

METHODOLOGY FOR ESTABLISHING CITY, TOWN AND RURAL SETTLEMENT REGION TYPES AND CLUSTERS

Until 2018, Statistics Estonia used settlement unit type as the basis for establishing rural and urban population. Due to rapid suburbanisation such distribution has not justified itself for years. The population of settlement units near cities had multiplied, but they were still considered rural population. The time of the administrative reform in 2017 was appropriate to change this approach.

The regional statistics working party, which convened in 2017 at the Ministry of Finance, decided to adopt an international methodology based on clusters of similar population density for establishing rural and urban population. However, internationally used criteria for establishing rural and urban regions do not satisfy Estonian needs, as the thresholds are too high. Consequently, the working party developed thresholds suitable for Estonia: settlement units are classified into city (type 1), town (type 2) and rural (type 3) types.

Outcomes

Figure 1. City, town and rural type settlement units

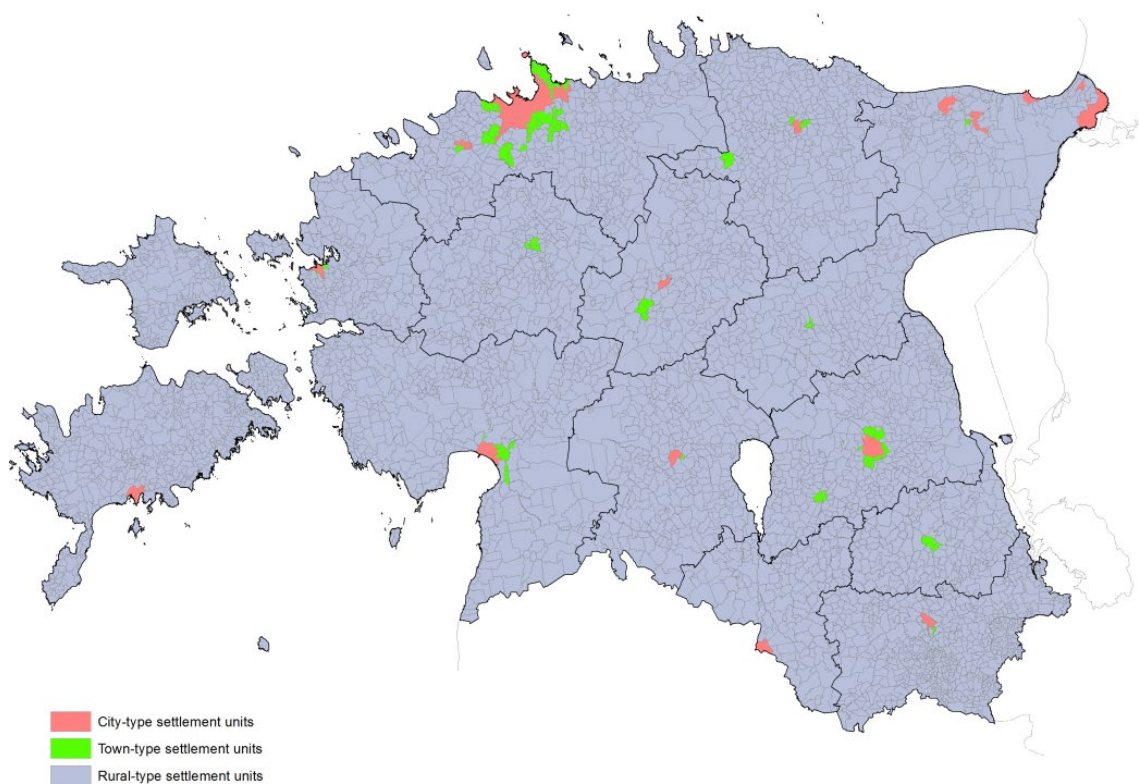


Table 1. City-type settlement units (EHAK 2017v3) by population figures of clusters, 01.01.2018

Settlement unit code	Settlement unit name	Population				Type
		City cluster	Town cluster	Rural cluster	Total ^a	
0120	Ahtme city district	15 730	113	650	16 493	1
0176	Haabersti city district	39 681	3 773	189	43 643	1
1675	Haabneeme small town	5 553	238	52	5 843	1
1692	Haapsalu city	9 079	825	51	9 955	1
2271	Jõhvi village	400		2	402	1
2270	Jõhvi city	8 808	1 199	79	10 086	1
2350	Järve village	547	55	2	604	1
0265	Järve city district	14 851	1 078	141	16 070	1
0296	Keila city	8 829	529	346	9 704	1
0298	Kesklinn city district	54 875	1 894	102	56 871	1
0339	Kristiine city district	31 908	106	14	32 028	1
3519	Kudjape small town	365	188	76	629	1
3655	Kuressaare city	12 029	1 187	178	13 394	1
4014	Laagri small town	4 654	242	136	5 032	1
0387	Lasnamäe city district	114 332	690	118	115 140	1
0446	Maardu city	11 893	2 858	339	15 090	1
4943	Miiduranna village	202	43	81	326	1
0482	Mustamäe city district	64 764	520	35	65 319	1
0511	Narva city	56 218	808	155	57 181	1
0524	Nõmme city district	34 757	3 539	189	38 485	1
5860	Paide city	7 052	1 046	135	8 233	1
0596	Pirita city district	14 395	3 046	303	17 744	1
0614	Põhja-Tallinn city district	57 478	174	40	57 692	1
6613	Pärnamäe village	984	562	20	1 566	1
6619	Pärnu city	34 348	4 843	465	39 656	1
0663	Rakvere city	12 800	2 487	253	15 540	1
0735	Sillamäe city	13 257		43	13 300	1
8151	Tartu city	87 624	5 214	368	93 206	1
8918	Valga city	10 265	2 011	187	12 463	1
9280	Viimsi small town	2 077	174		2 251	1
0897	Viljandi city	16 723	815	189	17 727	1
0919	Võru city	8 430	3 495	253	12 178	1

^a The data in the statistical database are different, as the data of people without precise address have been added to grid map data here.

Table 2. Town-type settlement units (EHAK 2017v3) by population figures of clusters, 01.01.2018

Settlement unit code	Settlement unit name	Population				Type
		City cluster	Town cluster	Rural cluster	Total ^a	
1050	Aaviku village		134	69	203	2
1216	Alliku village		1 148	291	1 439	2
1408	Assaku small town		389	80	469	2
1586	Elva city		5 351	323	5 674	2
1776	Harkujärve village		690	62	752	2
2100	Iru village	7	342	2	351	2
2220	Juuliku village		267	73	340	2
2261	Jõgeva small town		475	38	513	2
2262	Jõgeva city		5 109	132	5 241	2
2353	Järveküla village		1 158	182	1 340	2
2377	Jüri small town		3 458	56	3 514	2
2671	Kangru small town		542	72	614	2
2763	Karla village		554	142	696	2
2794	Kasemetsa village		260	87	347	2
2945	Kelvingi village		452	10	462	2
3285	Koidu village		287	129	416	2
3435	Kopli village		299	96	395	2
3462	Kose small town		502	71	573	2
3603	Kulna village		192	70	262	2
3949	Käärdi small town		436	14	450	2
4043	Lagedi small town		829	86	915	2
4064	Laiaküla village		417	120	537	2
4299	Leppneeme village		409	165	574	2
4451	Lohkva village	418	685	175	1 278	2
4534	Lubja village		378	206	584	2
4550	Luige small town		1 010	179	1 189	2
4769	Mammaste village		356	272	628	2
4887	Metsakasti village	29	530	45	604	2
4912	Metsanurme village		395	217	612	2
5104	Muuga village		387	195	582	2
5277	Märja small town		491		491	2
5554	Näpi small town		304	10	314	2
5864	Paikuse town		2 718	235	2 953	2
5891	Pajupea village		69	63	132	2
5989	Paralepa small town		193	106	299	2
6086	Peetri small town		4 397	139	4 536	2
6370	Pringi village	76	942	42	1060	2
6411	Puiga village		255	16	271	2
6536	Põlva city		5 452	80	5 532	2
6672	Püüsi village		1 263	65	1 328	2
6713	Rae village		652	388	1040	2
6797	Randvere village		1 673	80	1 753	2
6814	Rannamõisa village		580	185	765	2
6826	Rapla city		5 078	99	5 177	2
7039	Rohuneeme village		417	10	427	2
7361	Saku small town		4 379	106	4 485	2
7453	Saue city		5 662	74	5 736	2
7455	Sauga small town		1 202	16	1 218	2
7469	Saustinõmme village		77	33	110	2
7591	Silla village		228	147	375	2
7607	Sindi city		3 728	120	3 848	2
7666	Soinaste village		745	164	909	2

Settlement unit code	Settlement unit name	Population				Cont. Type
		City cluster	Town cluster	Rural cluster	Total ^a	
7796	Sulupere village		106	67	173	2
7892	Sõmeru small town		1 165	21	1 186	2
7935	Särevere small town		605	22	627	2
8009	Tabasalu small town	93	3 304	64	3 461	2
8096	Tammejärve village		15		15	2
8114	Tammiku small town		277	46	323	2
8120	Tammiste village		1 118	286	1 404	2
8126	Tammneeme village		364	105	469	2
8140	Tapa city		5 246	221	5 467	2
8235	Tila village		476	195	671	2
8257	Tiskre village		894	21	915	2
8525	Tõrremäe village		139	16	155	2
8532	Tõrvandi small town		1 526	126	1 652	2
8595	Türi city		5 011	164	5 175	2
8596	Türi-Alliku village		302	109	411	2
8740	Ussimäe village	3	239	24	266	2
8769	Uuemõisa small town		958	75	1 033	2
8774	Uuesalu village		335	61	396	2
8783	Uusküla village	3	205	182	390	2
8788	Uusküla village		241	143	384	2
8796	Uuta village		35	32	67	2
8850	Vahi small town	216	842	232	1 290	2
9033	Vanamõisa village		332	157	489	2
9108	Vaskjala village		474	193	667	2
9183	Veibri village		458	170	628	2
9292	Viiratsi small town		1 193	45	1 238	2
9717	Õssu village	8	308	35	351	2
9744	Äigrumäe village	37	31	64	132	2
9820	Üksnurme village		373	203	576	2
9832	Ülejõe village		74	45	119	2
9835	Ülenurme small town		1 919	191	2 110	2

^a The data in the statistical database are different, as the data of people without precise address have been added to grid map data here.

All other settlements belong to rural settlement region.

In publishing data in the statistical database, if for some reason town-type settlement region cannot be separately shown, especially for confidentiality reasons, city and town type settlement units are combined and the resulting region is considered city-type settlement region. In this case, two types of settlement regions are used.

Methodology

The basis of data is the population figure of 01.01.2017 in 500 × 500 m grid. Persons with unknown place of residence and those whose place of residence could not be geocoded to building level are linked to the cell associated with the centroid of the settlement / city district / municipality.

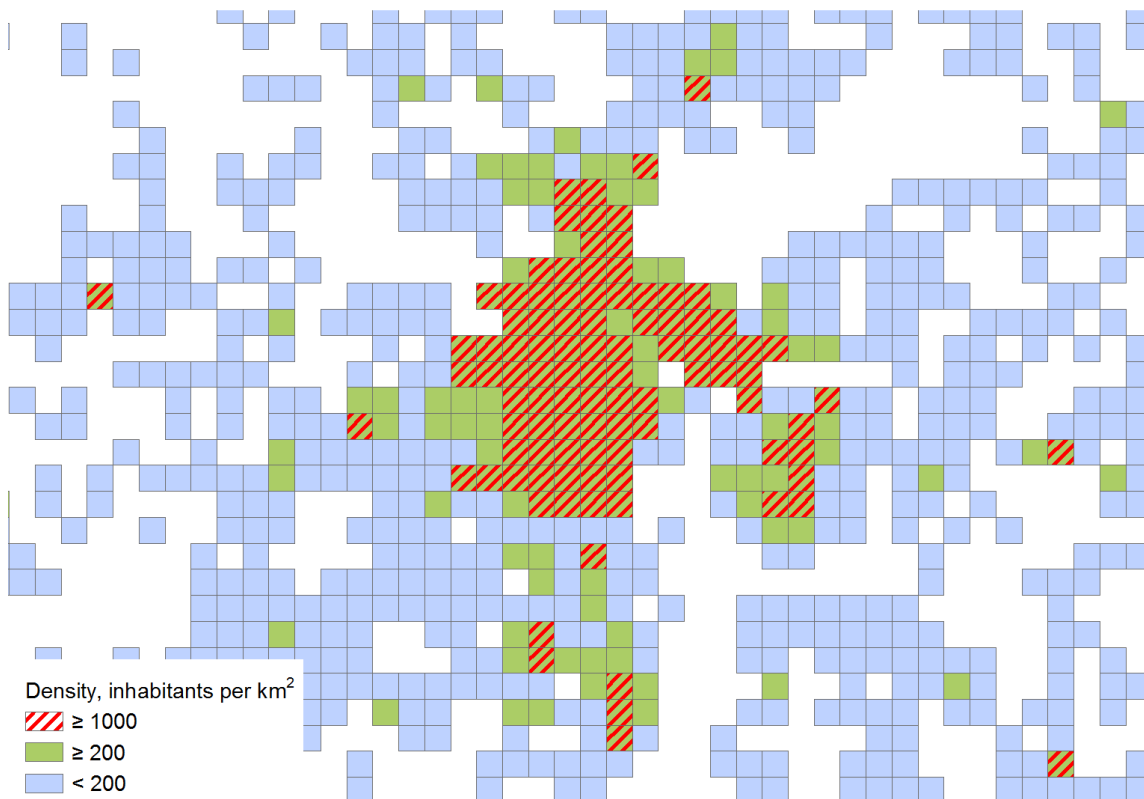
The data of village borders have been obtained from the geoportal of the Land Board (<https://geoportaal.maaamet.ee/est/Andmed-ja-kaardid/Haldus-ja-asustusjaotus-p119.html>) and correspond to the classification of Estonian administrative units and settlements (EHAK 2017 version 3) as at 01.01.2018.

The grids were clipped with coastline and state border in order to allow calculating comparable population density for all grid cells.

Population density was used to define density classes (Figure 2):

- City-type – density $\geq 1,000$ inhabitants per km²;
- Town-type – density ≥ 200 inhabitants per km²;
- Rural-type – density under 200 inhabitants per km².

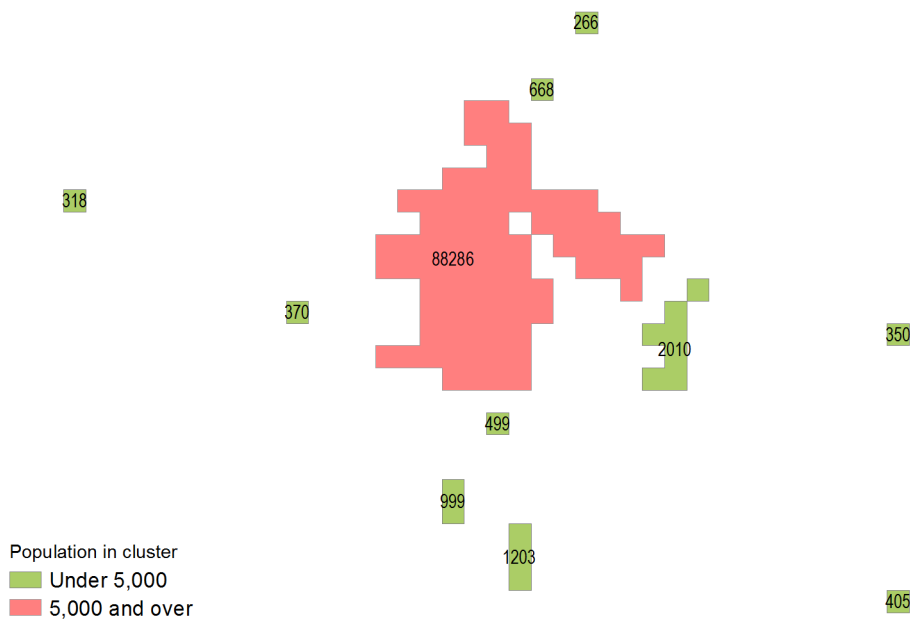
Figure 2. Population density in 500 × 500 m grid, 01.01.2017



Establishing city type

Cells with city-type population density were selected and joined into clusters. Clusters were formed of cells touching at sides or corners. The population figure was calculated for each cluster. A cluster of at least 5,000 inhabitants is of the city type. Figure 3 shows cells with city-type population density formed into clusters and the population figure of these clusters. Only the cluster with the population figure 88,286 (red on the figure) is of the city type. The green clusters have city-type population density, but do not fulfil the population figure criterion.

Figure 3. Cells with city-type population density formed into clusters^a

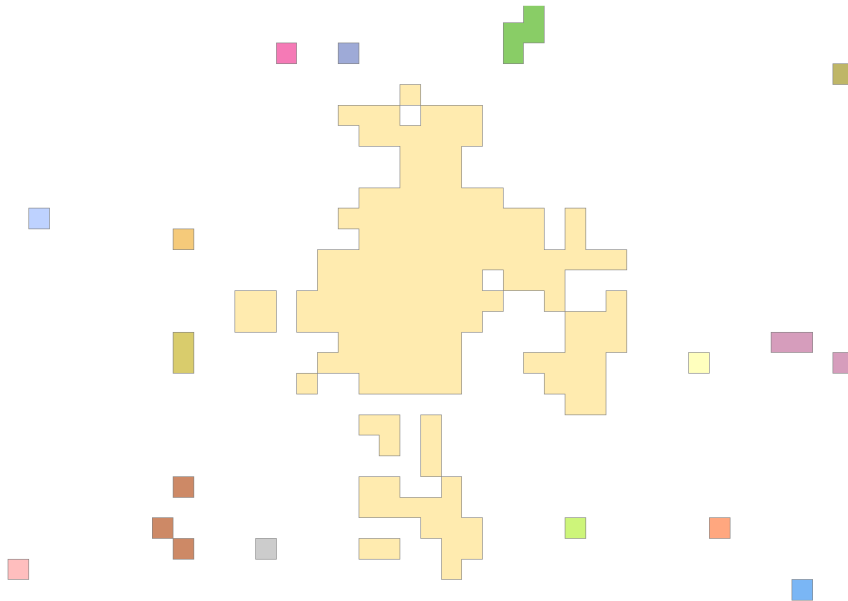


^a A city cluster has a density of more than 1,000 persons per km² and the population figure is at least 5,000 persons (light red on the map).

Establishing town type

Cells with town-type population density were selected (density ≥ 200 inhabitants per km²) and joined into clusters. Clusters were formed of cells touching at sides or corners as well as of those that were located one cell further (Figure 4). Such bridges were used to ensure that traffic nodes and industrial areas would not break clusters.

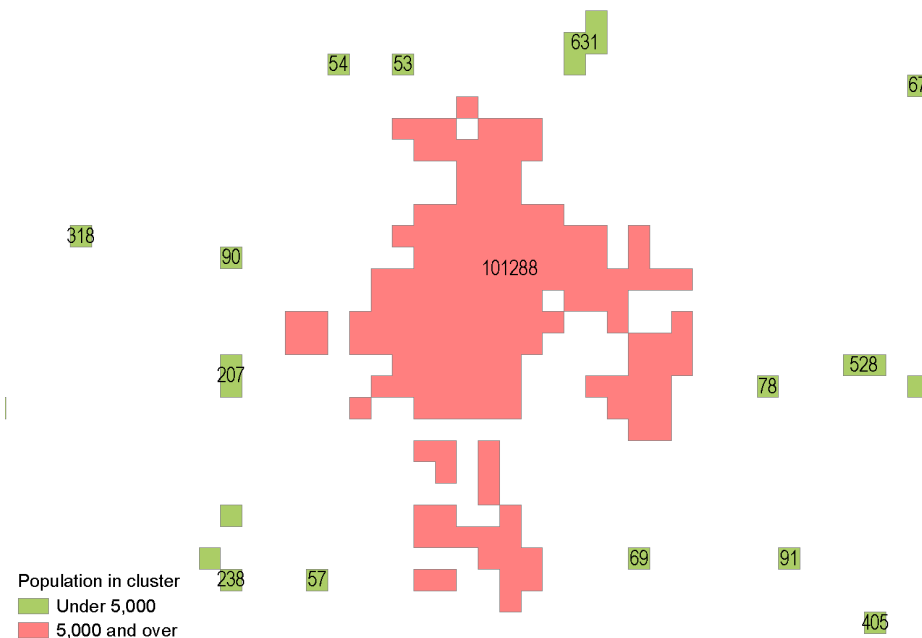
Figure 4. Cells with town-type population density formed into preliminary clusters^a



^a Density ≥ 200 . Cells belonging to one cluster are of the same color.

A population figure was calculated for clusters. If it was over 5,000, the cluster was considered of the town type. The population of the red cluster in Figure 5 is over 5,000. This is the only cluster of the town type. The population of areas marked in green is under 5,000, and therefore, do not belong to the town-type cluster.

Figure 5. Town-type cluster



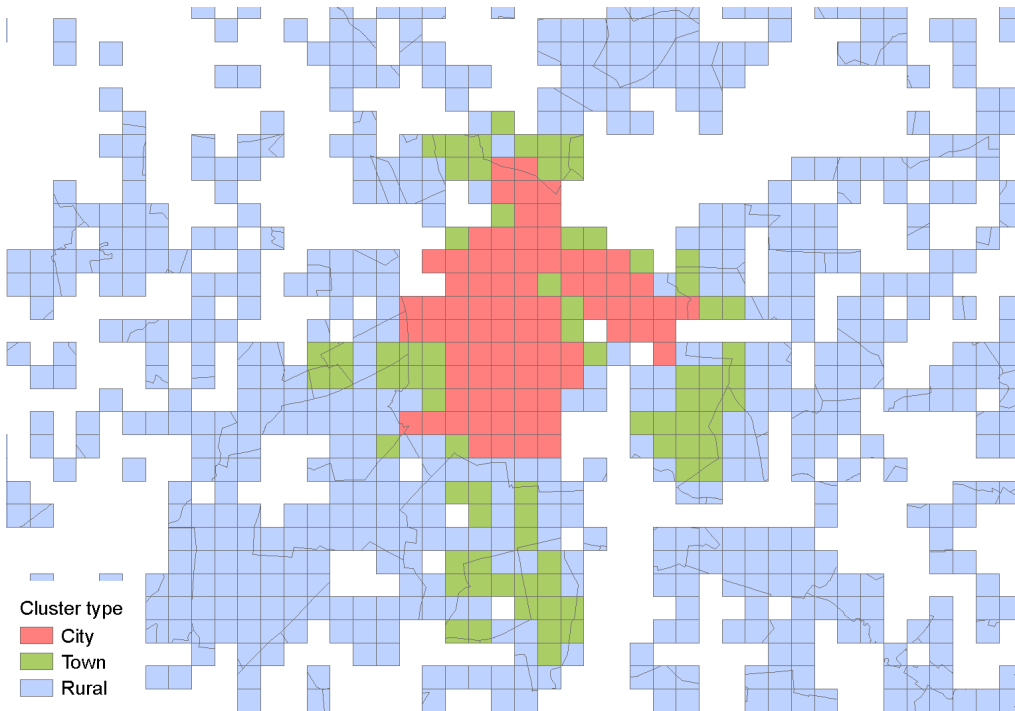
As town-type clusters overlapped with city-type clusters, for the final definition of town-type clusters, areas belonging to city-type clusters had to be clipped.

All other areas were automatically considered rural settlement region.

Establishing type of settlement unit

In order to classify settlement units to city, town and rural types, the layer of settlement units was united combined with the layer of city, town and rural clusters, obtained by using the aforescribed methodology (Figure 6). This enabled establishing different types or regions in each settlement unit. A population figure was calculated for each resulting region. For this purpose, building-based population data were used. The results were aggregated by settlement units. This provided city, town and rural region population figure for each settlement unit. Determining whether a settlement unit classified as a city, town or rural region was based on which type's population figure dominated.

Figure 6. Settlement unit layers combined with clusters of different types

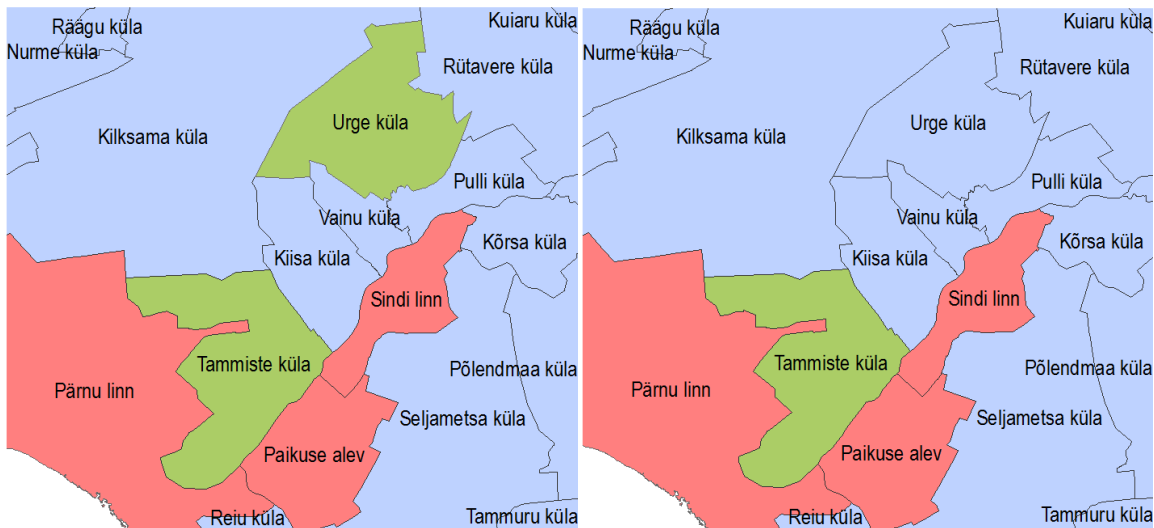


Checking

The results were corrected to avoid creation of detached areas due to the use of so-called bridges.

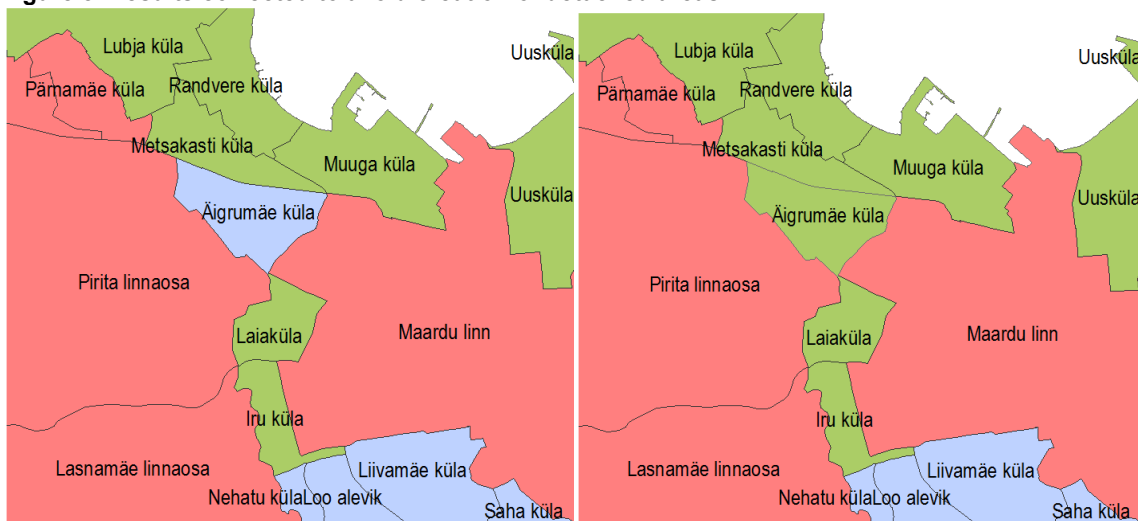
If a town-type settlement was detached, i.e. a rural-type settlement separated it, the detached settlement was classified as rural, e.g. Urge village in Pärnu county.

Figure 7. Results corrected to avoid creation of detached areas



If a rural-type settlement remained between settlements of other types, it was reclassified. For example, Äigrumäe village was classified as town-type settlement.

Figure 8. Results corrected to avoid creation of detached areas



Sources

http://ec.europa.eu/eurostat/statistics-explained/index.php/Degree_of_urbanisation_classification_-_2011_revision (03.03.2018)