

Healthcare Resilience Evaluation Using Novel Multi-Criteria Method

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1 Supplementary material

Table 1 displays the dataset with countries' performance values regarding healthcare resilience evaluation criteria in a constructed multi-criteria model.

Table 1: The dataset with performance values of evaluated countries collected for 2021.

Country	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}	C_{13}
United States	18.816	12196.97	2.67	12.5	2.77	2.53	58556.54	15168.83	1386.82	72.032	0.014	1417.123	0.177
Austria	9.555	5262.371	5.45	10.8	7.37	5.31	52604.16	11868.07	13234.00	74.842	0.010	1063.525	0.092
Belgium	11.065	6022.253	3.25	20.5	5.64	4.93	50511.13	12948.27	1743.99	76.689	0.006	767.982	0.033
Bulgaria	8.52	2479.297	4.168	4.74	7.454	5.95	36456.89	3342.987	904.11	28.805	0.043	3453.262	0.393
Czechia	9.24	4302.98	4.26	8.95	6.63	4.04	112347	20646.68	4084.55	64.951	0.014	2355.455	0.217
Denmark	9.264	5453.023	4.38	10.24	2.5	2.47	15783.19	2590.29	7309.68	80.118	0.003	332.065	0.031
Finland	9.613	5251.501	4.33	18.92	3.28	2.61	8934.355	1580.66	1119.22	77.435	0.005	196.983	0.047
France	12.205	6105.608	3.36	9.65	5.98	3	88607.16	14475.36	2328.87	78.371	0.008	881.300	0.052
Germany	11.016	6350.865	4.53	12.03	8	5.95	218595	12105.3	688.91	75.06	0.015	961.138	0.069
Greece	9.508	2736.445	6.306	3.77	4.21	3.64	4200	2491.2	4082.54	71.596	0.016	1530.678	0.149
Hungary	5.303	2748.683	3.28	6.59	7.02	4.23	132247.1	3045.9	667.73	61.548	0.032	2971.140	0.194
Ireland	5.275	4575.532	4.05	12.8	2.96	2.69	32018.62	5650.88	1521.55	78.248	0.006	734.343	0.078
Italy	7.145	3051.572	4.13	6.26	3.18	2.66	74866.85	8341.53	1872.37	81.786	0.017	1090.165	0.105
Lithuania	5.507	2320.756	4.47	7.88	6.56	5.06	90120.64	4628.2	1886.25	69.394	0.015	2066.396	0.306
Luxembourg	5.354	6273.571	2.98	12.1	4.51	3.22	32012	8089.836	3405.40	71.348	0.008	668.859	-0.017
Netherlands	9.551	5752.462	3.836	11.3	3.32	2.62	22918.16	8965.263	906.99	71.717	0.004	553.548	0.097
Norway	8.625	6044.488	5.18	18.37	3.6	3.1	8142.857	2846.9	1206.46	78.94	0.003	156.153	0.036
Poland	4.785	1863.608	3.44	5.68	6.62	4.37	101791.9	3240.32	528.47	54.167	0.024	1701.611	0.223
Portugal	7.171	2441.07	5.615	7.44	3.39	3.34	44826.74	7614.164	1971.87	91.636	0.013	1189.633	0.082
Romania	6.272	2384.52	2.974	7.37	6.892	4.03	112978.4	2316.769	630.60	30.503	0.037	2201.216	0.286
Slovakia	7.232	2521.59	3.68	5.73	5.82	4.85	106567.7	17871.67	7948.75	44.756	0.013	2585.799	0.345
Slovenia	6.828	2787.512	3.34	10.49	4.5	4.13	88757.99	19829.31	661.80	58.576	0.009	1398.485	0.102
Spain	10.714	4086.783	4.49	6.34	2.97	2.51	50710.18	12992.13	1048.11	83.424	0.009	820.071	0.063
Sweden	9.787	5358.066	4.32	10.85	2.22	1.9	31702.9	5318.717	1043.65	72.624	0.008	652.269	0.026
Switzerland	11.796	7582.184	4.45	18.39	4.53	3.59	35607.92	7751.984	1261.00	68.158	0.005	513.403	0.051
United Kingdom	9.898	4466.127	3.18	8.68	2.54	2.43	49970.98	5875.549	5061.41	74.079	0.008	1247.407	0.090

The following Figures 1- 7 present shifts caused by increasing compensation reduction of particular criteria groups (G_1 - G_7).

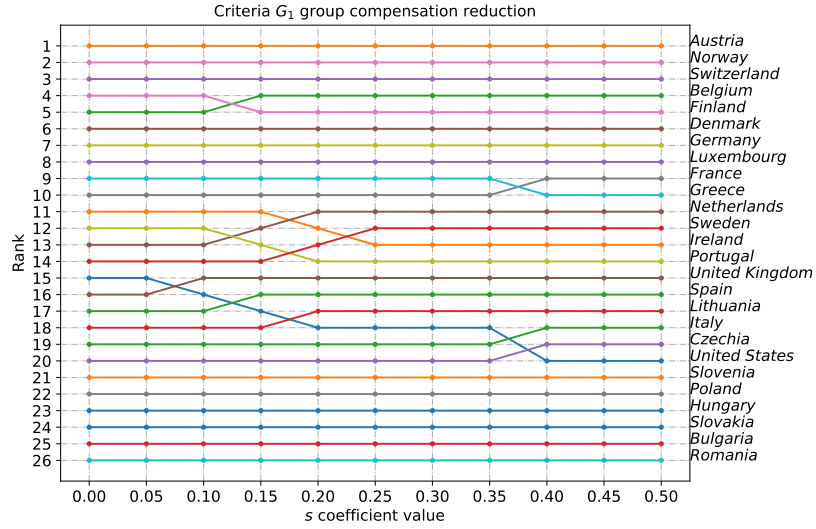


Fig. 1: Rank shifts caused by increasing compensation reduction of G_1 criteria group.

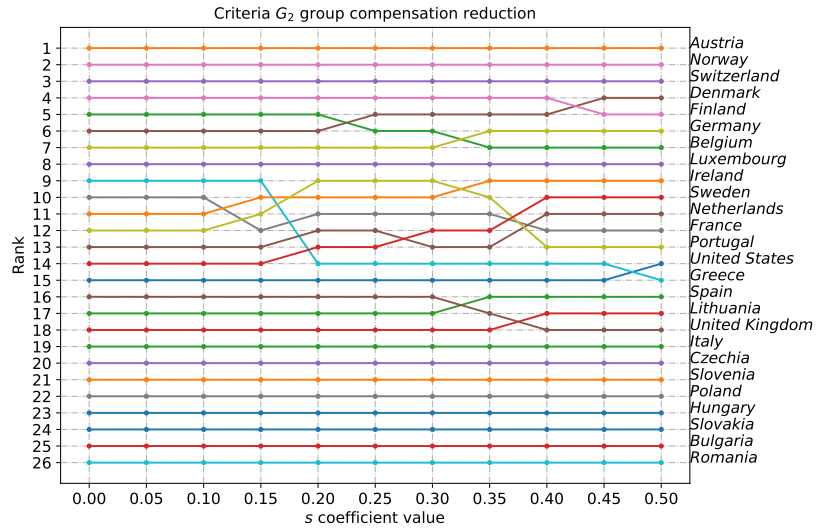


Fig. 2: Rank shifts caused by increasing compensation reduction of G_2 criteria group.

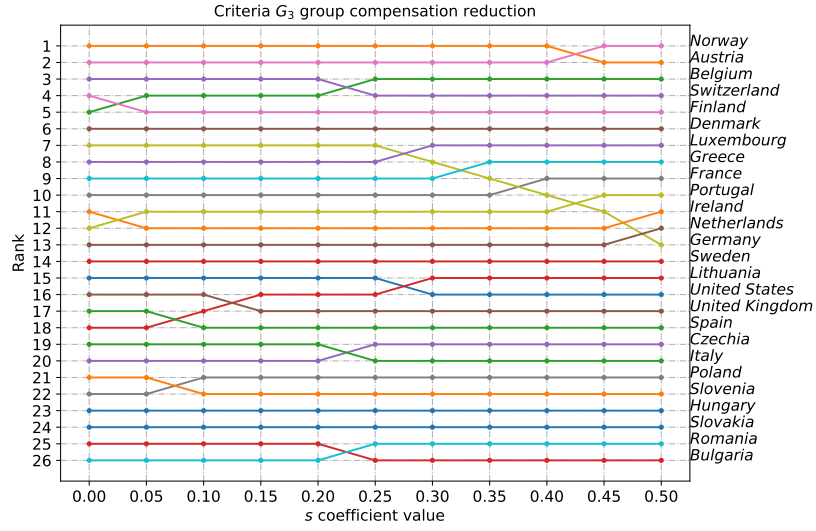


Fig. 3: Rank shifts caused by increasing compensation reduction of G_3 criteria group.

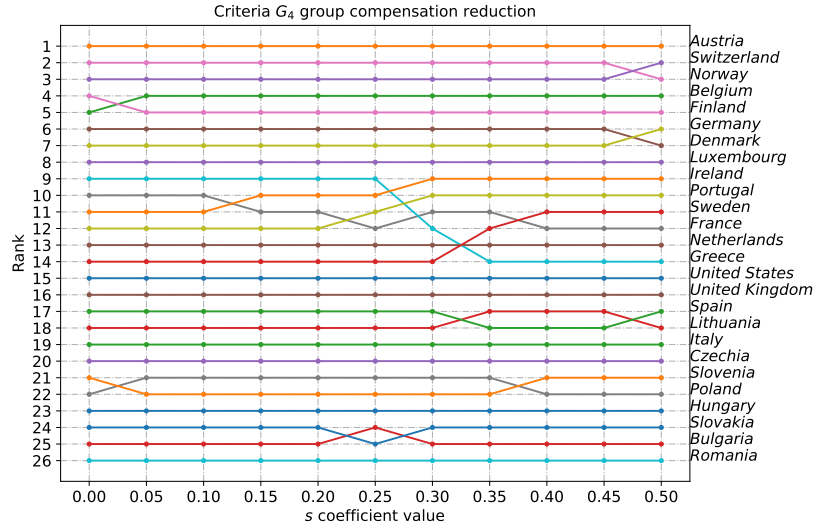


Fig. 4: Rank shifts caused by increasing compensation reduction of G_4 criteria group.

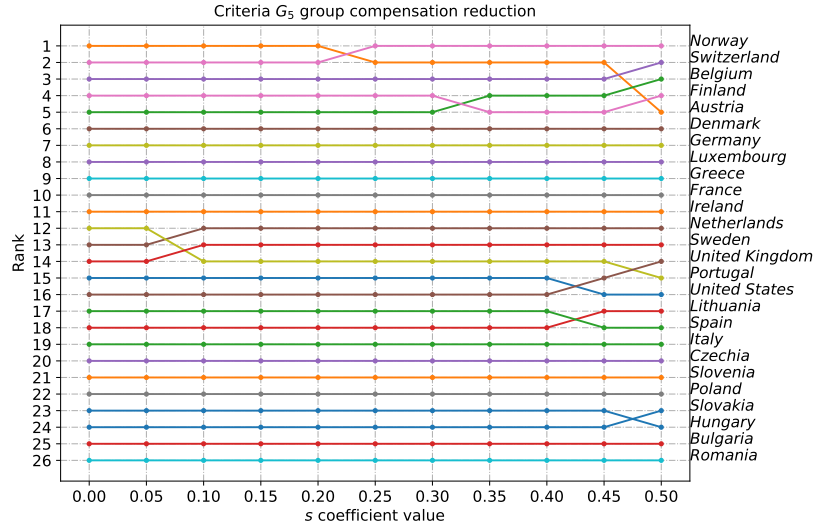


Fig. 5: Rank shifts caused by increasing compensation reduction of G_5 criteria group.

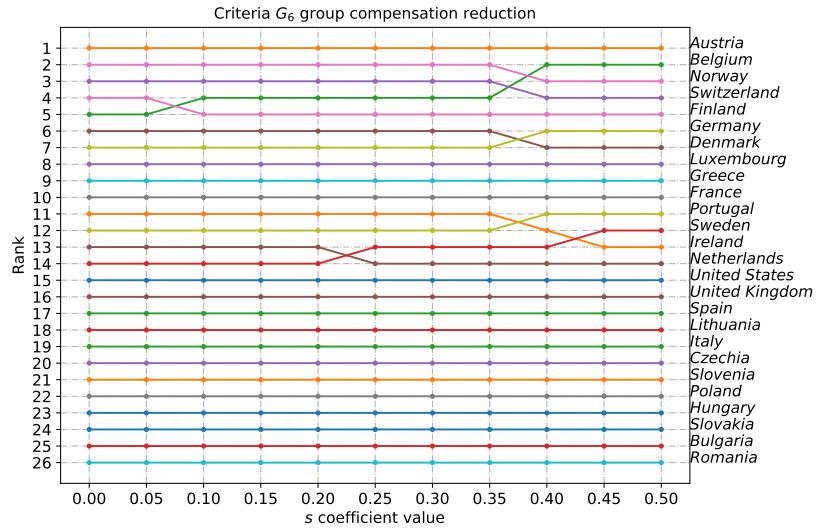


Fig. 6: Rank shifts caused by increasing compensation reduction of G_6 criteria group.

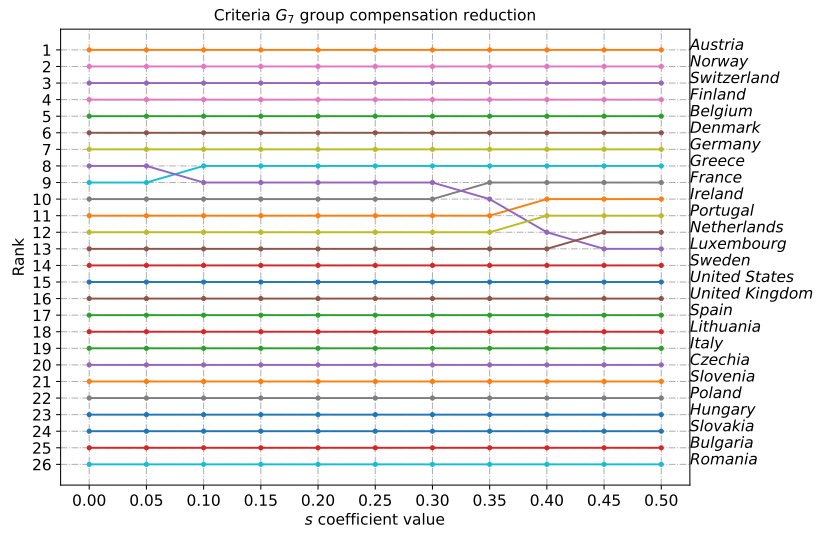


Fig. 7: Rank shifts caused by increasing compensation reduction of G_7 criteria group.

Table 2: Countries' SSP-SPOTIS scores for all criteria compensation reduction.

Country	0 (SPOTIS)	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5
United States	0.518	0.517	0.515	0.513	0.512	0.511	0.510	0.509	0.509	0.509	0.509
Austria	0.324	0.313	0.302	0.290	0.277	0.269	0.263	0.260	0.259	0.263	0.269
Belgium	0.377	0.369	0.360	0.350	0.340	0.330	0.319	0.308	0.301	0.294	0.291
Bulgaria	0.661	0.656	0.652	0.647	0.645	0.645	0.648	0.652	0.656	0.660	0.665
Czechia	0.583	0.573	0.562	0.550	0.538	0.525	0.511	0.496	0.480	0.465	0.453
Denmark	0.403	0.390	0.377	0.365	0.358	0.352	0.345	0.338	0.333	0.327	0.320
Finland	0.376	0.366	0.359	0.352	0.350	0.349	0.350	0.351	0.352	0.353	0.356
France	0.482	0.471	0.458	0.445	0.431	0.416	0.401	0.384	0.366	0.347	0.328
Germany	0.423	0.418	0.412	0.406	0.400	0.394	0.387	0.380	0.372	0.364	0.355
Greece	0.469	0.464	0.458	0.454	0.451	0.449	0.446	0.443	0.439	0.436	0.432
Hungary	0.632	0.623	0.615	0.606	0.596	0.588	0.581	0.579	0.577	0.574	0.572
Ireland	0.485	0.474	0.463	0.451	0.439	0.426	0.413	0.400	0.387	0.373	0.360
Italy	0.572	0.563	0.554	0.544	0.534	0.523	0.512	0.500	0.487	0.475	0.465
Lithuania	0.537	0.527	0.516	0.504	0.492	0.479	0.466	0.451	0.437	0.427	0.425
Luxembourg	0.465	0.456	0.447	0.437	0.426	0.415	0.404	0.391	0.378	0.363	0.352
Netherlands	0.489	0.478	0.466	0.454	0.443	0.432	0.420	0.409	0.400	0.391	0.380
Norway	0.341	0.331	0.322	0.312	0.303	0.302	0.301	0.300	0.300	0.302	0.303
Poland	0.610	0.602	0.593	0.584	0.575	0.566	0.558	0.551	0.543	0.537	0.534
Portugal	0.486	0.478	0.470	0.461	0.452	0.443	0.432	0.426	0.421	0.416	0.411
Romania	0.681	0.674	0.666	0.661	0.656	0.650	0.644	0.639	0.638	0.637	0.636
Slovakia	0.653	0.644	0.635	0.625	0.615	0.603	0.591	0.578	0.564	0.549	0.535
Slovenia	0.609	0.601	0.592	0.583	0.573	0.563	0.552	0.540	0.528	0.515	0.501
Spain	0.533	0.524	0.513	0.502	0.491	0.479	0.466	0.453	0.441	0.430	0.418
Sweden	0.490	0.480	0.468	0.457	0.444	0.431	0.417	0.406	0.393	0.381	0.372
Switzerland	0.371	0.356	0.341	0.325	0.307	0.295	0.284	0.276	0.267	0.258	0.251
United Kingdom	0.530	0.519	0.509	0.498	0.486	0.473	0.460	0.445	0.430	0.414	0.396

Table 2 displays weighted normalized average distance values of evaluated alternatives obtained by applying increasing s coefficient values in the SSP-SPOTIS method.

Acknowledgments. This research was funded in whole by National Science Centre, Poland 2022/45/B/HS4/02960, and Co-financed by the Minister of Science under the "Regional Excellence Initiative" Program.

