

## Annex E. Sensitivity of functional areas to parameter specification

The following section provides a sensitivity analysis of functional areas to different parameters specification for the countries where the methodology was applied.

**Table A E.1. Sensitivity analysis, Canada**

Scenario	$W_{min}$ (000s)	$W_{target}$ (000s)	$SC_{min}$ (%)	$SC_{target}$ (%)	Without CMA		With CMA	
					Number of areas	Average population	Number of areas	Average population
1	0	50	0.80	0.95	351	15.7	225	155.8
2	0	40	0.80	0.95	353	15.6	232	151.1
3	0	50	0.75	0.95	354	15.6	238	147.2
4	0	40	0.75	0.95	359	15.3	245	143.0
5	0	25	0.80	0.95	364	15.2	247	141.9
6	0	15	0.80	0.95	378	14.5	268	130.7
7	0	25	0.75	0.95	369	14.9	271	129.2
8	0	15	0.75	0.95	382	14.3	285	122.9
9	0	50	0.75	0.90	421	12.9	309	113.2
10	0	40	0.75	0.90	423	12.9	315	111.5
11	0	5	0.80	0.95	410	13.2	317	110.4
12	0	25	0.75	0.90	428	12.7	323	108.3
13	0	15	0.75	0.90	440	12.3	337	103.8
14	0	50	0.60	0.90	428	12.7	338	103.4
15	0	5	0.75	0.95	431	12.6	342	102.3
16	0	40	0.60	0.90	434	12.4	346	101.1
17	0	25	0.60	0.90	447	12.1	366	95.5
18	0	5	0.75	0.90	483	11.2	376	92.9
19	0	50	0.65	0.85	488	11.0	385	90.7
20	0	15	0.60	0.90	463	11.7	391	89.4
21	0	40	0.65	0.85	489	10.9	391	89.3
22	0	25	0.65	0.85	495	10.8	401	87.1
23	0	15	0.65	0.85	508	10.5	413	84.5
24	0	5	0.65	0.85	534	9.8	450	77.5
25	0	5	0.60	0.90	512	10.4	451	77.4

*Note:* The table above shows the results using different parameters. The columns  $W_{min}$  and  $W_{target}$  specify the minimum and target number of employees in thousands respectively. The columns  $SC_{min}$  and  $SC_{target}$  specify the minimum and target levels of self-containment in percentages respectively. *Number of areas* denotes the total number of clusters for a given scenario. *Avg. units per cluster* denotes the mean number of geographic units contained in each cluster. *Average size* denotes the average number of employees per cluster. *FUA included* denotes if the municipalities that form part of a functional urban area were included in the calculation. The table summarises the results before post-processing.

*Source:* Calculations provided by Statistics Canada.

Table A E.2. Sensitivity analysis, United States

Scenario	$W_{min}$ (000s)	$W_{target}$ (000s)	$SC_{min}$ (%)	$SC_{target}$ (%)	Number of areas	Avg. units per cluster	Average size: employees	FUA included
1	50	100	65	85	327	7	265 320	No
2	50	100	65	85	512	6	635 348	Yes
3	50	100	70	95	298	8	291 139	No
4	50	100	70	95	451	7	721 282	Yes
5	50	100	75	90	301	8	288 237	No
6	50	100	75	90	414	8	785 744	Yes
7	50	150	65	85	322	8	269 439	No
8	50	150	65	85	473	7	687 734	Yes
9	50	150	70	95	278	9	312 084	No
10	50	150	70	95	405	8	803 205	Yes
11	50	150	75	90	289	8	300 206	No
12	50	150	75	90	384	8	847 131	Yes
13	50	200	65	85	314	8	276 304	No
14	50	200	65	85	452	7	719 686	Yes
15	50	200	70	95	265	9	327 394	No
16	50	200	70	95	374	9	869 781	Yes
17	50	200	75	90	281	9	308 753	No
18	50	200	75	90	370	9	879 184	Yes
19	100	200	65	85	180	13	481 997	No
20	100	200	65	85	358	9	908 654	Yes
21	100	200	70	95	162	15	535 552	No
22	100	200	70	95	321	10	1 013 390	Yes
23	100	200	75	90	165	15	525 815	No
24	100	200	75	90	299	11	1 087 954	Yes
25	100	300	65	85	176	14	492 952	No
26	100	300	65	85	339	9	959 582	Yes
27	100	300	70	95	152	16	570 786	No
28	100	300	70	95	282	11	1 153 540	Yes
29	100	300	75	90	157	15	552 608	No
30	100	300	75	90	273	12	1 191 568	Yes

*Note:* The table above shows the results using different parameters. The columns  $W_{min}$  and  $W_{target}$  specify the minimum and target number of employees in thousands respectively. The columns  $SC_{min}$  and  $SC_{target}$  specify the minimum and target levels of self-containment in percentages respectively. *Number of areas* denotes the total number of clusters for a given scenario. *Avg. units per cluster* denotes the mean number of geographic units contained in each cluster. *Average size* denotes the average number of employees per cluster. *FUA included* denotes if the municipalities that form part of a functional urban area were included in the calculation. The table summarises the results before post-processing.

**Table A E.3. Sensitivity of results excluding FUAs, Mexico**

Scenario	$W_{min}$ (000s)	$W_{target}$ (000s)	$SC_{min}$ (%)	$SC_{target}$ (%)	Number of areas	Avg. units per cluster	Average size: employees	FUA included
1	50	100	65	85	141	14	320 702	No
2	50	100	65	85	207	12	612 004	Yes
3	50	100	70	95	135	15	334 955	No
4	50	100	70	95	193	13	656 398	Yes
5	50	100	75	90	136	15	332 492	No
6	50	100	75	90	186	13	681 102	Yes
7	50	150	65	85	141	14	320 702	No
8	50	150	65	85	200	12	633 424	Yes
9	50	150	70	95	133	15	339 992	No
10	50	150	70	95	176	14	719 801	Yes
11	50	150	75	90	136	15	332 492	No
12	50	150	75	90	176	14	719 801	Yes
13	50	200	65	85	141	14	320 702	No
14	50	200	65	85	196	12	646 352	Yes
15	50	200	70	95	132	15	342 568	No
16	50	200	70	95	171	14	740 847	Yes
17	50	200	75	90	135	15	334 955	No
18	50	200	75	90	176	14	719 801	Yes
19	100	200	65	85	69	29	655 347	No
20	100	200	65	85	125	20	1 013 479	Yes
21	100	200	70	95	70	28	645 984	No
22	100	200	70	95	120	20	1 055 707	Yes
23	100	200	75	90	68	29	664 984	No
24	100	200	75	90	116	21	1 092 111	Yes
25	100	300	65	85	69	29	655 347	No
26	100	300	65	85	120	20	1 055 707	Yes

*Note:* The table above shows the results using different parameters. The columns  $W_{min}$  and  $W_{target}$  specify the minimum and target number of employees in thousands respectively. The columns  $SC_{min}$  and  $SC_{target}$  specify the minimum and target levels of self-containment in percentages respectively. *Number of areas* denotes the total number of clusters for a given scenario. *Avg. units per cluster* denotes the mean number of geographic units contained in each cluster. *Average size* denotes the average number of employees per cluster. *FUA included* denotes if the municipalities that form part of a functional urban area were included in the calculation. The table summarises the results before post-processing.

Table A E.4. Sensitivity analysis, Estonia

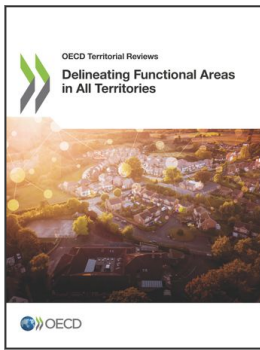
Scenario	$W_{min}$ (000s)	$W_{target}$ (000s)	$SC_{min}$ (%)	$SC_{target}$ (%)	Number of areas	Avg. units per cluster	Avg. size	FUA included
1	1	2	70	95	27	31	51 765	Yes
2	1	2	75	90	19	44	73 560	Yes
3	1	3	75	90	19	44	73 560	Yes
4	1	4	75	90	19	44	73 560	Yes
5	10	20	65	85	15	45	38 676	No
6	10	20	65	85	20	42	69 882	Yes
7	10	20	70	95	14	48	41 439	No
8	10	20	70	95	16	53	87 353	Yes
9	10	20	75	90	13	52	44 627	No
10	10	20	75	90	13	65	107 511	Yes
11	10	30	65	85	13	52	44 627	No
12	10	30	65	85	15	56	93 176	Yes
13	10	30	70	95	12	56	48 345	No
14	10	30	70	95	11	77	127 059	Yes
15	10	30	75	90	11	61	52 740	No
16	10	30	75	90	10	85	139 765	Yes
17	10	40	65	85	11	61	52 740	No
18	10	40	65	85	13	65	107 511	Yes
19	10	40	70	95	9	75	64 461	No
20	10	40	70	95	9	94	155 294	Yes
21	10	40	75	90	10	67	58 015	No
22	10	40	75	90	9	94	155 294	Yes
23	50	100	65	85	4	169	145 036	No
24	50	100	65	85	6	141	232 941	Yes
25	50	100	70	95	4	169	145 036	No
26	50	100	70	95	5	169	279 529	Yes
27	50	100	75	90	2	337	290 073	No
28	50	100	75	90	5	169	279 529	Yes
29	50	150	65	85	5	135	116 029	No
30	50	150	65	85	6	141	232 941	Yes
31	50	150	70	95	2	337	290 073	No
32	50	150	70	95	3	282	465 882	Yes
33	50	150	75	90	2	337	290 073	No
34	50	150	75	90	5	169	279 529	Yes
35	50	200	65	85	3	225	193 382	No
36	50	200	65	85	5	169	279 529	Yes
37	50	200	70	95	2	337	290 073	No
38	50	200	70	95	3	282	465 882	Yes
39	50	200	75	90	2	337	290 073	No
40	50	200	75	90	4	211	349 411	Yes

Note: The table above shows the results using different parameters. The columns  $W_{min}$  and  $W_{target}$  specify the minimum and target number of employees in thousands respectively. The columns  $SC_{min}$  and  $SC_{target}$  specify the minimum and target levels of self-containment in percentages respectively. *Number of areas* denotes the total number of clusters for a given scenario. *Avg. units per cluster* denotes the mean number of geographic units contained in each cluster. *Average size* denotes the average number of people per cluster. *FUA included* denotes if the municipalities that form part of a functional urban area were included in the calculation. The table summarises the results before post-processing.

Table A E.5. Sensitivity analysis, Korea

Scenario	$W_{min}$ (000s)	$W_{target}$ (000s)	$SC_{min}$ (%)	$SC_{target}$ (%)	Number of areas	Avg. units per cluster	Average size: employees	FUA included
1	50	100	65	85	45	2	158 846	No
2	50	100	65	85	69	3	624 565	Yes
3	50	100	70	95	45	2	158 846	No
4	50	100	70	95	57	4	756 052	Yes
5	50	100	75	90	44	3	162 456	No
6	50	100	75	90	52	4	828 749	Yes
7	50	150	65	85	45	2	158 846	No
8	50	150	65	85	62	4	695 080	Yes
9	50	150	70	95	41	3	174 344	No
10	50	150	70	95	48	5	897 812	Yes
11	50	150	75	90	43	3	166 235	No
12	50	150	75	90	46	5	936 847	Yes
13	50	200	65	85	44	3	162 456	No
14	50	200	65	85	62	4	695 080	Yes
15	50	200	70	95	41	3	174 344	No
16	50	200	70	95	46	5	936 847	Yes
17	50	200	75	90	43	3	166 235	No
18	50	200	75	90	45	5	957 666	Yes
19	100	200	65	85	27	4	264 744	No
20	100	200	65	85	46	5	936 847	Yes
21	100	200	70	95	26	4	274 926	No
22	100	200	70	95	39	6	1 104 999	Yes
23	100	200	75	90	26	4	274 926	No
24	100	200	75	90	38	6	1 134 078	Yes
25	100	300	65	85	27	4	264 744	No
26	100	300	65	85	44	5	979 431	Yes
27	100	300	70	95	26	4	274 926	No
28	100	300	70	95	35	6	1 231 285	Yes
29	100	300	75	90	26	4	274 926	No
30	100	300	75	90	36	6	1 197 083	Yes
31	100	400	65	85	27	4	264 744	No
32	100	400	65	85	44	5	979 431	Yes
33	100	400	70	95	26	4	274 926	No
34	100	400	70	95	33	7	1 305 908	Yes
35	100	400	75	90	26	4	274 926	No
36	100	400	75	90	34	7	1 267 499	Yes
37	200	400	65	85	12	9	595 674	No
38	200	400	65	85	34	7	1 267 499	Yes
39	200	400	70	95	12	9	595 674	No
40	200	400	70	95	29	8	1 486 034	Yes
41	200	400	75	90	12	9	595 674	No
42	200	400	75	90	29	8	1 486 034	Yes

Note: The table above shows the results using different parameters. The columns  $W_{min}$  and  $W_{target}$  specify the minimum and target number of employees in thousands respectively. The columns  $SC_{min}$  and  $SC_{target}$  specify the minimum and target levels of self-containment in percentages respectively. *Number of areas* denotes the total number of clusters for a given scenario. *Avg. units per cluster* denotes the mean number of geographic units contained in each cluster. *Average employees* denotes the average number of employees per cluster. *FUA included* denotes if the municipalities that form part of a functional urban area were included in the calculation. The table summarises the results before post-processing.



**From:**  
**Delineating Functional Areas in All Territories**

**Access the complete publication at:**  
<https://doi.org/10.1787/07970966-en>

**Please cite this chapter as:**

OECD (2020), "Sensitivity of functional areas to parameter specification", in *Delineating Functional Areas in All Territories*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/6c926045-en>

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Extracts from publications may be subject to additional disclaimers, which are set out in the complete version of the publication, available at the link provided.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at <http://www.oecd.org/termsandconditions>.