Pabna University of Science & Technology

Data Warehouse and Data Mining

Unsupervised Learning: Cereal with 'vitamin' and 'rating' Data Set.

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Description:
The data set here is about some cereals or morning breakfasts. The goal here is simply to cluster the breakfast items, find the correlation between them, and suggest preferable diets for people with particular cases **Attributes of the dataset:**

1. 1st column: Name of cereal
2. calories: calories per serving
3. protein: grams of protein
4. fat: grams of fat
5. sodium: milligrams of sodium
6. fiber: grams of dietary fiber

7. carbo: grams of complex carbohydrates
8. sugars: grams of sugars
9. potash: milligrams of potassium
10. vitamins: vitamins and minerals - 0, 25, or 100, indicating the typical percentage of FDA recommended
11. shelf: display shelf (1, 2, or 3, counting from the floor)
12. rating: a rating of the cereals (calculated by Consumer Reports)

Source of Dataset:

(With 'vitamin' and 'rating' columns): 77 x 11 here: http://www.cs.umd.edu/hcil/hce/examples/cereal/cereal-updated.txt
Dataset:

Relation: Cereal

No.	1: Cereals Nominal	2: calories Numeric	3: protein Numeric	4: fat Numeric	5: sodium Numeric	6: fiber Numeric	7: carbo Numeric	8: sugars Numeric	9: potass Numeric	10: vitamins Numeric	11: shelf Numeric	12: rating Numeric
1	100%_...	70.0	4.0	1.0	130.0	10.0	5.0	6.0	280.0	25.0	3.0	68.402...
2	100%_...	120.0	3.0	5.0	15.0	2.0	8.0	8.0	135.0	0.0	3.0	33.983...
3	All-Bran	70.0	4.0	1.0	260.0	9.0	7.0	5.0	320.0	25.0	3.0	59.425...
4	All-Bran...	50.0	4.0	0.0	140.0	14.0	8.0	0.0	330.0	25.0	3.0	93.704...
5	Almond...	110.0	2.0	2.0	200.0	1.0	14.0	8.0	99.0	25.0	3.0	34.384...
6	Apple_...	110.0	2.0	2.0	180.0	1.5	10.5	10.0	70.0	25.0	1.0	29.509...
7	Apple_...	110.0	2.0	0.0	125.0	1.0	11.0	14.0	30.0	25.0	2.0	33.174...
8	Basic_4	130.0	3.0	2.0	210.0	2.0	18.0	8.0	100.0	25.0	3.0	37.038...
9	Bran_C...	90.0	2.0	1.0	200.0	4.0	15.0	6.0	125.0	25.0	1.0	49.120...
10	Bran_Fl...	90.0	3.0	0.0	210.0	5.0	13.0	5.0	190.0	25.0	3.0	53.313...
11	Cap_n...	120.0	1.0	2.0	220.0	0.0	12.0	12.0	35.0	25.0	2.0	18.042...
12	Cheerios	110.0	6.0	2.0	290.0	2.0	17.0	1.0	105.0	25.0	1.0	50.764...
13	Cinna...	120.0	1.0	3.0	210.0	0.0	13.0	9.0	45.0	25.0	2.0	19.823...
14	Clusters	110.0	3.0	2.0	140.0	2.0	13.0	7.0	105.0	25.0	3.0	40.400...
15	Cocoa_...	110.0	1.0	1.0	180.0	0.0	12.0	13.0	55.0	25.0	2.0	22.736...
16	Corn_C...	110.0	2.0	0.0	280.0	0.0	22.0	3.0	25.0	25.0	1.0	41.445...
17	Corn_F...	100.0	2.0	0.0	290.0	1.0	21.0	2.0	35.0	25.0	1.0	45.863...
18	Corn_P...	110.0	1.0	0.0	90.0	1.0	13.0	12.0	20.0	25.0	2.0	35.782...
19	Count_...	110.0	1.0	1.0	180.0	0.0	12.0	13.0	65.0	25.0	2.0	22.396...
20	Crackli...	110.0	3.0	3.0	140.0	4.0	10.0	7.0	160.0	25.0	3.0	40.448...
21	Cream...	100.0	3.0	0.0	80.0	1.0	21.0	0.0	99.0	0.0	2.0	64.533...
22	Crispix	110.0	2.0	0.0	220.0	1.0	21.0	3.0	30.0	25.0	3.0	46.895...
23	Crispy_...	100.0	2.0	1.0	140.0	2.0	11.0	10.0	120.0	25.0	3.0	36.176...
24	Double...	100.0	2.0	0.0	190.0	1.0	18.0	5.0	80.0	25.0	3.0	44.330...
25	Froot_L...	110.0	2.0	1.0	125.0	1.0	11.0	13.0	30.0	25.0	2.0	32.207...
26	Frosted...	110.0	1.0	0.0	200.0	1.0	14.0	11.0	25.0	25.0	1.0	31.435...
27	Frosted...	100.0	3.0	0.0	0.0	3.0	14.0	7.0	100.0	25.0	2.0	58.345...
28	Fruit_&...	120.0	3.0	2.0	160.0	5.0	12.0	10.0	200.0	25.0	3.0	40.917...

		Calories	protein	fat	sodium	fiber	carbo	sugars	potash	vitamins	shelf	rating
29	Fruitful...	120.0	3.0	0.0	240.0	5.0	14.0	12.0	190.0	25.0	3.0	41.015...
30	Fruity_...	110.0	1.0	1.0	135.0	0.0	13.0	12.0	25.0	25.0	2.0	28.025...
31	Golden...	100.0	2.0	0.0	45.0	0.0	11.0	15.0	40.0	25.0	1.0	35.252...
32	Golden...	110.0	1.0	1.0	280.0	0.0	15.0	9.0	45.0	25.0	2.0	23.804...
33	Grape_...	100.0	3.0	1.0	140.0	3.0	15.0	5.0	85.0	25.0	3.0	52.076...
34	Grape-...	110.0	3.0	0.0	170.0	3.0	17.0	3.0	90.0	25.0	3.0	53.371...
35	Great_...	120.0	3.0	3.0	75.0	3.0	13.0	4.0	100.0	25.0	3.0	45.811...
36	Honey_...	120.0	1.0	2.0	220.0	1.0	12.0	11.0	45.0	25.0	2.0	21.871...
37	Honey_...	110.0	3.0	1.0	250.0	1.5	11.5	10.0	90.0	25.0	1.0	31.072...
38	Honey-...	110.0	1.0	0.0	180.0	0.0	14.0	11.0	35.0	25.0	1.0	28.742...
39	Just_Ri...	110.0	2.0	1.0	170.0	1.0	17.0	6.0	60.0	100.0	3.0	36.523...
40	Just_Ri...	140.0	3.0	1.0	170.0	2.0	20.0	9.0	95.0	100.0	3.0	36.471...
41	Kix	110.0	2.0	1.0	260.0	0.0	21.0	3.0	40.0	25.0	2.0	39.241...
42	Life	100.0	4.0	2.0	150.0	2.0	12.0	6.0	95.0	25.0	2.0	45.328...
43	Lucky_...	110.0	2.0	1.0	180.0	0.0	12.0	12.0	55.0	25.0	2.0	26.734...
44	Maypo	100.0	4.0	1.0	0.0	0.0	16.0	3.0	95.0	25.0	2.0	54.850...
45	Muesli_...	150.0	4.0	3.0	95.0	3.0	16.0	11.0	170.0	25.0	3.0	37.136...
46	Muesli_...	150.0	4.0	3.0	150.0	3.0	16.0	11.0	170.0	25.0	3.0	34.139...
47	Mueslix...	160.0	3.0	2.0	150.0	3.0	17.0	13.0	160.0	25.0	3.0	30.313...
48	Multi-Gr...	100.0	2.0	1.0	220.0	2.0	15.0	6.0	90.0	25.0	1.0	40.105...
49	Nut&Ho...	120.0	2.0	1.0	190.0	0.0	15.0	9.0	40.0	25.0	2.0	29.924...
50	Nutri-Gr...	140.0	3.0	2.0	220.0	3.0	21.0	7.0	130.0	25.0	3.0	40.692...
51	Nutri-gr...	90.0	3.0	0.0	170.0	3.0	18.0	2.0	90.0	25.0	3.0	59.642...
52	Oatme...	130.0	3.0	2.0	170.0	1.5	13.5	10.0	120.0	25.0	3.0	30.450...
53	Post_N...	120.0	3.0	1.0	200.0	6.0	11.0	14.0	260.0	25.0	3.0	37.840...
54	Product...	100.0	3.0	0.0	320.0	1.0	20.0	3.0	45.0	100.0	3.0	41.503...
55	Puffed_...	50.0	1.0	0.0	0.0	0.0	13.0	0.0	15.0	0.0	3.0	60.756...
56	Puffed_...	50.0	2.0	0.0	0.0	1.0	10.0	0.0	50.0	0.0	3.0	63.005...

		Calories	protein	fat	sodium	fiber	carbo	sugars	potash	vitamins	shelf	rating
57	Quaker...	100.0	4.0	1.0	135.0	2.0	14.0	6.0	110.0	25.0	3.0	49.511...
58	Quaker...	100.0	5.0	2.0	0.0	2.7	-1.0	-1.0	110.0	0.0	1.0	50.828...
59	Raisin_...	120.0	3.0	1.0	210.0	5.0	14.0	12.0	240.0	25.0	2.0	39.259...
60	Raisin_...	100.0	3.0	2.0	140.0	2.5	10.5	8.0	140.0	25.0	3.0	39.7034
61	Raisin_...	90.0	2.0	0.0	0.0	2.0	15.0	6.0	110.0	25.0	3.0	55.333...
62	Rice_C...	110.0	1.0	0.0	240.0	0.0	23.0	2.0	30.0	25.0	1.0	41.998...
63	Rice_K...	110.0	2.0	0.0	290.0	0.0	22.0	3.0	35.0	25.0	1.0	40.560...
64	Shredd...	80.0	2.0	0.0	0.0	3.0	16.0	0.0	95.0	0.0	1.0	68.235...
65	Shredd...	90.0	3.0	0.0	0.0	4.0	19.0	0.0	140.0	0.0	1.0	74.472...
66	Shredd...	90.0	3.0	0.0	0.0	3.0	20.0	0.0	120.0	0.0	1.0	72.801...
67	Smacks	110.0	2.0	1.0	70.0	1.0	9.0	15.0	40.0	25.0	2.0	31.230...
68	Special...	110.0	6.0	0.0	230.0	1.0	16.0	3.0	55.0	25.0	1.0	53.131...
69	Strawb...	90.0	2.0	0.0	15.0	3.0	15.0	5.0	90.0	25.0	2.0	59.363...
70	Total_C...	110.0	2.0	1.0	200.0	0.0	21.0	3.0	35.0	100.0	3.0	38.839...
71	Total_R...	140.0	3.0	1.0	190.0	4.0	15.0	14.0	230.0	100.0	3.0	28.592...
72	Total_...	100.0	3.0	1.0	200.0	3.0	16.0	3.0	110.0	100.0	3.0	46.658...
73	Triples	110.0	2.0	1.0	250.0	0.0	21.0	3.0	60.0	25.0	3.0	39.106...
74	Trix	110.0	1.0	1.0	140.0	0.0	13.0	12.0	25.0	25.0	2.0	27.753...
75	Wheat_...	100.0	3.0	1.0	230.0	3.0	17.0	3.0	115.0	25.0	1.0	49.787...
76	Wheaties	100.0	3.0	1.0	200.0	3.0	17.0	3.0	110.0	25.0	1.0	51.592...
77	Wheati...	110.0	2.0	1.0	200.0	1.0	16.0	8.0	60.0	25.0	1.0	36.187...

Instances: 77
Attributes: 11 (Calories, protein, fat, sodium, fiber, carbo, sugars, potash, vitamins, shelf, rating)

Result:

Clustering model (full training set):

Cluster 0
(((((68.402973:1.10054,59.425505:1.10054):0.10318,93.704912:1.20372):0.00394,((33.983679:1.18551,(((((((((((((
((((
(3

4.384843:1.04527,((40.400208:1.0182,39.7034:1.0182):0.01535,40.448772:1.03354):0.01172):0.00272,((37.038562:1.
02
239,40.69232:1.02239):0.0165,30.450843:1.03889):0.00909):0.00251,36.176196:1.05049):0.00012,((52.076897:1.0
288
,
49.511874:1.0288):0.01051,(53.371007:1.02253,59.642837:1.02253):0.01678):0.0113):0.00068,((46.895644:1.0361
3,3
9.
106174:1.03613):0.00052,44.330856:1.03665):0.01464):0.00489,40.917047:1.05619):0.00924,45.811716:1.06543):
0.0
1
267,((37.136863:1.01544,34.139765:1.01544):0.03775,30.313351:1.05318):0.02493):0.00027,(41.015492:1.06917,
37.8
40594:1.06917):0.00921):0.02311,53.313813:1.10149):0.01878,39.241114:1.12027):0.00862,(((((((33.174094:1.02
18,3
2.2
07582:1.0218):0.00378,(((22.736446:1.00051,22.396513:1.00051):0.0167,(28.025765:1.00013,27.753301:1.00013):
0.0
1
709):0.00586,26.734515:1.02308):0.0025):0.00072,31.230054:1.0263):0.00524,29.924285:1.03154):0.00559,35.78
279
1:
1.03713):0.00002,((18.042851:1.00627,21.871292:1.00627):0.02532,19.823573:1.03159):0.00556):0.02135,23.804
043:
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.0585):0.07039):0.00286,((((29.509541:1.0593,((49.120253:1.02913,(40.105965:1.02293,36.187559:1.02293):0.006
2):
0.
0191,(49.787445:1.00479,51.592193:1.00479):0.04344):0.01106):0.00376,31.072217:1.06307):0.00389,(31.435973
:1.0
0
563,28.742414:1.00563):0.06133):0.0441,(((41.445019:1.00106,40.560159:1.00106):0.01083,45.863324:1.01189):0
.01
8
44,41.998933:1.03033):0.08073):0.0207):0.00478,39.259197:1.13653):0.00225,(((58.345141:1.03393,59.363993:1.
033
9
3):0.06049,54.850917:1.09442):0.03167,55.333142:1.12609):0.0127):0.00335,45.328074:1.14213):0.00032,64.533
816:
1
.14245):0.00298,35.252444:1.14544):0.02045,(68.235885:1.0421,(74.472949:1.00566,72.801787:1.00566):0.03644
):0.
1
2378):0.01963):0.01049,(60.756112:1.03632,63.005645:1.03632):0.15969):0.01166):0.00284,(50.764999:1.11525,5
3.1
3
1324:1.11525):0.09525):0.05173,(((((36.523683:1.04118,38.839746:1.04118):0.03469,46.658844:1.07587):0.01161
,36.
4

71512:1.08748):0.02516,41.50354:1.11264):0.0535,28.592785:1.16614):0.09609)

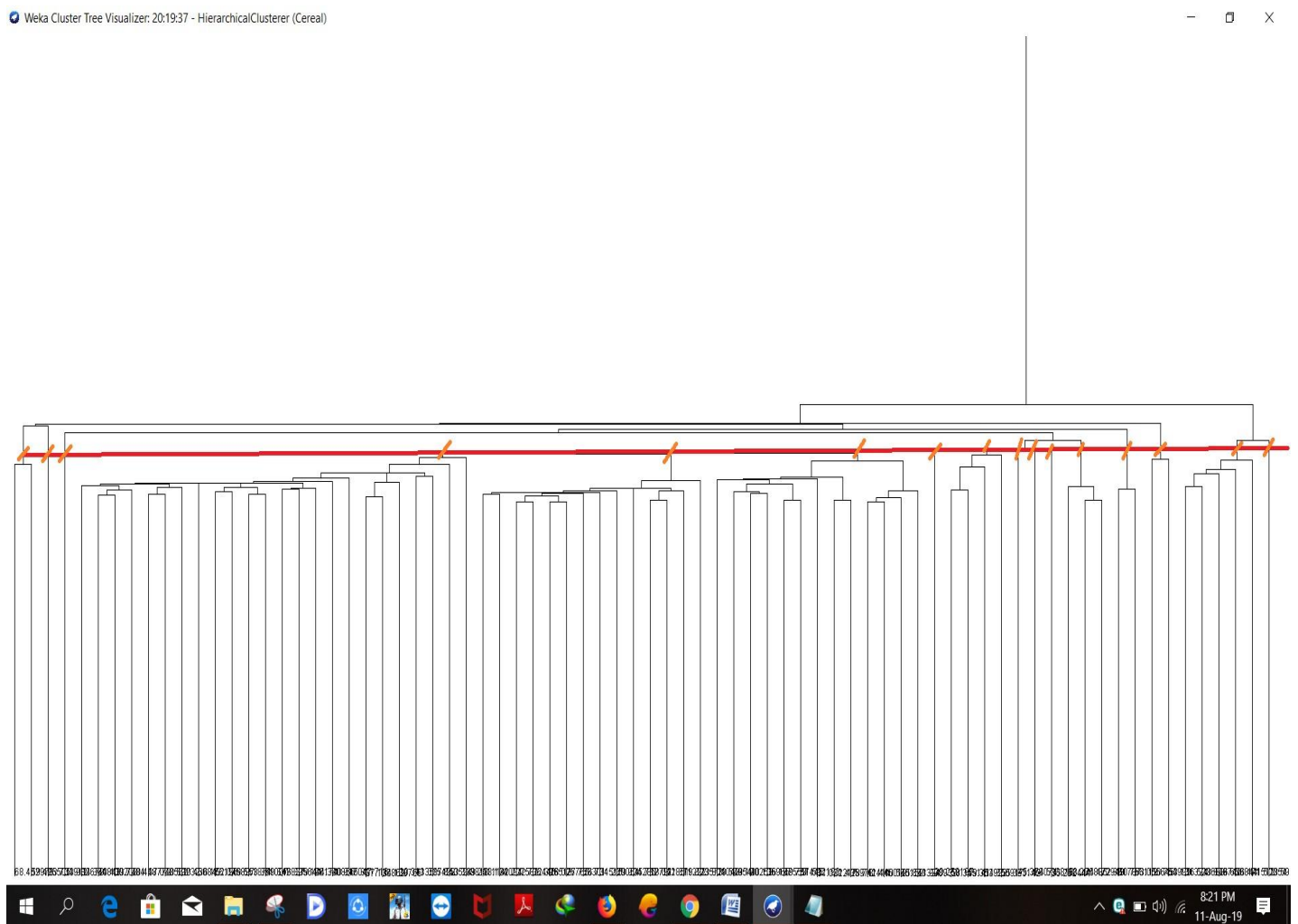**Time taken to build model (full training data)**: 0.02 seconds

Model and evaluation on training set

Clustered Instances:

0   76 (99%)

1   1 (1%)

Tree with Pruning:

Cluster Analysis:

Name	High	Medium	Low
Calorie	131-160	90-130	50-90
Protein	5-6	3-4	1-2
Fat	4-5	2-3	0-1
Sodium	211-320	111-210	0-110
Fiber	10-14	5-9	0-4
Carbo	15-23	8-14	0-7
Sugar	11-15	6-10	0-5
Potassium	221-330	111-220	15-110
vitamins	67-100	25-66	0-24

Cluster 1

Low: Calories, Fat, Carbo, Sugar
Medium: Protein, Sodium, Fiber, Vitamin
High: Potassium

	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
1	100%_Bran	70	4	1	130	10	5	6	280	25	3	68.40297
3	All-Bran	70	4	1	260	9	7	5	320	25	3	59.42551

Cluster 2

Low: Calories, Fat, Sugar
Medium: Protein, Sodium, Vitamin,
Carbo High: Potassium, Fiber

	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
4	All-Bran_with_Extra_Fiber	50	4	0	140	14	8	0	330	25	3	93.70491

Cluster 3

Low: Sodium, Fiber, Vitamin
Medium: Potassium, Sugar, Calories, Protein, Carbo
High : Fat

2	100%_Natural_Bran	120	3	5	15	2	8	8	135	0	3	33.98368

Cluster 4

Low: Protein, Fat, Fiber
Medium: Calories, Carbo, Sodium, Vitamin
High: Sugar, Potassium

	Cereals	calories	prote in	fa t	sodium	fib er	car bo	suga rs	pota ss	vitami ns	she lf	rating
5	Almond_Delight	110	2	2	200	1	14	8	99	25	3	34.38484
14	Clusters	110	3	2	140	2	13	7	105	25	3	40.40021
60	Raisin_Nut_Bran	100	3	2	140	2.5	10.5	8	140	25	3	39.7034

20	Cracklin'_Oat_Bran	110	3	3	140	4	10	7	160	25	3	40.44877
8	Basic_4	130	3	2	210	2	18	8	100	25	3	37.03856
50	Nutri-Grain_Almond-Raisin	140	3	2	220	3	21	7	130	25	3	40.69232
52	Oatmeal_Raisin_Crisp	130	3	2	170	1.5	13.5	10	120	25	3	30.45084
23	Crispy_Wheat_&_Raisins	100	2	1	140	2	11	10	120	25	3	36.1762
33	Grape_Nuts_Flakes	100	3	1	140	3	15	5	85	25	3	52.0769
57	Quaker_Oat_Squares	100	4	1	135	2	14	6	110	25	3	49.51187
34	Grape-Nuts	110	3	0	170	3	17	3	90	25	3	53.37101
51	Nutri-grain_Wheat	90	3	0	170	3	18	2	90	25	3	59.64284
22	Crispix	110	2	0	220	1	21	3	30	25	3	46.89564
73	Triples	110	2	1	250	0	21	3	60	25	3	39.10617
24	Double_Chex	100	2	0	190	1	18	5	80	25	3	44.33086
28	Fruit_&_Fibre_Dates,_Walnuts,_and_Oats	120	3	2	160	5	12	10	200	25	3	40.91705
35	Great_Grains_Pecan	120	3	3	75	3	13	4	100	25	3	45.81172
45	Muesli_Raisins,_Dates,_&_Almonds	150	4	3	95	3	16	11	170	25	3	37.13686

46	Muesli_Raisins,_Peaches,_&_Pecans	150	4	3	150	3	16	11	170	25	3	34.13977
47	Mueslix_Crispy_Blend	160	3	2	150	3	17	13	160	25	3	30.31335
29	Fruitful_Bran	120	3	0	240	5	14	12	190	25	3	41.01549
53	Post_Nat._Raisin_Bran	120	3	1	200	6	11	14	260	25	3	37.84059
10	Bran_Flakes	90	3	0	210	5	13	5	190	25	3	53.31381
41	Kix	110	2	1	260	0	21	3	40	25	2	39.24111

Cluster 5

Low: Fiber, Sugar, Potassium
Medium: Fat, Calories, Protein, Vitamin, Sodium
High: Carbo

id	Cereals	calories	protein	fa t	sodium	fibe r	carbo	sugars	potass	vitamins	shelf	rating
7	Apple_Jacks	110	2	0	125	1	11	14	30	25	2	33.17409
25	Froot_Loops	110	2	1	125	1	11	13	30	25	2	32.20758
15	Cocoa_Puffs	110	1	1	180	0	12	13	55	25	2	22.73645
19	Count_Chocula	110	1	1	180	0	12	13	65	25	2	22.39651
30	Fruity_Pebbles	110	1	1	135	0	13	12	25	25	2	28.02577
74	Trix	110	1	1	140	0	13	12	25	25	2	27.7533
43	Lucky_Charms	110	2	1	180	0	12	12	55	25	2	26.73452
67	Smacks	110	2	1	70	1	9	15	40	25	2	31.23005
49	Nut&Honey_Crunch	120	2	1	190	0	15	9	40	25	2	29.92429
18	Corn_Pops	110	1	0	90	1	13	12	20	25	2	35.78279
11	Cap'n'Crunch	120	1	2	220	0	12	12	35	25	2	18.04285
36	Honey_Graham_Ohs	120	1	2	220	1	12	11	45	25	2	21.87129
13	Cinnamon_Toast_Crunch	120	1	3	210	0	13	9	45	25	2	19.82357
32	Golden_Grahams	110	1	1	280	0	15	9	45	25	2	23.80404

Cluster 6

Low: Fat
Medium: Calories, Protein, Vitamin, Carbo, Sodium, Fiber

High: Sugar, Potassium

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
6	Apple_Cinnamon_Cheerios	110	2	2	180	1.5	10.5	10	70	25	1	29.50954
94	Bran_Chex	90	2	1	200	4	15	6	125	25	1	49.12025
48	Multi-Grain_Cheerios	100	2	1	220	2	15	6	90	25	1	40.10597
77	Wheaties_Honey_Gold	110	2	1	200	1	16	8	60	25	1	36.18756
75	Wheat_Chex	100	3	1	230	3	17	3	115	25	1	49.78745
76	Wheaties	100	3	1	200	3	17	3	110	25	1	51.59219
37	Honey_Nut_Cheerios	110	3	1	250	1.5	11.5	10	90	25	1	31.07222
26	Frosted_Flakes	110	1	0	200	1	14	11	25	25	1	31.43597
38	Honey-comb	110	1	0	180	0	14	11	35	25	1	28.74241
16	Corn_Chex	110	2	0	280	0	22	3	25	25	1	41.44502
63	Rice_Krispies	110	2	0	290	0	22	3	35	25	1	40.56016
17	Corn_Flakes	100	2	0	290	1	21	2	35	25	1	45.86332
62	Rice_Chex	110	1	0	240	0	23	2	30	25	1	41.99893

Cluster 7

Low: Fat, Sodium, Fiber,
Sugar Medium: Calories,
Protein, Vitamin
High: Potassium, Carbo

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
59	Raisin_Bran	120	3	1	210	5	14	12	240	25	2	39.2592

Cluster 8

Low: Calories, Protein, Fat,
Sodium,Fiber Medium: Vitamin,
Sugar, Potassium
High: Carbo

id	Cereals	calories	protein	fa t	sodium	fiber	carbo	sugars	potass	vitamins	shel f	rating
27	Frosted_Mini-Wheats	100	3	0	0	3	14	7	100	25	2	58.34514
69	Strawberry_Fruit_Wheats	90	2	0	15	3	15	5	90	25	2	59.36399
44	Maypo	100	4	1	0	0	16	3	95	25	2	54.85092
61	Raisin_Squares	90	2	0	0	2	15	6	110	25	3	55.33314

Cluster 9
Low: Fiber, Potassium
Medium: Calories, Protein, Fat, Sodium, Vitamin, Sugar, Carbo

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
42	Life	100	4	2	150	2	12	6	95	25	2	45.32807

Cluster 10

Low: Fiber, Potassium, Fat, Sodium, Sugar,
Vitamin Medium: Calories, Protein High:
Carbo

id	Cereals	calories	protein	fa t	sodium	fibe r	carbo	sugars	potass	vitamins	shel f	rating
21	Cream_of_Wheat_(Quick)	100	3	0	80	1	21	0	99	0	2	64.53382

Cluster 11

Low: Fiber, Potassium, Fat, Sodium
Medium : Calories, Protein, Carbo, Vitamin
High: Sugar

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
31	Golden_Crisp	100	2	0	45	0	11	15	40	25	1	35.25244

Cluster 12
Low: Sugar, Vitamin, Calories, Fiber, Fat, Sodium
Medium: Carbo, Potassium
High: Protein

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
64	Shredded_Wheat	80	2	0	0	3	16	0	95	0	1	68.23589
65	Shredded_Wheat_'n'Bran	90	3	0	0	4	19	0	140	0	1	74.47295
66	Shredded_Wheat_spoon_size	90	3	0	0	3	20	0	120	0	1	72.80179

Cluster 13
Low: Sugar, Vitamin, Calories, Fiber, Fat, Sodium, Protein, Potassium
Medium: Carbo

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
55	Puffed_Rice	50	1	0	0	0	13	0	15	0	3	60.75611
56	Puffed_Wheat	50	2	0	0	1	10	0	50	0	3	63.00565

Cluster 14

Low: Sugar, Fiber, Fat, Potassium
Medium: Calories, Vitamin
High :Carbo, Protein, Sodium

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
12	Cheerios	110	6	2	290	2	17	1	105	25	1	50.765
68	Special_K	110	6	0	230	1	16	3	55	25	1	53.13132

Cluster 15

Low: Fiber, Fat, Potassium
Medium: Calories, Protein, Sodium, Sugar
 High: Carbo, Vitamin

| id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
39	Just_Right_Crunchy Nuggets	110	2	1	170	1	17	6	60	100	3	36.52368
70	Total_Corn_Flakes	110	2	1	200	0	21	3	35	100	3	38.83975
72	Total_Whole_Grain	100	3	1	200	3	16	3	110	100	3	46.65884
40	Just_Right_Fruit_&_Nut	140	3	1	170	2	20	9	95	100	3	36.47151
54	Product_19	100	3	0	320	1	20	3	45	100	3	41.50354

Cluster 16

Low: Fiber, Fat
Medium: Protein, Sodium
High: Carbo, Vitamin, Calories, Sugar, Potassium

id	Cereals	calories	protein	fat	sodium	fiber	carbo	sugars	potass	vitamins	shelf	rating
71	Total_Raisin_Bran	140	3	1	190	4	15	14	230	100	3	28.592785

Question Answers:

1. Is a strong correlation between dietary fiber and potassium?   **Answer:**
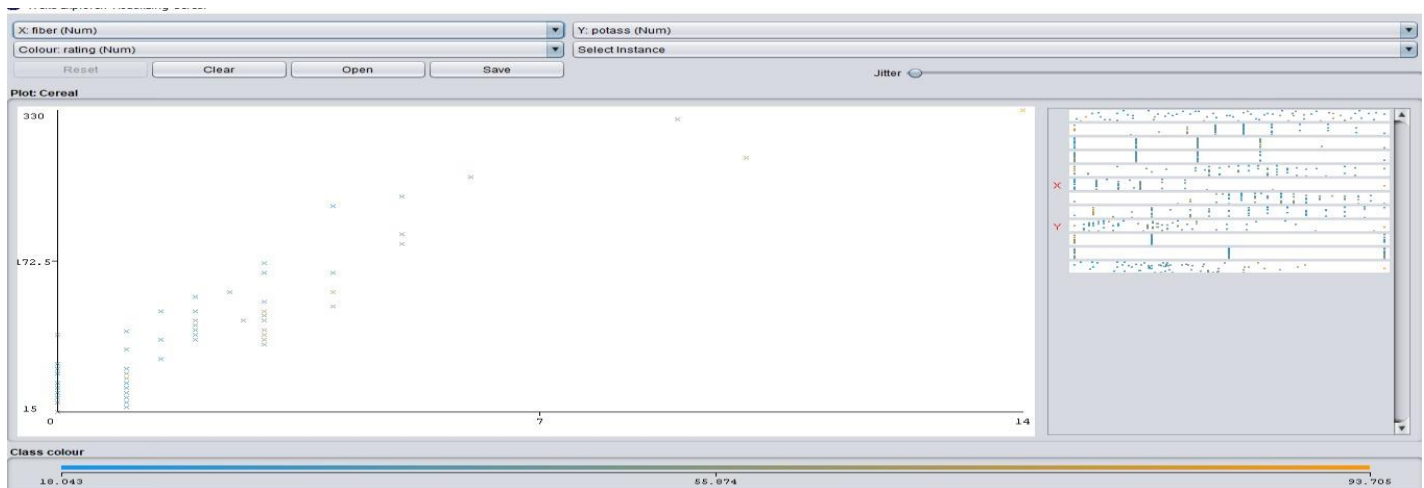
There is a strong linear correlation between fibers and potash. If one is increase/decrease the other one also increased/decreased proportionally.

2. Are groups of cereals from which we can choose according to our preferences? **Answer:**

Type	Cluster No	Reason
Pregnant women	2,12,14,16	High fiber, High protein, high Calories.
High Pressure	7,8,10,12,13	Because of law sodium and fat
Low Pressure	2.5,9,14	Should take food containing High sodium, high fiber, moderate fat
Diabetes	1,2,7,10,12,13,14	Needs to avoid sugar.

3. See other correlation between the data given in the files.
    Answer:

Here majority of the data indicates that complex carbohydrate is inversely proportional with potassium but not vice versa. That means when quantity of complex carbohydrate rises, potassium quantity decrease.