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2 **Table 1.** Urban shrinkage indicators based on Milbert (2015, 2020).

Polish equivalents in GUS BDL data (Author's choice)	Subject ID in Polish Statistics (GUS)	Variable ID in Polish Statistics (GUS)
annual average population development in %	'P2137'	72305
net migration per 1000 inhabitants	'P1350'	1365234
annual average change in working age population (18 to 59/64) in %	'P1342'	152
annual average change of employed persons in %	'P2172'	54821
annual average change of unemployed persons in % points	'P1944'	10514
annual average change of the municipality's own income per inhabitant in %	'P2622'	76070

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4 **Table 2.** Compactness and density measures of German MSCs

Compactness index (Ci)	CLC2006	CLC2012	CLC2018
Observations	634	634	634
Min.	0.1121	0.1037	0.1037
Median	0.2309	0.2071	0.2075
Max.	0.6520	0.6001	0.6001
Urban population density (Pd)	**CLC2006**	**CLC2012**	**CLC2018**
Min. (ppl/km²)	612	746	749
Median (ppl/km²)	2887	2555	2588
Max. (ppl/km²)	6135	5861	6183

5 Notes: Author's calculations based on the CLC dataset.

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7 **Table 3.** Compactness and density measures of Polish MSCs

Compactness index (Ci)	CLC2006	CLC2012	CLC2018
Observations	180	184	180

Min.	0.1160	0.1047	0.1049
Median	0.2628	0.2577	0.2503
Max.	0.5146	0.5221	0.5186
Urban population density (Pd)	**CLC2006**	**CLC2012**	**CLC2018**
Min. (ppl/km²)	1511	1512	1406
Median (ppl/km²)	3259	3000	2903
Max. (ppl/km²)	5353	4893	4502

Notes: Author's calculations based on the CLC dataset.

Table 4. Correlation outcomes between the shrinkage and growth score (Sc) and urban compactness index (Ci) for MSCs in Germany.

	Periods		
	2003-2008	2008-2013	2013-2018
Number of observations	634	634	634
Correlation for 'urban fabric'	**0.15** **(p = 0.000)**	**0.28** **(p = 0.000)**	**0.26** **(p = 0.000)**
Correlation for 'artificial surfaces'	**0.09** **(p=0.020)**	**0.26** **(p=0.000)**	**0.24** **(p=0.000)**

Notes: Author's calculations.

Table 5. Correlation outcomes between the shrinkage and growth score (Sc) and urban population density (Pd) for MSCs in Germany.

	Periods		
	2003-2008	2008-2013	2013-2018
Number of observations	634	634	634
Correlation for 'urban fabric'	0.07 (p = 0.08)	**0.24** **(p = 0.000)**	**0.27** **(p = 0.000)**
Correlation for	**0.1**	**0.25**	**0.28**

'artificial surfaces'	**(p=0.007)**	**(p=0.000)**	**(p=0.000)**

16 Notes: Author's calculations.

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18 **Table 6.** Correlation outcomes between the shrinkage and growth score (Sc) and urban compactness (Ci) for
19 MSCs (only urban municipalities) in Poland.

	Periods		
	2006-2011	2011-2016	2016-2021
Number of observations	147	149	147
Correlation for 'urban fabric'	**0.34 (p = 0.00)**	**0.23 (p = 0.00)**	**0.22 (p = 0.005)**
Correlation for 'artificial surfaces'	**0.29 (p=0.0002)**	**0.19 (p=0.014)**	**0.18 (p=0.024)**

20 Notes: Author's calculations.

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22 **Table 7.** Correlation outcomes between the shrinkage and growth score (Sc) and urban population density
23 (Pd) for MSCs (only urban municipalities) in Poland.

|	**Periods**		
	2006-2011	2011-2016	2016-2021
Number of observations	147	149	147
Correlation for 'urban fabric'	**-0.18 (p = 0.022)**	-0.11 (p = 0.15)	-0.03 (p = 0.71)
Correlation for 'artificial surfaces'	-0.081 (p=0.32)	-0.016 (p=0.83)	0.12 (p=0.14)

24 Notes: Author's calculations.

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Figure 11. City of Griesheim- selected growing, dense and compact MSC. A municipality's land use (left), urban areas (middle) and merged areas with a circle the size of an urban area (right). Below are the outcomes of growth/shrinkage score calculation in three five-year periods. Source: Authors
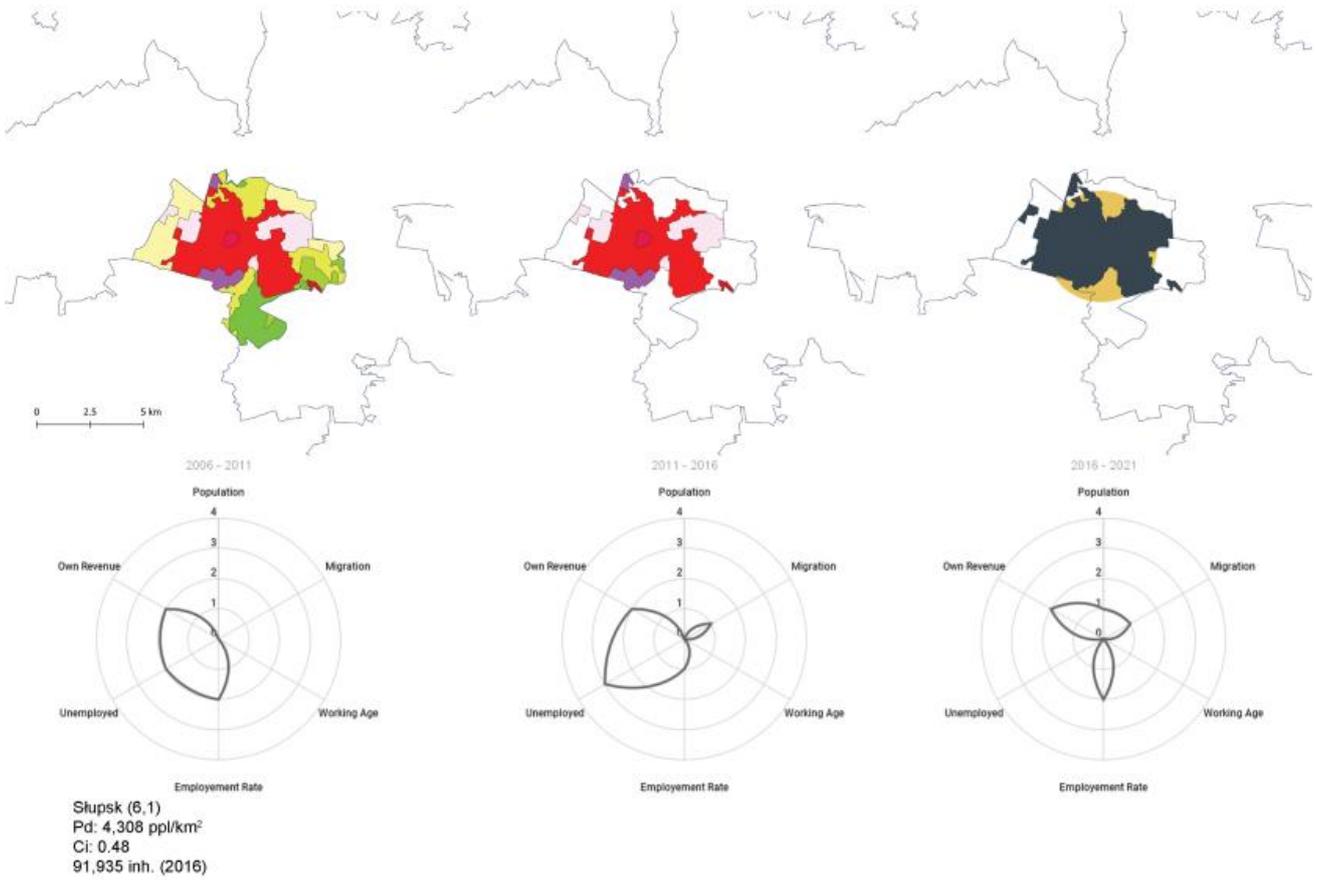
Figure 12. City of Słupsk - selected shrinking, dense and compact MSC. A municipality's land use (left), urban areas (middle) and merged areas with a circle the size of an urban area (right). Below are the outcomes of the growth/shrinkage score calculation in three five-year periods. Source: Authors