A1

Kai Liao

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Exercise 1

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number of students

340823

number of schools

898

This result base on the datsss dataset. If we use datstu dataset and only count the schools that has been chose by students, the result would be 640.

number of choices

Under different criteria, there are two answers:

4671

If only program or school is na, I still count is as a choice. Only when both program and school are na, it is not considered as a choice.

2773

If program or school is na, this is not a choice. Only both of them have valid values, I count it as a choice.

number of empty scores

179887

number of students applying to the same school

120071

number of students apply to less than 6 choices

I count this base on the school data. If a student does not fill all school cells, he/she is considered applying to less than 6 choices.

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Exercise 2

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Please see "Exercise2.csv"

	schoolcode	sssdistrict	ssslong	ssslat	programplaced	cutoff	quality	size
1	10101	Accra Metropolitan	-0.19712	5.607396	Home Economics	284	300.5714	49
2	10101	Accra Metropolitan	-0.19712	5.607396	Business	305	324.86	100
3	10101	Accra Metropolitan	-0.19712	5.607396	Agriculture	288	310.1429	49
4	10101	Accra Metropolitan	-0.19712	5.607396	General Science	299	329.1	50
5	10101	Accra Metropolitan	-0.19712	5.607396	Visual Arts	296	311.54	50
6	10101	Accra Metropolitan	-0.19712	5.607396	General Arts	316	330.09	100
7	10101	Accra Metro	-0.19712	5.607396	Home Economics	284	300.5714	49
8	10101	Accra Metro	-0.19712	5.607396	Business	305	324.86	100
9	10101	Accra Metro	-0.19712	5.607396	Agriculture	288	310.1429	49
10	10101	Accra Metro	-0.19712	5.607396	General Science	299	329.1	50
11	10101	Accra Metro	-0.19712	5.607396	Visual Arts	296	311.54	50
12	10101	Accra Metro	-0.19712	5.607396	General Arts	316	330.09	100
13	10102	Accra Metro	-0.19712	5.607396	Home Economics	363	377.1111	45
14	10102	Accra Metro	-0.19712	5.607396	General Science	389	406.4143	70
15	10102	Accra Metro	-0.19712	5.607396	General Arts	388	404.9773	88
16	10102	Accra Metro	-0.19712	5.607396	Visual Arts	343	370.9333	45
17	10102	Accra Metropolitan	-0.19712	5.607396	Home Economics	363	377.1111	45
18	10102	Accra Metropolitan	-0.19712	5.607396	General Science	389	406.4143	70
19	10102	Accra Metropolitan	-0.19712	5.607396	General Arts	388	404.9773	88
20	10102	Accra Metropolitan	-0.19712	5.607396	Visual Arts	343	370.9333	45

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Exercise 3

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Please see "Exercise3.csv"

	jssdistrict	sssdistrict	ssschoolcode	schooldistance
1	South Dayi (Kpeve)	Cape Coast Municipal	30107	134.0965
2	South Dayi (Kpeve)	Cape Coast Municipal	30103	134.0965
3	South Dayi (Kpeve)	Kwahu South (Mpraeso)	21003	60.35934
4	South Dayi (Kpeve)	Ga West (Amasaman)	10111	64.41946
5	South Dayi (Kpeve)	Cape Coast Municipal	30104	134.0965
6	South Dayi (Kpeve)	Akwapim South (Nsawam)	20301	50.16308
7	South Dayi (Kpeve)	Kumasi Metro	50110	125.8669
8	South Dayi (Kpeve)	Accra Metropolitan	10110	59.99199
9	South Dayi (Kpeve)	Shama/Ahanta/East (Sekondi/Takoradi)	40103	154.4938
10	South Dayi (Kpeve)	Kwaebibirem (Kade)	21103	71.20566
11	South Dayi (Kpeve)	Kumasi Metro	50102	125.8669
12	South Dayi (Kpeve)	Accra Metropolitan	10102	59.99199
13	South Dayi (Kpeve)	Mfantsiman (Saltpond)	30301	116.4609
14	South Dayi (Kpeve)	Kumasi Metro	50108	125.8669
15	South Dayi (Kpeve)	Sunyani	60106	186.7139
16	South Dayi (Kpeve)	New Juaben (Koforidua)	20102	39.20723
17	South Dayi (Kpeve)	Akwapim North (Akropong)	20402	37.72257
18	South Dayi (Kpeve)	Kumasi Metro	50107	125.8669
19	South Dayi (Kpeve)	Cape Coast Municipal	30101	134.0965
20	South Dayi (Kpeve)	Cape Coast Municipal	30102	134.0965

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Exercise 4

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Rank	Cutoff	Quality	Sd
1	165	313.6368	56.41016
2	173	302.4478	49.04344
3	190	288.6138	42.41799
4	185	276.7714	37.50909
5	198	252.7439	30.44706
6	158	251.1727	28.94855

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Exercise 5

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Please see code

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Exercise 6

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The correlation between Y and X_1 is 0.2. It is very different from 1.2.

The OLS results are:

	beta	std
const	2.456103	0.129831
x1	1.2158	0.055412
x2	-0.89377	0.037418
x3	0.101876	0.069823

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Exercise 7

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Probit	beta	std
Const	2.816788	0.097449
x1	1.239061	0.044298
x2	-0.89215	0.018006
x3	0.048036	0.046933

Logit	beta	std
Const	5.066014	0.097449
x1	2.23095	0.044298
x2	-1.60595	0.018006
x3	0.086726	0.046933

linear prob	beta
Const	0.879523
x1	0.152089
x2	-0.10554

x3	0.010557

Interpretation: Probit and Logit are pretty capable to identify the effects of x1, x2, and x3 on ydum. All of these methods are significant.

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Exercise 8

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Probit	Const	x1	x2	x3
Stand dev	0.10535	0.068975	0.032203	0.020634
Mean	0.296861	0.154813	-0.10291	0.014934

Logit	Const	x1	x2	x3
Stand dev	0.009703871	0.004490032	0.000415919	0.004965091
Mean	0.337154738	0.152638378	-0.107570165	0.00966835