

The use of generation replacement indexes for the research on internal youth migration

04-06 February 2015, Wiesbaden, Germany

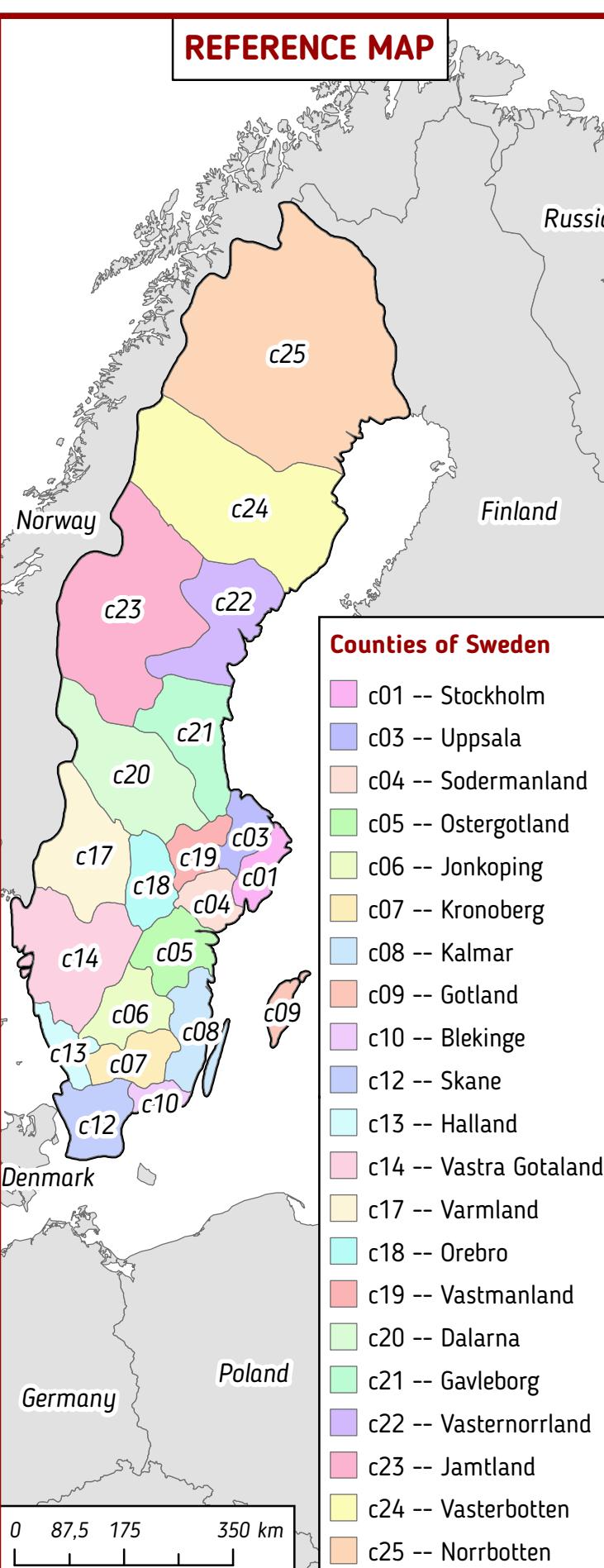
Symposium "Internal Migration and Commuting in International Perspective"

Ilya Kashnitsky

(1) University of Groningen, Faculty of Spatial Science, Groningen, Netherlands & Netherlands Interdisciplinary Demographic Institute, The Hague, Netherlands
PhD Researcher

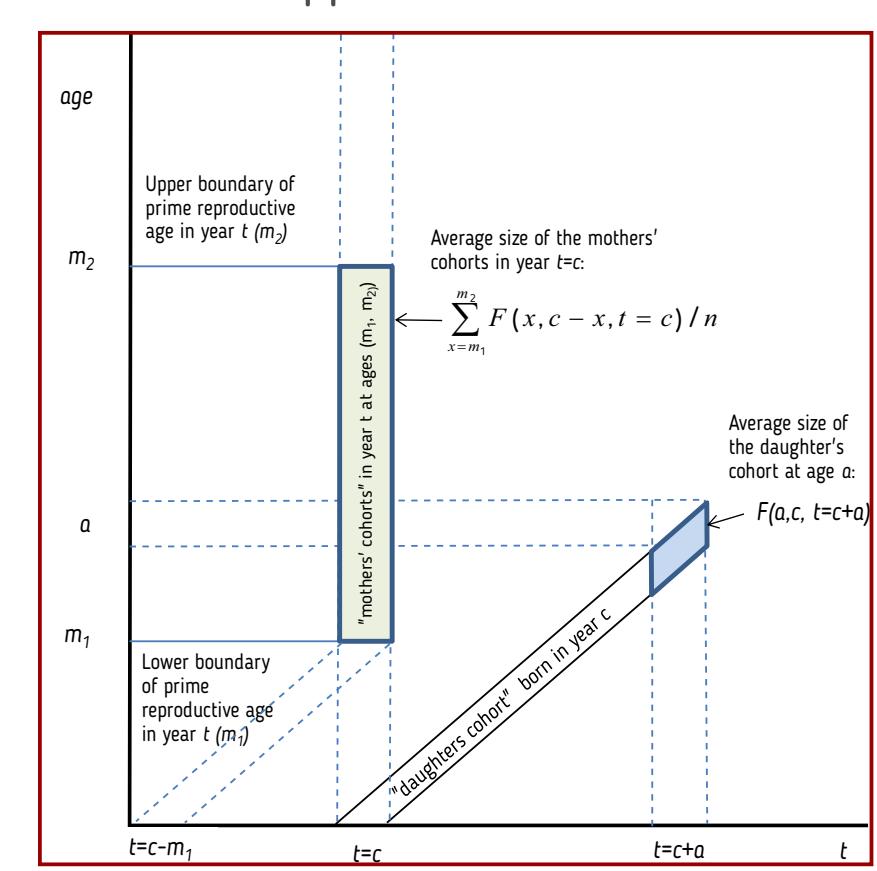
(2) National Research University Higher School of Economics, Moscow, Russia
Migration Policy Center, Research Intern

ilya.kashnitsky@gmail.com



METHODOLOGY

The method used in my research is a very recent one proposed by Chris Wilson and co-authors [1]. The indicator is called **overall replacement ratio (ORR)** and combines some features of both cohort and conventional approach.



ORR relates the size of daughters' cohort at different ages to the mean size of mothers' cohort at the moment of their birth. Traced

cohort-wise till the average age of childbirth, ORR reflects the multiplying coefficient with which the next generation succeeds the previous one. Changes in ORR show mainly the role of migration in the process of generation replacement.

My research applies the described method to sub-national levels of administrative division in order to trace the impact of internal migration on the generation replacement. Data used in the research is the one-year age composition of female population of Sweden over 1968-2013.

Changes in relative cohort size are analyzed for 21 counties (NUTS 3 level) and 290 municipalities of Sweden. After the consideration for mortality, which is quite low in the present-day Sweden at young ages, the changes in cohort size stand for spatial redistribution of population.

The approach has an evident limitation. Using ORR we can not distinguish between internal migration itself and spatial distribution of international migration within country.

HYPOTHESIS

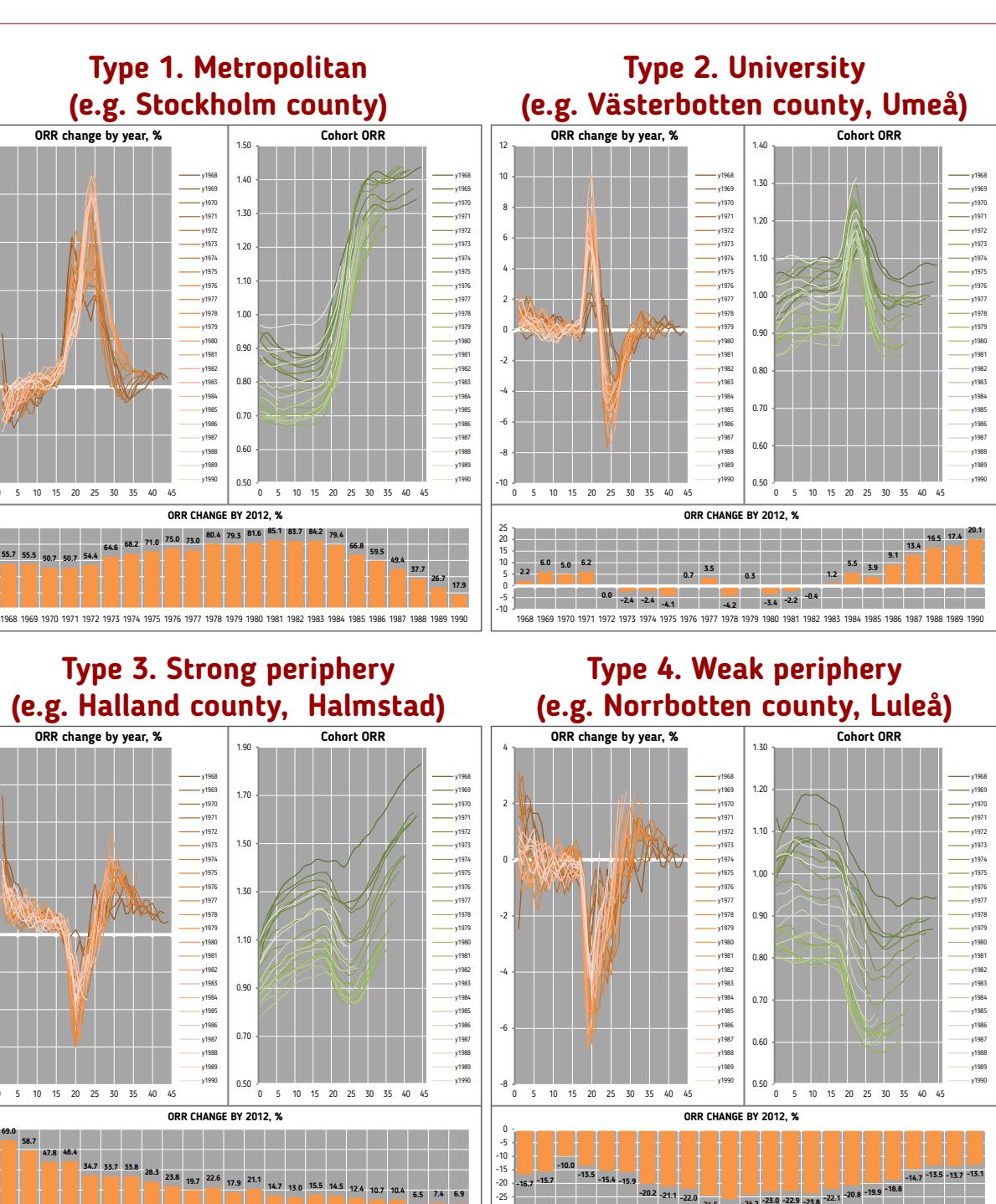
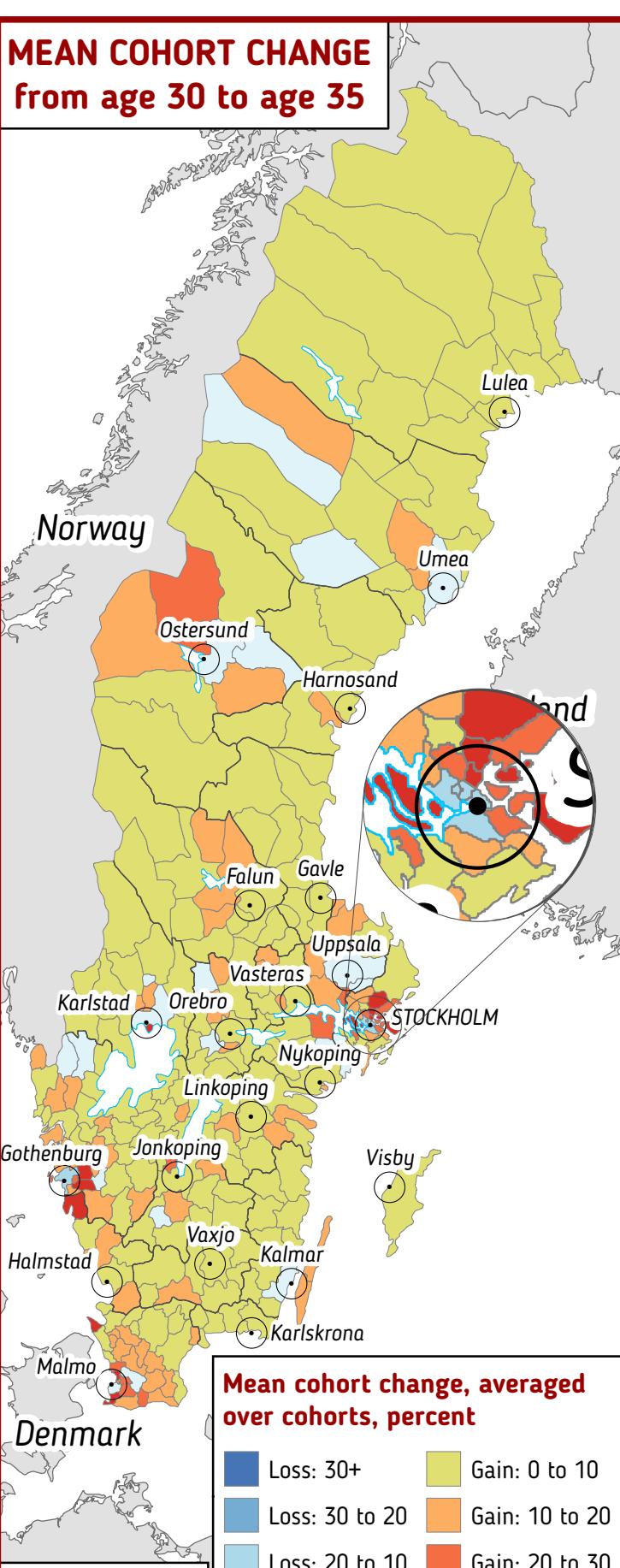
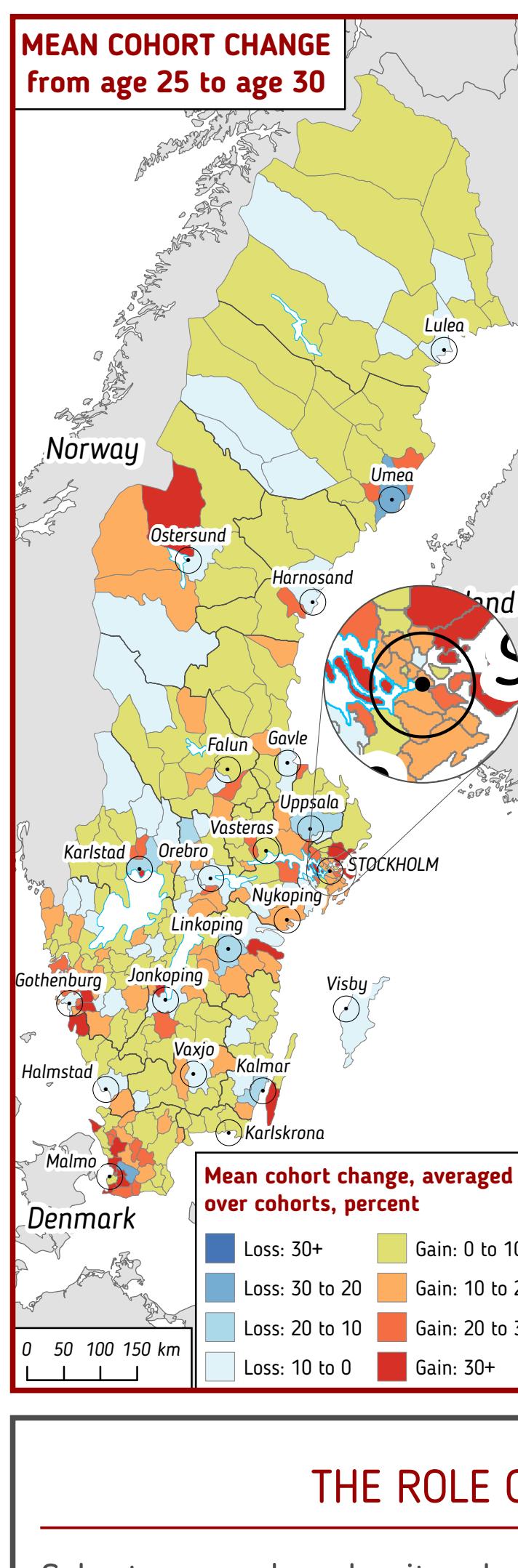
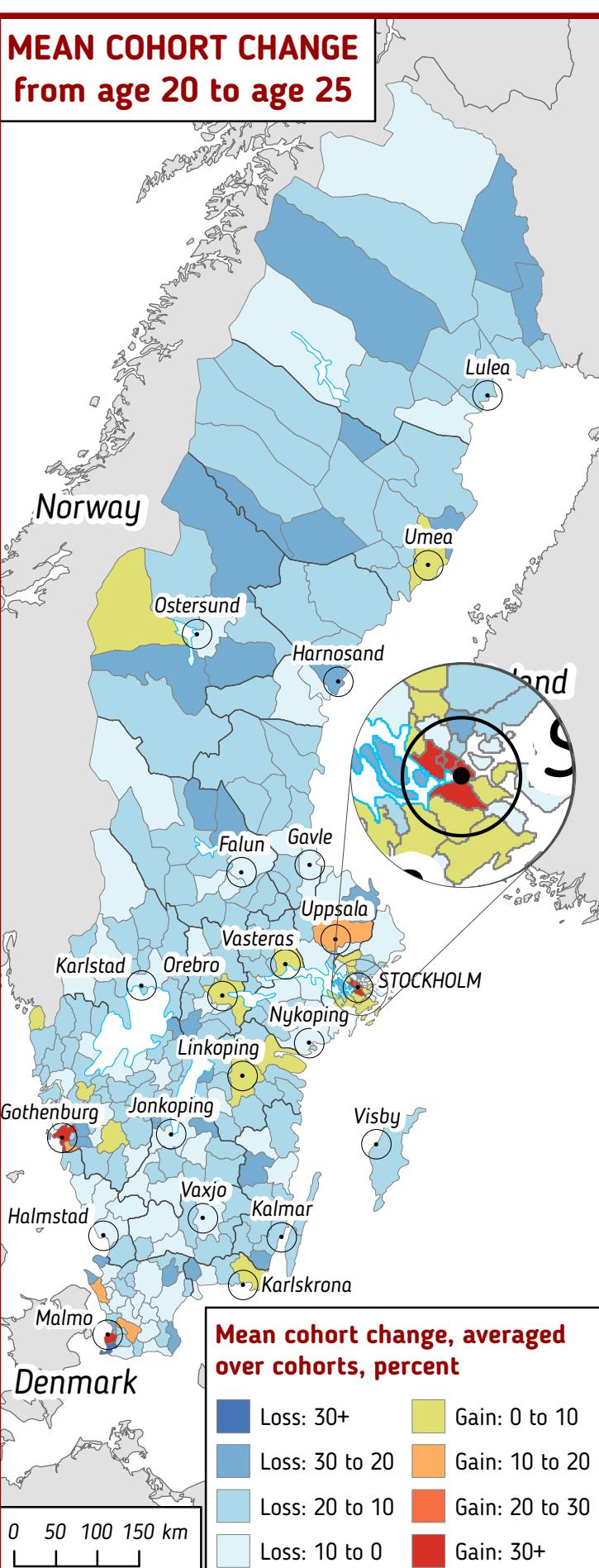
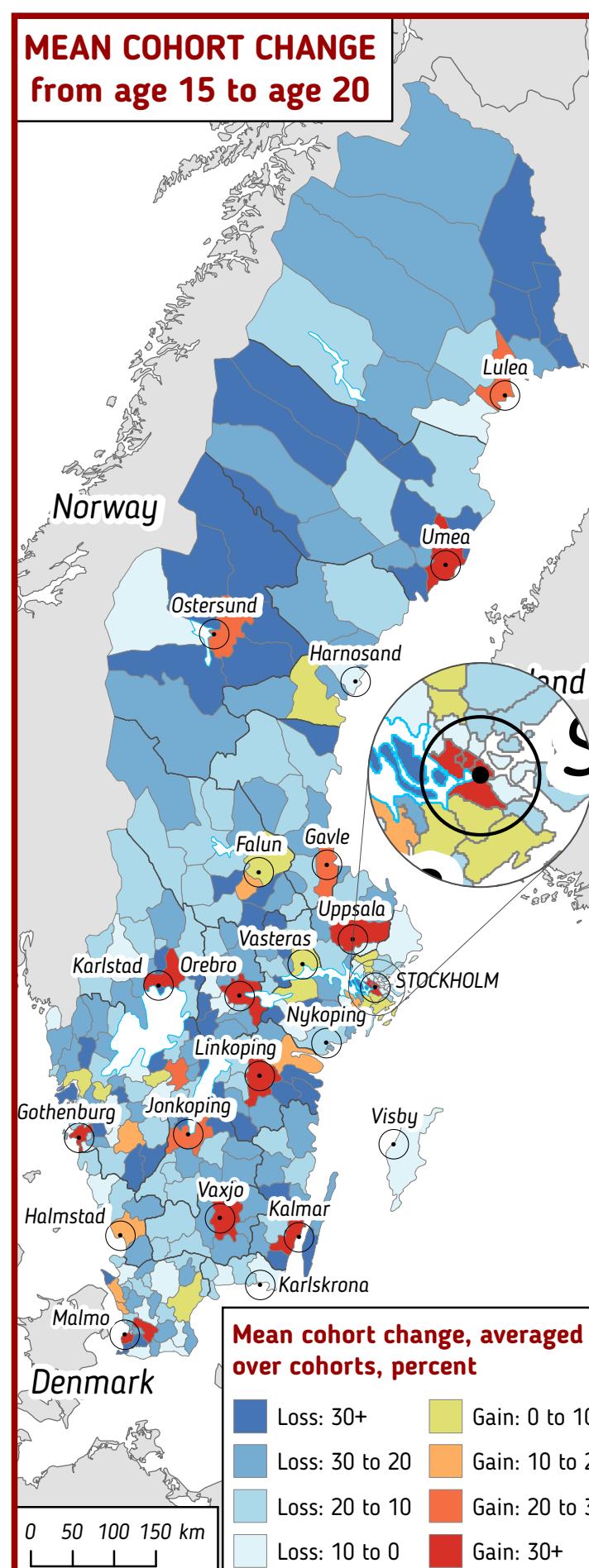


Figure 2. Classification of regions by the balance of migration at young ages. The four types are illustrated with distinctive counties' examples. The spatial variation is even more evident at the municipal level.

The analysis of ORR change during the cohorts' life span reveals quite a sustainable pattern of spatial diversity. Four types of regions could be distinguished according to migration preferences at young ages.

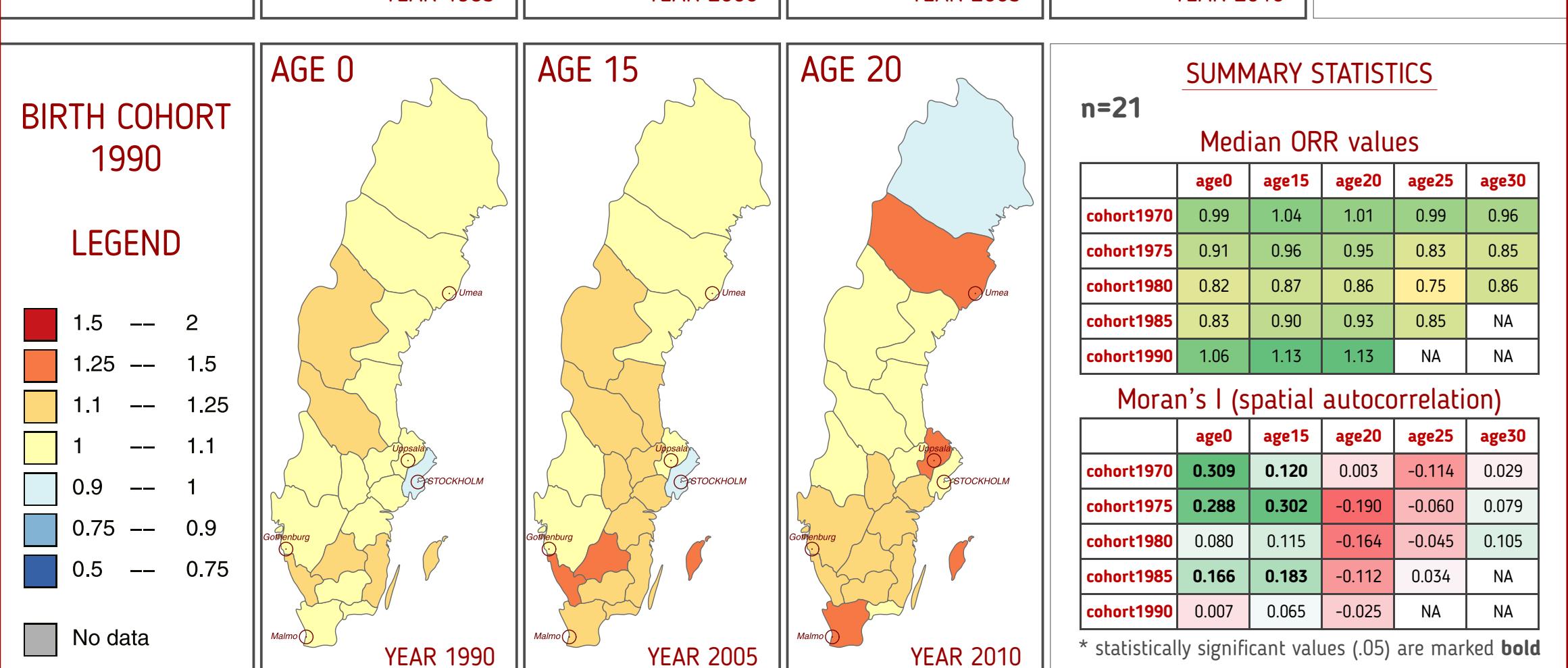
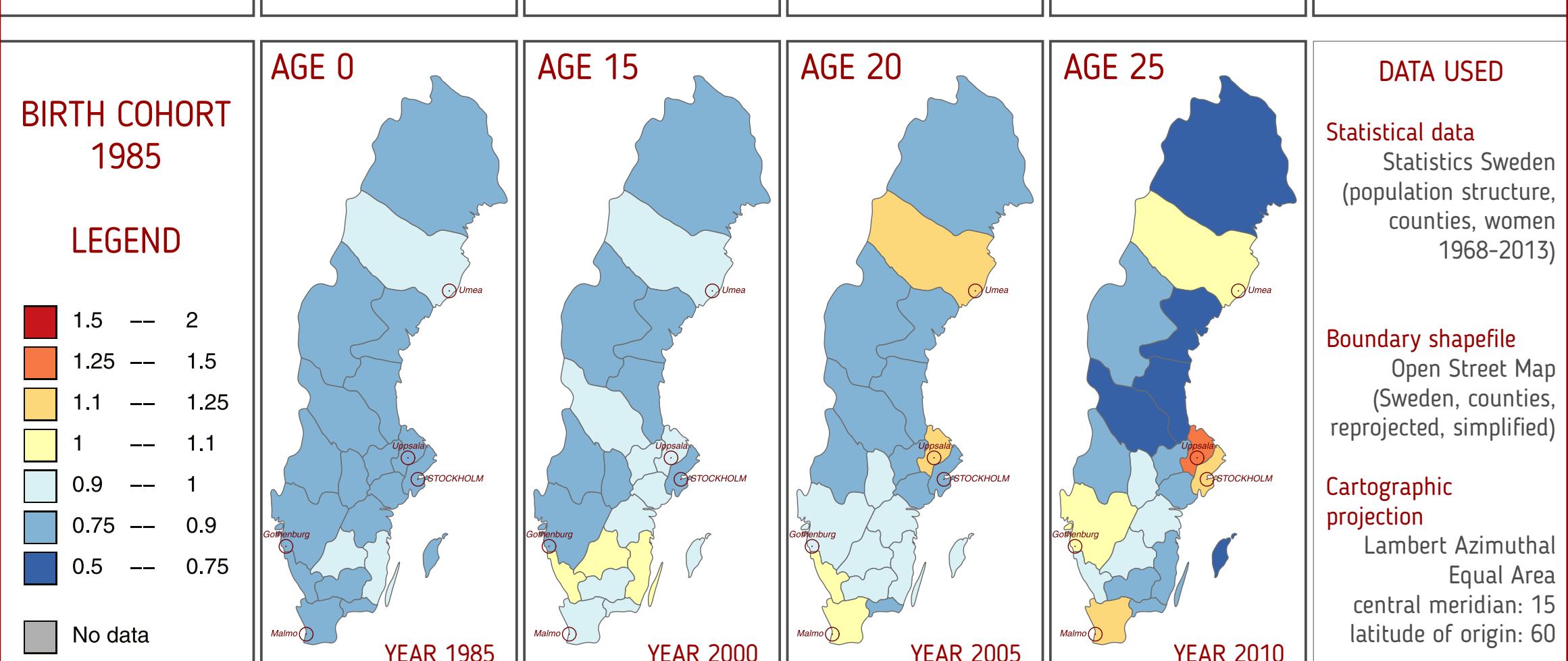
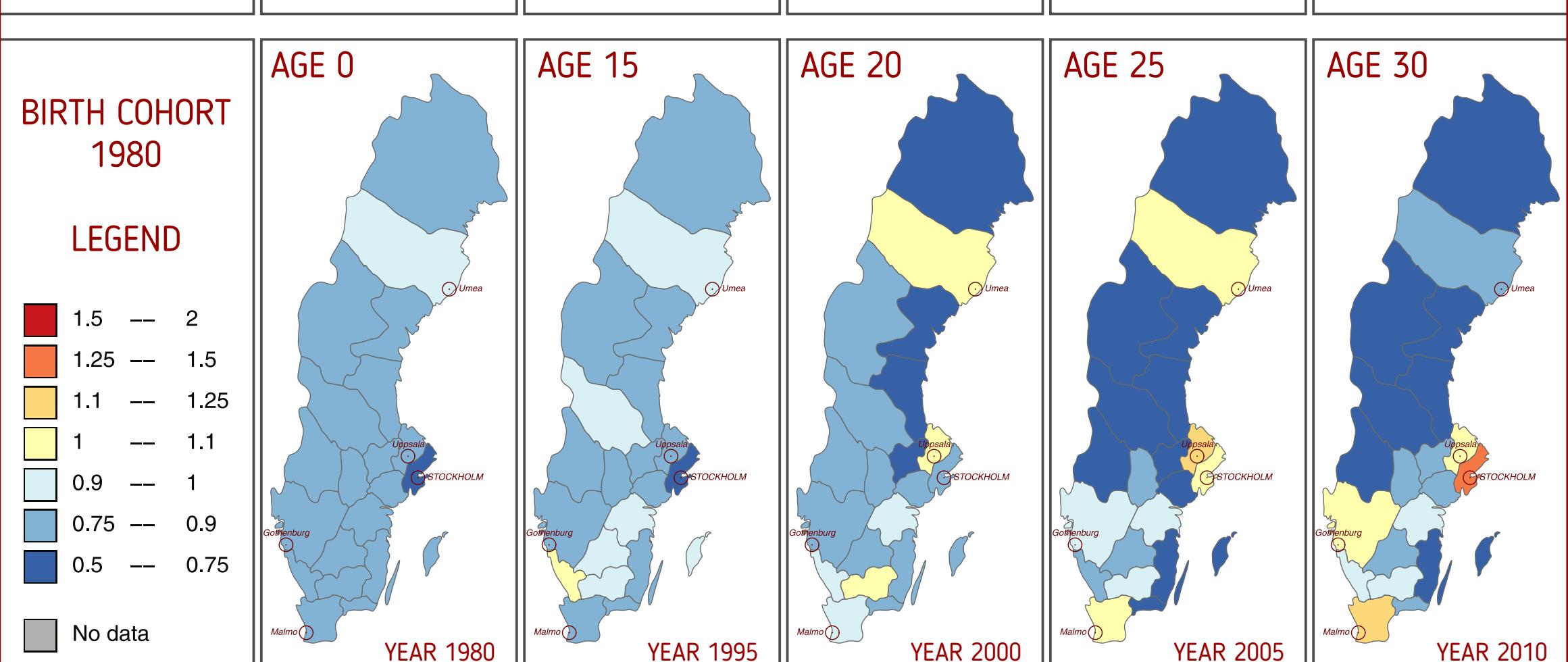
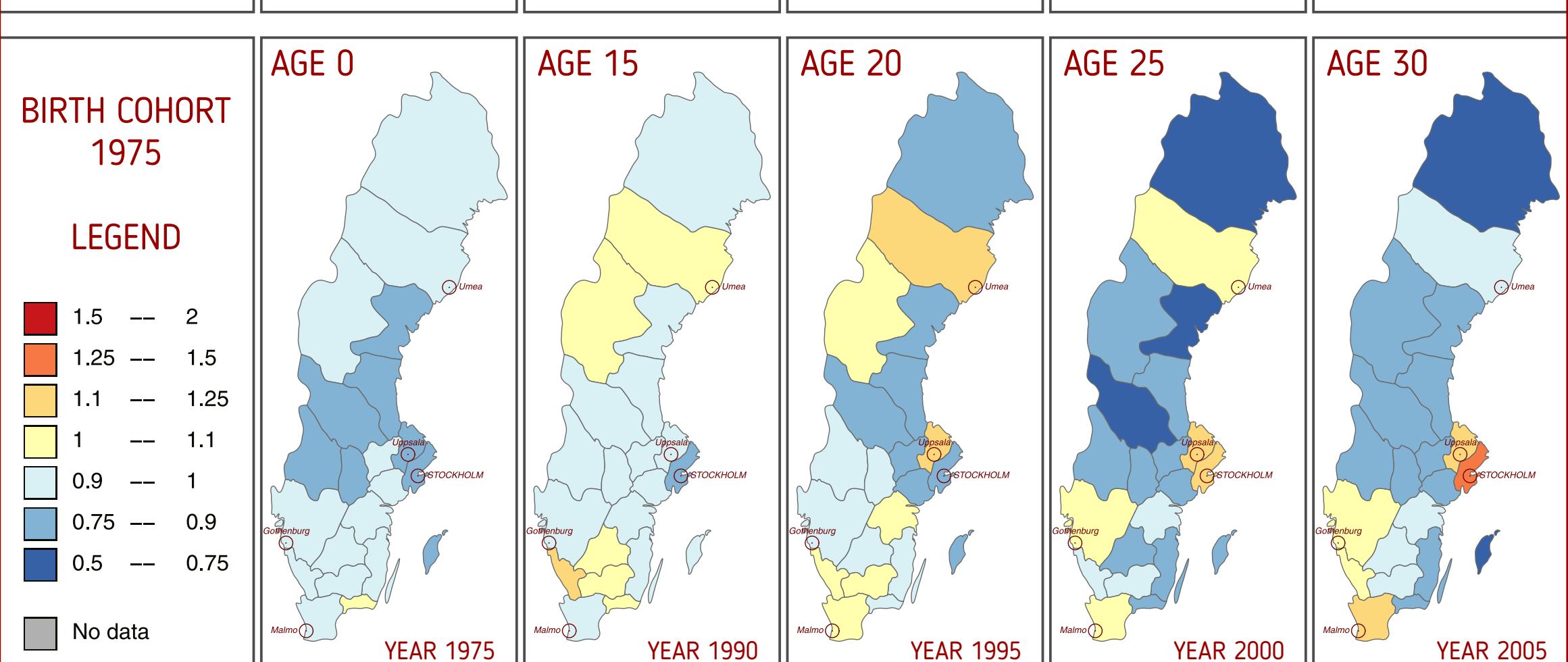
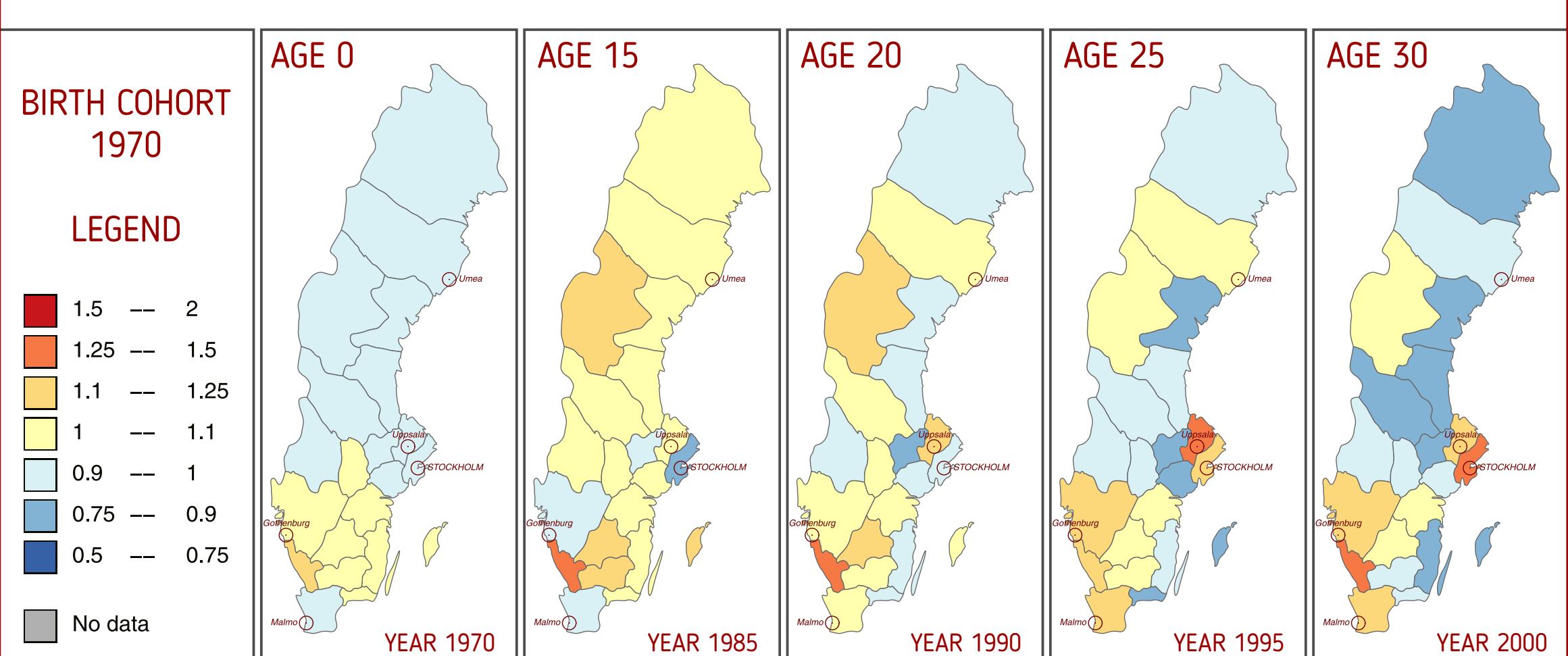
In principle, only two waves of internal migration matter in terms of generation replacement (approx. by the age of 30). These two waves of migration are "student" and "post-student", with university and labor market opportunities being the two major drivers of population redistribution, respectively.

The combination of region's success in attracting young movers of two major waves gives the four model types of the classification based on youth migration patterns.



COUNTIES

Overall Replacement Ratio of several birth cohorts at certain ages



SUMMARY STATISTICS

n=21

Median ORR values

age0 age15 age20 age25 age30

cohort1970 0.99 1.04 1.01 0.99 0.96

cohort1975 0.91 0.96 0.95 0.83 0.85

cohort1980 0.82 0.87 0.86 0.75 0.86

cohort1985 0.83 0.90 0.93 0.85 NA

cohort1990 1.08 1.13 1.13 1.13 NA NA

Moran's I (spatial autocorrelation)

age0 age15 age20 age25 age30

cohort1970 0.309 0.120 0.003 -0.114 0.029

cohort1975 0.288 0.302 -0.190 -0.060 0.079

cohort1980 0.860 0.115 -0.164 -0.045 0.105

cohort1985 0.166 0.183 -0.112 0.034 NA

cohort1990 0.007 0.065 -0.025 NA NA

* statistically significant values (.05) are marked bold

n=290

Median ORR values

age0 age15 age20 age25 age30

cohort1970 1.02 1.14 1.04 0.94 0.97

cohort1975 0.95 1.05 0.88 0.74 0.83

cohort1980 0.86 0.94 0.71 0.62 0.72

cohort1985 0.87 0.98 0.80 0.69 NA

cohort1990 1.13 1.19 1.01 0.94 NA

Moran's I (spatial autocorrelation)

age0 age15 age20 age25 age30

cohort1970 0.214 0.085 0.274 0.232 0.525

cohort1975 0.100 0.099 0.104 0.190 0.572

cohort1980 0.115 0.132 0.081 0.134 0.369

cohort1985 0.124 0.155 0.161 0.147 NA

cohort1990 0.023 0.102 0.172 NA NA

* statistically significant values (.05) are marked bold

COMMENTS ON THE SERIES OF MAPS

The two panels above contain series of maps representing ORR of several birth cohorts at various ages at the levels of counties (left panel) and municipalities (right panel). The great number of maps is in fact just an attempt to visualize time in the analysis.

The general overview shows how university areas (e.g. Kronoberg or Västerbotten) gain population by the age of 20 and lose a considerable part of the gain by the age of 30 when lots of the graduates move elsewhere in search of proper employment.

The flight of gradiates is best visible at the 4 bigger maps (top-right) showing (at the level of municipalities) change in cohort size by five-year periods averaged over all analysed cohorts. All regional centers attract youths greatly at ages 15 to 20. Then, small regional centers like Växjö, Karlstad, Falun, Kalmar, Halmstad, Gävle, Östersund, Luleå, Härnösand and Jönköping start to loose young graduates as they cannot offer the same employment

opportunities as the metropolitan areas Stockholm, Malmö, Gothenburg and the centers nearest to Stockholm continue to attract youths aged 20-24. At 25-29 only Stockholm and Malmö (and their suburbs) gain youths along with the suburbs of Gothenburg. By the age of 35 even in Stockholm we can see the suburbanisation. University based Uppsala and Umeå suffer a huge outflow of graduates aged 30 plus. In contrast, regional periphery experiences moderate gain after a big loss.

ORR seems to be a simple and robust tool to study internal youth migration. The advantage of ORR is that it requires just the data on age composition. Thus, it could be widely used for the countries with limited quality of population statistics. It would be interesting to compare the results of ORR computations with the traditional APC analysis based on remarkably good Swedish data. Also, I am going to check for gender disproportion in Swedish students' migration rates as there should be some [3].

[1] Wilson, C., Sobotka, T., Williamson, L., & Boyle, P. (2013). Migration and intergenerational replacement in Europe. *Population and Development Review*, 39(1), 131-157.

[2] Högskoleverket. (2000). Swedish universities & university colleges: short version of annual report, 1999. Stockholm: National Agency for Higher Education (Högskoleverket).

[3] SHEA. (2014). Higher education in Sweden: 2014 status report (No. 2014:10) (p. 68). Stockholm: Swedish Higher Education Authority. www.uka.se

DISCUSSION AND FURTHER RESEARCH

REFERENCES



We may notice the clear result of massive inflow of students to the freshly founded universities. Those born in 1979-83 were 16-20 in 1999, and they responded to the opening of new universities with a change in migration behavior. Later, at the age of 25-29 and after the graduation, they still tend to move out from the university area. Due to the described changes the Kronoberg and Örebro moved from type4 to type2 in the classification of regions' proposed here.

Some of the regions with older universities have also experienced significant changes in migration balance at "student" ages. A great increase in the number of students happened in late 80s after a major reform in higher education system of 1977 [2]. Booming growth of attainment to higher education immediately resulted in intensification of youth internal migration. 1964-68 birth cohort's smoothed peak of student influx in some counties of type2 (Uppsala, Linköping and Umeå universities) indicates that the sharp uprise in the number of student positions encouraged entering universities at older ages.

