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#### **Better utilization of administrative data sources to measure migration**

## **The use of additional administrative data sources: towards improving migration statistics in Slovenia**

**Note by the Statistical Office of the Republic of Slovenia\***

### *Abstract*

Migration statistics in Slovenia are currently based solely on the Central Population Register (CPR), which is maintained by the Ministry of the Interior. Like every register it has its faults, but it is in general accurate and relatively easy to work with. While the statistical process (carried out entirely by the Statistical Office, SURS) can and does correct some of the inconsistencies that occur in the register, we have until now only been able to vaguely detect the under- and over-registration of population in the CPR and thus also unregistered migrants. The paper focuses on combining existing administrative and statistical registers with the CPR to detect persons not registered as migrants. The combining of different registers was first used in such an extent for the register-based census in 2011, and is now utilized regularly to produce statistics on education and activity status of population and migrants. We will analyse the groups of people who appear in the CPR and not in other registers, and vice versa; we will also try to find if and how the results of our analyses can be used in the statistical process to produce better migration statistics.

### **Introduction**

The premise of this paper is that each person counted among usual resident population (in the case of Slovenia that means they must have some kind of registered residence and fit some other criteria) should be found also in some other registers or databases, be it administrative or statistical. Similarly, persons found in some relevant administrative registers and statistical databases are very

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likely to be usual residents. The paper focuses on persons who do not fit either of the above-mentioned criteria, i.e. they are present in other registers but not counted among CPR-based usual resident population, or they are only found among usual resident population but not in any other source. The preliminary analyses presented in the paper are just the beginning of a longer process to get a better insight into unregistered migration in Slovenia.

## **Background**

Estimating over- and under-registration has long been a problem present in all register-based statistics. All Slovenian demography statistics are register-based and have been for many years. The problem of estimating over- and under-registration is especially difficult in statistical surveys that are based on one source only, e.g. population and migration statistics. The source is the Central Population Register (CPR) maintained by the Ministry of the Interior. Surveys on other demographic balance-affecting events (deaths, births) combine CPR with other administrative sources.

For the purposes of all demographic statistics, individual CPR data (including PINs) are transmitted to SURS quarterly, approximately 3 months after the reference date. The transmission includes two datasets:

- STOCK includes all living persons who can legally reside in the country (i.e. citizens of Slovenia, foreign citizens with valid residence permits, regardless of whether they have actually registered their residence or not), on a given reference date (1 January, 1 April, 1 July, 1 October); this dataset includes about 2.7 million records every quarter;
- EVENTS include all registered events (vital, migration, administrative) that occurred to any person that has ever been assigned a PIN, in the quarter preceding the STOCK reference date; the dataset includes about 0.4 million records per quarter.

STOCK data are the basis for deriving usual resident population, with some auxiliary data being derived from EVENTS data.

## **Registration of residence and usual resident population**

Different rules apply to different population groups in Slovenia, but in general every citizen of Slovenia can register permanent residence in the country. Additionally they can register temporary residence elsewhere in the country (usually in another settlement, but not necessarily), or they can register just temporary residence (very rare). Temporary residence is automatically valid for 12 months unless explicitly stated as shorter at registration. It can be extended after expiration.

Based on the type of residence permit, foreigners can register the same types of residence as Slovenian citizens, with the only exception that the expiration date of their temporary residence cannot be later than the expiration date of their residence permit. The extension of temporary residence validity is subject to the extension of temporary permit validity.

Every person with registered residence in Slovenia must register temporary absence from the country if they intend to leave for 3 months or more, and register their return after such absence.

All these registrations must be done at the administrative unit of residence registered. There are 58 administrative units, each with several local offices.

Due to these specifics, the process of determining who has usual residence in Slovenia (and where exactly) is not very straightforward, but in general, regardless of citizenship, usual resident population are the following:

- Persons who have registered permanent residence in Slovenia, excluding those who have been temporarily abroad for one year or more. These persons are counted as usual resident population at the address of their registered permanent residence.
- Persons who have registered temporary residence in Slovenia with the total duration of at least one year. These persons are counted as usual resident population at the address of their last registered temporary residence.
- Persons who have registered both permanent and temporary residence in Slovenia, excluding those who have been temporarily abroad for one year or more. These persons are usually counted as usual resident population at the address of their registered temporary address.

This produces an end usual resident population database, which includes all the key variables needed for further data processing and for other demographic surveys.

### **Migration statistics based on usual resident population**

The preparation of migration statistics follows the same basic rules. When a person comes from abroad and registers permanent residence or temporary residence valid for 12 months, they are considered an immigrant immediately. If they register temporary residence with shorter validity, they are considered an immigrant if and when the sum of their consecutive (or extended) temporary residences validity reaches at least 12 months.

A person who had usual residence in Slovenia is considered an emigrant when they deregister their residence(s) or their sole temporary residence has expired, or their temporary absence from the country has lasted 12 months or more.

To ensure all the population changes are accounted for, EVENTS data and the end usual resident population database are combined and compared.

### **Non-registration of residence**

Most people (de-)register as required by the law. However some do not and the reasons for this are manifold. They can stem from misinformation and/or speculation. Below, just a few are described.

Persons with permanent residence who do not want to be found – running from the law or similar – sometimes de-register their permanent residence. With this they lose all the rights proceeding from or based on permanent residence (social benefits, health insurance etc.), so should they need any of these (e.g. see the physician), they tend to re-register.

Persons who go abroad for whatever reason for more than 3 months should register temporary absence. Even though the legislation provides penalties, many people fail to register such absence, perhaps simply due to being poorly informed.

Persons who went abroad as children with their families and their parents correctly registered temporary absence (before 1991, persons temporarily absent from the country had some privileges regarding crossing the more-closed border, e.g. the amount of cash they could carry etc.). Upon their return these now-adult children do not know about their own absence registration, and fail to report the return.

Third country citizens (non-EU foreign citizens) with long-term resident status in Slovenia face fewer or even no restrictions regarding working and residing in other EU countries. So once they have registered permanent residence in Slovenia (based on their permit) they are less likely to de-register in the case of returning to their home country because the long-term resident status in Slovenia is their “golden ticket” to the whole EU.

Registered permanent residence is also the first condition for collecting some social transfers, such as child allowance. This presents a further disincentive to de-register entire families of a third country citizen who may have never even actually resided in the country but only registered permanent residence on the basis of their permit, granted on the principle of family reunification of the initial immigrant who had qualified for permanent residence permit.

### **Detecting non-registration**

In the past we were only able to catch glimpses into the whole issue of non-registration and failing to de-register. For example there was some analysis of administratively surviving centenarians that found some cases of the very oldest usual residents had absolutely no income (no pension, no benefits) and no health insurance. Through our statistical survey on births we found mothers who gave birth in Slovenia, registered their newborns' residence in Slovenia, and appeared to actually live in Slovenia, but were officially temporarily absent from the country. They had maybe left as small children with their parents and probably never knew they had to register their return as adults.

In 2011, we carried out our first register-based census. By combining many administrative and statistical registers and databases we got a much better overview of what information we can possibly get on each person in our usual resident population database. Since the census we have been carrying out an annual survey on socioeconomic characteristics of population and international migrants using the same methodology and sources that were used in the census. For detecting persons who are counted as usual resident population but are in fact not present in the country and vice versa, the part on activity status is the most relevant.

### **Activity status**

Activity status is one of the characteristics of a person that can change often. An employed person can be unemployed the next time we look at them, a student can get a job, an unemployed person can retire, and an inactive person can become self-employed, etc.

To derive activity status of all usual resident population aged 15+ (children cannot be economically active), we collect data for each person from 8 sources:

1. Statistical Register of Employment (SRDAP, internal source);
2. Registered unemployed persons (provided by Employment Service of Slovenia);

3. Students in vocational and professional higher education (statistical survey);
4. Recipients of national scholarship in upper secondary and tertiary education (statistical survey);
5. Recipients of old-age, disability, survivor's and national pensions (provided by Pension and Disability Insurance Institute of Slovenia);
6. Family members of insured persons and other inactive persons in health insurance (provided by Health Insurance Institute of Slovenia);
7. Recipients of social and other assistance and benefits (provided by Ministry of Labour, Family, Social Affairs and Equal Opportunities);
8. Income tax payers (provided by Tax administration of the Republic of Slovenia).

Data are linked with usual resident population database through PINs. Before the actual linking, all the aforementioned sources must be thoroughly checked for inconsistencies, such as impossible combinations of a person's age and activity status that could be derived from the source (for example very young people receiving old-age pensions), incomplete/wrong PINs etc.

After combining all the sources, every person is assigned an activity status according to the hierarchy of sources. This means that in case of availability of data on activity in several sources, the priority is given to the source indicated with higher priority (irrespective of whether data in different sources are the same or different). In setting priorities of the sources we derive from the hierarchy of activity status and international recommendations in this area. Preference is given to sources on persons in employment, followed by sources on persons involved in education and finally data sources on inactive population.

As a rule, data on activity refer to 1 January, where we assume at individual source that data refer to this time point. The most important source for data on activity is SRDAP, from where we take data for all persons that were in accordance with the methodology and international recommendations in employment in the last week before the reference date (1 January of each year).

There are of course persons among usual resident population that cannot be found in any of the other sources. This can either be because of incompleteness of a source (e.g. a person's PIN in the source was incomplete and therefore not usable for linking, or perhaps something was lost on the way to us), or because the person does not actually live in the country. Because SURS is not in charge of all the databases used as sources for this survey, it is difficult to estimate whether there is actually something wrong with the sources, what exactly it could be and why. So for the time being we use statistical methods (imputation, automated corrections) to complete activity status data for persons not found in any other sources.

### **Potential unregistered emigrants**

Aware of all the known and potential inconsistencies within the data sources, we cannot consider a person who is only found in the usual resident population database and not in any other source on a given reference date, falsely registered in the CPR/counted as usual resident. However if this happens on several consecutive reference dates, it could be a sign that this person does not actually reside in Slovenia.

For the purpose of this paper, three data points for which we have consistently prepared data so far, namely 1 January 2011, 2012 and 2013, have been analysed. We realize three years might be too short a period to draw any final conclusions, but it certainly serves as a good starting point.

Table 1: Overview of usual resident population not found in any of the activity status sources, Slovenia

	2011	2012	2013
Total population	2,050,189	2,055,496	2,058,821
<b>of which aged 15+</b>	<b>1,759,336</b>	<b>1,761,347</b>	<b>1,760,726</b>
of which not found in any source but CPR	30,947	48,358	26,349
<b>% not found</b>	<b>1.8</b>	<b>2.7</b>	<b>1.5</b>
Not found on 2 consecutive reference dates	-	23,919	20,471
<b>% not found twice<sup>1)</sup></b>	<b>-</b>	<b>1.4</b>	<b>1.2</b>
Not found on 3 consecutive reference dates	-	-	17,730
<b>% not found three times<sup>2)</sup></b>	<b>-</b>	<b>-</b>	<b>1.0</b>

1) Share calculated from population aged 16+ because persons aged 15+ in the first year are aged 16+ in the second year.

2) Share calculated from population aged 17+ because persons aged 15+ in the first year are aged 17+ in the third year.

Source: SURS

As can be seen from Table 1, the share of population not found in any source varies quite a bit year-to-year. This can be due to the already mentioned inconsistencies within the data sources (including possible methodological or legislation changes regarding these sources), and also due to the main point of this entire exercise – unregistered migration. In general, we expect the inconsistencies within activity status data sources to decrease with time, especially because statistical surveys, on which some of the sources are based, are being improved.

The number of usual residents not present in any source for two consecutive years seemed to drop somewhat between 2012 and 2013. This is most likely because of improvements in data sources, including the base source, CPR, from which usual resident population is derived.

In total, we found 17,730 persons who were counted as usual resident population aged 15 or over on all three reference dates that were never found in any of the eight activity status sources so their activity status had to be completed using statistical methods. These are possible unregistered emigrants. Among population aged 17 or more, they represented 1%.

Table 2: Usual resident population aged 17+ not found in any of the activity status sources by citizenship and sex, Slovenia

	USUAL RESIDENT POPULATION			PERSONS NOT FOUND		
	TOTAL	men	women	TOTAL	men	women
TOTAL	<b>1,722,380</b>	845,875	876,505	<b>17,730</b>	8,482	9,248
SI	<b>1,641,098</b>	788,982	852,116	<b>15,250</b>	6,995	8,255
non-SI	<b>81,282</b>	56,893	24,389	<b>2,480</b>	1,487	993

Source: SURS

The majority of usual residents not found in any other source three years in a row were Slovenian citizens, 86%. 14% foreign citizens are well above the share of this group in the usual resident population (4.7% on 1 January 2013 among those aged 17 or more). More than 3% of all foreign usual residents were not found, while among Slovenian citizens this share was just under 1%.

Table 3: Usual resident population aged 17+ not found in any of the activity status sources by age and citizenship, %, Slovenia

Age	USUAL RESIDENT POPULATION			PERSONS NOT FOUND		
	TOTAL	SI	non-SI	TOTAL	SI	non-SI
17-19	<b>3.5</b>	3.6	2.0	<b>2.9</b>	3.2	1.0
20-24	<b>6.8</b>	6.8	6.9	<b>5.4</b>	5.6	4.0
25-29	<b>8.1</b>	7.8	13.6	<b>6.2</b>	6.2	6.2
30-34	<b>9.1</b>	8.8	14.8	<b>9.2</b>	9.4	7.7
35-39	<b>9.0</b>	8.7	13.5	<b>11.7</b>	12.0	9.9
40-44	<b>8.5</b>	8.3	12.4	<b>12.3</b>	12.4	11.6
45-49	<b>9.1</b>	9.0	11.2	<b>10.9</b>	10.9	10.7
50-54	<b>8.8</b>	8.8	9.7	<b>9.7</b>	9.6	10.4
55-59	<b>8.9</b>	9.0	7.0	<b>9.9</b>	10.1	8.7
60-64	<b>7.8</b>	8.0	3.9	<b>9.9</b>	10.1	9.3
65-69	<b>5.6</b>	5.8	2.0	<b>4.4</b>	4.1	6.3
70-74	<b>5.2</b>	5.4	1.4	<b>2.9</b>	2.3	6.3
75-79	<b>4.2</b>	4.4	0.8	<b>2.0</b>	1.7	3.5
80-84	<b>3.1</b>	3.3	0.5	<b>1.2</b>	1.1	2.1
85+	<b>2.2</b>	2.3	0.3	<b>1.5</b>	1.4	2.3

Source: SURS

We checked the recent history of possible unregistered emigrants in the CPR (as of 30 June 2014). 898 had valid registered temporary residence, which means that they must have been actually present on the territory of Slovenia in the last year. 455 persons had registered permanent residence in the country after 1 January 2013, indicating that they were in fact resident at some point since then.

2,189 persons were no longer counted as usual resident population on 1 January 2014. Some of them due to death, but most of them due to own or administrative deregistration of residence (or registration of temporary absence, which might have been late, too). Once we are able to link 2014 usual resident population data with activity status data sources, we are likely to find only a few of the remaining 15,500 persons there. And there will be new persons not present in any other source than the usual resident population three years in a row.

### Potential unregistered immigrants

Just like there are persons who appear among usual resident population and not in any other source, there are also persons who appear in at least one activity status source, but not in usual resident

population (they are excluded because they do not fit the actual or intended stay criteria, but they are registered in the CPR).

Not appearing among usual resident population and still appearing elsewhere does not necessarily mean that a person is usually resident. This is especially true for short-term immigrants, who often work, have income, have health insurance etc. but do not fit the 12-month criteria.

Because persons who are not usually resident have not been of particular interest for us until now, we have only carried out very quick provisional analysis of persons who have registered temporary absence from the country that has actually lasted 12 months or more (they still have registered permanent residence in Slovenia) but were found in some of the activity status sources. In the case of immigrants we only prepared data for one year, namely 2013.

We only selected four activity data sources for this exercise:

1. Statistical Register of Employment (SRDAP, internal source);
2. Registered unemployed persons (provided by Employment Service of Slovenia);
3. Students in vocational and professional higher education (statistical survey);
4. Income tax payers (provided by Tax administration of the Republic of Slovenia).

Appearing in these sources would probably be the best indicator that a person is in fact a resident of Slovenia. Scholarships, pensions and health insurance are not necessarily indicative of this.

Table 4: Persons with registered permanent residence, temporarily absent for 12 months or more, in activity status data sources, Slovenia, 2013

<b>Total</b>	<b>28,983</b>
of which aged 15+	27,690
<b>Found in at least one source<sup>1)</sup></b>	<b>9,860</b>
SRDAP	2,116
Registered unemployed	440
Enrolled students	155
Income tax payers	9,362

1) Because a person is often found in more than one source, the sum of individual sources is higher than the number of all persons found at least once.

Source: SURS

Using the same methodology that we use for usual resident population (the same source hierarchy, only fewer sources), we derived activity status of the temporarily absent persons.

Table 5: Derived activity status and source used for temporarily absent for 12 months or more who were found in at least one source, Slovenia, 2013

	Source – total	SRDAP	Reg. unemployed	Enrolled students	Income tax payers
<b>Activity status – total</b>	<b>9.860</b>	<b>2.116</b>	<b>437</b>	<b>103</b>	<b>7.204</b>
Employed	<b>2.900</b>	2.116	-	-	784
Unemployed	<b>437</b>	-	437	-	-
Tertiary students	<b>153</b>	-	-	103	50
Pensioners	<b>6.370</b>	-	-	-	6.370

Source: SURS

Especially employed persons found in the SRDAP are very likely to be usual residents. They are employed in Slovenia, they have health insurance and all their social contributions are paid in Slovenia. A vast majority (91%) are expectedly also found among income tax payers.

The large number of pensioners based on income tax payers data is not a surprise, and there would likely be some more if we also used data on recipients of old-age, disability, survivor's and national pensions (we expect to also get information on the country of bank transaction in the future, so that will be possible).

### Unregistered migration: from a rough estimate to exact figures?

While we can with some degree of certainty count the persons who have most likely migrated and not registered that, the main question is what to do with this information. The issue is manifold; just a few points in no particular order:

1. We know that no source is perfect and methods are still to be refined, so there is always room for a piece of information to slip away. We are yet to develop precise criteria and processes for detecting unregistered migration.
2. Our data on the number of usual resident population is final upon first publication (T+120 days). We do not have sufficient information on a person's activity status until about 8 months after publication. Subsequent inclusion/exclusion could happen on the fourth reference date, but another 8 months after publication we could actually find this person actually present (if subsequently excluded), or they might not be found again (if subsequently included).
3. Only persons aged 15+ can possibly be present in all of the sources. Children under 15 can go undetected in some activity status data sources, so we might not have any basis for including or especially excluding them.
4. Detecting persons for inclusion/exclusion would mean SURS would have to establish and maintain a separate database of these persons.
5. We might know who unregistered migrants are, but we do not know when they migrated and where to/from, should they all be included in annual migration statistics, and if so, how?

Ideally, we would create a list of potential unregistered migrants and have Ministry of the Interior who maintain the CPR, check them and take appropriate action. The Ministry is already quite aware of the problem of unregistered migrants, but legal provisions prevent us from giving them such a list, plus it would be very difficult for them to process it (financial limitations). They do occasionally carry out campaigns that may result in a more accurate CPR so they can be of some consequence for SURS. This is a work in progress, however.

For the moment, we can only give an estimate on the number of unregistered migrants, along with the methodology used. We are planning to carry out a sample survey as a part of Eurostat grant for the action "Usual residence population: Feasibility studies", to see how accurate our findings so far have been. This will be an excellent basis to decide on future plan of action regarding late/non-registration of migrations. Along with the methodology and developing appropriate statistical processes, we must also pay attention to the dissemination of these data and prepare clear, understandable, unambiguous and easily interpretable explanations for these phenomena.

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