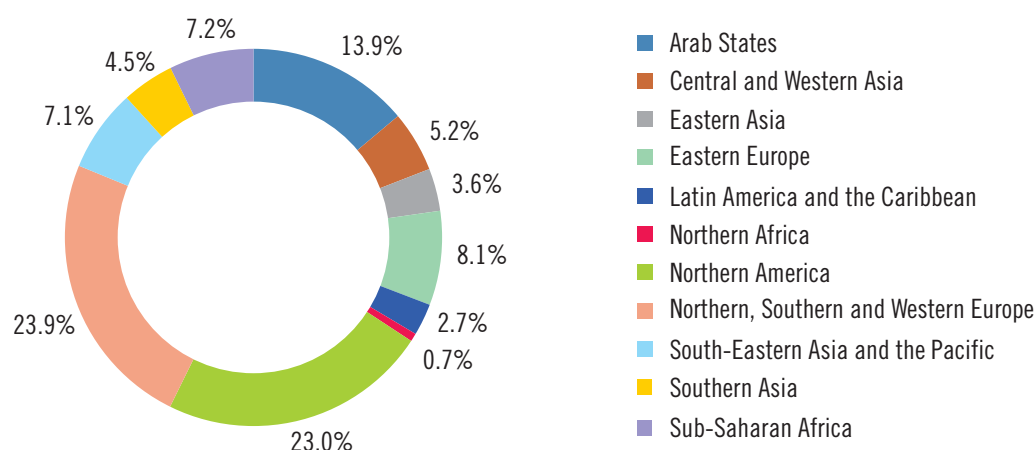
The labour force participation rate of migrants (aged 15 and older) is higher than that of non-migrants in 9 subregions out of 11 (figure 2.10). The largest difference is in the Arab States, where the labour force participation rate of migrants (75.4 per cent) is substantially higher than that of non-migrants (42.2 per cent), followed by Northern, Southern and Western Europe where the difference is 17 percentage points.

Apart from Eastern Asia and South-Eastern Asia and the Pacific, where the difference between the labour force participation rates of migrants and non-migrants is negligible, and Sub-Saharan Africa and Latin America, where non-migrants have somewhat higher rates, the difference between the rates of migrants and non-migrants in other regions of the world is between 7 and 10 percentage points.

Figure 2.10 Labour force participation rates of migrants and non-migrants, by broad subregion, 2017

■ Migrants ■ Non-migrants
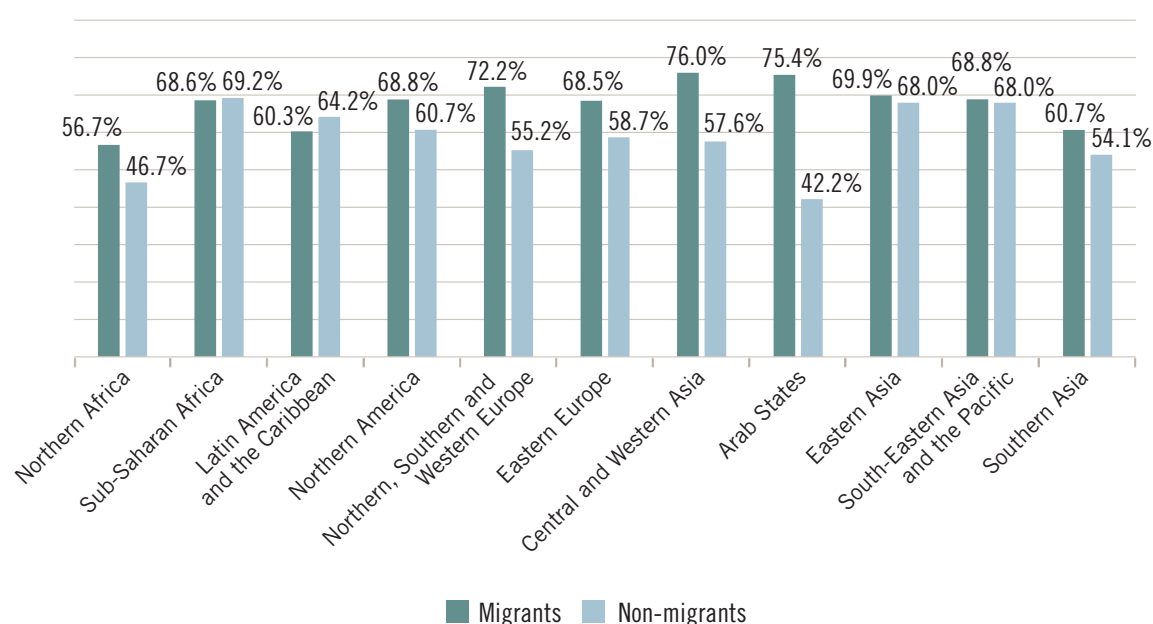
The 2017 shares of migrants in each region's workforce were very similar to 2013 levels, with at most a 1 per cent increase in all regions expect the Arab States (5.2 per cent) and Northern, Southern and Western Europe (1.4 per cent) (table 2.12). As noted above, the overall increase across all regions was 0.3 percentage points, from 4.4 per cent to 4.7 per cent. The demand for (male) workers in the Arab States explains the sharp increase in the share of migrant workers in this region (UN, 2017). Many of these workers are manual labourers, located mostly in the construction sector (ILO, 2016c; ILO, 2017).

2.3.2 Gender composition

Of the 95.7 million male migrant workers, 20.2 million (21.1 per cent) are in Northern America, 19.0 million (19.8) per cent are in Northern, Southern and Western

Europe and 19.1 million (20.0 per cent) are in the Arab States (table 2.13; figure 2.11). By contrast, of the 68.1 million female migrant workers, 17.5 million (25.8 per cent) are in Northern America and 20.2 million (29.6 per cent) are in Northern, Southern and Western Europe, while only 5.3 per cent are in the Arab States. Hence, while the sex composition of migrant workers in Northern America and in Northern, Southern and Western Europe is nearly equal, it is substantially tilted towards men in the Arab States, where 8 out of every 10 migrant workers are men. This largely depends, however, on the sectors analysed. Sectors largely dependent on manual labour are often over-represented by male migrant workers, whereas the 2015 global and regional estimates of migrant workers showed that a large portion of domestic workers are female migrant workers, although the Arab States host the largest number of male migrant domestic workers of any subregion (ILO, 2015).

TABLE **2.12**

MIGRANT WORKERS AS A PROPORTION OF ALL WORKERS, 2013 AND 2017 (PERCENTAGE)											
	Northern Africa	Sub-Saharan Africa	Latin America and the Caribbean	Northern America	Northern, Southern and Western Europe	Eastern Europe	Central and Western Asia	Arab States	Eastern Asia	South-Eastern Asia and the Pacific	Southern Asia	All
2013	1.1	2.2	1.5	20.2	16.4	9.2	10.0	35.6	0.6	3.5	1.3	4.4
2017	1.6	2.9	1.4	20.6	17.8	9.1	11.1	40.8	0.6	3.3	1.0	4.7

TABLE **2.13**

MIGRANT WORKERS BY SEX AND BROAD SUBREGION, 2017	Northern Africa	Sub-Saharan Africa	Latin America and the Caribbean	Northern America	Northern, Southern and Western Europe	Eastern Europe	Central and Western Asia	Arab States	Eastern Asia	South-Eastern Asia and the Pacific	Southern Asia	All
Male												
Total workers	**56.4**	**213.4**	**182.7**	**98.8**	**118.7**	**76.6**	**46.8**	**46.7**	**522.8**	**200.6**	**539.4**	**2,102.8**
Total workers (percentage)	2.7	10.1	8.7	4.7	5.6	3.6	2.2	2.2	24.9	9.5	25.7	100
Labour force participation rate for total population	72.0	73.9	77.3	68.4	63.9	67.7	73.7	77.1	75.5	79.6	79.1	75.2
Migrant population aged 15+	1.3	9.7	3.9	27.7	27.3	9.5	5.5	22.3	4.3	9.0	6.5	126.8
Migrant population aged 15+ (percentage)	1.0	7.7	3.0	21.8	21.5	7.5	4.3	17.6	3.4	7.1	5.1	100
Migrants as a proportion of population aged 15+	1.6	3.4	1.6	19.2	14.7	8.4	8.6	36.8	0.6	3.6	1.0	4.5
Migrant workers	0.9	8.3	2.8	20.2	19.0	6.3	3.5	19.1	3.2	6.4	6.0	95.7
Migrant workers in (percentage)	0.9	8.7	2.9	21.1	19.8	6.5	3.7	20.0	3.4	6.7	6.3	100
Labour force participation rate for migrant population	70.9	85.2	72.2	73.0	69.5	66.0	64.8	85.9	75.7	71.1	92.1	75.5
Labour force participation rate for non-migrant population	72.0	73.6	77.4	67.4	63.0	67.9	74.6	72.0	75.5	79.9	79.0	75.2
Migrant workers as a proportion of all workers	1.6	3.9	1.5	20.4	16.0	8.2	7.6	41.0	0.6	3.2	1.1	4.5
Female												
Total workers	**17.3**	**191.1**	**127.2**	**84.1**	**101.0**	**68.9**	**30.5**	**9.0**	**405.3**	**145.7**	**181.8**	**1,361.9**
Total workers (percentage)	1.3	14.0	9.3	6.2	7.4	5.1	2.2	0.7	29.8	10.7	13.4	100
Labour force participation rate for total population	21.8	64.5	51.5	56.3	51.7	52.4	45.4	18.9	60.2	56.6	27.9	48.7
Migrant population aged 15+	0.8	7.6	3.6	27.2	26.9	9.8	5.8	7.9	4.3	7.8	5.6	107.2
Migrant population aged 15+ (percentage)	0.7	7.1	3.3	25.3	25.1	9.2	5.4	7.4	4.0	7.3	5.2	100
Migrants as a proportion of population aged 15+	1.0	2.6	1.4	18.2	13.8	7.5	8.6	16.5	0.6	3.0	0.9	3.8
Migrant workers	0.3	3.6	1.7	17.5	20.2	7.0	5.0	3.6	2.7	5.2	1.3	68.1
Migrant workers (percentage)	0.4	5.3	2.5	25.8	29.6	10.2	7.3	5.3	4.0	7.6	2.0	100
Labour force participation rate for migrant population	33.0	47.3	47.4	64.6	75.0	70.8	86.5	45.7	64.0	66.3	24.1	63.5
Labour force participation rate for non-migrant population	21.7	65.0	51.6	54.4	48.0	50.9	41.5	13.6	60.2	56.3	28.0	48.1
Migrant workers as a proportion of all workers	1.5	1.9	1.3	20.9	20.0	10.1	16.4	39.9	0.7	3.6	0.7	5.0

Note: Numbers are given in millions for the following categories: total workers, migrant population aged 15+ and migrant workers; workers and migrant workers include both the employed and unemployed; labour force participation rate is the ratio of the number of workers (employed plus unemployed) to working age population (population aged 15+).

Figure 2.11 Distribution of migrant workers, by sex and broad subregion, 2017

Male

8.7%
6.3%
6.7%
19.8%
21.1%
0.9%
2.9%
6.5%
3.4%
3.7%
20.0%

Female

2.0%
5.3%
5.3%
7.3%
4.0%
10.2%
2.5%
0.4%
25.8%
29.6%
7.6%

- ■ Arab States
- ■ Central and Western Asia
- ■ Eastern Asia
- ■ Eastern Europe
- ■ Latin America and the Caribbean
- ■ Northern Africa
- ■ Northern America
- ■ Northern, Southern and Western Europe
- ■ South-Eastern Asia and the Pacific
- ■ Southern Asia
- ■ Sub-Saharan Africa
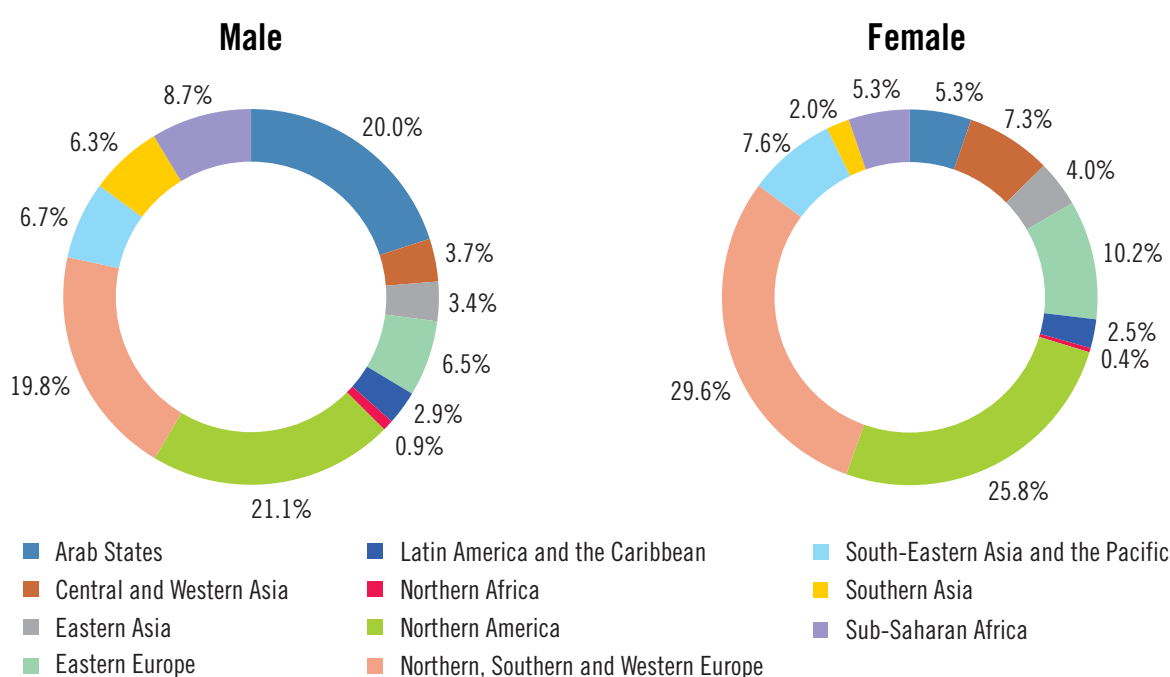
Male and female migrant workers make up about 20 per cent of the labour force in Northern America and about 16.0 per cent and 20.0 per cent, respectively, of the labour force in Northern, Southern and Western Europe. In the Arab States, this proportion increases to a staggering 41.0 per cent among men and 39.9 per cent among women, despite the fact that only 5.3 per cent of female migrant workers worldwide are found in the Arab States. The high proportion of female migrant workers in the labour force in the Arab States results from the substantially higher labour force participation rate of migrant women (45.7 per cent) in this region compared to non-migrant women (13.6 per cent), as well as the increased demand for migrant workers as domestic workers and hospitality staff (figure 2.12). Another region where migrant workers make up a significant proportion of the female workforce (16.4 per cent) is Central and Western Asia: although this region also receives a relatively small share of female migrant workers (7.3 per cent), the substantially higher labour force participation of migrant women of working age (86.5 per cent) compared to non-migrant women (41.5 per cent) translates into a high share for migrant women in the labour force. In general, migrant men and women tend to have higher labour force participation rates than non-migrant men and women. Out of 11 subregions, this is true for 7 subregions in the case of men and 8 subregions in the case of women.

Migrants – both men and women – in countries where they constitute a relatively higher share of the population tend to boast higher labour force participation rates than they do in countries where they constitute lower population shares and higher rates than non-migrants in general. Although there are various reasons why people migrate, the most prominent reason is for work. Hence, it is no surprise that migrants tend to enjoy higher labour force participation rates than non-migrants and choose destinations where they expect to find work fit for their skills, resulting in higher participation rates.

2.3.3 Age composition

In all regions, prime-age adults (aged 25-64) constitute the largest group of migrant workers (table 2.14), with a share ranging from 76.9 to 92.5 per cent (table 2.15). In the Arab States, Northern America and Northern, Southern and Western Europe, which boast large numbers of migrant workers, the share of prime-age adults in migrant populations ranges from 86.5 to 92.5 per cent, the highest share being estimated for the Arab States. The share of youth workers (aged 15-24) among migrant workers, on the other hand, ranges from 5.8 to 13.7 per cent, while that of older workers (65 plus) ranges from 1.4 to 10.1 per cent. Southern Asia stands out as the region where the share of youth workers (13.0 per cent) and older workers (10.1 per cent) in the migrant worker population is relatively higher than in other regions of the world.

Figure 2.12 Labour force participation rates of migrants and non-migrants, by sex and broad subregion, 2017

Male

Female

■ Migrants   ■ Non-migrants
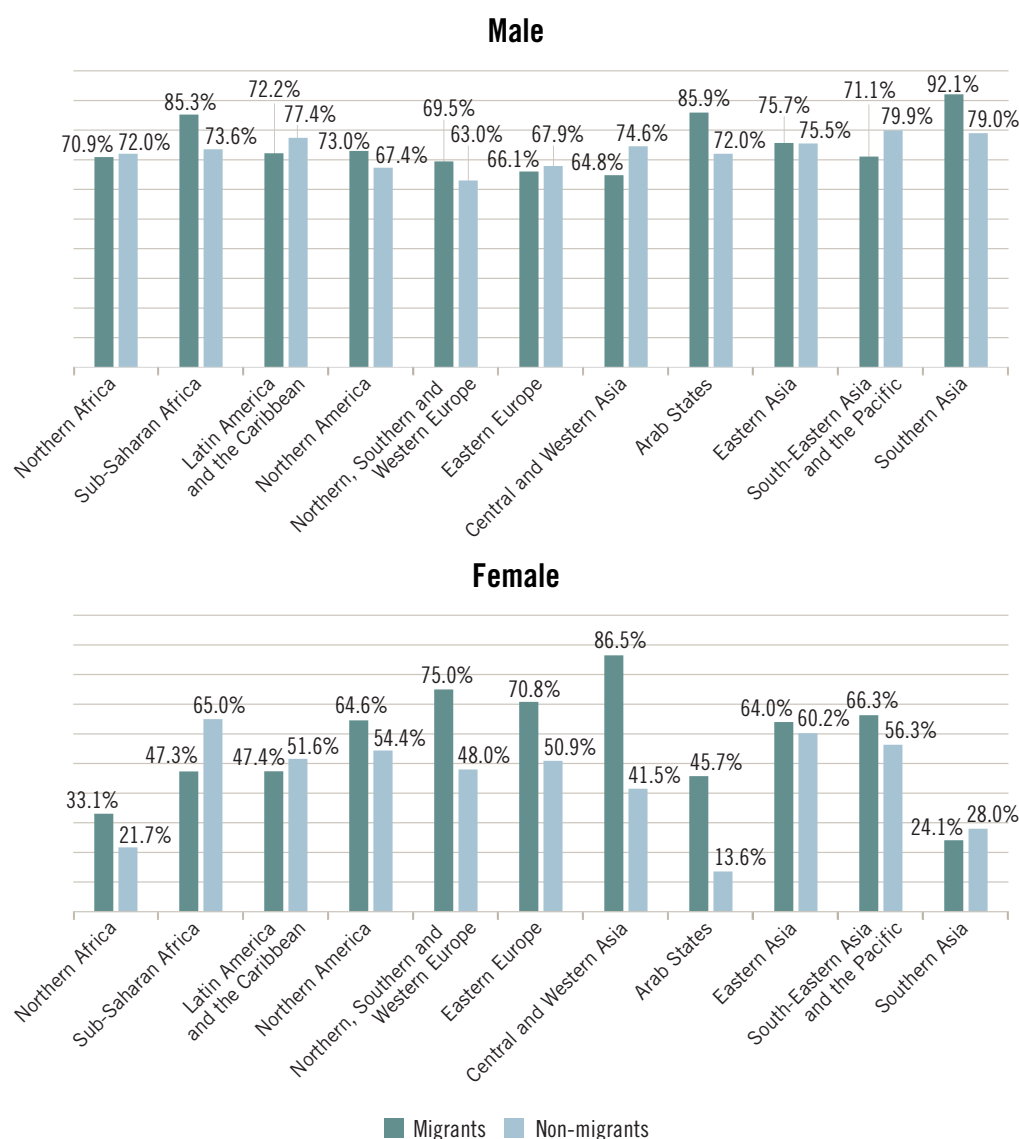
The distribution of migrant workers of different age groups across the 11 subregions of the world shows that Northern America and Northern, Southern and Western Europe host substantial numbers of migrant workers of all three age groups, ranging from 19.1 to 29.6 per cent (table 2.16). The Arab States also host a substantial proportion of migrant workers of prime age (14.8 per cent) but smaller proportions of youth workers (10.2 per cent) and older workers (3.8 per cent). For older and younger workers, Sub-Saharan Africa turns out to be an important host region, for which a possible explanation is the increased rates of internal migration throughout Africa and the policies established to facilitate cross-border mobility (GMG, 2014; AUC, 2017).

For prime-age male migrant workers, again three regions stand out: Northern America, Northern, Southern and Western Europe and the Arab States. For younger workers, Sub-Saharan Africa is added to these three regions. For older workers, the Arab States is replaced by Sub-Saharan Africa. For women of all age groups, the two prominent regions are Northern America and Northern, Southern and Western Europe. The Arab States do not offer employment opportunities to any female age group, particularly for older women, at the same rate offered to male migrant workers. Eastern Europe has become an important host country for prime-age female migrant workers, Central and Western Asia for younger female migrant workers.

TABLE **2.14**

MIGRANT WORKERS BY AGE, SEX AND BROAD SUBREGION, 2017 (MILLIONS)											
	All (Male+Female)				Male				Female			
	15-24	25-64	65+	All	15-24	25-64	65+	All	15-24	25-64	65+	All
Arab States	1.4	21.0	0.3	22.7	1.1	17.7	0.3	19.1	0.3	3.3	0.1	3.6
Central and Western Asia	1.2	7.0	0.4	8.5	0.5	2.9	0.1	3.5	0.7	4.1	0.2	5.0
Eastern Asia	0.7	4.8	0.4	6.0	0.4	2.6	0.2	3.2	0.3	2.2	0.2	2.7
Eastern Europe	0.8	11.9	0.5	13.2	0.4	5.6	0.3	6.3	0.4	6.3	0.3	7.0
Latin America and the Caribbean	0.5	3.7	0.3	4.5	0.3	2.3	0.2	2.8	0.2	1.4	0.1	1.7
Northern Africa	0.1	1.0	0.1	1.1	0.1	0.8	0.0	0.9	0.0	0.2	0.0	0.3
Northern America	2.6	32.6	2.5	37.7	1.4	17.5	1.3	20.2	1.2	15.2	1.2	17.5
Northern, Southern and Western Europe	2.8	34.8	1.6	39.2	1.4	16.8	0.8	19.0	1.4	17.9	0.8	20.2
South-Eastern Asia and the Pacific	1.2	9.8	0.7	11.6	0.6	5.4	0.4	6.4	0.5	4.4	0.3	5.2
Southern Asia	1.0	5.7	0.7	7.4	0.8	4.6	0.6	6.0	0.2	1.0	0.1	1.3
Sub-Saharan Africa	1.4	9.5	0.9	11.9	1.0	6.6	0.6	8.3	0.5	2.9	0.3	3.6
Total	**13.6**	**141.7**	**8.5**	**163.8**	**7.9**	**82.9**	**4.8**	**95.7**	**5.7**	**58.8**	**3.7**	**68.1**

Note: Migrant workers include both the employed and unemployed.

TABLE **2.15**

MIGRANT WORKERS: RATIOS BY AGE, SEX AND BROAD SUBREGION, 2017 (PERCENTAGE)											
	All (Male+Female)				Male				Female			
	15-24	25-64	65+	All	15-24	25-64	65+	All	15-24	25-64	65+	All
Arab States	6.1	92.5	1.4	100	6.0	92.7	1.3	100	7.0	91.1	1.9	100
Central and Western Asia	13.7	82.1	4.2	100	14.0	82.1	4.0	100	13.5	82.0	4.4	100
Eastern Asia	12.3	80.4	7.3	100	12.1	81.1	6.8	100	12.5	79.6	7.9	100
Eastern Europe	6.1	89.7	4.2	100	6.1	89.7	4.2	100	6.2	89.7	4.1	100
Latin America and the Caribbean	11.5	82.4	6.1	100	11.6	82.3	6.1	100	11.3	82.6	6.1	100
Northern Africa	5.8	88.4	5.8	100	5.7	88.9	5.4	100	6.0	86.8	7.2	100
Northern America	6.9	86.5	6.6	100	6.9	86.4	6.6	100	6.9	86.4	6.7	100
Northern, Southern and Western Europe	7.1	88.8	4.1	100	7.1	88.8	4.1	100	7.0	88.8	4.2	100
South-Eastern Asia and the Pacific	9.9	84.3	5.8	100	10.1	84.4	5.5	100	9.8	84.2	6.0	100
Southern Asia	13.0	76.9	10.1	100	13.0	77.1	9.9	100	12.7	76.4	10.9	100
Sub-Saharan Africa	12.2	80.1	7.7	100	12.0	80.3	7.7	100	12.7	79.5	7.8	100
Total	**8.3**	**86.5**	**5.2**	**100**	**8.3**	**86.7**	**5.0**	**100**	**8.3**	**86.3**	**5.4**	**100**

Note: Migrant workers include both the employed and unemployed.

TABLE **2.16**

DISTRIBUTION OF MALE AND FEMALE MIGRANT WORKERS, BY AGE AND BROAD SUBREGION, 2017 (PERCENTAGE)											
	All (Male+Female)				Male				Female			
	15-24	25-64	65+	All	15-24	25-64	65+	All	15-24	25-64	65+	All
Arab States	10.2	14.8	3.8	13.9	14.3	21.4	5.3	20.0	4.4	5.6	1.8	5.3
Central and Western Asia	8.6	4.9	4.3	5.2	6.2	3.5	2.9	3.7	11.9	7.0	6.1	7.3
Eastern Asia	5.4	3.4	5.2	3.6	4.9	3.2	4.6	3.4	6.0	3.7	5.9	4.0
Eastern Europe	6.0	8.4	6.5	8.1	4.8	6.8	5.5	6.5	7.6	10.6	7.8	10.2
Latin America and the Caribbean	3.8	2.6	3.2	2.7	4.1	2.8	3.5	2.9	3.4	2.4	2.8	2.5
Northern Africa	0.5	0.7	0.8	0.7	0.6	1.0	1.0	0.9	0.3	0.4	0.5	0.4
Northern America	19.2	23.0	29.6	23.0	17.6	21.0	28.0	21.1	21.4	25.8	31.9	25.8
Northern, Southern and Western Europe	20.4	24.5	19.1	23.9	17.1	20.3	16.1	19.8	25.0	30.5	23.0	29.6
South-Eastern Asia and the Pacific	8.4	6.9	7.9	7.1	8.1	6.5	7.3	6.7	9.0	7.4	8.6	7.6
Southern Asia	7.0	4.0	8.8	4.5	9.8	5.6	12.4	6.3	3.0	1.8	4.0	2.0
Sub-Saharan Africa	10.6	6.7	10.9	7.2	12.4	8.0	13.4	8.7	8.0	4.9	7.7	5.3
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Note: Migrant workers include both the employed and unemployed.

PART II
ESTIMATE METHODOLOGY

3. Methodology phase I. Data sources and input data

In 2015, the ILO developed a comprehensive methodology for generating global and regional estimates of international migrant workers and issued the first edition of *ILO global estimates on migrant workers: Results and methodology* (ILO, 2015), including global and regional estimates of international migrant workers and international migrant domestic workers, with reference year 2013.[14] The present edition of the *ILO global estimates on international migrant workers: Results and methodology*, with reference year 2017, follows the general methodology of the earlier edition, with the following main differences:

1. The present edition is confined to international migrant workers. It has not been considered necessary at this stage to repeat the estimation of numbers of international migrant domestic workers.
2. A greater effort has been made to construct benchmark data on population size, number of international migrants and number of workers at the level of individual country or subnational territory, covering the same standard list of units but accounting for practically the entire working age population of the world for the three variables involved (working age population, stock of international migrants and labour force).
3. An attempt has been made to define the target population more clearly and uniformly. For instance, in all countries, where possible, a migrant is defined as a foreign-born person (rather than a non-citizen) and target populations are adjusted, where necessary, to include refugees, who are important because of their increasing numbers and barriers to entry into the labour force. Apart from this, the estimates are confined to workers in the usually resident population and generally do not cover

irregular migrants due to the existing data collection practices in some countries.

4. The methodology of estimating international migrant workers been made more robust and precise. It involves estimating a single parameter, which can be expected to be larger than but close to 1.0 and reasonably stable across countries and demographic groups: *the ratio of labour force participation rate among migrants to that rate in the general population*. This estimation has been generated for the male population globally and for suitably defined strata, such as by geographical region and by country income group.
5. For the estimation of female international migrant workers, the parameter used was: *the cross-product ratio*. This is defined as the ratio of workers to non-workers among migrants relative to the corresponding ratio among non-migrants. The reason for the use of a different parameter for women was the fragility of national data on women compared to data on men. The national data on international migrant workers in the present edition tended to underestimate the number of female international migrant workers relative to the estimates used in the earlier edition, where special attention was devoted to collecting data on international migrant domestic workers, many of whom are women and migrants.

Sections 3 and 4 below describe in some detail the input data and the methodology used for the 2017 edition of the *ILO global* estimation *estimates on migrant workers*, while section 5 provides an assessment of data quality in terms of its completeness and consistency and the plausibility of the resulting estimates. The ILO regional groupings and the list of national data sources on international migrant workers used for global estimation are presented, respectively, in Annexes A and B, while the availability of data by country is presented in Annex C.

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14 Previously, ILO had estimated the economically active population among international migrants (based on United Nations estimates of the total stock of migrants) at the regional and global levels in 2000; those estimates were updated in 2007 and 2010.

The ILO global estimates on international migrant workers were produced in close collaboration with UN/DESA, based on three sets of benchmark data, with reference year 2017, covering virtually all countries and territories: (a) benchmark data on world population; (b) benchmark data on the stock of international migrants; and (c) benchmark data on the labour force. The benchmark data were supplemented by national data sources covering individual countries and databases, each covering a limited set of countries but providing information on the specific target variable, i.e., international migrant workers. The various sources of benchmark and national data are shown in figure 3.1 and described in detail below.

3.1 Benchmark data

The present edition of the *ILO global estimates on international migrant workers* covers 188 countries and territories, representing about 99.9 per cent of the world population in 2017. The 2013 edition covered 176 countries and territories, representing about 99.8 per cent of the world's working age population. The following 15 countries or territories were added or separately treated: Channel Islands (United Kingdom), Djibouti, French Polynesia, Guam (United States), Montenegro, New Caledonia (France), Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, South Sudan, Taiwan (China), Tonga, United States Virgin Islands and Vanuatu. By contrast, 3 French territories were not treated as separate data points in the present edition (Guadeloupe, Martinique, Reunion).

The countries and territories are grouped into geographic regions according to the ILO field structure: each region includes the countries and territories covered by the ILO regional office and the non-ILO member countries in the geographic region, together with broad and detailed subregional groupings. The countries and territories are also grouped by level of income as defined in the World Bank's country income classification.[15]

The global estimation procedure began with the creation of a standard list of the 188 countries and territories, with codes identifying each of them, along with their ILO region and income group. The list is given in Annex A, table A.4.1, below. It forms the basic "template" into which are put in a uniform manner the benchmark data and all substantive data required for global estimates of international migrant workers (numbers of persons, working age persons, persons in labour force, international migrants, international migrant workers, etc.).

3.1.1 Benchmark population data

The benchmark population data were derived from UN population estimates and projections issued in *World Population Prospects: The 2017 Revision.*[16] The dataset includes population estimates and projections generated for a total of 233 countries or areas, with detailed results published for 201 countries or areas with 90,000 inhabitants or more in 2017. For the remaining 32 countries or areas

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15 The World Bank updates its country income classification once a year; for the purpose of ILO regional groupings, the latest World Bank income classification is used to recreate consistent series over time (i.e. the same country composition across years).

16 https://www.un.org/development/desa/publications/world-population-prospects-the-2017-revision.html.

Figure 3.1 Data sources: benchmark and national data

Benchmark data (2017)		National data (2010-2017)	
ILO POP	ILO population by sex and age based on UN estimates and projections, July 2017 http:www.ilo.org/ilostat/		ILOSTAT Database on Labour migration
UN MIGR	International Migrant Stock, 2017 Revision, UNDESA https://esa.un.org/unmigration		EUROSTAT Migrant integration statistics – labour market indicators http://ec.europa.eurostat/statistics-explained/index.php/Migrant_integration_statistics_%E2%80%93_labour_market_indicators#Further_Eurostat_information
ILO LFPR	Labour force by sex and age, ILO modelled estimates, July 2017 http://www.ilo.org/ilostat/		OECD International Migration Database https://data.oecd.org/migration/foreign-born-participation-rates.htm

Other national data sources |

that fell below that threshold, only total population and growth rates are made available. The methodology of the population estimates and projections is described in a separate document.[17]

Constructing the population database for the ILO global estimation of international migrant workers involved a number of steps:

1. consolidating and formatting UN population data for 2017 by sex and 10-year age group in the form of a standard template;
2. adding data on refugees reported separately in the UN database on the stock of international migrants, where not included in UN population data;
3. harmonizing UN population data with data on working-age population used in the ILO labour force database.

The output of this exercise was a set of templates, each covering exactly the same list of 188 countries and territories and providing the size of the working-age population (P_{2017}) by sex and 10-year age intervals.

3.1.2 Benchmark migrant data

The benchmark migrant data were derived from the UN dataset *Trends in International Migrant Stock: The 2017 Revision*,[18] which provides estimates of the international migrant stock for 232 countries or areas by age, sex and origin for the mid-point (1 July) of each year: 1990, 1995, 2000, 2005, 2010, 2015 and 2017. The dataset contains separate estimates of refugee stock (including asylum seekers), calculated using estimates for the end-2016 of refugee populations or persons in refugee-like situations prepared by UNHCR and, where appropriate, by the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). A description of the dataset and methodology for estimating the migrant stock is provided in a separate document.[19]

The preparation of the benchmark migrant data used for the preparation of the *ILO global estimates on international migrant workers* involved three steps:

1. **Filling and standardizing templates for the list of countries or territories for which data on the number of persons and the corresponding number of migrants were available in the UN migrant stock dataset.** The UN migrant stock dataset contained 29 very small territories, for which migration data have been separately

provided but for which information on population size was not available separately in the UN population and migration database. In order to standardize the list for the present purpose, those 29 small territories were dropped and their migrant population was incorporated into the dataset by distributing them among countries in the standard list within strata defined in terms of detailed subregion and income level group.

2. **Adding data on the refugee stock, which required updating the UN data on refugees and estimating the sex-age breakdown.** In the UN migrant stock dataset, 19.6 million refugees from UNHCR are included, of whom 14.3 million have already been included in the population data (hence presumably also in the recorded numbers of migrants), while 5.3 million originating from 96 of the countries or territories on the list have not been included. These numbers were therefore added to the reported numbers of migrants and also to the corresponding population figures.

3. **Reducing the effect of differences in the definition of "migrant".** In most countries, a foreign-born person is taken to be an international migrant, while in some other countries a migrant is taken to mean a foreigner, i.e. a non-citizen of the country concerned. The general UN preference is the former definition, defining migrants on the basis of country of birth. In order to reduce the effect of differences among countries in the definition of "international migrant" used and to be closer to the definition based on country of birth, a correction factor has been applied to the reported numbers of migrants. The correction factor was obtained from the data of countries in which the numbers of migrants were available on the basis of both definitions. These data indicated that the number of migrants defined according to country of birth is generally significantly larger than the number of migrants defined according to country of citizenship. For about 90 countries in the Organisation for Economic Co-operation and Development (OECD) database covering this question, the ratio of the two numbers was approximately F=1.8, which was rounded to F=1.5 as a conservative estimate. This means that there were in general relatively more foreign-born citizens than there were native-born non-citizens. Accordingly, the factor F was used to inflate the reported number of migrants in countries, where migrant status was defined on the basis of country of citizenship (rather than country of birth).[20]

The output of this exercise was a set of templates, each covering exactly the same list of 188 countries and territories and providing the size of the international

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17 https://population.un.org/wpp/Publications/Files/WPP2017_Methodology.pdf.

18 http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates17.shtml

19 http://www.un.org/en/development/desa/population/migration/data/estimates2/docs/MigrationStockDocumentation_2017.pdf.

20 It should be mentioned that the correction factor, F, was applied only to the reported number of migrants; it did not affect base population numbers.

migrant stock, adjusted for refugees and asylum seekers and harmonized to a common definition of international migrants of working age based on country of birth (M_{2017}), by sex and 10-year age intervals.

The benchmark templates, M, are in fact accompanied by their corresponding population templates P(M), where the paired population template is used to align the benchmark migrant data (M) to the benchmark population data P, where necessary. For example, if the reference year of a benchmark data point is 2016, it is aligned to the reference year 2017 by:

$$M_{2017} = P_{2017} \times \frac{M_{2016}}{P(M)_{2016}}$$

which means applying a proportionality factor for alignment.

3.1.3 Benchmark labour force data

The present 2017 edition of the ILO labour force estimates and projections covers 189 countries. The basic data are single-year labour force participation rates by sex and age groups, of which 10 groups are defined by 5-year age intervals and the last age group is defined as 65 years and above. The reference period is 1990-2016 for the estimates and 2017-2030 for the projections. The relevant data are available on ILOSTAT.[21]

The estimation model 1990-2016 scrutinizes available labour force participation rates, selects those deemed sufficiently comparable and imputes values for missing data using a multi-step procedure. The projection model 2017-2030 involves four types of approaches, including judgemental methods based on scenarios, time-series extrapolations, regression models and cohort-based models. The methods are described in a separate document.[22]

The preparation of the benchmark labour force for the generation of the *ILO global estimates on migrant workers* was greatly facilitated by the fact that the data were obtained from the same organization; thus, the country name and number of items were identical to the template list of 188 countries and territories. The data were accordingly consolidated into 10-year age groups by sex, with minimal further processing. The output was a set of templates, each covering exactly the same list of 188 countries and territories and providing standardized labour force data by sex and 10-year age groups, labelled here as W_{2017}.

As in the case of benchmark migrant data, the benchmark labour force data, W, are accompanied by the corresponding population templates P(W). The paired population template is used to align the benchmark labour force data (W) to the benchmark population data P, where necessary. For example, if the population value P(W) differs from the corresponding benchmark population number (P), the benchmark labour force number (W) is aligned to that benchmark population number, applying a proportionality factor:

$$W_{2017} = P_{2017} \times \frac{W'_{2017}}{P(W)_{2017}}$$

One effect of this alignment is to assign the same labour force participation rate of the population P(W) to the non-aligned population (P-P(W)). Where the non-aligned population consists of a particular group with specific labour market characteristics, such as refugees and asylum seekers, the proportional alignment procedure may introduce some bias as it would inflate the number of labour force participants among refugees and asylum seekers.

3.2 National data

The next step was to compile as many national data points as possible on the main variable of global estimation, namely, international migrant workers. The data were obtained mostly by extracting the information from existing international and regional databases. Additional national data points were collected from publications or websites of national statistical offices.

3.2.1 ILO International Labour Migration Statistics database in ASEAN

The ILMS database in ASEAN is produced by the ILO's ASEAN TRIANGLE project, with support from the Canadian Government. The current database contains 19 tables on the presence and movements of international migrants and international migrant workers.[23] It was designed on the basis of national consultations to provide a comprehensive, comparable and tractable source of statistical information for policy-makers and researchers to profile and benchmark international migrants and international migrant workers in, from and throughout the ASEAN region.

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21 https://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afrLoop=2106346438166971&_afrWindowMode=0&_afrWindowId=null#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D2106346438166971%26_afrWindowMode%3D0%26_adf.ctrl-state%3Ddful5lx9s_428 https://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afrLoop=2106346438166971&_afrWindowMode=0&_afrWindowId=null#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D2106346438166971%26_afrWindowMode%3D0%26_adf.ctrl-state%3Ddful5lx9s_428.

22 https://www.ilo.org/ilostat-files/Documents/LFEP.pdf.

23 http://apmigration.ilo.org/asean-labour-migration-statistics.

The database includes data on the stock of international migrants, by sex, age group and labour force status, for 10 countries in the ASEAN region: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam. The database includes additional information on international migrants of working age, by sex and education, by country of origin, by economic activity, by occupation, by status in employment and by employment-related income, as well as on inflows of migrants by sex and country of origin, by sex and education, by economic activity and by occupation.

The data use varying time periods, but most data were available for the reference year 2017 of the present estimates. Also, users of the data are advised that the numbers provided have been gathered from a variety of different and often incompatible sources. Not only do these employ different sampling and data collection methods but they also sometimes rely on widely different definitions. In this sense, many of the underlying sources are not directly comparable or combinable. For that reason, the ILMS database provides descriptive notes on the different definitions underpinning the data in its "sources" sheet. Users are advised to take full and careful note of these differences and to report them clearly and transparently in any resulting work, wherever possible, so as to avoid any error or misinterpretation.

3.2.2 EUROSTAT migrant integration statistics

EUROSTAT online migrant integration statistics provide labour market data from the 28 Member States of the European Union (EU) from 2008 to 2017.[24] Indicators include labour force participation rate, employment rate, youth employment, unemployment, youth unemployment and long-term unemployment. The main source of the data is the EU labour force survey (EU/LFS), a large quarterly sample survey that covers the resident population living in civilian non-institutional households.

Data are provided by country of birth, distinguishing between:

■ **Native born**: population born in the reporting country
■ **Foreign born**: population born outside the reporting country, subdivided into:
  ● **EU-born**: population born in an EU Member State other than the reporting country
  ● **Non-EU-born**: population born in non-EU countries

Data are also provided by citizenship, distinguishing between:

■ **Nationals**: population of citizens of the reporting country
■ **Foreign citizens**: population of non-nationals, subdivided into:
  ● **EU citizens**: population of EU Member States other than the reporting country
  ● **Non-EU citizens**: citizens of non-EU countries

3.2.3 OECD international migration databases

OECD manages several databases dedicated to international migration: the OECD international migration database; the Database on Immigrants in OECD Countries (DIOC); and the Database on Immigrants in OECD and non-OCED Countries (DIOC-E).[25]

The main database used for the present study was the OECD international migration database providing key statistics on stocks and flows of immigrants, 2006-16 (or 2007-17) and labour market outcomes of immigrants, 2013-17.[26] In particular, the database provides quarterly data on labour force participation rates by place of birth and sex in OECD countries from 2012 to 2017. The data are not adjusted for seasonal variations, but for the present estimates the annual averages are used.

The OECD database covers 34 countries, including Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Republic of Korea, Slovakia, Slovenia, Spain, Sweden, Turkey, the United Kingdom and the United States. More data by country of origin are also available in an accompanying database.

The sources of data for European countries and Turkey are Eurostat LFSs; for Australia, Canada, Israel and New Zealand, their respective national LFSs; for Chile, the Encuesta de Caracterización Socioeconómica Nacional (CASEN); for Mexico, the Encuesta Nacional de Ocupación y Empleo (ENOE); and for the United States, the Current Population Survey (CPS).

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24 https://ec.europa.eu/eurostat/statistics-explained/index.php/Migrant_integration_statistics_–_labour_market_indicators.

25 http://www.oecd.org/els/mig/oecdmigrationdatabases.htm.
26 http://www.oecd.org/els/mig/keystat.htm.

3.2.4 Other national data

In addition, other national data were collected on international migrant workers from national publications or websites. Overall, national data points on international migrant workers were available for 61 countries and territories from 5 types of data sources, with reference years ranging from 2009 to 2017. The distribution by type of data source is shown in figure 3.2. It can be observed that most of the data sources were LFSs,

followed by population censuses and other types of household surveys. There were also a few countries for which data points were obtained from administrative sources and other types of sources.

The distribution of data points by reference year is shown in figure 3.3. It can be observed that the reference year for the bulk of the data sources was 2016 or 2017, while for most of the other sources it was 2014 or 2015 and in just a few cases it was an earlier year.

Figure 3.2 Number of countries or territories with data points on migrant workers by type of source
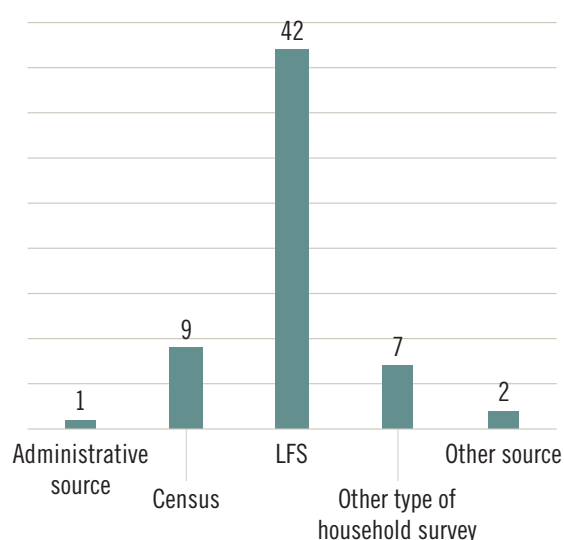
Figure 3.3 Number of countries or territories with data points on migrant workers, by reference year
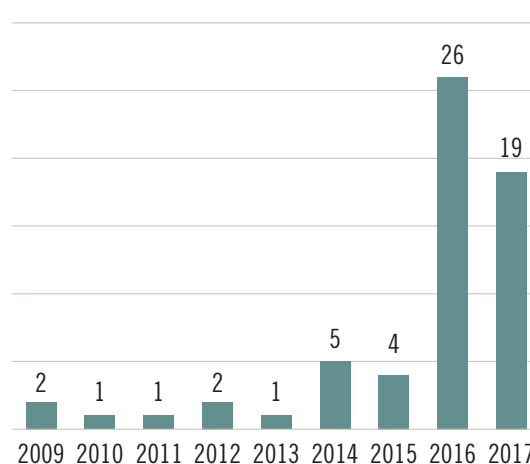
4. Methodology phase 2. Data imputation and production of global and regional estimates

4.1 General approach

The general approach in the 2017 edition of *ILO global estimates on international migrant workers* consisted of using the benchmark and national data described in section 3 above to calculate standardized data points on international migrant workers (MW) for each of the 188 countries and territories in the ILO list, and thereafter to aggregate the results to produce global estimates by region and income level of countries and territories.

The calculations were carried out for men and women separately, using different methodologies as explained

below. In each case, the calculations involved various degrees of editing and imputation. The general approach is schematically illustrated in table 4.1.

As noted in table 4.1, the methodology for calculating standardized data points on migrant workers was different for men than for women. The reason for this is as follows. The 2013 edition of the *ILO global estimates on migrant workers* included separate estimates on domestic migrant workers. This feature implied special efforts in the collection of data on domestic workers in general, using not only data on industry and occupation but also data on relationship

TABLE **4.1**

CALCULATION OF STANDARDIZED NATIONAL DATA POINTS FOR 2017		
Variable	Name	Calculation
Benchmark data		
Population aged 15+ years	P	UN population data, July 2017, consolidated to ILO templates, augmented by number of refugees, and harmonized to working age population used in ILO labour force database
Migrant population aged 15+ years	M	UNDESA, International Migrant Stock, 2017 Revision, consolidated to ILO templates, augmented by number of refugees, and harmonized to a common definition of international migrant based on country of birth
Labour force aged 15+ years	W	ILO modelled estimates, Labour force by sex and age, July 2017
Standardized national data points		
Migrant workers - Male 15+ years	MW Male	"(1) M x Edited/imputed data point [MW/M] or (2) W x Edited/imputed data point [MW/W]"
Migrant workers - Female 15+ years	MW Female	(3) Solution of 2013 cross-product ratio fit to 2017 national data points P, M and W

to head or reference person of the household, where one of the categories after "spouse", "son/daughter" and "other relatives" is a category of non-relatives, often labelled as "domestic worker". Tapping this additional source of data helped to improve the coverage of domestic workers, many of whom were women and migrants.

Because separate data on migrant domestic workers was not a requirement of the present edition of the *ILO global estimates on international migrant workers*, the special efforts to improve the coverage of data on domestic workers were not made for the present edition, and as a consequence the national data collected through conventional sources proved to be not comparable to the corresponding data of the 2013 edition. It was therefore decided to adopt separate methodologies for men and for women for the global estimation of the number of international migrant workers provided in the present edition. These are described in turn below. In the last part of the section, it is shown that the two methodologies are theoretically equivalent, although they produce different results because of the use of different parameter values.

4.2 Male international migrant workers

For men, the basic methodology consisted of editing into a standardized format the data on the number of international migrant workers, for countries where information existed, and using the results to impute corresponding values for countries with missing data. The imputation procedure involved two stages. First, an "indicative" number of international migrant workers was estimated based on the assumption that the labour force participation rate of the migrant working age population is the same as that of the general working age population. Then, the final estimate was calculated by applying a ratio R obtained from countries of the subregion for which data on international migrant workers were available from national sources. The two steps are described in turn below.

4.2.1 "Indicative" number of migrant workers

The variable MW_indicative is an estimate of the number of workers under the hypothetical assumption that, in a given country and a given sex and age group, the labour force participation rate for migrants is the same as the corresponding rate for the general population. This variable provides a convenient basis for the subsequent estimation of the actual number of migrant workers, MW, at the global and regional levels. It is computed as:

$$MW\_indicative = P \times M\_rate \times W\_rate$$

where:

$$M\_rate = \frac{M}{P(M)} \quad and \quad W\_rate = \frac{W}{P(W)}$$

It can be verified that under the hypothetical assumption, the following identity holds:

$$\frac{MW}{M} = \frac{W}{P(W)}$$

which leads to:

$$MW\_indicative = MW$$

except for the population alignment factor *P/P(M)*.

The "indicative" number of migrant workers, as defined above, is calculated for all countries and territories using the benchmark data. The results are then tabulated in the form of estimated indicative numbers of migrant workers, by sex and 10-year age group. The numbers are then consolidated by stratum (broad subregion and income level of countries) and used for estimation of the ratio of migrant to general population labour force participation rates, as described below.

4.2.2 R: Ratio of migrant to general population labour force participation rates

The parameter R is the ratio of the labour force participation rate (LFPR) of the migrant working age population to the labour force participation rate (LFPR) of the general working age population. It may be expressed as:

$$R = \frac{LFPR_{migrant\ population}}{LFPR_{general\ population}} = \frac{\frac{MW}{M}}{\frac{W}{P}}$$

where MW is the number of international migrant workers, M the number of international migrants, W the total number of workers (or more precisely the total labour force) and P the total working age population.

The values of R are expected to be relatively stable close to 1 across countries (at least within sufficiently detailed subregions) and across demographic (sex and age) categories. A value of R larger than 1 means that the labour force participation rate of migrants is higher than that of the general population. By contrast, a value of R smaller than 1 means that the labour force participation of migrants is lower than that of the general population. A value of R equal to 1 means that the labour force participation rate of migrants is the same as that of the general population and the indicative

estimate of the number of migrant workers is the same as the actual number of migrant workers. In the 2013 edition of the global estimates, the overall value of R was 1.13, with R=1.01 for male and R=1.30 for female populations.

For the present estimates, the values of R were recalculated, based on the national sources with data on migrant workers, and the results were aggregated at the global and regional levels. As expected, the values of R were found to be somewhat larger than 1 but close to 1 for both men and women.

The recalculated values of R for the 2017 edition were then used for estimation of the number of international migrant workers, MW, for countries with missing data. The estimate for a given country was obtained by:

$$MW = M\_indicative \times R$$

where R refers to the value of R of the subregion to which the country or territory belongs.

It can be verified that for a country for which the number of international migrant workers is known, replacing each part of the equation with its definitional value, we obtain:

$$MW = [P \times M_{rate} \times W_{rate}] \times \frac{LFPR_{migrant\ population}}{LFPR_{general\ population}}$$

$$= \left[P \times \frac{M}{P(M)} \times \frac{W}{P(W)}\right] \times \left[\frac{\frac{MW}{M}}{\frac{W}{P(W)}}\right]$$

$$= \frac{P}{P(M)} \times MW$$

which means that except for the population alignment factor P/P(M), the two sides of the equation are equal.

The imputation of the number of international migrant workers for countries with missing data was carried out for men as well as for women. The results were then edited for eventual inconsistencies, as described below.

4.2.3 Editing rules

Five editing rules were established for controlling the values of the various estimates, as listed in table 4.2.

Editing rule 1 was to ensure that for each variable, the male number and the female number add up to the total number. Where a difference was found between the total and the sum of the male and female numbers, the discrepancy was removed by applying the following adjustment procedure:

Total₂ = $\max(Total_1, Male_1 + Female_1)$

Male₂ = $Male_1 * (Total_2 / Total_1)$

Female₂ = $Female_1 * (Total_2 / Total_1)$

where the subscript 1 refers to the original number and the subscript 2 to the adjusted value. The adjustment procedure ensures that the male and female numbers add up to the total and their relative shares remain unchanged.

Editing rules 2 to 5 concerned the migration variables, which were all edited at the national level and for each sex separately. In the case of men, the estimates of migrant workers exceeded the number of migrants (editing rule 2) in 23 cases (Afghanistan, Angola, Bangladesh, Botswana, Brunei Darussalam, Cameroon, Central African Republic, Chad, Eritrea, Kuwait, Lesotho, Madagascar, Malawi, Maldives, Nepal, Niger, Pakistan, Singapore, Tanzania, (United Republic of), Thailand, United Arab Emirates, Zambia and Zimbabwe). There were also 2 cases (Kuwait and United Arab Emirates) in which the estimates of migrant workers exceeded the number of

TABLE **4.2**

EDITING RULES		
	Description	Editing rule
1	For each variable, the male number and the female number should add up to the total number	Total = Male + Female
2	The number of migrant workers should not exceed the number of working age migrants	MW <= M
3	The number of migrant workers should not exceed the number of workers	MW <= W
4	The number of workers should not exceed the size of the working age population	W <= P
5	The number of working age migrants should not exceed the size of the working age population	M <= P

Note: MW = Migrant workers; M = Migrants (working age); W = Workers; P = Population (working age)

workers (editing rule 3). In all these cases, the estimates were replaced with the corresponding estimates based on cross-product ratios for men.

There were 2 cases (again Kuwait and United Arab Emirates) in which the number of working age migrants exceeded the working age population (editing rule 5). In these two cases, the estimate of the number of working age migrants (M) was replaced with an imputed value calculated on the basis of the valid data of the neighboring Gulf Cooperation Council (GCC) countries, as follows:

$$Imputed\ M = \gamma\ P$$

$$\gamma = \frac{\sum_{Other\ GCC} M}{\sum_{other\ GCC} P}$$

where "other GCC" means the other GCC countries: Bahrain, Oman, Qatar and Saudi Arabia.

In the case of women, the estimates passed all five editing rules as the underlying estimation methodology based on cross-product ratios guarantees that cell values do not exceed the margins.

4.3 Female international migrant workers

For the reason reasons noted above, a different methodology was adopted for imputing international migrant workers in the case of women. The methodology was based on the cross-product ratios of worker status and migrant status, tested as an alternative methodology in the previous 2015 edition of the *ILO global estimates on migrant workers*.

4.3.1 Cross-product ratio α

Consider the cross-tabulation of the working age population by migrant status and worker status as shown in table 4.3.

In table 4.3, migrant status = 1 refers to "migrant of working age" and migrant status = 0 refers to "not migrant of working age". Similarly, worker status = 1 refers to "worker" or more precisely to "person in the labour

force", while worker status = 0 refers to "not worker" or "not in the labour force". The total number of migrants of working age is denoted by M, while the total number of workers or the total labour force is indicated by W. The total number of non-migrants of working age is therefore P-M and the total number of non-workers or the total number of persons of working age outside the labour force is P-W.

The core elements of the cross-tabulation are the number of migrant workers (a), the number of non-migrant workers or non-migrants in the labour force (b), the number of migrants of working age outside the labour force (c), and the number of non-migrants of working age outside the labour force (d). These terms may be expressed as:

a = MW

b = W – MW

c = M – MW

d = P – W – M + MW = (P-M) – (W-MW)

Based on this cross-tabulation, the degree of association between migrant status and worker status may be measured by the cross-product ratio, α, defined by:

$$\alpha = \frac{a \times d}{c \times b} = \frac{MW \times (P - W - M + MW)}{(M - MW) \times (W - MW)}$$

If there is no association between migrant status and worker status, the cross-product ratio is 1 (α=1), and it can be verified that in this case, the labour force participation of migrants, MW/M, and the labour force participation of non-migrants, (W-MW)/(P-M), are the same. In general, the cross-product ratio differs from 1, reflecting different degrees of association between migrant status and worker status. In principle, the cross-product ratio may take any value between -∞ and +∞, but in practice the values are concentrated around 0 and 1 when there is a positive association between the variables.

TABLE **4.3**

CROSS-TABULATION OF THE WORKING AGE POPULATION BY MIGRANT STATUS AND WORKER STATUS				
		Migrant status		Total
		1	0	
Worker status	1	a	b	W
	0	c	d	P-W
Total		M	P-M	P

Table 4.4 shows the estimates of the cross-product ratios by sex and detailed subregion, obtained in the course of the preparation of the 2015 edition of the *ILO global estimates on migrant workers*, with reference year 2013. The results for women show a strong association between migrant status and work status, with α greater than 2 in the Arab States, most parts of Europe except Western Europe, and the Pacific Islands. By contrast, there is little association between migrant status and work status, with α less than 1, in most parts of Africa except Northern and Southern Africa, South America, Western Europe and Southern Asia.

Assuming that the degree of association of migrant status and work status has not significantly changed between 2013 and 2017, the 2013 values of the cross-product ratios may be used to estimate the number of migrant workers as shown below. The problem may be expressed as that of finding the cell values of table 4.3 given the cross-product ratio α and the margin values M, W and P. It can be shown that the

cell value, MW, may be obtained by solving the quadratic equation:

$$Ax^2 + Bx + C = 0$$

where:

A=1-α, B=P-(1-α)(M+W) and C=-αMxW

The solution of the quadratic equation is then given by:

$$MW = \frac{-P + (1-\alpha)(M+W) + \sqrt{[P - (1-\alpha)(M+W)]^2 + 4\alpha(1-\alpha)M \times W}}{2(1-\alpha)}$$

where there is no association between migrant status and worker status, i.e.:

α=1, then 1-α = 0

and the quadratic equation reduces to a linear equation, with:

A=0, B=P and C=-MxW

TABLE **4.4**

ESTIMATED CROSS-PRODUCT RATIO OF RELATIONSHIP BETWEEN MIGRANT STATUS AND WORKER STATUS, BY SEX AND DETAILED SUBREGION			
Detailed sub-region	Sub-region Code	Cross-product ratio (α)	
		Male	Female
Northern Africa	111	0.5348	1.6938
Central Africa	121	0.5978	0.3766
Eastern Africa	122	0.2157	0.2279
Southern Africa	123	1.5931	1.4544
Western Africa	124	0.6642	0.8060
Caribbean	211	1.0366	1.8955
Central America	212	0.5649	1.1591
South America	213	0.6751	0.7887
Northern America	221	1.7027	1.5173
Northern Europe	311	0.7592	3.7775
Southern Europe	312	0.8628	3.0440
Western Europe	313	2.0282	0.7184
Eastern Europe	321	0.5940	2.3161
Central and Western Asia	331	0.7507	8.7113
Arab States	411	3.4759	4.4090
Eastern Asia	511	2.1589	1.7046
South-Eastern Asia	521	0.9224	1.4653
Australia and New Zealand	522	2.4312	1.6500
Pacific Islands	523	0.2178	2.8133
Southern Asia	531	1.9214	0.7728

Source: ILO global estimation on migrant workers, 2013.

Note: In line with ILO regional groupings, Western Asia is assimilated with Central Asia and grouped with Eastern Europe, Western Europe and Northern Europe into the region "Europe and Central Asia".

and the solution of the equation is given by:

$$MW = \frac{M \times W}{P}$$

which is equivalent to assuming that the labour force participation rate of migrants (MW/M) is the same as the labour force participation rate of the general working age population (W/P).

As an illustration, the number of female migrant workers in Jordan may be calculated on the basis of the female cross-product ratio of the Arab States (α=4.4090), and the 2017 data (in thousands) on the female working age population (P=3'040), the female labour force (W=432) and the female migrants of working age (M=904.542). The calculations give:

A = 1 - 4.4090 = -3.4090

B = 3040 - (1-4.4090) x (904.542+432) = 7'650

C = -4.4090 x 904.542 x 432 = 1'722'7871

and:

MW = 254

The resulting estimate may be compared with the corresponding estimate, based on national data points, of MW = 146.

The methodology was applied to all countries and territories covered by the 2017 edition of the *ILO global estimates on international migrant workers*. The procedure assigned to each country or territory the cross-product ratio of the detailed subregion to which it belongs. It also assigned the benchmark values of the female working age population, female migrants of working age and female workers from the respective datasets, ILO POP, UN MIGR and ILO LFPR. Subsequently, the number of female migrant workers of each country was estimated based on the corresponding cross-product ratio and values P, M and W, using the formulae expressed above. The resulting country estimates were then successively aggregated to obtain subregional and global estimates, and finally reaggregated to obtain estimates by income level of countries.

Similar calculations were also made for male migrant workers, although these estimates were not directly used for the present estimates. The cross-product ratio estimates of male migrant workers were only used when the R estimates failed one or more of the editing rules set for controlling the relationship of the different estimates (see section 4.2.3 above).

4.3.2 Equivalence of R and α

The cross-product ratio methodology is essentially equivalent to the methodology based on the ratio R, the ratio of the labour force participation rate of migrants to the labour force participation rate of the general working age population. First, it may be verified that the cell entries of table 4.3 may be expressed in terms of the parameter R, as follows:

$$a = \hat{a} - (1 - R)\hat{a}$$

$$b = \hat{b} + (1 - R)\hat{a}$$

$$c = \hat{c} + (1 - R)\hat{a}$$

$$d = \hat{d} - (1 - R)\hat{a}$$

where $\hat{a}, \hat{b}, \hat{c}$ and $\hat{d}$ are the respective estimates of a, b, c and d based on the assumption of independence between migrant status and worker status (what the R methodology calls the indicative estimate of migrant workers). These values may be expressed as:

$$\hat{a} = \frac{M \times W}{P}$$

$$\hat{b} = \frac{(P - M) \times W}{P}$$

$$\hat{c} = \frac{M \times (P - W)}{P}$$

$$\hat{d} = \frac{(P - M) \times (P - W)}{P}$$

Next, the cross-product ratio α is expressed in terms of:

$$\alpha = \frac{a \times d}{b \times c}$$

$$= \frac{[\hat{a} - (1 - R)\hat{a}][\hat{d} - (1 - R)\hat{a}]}{[\hat{b} + (1 - R)\hat{a}][\hat{c} + (1 - R)\hat{a}]}$$

Finally, using the identity $\hat{a} \times \hat{d} = \hat{b} \times \hat{c}$, the cross-product ratio can be re-expressed as:

$$\alpha = 1 - \frac{(1 - R)}{(1 - uR)(1 - vR)}$$

where u is the general labour force participation rate (u=w/P) and v is the share of migrants in the working age population (v=M/P). The parameters u and v are in fact the marginal values of table 4.3 standardized for P=1. It can thus be verified that when R=1 then α=1 as expected. In general, for any value R, the corresponding value of α can be derived given the standardized marginal values of table 4.3.

As part of the evaluation of data quality of the 2013 edition of the *ILO global estimates on migrant workers*, alternative imputation procedures were examined for the statistical treatment of countries with missing data. Imputation based on cross-product ratios was one of the alternative methods that was evaluated. The comparison of the results showed close agreement among the global estimates. The method based on cross-product ratios provided a global estimate of 151.8 million international migrant workers in 2013, compared with the published estimate of 150.3 million based on subregional averaging. The discrepancy between the two estimates is about 1 per cent; the discrepancies by sex were slightly higher but less than 2 per cent.

While the two methods based on R or on α are essentially equivalent, there are certain advantages in the cross-product ratio method. The cross-product ratio α is the natural parameter of binary log-linear models and can therefore be used to make relevant statistical analyses of the data, such as tests of independence, treatment of missing values and higher dimensional modelling.

In its simplest form, the methodology can be viewed as a procedure for distributing a total in more than one dimension while keeping the structure of the underlying data intact. It is this property of the cross-product ratio that ensures that the estimate of migrant workers does not exceed the number of migrants or the number of workers. Thus, the methodology guarantees that MW <= M and MW <= W.

4.4 Age groups

The estimates of the number of international migrant workers by age group were obtained by taking as initial values the estimates obtained from R by sex and age group for each country, and then distributing the estimates of international migrant workers proportionally for each sex to obtain the final estimates. In mathematical terms, the procedure may be expressed as:

$$MW(j) = MW \times \frac{MW_R(j)}{\sum_j MW_R(j)}$$

where MW is the estimate of total international migrant workers for a given sex and a given country, $MW_R(j)$ is the initial estimate for age group j based on R, and MW(j) is the resulting estimate of international migrant workers for age group j for that sex and that country. There are 3 broad age groups:

J	Age group
1	15-24 years
2	25-64 years
3	65+ years

The country results for each sex are then aggregated into broad subregions and income groups of countries, and further aggregated to obtain the global estimates by sex and age group.

5. Data quality

In global estimation, there are two general aspects of data quality: the quality of the underlying benchmark and national data, and the quality of the resulting global estimates. The quality of the global estimates depends, of course, on the quality of the input data, but these are essentially produced outside the project and are considered as given in the context of global estimation. The basic control of the input data "I" in the process of selection and standardization is assumed, whereby attempts are made to choose input data from reliable sources, conform to standard concepts and definitions, and make adjustments where required and feasible.

The focus in this section is therefore on the quality of the global estimates in terms of the completeness of the underlying data, the internal consistency of the intermediate estimates and the plausibility of the final results, with respect to some predefined relationships. These three specific aspects of data quality are examined in turn below.

5.1 Completeness of available data

Data on population, migrants and labour force were available for all 188 countries and territories as part of the benchmark databases. Therefore, in this context completeness refers to the coverage of countries and territories in terms of data on migrant workers, in the form of migrant labour force or migrant labour force participation rate.

Table 5.1 indicates that in total there were 67 countries and territories with data on international migrant workers among the total 188 countries and territories used for the ILO global estimation. They represented about 36 per cent of the total number of countries and territories, and about 31 per cent of the total labour force in the ILO standard list template.

The percentage of labour force coverage increases with the income level of countries. Among low-income level countries, the countries with data on international migrant workers constituted 16.6 per cent of the total labour force coverage. The percentage was 17.3 per cent among lower middle-income countries, and about 20 per cent among upper middle-income countries. The highest percentage labour force coverage was among high-income countries, with about more 93.0 per cent coverage.

TABLE **5.1**

COVERAGE OF COUNTRIES AND TERRITORIES WITH DATA ON INTERNATIONAL MIGRANT WORKERS, BY INCOME LEVEL OF COUNTRIES				
Income group	Number of countries and territories			Labour force %
	Total	Covered	%	
Low-income	31	6	19.4	16.6
Lower middle-income	50	8	16.0	17.3
Upper middle-income	50	13	26.0	19.7
High-income	57	40	70.2	93.0
Total	**188**	**67**	**35.6**	**31.3**

A similar pattern of coverage is exhibited in terms of male and female and population coverage, as shown in table 5.2. All countries and territories with data on international migrant workers had data for men and women separately. In terms of the size of the working age population, however, female population coverage was slightly higher than male population coverage among all income groups of countries.

Table 5.3 shows the corresponding figures by geographical region. Northern America and Northern, Southern and Western Europe had the highest coverage of countries and territories with data on international migrant workers (100.0 per cent and 98.4 per cent, respectively), followed by Eastern Europe (81.5 per cent) and Central and Western Asia (54.2 per cent). Broad sub-regions with the lowest coverage were Southern Asia (less than 5 per cent), followed by Northern Africa and the Arab States (5.6 per cent and 10.2 per cent, respectively).

5.2 Consistency of available data

There are a number of inherent relationships among the key variables of the global estimation which were built into the editing process of the methodology, namely:

$$MW <= M$$
$$MW <= W$$
$$W <= P$$
$$M <= P$$

While inconsistencies were removed in the final global estimates, the counts of the edit failures in the process of editing provides an indication of the underlying inconsistencies of the intermediate estimates. Table 5.4 presents the number of edit failures by income level of countries.

The results show that there were on average 0.14 edit failures per country, with the highest frequency in low-

TABLE **5.2**

COVERAGE OF COUNTRIES AND TERRITORIES WITH DATA ON INTERNATIONAL MIGRANT WORKERS, BY SEX AND INCOME LEVEL OF COUNTRIES							
Income group	Total countries	Number of countries covered			Population coverage (%)		
		Total	Male	Female	Total	Male	Female
Low-income	31	6	6	6	16.5	16.3	16.7
Lower middle-income	50	8	8	8	15.9	15.8	16.1
Upper middle-income	50	13	13	13	22.1	21.3	22.9
High-income	57	40	40	40	92.9	92.2	93.7
Total	**188**	**67**	**67**	**67**	**32.0**	**31.3**	**32.6**

TABLE **5.3**

COVERAGE OF COUNTRIES AND TERRITORIES WITH DATA ON INTERNATIONAL MIGRANT WORKERS, BY SEX AND BROAD SUBREGION							
Broad sub-region	Total countries	Number of countries covered			Population coverage (%)		
		Total	Male	Female	Total	Male	Female
Northern Africa	6	1	1	1	5.6	5.5	5.7
Sub-Saharan Africa	47	10	10	10	39.6	39.7	39.6
Latin America and the Caribbean	31	5	5	5	32.9	33.0	32.7
Northern America	2	2	2	2	100.0	100.0	100.0
Northern, Southern and Western Europe	30	26	26	26	98.4	98.4	98.4
Eastern Europe	10	8	8	8	81.5	81.9	81.2
Central and Western Asia	11	4	4	4	54.2	54.2	54.1
Arab States	12	2	2	2	10.2	12.6	7.2
Eastern Asia	8	3	3	3	11.4	11.0	11.8
South-Eastern Asia and the Pacific	22	5	5	5	43.3	43.7	42.9
Southern Asia	9	1	1	1	4.6	4.5	4.7
Total	**188**	**67**	**67**	**67**	**32.0**	**31.3**	**32.6**

income countries (0.32 edit failures per country). Average edit failures were significantly lower among the other income groups of countries, ranging from 0.08 in upper middle-income countries to 0.12 in lower middle-income countries. In terms of geographic regions, most of the edit failures were in Southern Asia (0.56 edit failures per country), followed by the Arab States (0.33 edit failures per country) and Sub-Saharan Africa (0.28 edit failures per country).

5.3 Plausibility of available data

Plausibility is a vague, yet useful concept. Essentially, it implies that if the data are clearly outside the range of values which can be expected, for example, on the basis of experience, comparison with similar statistics, the logic of the situation or subjective expert assessment, then they are not plausible. Two tests of plausibility are examined here with respect to global estimates of international migrant workers:

1. To the extent that some migration is motivated by economic and labour market reasons, one would expect the labour force participation rate for migrants to be higher than the corresponding rate for non-migrants, i.e., LFPR_Migrants >= LFPR_Non-migrants;
2. Given that in virtually all countries and for all age groups, the labour force participation rate of the male

population is greater than the corresponding rate for the female population, one would expect the same relationship to exist among migrants, i.e., LFPR_Migrants (Male) >= LFPR_Migrants (Female).

Table 5.5 shows the number of countries, by income group, for which the estimates of international migrant workers satisfy these two plausibility criteria. It can be observed that for more than 80 per cent of the countries and territories, the first plausibility criterion is satisfied, i.e., the estimated labour force participation rate of migrants is higher than the corresponding rate of non-migrants. The percentage of country estimates passing this plausibility criterion tends to increase with the income group of the country, from 45 per cent among low-income countries to 82 per cent for lower and upper middle-income countries and 98 per cent for high-income countries.

With respect to the second test of plausibility, the results show that the criterion is satisfied by a great majority of the country estimates, almost 75 per cent, but the percentage decreases as the income level of countries rises (from 100 per cent among low-income countries to 84 per cent for lower middle-income countries, 74 per cent for upper middle-income countries and 51 per cent for high-income countries). It would be instructive to understand the reason for this inverse pattern.

TABLE **5.4**

NUMBER OF EDIT FAILURES, BY INCOME LEVEL OF COUNTRIES			
Income group	Total number of countries	Number of edit failures	Average number of edit failures per country
Low-income	31	10	0.32
Lower middle-income	50	6	0.12
Upper middle-income	50	4	0.08
High-income	57	6	0.11
Total	**188**	**26**	**0.14**

TABLE **5.5**

NUMBER OF COUNTRIES SATISFYING TWO PLAUSIBILITY CRITERIA					
Income group	Total number of countries	LFPR Migrants >= LFPR Non-migrants		LFPR Migrants (Male) >= LFPR Migrants (Female)	
		Countries	%	Countries	%
Low-income	31	14	45	31	100
Lower middle-income	50	41	82	42	84
Upper middle-income	50	41	82	37	74
High-income	57	56	98	29	51
Total	**188**	**152**	**81**	**139**	**74**

ANNEXES

Annex A. Geographical regions and income groups

Countries and territories have been grouped into four groups according to income level, as set out in the tables below.

TABLE **A.1 NUMBER OF COUNTRIES AND TERRITORIES IN EACH INCOME GROUP**

	Income groups	No. of countries and territories
1	Low-income	31
2	Lower middle-income	50
3	Upper middle-income	50
4	High-income	57
	Total	**188**

TABLE **A.1.1 COUNTRIES AND TERRITORIES, BY INCOME GROUP**

Income groups	No. of countries	Countries and territories
Low-income	**31**	Afghanistan
		Benin
		Burkina Faso
		Burundi
		Central African Republic
		Chad
		Comoros
		Congo (Democratic Republic of the)
		Eritrea
		Ethiopia
		Gambia
		Guinea
		Guinea-Bissau
		Haiti
		Korea (Democratic People's Republic of)
		Liberia
		Madagascar
		Malawi
		Mali
		Mozambique
		Nepal
		Niger
		Rwanda
		Senegal
		Sierra Leone
		Somalia
		South Sudan
		Tanzania (United Republic of)
		Togo
		Uganda
		Zimbabwe

Income groups	No. of countries	Countries and territories
Lower middle-income	**50**	Angola
		Armenia
		Bangladesh
		Bhutan
		Bolivia
		Cambodia
		Cameroon
		Cape Verde
		Congo
		Côte d'Ivoire
		Djibouti
		Egypt
		El Salvador
		Georgia
		Ghana
		Guatemala
		Honduras
		India
		Indonesia
		Jordan
		Kenya
		Kyrgyzstan
		Lao People's Democratic Republic
		Lesotho
		Mauritania
		Moldova (Republic of)
		Mongolia
		Morocco
		Myanmar
		Nicaragua
		Nigeria
		Occupied Palestinian Territory
		Pakistan
		Papua New Guinea
		Philippines
		Sao Tome and Principe
		Solomon Islands
		Sri Lanka
		Sudan
		Swaziland
		Syrian Arab Republic
		Tajikistan
		Timor-Leste

Income groups	No. of countries	Countries and territories	Income groups	No. of countries	Countries and territories
		Tunisia			Paraguay
		Ukraine			Peru
		Uzbekistan			Romania
		Vanuatu			Russian Federation
		Viet Nam			Saint Lucia
		Yemen			Saint Vincent and the Grenadines
		Zambia			Samoa
Upper middle-income	50	Albania			Serbia
		Algeria			South Africa
		Argentina			Suriname
		Azerbaijan			Thailand
		Belarus			Tonga
		Belize			Turkey
		Bosnia and Herzegovina			Turkmenistan
		Botswana			Venezuela (Bolivarian Republic of)
		Brazil	High-income	57	Australia
		Bulgaria			Austria
		China			Bahamas
		Colombia			Bahrain
		Costa Rica			Barbados
		Croatia			Belgium
		Cuba			Brunei Darussalam
		Dominican Republic			Canada
		Ecuador			Channel Islands (United Kingdom)
		Equatorial Guinea			Chile
		Fiji			Cyprus
		Gabon			Czech Republic
		Guyana			Denmark
		Iran (Islamic Republic of)			Estonia
		Iraq			Finland
		Jamaica			France
		Kazakhstan			French Polynesia
		Lebanon			Germany
		Libya			Greece
		Macedonia (the former Yugoslav Republic of)			Guam (United States)
		Malaysia			Hong Kong (China)
		Maldives			Hungary
		Mauritius			Iceland
		Mexico			Ireland
		Montenegro			Israel
		Namibia			Italy
		Panama			Japan

Income groups	No. of countries	Countries and territories
		Korea (Republic of)
		Kuwait
		Latvia
		Lithuania
		Luxembourg
		Macau (China)
		Malta
		Netherlands
		New Caledonia (France)
		New Zealand
		Norway
		Oman
		Poland
		Portugal
		Puerto Rico
		Qatar
		Saudi Arabia
		Singapore
		Slovakia
		Slovenia
		Spain
		Sweden
		Switzerland
		Taiwan, China
		Trinidad and Tobago
		United Arab Emirates
		United Kingdom
		United States
		Virgin Islands
		Uruguay
Total	**188**	

For the purpose of this report, the world has been divided into standard geographical regions with three levels of detail: 5 major regions and 11 broad subregions, further divided into 20 finer subregions, as set out in the tables below.

TABLE **A.2 STANDARD GEOGRAPHICAL REGIONS**

Standard geographical regions
1 Africa
11 Northern Africa
111 Northern Africa
12 Sub-Saharan Africa
121 Central Africa
122 Eastern Africa
123 Southern Africa
124 Western Africa
2 Americas
21 Latin America and the Caribbean
211 Caribbean
212 Central America
213 South America
22 Northern America
221 Northern America
3 Arab States
31 Arab States
311 Arab States
4 Asia and the Pacific
41 Eastern Asia
411 Eastern Asia
42 South-Eastern Asia and the Pacific
421 Pacific Islands
422 South-Eastern Asia
43 Southern Asia
431 Southern Asia
5 Europe and Central Asia
51 Central and Western Asia
511 Western Asia
512 Central Asia
52 Eastern Europe
521 Eastern Europe
53 Northern, Southern and Western Europe
531 Northern Europe
532 Southern Europe
533 Western Europe

TABLE A.3 NUMBER OF COUNTRIES AND TERRITORIES, BY MAJOR REGIONS

Major regions	No. of countries and territories
Africa	53
Americas	33
Arab States	12
Asia and the Pacific	39
Europe and Central Asia	51
Total	**188**

TABLE A.4 NUMBER OF COUNTRIES AND TERRITORIES, BY BROAD SUBREGION

Broad subregions	No. of countries and territories
Arab States	12
Central and Western Asia	11
Eastern Asia	8
Eastern Europe	10
Latin America and the Caribbean	31
Northern Africa	6
Northern America	2
Northern, Southern and Western Europe	30
South-Eastern Asia and the Pacific	22
Southern Asia	9
Sub-Saharan Africa	47
Total	**188**

TABLE A.4.1 COUNTRIES AND TERRITORIES, BY BROAD SUBREGION

Broad subregion	No. of countries	Countries and territories
11 Northern Africa	**6**	
		Algeria
		Egypt
		Libya
		Morocco
		Sudan
		Tunisia
12 Sub-Saharan Africa	**47**	
		Angola
		Benin
		Botswana
		Burkina Faso
		Burundi
		Cameroon
		Cape Verde
		Central African Republic
		Chad
		Comoros

Broad subregion	No. of countries	Countries and territories
		Congo
		Congo, Democratic Republic of the
		Côte d'Ivoire
		Djibouti
		Equatorial Guinea
		Eritrea
		Ethiopia
		Gabon
		Gambia
		Ghana
		Guinea
		Guinea-Bissau
		Kenya
		Lesotho
		Liberia
		Madagascar
		Malawi
		Mali
		Mauritania
		Mauritius
		Mozambique
		Namibia
		Niger
		Nigeria
		Rwanda
		Sao Tome and Principe
		Senegal
		Sierra Leone
		Somalia
		South Africa
		South Sudan
		Swaziland
		Tanzania (United Republic of)
		Togo
		Uganda
		Zambia
		Zimbabwe
21 Latin America and the Caribbean	**31**	
		Argentina
		Bahamas
		Barbados
		Belize

Broad subregion	No. of countries	Countries and territories
		Bolivia
		Brazil
		Chile
		Colombia
		Costa Rica
		Cuba
		Dominican Republic
		Ecuador
		El Salvador
		Guatemala
		Guyana
		Haiti
		Honduras
		Jamaica
		Mexico
		Nicaragua
		Panama
		Paraguay
		Peru
		Puerto Rico
		Saint Lucia
		Saint Vincent and the Grenadines
		Suriname
		Trinidad and Tobago
		United States Virgin Islands
		Uruguay
		Venezuela, Bolivarian Republic of
22	Northern America	2
		Canada
		United States
31	Arab States	12
		Bahrain
		Iraq
		Jordan
		Kuwait
		Lebanon
		Occupied Palestinian Territory
		Oman
		Qatar
		Saudi Arabia
		Syrian Arab Republic

Broad subregion	No. of countries	Countries and territories
		United Arab Emirates
		Yemen
41	Eastern Asia	8
		China
		Hong Kong (China)
		Japan
		Korea (Democratic Republic of)
		Korea (Republic of)
		Macau (China)
		Mongolia
		Taiwan (China)
42	South-Eastern Asia and the Pacific	22
		Australia
		Brunei Darussalam
		Cambodia
		Fiji
		French Polynesia
		Guam (United States)
		Indonesia
		Lao People's Democratic Republic
		Malaysia
		Myanmar
		New Caledonia (France)
		New Zealand
		Papua New Guinea
		Philippines
		Samoa
		Singapore
		Solomon Islands
		Thailand
		Timor-Leste
		Tonga
		Vanuatu
		Viet Nam
43	Southern Asia	9
		Afghanistan
		Bangladesh
		Bhutan
		India
		Iran (Islamic Republic of)
		Maldives
		Nepal

Broad subregion	No. of countries	Countries and territories
		Pakistan
		Sri Lanka
51 **Central and Western Asia**	**11**	
		Armenia
		Azerbaijan
		Cyprus
		Georgia
		Israel
		Kazakhstan
		Kyrgyzstan
		Tajikistan
		Turkey
		Turkmenistan
		Uzbekistan
52 **Eastern Europe**	**10**	
		Belarus
		Bulgaria
		Czech Republic
		Hungary
		Moldova (Republic of)
		Poland
		Romania
		Russian Federation
		Slovakia
		Ukraine
53 **Northern, Southern and Western Europe**	**30**	
		Albania
		Austria
		Belgium
		Bosnia and Herzegovina
		Channel Islands (United Kingdom)
		Croatia
		Denmark
		Estonia
		Finland
		France
		Germany
		Greece
		Iceland
		Ireland
		Italy
		Latvia

Broad subregion	No. of countries	Countries and territories
		Lithuania
		Luxembourg
		Macedonia, the former Yugoslav Republic of
		Malta

TABLE **A.5 NUMBER OF COUNTRIES AND TERRITORIES IN EACH DETAILED SUBREGION**

	Detailed subregions	No. of countries and territories
111	Northern Africa	6
121	Central Africa	9
122	Eastern Africa	17
123	Southern Africa	5
124	Western Africa	16
211	Caribbean	11
212	Central America	8
213	South America	12
221	Northern America	2
311	Arab States	12
411	Eastern Asia	8
421	Pacific Islands	11
422	South-Eastern Asia	11
431	Southern Asia	9
511	Western Asia	6
512	Central Asia	5
521	Eastern Europe	10
531	Northern Europe	11
532	Southern Europe	12
533	Western Europe	7
Total		**188**

Results are presented for 4 income groups (low-income, lower middle-income, upper middle-income and high-income) at the global level and at the level of 11 broad subregions. Some results are also discussed by cross-classifying income groups and broad subregions. Ignoring empty and very small cells, there are 22 categories in this cross-classification. All results are shown for the total population and for male and female populations separately. The estimation procedure that was used involved the construction of measures by individual country (for the 176 countries included in the database), as well as by 49 detailed country groups (domains) formed by cross-classification of detailed subregions and income groups. These results formed the "building blocks" of the estimation procedure used, but they are considered too detailed to be included in this report. These detailed results are available at the ILO for internal use.

Geographical regions and groups of countries and territories by income level are highly correlated. In some regions, such as Eastern Europe, South-Eastern Asia and the Pacific, and Northern, Southern and Western Europe, nearly all countries and territories are in the high-income group, while in other regions, such as Sub-Saharan Africa, a majority of countries and territories are in the low-income group.

Table B.1 shows how the 61 countries and territories included in the present analysis are distributed according to broad subregion and income group. Out of the possible 11x4=44 cells of the cross-classification, 23 cells have no countries or territories in them.

TABLE **B.1 NUMBER OF COUNTRIES AND TERRITORIES BY BROAD SUBREGION AND INCOME GROUP**

		Number of countries and territories Income group				
Subregion		1	2	3	4	All
11	Northern Africa		1			1
12	Sub-Saharan Africa	6	3	1		10
21	Latin America and the Caribbean			4	1	5
22	Northern America				2	2
31	Northern, Southern and Western Europe			3	23	26
32	Eastern Europe		1	3	4	8
33	Central and Western Asia		1	1	2	4
41	Arab States		1		1	2
51	Eastern Asia				3	3
52	South-Eastern Asia and the Pacific		1		4	5
53	Southern Asia			1		1
Total		**6**	**8**	**13**	**40**	**67**

Annex C. Data availability for different variables, by country or territory, sex and age group

Table C.1 shows whether input data on a particular variable were available (=1) or not (blank). Information is provided for each of the 188 countries included in the present analysis, for the total, male and female population separately, and by age groups

Full information for all 188 countries is available from standard international sources on the three base variables:

Total population aged 15+	P
Migrant population aged 15+	M
Total workers	W

For each of the variables included, information is also provided on whether at least one data point is available, on total (T), as well as on male (M) or female (F) when disaggregated by age group.

TABLE **C.1 DATA AVAILABILITY STATUS FOR DIFFERENT VARIABLES, BY COUNTRY OR TERRITORY, SEX AND AGE GROUP**

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
1112	1	Algeria															0
1112	2	Libya															0
1113	3	Egypt															0
1113	4	Morocco															0
1113	5	Sudan															0
1113	6	Tunisia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
1212	7	Equatorial Guinea															0
1212	8	Gabon															0
1213	9	Angola															0
1213	10	Cameroon															0
1213	11	Congo															0
1213	12	Sao Tome and Principe															0
1214	13	Central African Republic															0
1214	14	Chad															0
1214	15	Congo (Democratic Republic of the)															0

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
1222	16	Mauritius															0
1223	17	Djibouti															0
1223	18	Kenya															0
1223	19	Zambia															0
1224	20	Burundi															0
1224	21	Comoros															0
1224	22	Eritrea															0
1224	23	Ethiopia															0
1224	24	Madagascar															0
1224	25	Malawi															0
1224	26	Mozambique							1							1	2
1224	27	Rwanda	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
1224	28	Somalia															0
1224	29	South Sudan															0
1224	30	Tanzania (United Republic of)															0
1224	31	Uganda							1							1	2
1224	32	Zimbabwe							1							1	2
1232	33	Botswana															0
1232	34	Namibia															0
1232	35	South Africa	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
1233	36	Lesotho															0
1233	37	Swaziland															0
1243	38	Cape Verde															0
1243	39	Côte d'Ivoire															0
1243	40	Ghana	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
1243	41	Mauritania	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
1243	42	Nigeria							1							1	2
1244	43	Benin															0
1244	44	Burkina Faso															0
1244	45	Gambia							1							1	2
1244	46	Guinea	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
1244	47	Guinea-Bissau															0
1244	48	Liberia															0
1244	49	Mali															0
1244	50	Niger															0
1244	51	Senegal															0
1244	52	Sierra Leone															0
1244	53	Togo															0
2111	54	Bahamas															0
2111	55	Barbados															0
2111	56	Puerto Rico															0
2111	57	Trinidad and Tobago															0
2111	58	United States Virgin Islands															0
2112	59	Cuba															0
2112	60	Dominican Republic															0
2112	61	Jamaica															0
2112	62	Saint Lucia															0
2112	63	Saint Vincent and the Grenadines															0
2114	64	Haiti															0
2122	65	Belize	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
2122	66	Costa Rica															0
2122	67	Mexico	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
2122	68	Panama															0
2123	69	El Salvador															0
2123	70	Guatemala															0
2123	71	Honduras															0
2123	72	Nicaragua															0
2131	73	Chile	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
2131	74	Uruguay															0
2132	75	Argentina															0
2132	76	Brazil															0
2132	77	Colombia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
2132	78	Ecuador							1							1	2
2132	79	Guyana															0
2132	80	Paraguay															0
2132	81	Peru															0
2132	82	Suriname															0
2132	83	Venezuela (Bolivarian Republic of)															0
2133	84	Bolivia															0
2211	85	Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
2211	86	United States	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
3111	87	Bahrain															0
3111	88	Kuwait															0
3111	89	Oman															0
3111	90	Qatar															0

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
3111	91	Saudi Arabia															0
3111	92	United Arab Emirates							1							1	2
3112	93	Iraq															0
3112	94	Lebanon															0
3113	95	Jordan															0
3113	96	Occupied Palestinian Territory	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
3113	97	Syrian Arab Republic							1								0
3113	98	Yemen															0
4111	99	Hong Kong (China)															0
4111	100	Japan	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
4111	101	Korea, Republic of							1							1	2
4111	102	Macau (China)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
4111	103	Taiwan (China)															0
4113	104	Mongolia															0
4114	105	Korea (Democratic People's Republic of)															0
4211	106	Australia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
4211	107	French Polynesia															0
4211	108	Guam (United States)															0
4211	109	New Caledonia (France)															0
4211	110	New Zealand	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
4212	111	Fiji															0
4212	112	Samoa															0
4212	113	Tonga															0
4213	114	Papua New Guinea															0
4213	115	Solomon Islands															0

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
4213	116	Vanuatu															0
4221	117	Brunei Darussalam	1					1	1	1					1	1	6
4221	118	China															0
4221	119	Singapore							1							1	2
4222	120	Malaysia															0
4222	121	Thailand															0
4223	122	Cambodia															0
4223	123	Indonesia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
4223	124	Lao People's Democratic Republic															0
4223	125	Myanmar															0
4223	126	Philippines															0
4223	127	Timor-Leste															0
4223	128	Viet Nam															0
4312	129	Iran, Islamic Republic of	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
4312	130	Maldives															0
4313	131	Bangladesh															0
4313	132	Bhutan															0
4313	133	India															0
4313	134	Pakistan															0
4313	135	Sri Lanka															0
4314	136	Afghanistan															0
4314	137	Nepal															0
5111	138	Cyprus	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5111	139	Israel	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5112	140	Azerbaijan															0

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
5112	141	Turkey	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5113	142	Armenia															0
5113	143	Georgia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5122	144	Kazakhstan															0
5122	145	Turkmenistan															0
5123	146	Kyrgyzstan															0
5123	147	Tajikistan															0
5123	148	Uzbekistan															0
5211	149	Czech Republic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5211	150	Hungary	1	1	1	1	1		1	1	1	1	1	1		1	12
5211	151	Poland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5211	152	Slovakia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5212	153	Belarus															0
5212	154	Bulgaria							1							1	2
5212	155	Romania							1							1	2
5212	156	Russian Federation	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5213	157	Moldova (Republic of)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5213	158	Ukraine															0
5311	159	Channel Islands															0
5311	160	Denmark	1	1	1	1	1		1	1	1	1	1	1		1	12
5311	161	Estonia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5311	162	Finland	1	1	1	1	1		1	1	1	1	1	1		1	12
5311	163	Iceland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5311	164	Ireland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5311	165	Latvia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5311	166	Lithuania	1	1	1	1	1		1	1	1	1	1	1		1	12

Domain Code	Serial No.	Country	Female							Male							Total Data Points
			15-24	25-34	35-44	45-54	55-64	65+	15+	15-24	25-34	35-44	45-54	55-64	65+	15+	
5311	167	Norway	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5311	168	Sweden	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5311	169	United Kingdom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5321	170	Greece	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5321	171	Italy	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5321	172	Malta	1		1	1	1		1	1		1	1	1		1	10
5321	173	Portugal	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5321	174	Slovenia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5321	175	Spain	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5322	176	Albania															0
5322	177	Bosnia and Herzegovina															0
5322	178	Croatia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5322	179	Macedonia (the former Yugoslav Republic of)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5322	180	Montenegro															0
5322	181	Serbia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5331	182	Austria	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5331	183	Belgium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5331	184	France	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5331	185	Germany	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5331	186	Luxembourg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5331	187	Netherlands	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
5331	188	Switzerland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Total	**67**		**55**	**54**	**55**	**55**	**55**	**52**	**67**	**55**	**54**	**55**	**55**	**55**	**52**	**67**	**786**

Note: Number of countries (including countries with no data) 188.

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This 2nd edition of the global estimates report on migrant workers provides information on the order of magnitude of labour migration. It begins with a presentation of the main results obtained and a description of what is being estimated. It then provides a detailed description and analysis of the global and regional estimates of migrant workers in 2017, with a breakdown by income group, gender and age. The report also describes the sources and methodology used, the nature and quality of the data, as well as the corresponding limitations. Three annexes complement the material presented in the main body of the report.

The report intends to contribute to the 2018 Global Compact for Safe, Orderly and Regular Migration, as well as to achieving the Sustainable Development Goal targets 8.8 and 10.7. Furthermore, the report helps to draw attention to the economic and social issues of labour migration, and facilitates the future development of sound international statistical standards in line with the 2018 International Conference of Labour Statisticians (ICLS) *Guidelines concerning Statistics of International Labour Migration*.