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## Economic Commission for Europe

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### Group of Experts on Population and Housing Censuses

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**Lessons Learned from the 2020 Round Censuses**

## Main Results of Population Censuses in the CIS Region

CIS Statistical Committee\*

### Summary

Key findings of the 2020 round population censuses in CIS member states:

- CIS countries have begun the transition from the traditional model to a combined census;
- the search for new approaches to census taking is caused by the need to reduce direct burden on respondents, minimise the costs of census taking, as well as by rapidly evolving technologies and the emergence of new data sources;
- administrative data sources have been increasingly used, making it necessary to check this data for completeness and reliability, as well as analyse its suitability for census purposes;
- the issues of checking the quality of information at different stages of the census are becoming some of the key issues, requiring the development of special procedures for solving them;
- the development of modern technologies “ties into an ever tighter knot” the organizational, methodological, technical and technological aspects of preparing and taking the census, increasing the connection and dependence between them.

\* Prepared by: Irina Zbarskaya, Galina Selishcheva, CIS Statistical Committee

*Note:* The designations employed in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

1. In support of the UN Resolution announcing the 2020 round of population and housing censuses, the CIS Council of Heads of State decided (in 2016) to conduct population and housing censuses in the CIS region. The Council urged the Commonwealth countries to synchronize the timing of national censuses as closely as possible. However, the COVID-19 pandemic prevented CIS countries from conducting censuses close to 2020, forcing several countries to postpone them to later years.
2. The population and housing census programs of CIS countries adhered to the recommendations of international organizations for the 2020 round, covering all major topics traditionally studied in national censuses.
3. CIS Statistical Committee coordinated with national statistical offices the list of questions for the harmonized measurement of *migration and labour force as part of the 2020 round*, exact wordings, methodology, and table layouts for publishing results. The resulting proposals aligned with the Conference of European Statisticians Recommendations for Population and Housing Censuses for the 2020 round.
4. For migration measurement in CIS countries, the following indicators were agreed upon:
  - permanent residence (or place of usual residence);
  - location at the time of the census;
  - country of birth (place of birth);
  - country of citizenship (citizenship);
  - duration of residence in this place (year and month of arrival at the current place of residence);
  - previous place of residence.
5. To study the economic characteristics of the population, the following key indicators were selected:
  - labour force status;
  - employment status;
  - main source of livelihood.
6. Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, and Turkmenistan conducted national censuses and published results from 2019 to 2022<sup>1</sup>. In Moldova, the population census took place from April 8 to July 7, 2024. In Uzbekistan, a pilot census was conducted in 2021 in four regions of the country, covering more than 500 thousand people, and currently the time frame of the full-scale population census is being determined.
7. To date, **212 million people, or over 80% of the total population of CIS countries** (excluding Moldova), have been enumerated. Of these, 35 million, or 16% of the enumerated population,

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<sup>1</sup> The report provides data submitted by the statistical offices of the CIS member states to CIS Statistical Committee as part of the information exchange, besides information posted on the websites of the statistical offices of the CIS countries was used.

completed census forms online, while data for 84% was collected through surveys or obtained from administrative sources.

8. The 2020 round showed significant changes in the approaches to conducting national censuses. In previous rounds, all Commonwealth countries demonstrated absolute uniformity in census models. It was a typical traditional census with pre-trained enumerators conducting interviews. The main differences were in the census forms as technical carriers of information – those were either paper forms, information from which was entered manually (keyboard method) or machine-readable paper forms with scanning of completed fields.

Table 1

### Conducting censuses in CIS countries: methods and innovations

	2000 and 2010 rounds	2020 round				
		Traditional model			Administrative data	
		Interview	Technical storage media*		Internet	
			PF	ED		
Azerbaijan	Traditional paper-based survey model involving an enumerator	•	•			
Armenia		•		•		•
Belarus		•		•	•	•
Kazakhstan		•		•	•	•
Kyrgyzstan		•		•		
Moldova		•		•	•	
Russia		•		•	•	•
Tajikistan		•	•	•	•	
Turkmenistan		•		•		
Uzbekistan			•		•	•

\* PF – paper census forms; ED – electronic devices

9. For the first time, the Internet was used for population censuses, allowing respondents to complete census forms themselves. The results show a sufficiently high level of public engagement. In total, 35 million people across CIS countries provided information online.

Table 2

### Population completing census forms online

(In per cent to the enumerated population)

Belarus	22
Kazakhstan	40

Moldova*	19
Russia	16
Tajikistan	15
Uzbekistan*	10

\*Preliminary NSO estimate

10. The added complexity of the model highlights the importance of ensuring the quality of census results: avoiding duplication of records for the same respondents/households and ensuring complete population coverage.
11. Combining direct interviews with self-completed census forms required that statistical offices conduct additional information quality checks. According to national statistics specialists, eliminating data duplication when respondents completed census forms online for themselves and their household members, and enumerators simultaneously interviewed the members of the same family/household is a labour-intensive process of data cleaning. Special algorithms had to be developed to define the data to prioritize and the data to exclude.
12. Ensuring full coverage is a task for all census stages – pre-census period, control during the census, and post-fieldwork control procedures. Traditionally, CIS countries conduct post-enumeration control surveys (5-10% sample) immediately after the main survey. Belarus (2019) and Moldova (2014 and 2024) conducted post-census surveys.
13. A special feature of this round is the increased use of administrative data both in pre-census work and in data collection. In Belarus, Kazakhstan, and Russia, information from administrative resources was loaded to prefill the fields for individual census form questions, thus enumerators during surveys and respondents during completion only had to verify the responses. Additionally, administrative data was used in some cases for key characteristics (age and sex) when people were absent from their usual (permanent) place of residence. In Belarus, such cases constituted 2% of the total counted population, and in Russia, 4%.
14. Armenia was the first CIS country to fully utilize the population register<sup>2</sup> to produce the census data body as regards basic demographic characteristics for the entire population.

The Armenian State Population Register includes the following individual data:

- a. personal identification code
- b. name, surname, and patronymic if supporting documents were presented
- c. day, month, year of birth
- d. sex

<sup>2</sup> Note *Measuring migration during the population census in the Republic of Armenia in 2022* presented by the Statistical Committee of the Republic of Armenia at the meeting of the UNECE Group of Experts on Migration Statistics on May 7-8, 2024.

- e. citizenship
- f. place of birth
- g. ethnicity
- h. status (residence permit or a refugee status).

To obtain extended socio-economic characteristics of the population, a 25 per cent sample of housing unit addresses from the Register was selected.

15. An innovation in this census round in CIS countries was the extensive use of electronic devices, primarily tablet computers, including national products as it was done for example in Russia and Turkmenistan.
16. In Kyrgyzstan, an absolute novelty was using personal enumerators' tablets and mobile phones as technical tools for data collection<sup>3</sup>. A special mobile application developed by the World Bank was adapted for the population and housing census in Kyrgyzstan. Enumerators were provided with SIM cards, which they used for conducting the survey. Thus, according to national experts, in combination with other measures, the safety and confidentiality of personal data was ensured.
17. Overall, the recent census round significantly boosted the development of national IT technologies in CIS countries. Domestic software was widely used in preparatory work, data processing, producing and disseminating the results. In some cases, standard software tools adapted to national censuses were used.
18. The combination of operational, technological, and technical innovations applied reduced the average processing and publication time of census results by a year to a year and a half, and also lowered census costs.

Table 3

## Census cost per person

US dollars, estimation based on annual average exchange rate

	2010 round*	2020 round**
Azerbaijan	1.03	1.88
Armenia	1.57	1.23
Belarus	1.53	n/a
Kazakhstan	2.9	1.0
Kyrgyzstan	1.12	n/a
Moldova	2.15	
Russia	3.81	3.38

<sup>3</sup> This scenario is called Bring your own device - BYOD. Guidelines for the use of electronic data collection technologies in population and housing censuses (para. C.57 – C.59). UN, New-York, 2019.

Tajikistan	1.31	n/a
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\**Measuring population and housing in Eastern Europe, Caucasus and Central Asia. Review of practices in the 2010 round of censuses*, UN, New York and Geneva, 2016

\*\*UNECE Statistical Division NSO questionnaire responses, 2023

19. Key findings from the 2020 census round in CIS countries:

- CIS countries have begun transition from the traditional model to a combined census involving both full and sample surveys combined with administrative data. This disrupts the principle of methodological unity, requiring some assumptions and adjustments in evaluating census results;
- the search for new approaches to census taking is caused by the need to reduce direct burden on respondents, minimise the costs of census taking, as well as by rapidly evolving technologies and the emergence of new data sources;
- the importance of administrative data sources has been increasing, necessitating checks for their completeness and reliability, and analysis of their suitability for census purposes.
- the added complexity of the census model, i.e., obtaining data from multiple sources, highlights the need for the verification of consolidated data arrays;
- the issues of quality checking at different stages of the census are becoming some of the key issues, requiring the development of special procedures for solving them;
- the development of modern technologies “ties into an ever tighter knot” the organizational, methodological, technical and technological aspects of preparing and taking the census, increasing the connection and dependence between them.

20. Below are the main results of population censuses in CIS countries, submitted by statistical offices as part of interstate information exchange.

21. The change in the **number of resident population and its distribution across a country** is influenced by the country’s demographic trends in terms of birth rates, mortality, as well as internal and external migration dynamics.

**Table 4**

**Resident population in CIS countries**

(according to population census data)

	Resident population, thousand			Population change, %		
	2000	2010	2020	2000/1989	2010/2000	2020/2010
Azerbaijan	7,953.4	8,922.4	9,951.4	113.3	112.2	111.5
Armenia	3,213.0	3,018.9	2,932.7	97.2	94.0	97.1
Belarus	10,045.2	9,503.8	9,413.4	98.9	94.6	99.0
Kazakhstan	14,981.3	16,009.6	19,186.0	92.4	106.9	119.8
Kyrgyzstan	4,822.9	5,362.8	6,936.2	113.3	111.2	129.3

Moldova	3,383.3	2,998.2		92.5	88.6	
Russia	145,166.7	145,141.0	147,182.1	98.7	100.0	101.4
Tajikistan	6,127.5	7,564.5	9,657.0	120.3	123.5	127.7
Turkmenistan	4,437.6	...	7,057.8	126.0	...	...

22. Results from all three recent census rounds indicate that in most CIS countries, the **urbanization process** has stabilized. In Armenia, Kyrgyzstan, Russia, and Tajikistan, the proportion of urban population remains at the levels of previous census rounds. The highest proportion of urban residents is in Belarus and Russia – over 70 per cent of the population. While in Kyrgyzstan and Tajikistan, the urban population's share is 35 per cent and 26 per cent, respectively.
1. A distinctive feature of almost all CIS countries is the **population growth in capitals**. The migration vector towards capital areas is characteristic of both internal movements and external migration in all CIS countries. This is due to diversified labour market offerings, higher employment prospects, more developed infrastructure, a broader range of educational institutions, and so on. Additionally, the population growth of capital agglomerations may be linked to the inclusion of nearby settlements within the capital city boundaries. At the same time, census results indicate population growth not only in capitals but also in adjacent areas.

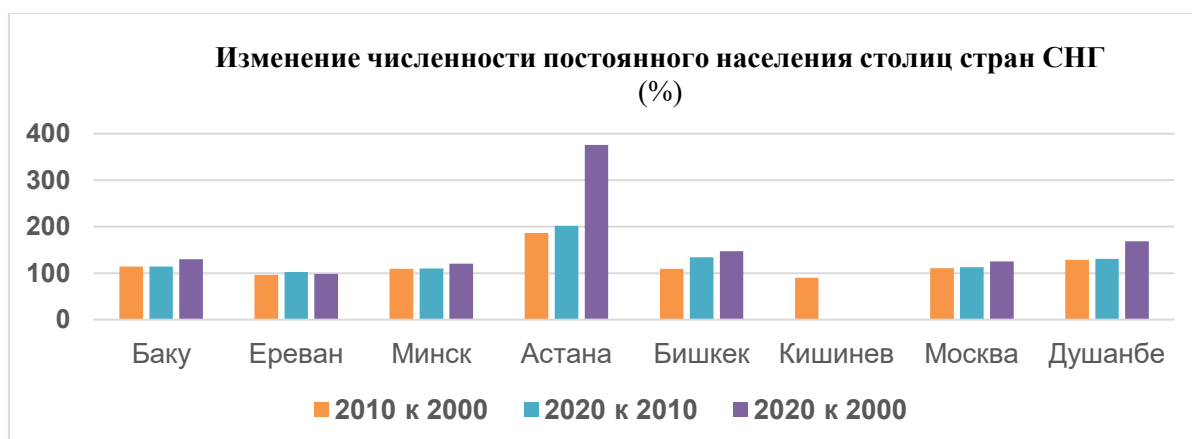
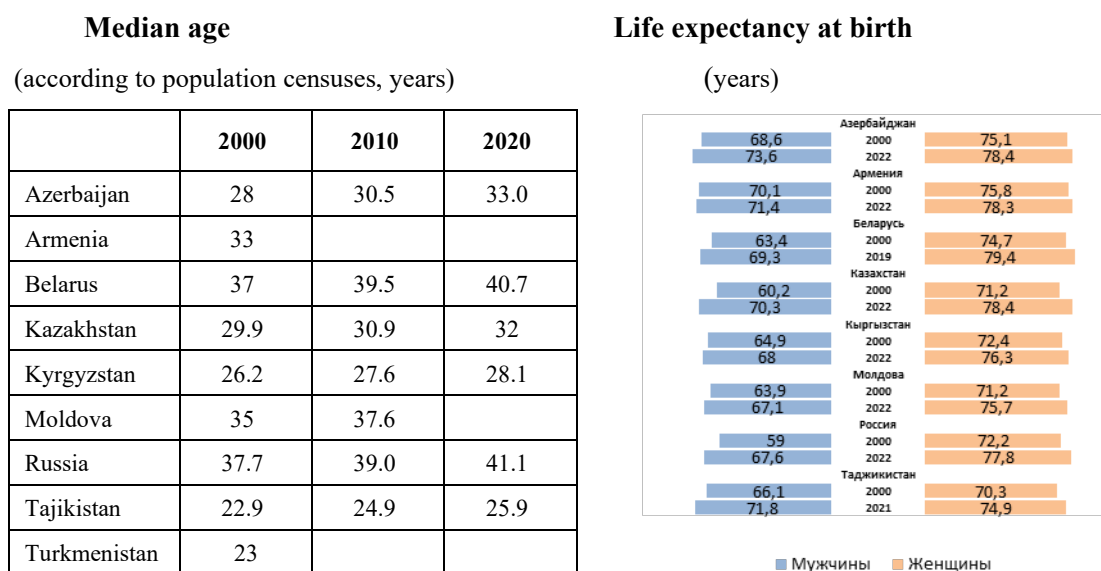


Chart 1

25. Differences in demographic trends and demographic behaviour patterns influence the **age structure** of CIS countries. In Armenia, Belarus, and Russia, the proportion of older persons (65 years and older) is 15-16 per cent – these are countries with an ageing population. In contrast, in Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan, children and adolescents under 14 make up about one-third of the population.
26. Despite the differences in demographic behaviour patterns, a common trend over the last two decades has been an increase in life expectancy in all CIS countries (with some declines noted

in 2020-2021). The rightward shift in age-specific mortality rates results in a gradual increase in the average population age, indicating population ageing.

Table 5 Chart 2



25. General population censuses provide information on the **distribution of permanent residents by citizenship**. The vast majority (98-99 per cent) of the CIS population are citizens of their respective countries. The remaining 1-2 per cent are citizens of other countries, mostly nationals of CIS countries.
26. All CIS countries obtained data on **stateless persons**. Their numbers are minimal and almost everywhere declining compared to the previous census, except for Kyrgyzstan (5.9 thousand vs. 1.6 thousand) and Tajikistan (2.8 thousand vs. 1.3 thousand).
27. The censuses reflect an important social phenomenon for all CIS countries. While the total number of **households** is growing, their average size is decreasing (except in Tajikistan, where it remains at previous census levels). This is primarily due to a significant absolute and relative increase in the number of **one-person** households. Although there is considerable variation between countries, the overall trend is consistent across the CIS. Factors influencing this include demographic behaviour model, ageing population, historical and cultural traditions, national programmes supporting young families, housing construction growth, and young people's desire and ability to start independent lives earlier.

Table 6

### Number of private households and their average size



(according to population census data)

	Private households, thousand		Share of one-person households, per cent		Household average size, persons	
	2010	2020	2010	2020	2010	2020
Azerbaijan	1895.9	2293.8	6.7	9.6	4.7	4.3
Armenia	763.1	857.5	12.1	17.2	4.0	3.4
Belarus	3873.1	4319.7	29.6	37.9	2.4	2.2
Kazakhstan	4391.7	5619.6	14.5	15.4	3.6	3.4
Kyrgyzstan	1145.7		8.6		4.7	
Russia	54560.6	66061.4	25.7	41.8	2.6	2.2
Tajikistan	1197.2	1578.6	3.2	5.2	6.3	6.1

28. One of the essential population characteristics is educational attainment. Below is information over time on the three predominant educational attainment levels in CIS countries – higher, secondary vocational, and general secondary education.

**Table 7****Educational attainment, people aged 15 and over**

(according to population census data)

	Per 1,000 population of respective age:								
	higher			secondary vocational			general secondary		
	2000	2010	2020	2000	2010	2020	2000	2010	2020
Azerbaijan	106	122	158	126	85	91	519	569	570
Armenia	170	220	254	176	171	190	382	447	450
Belarus	140	189	266	223	270	306	262	236	226
Kazakhstan	126	198	276	224	250	279	366	309	266
Kyrgyzstan	105	124	245	108	71	176	500	527	346
Russia	162	234	267	275	312	258	177	182	189
Tajikistan	76	77	72	66	73	63	575	528	601
Turkmenistan	92			166			478		

29. The Commonwealth region is traditionally characterized by a high educational attainment level. In the vast majority of CIS countries, about half the population has higher or secondary vocational education, with a declining proportion of population having primary general education. Population distribution by educational attainment is influenced by various factors, including the age structure, living standards, and national labour market needs.
30. All CIS countries' constitutions guarantee equal rights for men and women in accessing educational services.

**Table 8****Gender parity index in education, 2022\***

	Ratio of pupils and students by gender
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	preschool institutions	daytime general educational institutions	secondary vocational educational institutions	higher education institutions
Azerbaijan	0.88	0.88	1.62	0.99
Armenia	1.03	1.04	1.19	1.46
Belarus	0.90	0.96	1.06	1.11
Kazakhstan	0.94	0.96	0.91	1.14
Kyrgyzstan	0.97	0.97	1.33	1.08
Moldova	0.93	0.96	1.18	1.46
Russia	0.93	0.95	0.90	1.07
Tajikistan	0.82	0.94	2.84	0.70
Uzbekistan	0.93	0.95	0.96	0.85

\* According to UNESCO's definition, a ratio of men to women equal to 1 indicates gender equality; from 0 to 1 indicates male dominance; above 1 indicates female dominance.

31. To harmonize the CIS **labour market** measurement during population censuses, indicators regarding the composition of the labour force and persons not in the labour force were agreed upon. Currently, the total CIS labour market is approximately 183 million people, with 117 million in the labour force (111 million employed and 6 million unemployed) and 66 million not in the labour force. Persons not in the labour force in addition to the unemployed constitute a significant "pressure" on the labour markets of these countries.

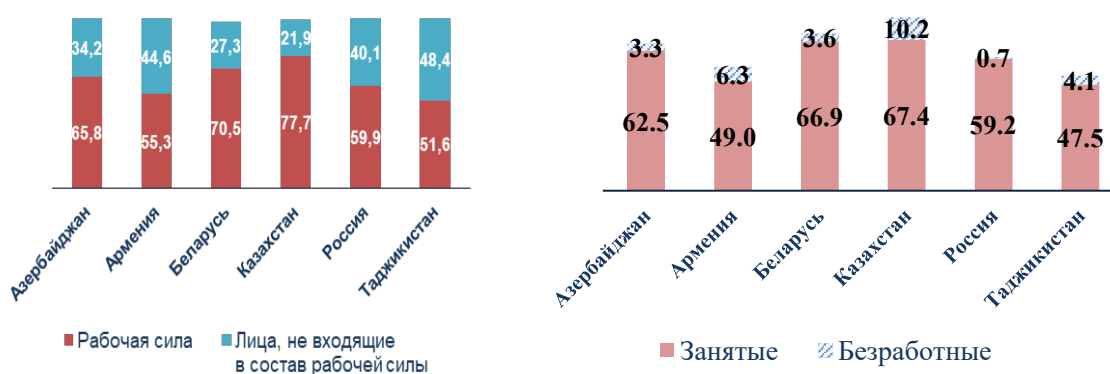
Chart 3

**Main labour market indicators in CIS countries**

(according to population census data)

In per cent of the total population

in per cent of population aged 15 and over



2. Among the economic characteristics of the CIS population, harmonized information on **sources of livelihood, reflecting** the countries' social structures, is essential.

Table 9

**Population by main source of livelihood**

(in per cent to total population)

	Paid employment (salary)	Income from self-employment	Production of goods for own use	All kinds of pensions	Other transfers	Dependency
Azerbaijan	24.2	26.6	0.8	12.3	3.4	43.2
Armenia	26.3	10.3	0.8	17.7	1.9	33.3
Belarus	43.1	2.3	0.0	25.1	3.4	22.5
Kazakhstan	40.2	5.6		9.6	1.6	34.3
Russia*	45.3	2.2	0.5	25.7		25.0
Tajikistan	11.4	11.8	10.3	3.1	2.8	48.4

\* In per cent of the respondents who indicated sources of livelihood

33. Besides the sources of livelihood presented in the table, 1.5 per cent of respondents in Armenia and 1.4 per cent of respondents in Tajikistan cited financial assistance/remittances from family members working abroad as their main source.
34. CIS Statistical Committee continues its work within the framework of interstate information exchange related to the collection and analysis of national population census data. The results of the three most recent census rounds are available on the CIS Statistical Committee's website: <https://new.cisstat.org/census>.