

Labor mobility of the elderly: spatial analysis for Poland *(preliminary)*

Grzegorz Kula*, Piotr Wójcik

Faculty of Economic Sciences, University of Warsaw

Vienna, 23-26 August 2016

*Grzegorz Kula gratefully acknowledges the support of the Polish National Science Centre, grant 2014/13/B/HS4/03204. All opinions expressed are those of the authors and have not been endorsed by the NSC.

Background:

- Populations are ageing fast,
- Labor market participation of the elderly is increasing.
- However:
 - Labor market participation of the elderly is still too low, given the speed of aging processes.
- There is an abundant literature on what makes the elderly stop working.
- There are many studies on job switching, labor migration and commuting to work, although they do not focus on the elderly.
- These are usually studies on individual data and the role of local government and municipal characteristics are often ignored.

Why should we consider local government and municipal characteristics?

- Local government and municipal characteristics create and define the conditions in which elderly people operate.
- With ageing and often shrinking population it is in local governments' interest to increase the activity of the elderly.

What should be taken into account:

- Geographical age distribution of the population,
- Characteristics of the elderly,
- Characteristics of a municipality, including its labor market,
- Institutional structure and the rules of decentralization,
- Activities of local governments.

Objective of the research

Verify why in some municipalities more elderly are working than in others and which local characteristics make the elderly to commute to work to other municipalities.

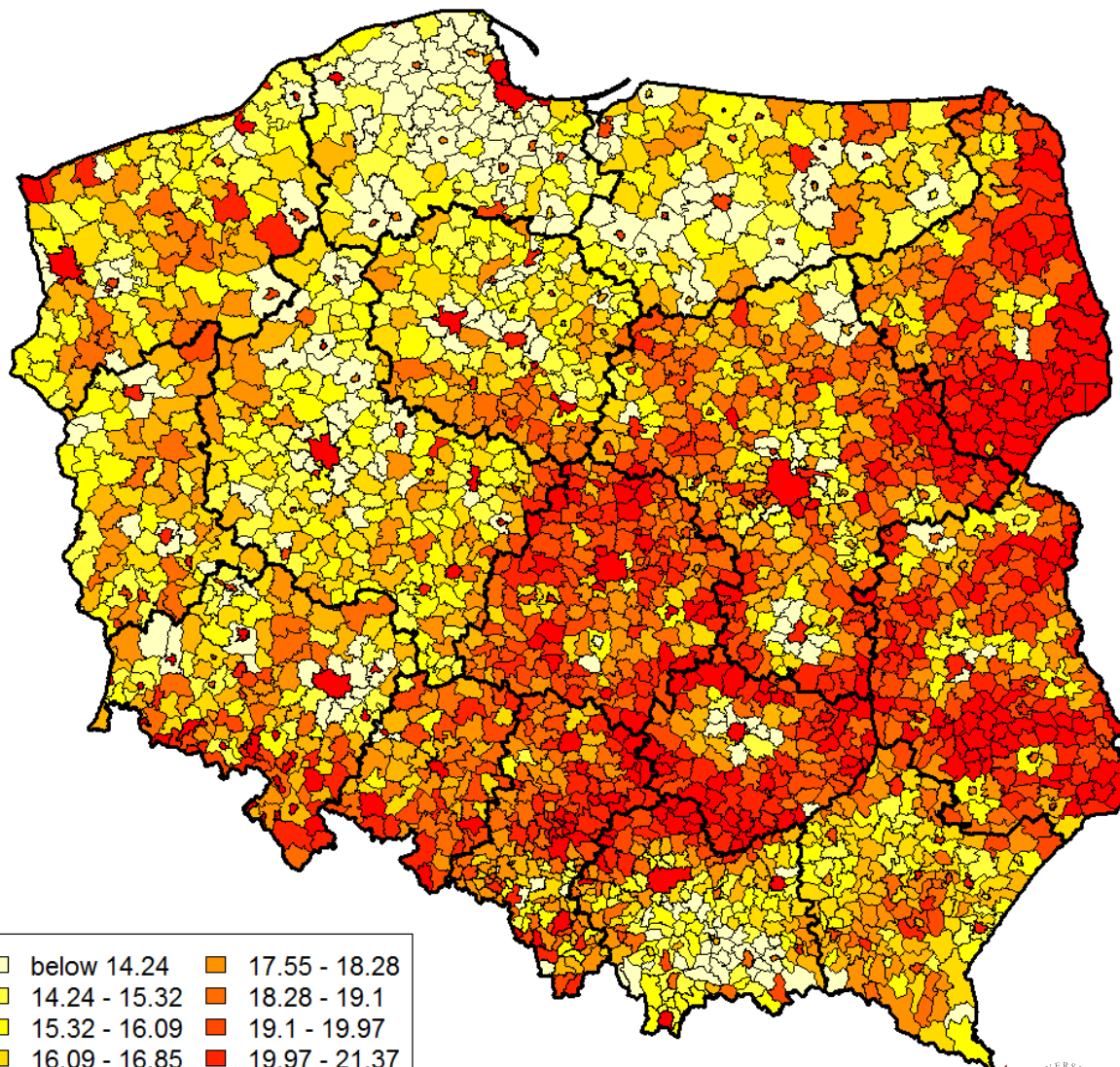
Methodology:

- Moran I correlations for initial overview of spatial relations,
- spatial autoregression model (SAR)

Data:

Local Data Bank, Polish Central Statistical Office, Ministry of Finance POLTAX base for 2014 (unique).

Share (%) of women 60+ and men 65+ in the population

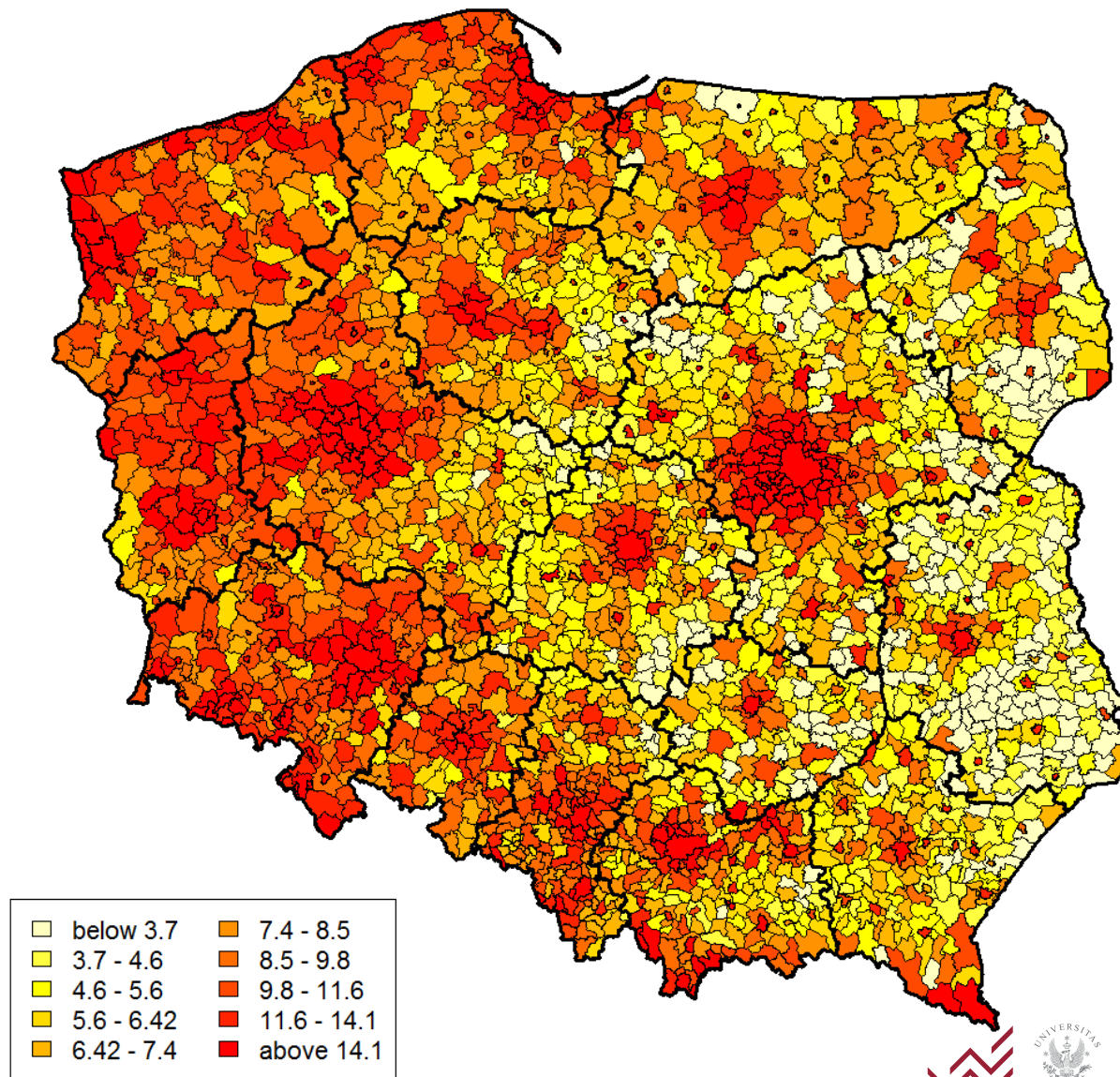


below 14.24	17.55 - 18.28
14.24 - 15.32	18.28 - 19.1
15.32 - 16.09	19.1 - 19.97
16.09 - 16.85	19.97 - 21.37
16.85 - 17.55	above 21.37

Source: own calculations based on Polish Local Data Bank

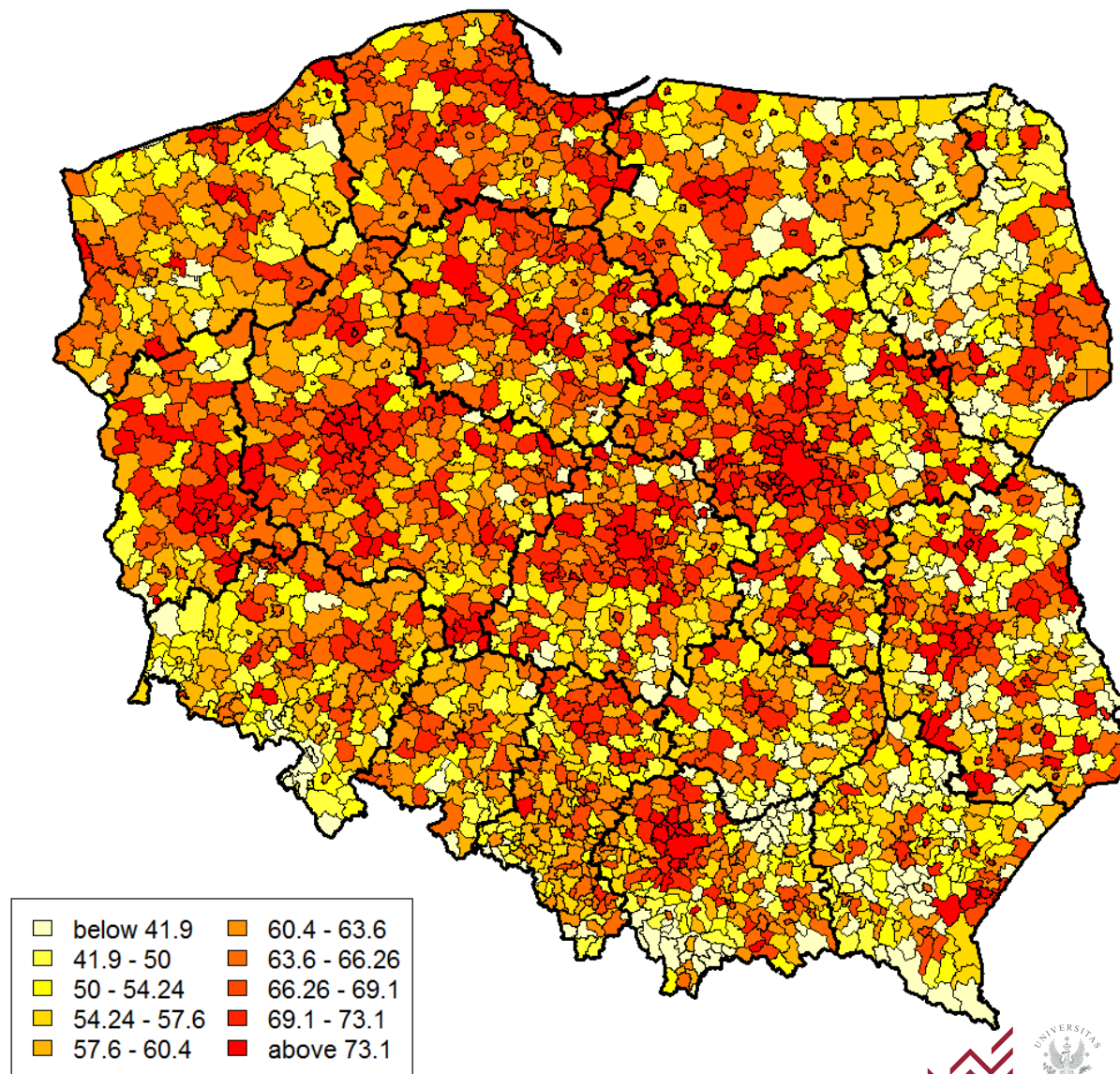
Share (%) of working elderly in the elderly population

Source: own calculations based on Ministry of Finance POLTAX data



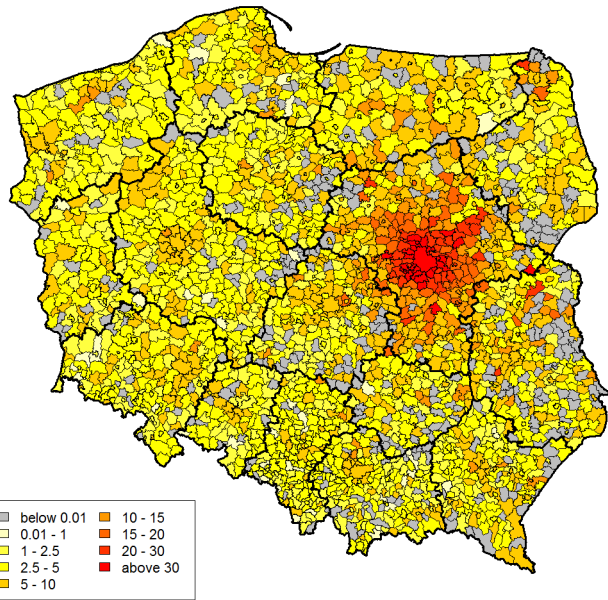
Share (%) of commuting elderly in the working elderly population

Source: own calculations based on Ministry of Finance POLTAX data

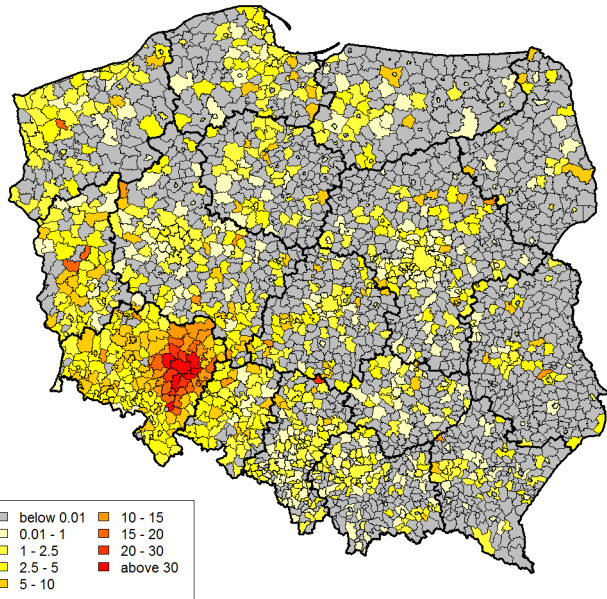


Kula, Wójcik: Labor mobility of the elderly: spatial analysis for Poland

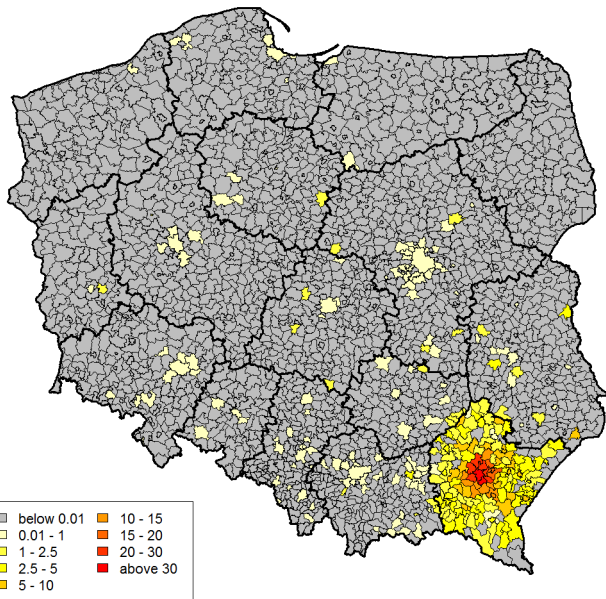
Share of working elderly commuting to Warsaw



Share of working elderly commuting to Wrocław



Share of working elderly commuting to Rzeszów



Source: own calculations based on Ministry of Finance POLTAX data

Initial analysis: Moran's I

variable (%)	common border	distance ≤ 20 km	knn = 10	knn = 5
commuters / elderly	0.5460	0.4928	0.4798	0.5099
women: commuters / elderly	0.5186	0.4663	0.4537	0.4850
men: commuters / elderly	0.4917	0.4456	0.4346	0.4581
commuters / working elderly	0.2846	0.2565	0.2463	0.2787
women: commuters / working elderly	0.2775	0.2467	0.2316	0.2626
men: commuters / working elderly	0.1667	0.1498	0.1493	0.1714
nonretired / elderly	0.5016	0.3048	0.3315	0.4997
women: nonretired / elderly	0.5171	0.3308	0.3558	0.5172
men: nonretired / elderly	0.4795	0.2789	0.3074	0.4748
working elderly / elderly	0.5680	0.5100	0.4984	0.5291
women: working elderly / elderly	0.5420	0.4831	0.4729	0.5044
men: working elderly / elderly	0.5268	0.4744	0.4635	0.4901

Dependent variable: share of working elderly in elderly population

	linear	SAR.border	SAR.knn5	SAR.knn10	SAR.d20
spatial autoregression		0.468 ***	0.411 ***	0.463 ***	0.448 ***
(Intercept)	-5.456 *	-2.970	-4.537 *	-3.664 .	-3.548 .
autonomy limitation (w1)	5.023 ***	2.077 .	2.864 *	2.415 .	2.305 .
income autonomy (wd1)	1.126 .	0.938 .	0.624	0.591	0.483
share of PIT	0.007 ***	0.005 ***	0.006 ***	0.005 ***	0.006 ***
housing allowances	0.016 ***	0.022 ***	0.021 ***	0.022 ***	0.022 ***
share of elderly in population	-0.175 ***	-0.139 ***	-0.139 ***	-0.156 ***	-0.148 ***
share of oldest old in elderly	0.027	-0.050 .	-0.052 .	-0.056 *	-0.062 *
urban municipality	1.056 ***	1.455 ***	1.289 ***	1.389 ***	1.351 ***
rural municipality	-0.620 ***	-0.688 ***	-0.704 ***	-0.635 ***	-0.649 ***
large city	1.396 *	1.216 *	1.026 .	1.021 .	1.016 .
highway or express way in powiat	0.174 .	-0.089	-0.057	-0.101	-0.098
women per 100 men	0.074 ***	0.059 ***	0.072 ***	0.071 ***	0.069 ***
net migrations 2004-2014 per 1000 inh	0.010 ***	0.006 ***	0.007 ***	0.008 ***	0.007 ***
firms per 10000 inhabitants	0.002 ***	0.001 ***	0.001 ***	0.001 ***	0.001 ***
foundations per 1000 inhabitants	0.024 ***	0.024 ***	0.025 ***	0.028 ***	0.026 ***
share of children 0-14 in population	-0.072 .	-0.089 *	-0.094 *	-0.119 **	-0.110 **
historical Prussian division	0.927 ***	-0.034	0.079	-0.107	-0.056
historical Russian division	-0.439 **	-0.171	-0.260 .	-0.289 *	-0.235 .
number of neighboring urban munic.	-0.498 ***	-0.678 ***	-0.618 ***	-0.584 ***	-0.572 ***

Dependent variable: share of commuters in working elderly population

	linear	SAR.border	SAR.knn5	SAR.knn10	SAR.d20
spatial autoregression		0.361 ***	0.363 ***	0.464 ***	0.426 ***
(Intercept)	33.046 **	22.538 *	22.763 *	18.136 .	18.821 .
autonomy limitation (w1)	-17.984 **	-14.589 *	-16.116 *	-14.834 *	-14.598 *
income autonomy (wd1)	9.571 **	7.690 **	8.335 **	6.983 *	7.367 **
share of PIT	0.009 ***	0.007 ***	0.007 ***	0.007 ***	0.007 ***
housing allowances	0.057 **	0.050 **	0.053 **	0.055 **	0.053 **
share of elderly in population	-0.268 .	-0.309 *	-0.311 *	-0.344 *	-0.323 *
share of oldest old in elderly	-0.458 **	-0.364 **	-0.363 **	-0.310 *	-0.346 *
urban municipality	-0.722	-0.102	-0.203	-0.054	-0.256
rural municipality	-1.952 **	-2.426 ***	-2.473 ***	-2.390 ***	-2.480 ***
large city	-0.899	-1.660	-1.885	-2.701	-2.448
highway or express way in powiat	1.772 ***	0.932 *	1.030 *	0.793 .	0.808 .
women per 100 men	0.203 *	0.190 *	0.194 **	0.208 **	0.205 **
net migrations 2004-2014 per 1000 inh	0.012 *	0.011 *	0.011 *	0.013 *	0.011 *
firms per 10000 inhabitants	0.003 **	0.002 *	0.002 *	0.002 *	0.002 *
foundations per 1000 inhabitants	0.000	-0.009	-0.004	-0.008	-0.011
share of children 0-14 in population	0.849 ***	0.421 *	0.403 *	0.250	0.339 .
historical Prussian division	3.800 ***	1.607 *	1.822 *	1.290 .	1.380 .
historical Russian division	7.860 ***	5.318 ***	5.505 ***	4.840 ***	5.069 ***
number of neighboring urban munic.	-1.184 ***	-1.101 ***	-1.101 ***	-0.987 **	-1.003 **

- The results show that both municipal characteristics and activities of local authorities have impact of working decisions of the elderly and on their decisions to commute to work in a different municipality.
- Further steps should include more advanced modeling:
 - spatial Poisson / negative binomial model,
 - sequential / nested logit on simulated individual data,
 - correcting commuter flows data with respect to large companies registered in one municipality and employing workers in many others.
 - getting similar POLTAX data for longer period
- Optimally these problem should be investigated on the panel data.

As I have said this is very preliminary. Comments and suggestions are appreciated.