

The World Happiness Report dataset



Introduction:

One of the most common life objectives of humans all over the world is happiness. The study of happiness started to be done from a social science perspective since the 21st century, people for example who believe they have enough social support report being happier than those who don't, and they also experience less psychological issues, such as eating disorders and mental disease. Various analyses of happiness throughout the years have connected it to several factors, such as:

1. GDP per capita.
2. Social support.
3. Healthy life expectancy.
4. Freedom to make life choices.
5. Generosity.
6. Perception of corruption. [1]

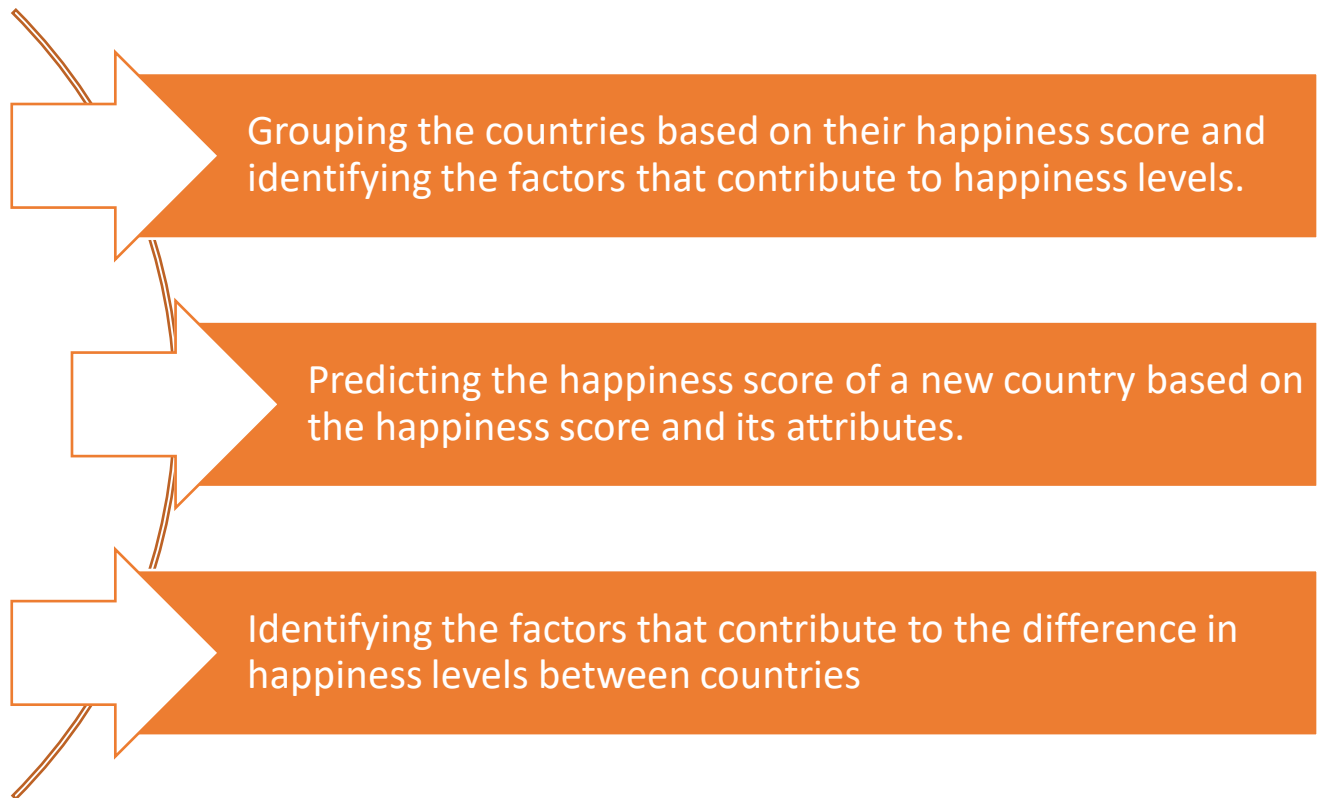
The dataset that I have chosen is the "World Happiness Report dataset", which can be found on the website called "Kaggle" at the following URL:

(<https://www.kaggle.com/datasets/unsdsn/world-happiness?select=2017.csv>).

Collaborated by Sustainable Development Solutions Network (Owner), and last updated 3 years ago. The dataset includes data on the happiness levels of different countries around the world, in addition to various factors that contributes to it.

Categorical Data	Characters	Description
	Country or Region	156 countries and region's names all over the world.
Numerical Data	Overall Rank	Rank of the country based on the Happiness Score.
	Score	A metric measured in 2017 by asking the sampled people the question: "How would you rate your happiness on a scale of 0 to 10 where 10 is the happiest". [2]
	GDP per capita	The extent to which GDP (Gross Domestic Product) contributes to the calculation of the Happiness Score.
	Social support	Determines if family or friends would support the individual in case of facing problems.
	Healthy life expectancy	Data from the World Health Organisation (WHO) are used to calculate the healthy life expectancy at birth.
	Freedom to make life choices	The level of satisfaction of a person with having the freedom to select what to do in life.
	Generosity	The residual after regressing the national mean of answers to the question "Have you donated money to a charity in the last month?" .
	Perceptions of corruption	an index that ranks nations based on their perceived levels of corruption in the public sector.

Hypothesis:

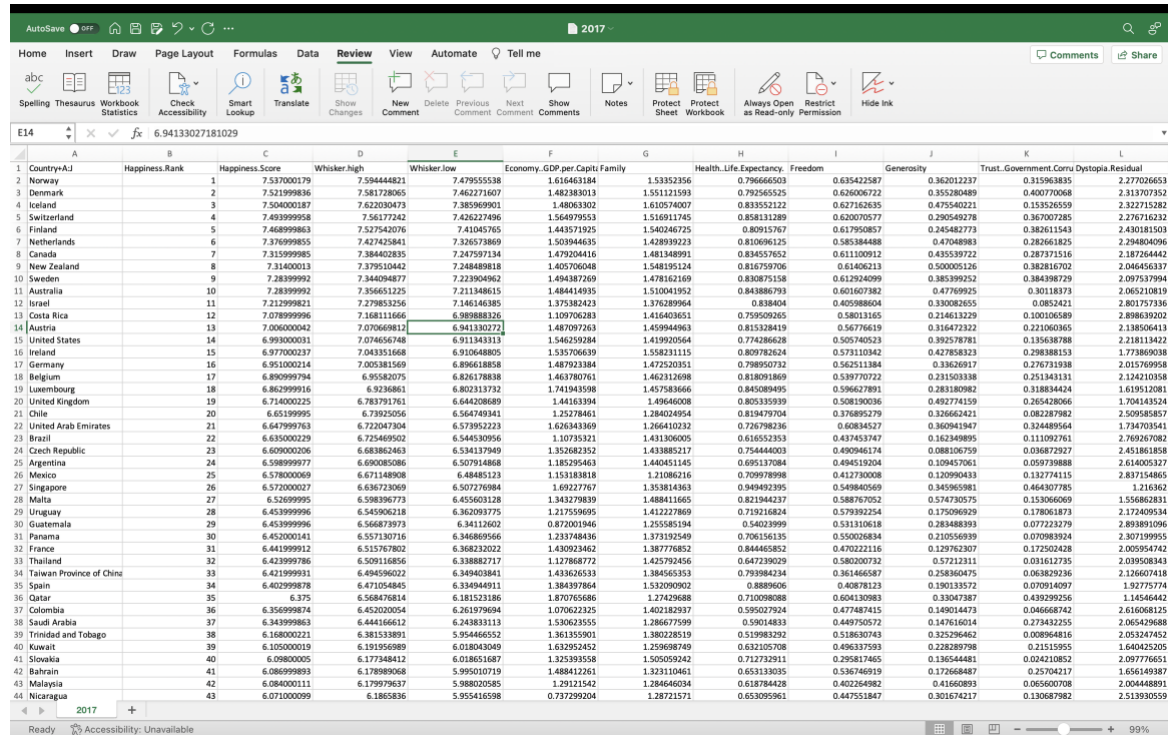


Preprocessing:

The preprocessing steps that I have applied for making the data fittingly utilisable for my purpose are as follows:

1. Removed columns that are not applicable for my analysis: I removed the columns on Whisker.high, Whisker.low, and Dystopia.Residual, as I will not be using these in my analysis.

Before:



Country	Happiness	Whisker.high	Whisker.low	Economy.GDP per Capiti	Family	Health.Life Expectancy	Freedom	Generosity	Trust.Government Corruption	Dystopia	Residual
Norway	1	7.537000179	7.59444821	7.47595538	1.61646184	1.53352356	0.79666503	0.63542287	0.362012237	0.315963835	2.27702653
Denmark	2	7.521998836	7.581728065	7.462271607	1.482383013	1.55121593	0.79256525	0.62600672	0.355280489	0.400770068	2.31370752
Iceland	3	7.504000187	7.622030473	7.385969901	1.48063302	1.610574007	0.833552122	0.627162635	0.47540221	0.153526535	2.32715282
Switzerland	4	7.489999958	7.5617242	7.426217496	1.564979553	1.516911745	0.856131289	0.620070577	0.290549278	0.367007285	2.276716322
Finland	5	7.468999863	7.527454076	7.410453695	1.448571925	1.540246725	0.80915767	0.617950857	0.245482773	0.382611543	2.430181503
Netherlands	6	7.376999855	7.472425841	7.26573869	1.50994635	1.428939223	0.810696125	0.585384488	0.47048983	0.282661825	2.294804096
Canada	7	7.315999985	7.38402835	7.247597134	1.473204416	1.481348991	0.834557652	0.61100912	0.435539722	0.287371516	2.187264442
New Zealand	8	7.31400013	7.379510442	7.248488818	1.405700648	1.548195124	0.816759706	0.614060213	0.500055126	0.38281072	2.046456337
Sweden	9	7.28399992	7.344094877	7.22304962	1.494387269	1.478162169	0.83087158	0.612924099	0.385399252	0.384398729	2.097573794
Australia	10	7.28399992	7.356651225	7.211348615	1.484414935	1.510041952	0.843886793	0.601607382	0.47769925	0.30118373	2.065210819
Israel	11	7.212999821	7.279853256	7.146146385	1.375382423	1.376289964	0.838404	0.405988604	0.330082555	0.0852421	2.80157336
Costa Rica	12	7.078999996	7.168111666	6.989888326	1.109706283	1.416403651	0.795092625	0.58031165	0.214613229	0.100106589	2.898639202
Austria	13	7.06000042	7.070600812	6.941330272	1.487097263	1.459949693	0.815328419	0.56776619	0.316473322	0.22106065	2.138504413
United States	14	6.99300031	7.074656748	6.911343313	1.546250639	1.419920564	0.774286628	0.505740523	0.392578781	0.135638788	2.218113422
Ireland	15	6.977000237	7.043531668	6.910648805	1.537056284	1.558231115	0.809782624	0.573110342	0.427858323	0.298388153	1.773869038
Germany	16	6.951000214	7.005381569	6.896618858	1.487923384	1.472520351	0.798950732	0.56251384	0.33626917	0.276731938	2.015769958
Belgium	17	6.958999794	6.9582075	6.828979786	1.463780761	1.462312698	0.818091869	0.597797722	0.231501338	0.251341331	2.124210318
Luxembourg	18	6.862999816	6.92364661	6.802311732	1.741343598	1.457783666	0.846084965	0.596477981	0.283180982	0.131884424	6.19512081
United Kingdom	19	6.714000225	6.783791761	6.644206869	1.44163394	1.49646008	0.805335939	0.508190036	0.492774159	0.265428066	1.704143524
Chile	20	6.65199995	6.73925056	6.564749341	1.23278461	1.284024954	0.813479704	0.376895279	0.326662421	0.08287982	2.509585857
United Arab Emirates	21	6.647999763	6.722047304	6.57395223	1.626341309	1.26410232	0.726798236	0.6084527	0.360941947	0.324894564	1.734703541
Brazil	22	6.630000229	6.702463056	6.54303956	1.10739321	1.431306005	0.616552353	0.437453147	0.162348985	0.111092761	2.76976788
Czech Republic	23	6.609000206	6.68382463	6.534137949	1.352682352	1.433885217	0.754444003	0.49046174	0.08810759	0.036872927	2.451861858
Argentina	24	6.598999977	6.690085086	6.507914868	1.185295463	1.440451145	0.695137084	0.494515204	0.10945306	0.059739888	2.614005217
Mexico	25	6.578000069	6.671148908	6.44848123	1.153183818	1.21086216	0.709978998	0.412730008	0.120993433	0.13277415	2.837514665
Singapore	26	6.572000027	6.657273069	6.507270984	1.46327767	1.379192549	0.796156135	0.550286629	0.210556699	0.07082636	2.307199955
Malta	27	6.52699995	6.59836773	6.455603128	1.343279839	1.488411665	0.821944237	0.588767052	0.574730575	0.153066069	1.556862831
Uruguay	28	6.453999996	6.545906218	6.362039775	1.217559695	1.41227869	0.719216824	0.579392254	0.175096929	0.178061873	2.174205934
Guatemala	29	6.453999996	6.566873973	6.34111602	0.872003196	1.25585194	0.54023999	0.531130618	0.283488393	0.077232129	2.893891096
Panama	30	6.452000141	6.557310716	6.36232002	1.371924546	1.276156135	0.796156135	0.550286629	0.210556699	0.07082636	2.307199955
France	31	6.441999912	6.515767802	6.368232002	1.430923462	1.387776852	0.844658582	0.470223116	0.129762307	0.127502428	2.005954742
Thailand	32	6.423999786	6.509116856	6.338887712	1.127868772	1.425792456	0.647239029	0.580200732	0.57212311	0.03161735	2.03598343
Taiwan Province of China	33	6.421999931	6.495960022	6.349403841	1.432653533	1.38465353	0.793984234	0.361466587	0.258360475	0.063829236	2.126607418
Spain	34	6.402999878	6.471054845	6.338404911	1.38493786	1.532806902	0.80890606	0.40878123	0.190133572	0.130775774	2.32775774
Qatar	35	6.375	6.568478514	6.181523186	1.076765814	1.274205688	0.710708088	0.604135081	0.330473887	0.439292925	1.45464442
Colombia	36	6.356999874	6.45200054	6.261979694	1.07062325	1.402182937	0.595027924	0.477487415	0.14901473	0.046668742	2.610686125
Saudi Arabia	37	6.343999863	6.444166612	6.243833113	1.530623555	1.286677599	0.59014833	0.449750572	0.147616014	0.27342255	2.065429588
Trinidad and Tobago	38	6.188000221	6.38153891	5.95466552	1.361355901	1.380278519	0.519983292	0.518630743	0.325296462	0.008964816	2.05247462
Kuwait	39	6.150500289	6.10500289	6.018043049	1.632952452	1.25698769	0.632105708	0.496337593	0.228288798	0.21151955	1.64042205
Slovakia	40	6.09800005	6.17748412	6.018651687	1.325393558	1.505059242	0.712732911	0.295817465	0.136544481	0.024210852	2.09776651
Bahrain	41	6.086999893	6.178989068	5.995010719	1.48841261	1.323110461	0.653133035	0.536746919	0.172668487	0.25704217	1.656149387
Malaysia	42	6.084000111	6.179979637	5.988020585	1.29121542	1.284646034	0.618784428	0.402264982	0.41660893	0.065607008	2.00448891
Nicaragua	43	6.071000099	6.1865836	5.954145598	0.737299204	1.28721571	0.653099961	0.47551847	0.301674217	0.130687982	2.513930559

After:

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2. Renamed the columns for better legibility: I renamed the columns as some of them are difficult to understand and not very clear. This way I made them more descriptive and easier to read.

Before:

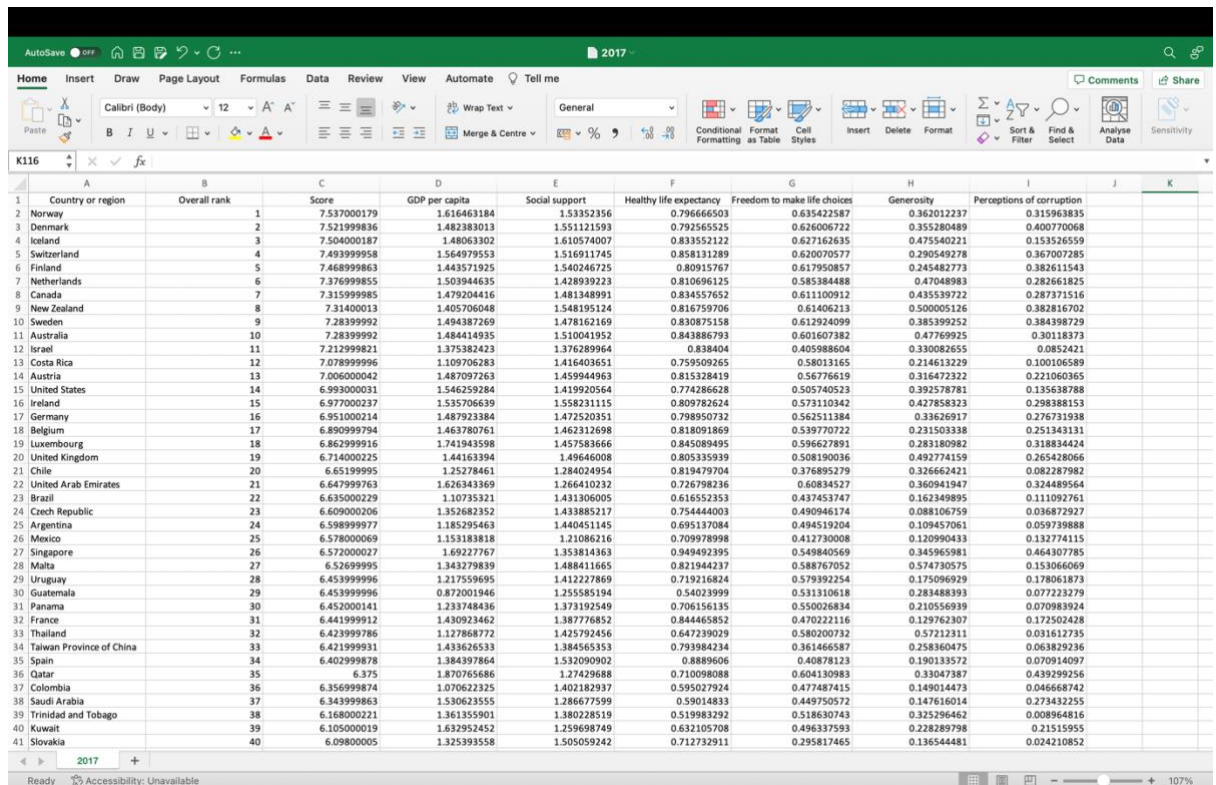
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Country/A	Happiness Rank	Happiness Score	Economy	GDP per Capita	Family	Health	Life Expectancy	Freedom	Generosity	Trust	Government Corruption			
1	Norway	1	7.537000179	1.616463184	1.5352356	0.79666503	0.635422587	0.362012237	0.315963835						
2	Denmark	2	7.521999836	1.482383013	1.551121593	0.792565525	0.626006722	0.355280489	0.400770068						
3	Iceland	3	7.504000187	1.48063302	1.610574007	0.833552122	0.627162635	0.475540221	0.153526559						
4	Switzerland	4	7.493999958	1.564979553	1.516911745	0.858131289	0.620070577	0.290549278	0.367007285						
5	Finland	5	7.468999863	1.443572325	1.540246725	0.80915767	0.617950857	0.245482773	0.38611543						
6	Netherlands	6	7.376999855	1.503944635	1.43939223	0.810696125	0.585384488	0.47048893	0.28361625						
7	Canada	7	7.315999885	1.479204416	1.481348991	0.834557652	0.611100912	0.435539722	0.28737516						
8	New Zealand	8	7.31400013	1.405706048	1.548195124	0.816759706	0.61406213	0.50005126	0.382816702						
9	Sweden	9	7.28399992	1.494387269	1.478162169	0.830875158	0.612924099	0.385399252	0.384398729						
10	Australia	10	7.28399992	1.484414935	1.510041952	0.843886793	0.601607382	0.47769925	0.30118373						
11	Israel	11	7.212999821	1.375382423	1.376289964	0.838404	0.405988604	0.33082655	0.0852421						
12	Costa Rica	12	7.078999996	1.109706283	1.416403651	0.79590265	0.58013165	0.214613229	0.100106589						
13	Austria	13	7.006000042	1.487097263	1.459944963	0.81528419	0.56776619	0.316472322	0.221060365						
14	United States	14	6.993000031	1.546259284	1.419920564	0.77486628	0.505740523	0.392578781	0.135638788						
15	Ireland	15	6.977000237	1.535706639	1.55823115	0.809782624	0.573110342	0.427858323	0.296388153						
16	Germany	16	6.951000214	1.487923384	1.472520351	0.798950732	0.562511384	0.33626917	0.276731938						
17	Belgium	17	6.890999794	1.463780761	1.462312698	0.818091869	0.539770722	0.231503338	0.251343131						
18	Luxembourg	18	6.862999916	1.741943598	1.457583666	0.845089495	0.596627891	0.283180982	0.318834424						
19	United Kingdom	19	6.714000225	1.44163394	1.49646008	0.805335939	0.508190036	0.492774159	0.265428066						
20	Chile	20	6.65199995	1.25278461	1.284024954	0.819479704	0.376895279	0.326662421	0.082287982						
21	United Arab Emirates	21	6.647999763	1.626343369	1.266410232	0.726798236	0.6084527	0.360941947	0.324856564						
22	Brazil	22	6.635000229	1.10735321	1.431306005	0.616552533	0.437453747	0.162349895	0.111092761						
23	Czech Republic	23	6.609000206	1.352682352	1.433885217	0.754444003	0.49046174	0.088106759	0.038872927						
24	Argentina	24	6.58999977	1.185295463	1.440451145	0.695137084	0.494519204	0.109457061	0.059739868						
25	Mexico	25	6.578000069	1.153183818	1.21086216	0.709978998	0.412730008	0.120990433	0.13277415						
26	Singapore	26	6.572000027	1.69227767	1.35814363	0.949492395	0.549840569	0.345965981	0.464307785						
27	Malta	27	6.52699995	1.343279839	1.488411665	0.821944237	0.588767052	0.574730575	0.153066069						
28	Uruguay	28	6.453999996	1.217559695	1.412227869	0.719216824	0.579392254	0.175096929	0.178061873						
29	Guatemala	29	6.453999996	0.872001946	1.255585194	0.54023999	0.531310618	0.283488393	0.07722179						
30	Panama	30	6.452000141	1.233748436	1.373192549	0.706156135	0.55026884	0.210556939	0.070983924						
31	France	31	6.441999912	1.430923462	1.387776852	0.84465852	0.470222116	0.129762307	0.17502504						
32	Thailand	32	6.423999786	1.127868772	1.425792456	0.647239029	0.580200732	0.57212311	0.031612735						
33	Taiwan Province of China	33	6.421999931	1.433626533	1.384565353	0.793884234	0.361466587	0.258360475	0.063829236						
34	Spain	34	6.402999878	1.384397864	1.532099092	0.8889606	0.40878123	0.190133572	0.070914097						
35	Qatar	35	6.375	1.870765686	1.27429688	0.710098088	0.604130983	0.33047387	0.439299256						
36	Colombia	36	6.356999874	1.070622325	1.402182937	0.595027924	0.477487415	0.149014473	0.04668742						
37	Saudi Arabia	37	6.343999863	1.530623555	1.286677599	0.59014833	0.449750572	0.147616014	0.273432255						
38	Trinidad and Tobago	38	6.186000221	1.361355901	1.380228519	0.519882392	0.518630748	0.32536462	0.008646416						
39	Kuwait	39	6.105000019	1.632952452	1.259698749	0.632105708	0.496337593	0.228287998	0.21515955						
40	Slovakia	40	6.098000005	1.325393558	1.505059242	0.712732911	0.295817465	0.136544481	0.02410852						
41	Bahrain	41	6.086999893	1.488412261	1.323110461	0.653133035	0.536746919	0.172668487	0.25704217						
42	Malaysia	42	6.084000111	1.291221542	1.284640346	0.402264082	0.41660893	0.065600708	0.065600708						
43	Nicaragua	43	6.071000099	0.737299204	1.28721571	0.653095961	0.447551847	0.301674217	0.130687982						

After:

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3. Change the values format and handle the missing values: I checked for any missing values and made of the values only 3 number after the dot.

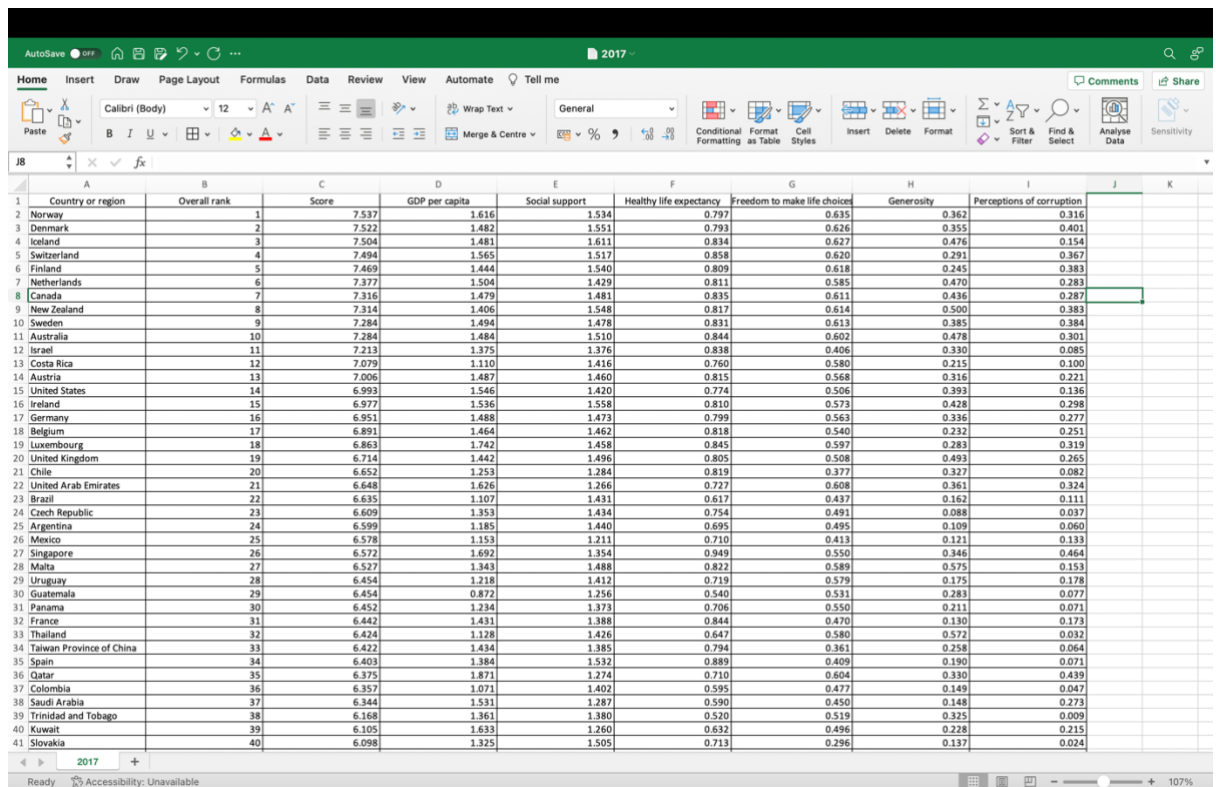
Before:



The screenshot shows an Excel spreadsheet with a table of country scores. The table has 11 columns: Country or region, Overall rank, Score, GDP per capita, Social support, Healthy life expectancy, Freedom to make life choices, Generosity, and Perceptions of corruption. The data is sorted by Overall rank. The values are displayed with varying decimal places, some with trailing zeros.

	A	B	C	D	E	F	G	H	I	J	K
	Country or region	Overall rank	Score	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices	Generosity	Perceptions of corruption		
1	Norway	1	7.537000179	1.616463184	1.53352356	0.79646503	0.635422587	0.362012337	0.315963835		
2	Denmark	2	7.521999836	1.482383013	1.551121593	0.795655535	0.626006722	0.355280489	0.400770068		
3	Iceland	3	7.504000187	1.48063302	1.610574007	0.833552122	0.627162635	0.475540221	0.153526559		
4	Switzerland	4	7.49399958	1.564979553	1.516911745	0.858131289	0.620070577	0.290549278	0.367007285		
5	Finland	5	7.468999863	1.443571925	1.540246725	0.80915767	0.617950857	0.245482773	0.382611543		
6	Netherlands	6	7.376999855	1.503944635	1.428939223	0.810696125	0.585384488	0.47048983	0.28661825		
7	Canada	7	7.315999985	1.479204416	1.481348991	0.834557652	0.611100912	0.435539722	0.287371516		
8	New Zealand	8	7.31400013	1.405706048	1.548195124	0.816759706	0.61406213	0.50005126	0.382816702		
9	Sweden	9	7.28399992	1.494387269	1.478162169	0.830875158	0.612924099	0.385399252	0.384398729		
10	Australia	10	7.28399992	1.484414935	1.510041952	0.843886793	0.601607382	0.47769925	0.30118373		
11	Israel	11	7.212999821	1.375382423	1.376289964	0.838404	0.405988604	0.330082655	0.0852421		
12	Costa Rica	12	7.078999996	1.109706283	1.164043651	0.759509265	0.58013165	0.214613229	0.100106589		
13	Austria	13	7.006000042	1.487097263	1.459944963	0.815328419	0.56778619	0.316472322	0.221006365		
14	United States	14	6.993000031	1.546259284	1.419920564	0.774286628	0.505740523	0.392578781	0.135638788		
15	Ireland	15	6.977000237	1.535706639	1.55823115	0.809782624	0.573110342	0.42785823	0.298388153		
16	Germany	16	6.951000214	1.487923384	1.472520351	0.798950732	0.56251384	0.33626917	0.276731938		
17	Belgium	17	6.890999794	1.463780761	1.462312698	0.818091869	0.539770722	0.231503338	0.251343131		
18	Luxembourg	18	6.862999916	1.741943598	1.457583666	0.845089495	0.596627782	0.283180982	0.18834424		
19	United Kingdom	19	6.714000225	1.44163394	1.49646008	0.805335939	0.508190036	0.492774159	0.265428066		
20	Chile	20	6.65199995	1.25278461	1.284024954	0.819479704	0.376895279	0.326662421	0.082287982		
21	United Arab Emirates	21	6.647999763	1.626343369	1.266410232	0.726798236	0.60834527	0.360941947	0.234489564		
22	Brazil	22	6.635000229	1.10735321	1.431306005	0.616552533	0.437453747	0.162349895	0.111092761		
23	Czech Republic	23	6.609000206	1.352682352	1.433885217	0.754444003	0.490946174	0.088106759	0.036872927		
24	Argentina	24	6.598999977	1.185295463	1.440451145	0.695137084	0.494519204	0.109457061	0.059739888		
25	Mexico	25	6.578000069	1.153183818	1.21086216	0.709978998	0.412730008	0.120990433	0.132774115		
26	Singapore	26	6.572000027	1.69227767	1.353814363	0.949492395	0.549840569	0.345965981	0.464307785		
27	Malta	27	6.526999995	1.343279839	1.488411665	0.821944237	0.588767052	0.574740575	0.153046609		
28	Uruguay	28	6.453999996	1.217559695	1.41227869	0.719216824	0.579392254	0.175096939	0.178061873		
29	Guatemala	29	6.453999996	0.872001946	1.255585194	0.54023999	0.531310618	0.28488393	0.077232379		
30	Panama	30	6.452000141	1.233748436	1.373192549	0.706156135	0.550026834	0.210556939	0.070983924		
31	France	31	6.441999912	1.430923462	1.387776852	0.844465852	0.470222116	0.129762307	0.172502428		
32	Thailand	32	6.423999786	1.127868772	1.425792456	0.647239029	0.580200732	0.57212311	0.031612735		
33	Taiwan Province of China	33	6.421999931	1.433626533	1.384565353	0.793984234	0.361466587	0.258360475	0.063829236		
34	Spain	34	6.402999878	1.384397864	1.532090902	0.8889606	0.400878123	0.190133572	0.070914097		
35	Qatar	35	6.375	1.870765686	1.27429688	0.710098088	0.604130983	0.33047387	0.439299256		
36	Colombia	36	6.356999874	1.070622325	1.402182937	0.595027924	0.477487415	0.149014473	0.046668742		
37	Saudi Arabia	37	6.343999863	1.530623555	1.286677599	0.59014833	0.449750572	0.147616014	0.273432255		
38	Trinidad and Tobago	38	6.186000221	1.361355901	1.380228519	0.519983292	0.518630743	0.325296462	0.008964816		
39	Kuwait	39	6.105000019	1.632952452	1.259698749	0.632105708	0.496337593	0.228289798	0.21515955		
40	Slovakia	40	6.098000005	1.325393558	1.505059242	0.712732911	0.295817465	0.136544481	0.024210852		

After:

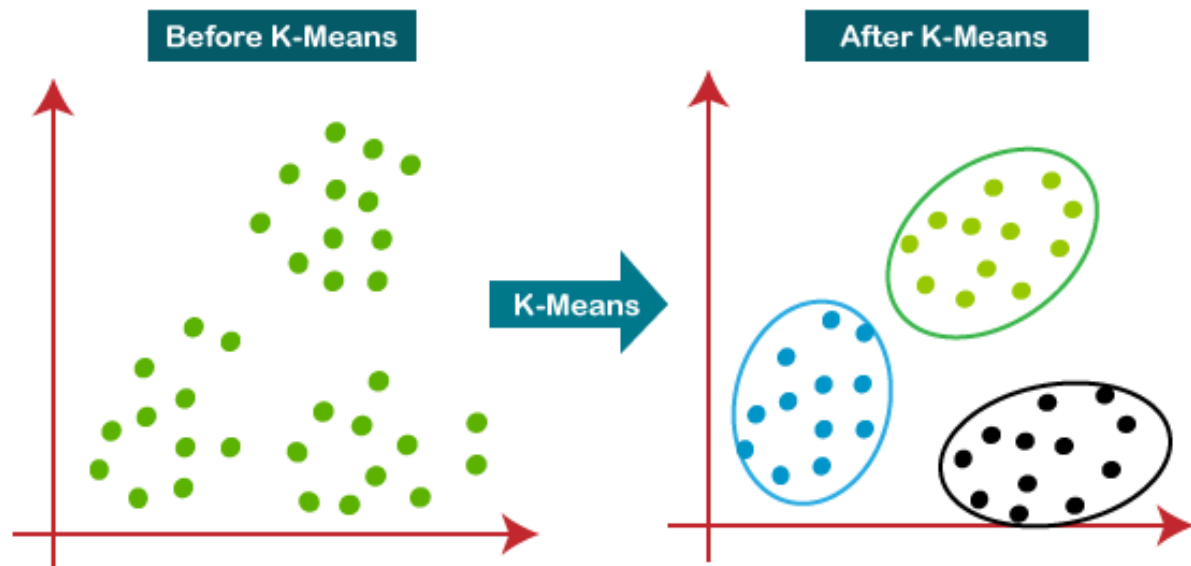


The screenshot shows the same Excel spreadsheet as before, but the values are now formatted to three decimal places. The table structure and data are identical, but the display format has been changed.

	A	B	C	D	E	F	G	H	I	J	K
	Country or region	Overall rank	Score	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices	Generosity	Perceptions of corruption		
1	Norway	1	7.537	1.616	1.534	0.797	0.635	0.362	0.316		
2	Denmark	2	7.522	1.482	1.551	0.793	0.626	0.355	0.401		
3	Iceland	3	7.504	1.481	1.611	0.834	0.627	0.476	0.154		
4	Switzerland	4	7.494	1.565	1.517	0.858	0.620	0.291	0.367		
5	Finland	5	7.469	1.444	1.540	0.809	0.618	0.245	0.383		
6	Netherlands	6	7.377	1.504	1.429	0.811	0.585	0.470	0.283		
7	Canada	7	7.316	1.479	1.481	0.835	0.611	0.436	0.287		
8	New Zealand	8	7.314	1.406	1.548	0.817	0.614	0.500	0.383		
9	Sweden	9	7.284	1.494	1.478	0.831	0.613	0.385	0.384		
10	Australia	10	7.284	1.484	1.510	0.844	0.602	0.478	0.301		
11	Israel	11	7.213	1.375	1.376	0.838	0.406	0.330	0.085		
12	Costa Rica	12	7.079	1.110	1.166	0.760	0.580	0.215	0.100		
13	Austria	13	7.006	1.487	1.460	0.815	0.568	0.316	0.221		
14	United States	14	6.993	1.546	1.420	0.774	0.506	0.393	0.136		
15	Ireland	15	6.977	1.536	1.558	0.810	0.573	0.428	0.298		
16	Germany	16	6.951	1.488	1.473	0.799	0.563	0.336	0.277		
17	Belgium	17	6.891	1.464	1.462	0.818	0.540	0.232	0.251		
18	Luxembourg	18	6.863	1.742	1.458	0.845	0.597	0.283	0.19		
19	United Kingdom	19	6.714	1.442	1.496	0.805	0.508	0.493	0.265		
20	Chile	20	6.652	1.253	1.284	0.819	0.377	0.327	0.082		
21	United Arab Emirates	21	6.648	1.626	1.266	0.727	0.608	0.361	0.324		
22	Brazil	22	6.635	1.107	1.431	0.617	0.437	0.162	0.111		
23	Czech Republic	23	6.609	1.353	1.434	0.754	0.491	0.088	0.037		
24	Argentina	24	6.599	1.185	1.440	0.695	0.495	0.109	0.060		
25	Mexico	25	6.578	1.153	1.211	0.710	0.413	0.121	0.133		
26	Singapore	26	6.572	1.692	1.354	0.949	0.550	0.346	0.464		
27	Malta	27	6.527	1.343	1.488	0.822	0.589	0.575	0.153		
28	Uruguay	28	6.454	1.218	1.412	0.719	0.579	0.175	0.178		
29	Guatemala	29	6.454	0.872	1.256	0.540	0.531	0.283	0.077		
30	Panama	30	6.452	1.234	1.373	0.706	0.550	0.211	0.071		
31	France	31	6.442	1.431	1.388	0.844	0.470	0.130	0.173		
32	Thailand	32	6.424	1.128	1.426	0.647	0.580	0.572	0.032		
33	Taiwan Province of China	33	6.422	1.434	1.385	0.794	0.361	0.258	0.064		
34	Spain	34	6.403	1.384	1.532	0.889	0.409	0.190	0.071		
35	Qatar	35	6.375	1.871	1.274	0.710	0.604	0.330	0.439		
36	Colombia	36	6.357	1.071	1.402	0.595	0.477	0.149	0.047		
37	Saudi Arabia	37	6.344	1.531	1.287	0.590	0.450	0.148	0.273		
38	Trinidad and Tobago	38	6.168	1.361	1.380	0.520	0.519	0.325	0.029		
39	Kuwait	39	6.105	1.633	1.260	0.632	0.496	0.228	0.215		
40	Slovakia	40	6.098	1.325	1.505	0.713	0.296	0.137	0.024		

Proposed solutions:

As a solution for these problems, I picked a technique called “K-Means Clustering”. Clustering is an example of unsupervised learning and a method of grouping a set of objects in a way that ensures the objects that are like each other remain in the same group.



Hypothesis 1:

Grouping the countries based on their happiness score and identifying the factors that contribute to happiness levels.

Solution:

K-Means Clustering is a useful method for grouping countries with similar happiness scores. By analysing the characteristics of each group, we can identify the factors that contribute to happiness in different regions of the world. This information can be useful for the improvement of the well-being of the citizens. We can perform K-Means Clustering on the dataset using the happiness score as the target variable and other attributes such as GDP, social support, life expectancy, etc. as features.

Hypothesis 2:

Predicting the happiness score of a new country based on the happiness score and its features.

Solution:

K-Means Clustering can be used to predict the happiness score of a new country. We can first group the existing countries based on their happiness score and features, and then assign the new country to the most similar group. The average happiness score of that cluster can be used as a prediction for the happiness score of the new country. This method is useful when we have a limited amount of data for the new country and would want to predict its happiness score based on the similarities with existing countries.

Hypothesis 3:

Identifying the factors that contribute to the difference in happiness levels between countries.

Solution:

K-Means Clustering can be used to identify countries that have significantly different happiness scores and attributes than the rest of the dataset. By analysing the attributes of these countries, we can identify factors that contribute to happiness or its absence in these countries. This information can be useful for people that are considering moving or doing business in these countries, or for countries who want to improve the well-being of their citizens. We can use K-Means Clustering with happiness score as the target variable and other attributes as features to identify it.

References:

- [1] *Laccei* (no date). Available at: https://laccei.org/LACCEI2021-VirtualEdition/full_papers/FP303.pdf (Accessed: April 18, 2023).
- [2] Network, S.D.S. (2019) *World happiness report*, *Kaggle*. Available at: <https://www.kaggle.com/datasets/unsdsn/world-happiness/code?datasetId=894&sortBy=voteCount&select=2017.csv> (Accessed: April 18, 2023).