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Data integration for measuring migration

Turkey's experience on immigration and emigration statistics based on administrative registers: challenges and improvements**Note by Turkish Statistical Institute, Turkey****Summary*

Main data sources of the stock and flow migration statistics are censuses and administrative registers in Turkey. Before establishment of the Address Based Population Registration System (ABPRS) in 2007, the only data source on international migration statistics was the population censuses. Only basic immigration statistics has been produced from censuses beginning from 1980.

Currently, ABPRS is the unique system that annual population statistics are produced in Turkey. For the foreign population residing in Turkey, foreign registers of Ministry of Interior and the residence/work permit registers of related institutions are mainly used.

Within the scope of studies on development of statistics obtained from administrative registers, analyzes on existing records were carried out and administrative data integration procedures were conducted for related data sources (such as population registers, residence/work permits, records of citizens living abroad, birth and death records) of different governmental organizations. Thereafter, Turkish Statistical Institute produced information on immigration and emigration, namely annual migration flow statistics, for the first time based on administrative registers in 2018 for the years 2016 and 2017.

In this paper, background and production process of these statistics including data integration operations are tried to be introduced together with challenges faced and future plans.

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I. Introduction

1. Main data sources of the stock and flow migration statistics are censuses and administrative registers in Turkey. Before establishment of the Address Based Population Registration System (ABPRS) in 2007, the only data source on international migration statistics was the population censuses.
2. In Turkey, including the last census in 2000, 14 Population Censuses were conducted with using traditional census method. All population censuses were carried out in one day by application of a national curfew according to the de facto population definition. The availability of statistics on population and migration in 5-10 years intervals, duration of data processing around 3.5 years, high cost, large number of field staff, the inability to obtain information on usual residence (de jure) population, over-counting (imaginary) population and one day application were unfavourable features of census taking with traditional method. In order to overcome these problems and deficiencies, it was necessary to establish an up-to-date population registration system based on residence addresses.
3. In this context, ABPRS, the backbone of the population statistics, was established in 2007. Since then, statistics on population by size and its basic characteristics are produced annually and announced to the public in January of the following year.
4. Particularly, in order to obtain foreign population residing in Turkey, foreign registers held by the General Directorate of Civil Registration and Nationality (GDCRN) and the residence/work permit registers are mainly used.
5. For stock population, citizenship and country of birth statistics are produced from ABPRS. In addition, Turkish Statistical Institute (TurkStat) produced information on immigration and emigration, namely annual migration flow statistics, for the first time based on administrative registers in 2018 for the years 2016 and 2017. Similar to stock migration statistics, migration flow statistics are produced in “country of birth” and “country of citizenship” breakdowns.
6. Additionally, information on "foreign population by the first year of residence in Turkey” was produced for the first time for the year 2018 and announced to the public in 2019 with a press bulletin.
7. In this paper, background and production process of these statistics including data integration processes are tried to be introduced together with challenges faced and future plans.

II. Use of administrative registers for international migration statistics

A. Legal base

8. The use of administrative data is a prerequisite for statistics that TurkStat is to produce or elaborate within the scope of both national priorities and international requirements. In this vein, TurkStat explores the availability of additional administrative data for statistical production processes and data integration. Fortunately, TurkStat has the authority to access administrative registers according to Article 9 of the Statistics Law of Turkey numbered 5429.
9. With the Statistics Law of Turkey, TurkStat is also responsible for identifying the standards for the establishment of the national register systems, implement these standards, and to ensure their observance through inter-agency coordination. In this sense, in accordance with the Official Statistics Programme, TurkStat supports the interested bodies in terms of establishing

databases or register systems, increasing the use of administrative records in statistical production, data security, data confidentiality, and standardizing the identifiers and variables of real persons and legal entities.

10. In Turkey, the Official Statistics Programme (OSP), based on the Statistics Law of Turkey No 5429, is prepared for a 5-year-period in order to determine the basic principles and standards dealing with the production and dissemination of official statistics and to produce reliable, timely, transparent and impartial data required at national and international level. Within the scope of "OSP 2017-2021", working groups consisting of all related governmental bodies were revised, meetings were held and thus stakeholders, publication time, data sources, data collection methods were determined for each topic.
11. In this context, one of the working groups entered into force is on "international migration statistics". Under this group, following 6 sub-groups exist:
 - i. Foreign population (stock) statistics;
 - ii. Immigration and emigration (flow) statistics;
 - iii. Statistics on Turkish citizens living abroad;
 - iv. Citizenship statistics (statistics on the acquisition and loss of citizenship);
 - v. Statistics on residence permits, refugees, conditional refugees, subsidiary protection, temporary protection and illegal migration;
 - vi. Work permits statistics.
12. According to the OSP, TurkStat is responsible for the production of foreign population statistics, immigration/emigration statistics and statistics on Turkish citizens living abroad. As data holders and stakeholders, General Directorate of Civil Registration and Nationality (GDCRN), Directorate General of Migration Management (DGMM) and Directorate General of International Labour Force (DGILF) are the main organizations supporting the production process of these statistics.
13. On the other hand, while GDCRN is to produce citizenship statistics, DGMM is responsible for the statistics on residence permits, refugees, conditional refugees, subsidiary protection, temporary protection and illegal migration. Last, production of work permits statistics is under the responsibility of DGILF.

B. Background and current situation

14. In Turkey, 14 traditional population censuses were carried out in between 1927 and 2000. All of those censuses were carried out in one day by the application of national curfew according to the "de facto" population definition. Standard questionnaire was applied to collect information by face-to-face interviews. The availability of statistics on population and migration in 5-10 years intervals, duration of data processing around 3.5 years, high cost, large number of field staff, the inability to obtain information on usual residence (de jure) population, over-counting (imaginary) population and one day application were unfavourable features of census taking with traditional method. In order to overcome these problems and deficiencies, it was necessary to establish an up-to-date population registration system based on residence addresses.
15. In this context, according to the Population Registration Law No. 5490, all addresses within the boundaries of Turkey were registered in the National Address Database (NAD) as of 2006, and by linking those addresses with the unique 11-digit "Turkish identification number",

ABPRS was established in 2007 by TurkStat. The system was thereafter transferred to the Ministry of Interior General Directorate of Civil Registration and Nationality (GDCRN) which is charged with maintaining and updating the ABPRS according to the law.

16. ABPRS, the backbone of the population statistics, was established in order to obtain actual information on population of localities and monitor the population movements. In this way, TurkStat could produce basic population statistics annually pursuant to de-jure definition. Accordingly, statistics on population size by localities, age, sex, literacy and completed level of education, nationality, marital status, place of civil registration (place of family ledgers/origin or hometown), number of households, average household size, internal migration, place of birth, type of households, and immigration/emigration are presented from the ABPRS.
17. The 2011 Population and Housing Census (PHC) was implemented with combined method to produce census type statistics. A large scaled sample survey was conducted to collect information that were absent in registers or unavailable in household surveys at the necessary geographic detail. ABPRS was also used in the 2011 PHC both for the frame and for a source of statistics. In the 2011 census, TurkStat used the administrative registers for the first time for census purposes and obtained 20% of the information from administrative registers.
18. In determination of stock foreign population and migration flows, in addition to ABPRS, foreign registers, residence/work permits, birth/death records and records of citizens living abroad were used as auxiliary data sources. 11-digit personal identifiers used nationwide for both Turkish citizens and foreigners make administrative data integration and linkage possible. However, like all other countries, those administrative registers are kept by their institutions/organizations for their own needs within the framework of their legislation and institutional services. Since they play a major role in timely compilation of information and the production process of official statistics, transformation of them into systematic structure by integrating with other administrative registers is very important in the development of statistical processes.

1. Foreigners and International Protection Law

19. Foreigners and International Protection Law No. 6458 which was adopted on 4 April 2013 and entered into force on 11 April 2014, made significant legal and administrative changes on foreigners' entry into, stay in, exit and removal from Turkey, international protection, temporary protection and protection of victims of human trafficking. By the law, Directorate General of Migration Management (DGMM) was established. Since 11 April 2014, DGMM is responsible for not only carrying out the tasks and procedures related to foreign citizens but also for implementing policies and strategies related to migration and production of statistics.
20. Along with the Göç-Net system (migration management system), the main database of DGMM, registers of residence permits, international protection (applications, refugees, conditional refugees, subsidiary protection, temporary protection), illegal migration and other events related to foreigners have been kept in connection to each other. Studies on improving the registers kept by DGMM for statistical purposes are still in progress.

2. International Labour Force Law

21. In 2016, with International Labour Force Law numbered 6735, Directorate General of International Labour Force (DGILF) was established. The law has brought into notable changes for the work permit system in Turkey and all procedures related to the work permits were gathered in one hand, unlike pre-2016. DGILF is mandated to take the responsibility of

all task and procedures regarding the work permits, including the production of work permit statistics. As a consequence of that, centralized work permits data has been improved in terms of quality and coverage.

3. 2021 Population and Housing Census

22. For the 2021 PHC, in parallel with the global tendency in the further use of administrative registers and improvements in the national administrative data infrastructure, Turkey plans to conduct a register-based census. Within this scope, studies have been carried out in coordination with the related institutions to produce information from administrative data particularly on labour force statistics and building and dwelling statistics, considering that there is no single and complete (all requested attributes for all units) administrative data source available for those topics. Besides, in order to produce labour force statistics, the existing Labour Force Survey (LFS) data is also planned to be used as an additional source.

III. International migration statistics in Turkey

23. Main data sources of the international migration statistics are censuses and administrative registers in Turkey. Before establishment of the ABPRS in 2007, the only data source on international migration statistics was the population censuses. In addition to stock migration statistics by country of citizenship and country of birth, for the censuses conducted in 1980-2000 period, basic immigration statistics has been produced. On the other hand, these censuses did not provide information on emigration.
24. After establishment of the ABPRS in 2007, the Population and Housing Survey (PHS) was conducted with the use of administrative registers for the first time (combined method) in 2011. 2011 PHS was implemented to obtain information which is not available in the ABPRS at provincial level. Within the scope of international migration statistics, information on the place of birth, ever resided abroad, and the country of residence one year ago was compiled from 2011 PHS.
25. Currently, ABPRS is the unique system that annual population statistics are produced. For foreigners residing in Turkey (stock migration), information on the size of foreign population has been produced since 2007 from ABPRS. While statistics on foreign population by country of citizenship have been produced since 2012, information on country of birth for the whole population has been produced since 2014. These statistics are disseminated without the breakdowns of refugee or refugee like populations. In the production process of statistics on international migrant stock in Turkey, foreign registers, residence permits and work permits are mainly used.
26. In line with the international de-jure concept of ABPRS, foreign population covers individuals;
- i. Holding a valid residence/work permit at the reference day;
 - ii. Holding an identity document equivalent to residence permit (international protection, etc.) with a valid address declaration at the reference day;
 - iii. Who have already renounced his/her T.R. citizenship and who are residing in the country with a valid address declaration at the reference day.

In addition to Syrians under temporary protection, foreigners holding visas or residence permits shorter than 3 months with the purpose of training, tourism, scientific research etc., are not covered in annual population statistics.

27. To illustrate the current conditions in the determination of foreign population, Table 1 below gives detailed explanations.

Table 1
 Foreigners in the Official Population of Turkey

Population group	Explanation	Covered in total population?
Foreigners holding residence permit valid shorter than 3 months	Individuals present in Turkey for a short period of time with the aim of tourism, courses, scientific research, etc.,	No
Individuals under temporary protection	With the temporary protection identification document, individuals are granted the right to stay in Turkey. However, the document <u>is not equivalent to a residence permit or documents which substitute residence permits</u> . Additionally, the document does not grant the right for transition to long term residence permit, its duration is not be taken into consideration when calculating the total term of residence permit durations and not entitle its holder to apply for Turkish citizenship	No
Refugees	The identity documents issued to persons granted refugee status have <u>three years validity</u> and they <u>substitute residence permits</u> .	Yes
Conditional refugees and individuals under subsidiary protection	The identity documents issued to the conditional refugees and individuals under subsidiary protection have <u>one-year validity</u> and they <u>substitute residence permits</u> .	Yes

28. Even though address declaration of foreign residents is no longer a problem in terms of coverage, there is still lack of information on basic demographic and vital events (birth, death, marriage, divorce, etc.) as well as other socio-economic characteristics of foreign population (e.g. educational attainment) in these registers. Despite the considerable improvements in related registers, studies especially on the legal marital status and attained education level of foreigners are ongoing.
29. TurkStat has also access to the statistical registers of Turkish citizens living abroad. Nevertheless, this database is only used for the identification of resident population in Turkey and cross validations.
30. In terms of international migration flows, there is no specific survey for official statistics in Turkey and current household surveys do not have an ad hoc module on the subject. While census data is very limited, particularly for emigration, registers have some constraints like many other countries. However, together with improvements in the administrative data and legal framework, TurkStat was able to produce statistics on immigration and emigration for the first time based on administrative registers in 2018.
31. International Protection applications are received by Provincial Directorates of Migration Management through Göç-Net. Statistical figures on international protection applications are shared on DGMM's official website and published in Annual Migration Reports of DGMM

on a yearly basis along with the figures on foreigner's entry/exit, residence permits and illegal migration.

32. In accordance with the OSP, annual statistics on work permits are announced to the public by DGILF.
33. All in all, the existence of international migration variables that are produced by TurkStat from 1927 to present are given in the Table 2.

Table 2
International Migration Variables in Turkey by Data Source

International Migration Variables	Traditional censuses (1927-2000)	2011 PHC	ABPRS (Since 2007)
Stock Population			
<i>Population</i>	De-facto	De-jure	De-jure
<i>Country of Birth</i>	✓	✓	✓ -Since 2014-
<i>Country of Citizenship</i>	✓	X	✓ -Since 2012-
<i>Ever resided abroad</i>	X	✓	X
<i>First Year of Residence</i>	X	X	✓ -Since 2018-
Migration Flows			
<i>Immigration (country of birth, country of citizenship, previous country of residence) – Five years-</i>	✓	X	X
<i>Immigration (country of birth) –One year-</i>	X	✓	✓ -Since 2016-
<i>Immigration (country of citizenship) –One year-</i>	X	X	✓ -Since 2016-
<i>Immigration (Previous country of residence) –One year-</i>	X	✓	X
<i>Emigration (country of birth and country of citizenship) –One year-</i>	X	X	✓ -Since 2016-
<i>Emigration statistics (Next country of residence) –One year-</i>	X	X	X
<i>Reason for migration</i>	✓ (2000)	✓	X -Studies are ongoing-

IV. Syrians in Turkey

34. The conflict in Syria, which has already completed its eighth year, has caused the biggest displacement crisis that humanity has ever faced and forced millions of Syrians to take refuge in neighboring countries. At the beginning, no one could have predicted that almost 7 million of Syrians were forced to seek in other countries. For the Syrians who have moved to Turkey massively, Temporary Protection Regulation was issued in 2014 and thereby this group was

given temporary protection status. With the regulation, Syrians can get a foreign identification number to perform social and legal procedures and benefit from health, education, labour market access and social support services. DGMM is the responsible authority for the registration, status decisions and statistics within the scope of the temporary protection.

35. According to international legal population definition (de-jure), the legal population of a country depends on the legal residence status of the individuals. Within the scope of this definition, all TR citizens residing in Turkey and foreign residents holding valid residence permit are covered in ABPRS.
36. Along with the Foreigners and International Protection Law, it is compulsory to apply for residence permit for foreigners whose duration of stay exceed the term stated in the visa or exceed ninety days. With this application, foreigners who received residence permits for at least 3 months also began to register in ABPRS.
37. Having all these in mind, Syrian nationals are residing in Turkey in two ways: those holding residence permit/work permit and those under temporary protection. Temporary Protection Regulation issued in 2014 specifies that "Temporary Protection Identity Documents" or work permits issued for this group are not equivalent to residence permits or documents which substitute for residence permits. Thus, foreigners under temporary protection are not officially accepted as "resident population". As a result, in compliance with the international definitions, regulations and practices, Syrians under temporary protection are not included in the ABPRS population. Only Syrians who entered the country legally (with the required official documents such as a passport) are included in ABPRS population like other foreigners holding residence permit/work permit.
38. According to the results of ABPRS dated 31 December 2018, Syrians (those holding valid residence/work permit at the reference day) comprises of 7.3% (87,955) the total foreign population (1,211,034). On the other hand, the number of foreigners under temporary protection in Turkey, which was 14 thousand in 2012, has reached 225 thousand in 2013, 1,5 million in 2014, 2,5 million in 2015, 3,1 million in 2017 and almost 3,7 million as of September 2019 according to DGMM.
39. Owing to the fact that ABPRS is used as a frame for household surveys and as a base for other studies (population projections, life tables, international migration statistics, etc.), Syrians under temporary protection are not covered in household surveys or any of the mentioned studies.

V. Immigration and Emigration Statistics Based on Administrative Registers

40. In terms of international migration flows, there is no specific survey for official statistics in Turkey and current household surveys do not have an ad hoc module on the subject. While census data is very limited, particularly for emigration, registers have some constraints like many other countries. First of all, there is registration-deregistration problem for foreigners in the population registers. Declaration is crucial especially for the foreigners who lived in the country for a certain length of time or who have intention of staying for at least a certain length of time and who will leave the country. Secondly, since the appropriate sanctions or incentives are not in force, Turkish citizens moving abroad abstain from address declaration to the foreign missions unless they need. Hence, these population groups lead to over-coverage. Fundamentally, that's the main the reason why accurate emigration and immigration flow migration statistics cannot be produced up to 2018.

41. However, especially after the adoption Foreigners and International Protection Law in 2013 and International Labour Force Law in 2016, there have been significant legal and administrative changes. These new mechanisms have come with a lot of developments such as the increase in the quality and coverage of related data.
42. In addition to the improvements in foreign registers, which are kept by GDCRN and shared with TurkStat simultaneously, records of Turkish citizens living abroad have also gained up-to-dateness due to the recent legislative changes such as the obligation for citizens living abroad to register to be able to vote in the general elections in homeland.
43. Given these circumstances, with the experience of 11 years on annual population statistics derived from ABPRS, analyzes on existing records were carried out in parallel with the goal of development of statistics obtained from administrative registers. Thereafter, TurkStat produced information on immigration and emigration, namely annual migration flow statistics, for the first time based on administrative registers in 2018 for the years 2016 and 2017. Similar to stock migration statistics, migration flow statistics are produced in “country of birth” and “country of citizenship” breakdowns (no disaggregation by refugee or refugee like populations).
44. Annual immigration and emigration flow statistics were calculated based on ABPRS, where the records of Turkish Republic (T.R.) citizens and foreigners residing in Turkey are kept. In other words, the statistics were calculated in line with the criteria used for determination of foreign population in ABPRS (i.e. official foreign population definition and coverage). Other data sources utilized in the production process, which are all inter-linkable with ABPRS through unique identification numbers, as follows:
- i. Registers of Turkish citizens;
 - ii. Registers of Turkish citizens renounced the Turkish citizenship with the authorization of Turkish Republic;
 - iii. Registers of foreigners;
 - iv. The database on Turkish Republic citizens living abroad;
 - v. Residence/work permits;
 - vi. Birth/death records.
45. In the calculation process of migration flow statistics, definitions and concepts of the “Recommendations on Statistics of International Migration” published by United Nations and the reference metadata of international migration statistics disseminated by the Statistical Office of the European Union (Eurostat) were taken into consideration.
46. In the calculation process of migration flow statistics based on ABPRS, the demographic balance equation below was used as starting point.
- $$P(t+1) = P(t) + \text{Births} - \text{Deaths} + \text{Immigration} - \text{Emigration}$$
47. From the point of this view, analysis started with the following queries:
- Group 1: *Present in Turkey in year t; Not present in Turkey in year t+1* (death or emigration?)
- To be more precise, individuals who are not present in the reference year ABPRS while present in the previous year ABPRS and who are not died in the reference year were determined as potential emigrants.
- Group 2: *Not present in Turkey in year t; Present in Turkey in year t+1* (birth or immigration?)

Likewise, individuals who are present in the reference year ABPRS but not in the previous year and who were not born in the reference year were determined as potential immigrants. Exceptionally, if a person was born abroad and moved to Turkey in the same year and thereby present in that year's ABPRS, he/she is accepted as immigrant for that year.

48. Subsequently, cross validations were carried out to check consistency between the data sources. Discrepancies due to the specific conditions such as late registration of children under five, change of identification number after acquisition of citizenship (i.e. loss of the trace of the naturalized person), change of residence status for foreigners (e.g. residence permit to temporary protection), under/over-coverage of previous/present year ABPRS were solved under certain assumptions based on a data hierarchy.
49. For Turkish nationals, further analyses were conducted based on relations between household members. For instance, residence of children under certain age was used as a determinant for mothers whose migrant statuses were unclear. Conversely, residence of mother was also used as a determinant for children whose migrant statuses were unclear.
50. As a result of all cross checks, validations, adjustments and controls, "conclusive" immigrant and emigrant population were defined as of 31 December for the related years and the first annual migration flow statistics were disseminated in 2018 for the years 2016 and 2017. The next press release on the subject was released in July 2019 for the year 2018 and thus time series for annual migration flows have reached 3 years. In this context, main results of the study on international migration statistics are given in Table 3 and 4.

Table 3
International Migration Statistics of Turkey, 2016-2018

	2016				2017				2018			
	ABPRS Population (stock)	Immigration	Emigration	Net Migration	ABPRS Population (stock)	Immigration	Emigration	Net Migration	ABPRS Population (stock)	Immigration	Emigration	Net Migration
Total	79 814 871	380 921	177 960	202 961	80 810 525	466 333	253 640	212 693	82 003 882	577 457	323 918	253 539
Turkish citizens	78 998 461	107 052	69 326	37 726	79 891 464	101 772	113 326	- 11 554	80 792 848	110 567	136 740	- 26 173
Foreign nationals	816 410	273 869	108 634	165 235	919 061	364 561	140 314	224 247	1 211 034	466 890	187 178	279 712

Source: International Migration Statistics, TurkStat

Table 4
First 5 countries with the largest emigrant and immigrant population by country of citizenship, 2018

Country of citizenship	Immigrants	Country of citizenship	Emigrants (%)
Iraq	23.6	Iraq	20.6
Afghanistan	9.6	Azerbaijan	7.4
Syria	8.4	Uzbekistan	7.0
Turkmenistan	7.5	Turkmenistan	5.4
Iran	6.8	Iran	4.9

Source: International Migration Statistics, TurkStat

51. In 2019, there has been another pursuit of TurkStat, namely "length of stay of foreign residents". Under certain assumptions and by using administrative records again, statistics on "foreign population by the first year of residence in Turkey" was produced. The coverage of the study was the foreign population registered in the ABPRS and "the first year of residence" here refers to the year that a foreign resident started his/her continuous residence until the reference date. The reference date of the first results was 31 December 2018. This information was produced based on the retrospective analysis of the foreign population. In this analysis, not only the last but also the previous years of ABPRS were used along with the international migration data and residence/work permit records of related years. Basic figures related to this study are illustrated in Table 5.

Table 5

Foreign population by sex, country of citizenship and the first year of residence in Turkey, 2018 [As of 31 December]

Country of citizenship	Total foreign population	The first year of residence ^(*)					
		2018	2017	2016	2015	2014	2013 and earlier
Total	1 211 034	473 351	266 074	164 056	107 977	55 495	144 081
Iraq	283 934	113 458	81 756	45 068	32 750	6 530	4 372
Afghanistan	120 409	47 063	35 003	23 268	5 802	2 579	6 694
Syria	87 955	39 196	21 324	15 192	7 507	2 127	2 609
Germany	82 031	8 900	7 548	7 066	7 500	6 835	44 182
Iran	68 839	32 111	13 162	10 704	6 393	2 638	3 831
Turkmenistan	68 146	34 940	13 193	5 908	4 840	3 513	5 752
Azerbaijan	61 807	23 359	12 084	8 721	5 901	4 352	7 390
Uzbekistan	34 090	15 241	7 809	4 076	2 929	1 740	2 295
Russian Federation	33 441	13 844	4 938	3 444	3 352	2 771	5 092
Egypt	26 162	13 544	7 362	2 790	1 371	800	295
Other	344 220	131 695	61 895	37 819	29 632	21 610	61 569

Source: TurkStat, Address Based Population Registration System (ABPRS), 2013-2018

(*) It refers to the year that foreign population started to their continuous residence until 31 December 2018.

VI. Conclusion

52. In general, the context regarding the creation/use of administrative data on international migration in Turkey is favourable. Firstly, there is a legal basis for harmonization and processing of administrative data by TurkStat. Secondly, personal identifiers used nationwide for both Turkish citizens and foreigners make administrative data integration and linkage possible. Over the years, the quality of international migration data will increase and the content will be enriched in line with the improvement of the registers.
53. On the other hand, since the registers are kept for administrative purposes, even though remarkable progress has been achieved, there is still need for some improvements to acquire robust transformation of administrative registers to statistical data. Moreover, institutional mandates and data confidentiality concerns of administrative register holders may outweigh

the Statistical Law and become the main factors that slow down the process of access or transfer of the data.

54. Although registers of foreigners work in a similar way with the population registers, they only cover foreigners who have legal residence in the related country. In this respect, under-coverage (for those who are not in the administrative registers while present in the country) and over-coverage (for those who are in the administrative registers but not present in the country) problems come into prominence. Therefore, registration and deregistration of foreigners are crucial for determination of international migrants. Infrastructure works and awareness-raising campaigns will be carried out by the relevant institutions in order to make regulations that will ensure the individuals' declaration of their immigration and emigration. Declaration is crucial for the foreigners who lived in the country for a certain length of time or who have intention of staying for at least a certain length of time and who will leave the country.
55. Since the legislative change in 2015, Turkish citizens living abroad voluntarily register and update their information much more compared to pre-2015, for the sake of being able to vote in the general elections. However, further studies will continue with GDCRN to ensure the accuracy and completeness of the registers of Turkish Citizens living abroad.
56. Information on previous/next country of residence of migrants cannot be produced from the existing administrative data sources. Although information on previous country of residence seems likely to be produced with some arrangements in registers, information on next country of residence poses a strong challenge.
57. In order to calculate the most accurate population size, TurkStat needs to use border records to identify the usual residence population. Or another option is to modify the related regulation by adding mandatory de-registration rule and measures to ensure the application. Negotiations are still on-going with the relevant Ministry on this subject.
58. With the aim of increasing the quality of international migration statistics announced to the public annually, vital events (birth, marriage, divorce, death) should be complete and accurate for the foreigners residing in the country. Socio-economic characteristics of foreign population (such as educational attainment, economically activity status and occupation) are also to be studied by using existing data sources. So as to overcome the deficiencies in this matter, TurkStat will continue its work in cooperation with the relevant institutions.
59. In order to produce complete, reliable, regular, comparable and compatible international migration statistics, TurkStat, in cooperation with stakeholders, will continue to explore the availability of new data sources and to work on transformation of registers into statistical sources by developing existing data sources, fulfilling the fundamental information deficiencies and providing up-to-dateness and sustainability.
