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Mulliner, E, Maliene, V and Malys, N

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Table 1. Initial matrix for MCDM

Criteria <i>i</i>	<i>z</i>	Measur ement	Weight	Alternatives <i>j</i>										
				<i>A</i> ₁	<i>A</i> ₂	<i>A</i> ₃	<i>A</i> ₄	<i>A</i> ₅	<i>A</i> ₆	<i>A</i> ₇	<i>A</i> ₈	<i>A</i> ₉	<i>A</i> ₁₀	
1	House prices in relation to income	-	Ratio	0.063135	3.5	4.9	4.7	4.9	5.1	4	4.8	3.6	3.8	4.7
2	Rental costs in relation to income	-	%	0.063135	19	30	24	28	28	24	29	30	23	25
3	Interest rates and mortgage availability	-	%	0.058055	60	60	60	60	60	60	60	60	60	60
4	Availability of rented accommodation	+	%	0.058055	1.3	0.4	0.32	0.82	0.3	0.6	0.1	1.1	0.7	1.4
5	Availability of low cost homeownership products	+	Points	0.051524	2	1	1	1	2	2	3	3	1	2
6	Availability of market value home ownership products	+	%	0.04717	1.1	2.8	2.3	2.7	2.7	2.5	1.3	1.1	2.3	3
7	Crime	-	Rate	0.044267	135	39	58	41	57	56	65	135	89	75
8	Access to employment	+	Points	0.053701	3	3	3	3	3	2	3	3	3	3
9	Access to public transport	+	Points	0.049347	4	3	4	5	4	4	4	5	5	6
10	Access to good quality schools	+	Points	0.050073	5	6	5	5	4	4	3	5	6	6
11	Access to shopping facilities	+	Points	0.045718	3	1	2	2	3	1	2	3	1	3
12	Access to health services	+	Points	0.047896	9	9	9	9	9	9	9	9	9	9
13	Access to child care	+	Points	0.046444	6	6	6	5	6	6	6	6	6	6
14	Access to leisure	+	Points	0.039913	6	3	5	5	4	5	4	5	4	4
15	Access to open green public space	+	Points	0.043541	3	3	3	3	3	3	3	3	3	3
16	Presence of environmental problems	-	%	0.044267	24	1.5	29.3	4	21.1	19.4	15.9	13	46.6	30.5
17	Quality of housing in area	+	%	0.055152	72.4	70.3	69.1	79.4	86.2	89.9	77.5	72.8	89.1	82.9
18	Energy efficiency of housing in area	+	%	0.05225	60	55	57	53	57	64	63	66	61	68
19	Waste management in area	+	%	0.04209	35	35	35	35	35	35	35	35	35	35
20	Deprivation in area	-	%	0.044267	97.6	5	5.2	3.1	0	38.8	83.5	93.7	62.1	22.1

* The sign (+/-) indicates that a greater/lesser criterion value satisfies sustainable housing affordability

Table 2. Initial matrix for MCDM with all criteria calculated as benefit criteria*with all benefit criteria

Criteria <i>i</i>	Z	Weight	Alternatives <i>j</i>										
			1	2	3	4	5	6	7	8	9	10	
1	House prices in relation to incomes	+	0.063135	5.1	3.7	3.9	3.7	3.5	4.6	3.8	5	4.8	3.9
2	Rental costs in relation to incomes	+	0.063135	30	19	25	21	21	25	20	19	26	24
3	Interest rates and mortgage availability	+	0.058055	60	60	60	60	60	60	60	60	60	60
4	Availability of rented accommodation	+	0.058055	1.3	0.4	0.32	0.82	0.3	0.6	0.1	1.1	0.7	1.4
5	Availability of low cost homeownership products	+	0.051524	2	1	1	1	2	2	3	3	1	2
6	Availability of market value home ownership products	+	0.04717	1.1	2.8	2.3	2.7	2.7	2.5	1.3	1.1	2.3	3
7	Crime	+	0.044267	39	135	116	133	117	118	109	39	85	99
8	Access to employment	+	0.053701	3	3	3	3	3	2	3	3	3	3
9	Access to public transport	+	0.049347	4	3	4	5	4	4	4	5	5	6
10	Access to good quality schools	+	0.050073	5	6	5	5	4	4	3	5	6	6
11	Access to shopping facilities	+	0.045718	3	1	2	2	3	1	2	3	1	3
12	Access to health services	+	0.047896	9	9	9	9	9	9	9	9	9	9
13	Access to child care	+	0.046444	6	6	6	5	6	6	6	6	6	6
14	Access to leisure	+	0.039913	6	3	5	5	4	5	4	5	4	4
15	Access to open green public space	+	0.043541	3	3	3	3	3	3	3	3	3	3
16	Presence of environmental problems	+	0.044267	24.1	46.6	18.8	44.1	27	28.7	32.2	35.1	1.5	17.6
17	Quality of housing in area	+	0.055152	72.4	70.3	69.1	79.4	86.2	89.9	77.5	72.8	89.1	82.9
18	Energy efficiency of housing in area	+	0.05225	60	55	57	53	57	64	63	66	61	68
19	Waste management in area	+	0.04209	35	35	35	35	35	35	35	35	35	35
20	Deprivation in area	+	0.044267	0	92.6	92.4	94.5	97.6	58.8	14.1	3.9	35.5	75.5

*Table 2 only relates to WSM, WPM and revised AHP 1 since such methods can only use benefit criteria.

Table 31. Data obtained by ranking of the alternatives using different MCDM methods

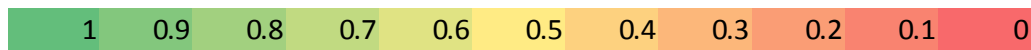
Method	Alternatives									
	A ₁	A ₂	A ₃	A ₄	A ₅	A ₆	A ₇	A ₈	A ₉	A ₁₀
WSM rank	0.1015	0.0972	0.0962	0.1055	0.1013	0.0989	0.0903	0.1024	0.0932	0.1134
	4	7	8	2	5	6	10	3	9	1
WPM rank	0	0.0923	0.0932	0.1029	0.0981	0.0972	0.0811	0.0905	0.0835	0.1105
	10	6	5	2	3	4	9	7	8	1
Revised AHP 1 rank	0.81	0.7812	0.7816	0.832	0.8121	0.7937	0.7407	0.8131	0.7682	0.8884
	5	8	7	2	4	6	10	3	9	1
Revised AHP 2 rank	0.9222	0.8434	0.8445	0.9824	0.9278	0.8775	0.7326	0.9308	0.8079	1.1365
	5	8	7	2	4	6	10	3	9	1
TOPSIS rank	0.4713	0.629	0.4889	0.7909	0.6148	0.5445	0.299	0.5271	0.252	0.8092
	8	3	7	2	4	5	9	6	10	1
COPRAS rank	0.099	0.1015	0.0961	0.1096	0.1021	0.0982	0.0891	0.1009	0.0912	0.1123
	6	4	8	2	3	7	10	5	9	1

Table 42. Priority of alternatives determined using different MCDM methods

Priority of alternatives	Methods				
	WSM	WPM	Revised AHP (approaches 1 and 2)	TOPSIS	COPRAS
1	A_{10}	A_{10}	A_{10}	A_{10}	A_{10}
2	A_4	A_4	A_4	A_4	A_4
3	A_8	A_5	A_8	A_2	A_5
4	A_1	A_6	A_5	A_5	A_2
5	A_5	A_3	A_1	A_6	A_8
6	A_6	A_2	A_6	A_8	A_1
7	A_2	A_8	A_3	A_3	A_6
8	A_3	A_9	A_2	A_1	A_3
9	A_9	A_7	A_9	A_7	A_9
10	A_7	A_1	A_7	A_9	A_7

Table 5. Correlation between alternative rankings computed using different MCDM methods.

Methods	WSM	WPM	Revised AHP 1/2	TOPSIS	COPRAS
WSM	1.000	.179	.995	.860	.944
WPM	.179	1.000	.189	.389	.306
Revised AHP 1	.995	.189	1.000	.831	.925
Revised AHP 2	.995	.189	1.000	.831	.925
TOPSIS	.860	.389	.831	1.000	.969
COPRAS	.944	.306	.925	.969	1.000



Similarity matrix is represented as a heat-map (shown below table 5) that shows the level of correlation between ranking results. The colour red indicates the most dissimilar rankings. MCDM method pairs with absolutely equal rankings has a Pearson correlation value equal to “1” and are indicated in the colour green.

Table 6. Distribution of sensitivity coefficients SC^* s:

MCDM method	Change of criterion weight											
	-5%			+5%			-50%			+50%		
	Sensitivity coefficient SC^*											
	0	1	>1	0	1	>1	0	1	>1	0	1	>1
	Occurance of sensitivity coefficient amongst 20 criteria											
WSM	19	1	0	17	3	0	12	5	3	12	5	3
WPM	20	0	0	20	0	0	13	5	2	16	2	2
Revised AHP 1	15	5	0	15	5	0	6	7	7	10	4	6
Revised AHP 2	15	5	0	15	5	0	6	7	7	10	4	6
TOPSIS	19	0	1	19	1	0	14	0	6	14	0	6
COPRAS	20	0	0	20	0	0	11	3	6	8	7	5