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Improvement of population and migration statistics in Armenia - Current situation, future plans and ways to improve

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Improvement of population and migration statistics in Armenia - Current situation, future plans and ways to improve

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Abstract

In 2021, the Statistical Committee of the Republic of Armenia (Armstat) requested support from UNECE in order to assess the suitability of linking and harmonizing relevant data on migration from the Population Register of Armenia (PRA), the Border Management Information System (BMIS) and other relevant national databases. The objective was to develop a system aimed at producing data on migration in an efficient and sustainable manner, thanks to linkages with databases maintained by other agencies.

In response to the request from Armstat, two UNECE consultants carried out a mission in Armenia to collect information and discuss with representatives of Armstat and other relevant institutions. This report presents the main findings about the current situation, future plans, and some suggestions to develop the production of data on international migration using administrative data.

Part I of the report presents an assessment of the current situation in Armenia concerning the production of statistics on population and migration, covering data sources used, methods, reliability of statistics produced and their limitations.

Part II presents future plans and suggestions, with reference to the October 2022 population census of Armenia, based on data from the population registers combined with a sample survey. The linkage between data from the border management information system (BMIS) and the population register (PRA), planned for the purpose of the 2022 census, is discussed also in relation to the implications for the production of migration flows data after the census. Possible improvements of the production of migration statistics after the 2022 census are also discussed.

The UNECE Working Paper Series on Statistics consists of studies prepared by leading experts in official statistics from the UNECE region. The series presents and analyzes timely topics in statistics and aims to identify emerging issues and share innovations. The studies often serve as a basis for launching new work to develop new statistics and guidelines. The views expressed are those of the authors and do not necessarily reflect the official positions of the secretariat or of the governments of UNECE member States.

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Abbreviations

Armstat	Statistical Committee of the Republic of Armenia
BMIS	Border Management Information System
ILCS	Integrated Living Conditions Survey
IOM	International Organization for Migration
LFS	Labour Force Survey
NKR	Republic of Artsakh (formerly Nagorno-Karabakh Republic)
PRA	Population Register of Armenia
PSN	Public Service Number
RA	Republic of Armenia
UN	United Nations

I. Current situation

A. Statistics on total population and population composition

1. Data sources used for production of population statistics

1. The Statistical Committee of the Republic of Armenia (Armstat) uses both statistical and administrative data for the production of population statistics. The basic data for estimating the annual number of total population and its age and sex composition is the RA Population Census 2011 results. The sources for estimating annual changes of the population are administrative data: the vital registration for births and deaths, and registration of the place of residence for in- and outmigration estimates. In addition, Household Integrated Living Conditions Survey (ILCS) data are used to estimate net migration.

2. Method for producing the number and composition of the population

2. The population is usually measured by censuses following two definitions: the *de jure* population is the population permanently resident, both present and absent, in the given territory, and the *de facto* population is the population of permanent and temporary residents who are present at the time of census. The population temporarily absent includes those who were registered as residents but were absent for less than 12 months from the place of their main (permanent) residence as of the census time. The temporarily present population are those individuals who were not residents and were present in the given territory for less than 12 months as of the census time. The total number of (permanent) population and its composition by main demographic characteristics is calculated every year from the last census results and annual population changes (The Demographic Handbook of Armenia, annual since 2005)¹. For natural change of the population and for producing vital statistics, the Armstat uses electronic records from the Civil status registration system. This system provides information on births, deaths, marriages and divorces. Migration data are extracted from the Population Registry of Armenia (PRA) and are based on administrative registration of the place of residence. The data are initially collected by local offices of (the Passport and Visa Department of) the Police of the Republic of Armenia and transmitted to the PRA. Registration of the place of residence is considered to be incomplete, not covering all population movements from one place of residence to another. Particularly, the under coverage is concerning international migrations of Armenian citizens. Therefore, for more reliable annual population update estimations, net migration is re-estimated (statistically adjusted) by using results of the Household Integrated Living Conditions Survey (ILCS). This survey includes a number of questions about household members who have recent migration experience. Similar migration questions were included also in the Labor Force Survey (LFS).

3. Reliability of population statistics and limitations

3. The accuracy of the results of the 2011 population census is considered sufficient as the base for further updating the population figures. The natural change of population based on births and deaths registration is also close to complete. The most difficult problem is to ensure reliable

¹ Extract from The Demographic Handbook of Armenia, 2019: 'The data on population are derived based on Population Censuses. Population current registration data for 2002 - 2011 are represented by the re-estimated permanent population number based on RA Population Census 2011. Since 2011 the base for calculation of permanent population is the data of Population Census conducted from 12 to 21 October 2011 which is updated by adding the number of annual births and arrivals and removing the number of deaths departed persons from the given territory for each year. The data on migration (registration / deregistration) obtained from the RA Police since 2013 undergo a reassessment (statistically adjustment), given the fact that they do not completely cover the movement of the population (as people generally move without informing about it the Passport and Visa Department of RA Police) based on the migration estimation obtained by the results of Integrated Household Living Conditions Survey of the previous year'.

estimates for the migration component of the population change. Whereas registration (deregistration in case of emigrating) of the place of residence is incomplete, the net migration estimate based on sample survey data, even if it is a good solution in the current situation, has some limits. Particularly, spatial distribution of population within the country in detailed age and sex distribution cannot be reliably calculated, e.g. for higher age groups and smaller municipalities, possibly also for distribution by some other characteristics and relatively small groups of population.

B. Statistics on migration

1. Data sources used for production of migration statistics

4. The Armstat uses data from administrative sources and statistical sample surveys for compiling migration statistics. Traditionally, the registration of the place of residence at the local police offices has been the source for migration statistics, both internal and international. Both Armenian citizens and foreigners are registered.

5. *The variables available from the PRA for statistical purposes are the following:*

- (a) Date of birth;
- (b) Place of birth (country, marz-province, community, settlement, address);
- (c) Sex;
- (d) Place of previous or next residence (country, marz, community, settlement, address);
- (e) Country of citizenship;
- (f) Place of registration or deregistration – new residence (country, marz, community, settlement, address);
- (g) Nationality (ethnic affiliation);
- (h) Date of registration or deregistration;
- (i) Residence status (refugee or special residence status).

6. A set of questions for collecting data on migration is added to the household sample survey questionnaires. Household Integrated Living Conditions Survey (ILCS) data have been used to estimate net migration for updating total population since last census in 2011. Migration relevant questions in the ILCS 2019 questionnaire are presented in the Annex 1.

7. Questions related to migration have been asked also in the Labor Force Survey (LFS) that is an annual sample survey. Some of the data on migration was collected on all household members, some only on survey respondents. Questionnaires are available since 2014 on the website of the Armstat. The questions in LFS 2019 on migration topics are presented in Annex 2.

8. In addition, the Armstat receives and publishes regularly aggregated data on border entries and exits that does not directly provide data on migration flows but gives theoretically the possibility to estimate net migration for the total population. The data on external passenger transportation (arrivals and departures in/from the Republic of Armenia) is provided by the Ministry of Territorial Administration of the Republic of Armenia, and since 2010 the source of data is the electronic Border Management Information System (BMIS). The Demographic Handbook of Armenia 2020 includes the following information: “RA Boarder Management Information System of the Republic of Armenia, enables to obtain information about the administrative records on border crossings and the number of participants. This system does not allow to carry out the data processing in order to get migration data according to UN definitions and methodology”.

9. Among data related to migration issues, there are also data on residency status of foreigners, asylum seekers and refugees. These all are based on respective administrative databases. Figures are published semiannually in monthly-information Reports “Socio-economic situation of the Republic of Armenia” (January–June, January–December) and annually in the Demographic Handbook of Armenia.

2. Method for producing the number of international migrants

10. The Armstat publishes tables on the number of ‘administrative registrations’ and ‘administrative de-registrations’ of addresses in the PRA of persons. These does not reflect de facto international migration flows because serious under coverage of registration from and to abroad. Moreover, the time criteria (at least 12 months or most of 12 months period) recommended by the UN, is not applied. The commonly used time criteria in defining migrants is ‘for three or more months’. This is introduced in data collection by household surveys, in both ILCS and LFS. However, in the ILCS, the main source for net migration, various length of duration can be reported for absent household members (departures). The return household members are identified if person arrived from abroad to that place and was away for more than 3 months. These data concern only persons who are considered as household members at the time of survey. Net migration estimated from data on arrivals and departures collected by the ILCS is used for the annual population updates. The Demography department of the Armstat has produced a special publication “Migration snapshot of the Republic of Armenia – 2017” that makes use of data the ILCS. The ILCS has its limits due to sample size (less than 20.000) and the fact that it is not specifically designed for collecting international migration data. Number of cases in some groups of migrants, a few hundreds, may be too small to obtain a reliable estimation for the total population.

3. Reliability of migration statistics and limitations

11. As given above the completeness of migration flows statistics is not sufficient (as assessed by the Armstat, as well). The produced statistics on registration and deregistration do not fully respond to the requirements for international migration statistics, and these registration data could be not fully reliable for internal migration, too. The tools for profound improvement in the migration statistics are not statistical at this moment. Inducement measures are needed for the registration system. It has to be also marked that, even though the data published on registration and deregistration of the place of residence do not fully cover migration movements into and out of Armenia, these data are useful and their presentation can be considered as useful and clear. The Armstat has made efforts to improve the availability of data and more reliable data on migration by collecting data through sample surveys, in addition. Also, aggregate data on arrivals and departures on border points are available for statistics. This ensures that more information is available for monitoring general processes in the international migration. However, these different sources provide data that are not compatible and the estimated net international migrants is different from each source. For the data user it could be difficult to rely on them, e.g. for policy development.

12. The following tables 1 and 2 present the size of in- and outflows to and from Armenia according to various data sources while the figure hereunder displays the net international migration compared as computed from the three data sources.

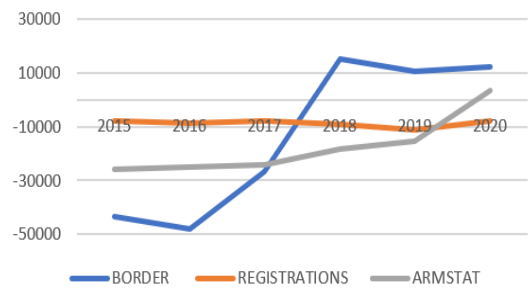
Table 1
In- and out-migration flows

	<i>Immigration including return migration</i>		<i>Emigration</i>		<i>Net migration</i>	
	Administrative registration in PR	ILCS estimation	Administrative deregistration in PR	ILCS estimation	Administrative registration in PR	ILCS estimation
2015	2,160	10,600	3,041	36,500	-881	-25,900
2016	2,427	8,200	2,520	33,000	-93	-24,800
2017	3,133	9,200	2,847	33,200	286	-24,000
2018	3,696	10,100	3,216	28,386	480	-18,286
2019	4,844	12,100	3,143	27,500	1,701	-15,400
2020	3,693	10,800	2,587	7,400	1,106	3,400

Table 2
Entries and exits at state border

	<i>Entries</i>	<i>Exits</i>	<i>Difference</i>
2015	2,709,269	2,752,694	-43,425
2016	2,867,000	2,915,170	-48,170
2017	3,398,169	3,425,014	-26,845
2018	3,757,187	3,741,869	15,318
2019	4,319,619	4,309,112	10,507
2020	913,211	901,119	12,092

Net migration 2015-2020



II. Future plans and suggestions

A. The 2020 Round Census Plans

13. The most important statistical data collection activity in the near future is the Population Census that is planned to be carried out in 2022. The recent and current activities in the field of population statistics are targeted to the preparation of this census. The exact census reference date is 13 October 2022 according to the RA Government decision. Whereas the intention is to base the main enumeration process on the available data in the state registers, mainly the Population Register (PRA), the identification of the resident population involves strongly the issues related to migration and data on migration.

1. Next census as the starting for new method for annual population estimates

14. General plans for the 2020 round census in Armenia have been done. It will be a register-based census combined with a sample survey. Main register to be used is the PRA. In addition to this, data from the border management information system (BMIS) will be used. Variables that cannot be taken from the register will be collected by a survey that covers 25% of addresses included in the PRA.

(a) Defining usual resident population in 2022 census in Armenia

15. In 2022, the census in Armenia is planned to be carried out as a register-based census combined with a sample survey. The census population will be defined as the de jure (registered) population of Armenia according to the PRA. For this, the ‘cleaning’ of the PRA extract is planned with help of the records on entries and exits from the BMIS. It involves matching active records of persons from the PRA with BMIS records of the latest entries and exits.

16. It has to be considered that places of residence are not well updated in the PRA. Need to correct the coverage of the PRA extract comes from the fact that data on place of residence is not well updated the PRA. Accordingly, it is not possible to reliably identify the total resident population at the time of census. More specifically, many Armenian citizens having a registered place of residence in Armenia actually left the country to work abroad, often to Russia but also to other countries, and live there already for many years. Opposite situations also exist, when an Armenian citizen or Armenian descendent who wish to acquire Armenian citizenship has declared a place of residence abroad but (already) lives in Armenia. Foreigners, who live permanently in Armenia are expected to register their place of residence in the PRA but there is no effective control over this. As a consequence, foreigner can live in Armenia but not having a registered address in the PR or if place of residence has been registered, it could be not updated after person left abroad. Issue of residence permit and end of its validity is not recorded in the PRA. The cases where Armenian citizen has no record in the PRA are rare but there are records of persons who has no registered place of residence in the PRA.

17. According to census plans the following characteristics will be extracted from the PRA (source: Armstat presentation 13.10.2021):

- (a) Personal code;
- (b) Name, surname and patronymic, if certified documents are presented;
- (c) Status (residence status or refugee status);
- (d) Actual registration address;
- (e) Citizenship, ethnicity;
- (f) Birthday, month, year, and birthplace;

(g) Sex.

2. Using register data for defining census population

18. From the PRA only active records of registered persons will be selected for the census population. Classification of persons who have active record in the PRA is given in Annex 3. For these persons, the last border entry or exit records will be searched from the BMIS.

19. Concerning existing information on the place of residence in the PRA, people can be classified in three groups in the PRA (see Annex 1):

(a) Most persons recorded in the PRA have a registered address of residence in Armenia;

(b) Some persons have address (place of residence) abroad in the PRA; among these, there are Armenian citizens but also citizens of other countries, e.g.: Russian citizens, who have Armenian origin but never lived in Armenia, but wish to have Armenian citizenship;

(c) Some persons have the address fields empty in the PRA (reasons to be specified, for some persons the address field can be emptied by owner's request²).

(a) Coverage of the PR and personal identifiers

20. Almost all Armenian citizens are included in the PRA but there is probably a contingent of people who live in Armenia but have no record in the PRA. The personal identification documents used as base for the registration in the PRA could be different – Armenian citizenship passports, ID cards or Social Cards (used for social services), foreign passports.

21. Among these documents only ID card and Social Card provides a unique identifier. Generally, every citizen of the Republic of Armenia has a PSN (Public Service Number). In case of having an ID card, the person's PSN is indicated on this card, and in case of not having it, it is available on the Social Card. Nevertheless, it is possible, that a person does not use any services provided by state authorities that would be available only when having identity documents and has not any such document. It is assumed that the number of people who do not use such services is very small.

22. Nevertheless, in the PRA record the person's PSN is created based on the information about the day, month, year of birth and sex of the person, auxiliary consecutive three-digit number and one-digit specifier (RA Law “On Public Service Number”) and if any person refuses to accept it, has the right to apply and receive a “Reference on not receiving PSN”. The PSN is not among the personal data in the passport of the Republic of Armenia and obviously it is not included in the passport of a foreigner. That may cause difficulties to match the PRA record with data from other datasets where the same identifiers need to be used. For matching the BMIS records and individual records of the PRA other identifiers, like names and passport number, are needed. It may cause the difficulty if person has changed his/her passport after the latest border crossing.

(b) Place of residence

23. According to the UNECE (and Conference of European Statisticians) recommendations (UNECE, 2016), the place of usual residence can be defined as the registered place of residence if administrative data are used for population and migration statistics. In general, it is assumed to be (for most of people) the same as the de facto place of residence.

24. In Armenia the registered address can be or not the same as de facto/actual place of residence (the range of difference is still to be identified, it is foreseen to ask questions in the 2022 census from 25% sample). As the place of residence is not regularly and completely updated, the PRA

² According to the RA Government decision (14.07.2005 N1231-N) “On Introduction of State Population Register System in the Republic of Armenia”, a person may be deregistered based on the homeowner's application or court decision.

record does not show the person's de facto place of residence at any time moment and it could not be possible to produce reliable data on the distribution of population neither on the number of usually resident population at the Census moment. Presence or absence of the person at the time of census cannot be reliably identified from the data on place of residence recorded in the PRA. Concretely, persons who live abroad but did not give the information about place of residence abroad, are still considered as residents in the country, and persons who arrived from abroad (even foreigners having residence permit) could be excluded if they ignored the requirement to register a place of residence in Armenia. In order to limit the errors in defining total census population, the PRA records are planned to be compared with the records of border entries and exits registered in the BMIS at the time of border crossing.

3. The BMIS extract

25. The planned linkage of the records from the BMIS with the PRA would enable better identification of the resident population in the country at the census moment. By matching the last entry or exit of the person over the state border to his/her record in the PRA the presence or absence of the person at the census time will be identified including the duration of period from last entry or exit to the census moment.

26. A detailed methodology description for how the matching of the records from two data sources will be executed, was not available at the time of preparing this report.

27. Currently, the data available for the Armstat from the BMIS includes the following data fields:

- (a) Year of border crossing (dates of entry exit exist in the BMIS);
- (b) Country of issuance of the document/passport (mostly identifying country of citizenship);
- (c) Year of birth;
- (d) Sex.

28. These data can be aggregated by the Armstat directly from the BMIS database through the special user's access environment. However, the Armstat does not have access to individual records of entries and exits in the BMIS and the record matching for census purposes is also planned to be done by the PRA and BMIS, and not by Armstat.

4. The project for linkage PRA and BMIS records for 2022 census

29. The project was initiated for the purpose of the 2022 census, but it is foreseen to serve various government users as well. For the linkage with the BMIS records, only active records of registered persons will be selected for the census population from the PRA. All alive Armenian citizens or ID card holders should have an active record in the PRA, but they may have registered address in Armenia or abroad. Also, a foreign citizen living in Armenia should have registered place of residence in Armenia. At the time of ongoing process of acquiring Armenian citizenship a foreigner may have record in the PRA with a registered address abroad.

30. For these persons, last border entry and exit records will be searched from the BMIS. Linkage of these records would identify who is physically in the country and who is out of the country at the census moment. The BMIS extract would include only the last border movement of each person registered in the PR since 2013 (partly since 2011 due to data availability).

31. This system allowing to distinguish among registered people in the PRA those who live in the country and those who live abroad, will be created for the census purposes. However, it would be useful to introduce the similar procedure after the census 2022 for the annual international migration statistics. In order to produce migration flows data based on registrations and

deregistrations in the PRA, new border crossings after census should be matched with active records in the PRA annually.

32. As the details for the record matching were not yet available at the time of preparing this report, we propose the following method that can be used for this exercise. By considering the time period between last border movement and census date, temporary absent and temporary present persons can be identified, international migrants can be distinguished among persons who arrived from or left to another country. Thus, persons who did not leave country or who arrived longer time ago, can be considered as permanently (usually) living in country and belonging to usually resident population at the census moment. Considering persons who has active record in the PRA at the census moment, the status of the person will be

(a) ‘Living in the country’ and accordingly considered as usually resident in country and included in the census population, if the last border record was ‘ENTRY’ and that occurred *at least 183 days before census moment*;

(b) ‘Living abroad’ and accordingly not considered as usually resident in country and excluded in census population (despite of registered address in Armenia), if the last border record was ‘EXIT’ and it occurred *at least 183 days before the census moment*;

(c) As present at time of census and included in the census population, if the last border record was ‘ENTRY’ *within the last 182 days* and person has a registered address in Armenia;

(d) As temporary abroad but included in the census population, if the last border record was ‘EXIT’ *within the last 182 days* and person has a registered address in Armenia.

(a) Any situations that need special attention

33. Whereas the linkage of border records with PRA records is expected to help identify among the people registered in the PRA of Armenia those who are in the country and those who are out of the country at the census moment, it leaves the possibility for errors. Concretely errors may occur in case of following persons:

(a) Have registered place of residence in Armenia but de facto live abroad, visiting Armenia shortly before census;

(b) Have registered place of residence in Armenia and emigrated shortly before the census (both foreigners and Armenian citizens);

(c) Foreigners not having registered place of residence in Armenia (both recently arrived and living already longer period in Armenia).

34. For example, if an Armenian citizen who has registered address in Armenia but de facto lives abroad, arrived recently before census, he or she will be considered as person living in country at census time even if he/she arrived only for temporary visit. Both Armenian citizens and foreigners who have registered place of residence in Armenia, and left country just before census (within 0–182 days) for a long-term residence abroad, will be still considered as members of Armenian population in the census. Also, as only persons having active records in the PRA will be considered among census population, any foreigner de facto living in country, but not having address in the PRA, would be excluded even if his/her last entry at border was long time ago (there seems to be no direct link between issue of residence permit and registration in the PRA).

35. In order to apply the criteria and to identify international migrants-returnees living in Armenia at census time and international emigrants who used to live in Armenia but left before census, it would be needed to capture year and month of at least two last ENTRIES or EXITS recorded in the BMIS. In order to include new foreign immigrants, the linkage of the BIMS with visa or residence permits records would be needed (see lower paragraph ‘Other possibilities...’)

36. Another thing that may create the problem or limit the possibility to link the PRA records with the BMIS records is missing unique identifier in BMIS records. Whereas the Public Service Number is indicated on the personal identification card (or in case of not having it on Social Card), this identifier is not shown in the Armenian passport. Therefore, it is necessary that the PRA record includes the serial number of a valid passport for every Armenian citizen as well as the serial numbers of previous passports that were used at last exit and entry over state border. The same should be also for foreigner who is official resident in country.

5. The expected coverage by groups of the census population as the result of matching the PRA and BMIS records

37. As the result of linkage, the extract from the PRA would consist of the following parts:

38. People identified *as present in country – last border record is arrival (ENTRY) (Group A)*

Group A1 – Records of Armenian citizens registered in PRA with address in Armenia linked with entry records in BMIS

Group A2 – Records of Armenian citizens registered in PRA with address abroad linked with entry records in BMIS

Group A3 – Records of foreign country citizens registered in PRA with address in Armenia linked with entry records in BMIS

Group A4 – Records of foreign country citizens registered in PRA with address abroad linked with entry records in BMIS (if such group exist)

Group A5 – Records of Armenian citizens registered in PRA with address in Armenia not linked with any records in BMIS

Group A6 – Records of foreign country citizens registered in PRA with address in Armenia not linked with entry records in BMIS

39. People identified *as absent from country – last border record is departure (EXIT) (Group B)*

Group B1 – Records of Armenian citizens registered in PRA with address in Armenia linked with exit records in BMIS

Group B2 – Records of Armenian citizens registered in PRA with address abroad linked with exit records in BMIS

Group B3 – Records of foreign country citizens registered in PRA with address in Armenia linked with exit records in BMIS

Group B4 – Records of foreign country citizens registered in PRA with address abroad linked with exit records in BMIS (if such group exist)

Group B5 – Records of Armenian citizens registered in PRA with address abroad not linked with any records in BMIS

Group B6 – Records of foreign country citizens registered in PRA with address abroad not linked with entry records in BMIS *(if such group exist)*

40. People, both identified as present and absent, can be further classified as permanently or temporary present or absent when considering the duration of time between census moment and, respectively, last entry or exit.

41. *Some coverage errors that can still remain*

(a) The census population would exclude recent (foreign) immigrants who has no registered place in the PRA. The ENTRY records from the BMIS of these persons will not be counted for the census enumeration;

(b) When using only last border movement, it is not possible to identify if person had de facto usual/permanent place of residence in or out of Armenia before census. At least two consequent border movements would be needed including the duration of stay in or out of country between these border crossings. Ideally, the BMIS extract must include all border crossings of person up to the date of census.

6. Other possible useful linkages for identification of census population

42. As shown above, immigrant foreigners who have no registered place of residence in the PRA will be excluded from the census population, even if according to the duration of stay in Armenia they should be enumerated as usual residents in country. One way to include them is to link the BMIS records with residence permit database and visa database (only for long visas that allow multiple entries). Obviously, most demographic and socio-economic characteristics of these foreigners are not available from the BMIS. However, if such linkage is possible, some variables can be taken from residence permit application. Their place of residence in Armenia would be most probably unknown, except if some information is collected by permit application. If linkage with residence permit database is not possible, the persons who have last border movement record 'ENTRY' at least 182 days before census should be considered in the total number of census population but with unknown values for variables that are not included in the BMIS records. According to information about available data for the Armstat from BMIS, shown above, in addition to entry and exit dates, sex, year of birth (or date of birth) and country of citizenship (country of issuance of the document/passport) are included in the border record.

7. Checking the reliability of constructed census population

43. The database resulting from the linkage of the PRA and BMIS records should be compared against any other existing dataset that includes similar data. All possibilities to compare should be considered. Ideally, record-by-record comparing should be done but this could be not possible or is too time consuming. Alternatively, comparing as many as possible lowlevel distributions of variables in total and/or specified categories of population could be done.

44. The datasets to consider would be:

(1) *the 2011 census*. Whereas record-by-record comparison would be difficult due to inexistence of a common unique identifiers, this comparison can still be effectively done by comparing aggregated data (cross tabulations with low level aggregation, e.g. settlements, single-year ages) and relative frequencies.

45. The same could be done with:

(2) *The survey data* – Household Integrated Living Conditions Survey (ILCS) or/and Labor force survey (LFS).

46. It could also be checked how close the constructed census population is to the

(3) *Estimated population at census time based on 2011 census results plus/minus vital events and registered international migration*.

47. Some other checks could include comparing the constructed age composition with the number of students in different level of education from school statistics, and the number of persons (above retirement age) receiving pension according social service records (in case if a large majority of people at certain age receive it).

8. Census data collection by a 25% address sample

48. The data on the other variables defined by the census program but not included in the PRA will be obtained by a sample survey that will involve 25% of the addresses in the state population register. The enumerator would visit these addresses and collect data through interviews (by CAPI).

49. Among other, questions are planned also on migration issues. Preliminary list of questions has been prepared. These include place of birth and country of citizenship. Data is planned to be collected also on previous place of residence that can be a place abroad. Thus, some minimum data on migration issues will be collected and this could satisfy basic needs for data on internal migration. However, only part of recent international migrants will be identified. In order to collect data on international migration it would be needed to revise the planned questionnaire. The list of planned questions is given in Annex 4 together with suggested corrections.

50. The census survey should include a limited number of questions that are clear and easy to answer and at the same time allow to collect all needed data for population composition and migration flows analysis. Planned migration-related questions data to be collected on composition of population at the time of census are the following:

- (a) Citizenship;
- (b) Country or locality of birth in Armenia;
- (c) Type of presence: permanently present, temporary present, absent;
- (d) Short-term migrant status;

Asking temporary presence or absence, short-term migrants can be distinguished according to duration of stay/absence.

- (e) Continuity/duration of living at the place of enumeration;
- (f) Previous place of residence (in Armenia or country abroad).

51. As the data is collected from a sample and not from the total population to be covered by census, the two last questions should be asked not only from the permanent residents but also from absent and temporary present persons.

9. Proposal for improvement of data collection on international migration by 25% census survey

52. Planned questions allow to estimate internal migration flows of the permanent population when considering persons who had previous place of residence elsewhere in country and the duration of living in the place 12 months or less (arrived during 12 last months).

53. However, the planned questions exclude possibility to collect data on composition of population by international migrant status. For both international migrants and returnees who, after arrival from abroad, changed once or more times their place of residence within Armenia, information about their living abroad will be not collected, even in case of the last international migration occurred within last 12 months before census. Accordingly, international immigration flows that could be estimated based on in-migrations during last 12 months will underestimate international migration. Moreover, data on duration of residence in country after arrival from abroad will be no available. Currently the planned questionnaire would not give the possibility to collect any data on migration pattern of returnees. These data would be very useful considering that Armenia has experienced huge outflows of it nationals and increasing return migration could take already place that there are some signs (e.g. according border movements).

54. Considering the planned list of questions, the most suitable solution would be to improve the collection of data by adding specific questions for international migration. Considering that international emigration and return migration are involving big number of Armenian population (migrants and their families) it is very important to gather these data by census sample. With 25 % of coverage of the population it can give remarkably more reliable information than the two other sample surveys (ILCS or LFS). By introducing minimum changes in wording and three or four additional linked questions the data on international migrations of enumerated persons in the sample could be captured.

55. A summary table in Annex 4 presents planned questions (in black) by Armstat together with our proposed revisions (in blue) in wording of question and new additional questions (in red) that would help to collect needed data.

B. Migration statistics after the 2022 census

56. The Armstat has currently several migration data sources that are used for producing statistical data on international migration. However, none of these are satisfactory and the produced data are not comparable. Resulting figures from these datasets are rather different. More problematically, the estimated net migration can be positive according to one data source and negative according to another (e.g. border movements versus ILCS for 2018 and 2019). The reasons are diverse: (i) under-coverage of administrative registrations and deregistrations (ii) limited sample size of statistical sample surveys and (iii) access to the individual records from the BMIS that does not allow to apply definition of migrant. Some improvement for the reliability of data produced from these sources could still be possible. These would involve some changes in survey questions and processing of individual border records by matching them with the records from the PRA for identification of in-and out-migrations of persons having place of residence registered in Armenia. Whereas the 2022 census will be combined from various data sources that are at the same time sources used for migration data, it is reasonable to seek for improvement of migration data collection from these sources as well in a short-term perspective. In this respect, we suggest to consider data improvement that would include mainly a clarification of the definition, and accordingly a rewording of the regular ILCS survey questionnaire. The way to use the survey's answers to identify international migrants for a given calendar year would also be reconsidered. Another suggestion concerns the development of a new methodology that matches individual data from border movements with the PRA records. This suggestion is not a fully new idea, as for the 2022 census such linkage is already foreseen.

1. Better catch international migration flow from ILCS

57. Suggestions for improving data collection by the ILCS mainly concern defining international migrants through rewording questions. First of all, a minimum duration of stay inside or outside the country should be fixed for counting person as a migrant. The 1998 UN recommendations on statistics of international migration define long term migrants as those who move to another country for at least 12 months, whereas the UN census recommendations suggest for defining usual place of residence either at least 12 months or most of the time during 12 months' period that means more than 6 months in a 12-months' period. The UN is working to revise the recommendations on international migration statistics, and in this context in March 2021 the UN Statistical Commission endorsed a new conceptual framework with revised concepts and definitions (UN, 2021) according to which the definition of "international migrant" does not refer to any specific threshold, but more generally to the fact of having changed the country of residence. Based on our experience on using border data in other countries, we recommend considering the criteria of a cumulative duration of at least six months during a 12 months period to identify international migrants. This allows to exclude short-term departures and arrivals when defining migration event.

(a) Absent members in the household

58. According to the ILCS 2019 data, the total reported number of absent persons is 995 (considering neither the place nor the duration of absence) of which 685 were reported as currently living abroad. To count the annual number of international emigrants we need to consider only those who left during a 12 months period. When using a time criterion of at least 3 months (as used for returnees, see above) we found 474 absent persons since more than 3 months and less than 15 months, that are living abroad. Nevertheless, following the recommended definition

mentioned above, the person should be counted as international emigrant if the duration of stay abroad was more than 6 months³.

(b) *Persons present in the household who reported that they stayed abroad during the last five years at least for 3 months*

59. The questions on reported in-migrants (both returnees and newly arrived) in households includes the duration of stay abroad for at least 3 months since 2014. In the 2019 ILCS, 951 persons reported having lived elsewhere at least 3 months, and among these 679 persons reported a stay abroad. The frequency distribution of the answers about returning from abroad by the year of last return is presented in table 3. It shows the obvious underreporting of returnees as the time between survey and return becomes longer. The more reliable data for a 12 months' period could be of 2018 (as 2019 is only partly covered as the survey took place alongside this year). Accordingly, we should consider the 273 arrivals after living abroad at least for a 3 months' in 2018. Moreover, the number of international returnees might be slightly under-estimated due to those who lived abroad but did thereafter an internal migration to the current place the recent. These could be hidden because their last return was from inside the country. Differently, it is important to include international immigrants who are not return migrants who never lived in the place of residence where they are currently living at census time. For the persons present who reported that they stayed abroad, ILCS answers do not give the possibility to apply the 6 months rule as criterion. Accordingly, in the recommendations, for consistency reasons and to better align with international recommendations, we suggest to *replace at least 3 months* of absence from household with *at least 6 months*.

Table 3

Number of household members in ILCS who reported returning from abroad after stay abroad at least 3 months

Year of last return	Household members returning from abroad
2014	14
2015	35
2016	55
2017	97
2018	273
2019	205
Total	679

60. As a result, the net international migration for the year 2018 may be estimated by $(273 - 474) / 18,654 = -1.1\%$ on the base of the 3 months criterion.

61. Therefore, the ILCS question “In what month and year did [NAME] come here after her/his most recent time away?” should be supplemented by the question: “In what month and year, and from which country did [NAME] returned or immigrated to Armenia”?

62. Nevertheless, such change of the criteria for the duration of stay in defining of migrants would result in only a small improvement in the estimation of migration flows because the sample size is too small for capturing international neither internal migration.

³ According to this definition, the annual number of emigrants identified by the survey would include persons who left but at least 6 months before survey (between 6 and 18 months before survey) *and were still absent at the time of survey*. In total, 401 members of households were absent at the time of ILCS 2019 according to this definition based of a minimum of 6 months of absence. Among them, 270 were international emigrants as they were living outside the country. As a result, the proportion of annual international emigrants would be $270/18,654 = 1.5\%$.

2. Possibilities to improve migration statistics by implementing data from the Border Management Information System

63. Migrants can be identified from the BMIS records by using the definition recommended by both UNECE (2015) and UN (1998) according to which the usual resident in the country is a person who usually resides in country. More precisely, a person who enters a country and stay there for 12 months or for the most of time during 12 months, has usual residence in this country and is therefore an immigrant. If person leave the country and stay abroad for more than 12 months (or most time during the 12 months' period) he/she will be considered as emigrant. These time criteria can be applied to the data on border entries and exits.

64. Border registration of entries and exits has been (electronically) available since 2013 (partially from 2011). As most border crossings are of tourists, a selection of records could be reasonable. ENTRIES and EXITS are registered at the date when these occur and dates are recorded in the database. In addition to date of border crossing and direction (ENTRY or EXIT) few variables are kept in the database. Nevertheless, a border record should include country of citizenship and passport number whereas sex, date of birth and country of birth could exist or not. Most durations between an ENTRY and EXIT (or opposite) are relatively short (from ENTRY and EXIT during the same day till a few weeks).

65. Extract from the border database should include all entries and exits records organized at individual level in order to reconstruct the border crossing history on all persons who had at least one ENTRY or EXIT. To identify international immigrants or emigrants for a given calendar year, the trajectory should cover three successive years including one year before and after the given year in order to apply the criteria of 'most of the time during the concerned year' as suggested by the UN census recommendations. The detailed methodology for using border collection data is presented in the Annex 5.

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ANNEXES

- ANNEX 1. Integrated living conditions survey (ILCS) questionnaire, 2019
- ANNEX 2. Labour Force Survey questionnaire, 2019
- ANNEX 3. The use of the Population Register to count international migrants
- ANNEX 4. Questions on migration topic for 25% sample of 2022 census, planned and recommended additions
- ANNEX 5. Methodology for using a border crossing database for the estimation of international migration flows
- ANNEX 6. Census program (content of questionnaire) of the 2022 census of the Republic of Armenia

Labour Force Survey (LFS) questionnaire 2019 – Questions on migration

SECTION C. INFORMATION ON POPULATION MOVEMENT *

The NN of H/H	[Name's] Place of birth	[Name's] Country of Citizenship	During the 2019 year, has [NAME] permanently lived in this settlement (usually) (province / Yerevan)	Since last year has [NAME] moved for 3 months and more? (departure from this settlement / arrival or returning to this settlement)	Please, specify the character of the LAST move*	Date of [NAME'S] LAST move		[NAME'S] LAST move		[NAME]		
						month	year	Main purpose	Country / province / settlement	[NAME] Status of stay in the household at the moment of survey	How long [NAME] Intended to stay in that settlement	Are [NAME] eligible for further questions?
B1	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

* For INTERVIEWER!

• Refers to column C3 and C4

Within the framework of this survey:

- MOVE within the Armenia likely to be a move from province to Yerevan or move from Yerevan to province for **3 months or more**
- Military compulsory service does not considered as MOVE.

• Refers to column C12

For SECTION D. (Employment) eligible respondents likely to be household's member(s) aged 15 to 75 (including):

- Permanently present member (C10 = 1), including person in military compulsory service
- Temporarily present members (C10 = 2)
- Absent members, if the length of absence is less than 12 months (C10 = 3 or C10 = 4).

NOTE: The full version of the questionnaire (including some questions on working or going abroad in sections D and J) is available on the website of the Statistical Committee of the Republic of Armenia at <https://armstat.am/file/doc/99522848.pdf>

The use of the Population Register for updating population count and identifying international migrants

Classification of persons who have active record in the Population Register

<i>Status of record</i>	<i>Population group</i>	<i>Status of person</i>	<i>Status of residency (place/address of residence)</i>	<i>Conditional selection (Last entry on the border more than 90 days ago, no exit after =yes)</i>	<i>Inclusion in Census population</i>
Active record in register	Citizen	Alive	Address in country	Yes	Conditionally
			Abroad	Yes	Conditionally
			Unknown (missing)	Yes; if no border crossings or if last border crossing is entry and no exit, the missing residence to be clarified	Conditionally
	Foreigner	Alive	Address in country	Yes	Conditionally
			Unknown	Yes; if no border crossings or if last border crossing is entry and no exit, the missing residence to be clarified	Conditionally
			<i>Abroad is not meaningful – should be non-active record then</i>	<i>See non-active record for foreigner</i>	
	Not determined (or in process of acquisition)	Alive	Address in country	Yes	Conditionally

Persons do not have active record in the register but who should have or whose record is in preparation or who had it in past (now in archive)

<i>Status of record</i>	<i>Population group</i>	<i>Status of person</i>	<i>Status of residency (place/address of residence)</i>	<i>Conditional selection (Last entry on the border more than 90 days ago, no exit after =yes)</i>	<i>Inclusion in Census population</i>
Non-active record in preparation (waiting list) OR NOT YET IN REGISTER	New citizen	Alive newborn in country to Armenian parents (<i>within limited days before census</i>)	No address or (parents') address in country		Direct (all newborns before census date regardless of status of the record or registered address)
		Alive newborn abroad to Armenian parents <i>within limited days before census</i> (or other e.g. new citizen?)	No address or address abroad	Entry on the border, no exit after; parents entry to be considered.	Yes, conditionally
	New foreigner	Recent resident permit applier	No address or (preliminary) address in country	Yes	Yes, conditionally
		Recent resident permit holder	No address or (preliminary) address in country	Yes	Yes, conditionally
Non-active records in archive	(Past) Citizen, resident or not	Dead	Missing (or last) address		
		Unknown	Missing address (or last address in archive)	Yes	Yes, conditionally
	(Past) Resident foreigner	Left country	Missing (or last address in archive)	Yes	Yes, conditionally

Persons who have no record in the Population Register but who should be enumerated in census

Identification based on border crossing (any other possibility e.g. life signs?)

<i>Status of record in the PR</i>	<i>Population group</i>	<i>Status of person (evidence)</i>	<i>Status of residency (place/address of residence) in the PR</i>	<i>Conditional selection</i>	<i>Inclusion in Census population</i>
No record in register	All	Alive	No, unknown	Last entry on border more than 90 days ago, no exit after	Yes, conditionally
No record in register	All	Alive	No, unknown	<i>Clear and continuous life signs since more than 90 days ago</i>	Yes, conditionally

In this case limited data can be collected on person, only main personal information from the passport – citizenship, maybe sex, date of birth and country of birth.

Criteria used to identify international migrants

The analysis of the records and the information included on the place/country of previous residence and country of current residence resulted in the following decisions for identifying international migrants:

- (a) No place of previous residence and a current place of registration in Armenia:
 - Persons less than 5 years old are newborn abroad registered in Armenia but not considered as having entered the country;
 - Persons older than 5 years old are international entries in Armenia but without place of previous residence;
- (b) No place of previous residence and registered with a place of residence abroad. These may be person who left the country and their international exit should counted or people already living abroad registering their address abroad for specific reasons including to avoid military obligations;
- (c) A place of previous residence in Armenia and a new registered place in Armenia. These are internal changes of place of registration and accordingly internal migrations;
- (d) A place of previous residence in Armenia and a new address of residence abroad. These people did an international exit outside the country;
- (e) A place of previous residence abroad and a new registration of address abroad. These do no enter or exit the country, just change their address abroad.

Basic statistical figures computed on the base of individual records of registrations in the Population Register

The following table distributes entries, exits and internal changes of place of registration by gender and citizenship (Armenians, Foreigners and, for the third group, holders of the Armenian citizenship plus one of plus other citizenships).

In total, for the years 2015–2020

	<i>ARMENIAN CITIZENS</i>			<i>FOREIGN CITIZENS</i>			<i>ARMENIAN AND FOREIGN</i>		
	Entry	Exit	Internal	Entry	Exit	Internal	Entry	Exit	Internal
M	12,152	15,914	78,454	1,414	10	246	5,541	16,474	1,681
F	12,403	18,577	124,149	642	8	163	6,458	20,209	1,917

In total, the net international migration 2015–2020 (6 years) is the following:

ARMENIAN = - 9,936 / FOREIGNERS = + 2,038 / DOUBLE CITIZENS = - 24,684

If double citizens are counted among Armenian citizens, the net international migration figures are the following:

ARMENIAN CITIZENS: - 34,620 / FOREIGN CITIZENS: + 2,038

The same data is available by year of occurrence and gender

International Migrations for the year 2015–2020 distinguishing Armenians and Foreigners

	<i>ARM</i>			<i>FOR</i>			<i>ARM/FOR</i>		
	ENTRY	EXIT	NET	ENTRY	EXIT	NET	ENTRY	EXIT	NET
	16,114	34,491	-18,377	1,523	18	1,505	1,416	36,683	-35,267
M	8,858	15,914	-7,056	1,045	10	1,035	695	16,474	-15,779
2015	2,429	3,149	-720		1	-1	153	2,151	-1,998
2016	1,669	2,813	-1,144	204		204	94	2,327	-2,233
2017	1,538	2,514	-976	220		220	165	2,704	-2,539
2018	1,343	2,740	-1,397	278		278	102	3,010	-2,908
2019	1,329	2,713	-1,384	178	3	175	128	3,989	-3,861
2020	550	1,985	-1,435	165	6	159	53	2,293	-2,240
F	7,256	18,577	-11,321	478	8	470	721	20,209	-19,488
2015	1,618	3,873	-2,255		1	-1	151	2,811	-2,660
2016	1,234	3,348	-2,114	116		116	115	3,529	-3,414
2017	1,412	3,084	-1,672	112		112	156	2,922	-2,766
2018	1,265	3,137	-1,872	114		114	102	3,589	-3,487
2019	1,222	2,862	-1,640	72	1	71	131	4,586	-4,455
2020	505	2,273	-1,768	64	6	58	66	2,772	-2,706

The following table shows the net migration figures and their distribution by age group and gender

	<i>Net Migration</i>		<i>Distribution</i>	
	Males	Females	Males	Females
0	-924	-1,144	4.2%	3.8%
5	244	261	-1.1%	-0.9%
10	280	32	-1.3%	-0.1%
15	-2,325	-4,266	10.7%	14.1%
20	-438	-2,870	2.0%	9.5%
25	-1,964	-3,134	9.0%	10.3%
30	-2,464	-2,856	11.3%	9.4%
35	-2,272	-2,556	10.4%	8.4%
40	-2,146	-2,293	9.8%	7.6%
45	-1,874	-2,237	8.6%	7.4%
50	-2,072	-2,389	9.5%	7.9%
55	-2,061	-2,482	9.5%	8.2%
60	-1,645	-1,870	7.5%	6.2%
65	-995	-1,102	4.6%	3.6%
70	-538	-626	2.5%	2.1%
75	-337	-429	1.5%	1.4%
80+	-269	-378	1.2%	1.2%

Questions on migration topic for 25% sample of 2022 census, planned and recommended additions

Residence of a person other than those listed at the given address
Registration at the given address
Place of birth, the country, in case of Armenia- marz, community and settlement
Country of citizenship
At Census day the respondent was <ul style="list-style-type: none"> • Permanently present • Temporary present • Absent
For those who are absent from the settlement or temporary present at Census day: Duration of absence/temporary presence (months);
For those who are absent from the settlement or temporary present at Census day: The reason of absence/temporary presence;
For those who are absent from the settlement or temporary present at Census day: Absent person's location at Census day -country, in case of Armenia – marz, community and settlement;
Temporary present person's location at Census day -country, in case of Armenia – marz, community and settlement
Planned question: Living continuously in the given settlement since birth, if 'No', Block A The year since...etc – Suggested to replace with the following (alternative) wording: Alternative question: From which time the person lives most of the time in the given settlement? Answers: (a) 'Never lived elsewhere (since birth)' (b) If 'Has lived elsewhere', Answer Block A (the same as planned) and thereafter go to Block B Explanation: With new formulation of question, persons who were born in this settlement and lived sometimes far in past elsewhere, will be more surely captured (helping memory) if focus is on 'living elsewhere' rather than 'living continuously in current place'. It should be asked from permanently present and absent persons; <i>optionally also from temporary present as they will not be interviewed in their permanent place of residence.</i>

Block A (we suggest to replace ‘continuously’ by ‘most of the time’)

The year since a person most of the time lives in the current settlement

The month since a person most of the time lives in the current settlement

Previous residence - country, in case of Armenia – marz, community and settlement.

Here additional question is needed about last arrival from abroad

What kind of settlement a person has his/her previous place of residence (rural urban)

Main reason for the last change of residence

Block B (additional questions to identify international migrants. new and returnees)

Have you (he/she) ever lived abroad for at least 6? or 12? months?

If 'no' ends in Block B

If 'yes' go to Block C

Explanation: International immigrants and returnees can be captured even if they changed their place of residence from one settlement to another in country after arrival to Armenia. Number of months abroad – need to be decided either 6 or 12 (in relation to definition of migration) but seems 6 months would be very suitable considering that, when working abroad, person spends every year some time his/her holidays in home country)

Block C

When (month and year) you (he/she) arrived to live in Armenia (last arrival if immigrated several times)?

What was your (his/her) country of residence before immigration/returning from living abroad?

Explanation: This question would allow to identify time (year) of returning your emigrants. It is useful for both characterizing the stock of population by its international migration experience and for estimating annual immigration/return migration flow (if considering only last 6 or 12 months).

Optional:

If born in Armenia, when left (year) abroad before last return?

Explanation: This question would allow to identify time (year) of emigration of returnees as well as duration of living abroad before return. No need to ask these questions from foreign-born persons who could also have lived more than once in Armenia because they are so rare.

Methodology for using a border crossing database for the estimation of international migration flows

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For ARMSTAT, December 2021

1. The following methodology has been initiated for countries managing successfully the control of their borders and having developed an exhaustive border crossing database based on the registration of individual data at border crossing (manual editing or optical reading recognition, the latter allowing to a reduction of necessary steps) or recorded from later using border cards filled in by international passengers.
2. The methodology aims at estimating the yearly international migration inflows and outflows as well as some groups as visitors, temporary absent, short-term migrants and circular migrants. For the reference year T, all individual border crossings observed and registered over a three-year period from year T-1 to year T+1 have to be considered. If the database covers N years of border crossing records, the statistics may be obtained for N-2 years excluding the first and the last years.
3. This solution strictly respects the UN and EU recommendations as far as the definition of international migration and the one of country of usual residence are concerned. The proposed methodology includes the following successive steps:
 - (a) The building of a border crossing database;
 - (b) The validation and correction of that database;
 - (c) The identification of international migrants and other types of travellers crossing the national borders; and
 - (d) Counting and producing statistics for each group and characterising the concerned persons.

A. Building a border crossing database

- All travellers crossing the National border have to be recorded by date, identification characteristics of the persons concerned and distinction between entries (IN) and exits (OUT).
- All border crossings for the same person will be linked and associated with the basic characteristics of that person such as sex, date of birth, country of citizenship, number of passport and, if available, country of birth.
- The keys for linking these records for the same person are the passport number, the country of citizenship, sex, name and surname and the complete date of birth. In some countries direct linkage between a given entry and the following exit is done directly by the border guards when the person leaves the country. However, this linkage is not systematic for successive visits while for absences, exits followed by returns such linkage is often not done directly.
- A special attention will be devoted to the completeness and the reliability of reconstructed personal itineraries as far as border crossing is concerned, i.e. sequences of entries and exits referring to the same individual. A validation and subsequent correction of the database is essential as the same person may

be involved in two or more reconstructed personal itineraries and that situation may result in an overestimation of the number of international migrants.

B. Validation of the personal itineraries including all border crossings related to the same person

4. All reconstructed personal itineraries resulting from the linkage of all entries and exits related to the same person and recorded in the database during the considered time period will be classified in three groups:

- Personal itineraries including only one border crossing, either an entry or an exit. Following the proposed methodology these persons would be automatically considered as international migrants but there is in fact a high probability that these persons have done other border crossings, these being included in a distinct personal itinerary. Both personal itineraries have to be joined in order to describe the whole border crossing history of that person. Accordingly, the records and persons have to be checked carefully in the validation phase.
- The so-called “logical itineraries” where all border crossings (more than one) linked to the same person are found in a logical suite which means that an entry cannot be followed in time by another entry and similarly for exits.
- The so-called “illogical itineraries” where at least two successive entries or exits are recorded without any exit or entry in between. These illogical itineraries have to be validated by finding the missing border crossings and joining the corresponding personal itineraries in order to reconstruct the total personal itinerary of these persons.

5. The complete validation methodology is based on similarities between individual characteristics and plausibility of the sequence of border crossings. As a result of that validation phase there should remain only “logical personal itineraries” including some itineraries of single entries or single exits that were not involved in the validation phase and joined with other personal itineraries.

6. A last check in order to join two or more ‘logical itineraries’ related to the same person is finally necessary in order to reflect the whole border crossing itinerary for each person.

7. In the case additional entries or exits will need to be added the following rules are proposed:

- An entry will be added between two recorded exits either eight days after the first exit for those who have their usual residence in the country concerned or eight days before the second exit for those who are not usual resident of the country.
- An exit will be added between two recorded entries either eight days after the first entry for those who have not their usual residence in the country concerned or eight days before the second entry for those who are usual resident of the country

C. UN recommendations for the identification of international migrants

8. The following extracts from various UN recommendations are essential to understand the proposed methodology for identifying international migrants by using border crossing database:

9. From the Principles and Recommendations for Population and Housing Censuses (UN, 2007):

1.463. *It is recommended that countries apply a threshold of 12 months when considering place of usual residence according to one of the following two criteria:*

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

(b) *The place at which the person has lived continuously for at least the last 12 months (not including temporary absences for holidays or work assignments), or intends to live for at least 12 months.*

10. From the Recommendations on Statistics of International Migration, Revision 1 (UN, 1998):

32. *An international migrant is defined as any person who changes his or her country of usual residence. A person's country of usual residence is that in which the person lives, that is to say, the country he or she normally spends the daily period of rest:*

Box 1. A long-term migrant is a person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence.

Box 1. A short-term migrant is a person who moves to a country other than that of his or her usual residence for at least three months but for less than a year. Since these persons have their usual place of residence in another country, they should not be included in the count of the total population that usually resides in the country.

11. The differences between these two above mentioned criteria are underlined. For the first criterion, most of the last 12 months (i.e. at least six months and one day) have to be considered while the second request at least 12 months of residence. Both criteria exclude temporary absence for holidays or work assignments.

12. The recent EU Regulation on Community Statistics on Migration and International Protection proposes the following definitions:

(a) *“Usual residence” shall refer to the place in which a person normally spends the daily period of rest. Temporary travel for purposes of recreation, holiday, visits to friends and relatives, business, medical treatment or religious pilgrimage shall not change a person's place of usual residence;*

(b) *“International immigration” shall refer to the action by which a natural person establishes his or her usual residence in the territory of the Member State for a period that is, or is expected to be, of at least twelve months, having previously been usually resident in another Member State or third country;*

(c) *“International emigration” shall refer to the action by which a natural person, having previously been usually resident in the territory of the Member State, ceases to be usually resident in that Member State for a period that is, or is expected to be, of at least twelve months.*

D. How to follow these recommendations when identifying international migrants by using a border crossing database?

13. First of all it is important to mention that the proposed methodology is only based on objective information that is the effective duration of presence or absence in the country. These durations are calculated very precisely *ex post* by considering all dates of entry or exit as recorded by the border guards. This methodology does consider neither the intention for the duration of presence or absence or the reason for entering or leaving the country. We are convinced that this is a strong aspect of this methodology as both intended duration of stay or absence and reason for moving are generally the weakest points in any data collection procedure on international migrations. Accordingly, all border crossing, entries or exits are considered on the same base and it will be impossible to exclude *temporary absences for holidays or work assignments*. As a consequence, the first criterion for identifying the place of usual residence is the most appropriate and more precisely the country of usual residence will be defined as the country where the person *has lived for most of the last 12 months (i.e., for at least six months and one day or 183 days within 12 months)*.

14. Considering only the duration of presence or absence in the country an international immigrant will be identify as follows:

15. An international immigrant is a person recorded when crossing the National border

- Who entered the country and has cumulated a minimum of 183 days of residence in the country during the twelve following months;
- Who was not usual resident of the country when entering the country which means that he spent at least a cumulate duration of 183 days of residence outside the country during the twelve months before entering the country.

16. Similarly, an international emigrant is a person recorded when crossing the National border

- Who crossed the border and left the country and has cumulated a minimum of 183 days of residence outside the country during the twelve following months;
- Who was usual resident of the country when leaving the country which means that he spent at least a cumulate duration of 183 days of residence inside the country during the twelve months before leaving the country.

17. International immigrants or emigrants will be counted at the time of entry or exit but their identification is only possible after a period that will vary between six and twelve months after border crossing. Therefore, the total number of international migrants for the year T will only be fixed at the end of the year T+1. In addition, the first year of observation T-1 does not allow identifying international migrants but the data for the year T-1 is needed in order to define if the person concerned is or not a usual residence of the country recording the border crossing. Doing so, international migrants cannot be identified for the first and the last year covered by the database.

18. When a given entry or exit has been found to be an international migration all subsequent entries and exits occurring before to reach the accumulated threshold of 183 days of presence or absence (within the first year) will be ignored. Only the first exit after having accumulated 183 days of presence in the country will be the starting point for identifying a subsequent international emigration. Similarly, the first entry after having accumulated 183 days of absence outside the country will be the starting point for identifying a subsequent international immigration.

19. Concretely this methodology does not allow registering more than one immigration and one emigration during a calendar year.

20. When entries and exits have not been validated as immigrations or emigrations, the following border crossing moves, respectively an exit or an entry, will be submitted as well to the same identification process.

21. As explained, we have to wait until the end of the second year T+1 in order to identify all international migrations to be enumerated during the first calendar year T. Nevertheless, in order to provide figures for international migration as earlier as possible for the calendar year T, we suggest observing the situation on 1 July in T+1 and using the following rules for identification of international migrants:

- Those who entered or left the country during the year T and have already accumulated their 183 days of presence or absence on 1 July T+1 will be considered among the international migrants for the year T;
- Those who did not succeed to reach the threshold of 183 days of presence after entry will be considered as immigrant if they are present in the country on 1 July T+1, while those who are absent at that date will not be considered as immigrants;
- Those who did not succeed to reach the threshold of 183 days of absence after exit will be considered as emigrant if they are outside the country on 1 July T+1, while those who are present at that date will not be considered as emigrants.

22. An alternative solution would be to consider the immigrations and emigrations that will be validated later between the 1 July up to the end of the year T+1 as part of the international migrations in T+1 even if the initial entry or exit was done during the calendar year T.

23. In conclusion, the suggested methodology allows producing statistical figures for international migrations before the end of the year T+1 and even six months earlier if we introduce some assumptions. This methodology respects strictly the UN recommendations defining international migration as change of country of usual residence and the ones defining the country of usual residence as the country where the person spend most of the twelve months following the move. Following these recommendations an international migrant may be identified after only 183 days of continuous presence in the country or absence outside the country. That means that no more than one immigration and/or one emigration may be counted for a given person in a given calendar year. At maximum we may count one immigration followed by one emigration for a given year what cannot be possible if we use the definition of international migration and place of usual residence based on the criterion of at least twelve month of residence. Consequently, this methodology will count in average more international migrations than the other method. There is a possibility to increase the reference period and to consider for example 300 days and not 183 days. In this case only one migration may be counted per year but the migrant has the possibility for visits and holidays up to 65 days. Doing so the figure will be close to the one based on the 12 months residence rule but all students and workers would be included. The key advantage of this methodology is the fact that the weakest aspects in the definition of international migration are avoided, the problem of intention and the temporary presence or absence for holidays and work.

24. Even if the concept of **circular migrant** is currently used in the literature, there is no operational definition. In the framework of the use of border crossing database it is possible to identify circular migrant as short-term migrants who stay alternatively for period between three and twelve months in two countries.

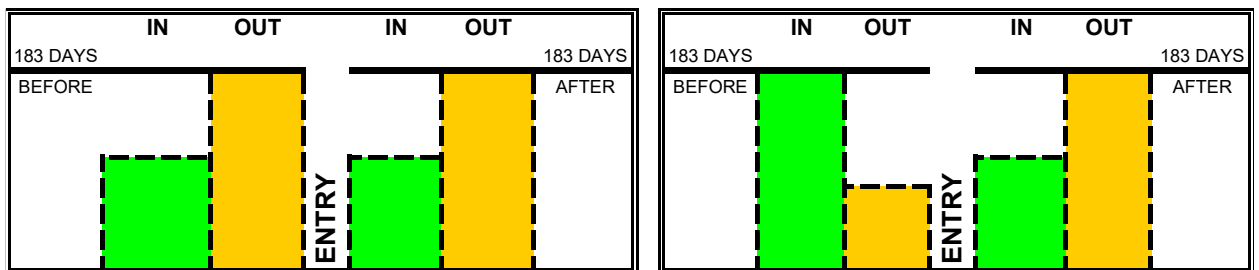
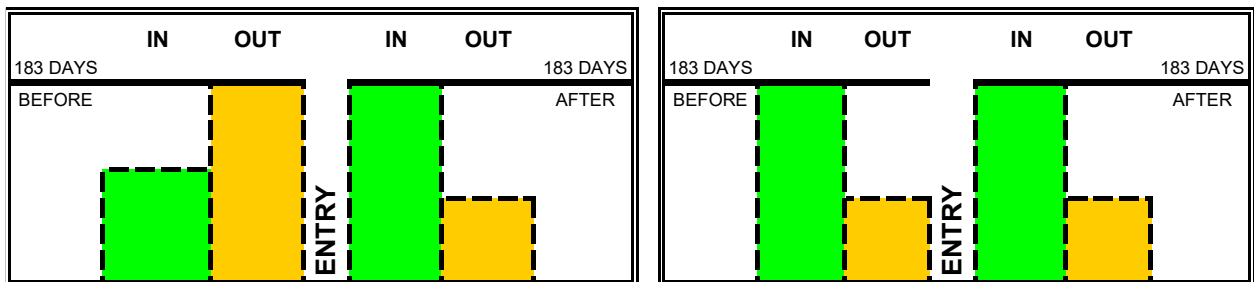
25. Instructions for implementing this methodology are presented in Annex based on various concrete examples. When international migrants are identified and counted for a given year the basic demographic characteristics of these migrants may be identified only by using border crossing databases.

E. Implementation of the methodology

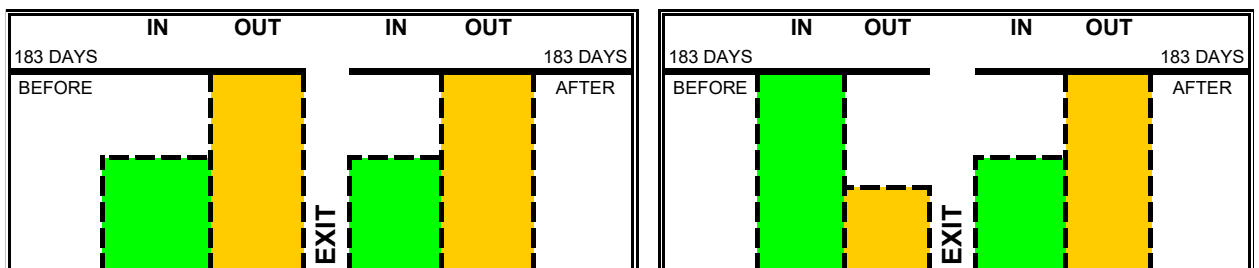
26. For a given person, consider the first border crossing of the year T (the border crossing for the first year T-1 will only be used in order to fix the country of usual residence). The methodology is based on the count of days spend in or outside the country backwards and forwards starting with the date of the border crossing concerned. We have to check which count reach first 183 days in or outside the country. This count should be done before and after the border crossing so that the person may be identified as international immigrant or international emigrant following the rules proposed hereunder.

27. The first consist in identifying international immigrant and international emigrants as presented in the following figure.

INTERNATIONAL IMMIGRANT



INTERNATIONAL EMIGRANT



28. When an international immigration or emigration has been identified considering the criteria presented above, all subsequent border crossings until the threshold of 183 days is reached are ignored for identifying the following international migration. The next border crossing to be

considered will be the first one after the 183 days criterion has been met. By definition it will be an opposed border crossing so that an emigration will follow immigration and vice versa. During twelve months observation period a maximum of one immigration and one emigration may be identified.

29. All border crossing not identified as international migration will be considered for identification of short term migrants as well as visitors and excursionists.

ENTRY

<i>COUNTING DAYS</i>	<i>Before entry: at least an accumulate count of 183 days in the country</i>	<i>Before entry: at least an accumulate count of 183 days outside the country</i>
After entry: at least an accumulate count of 183 days in the country	If the duration of last stay outside the country was at least 90 days: <u>return of a short-term emigrant</u> . If the last stay was shorter than 90 days: <u>return of an excursionist</u> .	INTERNATIONAL IMMIGRANT
After entry: at least a cumulative count of 183 days outside the country	If the duration of last stay outside the country was at least 90 days: <u>return of a short-term emigrant</u> . If the last stay was shorter than 90 days: <u>return of an excursionist</u> .	If the duration of stay in the country after entry is at least 90 days: <u>entry of short-term immigrant</u> . If the duration of stay in the country is less than 90 days: <u>entry of visitor</u>

EXIT

<i>COUNTING DAYS</i>	<i>Before exit: at least an accumulate count of 183 days in the country</i>	<i>Before exit: at least an accumulate count of 183 days outside the country</i>
After exit: at least an accumulate count of 183 days in the country	INTERNATIONAL EMIGRANT	If the duration of last stay in the country was at least 90 days: <u>return of a short-term immigrant</u> . If the last stay was shorter than 90 days: <u>return of a visitor</u> .
After exit: at least an accumulate count of 183 days outside the country	If the duration of stay outside the country is at least 90 days: <u>Exit of a short-term emigrant</u> . If the duration of stay outside the country is less than 90 days: <u>exit of an excursionist</u>	

30. In order to provide figures for international migration as earlier as possible for the calendar year T, we suggest observing the situation on 1 July in T+1. The following rules are proposed:

- Those entering or leaving during the year T and have already accumulated their 183 days of presence or absence on 1 July T+1 will be considered among the international migrants for the year T;

- Those entering during the year T and did not succeed to reach the threshold of 183 days of presence after entry will be considered as immigrant if they are present in the country on 1 July T+1, while those who are absent at that date will not be considered as immigrants;
 - Those leaving the country during the year T and did not succeed to reach the threshold of 183 days of absence after exit will be considered as emigrant if they are outside the country on 1 July T+1, while those who are present at that date will not be considered as emigrants.
31. These estimations will be consolidated at the end of the year T+1.

Census programme (content of questionnaire) of the 2022 Census of the Republic of Armenia

I. ADDRESS

1. Household address: Marz, Community, Settlement
2. Enumeration area
3. Residential unit (avenue / street, alley, house / building, apartment number)
4. Telephone number

II. INDIVIDUAL QUESTIONS

1. **Name**
2. **Residence of a person other than those listed at the given address**
3. **Public service number**
4. **Registration at the given address**
5. **Date of birth: day, month, year / age**
6. **Sex**
7. **Relationship to the reference person of the household**
 - Reference person of the household
His/her
 - Wife/husband (spouse)
 - Daughter/son
 - Child under the tutorship
 - Mother/father
 - Sister/brother
 - Mother-in-law/father-in-law
 - Daughter-in-law/son-in-law
 - Grandmother/grandfather
 - Grandchild
 - Other relative
 - Nonrelative
8. **Place of birth, the country in case of Armenia – marz, community and settlement**
9. **Country of citizenship**
 1. For dual citizenship, indicate also citizenship of second country
 2. For the citizens of the Republic of Armenia indicate how the citizenship was acquired
 - From birth
 - Naturalized
 - Other
 3. For stateless persons, indicate:
 - Recognized as a refugee, deported from Azerbaijan
 - Recognized as a refugee, deported from another country
 - Asylum seeker
 - Undocumented stateless person
 - Unknown

10. Ethnicity

If the person refuses to answer this question, state

Refuses to answer

11. 1) Mother tongue 2) Other language mastering freely

If the person refuses to answer this question or does not speak any other language, state
Refuses to answer or Does not know

12. At Census day the respondent was:

- Permanently present
- Temporary present
- Absent

13. For those who are absent from the settlement or temporary present at Census day

14.1. Duration of absence/temporary presence (months)

14.2. The reason of absence/temporary presence

- Employment
- Marriage / family reunification or family formation
- Residence
- Education/ Training
- Humanitarian-political reasons
- Other

14.3. Absent person's location at Census day -country, in case of Armenia – marz, community and settlement

14.4. Temporary present person's location at Census day -country, in case of Armenia – marz, community and settlement

14. Living continuously in the given settlement since birth

- Yes
- No

If "not", then indicate

15.1. The year and the month since a person continuously lives in the current settlement

15.2. Previous residence-country, in case of Armenia– marz, community and settlement

15.3. What kind of settlement a person came from:

- Urban
- Rural

15.4. Main reason of changing the residence:

- From other countries as a consequence of war actions
- From other countries because of fear to be exposed to persecution for racial, national, religious belong, membership to any social group or for political convictions
- Family
- Residence
- Learning
- Job
- Repatriation
- Temporary protection
- Climate change
- Other

15. Main source of livelihood

- Wage employment
- Self-employment (including peasant farm)
- Income from ownership
- Use of credits, savings and capital sale (including also property)
- Pension
- Benefit from state bodies
- Benefit from non-state sources
- Scholarship
- Under the state security
- Under the security of non-state charitable public organization

Monetary assistance

- From state sources
- From relatives, friends, acquaintances living in abroad
- From relatives, friends, acquaintances living in Armenia
- From a migrant family member living / working abroad
- Dependents
- Other sources

16. Does a person consider himself (herself) follower of any religion, church or denomination?

• if “considers”, then:

- | | | |
|----------------------|---------------------|---|
| ➤ Armenian apostolic | ➤ Yeshiva’s witness | ➤ Pagan |
| ➤ Catholic | ➤ Protestant | ➤ Moslem |
| ➤ Orthodox | ➤ Mormon | ➤ Judas |
| ➤ Nestorian | ➤ Molokai | ➤ Krishna consciousness or Hare Krishna |
| ➤ Evangelic | ➤ Shar-fadinian | ➤ TM (Transcendental meditation) |
| | | ➤ Other |
- doesn’t consider
 - refuses to answer

QUESTIONS ARE FILLED IN FOR PERSONS BORN IN 2016 AND EARLIER

The next questions are not filled in for those who are temporarily present

17. Education level, scientific degree

- Without primary education
 - Primary education
 - Basic education
 - Secondary education
 - Preliminary professional (handicraft)
 - Secondary professional
 - Bachelor
 - Master
 - Graduated specialist
 - Post-graduate professional (postgraduate, doctoral, internship, residency)
 - Candidate of the science
 - Doctor of the science

18. For those without primary education, are they literate?

- Yes
- No

19. Attendance to educational institution

- *if “studies” then specify educational institution type*
 - ✓ Primary school
 - ✓ Middle school
 - ✓ Secondary
 - ✓ High school
 - ✓ University: Bachelor's educational program
 - ✓ University: Master's educational program
 - ✓ University: Graduated specialist's educational program
 - ✓ Postgraduate program for postgraduate, researcher and applicant
 - ✓ Postgraduate educational program for interns, interns
- doesn't study

THE NEXT QUESTIONS ARE FILLED IN FOR PERSONS 15 YEARS AND OVER

20. Marital status:

- Never married
- Married (registered)
- Married (not registered)
- Marriage carried out only with church canonical ritual
- Widowed
- Divorced
- Separated (unregistered)

For female, indicate

21. How many children she has born alive?

22. How many of them are alive?

23. Does a person have a job or income-producing business for at least an hours during census preceding (including those who are temporary absent from their job)?

- Yes
- No

If “yes”

24. Occupation at the main workplace

25. Branch of economic activity of main workplace- organization, establishment (or its branch)

26. Status in employment

- Employee with contract
- Employee without contract
- Employer
- Self-employed
- Contributing family member
- Member of producers' co-operative
- Other

27. The place of workplace

- In the given settlement (marz, city Yerevan)
- City Yerevan
- Other marz in RA
- Other country (including Artsakh)
- It is difficult to answer

28. The workplace is in

- Urban settlement
- Rural settlement
- No fixed place
- It is difficult to answer

29. During the past month preceding the Census has a person been engaged in any business activity for at least one hour, resulting primarily meant for his family or household consumption?

- Yes
- No

For those who don't have job or income-producing work

30. Did he (she) look for a job during 1 month preceding census day?

- Yes, looked for a paid job
- Yes, tried to start own business
- No

If “looked for a paid job”

31. Looking for a job for the first time?

- Yes
- No

32. Are you currently available for work within subsequent 2 weeks if suitable job is offered?

- Yes
- No

If “No”

33. Mark the reason why not?

- Applied for a work and waits for the answer
- Already found a job and will get a job within the next 3 months
- Householder
- Has no hope to find a job
- Doesn't know where and how to look for a job
- Payment of the offered job is not satisfactory
- Lack of corresponding professional skills
- No need /wish to work
- Studies
- Age
- Health
- Family member care (sick, disabled, old)
- Is going to leave the country
- Is going to move to another city in RA
- Other reason
- It is difficult to answer

The following questions are not filled in for long absences, as well as for temporary presents

34. Do you have difficulty with seeing, even if wearing glasses?
35. Do you have difficulty with hearing, even if using a hearing aid?
36. Do you have difficulty with walking or climbing steps?
37. Do you have difficulty with remembering or concentrating?
38. Do you have difficulty with washing or dressing?
39. Using your usual (customary) language, do you have difficulty communicating, for example understanding or being understood?

Possible answers to questions 34–39: 1 - has no difficulty, 2 - has a little difficulty, 3 - has a lot of difficulty, 4 - is generally incapable.

III and IV sections are not completed for absent households

III. QUESTIONS ON HOUSING CONDITIONS OF THE HOUSEHOLD

B1. Who is the owner?

- Member(s) of the current household
- State
- Community
- Juridical entity
- Other person/s

B2. Type of dwelling unit

- Dwelling house (residence)
- Part of dwelling house
- Apartment
- Part of apartment
- Cottage/temporary shelter
- Dwelling of joint residence (institutional)
- Other dwelling unit

B3. Period of dwelling construction

- Before 1950
- 1951–1970
- 1971–1980
- 1981–1990
- 1991–2000
- 2001–2011
- 2012–2022

B4. Construction material of external walls

- Stone
- Monolith
- Mixed material
- Panel
- Wood
- Other

B5. Number of rooms occupied by household

B6. The floor space area of the dwelling in square meters

B7. Availability of fixed or mobile telephone

- Yes
- No

B8. Availability of personal computer in the housing unit

- Yes
- No

B9. Internet availability

- Yes, permanently
- Yes, but not permanently
- No

B10. Main source of heating

- Individual heating system running on natural gas or electricity
- Individual wood heating system
- Individual heating system working with other types of solid biofuels (briquettes, pallets)
- Central heating
- Gas furnace
- Electric heater
- Furnace heated with wood
- Furnace heated with other types of solid biofuels (briquettes, pallets)
- Solar photovoltaic station
- Other
- Has no main heating

B11. Main source of water supply

- Central water supply in dwelling unit
- Central water supply in building, not in dwelling unit
- Carried/ bought water
- Individual system for water collection
- Rivers/springs
- Groundwater
- Other

B12. Sewerage system

- Connected to the central sewerage system
- Has local system
- Other

B13. Availability of bathing facilities

- Yes, in dwelling unit
- Yes, in building, not in dwelling unit, only for current household use
- Yes, in building, not in dwelling unit, shared with other households
- Yes, out of building, only for current household use
- Yes, out of building, shared with other households
- No

B14. Availability of toilet facilities

Flush

- In dwelling unit, only for current household's use
- In dwelling unit, for joint use with other households
- Out of dwelling unit, only for current household's use

- Out of dwelling unit, for joint use with other households

No Flush

- Only for the current household use
- Shared
- Other

B15. Garbage removal

- Through building garbage pipe
- Thrown in regularly removing garbage bin
- Thrown in garbage sorting bin
- Thrown in irregularly removing garbage bin
- Other

IV. OTHER QUESTIONS FOR THE HOUSEHOLD

C During the last 12 months recorded in the household

C1. Number of live birth/s

- 1.1. Registered in Civilian Registry Office (number)
- 1.2. Not registered in Civilian Registry Office (number)

C2. Number of case/s of death

- 2.1. Registered in Civilian Registry Office by sex and age
- 2.2. Not registered in Civilian Registry Office by sex and age

Improvement of population and migration statistics in Armenia - Current situation, future plans and ways to improve

Working Paper Series on Statistics

This report presents an assessment of the current situation in Armenia concerning the production of statistics on population and migration, covering data sources used, methods, reliability of statistics produced and their limitations. Future plans concerning the production of data on international migration using administrative sources are discussed. Some suggestions for possible improvements are formulated, with the objective of developing a system for producing data on migration in an efficient and sustainable manner, thanks to linkages with databases maintained by various national agencies. This report was produced following a request by the Statistical Committee of the Republic of Armenia (Armstat).

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