



Estonian 2021 census: determining households and dwellings from registers using graphs

Helle Visk

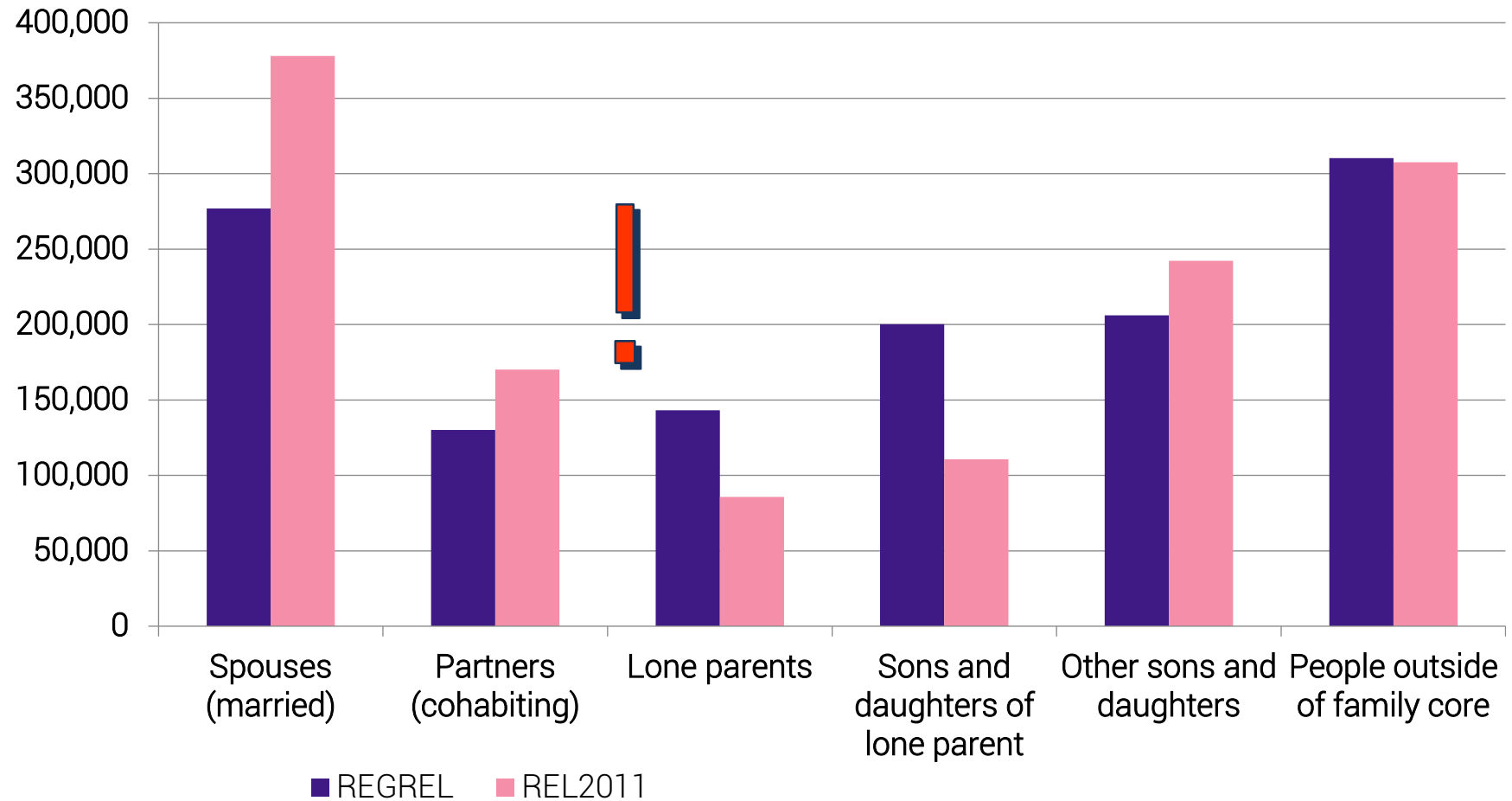
Meeting of the Group of Experts on Population and
Housing Censuses

20 September 2023

Estonian census 2021

- In Estonia, combined approach was used in census 2021.
 - EU-mandatory variables: registers
 - Other variables: survey (web + phone)
- Data about place of residence in Population Register (PR) is inaccurate ⇒ affects households
- Definition of household:
 - Housekeeping unit – live in same housing unit *and* „provide themselves with food and possibly other essentials for living, members of the group may pool their incomes to a greater or lesser extent“ (EU Commission Implementing Regulation 2017/543).
 - Address-based – live in same housing unit

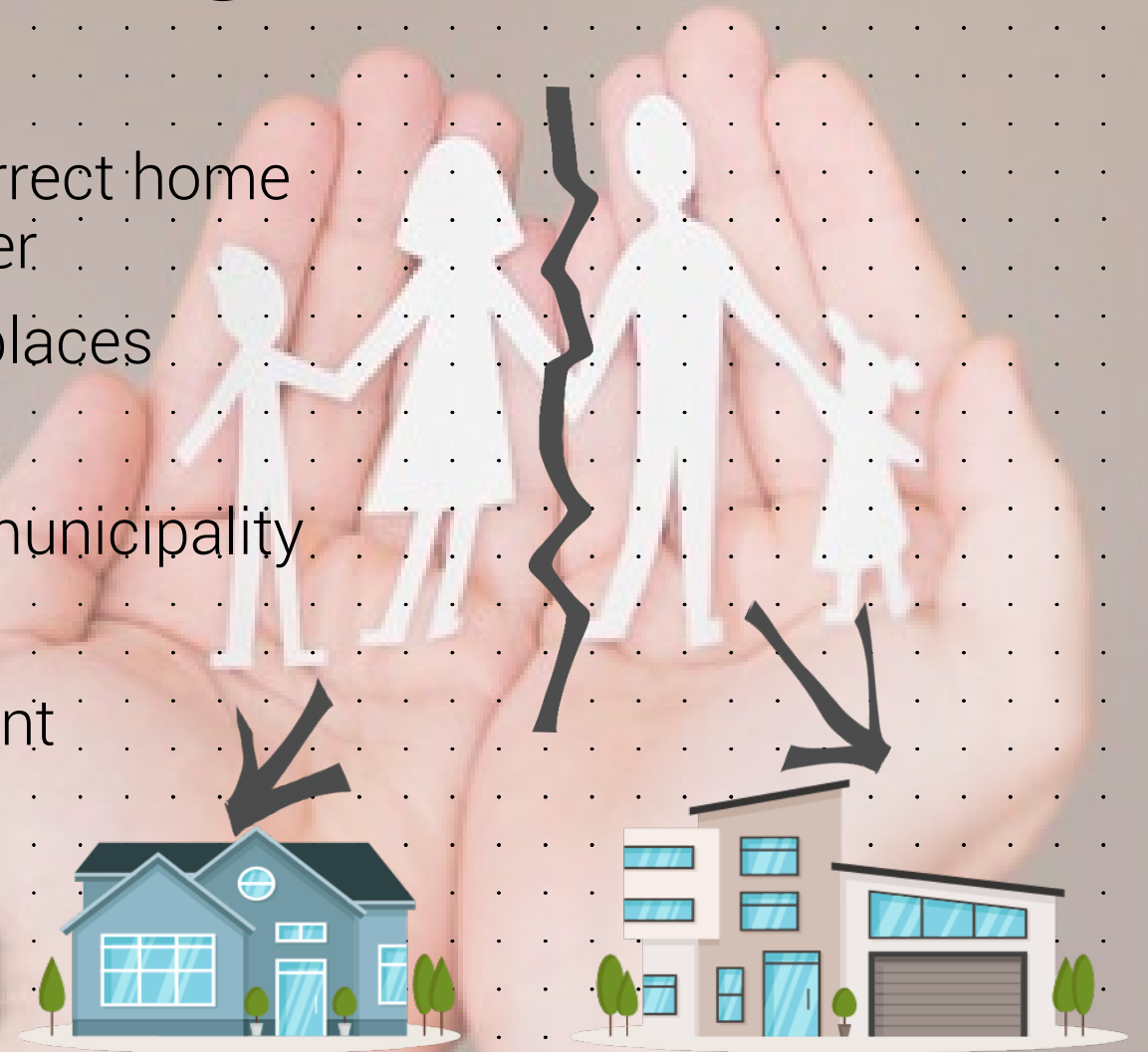
Reality check on family status: pilot census 2016 vs. 2011 census



False registering

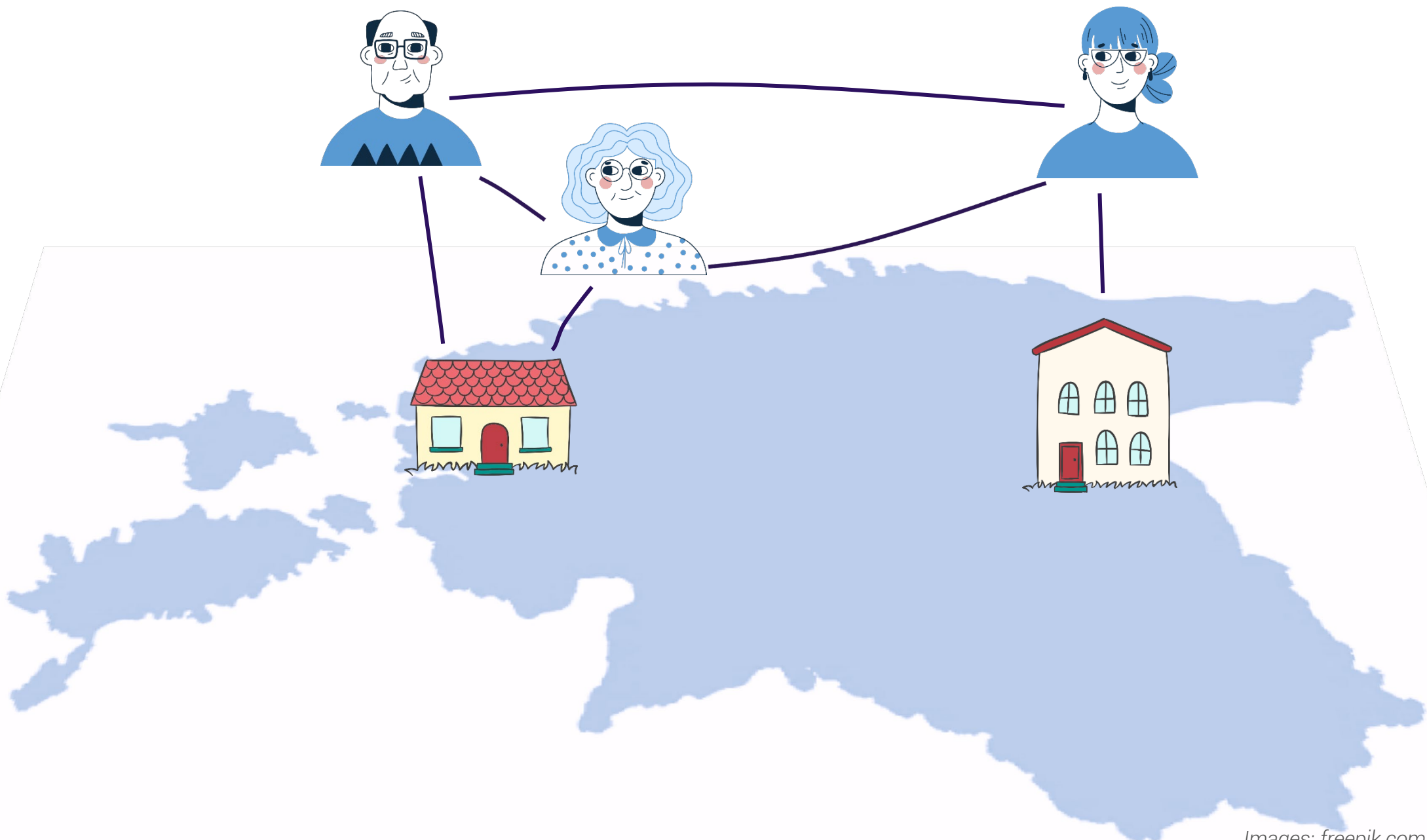
20% of people don't have correct home address in Population register.

- School and kindergarten places
- Free services
- Wish to support another municipality
- Ignorance
- Avoiding income tax on rent
- etc.

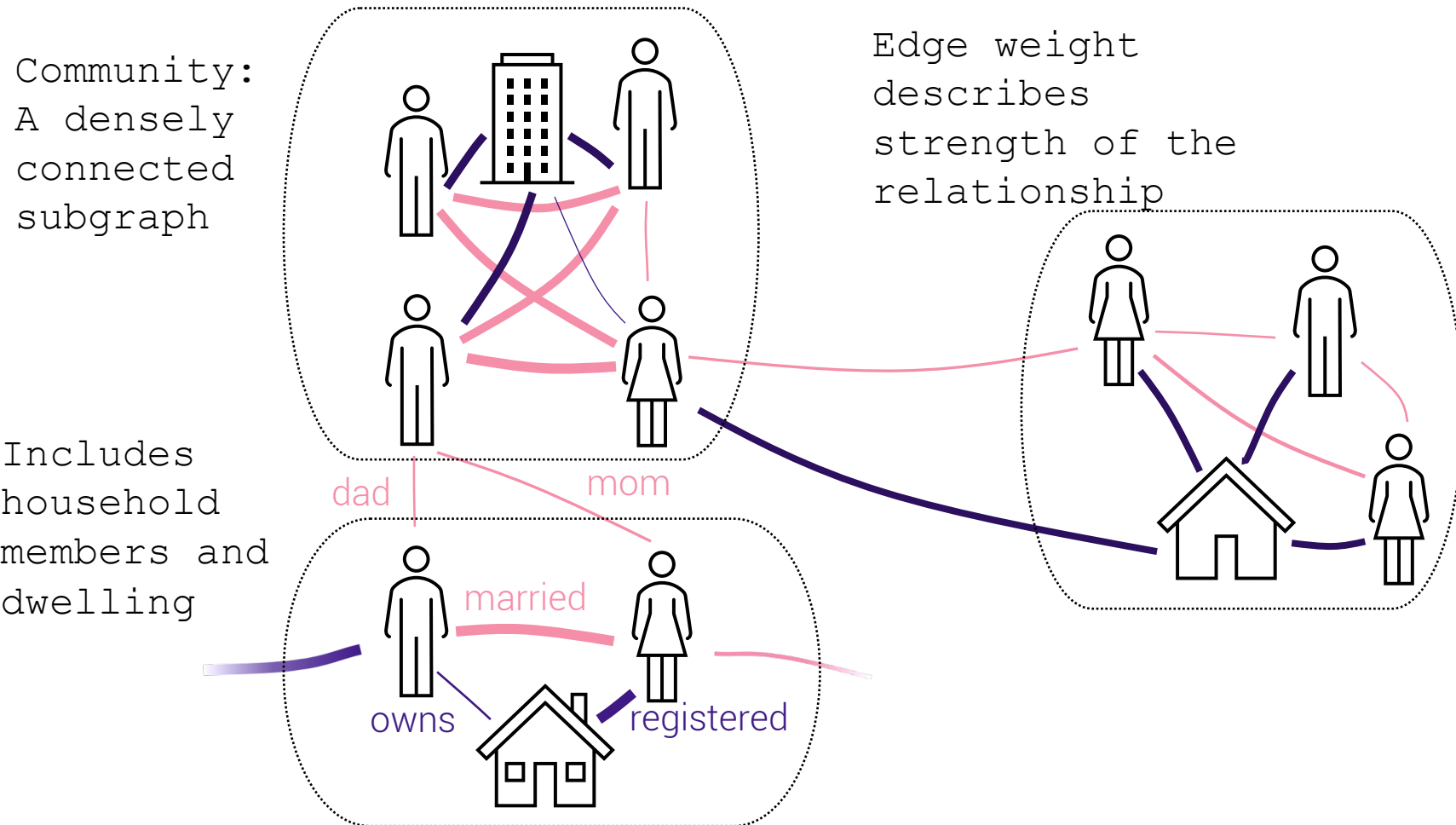


Reuniting families

- We need an algorithm that reunites broken families.
- Any solution means that
 - some people will have a different address (compared to PR)
 - some people will have different household members.
- Available data
 - Links between persons: marriage, parenthood, sharing car ...
 - Links between persons and places: place of residence, owning a property, ...
- Complex relationships
 - Sharing place of residence -> more likely partners
 - Partners -> more likely to share place of residence



Households as communities

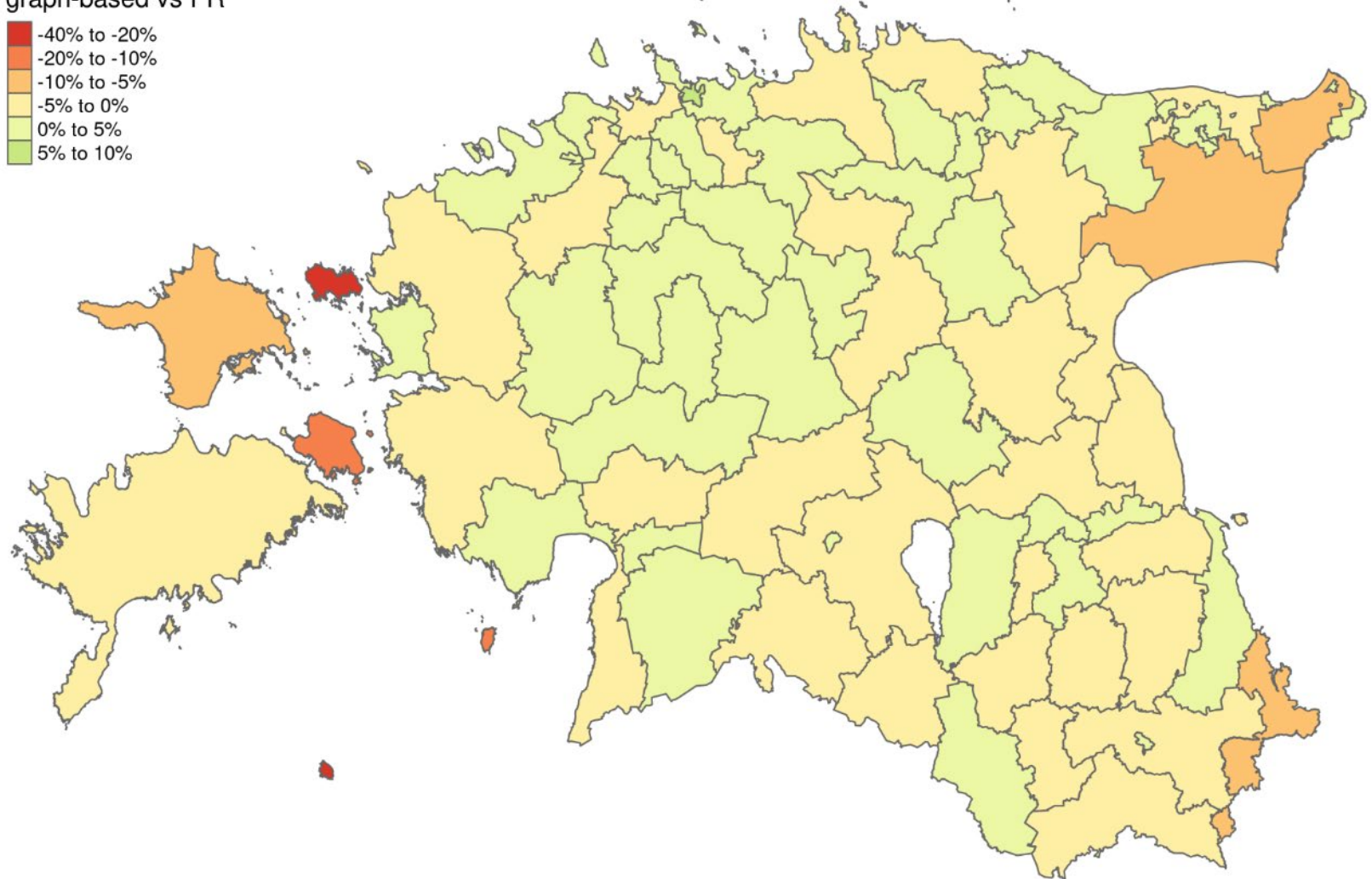
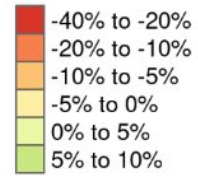


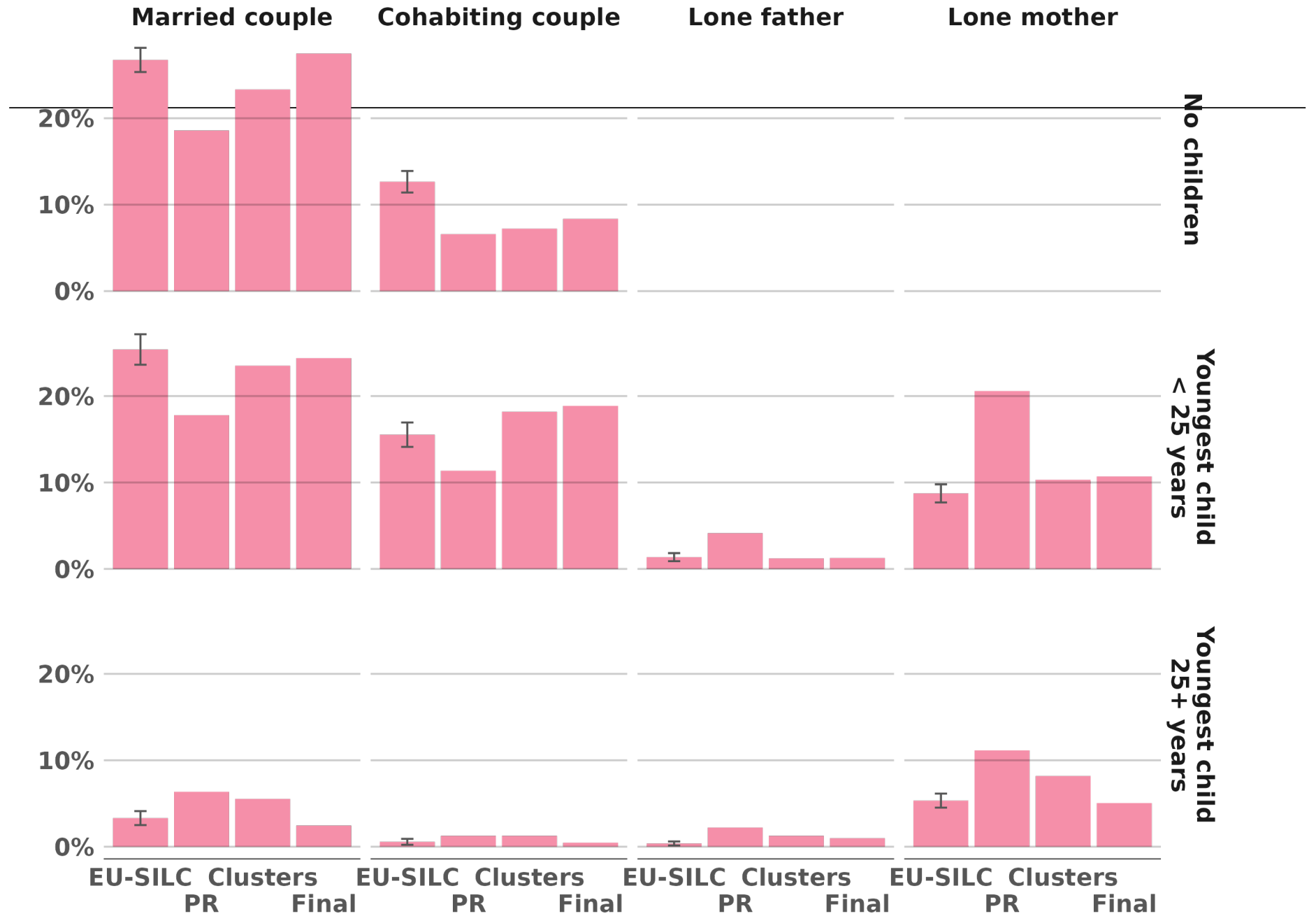
Data

- 16 registers
 - 24 person-person signs: marriage, divorce, parenthood, family allowance, owners/users of a vehicle, buying prescription medicine, care leave, custody, alimony, co-applying for mortgage, tax benefits...
 - 23 person-place signs: place of residence and postal address from different sources, property, mortgage, electricity contract, school, kindergarten, workplace, GP, medical care, dental care, pharmacy...
- 2 surveys
 - Estonian Social Survey (EU-SILC)
 - Estonian Labor Force Survey (ELFS)

Impact of methodology change to population counts, 01.01.2021

Change in population count:
graph-based vs PR







Summary

- Inaccuracy of place of residence data in Population Register affects household and family statistics
- Household and their dwelling can be viewed as a community in the graph of persons and places
- Results with graph-based methodology: starting from December 31, 2021 / January 1, 2022

Thank you!

Helle Visk

Methodologist

helle.visk@stat.ee

STATISTICS ESTONIA

www.stat.ee

Tatari 51, 10134 Tallinn