Supplementary Materials

Appendix A: Supplementary tables and data

Table A1: Potential confounders not included in the analysis.

Conditions	The lack of variability in 2019 (or 2018)
Municipality type (2019)	All included cases are city counties (*miasto na prawach powiatu*) that exercise both county-type (*powiat*) and city rights.
Mayor's political affiliation with the national political parties (2018)	Out of 23 cases, in 10 mayors were affiliated with the (national level) opposition parties during the 2018 municipal elections. None remained explicitly affiliated with the ruling coalition (the 'United Right' led by the Law and Justice party).
Mayor's education attainment (2018)	All city counties had mayors with at least a post-secondary degree.
Political orientation in the national elections (2019)	In the 2019 parliamentary elections, in all but two of the included cases the liberal opposition received more votes than the ruling right-wing coalition. In none of them the ruling coalition received more than 50% votes.

Source: author's own elaboration, based on the data retrieved primarily from the Statistics Poland database (2023) and the National Electoral Commission register (2018).

Table A2: The conditions included in the preliminary QCA tests, but excluded from the final analysis.

Set	Measurement (based on Statistics Poland 2023)	Calibration (set membership)		
		Fully out	Conversion point	Fully in
High share of progressive councillors on a city council	Average share of liberal and left-wing councillors in the city council (in 2014 and 2018)	30%	39%	50%
High population density	Inhabitants *per* square kilometre (2019)	1500	2000	2200
Above average support for left-wing parties	Share of votes for the left wing parties; The New Left coalition (in 2019)	13%	15%	18%

Source: author's own elaboration.
Note: the conditions were excluded due to the unsatisfactory (inconsistent and empirically trivial) results obtained through preliminary necessity and sufficiency analyses.

Table A3: Analysis of necessity.

Condition	Universal targeting in public health policy (OUT)			Absence of universal targeting in public health policy (~OUT)		
	Consistency	Coverage	RoN	Consistency	Coverage	RoN
POP	0,646	0,569	0,720	0,496	0,610	0,740
POORHEALTH	0,417	0,409	0,696	0,606	0,830	0,888
AFFL	0,578	0,500	0,682	0,481	0,580	0,718
WMR	0,651	0,587	0,737	0,442	0,556	0,723
SOCAP	0,872	0,567	0,562	0,639	0,579	0,570
~POP	0,557	0,442	0,618	0,649	0,719	0,762
~POORHEALTH	0,826	0,600	0,649	0,568	0,576	0,636
~AFFL	0,514	0,415	0,615	0,586	0,660	0,733
~WMR	0,507	0,395	0,588	0,671	0,729	0,761
~SOCAP	0,353	0,412	0,753	0,522	0,851	0,923
POORHEALTH **OR** ~WMR	–	–	–	**0,904**	**0,612**	**0,742**
~POP OR POORHEALTH OR ~AFFL OR ~SOCAP	–	–	–	**0,901**	**0,503**	**0,690**

Source: author's own elaboration.
Note: the thresholds applied: consistency = 0,9, coverage = 0,6, RoN = 0,5.

Table A4: Truth table for universal targeting in municipal public health policy.

POP	POOR HEALTH	AFFL	WMR	SOCAP	OUT	Inclusion score	PRI	Cases
0	**0**	**0**	**1**	**1**	**1**	**0,974**	**0,932**	**Olsztyn, Kielce, Bialystok**
1	**0**	**1**	**1**	**1**	**1**	**0,940**	**0,882**	**Warsaw, Gdansk**
0	**0**	**1**	**1**	**1**	**1**	**0,879**	**0,721**	~~**Gdynia**~~
1	1	1	1	1	0	0,785	0,422	Lodz
1	0	1	1	0	0	0,760	0,388	Poznan
0	0	0	0	0	0	0,746	0,391	Radom
1	0	1	0	1	0	0,737	0,485	Wroclaw, Krakow
0	1	0	1	1	0	0,661	0,255	Czestochowa
0	0	0	0	1	0	0,631	0,422	Torun, Rzeszow, Bielsko-Biala
1	1	0	1	0	0	0,622	0,430	Szczecin, Bydgoszcz
1	0	0	0	1	0	0,598	0,346	Lublin
0	1	0	0	1	0	0,588	0,172	Zabrze
0	1	1	0	0	0	0,529	0,172	Katowice, Gliwice
0	1	0	0	0	0	0,431	0,111	Sosnowiec, Bytom

Source: author's own elaboration.
Note: The crossed-out cities are deviant cases (consistency in kind). [1] stands for the presence of a condition or the outcome, while [0] for its absence. 'PRI' denotes 'Proportional Reduction in Inconsistency', an additional metric of relevance (see Oana, Schneider, and Thomann 2021). The consistency threshold were set at a conservative value of 0,8 (ibid). Presented her without empty configurations (logical reminders).

Conservative solution (no logical reminders included):
(~POP*~POORHEALTH *WMR *SOCAP) + (~POORHEALTH*AFFL *WMR *SOCAP) → OUT

Note: solution consistency = 0,916, PRI = 0,839, solution coverage = 0,542.

The most parsimonious (all logical reminders included, without directional expectations) and intermediate solutions proved to be effectively the same.

Table A5: Truth table for the absence of universal targeting in municipal public health policy.

POP	POOR HEALTH	AFFL	WMR	SOCAP	OUT	Inclusion score	PRI	Cases
0	**1**	**0**	**0**	**1**	**1**	**0,915**	**0,828**	**Zabrze**
0	**1**	**1**	**0**	**0**	**1**	**0,902**	**0,828**	**Katowice, Gliwice**
0	**1**	**0**	**0**	**0**	**1**	**0,889**	**0,827**	**Sosnowiec, Bytom**
0	**1**	**0**	**1**	**1**	**1**	**0,884**	**0,745**	**Czestochowa**
1	**0**	**1**	**1**	**0**	**1**	**0,847**	**0,611**	**Poznan**
0	**0**	**0**	**0**	**0**	**1**	**0,815**	**0,557**	~~**Radom**~~
1	0	0	0	1	0	0,788	0,654	Lublin
1	1	1	1	1	0	0,736	0,291	Lodz
0	0	0	0	1	0	0,731	0,578	Torun,Rzeszow, Bielsko-Biala
1	1	0	1	0	0	0,714	0,570	Szczecin, Bydgoszcz
1	0	1	0	1	0	0,690	0,393	Wroclaw, Krakow
0	0	1	1	1	0	0,688	0,279	Gdynia
0	0	0	1	1	0	0,625	0,015	Olsztyn, Kielce, Bialystok
1	0	1	1	1	0	0,551	0,118	Warsaw, Gdansk

Source: author's own elaboration
Note: The crossed-out cities are deviant cases (consistency in kind). The consistency threshold equals 0,8. Presented here without empty configurations.

Conservative solution (no logical reminders included):

(~POP*POORHEALTH *~AFFL *SOCAP) + (~POP*POORHEALTH*~WMR*~SOCAP) + (~POP *~AFFL*~WMR*~SOCAP) + (POP*~POORHEALTH*AFFL*WMR*~SOCAP) → ~OUT

Note: solution consistency = 0,915, PRI = 0,864, solution coverage = 0,523.

The most parsimonious solution (all logical reminders included, without directional expectations):

(~POP*POORHEALTH) + (~POORHEALTH*~SOCAP) → ~OUT

Note: solution consistency = 0,926, PRI = 0,878, solution coverage = 0,612.

Table A6: Raw data.

Cases	PHP_EXP	POP	AFFL	AGEMED	DEATH	TURN-OUT	PARTICIP	WMR	UNI_COV_A	UNI_COV_B
Zabrze	16,87	172,4	2777,8	43,8	10,81	35,35	14,91	24	2,1	99
Wroclaw	14,03	642,9	4948,3	41,4	10,7	45,14	8,5	24	32,3	71
Warsaw	161,38	1791	7054	41,7	10,82	56,94	17,55	47	54,7	95
Torun	9,06	201,4	3154,5	41,9	9,92	46,68	8,57	24	0	97
Szczecin	16,1	401,9	3572	43,3	11,51	43,7	3,23	37	13,9	32
Sosnowiec	9,7	200	2798,9	45,4	12,75	44,61	0,69	28	4,1	0
Rzeszow	141,99	196,2	3375,7	39,1	7,89	51,49	23,93	22	7,7	98
Radom	22,26	211,4	2566,6	42,4	11,15	47,33	7,48	29	74,7	6
Poznan	17,89	534,8	4592	41,9	10,59	47,96	2,22	41	41,2	13
Olsztyn	82,45	172	3592,6	41,9	9,3	51,27	1,25	44	99,9	100
Lublin	13,09	339,8	3372,9	42,1	10,25	47,87	16,37	26	41	45
Lodz	17,68	679,9	3873,5	45,1	14,27	47,83	12,97	38	43,7	87
Krakow	31,81	779,1	4648,7	41,2	9,95	50,16	16,82	26	0,1	99
Kielce	19,74	194,9	3356,2	43,6	10,64	48,72	2,09	40	76,2	91
Katowice	122,46	292,8	4441,9	44,7	12,23	45,35	4,61	25	34,9	68
Gliwice	9,65	178,6	4226,9	43,3	11,36	43,83	**NA** (1,39)	20	71,6	69

Cases	PHP_EXP	POP	AFFL	AGEMED	DEATH	TURN-OUT	PARTICIP	WMR	UNI_COV_A	UNI_COV_B
Gdynia	17,1	246,3	4043,8	43,5	10,65	52,5	0,3	39	66,1	75
Gdansk	28,58	470,9	4617,2	41,7	10,88	50,32	5,57	32	81,7	83
Czestochowa	12,26	220,4	2973,3	45,3	12,93	48,63	4,62	43	83,1	87
Bytom	15,74	165,3	2522	43,5	12,55	38,64	3,58	16	69,9	0
Bydgoszcz	87,16	348,2	3439,4	43,5	11,16	45,21	7,61	32	3,6	97
Bielsko-Biala	6,4	170,7	3570,1	43	10,74	48,66	19,22	20	12	0
Bialystok	23,76	297,6	3260,6	41,1	8,65	47,53	10,1	36	67,2	98
Crossover point:	17,8	300	3700	42,7	10,8	48	8	30	50	70

Source: author's own elaboration.
Note: PHP_EXP for Poznan was manually changed due to a detected reporting mistake, based on the documentation of a wrongly reported programme.
Key:
PHP_EXP = *Per capita* expenditure on public health programmes in 2019 in Polish Zloty.
POP = Population in thousands in 2019.
AGEMED = Median age of the population in 2019.
AFFL = Average *per capita* municipal 'own income' between 2017 and 2019 in Polish zloty.
DEATH = Average death rate calculated for 1000 inhabitants between 2016 and 2019.
TURNOUT = Average turnout at two consecutive local elections in 2014 and 2018.
PARTICP = Average number of participants in local civic organisations (clubs, sections) *per* 1000 inhabitants between 2017 and 2019.
WMR = Average representation of women on a city council in 2019.
UNI_COV_A = The proportion of participants in programmes belonging to the 'universal prevention' category (a legal designation used for statistical purposes in the National Health Programme) in 2019.
UNI_COV_B = The proportion of participants in programmes that addressed more than 1% of the city's population.

Table A7: Descriptive statistics for raw conditions.

Condition	Minimum	Maximum	Mean	Median	Standard deviation
PHP_EXP	6,40	577,29	63,33	17,68	44,93
POP	165,3	1790,7	387,3	246,3	347,53
AFFL	2522	7054	3773	3570	977,91
AGEMED	39,10	45,40	42,8	43	1,51
DEATH	7,89	14,27	10,94	10,81	1,37
TURNOUT	35,35	56,94	47,21	47,83	4,38
PARTICIPATION	0,3	23,93	8,41	7,48	6,71
WMR	16	47	31	29	8,71
UNI_COV_A	0	99,9	42,68	41,20	31,56
UNI_COV_B	0	100	68	83	34,56

Source: author's own elaboration, the format adopted from Hinterleitner, Sager, and Thomann 2016, App. A.

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Table A8: Calibrated data.

City county	OUT	PHP_ EXP	UNI_COV_A	UNI_COV_B	POP	AFFL	AGEMED	DEATH	TURN-	PARTICIP	WMR	POOR HEALTH	SOCAP
Zabrze	0,33	0,44	0,02	0,99	0,08	0,02	0,91	>0,50	0,00	0,95	0,03	>0,50	0,95
Wroclaw	0,16	0,20	0,18	0,54	1,00	1,00	0,04	0,46	0,16	0,55	0,03	0,04	0,55
Warsaw	0,98	1,00	0,61	0,98	1,00	1,00	0,08	0,51	1,00	0,98	0,99	0,08	1,00
Torun	0,04	0,04	0,01	0,98	0,13	0,09	0,12	0,19	0,31	0,56	0,03	0,12	0,56
Szczecin	0,05	0,37	0,05	0,00	0,95	0,37	0,78	0,77	0,07	0,01	0,89	0,77	0,07
Sosnowiec	0,02	0,04	0,02	0,00	0,12	0,02	1,00	0,97	0,12	0,00	0,24	0,97	0,12
Rzeszow	0,98	1,00	0,03	0,98	0,12	0,20	0,00	0,01	0,99	1,00	0,01	0,00	1,00
Radom	0,56	0,58	0,92	0,19	0,15	0,01	0,32	0,65	0,40	0,38	0,36	0,32	0,40
Poznan	0,34	0,41	0,32	0,00	1,00	1,00	0,12	0,41	0,49	0,00	0,96	0,12	0,49
Olsztyn	0,99	0,99	0,99	0,99	0,07	0,39	0,12	0,08	0,99	0,00	0,98	0,08	0,99
Lublin	0,13	0,15	0,32	0,02	0,76	0,20	0,19	0,29	0,48	0,97	0,09	0,19	0,97
Lodz	0,39	>0,50	0,37	0,92	1,00	0,85	0,99	1,00	0,47	0,89	0,91	0,99	0,89
Krakow	0,72	0,73	0,01	0,99	1,00	1,00	0,02	0,20	0,96	0,98	0,09	0,02	0,98
Kielce	0,51	0,54	0,93	0,96	0,11	0,19	0,87	0,43	0,74	0,00	0,95	0,43	0,74
Katowice	0,43	1,00	0,22	0,43	0,46	1,00	0,99	0,92	0,17	0,03	0,05	0,92	0,17
Gliwice	0,04	0,04	0,89	0,46	0,08	0,99	0,78	0,73	0,08	0,00	0,00	0,73	0,08
Gdynia	0,35	0,46	0,83	0,68	0,26	0,97	0,84	0,44	1,00	0,00	0,93	0,44	1,00
Gdansk	0,67	0,68	0,96	0,87	0,99	1,00	0,08	0,53	0,97	0,08	0,64	0,08	0,97
Czestocho-wa	0,10	0,11	0,96	0,92	0,17	0,04	1,00	0,98	0,72	0,03	0,98	0,98	0,72
Bytom	0,26	0,33	0,88	0,00	0,07	0,01	0,84	0,95	0,00	0,01	0,00	0,84	0,01
Bydgoszcz	0,98	0,99	0,02	0,98	0,81	0,25	0,84	0,65	0,16	0,41	0,64	0,65	0,41
Bielsko-Biala	0,02	0,01	0,04	0,00	0,07	0,37	0,65	0,48	0,73	0,99	0,00	0,48	0,99
Bialystok	0,58	0,61	0,84	0,98	0,49	0,14	0,02	0,03	0,43	0,71	0,85	0,02	0,71

Source: author's own elaboration.

Note: For Gliwice, only the data on the turnout at local elections was used to calculate its inclusion in SOCAP. POORHEALTH was created as a disjunction between AGEMED and DEATH sets. SOCAP is a conjunction of two conditions: TURNOUT and PARTICIP. OUT is a fuzzy set created as a family resemblance concept: PHP_EXP **AND EITHER** UNI_COV_A **OR** UNI_COV_B.

Appendix B: Calibration and robustness tests

Data Availability Statement

Replication materials are available in the Journal of Public Policy Dataverse at https://doi.org/10.7910/DVN/YMUVN2

This appendix provides detailed elaboration on the calibration choices made in this study, which is followed by a section dedicated to the robustness tests that adhere to the protocol proposed by Ioana-Elena Oana and Carsten Schneider (2021). The overall structure of the appendix (e.g., section names) draws on the Online Appendix B in the study of Markus Hinterleitner, Fritz Sager, and Eva Thomann (2016).

Calibration choices

For the purpose of operationalisation, the direct method of calibration was used. This procedure assigns cases to sets using three qualitative points of reference, or anchors: 0,05 ('fully absent'), 0,5 (the 'conversion' or 'crossover' point), and 0,95 ('fully present'; Hinterleitner, Sager, and Thomann 2016, App. B; Oana, Schneider, and Thomann 2021; Schneider and Wagemann 2012). As explained by Hinterleitner, Sager and Thomann in the online appendix to their study: "*the most important anchor is the crossover point (0,5): if a change in this anchor leads to a case displaying a qualitatively different membership in the set, then this can change its membership in the truth table rows and, hence, the substantial results*" (Hinterleitner, Sager, and Thomann 2016, App. B). Accordingly, alternative choices in setting conversion points were carefully evaluated.

fuzzy-set Universal Targeting Index

Since the fuzzy-set Universal Targeting Index was constructed using the family resemblance strategy in concept formation, three distinct attributes of cases were calibrated into fuzzy sets:

a) First, ***per capita* spending on public health programmes** was used to assign cases to the set representing above-median municipal public health expenditure in 2019 (PHP_EXP). The conversion point was conservatively set at 19, between the case slightly above the sample median (Lodz, 17,68), and the next relevant case. Borderline cases, Lodz and Poznan, that spent around this amount on the programmes, were excluded from the set to ensure a meaningful difference between sets representing the presence and absence of 'high spending'. As the raw data are rather skewed, the full inclusion point was chosen based on the noticeable gap between Krakow (ca. 31) and Olsztyn (ca. 81), supported by the mean value (63). The full absence point was set at 10, demarcating the lowest-spending municipalities. This set serves as a necessary attribute (NA) for the index, indicating the presence of well-funded public health policies at the local level.

b) Next, the **high share of participants in universally targeted programmes** as classified under the National Health Programme (‘universal prevention’ is a category used for reporting purposes), was calibrated into a separate set (UNI_COV_A). Universal programmes are defined as those dedicated to broad groups of inhabitants, regardless of their social or health status. Calibration thresholds were based on the distribution of raw values: at 50% for the crossover point, 80% for full inclusion and 10% for full exclusion. The crossover point reflects a division between majority and minority in participation scores. Full inclusion and full absence were assigned based on the significant gaps in empirical values. This set constitutes first substitutable attribute (SA1) in the fsUTI index.

c) Finally, to account for limitations in the official National Health Programme classifications, an alternative measure (UNI_COV_B) was also included. This set describes the high share of participants in public health programmes that target large groups of beneficiaries, even if they are officially classified as ‘selective’. Due to the relatively low quality of the reported data, some well-funded programmes may target large populations but be classified as selective support. Based on additional assessments made on case-to-case basis, a threshold of 1% of the population was deemed sufficient to identify large-scale programmes that could be miscategorised. In the course of the calibration process, the conversion point was set slightly above the mean value among the included cases (68%) at 70%. Since the condition was included based on observational criteria, a more conservative conversion point than 50% is required. Gliwice (69%) was excluded due to geographical and historical proximity to Katowice (68%). This set serves as the second substitutable attribute (SA2) in the fsUTI index.

Alternative calibration of the outcome

Given the poor quality of municipal data, no other indicators of policy content were deemed suitable for measurement purposes. For instance, the sheer number of programmes was inappropriate due to significant variation in their scope and size. In addition, data on the absolute number of participants per 1000 inhabitants proved inconsistent. This may be attributed to a few large programmes that often dominate the local policy landscape, but also to visible differences in reporting practices across cases. Ultimately, additional tests were conducted, which incorporated per capita spending on universal programmes in an alternative version of the fuzzy-set index. The following logical operation represents its operationalisation:

[(UNI_EXP_A + UNI_EXP_B) * PHP_EXP] * (UNI_COV_A + UNI_COV_B) → OUT (and independently: ~OUT).

Here, the cities included in the first set (the alternative necessary attribute) were restricted to those with high per capita spending on universally targeted public health interventions in 2019. Once again, either based on the National Health Programme categorisation (A) or the substantial size of the programmes (B). The results of the alternative analysis did not, however, differ from those presented in the main body of the article. While the alternative measurement choices resulted in slightly lower Proportional Reduction in Inconsistency (PRI) scores (a byproduct of combining 5 sets in the Index), the solutions obtained remained consistent with the findings presented in the article.

POP

For 'large population size' (POP), the crossover point was set at 300 000 inhabitants in 2019, between the sample median (ca.. 246 000) and the mean (ca. 387 000). Beyond simple descriptive statistics, the choice was informed by a noticeable gap in values that exists between Bialystok (ca. 297 000) and Lublin (ca. 339 000). This gap supports the conclusion that an in-kind difference exists between the two cities. Similarly, the full inclusion point was set at 400 000 inhabitants, falling between the cases of Bydgoszcz (ca. 348 000) and Szczecin (ca. 402 000). Full absence was assigned to cases with fewer than 165 000 residents, a threshold close to the minimum value in the dataset. The presence of the condition gradually declines below the conversion point, down to 0,06. However, based on the raw data distribution, no definitive point of full absence could be reasonably set.

POORHEALTH

As the data provided by the Ministry of Health omits important health indicators at the county level (e.g., life expectancy), the POORHEALTH condition was calculated using the conjunction ('AND') of two separate sets:

a) The median age of inhabitants in 2019 was used to assign cases to a set representing the presence of a high population median age (AGEMED). Older populations are naturally more prone to experience health problems, increasing the demand for many types of public health programmes. The conversion point was set at the mean value of 42,8, reflecting an empirical gap between Radom (42,4) and Bielsko-Biala (43). However, this choice is arguable, as Bielsko-Biala and two other cases (Gliwice and Szczecin) are close in terms of median age. Therefore, a possible alternative choice is acknowledged in the robustness tests section, where the crossover point is raised to a more conservative value, and all three borderline cases are re-coded to be included in the ~POORHEALTH set. Full inclusion (44,1) and exclusion (41,5) points were determined based on the Q_1 and Q_3 values, as well as gaps observed in empirical data. Additionally, an alternative metric of population health structure, the age dependency ratio, was separately used to assess the validity of relying the median age in this conjunction.

b) To further evaluate the health situation, the average death rate *per* 1000 inhabitants between 2016 and 2019 (DEATH) was calculated and added to the conjunction. The conversion point (10,8) was set close to the median value (10,81), between Bielsko-Biala and (10,74) and Zabrze (10,81). Zabrze was included in the set as the gap between it and the next closest case (Warsaw) was very narrow. In the robustness tests, a more conservative crossover point is applied, as an alternative calibration choice could also be reasonably justified based solely on the data distribution. Similarly to the AGEMED set, fully included cases (12,5) and excluded cases (9) were determined based on existing gaps in empirical data.

AFFL

For the set containing only the most affluent large cities in Poland (AFFL), the choice of the crossover point was informed by the mean per capita income of selected cities (3773 PLN) between 2017 and 2019. A large empirical difference exists between the last ~AFFL case, Olsztyn (3593 PLN), and the first two cities assigned to AFFL, which are characterised by above average per capita incomes – Lodz (3873 PLN) and Gdynia (4044 PLN). This clear gap justifies the presumption of an in-kind difference. The point of full membership is put at 4000 PLN, as only 8 of the chosen cities were able to reach this threshold. Overall, income variability remains relatively low, despite the presence of a notable outlier: the capital city of Warsaw. Full absence was assigned to Sosnowiec, Zabrze, Radom, and Bytom; post-industrial cities which were particularly affected by the fall of socialism in Poland.

WMR

As already mentioned in the main body of the article, the crossover point for the presence of a high representation of women in city councils was based on theoretical works on ‘substantial representation’. Coincidentally, the point aligns closely with the sample median (29%) and the mean (31%), which further reinforce this choice. The point of full inclusion, on the other hand, was set at 40% – as this level of representation is close to the overall majority in the council and suggests relatively strong influence of women. In turn, cases with comparatively weak representation, defined as less than 25% of council members, were assigned to the 'fully absent' set.

CIVSOC

The primary metric for measuring the strength of civil society proved to be slightly incomplete, as it included missing values for the city of Gliwice. Therefore, it was necessary to incorporate an additional metric to improve the overall precision of the measurement. Based on a recent study linking local social embeddedness with electoral turnout in Poland (Markowski, Żerkowska-Balas, and Stanley 2023), the presence of the 'strong civil society' condition was calculated as a disjunction ("OR") of two sets:

a) Above-average membership in civil society organisations per 1000 inhabitants between 2017 and 2019. The crossover point was set at 8 (mean = 8,4), marking a clear empirical gap between Radom (7,61) and Bydgoszcz (8,5). An alternative choice of the crossover point, which similarly constitutes a clear empirical gap, was included in the robustness tests. Full inclusion (15) and absence (5) were assigned based on existing gaps in empirical values and the proximity to other cases.
b) Above-average turnout calculated for two local elections (2014, 2018), with the conversion point equal to the mean value of 48%. Full membership in the set begins at 50%, which represents turnout exceeding a majority of the eligible voters. Since the latter value could potentially serve as an alternative conversion point given the distribution of raw data, it is verified in the robustness tests.

Robustness tests

Robustness tests applied in this article are based on the protocol outlined by Ioana-Elena Oana and Carsten Schneider (Oana and Schneider 2021; Oana, Schneider, and Thomann 2021). Applying QCA as a qualitative comparative method inherently involves a certain degree of arbitrariness in set calibration. There is often more than one plausible conversion points for a condition (or the outcome set), which may significantly alter the final results of the analysis. To ensure the quality of the analysis, robustness tests are thus recommended. Oana and Schneider propose to compare the final QCA results with alternative solutions that account for all possible measurement decisions. In this context, a 'robust' QCA result means one that remains unchanged against major changes in calibration choices. Quality control of this kind is based on the following steps (after ibid):

1. Produce the initial solution (IS) of QCA.

2. Determine the sensitivity ranges of the IS.
3. Generate alternative solutions for the various analytic changes that are as challenging as possible.
4. Obtain the test solution (TS) and the robust core (RC) of the results.
5. Calculate the fit-oriented parameters (RF) to evaluate the overlap between IS, RC and TS to assess the consistency of the initial solution.
6. Calculate the case-oriented robustness (RCR); identify robust types of cases and the robustness rank (RCC_{rank})

Sensitivity ranges

As clarified by Oana and Schneider: "Sensitivity ranges allow us to empirically assess the limits within which the Boolean expression for the solution remains unchanged" (ibid). The initial solutions considered here – for the occurrence of universal targeting (OUT) and its absence (~OUT) – are presented in the main body of the article. Sensitivity tests revealed that both solutions are relatively insensitive to changes in the initial consistency threshold (0,8), above which individual configurations are considered as sufficient for the outcome or its absence. For OUT, consistent results were obtained in the range of 0,74 and 0,93. For ~OUT, the range is between 0,74 and 0,88.

Alternative solution

To account for alternative operationalisation choices and to generate a test solution, the following three condition sets were recalibrated: AFFL, POORHEALTH (AGEMED AND DEATH), SOCAP (PARTICIP OR TURNOUT). The crucial choices regarding alternative conversion points are summarised and explained in Table B1.

Table B1: Alternative calibration choices for the conditions

Condition	Original conversion point	Alternative conversion point	Rationale
AFFL	3700	3900	Increased well above the mean. Excludes the city of Lodz from the set
AGEMED	42,7	43,4	Adjusted to be related to the median, not the mean. Excludes the three cases: Bielsko-Biala, Gliwice, Szczecin

Condition	Original conversion point	Alternative conversion point	Rationale
DEPENDENCY_RATIO (AGEMED replacement)	-	31,8	Median age may be questioned as a definitive measure of population health, so an alternative indicator was used (age dependency ratio; an average value between 2018-2019)
DEATH	10,8	11,3	Set well above the initial value to be closer to the mean. Excludes Zabrze, Warsaw, and Gdansk from the set
TURNOUT	48	50	Changed for theoretical reasons, now indicates the turnout exceeding the natural conversion point (majority of voters)
PARTICIPATION	8	10	Raised above both the mean and median values. Excludes possible borderline cases of Wroclaw and Torun

Source: author's own elaboration.

Test solution and robust core

Using the altered conditions presented in Table B1, two test solutions were calculated: one for the presence of universal targeting in municipal public health policy and one for its absence. The results were then compared with the initial solution. The robust core of the results was therefore obtained ("that part of the initial QCA solution that is supported by all the robustness tests performed by the researcher", ibid). The robustness parameters were also calculated, as specified in detail in the guidelines by Oana and Schneider (2021).

In the case of universal targeting in municipal public health policy (OUT), the obtained parameters remain convincingly high. Robustness Fit Consistency (RF_{Cons}) and Robustness Fit Coverage (RF_{Cov}) both exceed the value of 0,97 (with 1 being the perfect score). However, the Robustness Fit Set Coincidence parameters prove to be more modest, slightly exceeding 0,6. At the same time, Robustness Case Rank (RCC_{rank}) reaches a score of 2 (out of 4), due to the presence of one potential deviant case (Lodz) and one possible typical case (Krakow). Gdynia was identified as a robust deviant case, a finding important for the interpretation of the initial solution. Taken together, these results indicate a satisfactory fit-oriented robustness for the presence of universal targeting across the included cases.

The case-oriented parameters of robustness also proved to be relatively high. One notable case, namely that of Lodz, was difficult to assign during the calibration procedure. Its 2019 public health spending was slightly below the median, while its value in the fuzzy-set UTI nearly exceeded 0,5 (indicating the presence of the investigated outcome). Thus, Lodz represents a mixed type of municipal public health policy, one which is difficult to capture in the presented set-theoretic procedure. Notwithstanding the case of Lodz, all other cities in the initial solution were confirmed as robust typical cases, and the number of shaky cases remains low. In consequence, the interpretation of the solution proposed in the main body of the article was reinforced.

For the absence of universal targeting, the test produced slightly different results. The parameters of robustness are relatively high; RF_{Cov} exceeds 0,85 and RF_{Cons} equals 1, with Robustness Fit Set Coincidence parameters comparatively lower (below 0,7; RCC_{rank} = 4). Three possible deviant cases (Wroclaw, Torun, Lublin, Lodz) and one shaky typical case (Zabrze) were identified. However, the majority of cases in the initial solution (Sosnowiec, Bytom, Czestochowa, Katowice, Gliwice, Poznan) were confirmed as robust typical cases. Radom, the only deviant case, was also identified as being robust against possible changes in the calibration. Overall, the results of the test indicate acceptable robustness of the initial solution for the absence of universal targeting (~OUT), although the low Robustness Case Rank reflects the heterogeneity of this category of cities, as also explicated in the main body of the article. The low RCC is therefore a by-product of this variability of the absence of the investigated concept (its 'negative pole').

An additional version of the test outlined in the previous paragraphs was also conducted, which included an alternative condition choice in the POORHEALTH conjunction (replacing median age with the age dependency ratio as a measure of population health). The alternative solutions obtained are similar to the ones outlined above:

OUT: RF_{Cov} = 0,895, RF_{Cons} = 0,979, RCR_{typ} = 0,833, RCR_{dev} = 0,5; RCC_{rank} = 2;

~OUT: RF_{Cov} = 0,713, RF_{Cons} = 1 , RCR_{typ} = 0,455, RCR_{dev} = 1, RCC_{rank} = 4.

In conclusion, the initial results, both for the presence (OUT) and absence (~OUT) of universal targeting in municipal public health policy, are fairly robust against possible changes in the set calibration. However, the case-oriented robustness metrics remain more modest for the ~OUT solution, which should provide additional context for the interpretation of the results presented in the main body of the article.

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