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LAMPIRAN

Lampiran 1. Data indikator pembangunan manusia dan IPM Sulawesi Selatan Tahun 2021

No	Kabupaten Kota	UHH(Tahun)	HLS(Tahun)	RLS(Tahun)	PPP(Rp.)	IPM
1	Selayar	68,52	12,66	8,08	9060	67,76
2	Bulukumba	68,1	13,41	7,82	10632	69,62
3	Bantaeng	70,6	12,05	6,77	11829	68,99
4	Jeneponto	66,49	12,1	6,6	9215	64,56
5	Takalar	67,3	12,42	7,49	10543	67,72
6	Gowa	70,45	13,65	8,2	9504	70,29
7	Sinjai	67,38	13,06	7,78	9505	67,75
8	Maros	69,04	13,16	8,01	11032	70,41
9	Pangkajene Kepulauan	66,78	12,77	7,92	11519	69,21
10	Barru	69,07	13,59	8,24	11017	71,13
11	Bone	67,21	12,98	7,23	9030	66,4
12	Soppeng	69,81	13,05	7,82	9558	68,99
13	Wajo	67,48	13,15	7,05	12505	69,62
14	Sidenreng Rappang	70,01	12,95	7,94	12201	71,54
15	Pinrang	69,77	13,24	7,87	11956	71,45
16	Enrekang	70,93	13,71	8,91	10973	72,91
17	Luwu	70,44	13,39	8,35	10116	70,85
18	Tana Toraja	73,4	13,86	8,51	7434	69,49
19	Luwu Utara	68,67	12,57	7,86	11736	70,02
20	Luwu Timur	70,63	12,84	8,81	12886	73,34
21	Toraja Utara	73,41	13,39	8,25	8134	69,75
22	Kota Makasar	72,13	15,58	11,43	17097	82,66
23	Kota Pare-Pare	71,31	14,51	10,65	13786	78,21
24	Kota Palopo	70,92	15,09	10,94	13117	78,38

Lampiran 2. Hasil standarisasi data indikator pembangunan manusia di Provinsi Sulawesi Selatan Tahun 2021 dengan *z-Score*

No	X_1	X_2	X_3	X_4
1	-0,5390	-0,7619	-0,1601	-0,9450
2	-0,7532	0,1321	-0,3769	-0,1855
3	0,5216	-1,4890	-1,2525	0,3927
4	-1,5743	-1,4294	-1,3943	-0,8701
5	-1,1612	-1,0480	-0,6521	-0,2285
6	0,4451	0,4182	-0,0601	-0,7305
7	-1,1204	-0,2851	-0,4103	-0,7300
8	-0,2739	-0,1658	-0,2185	0,0077
9	-1,4264	-0,6308	-0,2936	0,2430
10	-0,2586	0,3466	-0,0267	0,0004
11	-1,2071	-0,3804	-0,8689	-0,9595
12	0,1187	-0,2970	-0,3769	-0,7044
13	-1,0694	-0,1778	-1,0190	0,7193
14	0,2207	-0,4162	-0,2769	0,5725
15	0,0983	-0,0705	-0,3352	0,4541
16	0,6899	0,4897	0,5319	-0,0208
17	0,4400	0,1082	0,0649	-0,4348
18	1,9496	0,6685	0,1983	-1,7306
19	-0,4625	-0,8692	-0,3436	0,3478
20	0,5369	-0,5473	0,4485	0,9034
21	1,9547	0,1082	-0,0184	-1,3924
22	1,3019	2,7188	2,6333	2,9380
23	0,8837	1,4433	1,9829	1,3383
24	0,6848	2,1347	2,2247	1,0150

Lampiran 3. Nilai *score* dari Komponen Utama yang terbentuk

No	KU ₁	KU ₂
1	-1,1307	-0,2851
2	-0,5350	0,3576
3	-1,2011	-0,0394
4	-2,6337	0,4640
5	-1,5525	0,6572
6	0,0937	-0,8601
7	-1,1633	0,2331
8	-0,3332	0,1930
9	-1,0272	1,1730
10	0,0729	0,1573
11	-1,6144	0,1126
12	-0,6227	-0,5924
13	-0,8546	1,2237
14	-0,0754	0,2773
15	-0,0124	0,2540
16	0,8686	-0,4917
17	0,1082	-0,6201
18	0,6129	-2,6184
19	-0,7469	0,6020
20	0,5401	0,3373
21	0,3067	-2,3543
22	4,8077	1,2058
23	2,8861	0,3701
24	3,2063	0,2432

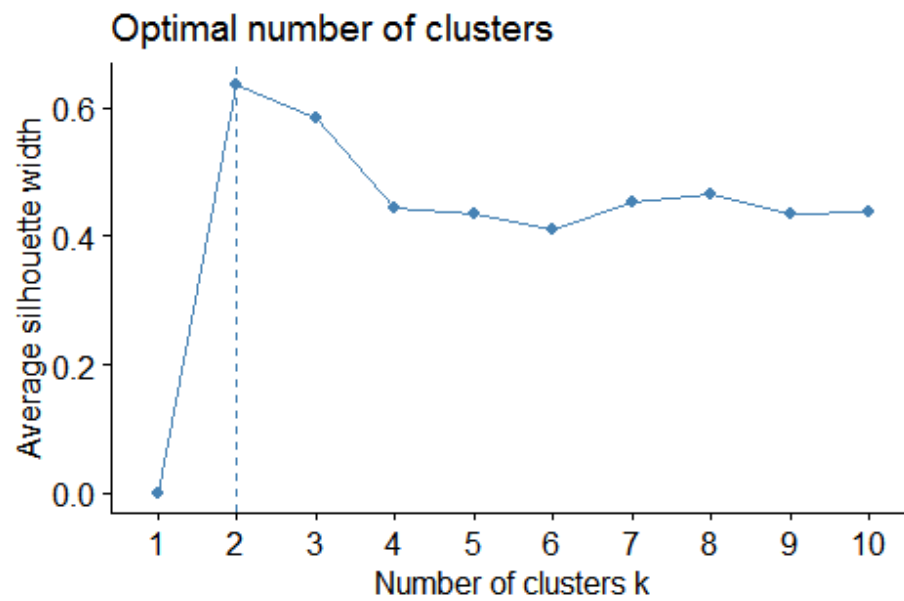
Lampiran 4. Jarak *euclidean* antar objek pada data KU

No	1	2	3	...	21	22	23	24
1	0,0000	0,8764	0,2556	...	2,5195	6,1228	4,0700	4,3692
2	0,8764	0,0000	0,7754	...	2,8397	5,4098	3,4213	3,7432
3	0,2556	0,7754	0,0000	...	2,7627	6,1366	4,1078	4,4165
4	1,6794	2,1014	1,5185	...	4,0731	7,4784	5,5207	5,8443
5	1,0325	1,0606	0,7802	...	3,5393	6,3839	4,4479	4,7768
6	1,3528	1,3706	1,5331	...	1,5093	5,1468	3,0514	3,3024
7	0,5193	0,6405	0,2751	...	2,9760	6,0499	4,0518	4,3698
8	0,9299	0,2605	0,8985	...	2,6265	5,2398	3,2242	3,5399
9	1,4619	0,9524	1,2249	...	3,7712	5,8351	3,9949	4,3345
10	1,2825	0,6402	1,2892	...	2,5226	4,8495	2,8212	3,1346
11	0,6263	1,1068	0,4404	...	3,1269	6,5146	4,5080	4,8226
12	0,5937	0,9542	0,8002	...	1,9921	5,7205	3,6386	3,9193
13	1,5340	0,9231	1,3098	...	3,7618	5,6624	3,8369	4,1777
14	1,1959	0,4666	1,1694	...	2,6593	4,9707	2,9630	3,2820
15	1,2415	0,5328	1,2243	...	2,6279	4,9133	2,9010	3,2189
16	2,0101	1,6408	2,1187	...	1,9455	4,2893	2,1939	2,4505
17	1,2835	1,1705	1,4324	...	1,7455	5,0418	2,9491	3,2162
18	2,9128	3,1899	3,1531	...	0,4044	5,6764	3,7549	3,8620
19	0,9667	0,3234	0,7860	...	3,1385	5,5874	3,6404	3,9695
20	1,7831	1,0755	1,7816	...	2,7018	4,3550	2,3462	2,6678
21	2,5195	2,8397	2,7627	...	0,0000	5,7388	3,7518	3,8930
22	6,1228	5,4098	6,1366	...	5,7388	0,0000	2,0955	1,8684
23	4,0700	3,4213	4,1078	...	3,7518	2,0955	0,0000	0,3444
24	4,3692	3,7432	4,4165	...	3,8930	1,8684	0,3444	0,0000

Lampiran 5. Jarak *euclidean* antar objek pada data yang distandarisasi

No	1	2	3	...	21	22	23	24
1	0,0000	1,2120	2,1534	...	2,6826	6,1958	4,0859	4,4067
2	1,2120	0,0000	2,3141	...	2,9865	5,4529	3,5058	3,7801
3	2,1534	2,3141	0,0000	...	3,0521	6,3162	4,4825	5,0634
4	1,7453	2,1486	2,4519	...	4,1213	7,4971	5,5298	5,8702
5	1,1065	1,2794	1,9425	...	3,5781	6,4093	4,4484	4,8334
6	1,5548	1,3840	2,5154	...	1,6777	5,1711	3,1141	3,3574
7	0,8211	0,7788	2,4731	...	3,1943	6,1328	4,1244	4,3708
8	1,1562	0,6173	1,8977	...	2,6537	5,2465	3,2476	3,6327
9	1,4946	1,1072	2,3396	...	3,8378	5,8732	4,0027	4,3640
10	1,4898	0,6693	2,3739	...	2,6260	4,8752	2,8873	3,1916
11	1,0462	1,1445	2,4887	...	3,3387	6,5848	4,5948	4,8349
12	0,8682	1,1018	1,8852	...	2,0339	5,7293	3,6546	3,9950
13	2,0324	1,1947	2,1005	...	3,8326	5,6813	3,9798	4,3630
14	1,7360	1,3543	1,4919	...	2,6851	5,0063	3,0969	3,6300
15	1,6949	1,0851	1,7426	...	2,6435	4,9206	3,0107	3,4750
16	2,1001	1,7505	2,7018	...	1,9823	4,3028	2,2135	2,5777
17	1,4237	1,2970	2,2314	...	1,7939	5,0528	2,9668	3,3066
18	2,9976	3,2112	3,6481	...	0,6894	5,6876	3,7868	3,9236
19	1,3125	1,1717	1,4769	...	3,1517	5,6178	3,6817	4,1692
20	2,2342	1,9985	2,0104	...	2,8159	4,4907	2,5742	3,2223
21	2,6826	2,9865	3,0521	...	0,0000	5,7469	3,7937	4,0678
22	6,1958	5,4529	6,3162	...	5,7469	0,0000	2,1872	2,1416
23	4,0859	3,5058	4,4825	...	3,7937	2,1872	0,0000	0,8249
24	4,4067	3,7801	5,0634	...	4,0678	2,1416	0,8249	0,0000

Lampiran 6. Kurva banyaknya k terbentuk berdasarkan nilai rata-rata *silhouette index*



Lampiran 7. Hasil klaster dengan metode *K-Medoids* pada data yang distandarisasi dengan $k = 2$

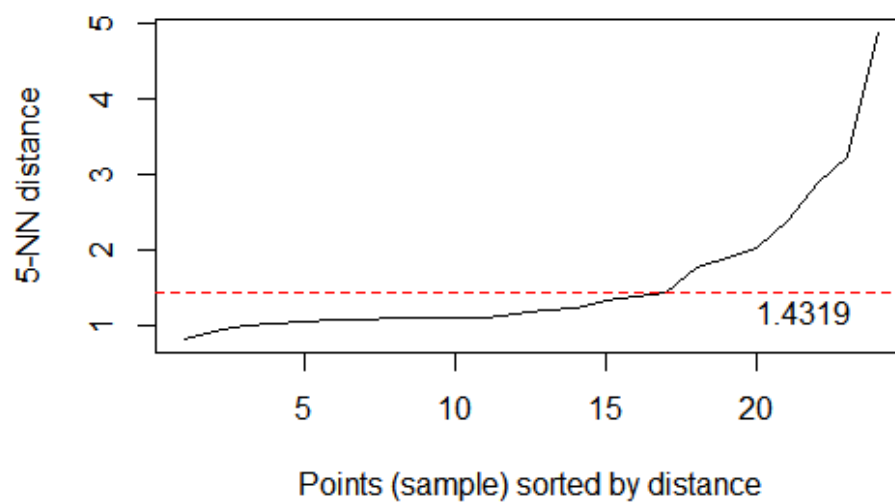
No	Kabupaten/Kota	o_1	o_2	Jarak Terdekat	Klaster
1	Selayar	1,1562	4,4067	1,1562	1
2	Bulukumba	0,6173	3,7801	0,6173	1
3	Bantaeng	1,8977	5,0634	1,8977	1
4	Jeneponto	2,3326	5,8702	2,3326	1
5	Takalar	1,3451	4,8334	1,3451	1
6	Gowa	1,1951	3,3574	1,1951	1
7	Sinjai	1,1454	4,3708	1,1454	1
8	Maros	0,0000	3,6327	0,0000	1
9	Pangkajene Kepulauan	1,2671	4,3640	1,2671	1
10	Barru	0,5476	3,1916	0,5476	1
11	Bone	1,5085	4,8349	1,5085	1
12	Soppeng	0,8389	3,9950	0,8389	1
13	Wajo	1,3343	4,3630	1,3343	1
14	Sidenreng Rappang	0,7936	3,6300	0,7936	1
15	Pinrang	0,6005	3,4750	0,6005	1
16	Enrekang	1,3867	2,5777	1,3867	1
17	Luwu	0,9280	3,3066	0,9280	1
18	Tana Toraja	2,9726	3,9236	2,9726	1
19	Luwu Utara	0,8134	4,1692	0,8134	1
20	Luwu Timur	1,4319	3,2223	1,4319	1
21	Toraja Utara	2,6537	4,0678	2,6537	1
22	Kota Makassar	5,2465	2,1416	2,1416	2
23	Kota Pare-Pare	3,2476	0,8249	0,8249	2
24	Kota Palopo	3,6327	0,0000	0,0000	2
Jumlah jarak terdekat				29,7328	

Lampiran 8. Jarak tetangga terdekat dengan $k = 5$ pada data KU

No	Kabupaten/Kota	d
1	Selayar	0,8763
2	Bulukumba	0,6401
3	Bantaeng	0,7802
4	Jeneponto	1,6793
5	Takalar	0,8074
6	Gowa	1,1192
7	Sinjai	0,5755
8	Maros	0,5817
9	Pangkajene Kepulauan	0,9523
10	Barru	0,6401
11	Bone	0,9960
12	Soppeng	0,8371
13	Wajo	1,0376
14	Sidenreng Rappang	0,6185
15	Pinrang	0,5589
16	Enrekang	1,1544
17	Luwu	0,8825
18	Tana Toraja	2,3731
19	Luwu Utara	0,6361
20	Luwu Timur	0,8917
21	Toraja Utara	1,9920
22	Kota Makasar	4,8495
23	Kota Pare-Pare	2,8212
24	Kota Palopo	3,1345

Lampiran 9. Jarak tetangga terdekat dan Plot KNN dengan $k = 5$ pada data distandarisasi

No	Kabupaten/Kota	d
1	Selayar	1,1562
2	Bulukumba	1,1018
3	Bantaeng	1,8977
4	Jeneponto	1,7637
5	Takalar	1,1065
6	Gowa	1,1951
7	Sinjai	1,0833
8	Maros	0,8134
9	Pangkajene Kepulauan	1,1072
10	Barru	1,0178
11	Bone	1,2326
12	Soppeng	1,0846
13	Wajo	1,3412
14	Sidenreng Rappang	1,0962
15	Pinrang	1,0485
16	Enrekang	1,3867
17	Luwu	0,9280
18	Tana Toraja	2,3808
19	Luwu Utara	0,9997
20	Luwu Timur	1,4319
21	Toraja Utara	2,0339
22	Kota Makasar	4,8752
23	Kota Pare-Pare	2,8873
24	Kota Palopo	3,2223



Lampiran 10. Objek p^* beserta anggotanya pada data KU dengan $Epsilon = 1,1544$ dan $MinPoints = 3$

p^*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0	1	1	0	1	0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0
2	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	0	0
3	1	1	0	0	1	0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0
4	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	1	1	0	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0
6	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	1	1	0	0	0	0	0	0	0
7	1	1	1	0	1	0	0	1	1	0	1	1	1	1	1	0	0	0	1	0	0	0	0	0
8	1	1	1	0	0	1	1	0	0	1	0	1	0	1	1	0	1	0	1	1	0	0	0	0
9	0	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
10	0	1	0	0	0	1	0	1	0	0	0	1	0	1	1	1	1	0	1	1	0	0	0	0
11	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
12	1	1	1	0	0	1	1	1	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	0
13	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
14	0	1	0	0	0	1	1	1	0	1	0	1	0	0	1	0	1	0	1	1	0	0	0	0
15	0	1	0	0	0	1	1	1	0	1	0	1	0	1	0	0	1	0	1	1	0	0	0	0
16	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
17	0	0	0	0	0	1	0	1	0	1	0	1	0	1	1	1	0	0	0	1	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
19	1	1	1	0	1	0	1	1	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0
20	0	1	0	0	0	0	0	1	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Σ	8	14	8	2	9	7	12	12	5	10	7	10	5	10	10	4	8	1	12	7	1	0	1	1

Lampiran 11. Nilai *silhouette* masing-masing kabupaten/kota pada data KU

Kabupaten/Kota	<i>K-Medoids</i>		DBSCAN	
	klaster	$s(i)$	klaster	$s(i)$
Selayar	1	0,7315	1	0,7134
Bulukumba	1	0,7268	1	0,7480
Bantaeng	1	0,7388	1	0,7352
Jeneponto	1	0,6147	1	0,5959
Takalar	1	0,6942	1	0,7068
Gowa	1	0,6039	1	0,4942
Sinjai	1	0,7387	1	0,7481
Maros	1	0,7184	1	0,7326
Pangkajene Kepulauan	1	0,6511	1	0,6848
Barru	1	0,6552	1	0,6650
Bone	1	0,7124	1	0,7070
Soppeng	1	0,7062	1	0,6593
Wajo	1	0,6377	1	0,6757
Sidenreng Rappang	1	0,6799	1	0,6983
Pinrang	1	0,6697	1	0,6866
Enrekang	1	0,3857	1	0,3067
Luwu	1	0,6234	1	0,5499
Tana Toraja	1	0,3256	0	-0,0876
Luwu Utara	1	0,7164	1	0,7435
Luwu Timur	1	0,4959	1	0,5226
Toraja Utara	1	0,4032	0	-0,1932
Kota Makasar	2	0,6446	0	0,3089
Kota Pare-Pare	2	0,6593	0	0,3020
Kota Palopo	2	0,7142	0	0,3563

Lampiran 12. Nilai *silhouette* masing-masing kabupaten/kota pada data distandarisasi

Kabupaten/Kota	<i>K-Medoids</i>		DBSCAN	
	klaster	$s(i)$	klaster	$s(i)$
Selayar	1	0,6644	1	0,6078
Bulukumba	1	0,6490	1	0,6463
Bantaeng	1	0,5717	0	-0,5249
Jeneponto	1	0,5972	1	0,5324
Takalar	1	0,6582	1	0,6313
Gowa	1	0,5600	1	0,4387
Sinjai	1	0,6578	1	0,6386
Maros	1	0,6689	1	0,6544
Pangkajene Kepulauan	1	0,6077	1	0,6134
Barru	1	0,5873	1	0,5810
Bone	1	0,6477	1	0,6083
Soppeng	1	0,6715	1	0,5875
Wajo	1	0,5784	1	0,5710
Sidenreng Rappang	1	0,5952	1	0,5479
Pinrang	1	0,6034	1	0,5725
Enrekang	1	0,3575	1	0,2888
Luwu	1	0,5881	1	0,4934
Tana Toraja	1	0,3117	0	-0,1050
Luwu Utara	1	0,6522	1	0,6251
Luwu Timur	1	0,4010	1	0,3649
Toraja Utara	1	0,3896	0	-0,1733
Kota Makasar	2	0,6148	0	0,2070
Kota Pare-Pare	2	0,5881	0	0,1614
Kota Palopo	2	0,6311	0	0,1920