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Emerging issues, including new methods to estimate and project migration

Methodology of estimating the annual number of usual resident population in Latvia

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Abstract

Population and Housing Census 2011 resulted in specifying the number of resident population of Latvia, and it notably – by 155 thousand or 7% – differed from the population number calculated in line with the information in Population Register. In 2012 the Central Statistical Bureau has worked out a new method for more precise estimation of the number of population in Latvia. The method is based on statistical classification and migration mirror statistics. The statistical classification model has been developed with the help of logistic regression analysis.

The paper explains the developed method – what kind of data is used, problems foreseen.

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I. Calculation of population number till 2011

1. Till 2011, Central Statistical Bureau of Latvia (CSB) calculated number and composition of population at the beginning of each year using information from the Population Register (at the beginning of each month CSB receives data files from Office of Citizenship and Migration Affairs (OCMA) Common Migration Information System sub-system Population Register – individual data, incl. information on sex, birth date, birth country, citizenship, legal marital status, code of administrative territory of declared place of residence, residence permit etc.).
2. Calculation was based on information at individual level. With the help of Population Register also data on international migration were calculated. Data on individual level were used.
3. Data from civil status registers were used to update information on the number of births and deaths. As in compliance with the Section 24 of Law on Registration of Civil Status Documents, civil status registry office has to be informed about birth of child within a month after the birth thereof, Population Register data received from the OCMA are specified by including also children born in December of the previous year, but registered in January and February of the running year. In line with the Section 38 of the mentioned Law, death should be reported to the civil status registry office not later than within six working days after the death or after person was found dead, therefore Population Register data received from the OCMA at the beginning of the year are modified by excluding the data about persons, whose death was registered at the beginning of the running year, but who died at the end of the previous year. Section 28 stipulates that in case of stillbirth or child death during delivery medical institution or specialist is obliged to inform civil status registry office about this fact within eight days.

II. New methodology of calculation of population number

4. Analysis of Population and Housing Census 2011 data resulted in acquiring information that helped CSB specifying population number and composition thereof in the country. On 1 January 2011, number of Latvia population accounted for 2 074,6 thousand. As compared to the information published prior (according to the Register), population number was 155 thousand or 7% smaller. The data confirmed that part of country population does not fulfil requirements of the Population Register Law and information included in the register on population migration is incomplete.
5. It was ascertained, that it is necessary to find out the ways how to estimate more precisely the number of population. The possible ways:
 - To improve the data quality on usual residence in the Population Register (the advisable way, however at the moment it can't be fulfilled);
 - To evaluate methods applied by other countries (the information from other countries were collected, but it was not possible to adopt method used by other country);
 - To work out a new method (what was done).
6. In 2012 the CSB worked out a new method for estimating the number of population (method developed by Mathematical Support Division – Jeļena Vaļkovska, Mārtiņš Liberts). The method is based on the Population Register and on individual data from other administrative registers (all data sources have ID codes which are used to merge data).
7. To evaluate the residence status of each individual the Logistic regression model had been developed. With the help of administrative register data, on each person registered within

the Population Register there are more than 200 characteristics variables developed. The aim of the model is to predict the probability (number falling within the interval from zero to one) of being a resident for each individual, to estimate the status of the actual place of residence at the beginning of the year for every resident registered (on individual level) in Latvia. Necessary probability to be included in the resident population differs depending on age and gender.

8. The model had been developed using data from 2011 Census on actual place of residence and data from administrative data sources on 2010, 1 January 2011 or 1 March 2011.

9. In the result database on individual level on 1st January for certain year is set up. The database allows preparing necessary data tables for national and international data users.

10. Apart from OCMA data, population statistics is produced by using also individual data from other administrative registers available to the CSB and meeting corresponding time period (starting from 2010). CSB has access to data in following administrative registers:

- State Revenue Service (SRS);
- State Social Insurance Agency (SSIA);
- Ministry of Education and Science (MES);
- Agricultural Data Centre (ADC);
- Rural Support Service (LRSS);
- National Health Service (NHS);
- State Employment Agency (SEA);
- 19 from 58 higher education institutions (48% of total number of students);
- Road Traffic Safety Directorate data.

11. CSB has information also from Social Security Administration Information System (SSAIS) on persons that have received social benefits from local governments. However, this information is available only starting from 2012. Thus currently mentioned data are used to adjust number of population in age group 18 - 30 and to assess model quality.

12. Starting from 2015 personal data from Latvian Prison Administration is also used to adjust number of population.

13. According to the CSB estimation, there were 1 986 096 usual residents at the beginning of 2015, however, according to the Population Register there were 2 157 767 residents – the difference was 172 thousand or 8% (it had even increased, if compare with data from 2011 Census). The highest difference was in age group 25-34. The reason for difference – people doesn't inform the register about the changes in their place of residence (according to the register, they live in Latvia).

14. CSB continue work on obtaining new administrative data – there isn't student's register in Latvia (the work has been started in 2015), so agreements have to be signed with each higher education institution; work had been started on acquiring individual data from libraries; in addition data on students who received students loans for studies abroad and data on personalised public transport tickets (e-ticket) used in Riga municipality will be available.

15. To evaluate the quality of estimation household survey data are used (data on individual level from Labour Force Survey (LFS), Survey "EU Statistics on Income and Living Conditions" (EU-SILC), European Health and Social Integration Survey (EHSIS); European

Health Interview Survey (EHIS). Evaluation of the results of the method is one of 2015 Micro Census's tasks.

16. The method had been presented and positive comments received from the Latvian Statistical Association, experts from the Central Bank of Latvia, demographers. The main conclusion was – if the information on usual place of residence in the Population Register is of so low quality, the developed method is the best solution.

17. Detail information about the methodology is available on CSB web page (http://www.csb.gov.lv/sites/default/files/dati/demstat_metodologija_eng_gala.pdf).

III. Micro Census 2015

18. In October 2014, the CSB set up a working group and launched organisation of Micro Census of individuals and households. A household was defined in accordance with the common housing concept. The sample size of Micro Census was 14 996 households (housings) in 50 administrative territories.

19. It was decided to launch Micro Census on 2 September 2015, for two weeks allowing the respondents to complete the questionnaire on-line (CAWI). From 17 September to 15 December 2015 field interviews (CAPI) were organised.

20. The main objective of Micro Census was quality control of the population assessment methodology developed by the CSB and of the information obtained from administrative data sources.

21. The results of Micro Census will be available at the end of 2nd quarter 2016.

IV. Problems identified within Population Register

22. Non or late deregistration – non-registered migration – even if according to the Population Register Law people have to inform the register about the changes – de jure marital status, children, usual place of residence etc., people not always do it (according to the 2011 Census results, 7% of population of Latvia had been moved abroad, but had not changed usual place of residence in the register (according to the register, they resided in Latvia). Also, analysing information from Population Register few years after Census, it is possible to see that there are quite a lot of people who correct the information in the register dilatory;

23. Very old persons – persons, who are in the register, however their usual place of residence is not Latvia, had died abroad - the Population Register didn't receive the information, they stay in the register as alive. The worst situation – person had left the country without the deregistration, the usual residence in the register is still Latvia, however he or she had died abroad.

V. Conclusion

24. Use of administrative data in statistics is increasing (and will continue in the future) and there are several reasons – direct data collections are expensive; statistical institutions have to decrease response burden; timely, detail information is necessary. Population Register is an important information source for demography statistics and the information is used also in statistical surveys.

25. In modern society, when it takes only a day or even an hour to change a place of residence, it is important, that people understand the importance to inform the authorities (Population Register) about changes in their data. In almost every policy area - economic, social or environmental, there is a requirement for high quality demographic statistics to help formulate operational objectives and to evaluate progress both on national and international level. At the end of 2013 Regulation on European Demographic Statistics entered into force. However, population statistics still requires harmonization - in the Regulation, only the Article 4 demands that data on number of population had to be prepared according to the usual residence population definition. In case of Latvia, it is obvious that there is very big difference, if data are produced according to the Population Register, or if the estimation is made to meet usual residence definition. That is a reason why official statistical data on number of population are only produced using developed method and these data are used by national and international data users.

26. It is planned that 2021 Population and Housing Census in Latvia will be based only on registers (information from Population Register was used in 2000 and 2011 Census; a lot of administrative data were used in 2011 Census), taking into account information from other administrative data sources (the residence status of each individual will be evaluated). However, the method to evaluate number of population is based on 2011 Census. The situation with population and in registers is changing. It is necessary to find way to improve the method (coefficients used). Probably, Micro Census results will help.
