



Determining permanent residency status using registers in Estonia

Session 15 – Methodology: Linkage and Modelling
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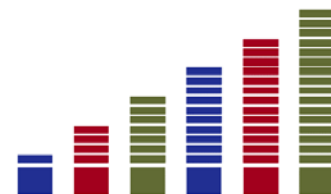
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Introduction

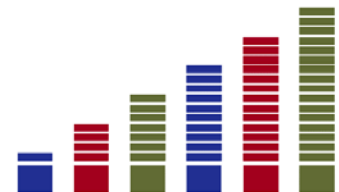
- **Population and household census (PHC)** aim is to collect data on the entire national population, households and dwellings on a fixed point in time
- The next PHC in Estonia is intended to be fully register-based (end of 2020)
- Estonian Population Register is over-covered



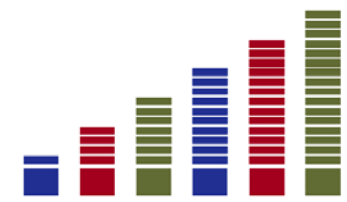
Estonian Population Register (PR)

- PR contains data about
 - all Estonian citizens
 - foreigners, who have registered their address in Estonia
 - foreigners, who have got an Estonian residence permit

- Everybody **is obliged** to register their right address to PR by the law.
- **BUT:**
 - people who have left Estonia do not register their leaving in PR;
 - people who have come (back) into Estonia do not give this information to PR

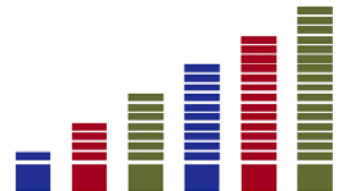


PR and official population



What about other registers?

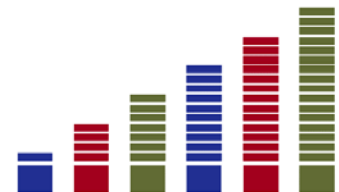
General idea: It can be assumed that the people who actually live in Estonia are represented in other administrative registers because they are using services and receive payments



Signs of life – activity in registers

- 1) Estonian Population Register (marriages, divorces)
- 2) Estonian Education Information System (students, teachers)
- 3) Social Services and Benefits Registry
- 4) Health Insurance Information Database
- 5) National Defence Obligation Register
- 6) Estonian National Pension Insurance Register
- 7) Estonian Unemployment Information System
- 8) Register of Residence and Work Permits
- 9) E-file system (crime documents, court documents etc)
- 10) Estonian Traffic Register (Changes of driver's licenses, changes of vehicles)
- 11) Register of Employment
- 12) Register of Identity Documents
- 13) Estonian Medical Prescription Center
- 14) The State Human Resources Database

In total 2015 we had 27 signs of life



Methodology (1)

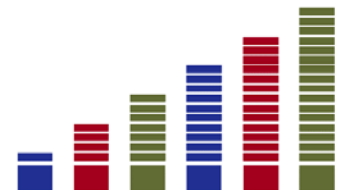
- Every year ($k+1$) value of residency status is calculated by last year (k) value of residency status and last year sum of signs of life with next formula:

$$R_j(k+1) = d * R_j(k) + g * X_j(k)$$

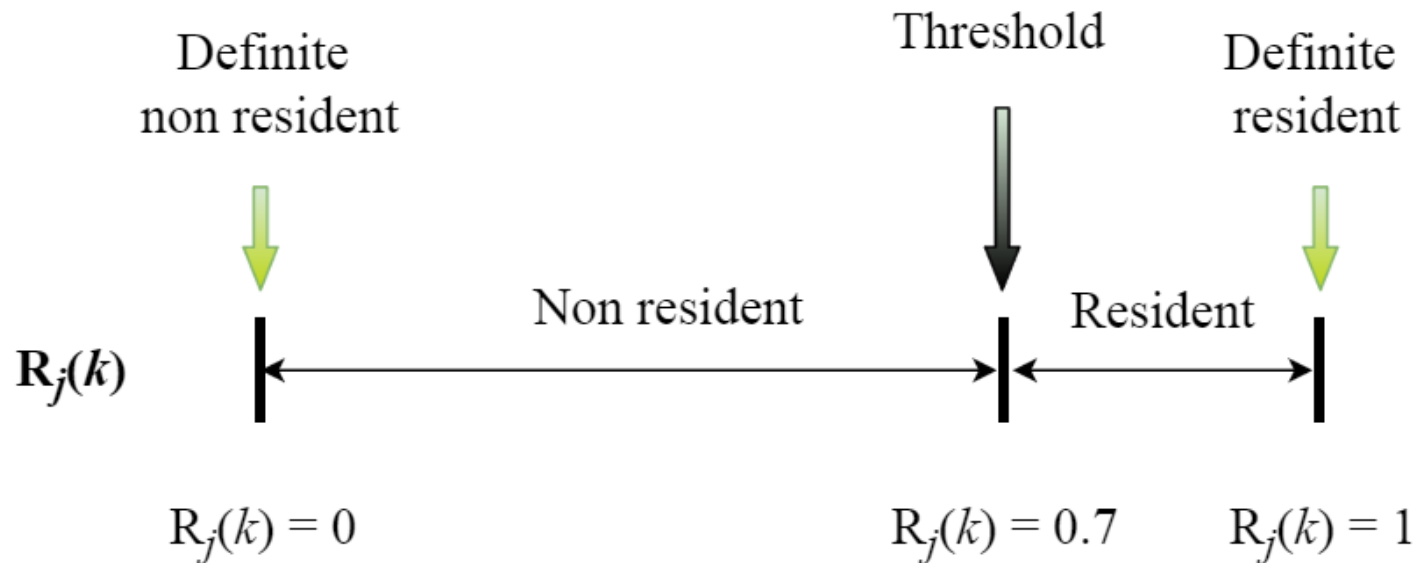
- R_j – a value of residency status
- X_j – sum of signs of life
- d – stability parameter; $d=0,8$
- g – signs of life parameter; $g=0,2$
- Sum of signs of life:

$$X_j(k) = \sum_{i=1}^I a_i B(i, j, k),$$

- a_i – weight of register
- $B(i, j, k)$ – sign of life, 0 or 1



Methodology (2)



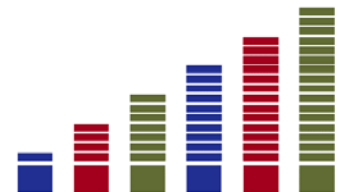
The three parameters:

c - threshold,

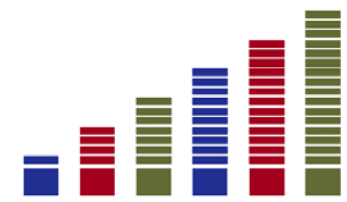
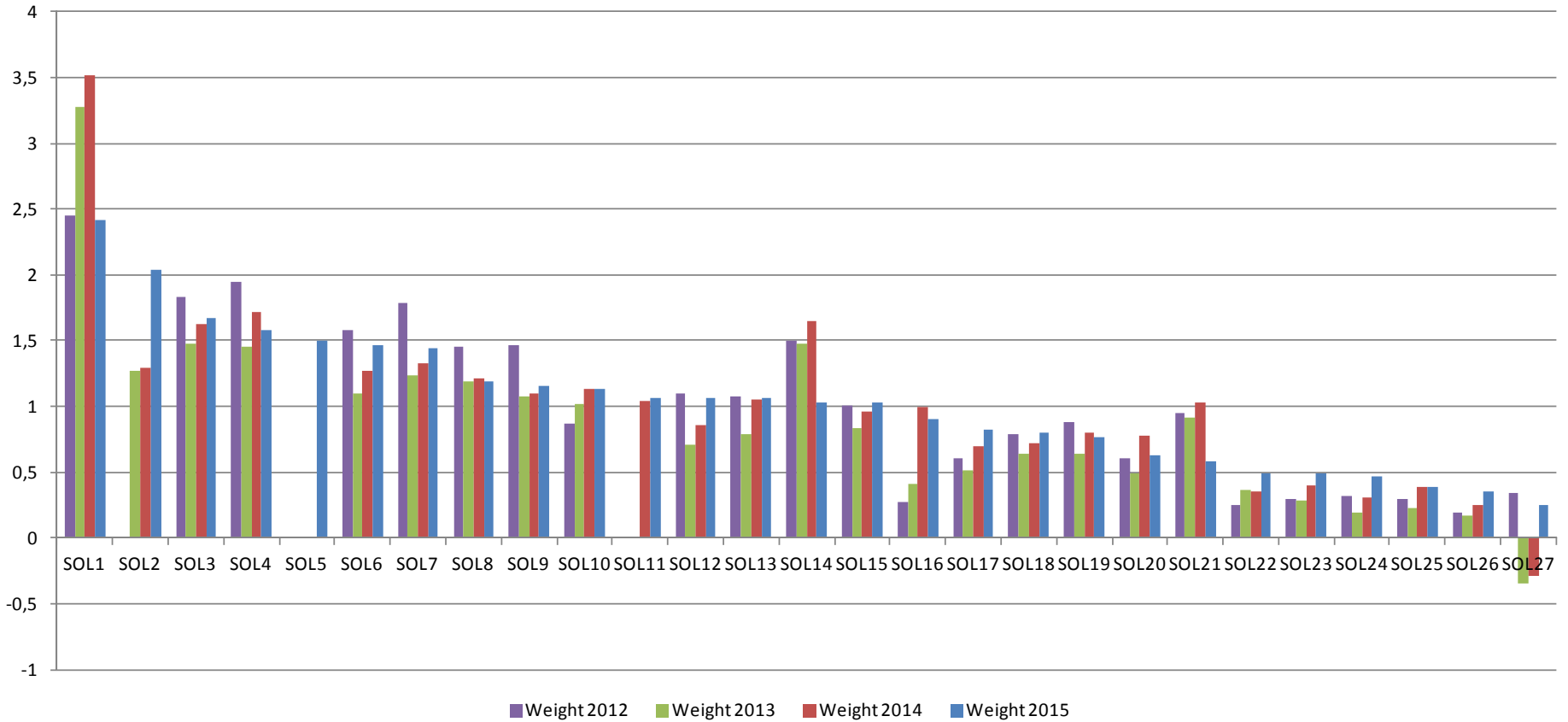
d - stability parameter

g - signs of life parameter

are estimated using logical considerations

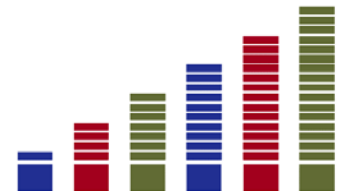


Weights of registers

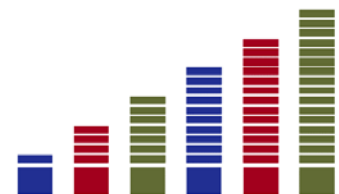
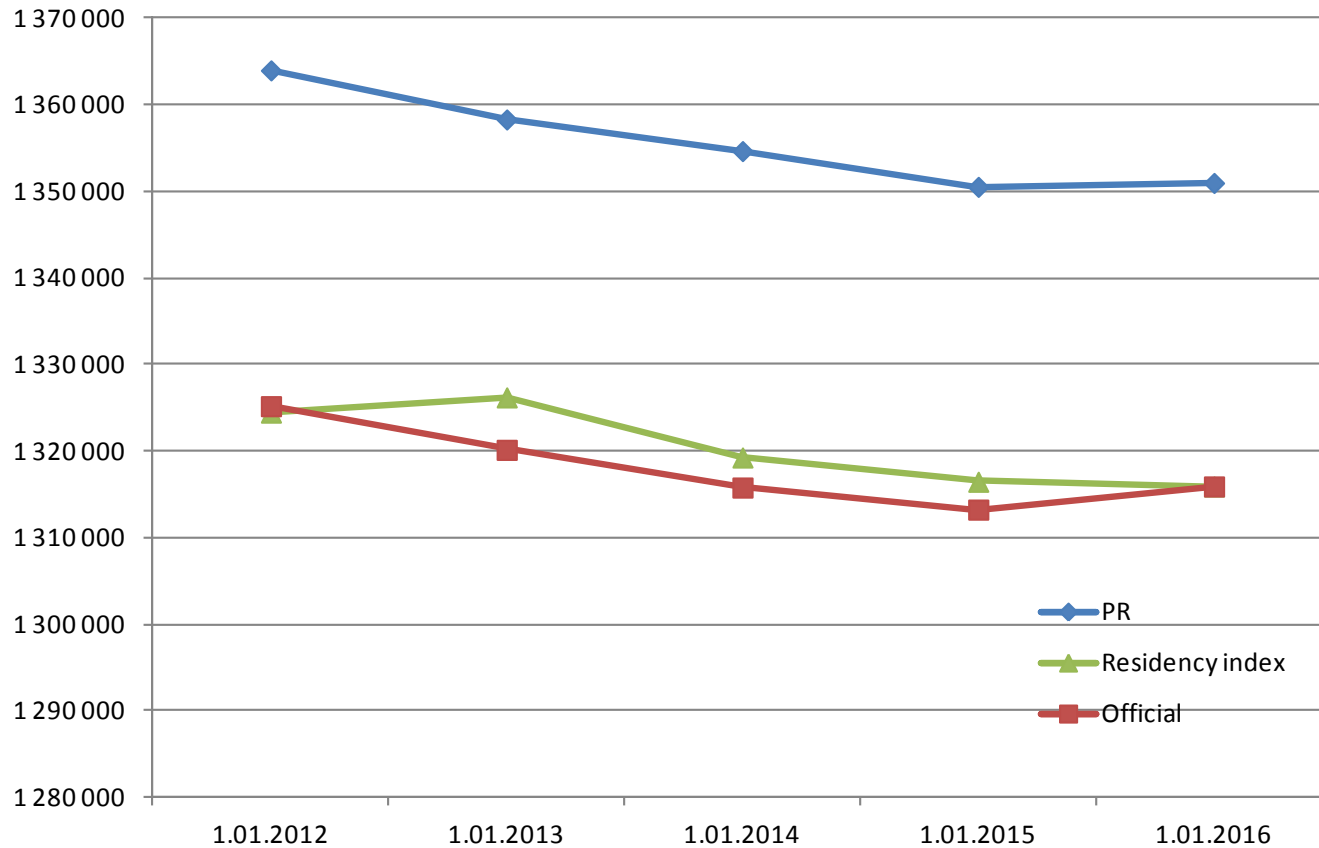


Examples

ID	Event	R(2014)	R(2014) - res	X(2014) simple	X(2014) weight	R(2015)	R(2015) - res
a	Birth	.	.	.	.	1	R
b	Death	0,8	R	.	.	0	NR
c	Registered immigration	.	.	.	.	1	R
d	Registered emigration	0,9	R	.	.	0	NR
e	-	0,4	NR	3	2,88	0,9	R
f	-	0	NR	5	4,05	0,81	R
g	-	0,92	R	2	1,24	0,98	R
h	-	0,75	R	1	0,35	0,64	NR

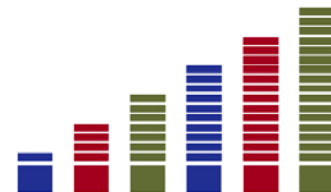


PR, official and residency index population



Summary

- The next PHC in Estonia is intended to be fully register-based
- New methodology for determining permanent residency status using registers
- 01.01.2016 Estonian official population is calculated by this new methodology



Thank you for your attention!

