Social Service Agency

Andy Grogan-Kaylor

May 18, 2020

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0.1 Background

You are working for a social service agency that keeps track of its clients and donors using Excel. While the agency has kept track of these two groups of individuals, the agency has done little to evaluate their work, and to assess ways in which they might do better.

The agency would like you to provide them with some data visualization, and they will provide you with a file of **clients** (in 2 formats), and a file of **donors**.

0.2 Clients

Here is what the data file of clients looks like.

Table 1: Table continues below

ID	age	gender	program	mental_health_T1	mental_health_T2
1838	22	Female	Program B	90.04	93.46
2132	18	Male	Program C	84.44	81.43
3935	33	Female	Program B	105.2	101.4
1458	25	Female	Program C	76.83	95.98
4304	27	Female	Program B	94.48	101.2
1227	34	Female	Program C	84.38	97.9

latitude	longitude
42.18	-83.83
42.44	-83.72
42.39	-83.66
42.29	-83.75
42.12	-83.8
42.19	-83.64

The agency also had an intern from a school of social work who did some preliminary data visualization.
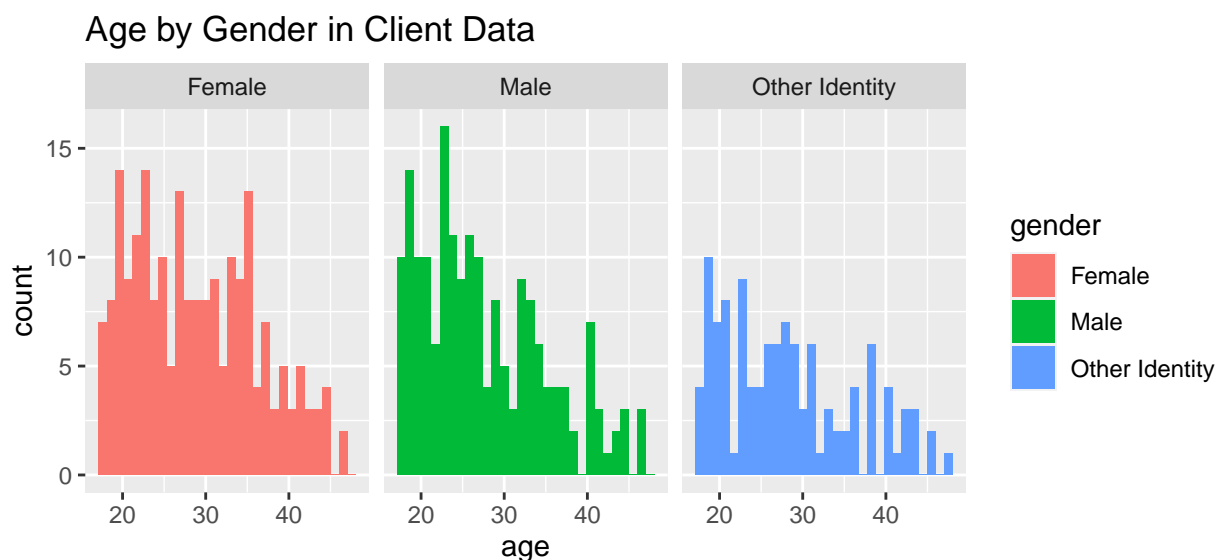

Figure 1: Preliminary Data Visualization of Clients

Agency staff would like to investigate questions of the following nature.

- What are demographic characteristics of clients?
- Do any demographic characteristics of clients have an association with mental health or program use?
- Is there any additional information that the agency should be collecting about clients?
- Are any of the programs associated with better mental health at Time 2?

The Director of the agency says:

> "I've heard you can investigate things like this with `ggplot()`, maybe using something like `geom_point()`, `geom_smooth()`, and `facet_wrap(~)`."[1]

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[1] Yes, the Director really talks like this sometimes.

0.3 Donors

The agency also has a file of donors which looks something like this:

ID	age	gender	neighborhood	annual_donation
GZ4r75R	53.91	Female	Neighborhood A	117
zHGxLaM	43.85	Male	Neighborhood A	83
7s3fCFi	38.63	Male	Neighborhood B	1206
sC5sL2f	47.69	Female	Neighborhood A	214
OeGZTmF	38.54	Female	Neighborhood A	230
7sidLyL	45.96	Female	Neighborhood A	253

The agency would like to know.

- In terms of available information, what are the demographic characteristics of donors?
- Is there any additional information that we should collect about donors?
- Is there any information that predicts which donors will donate larger amounts of money?

The agency did hire a consulting agency to do some preliminary analysis of their donors. After paying the consultant several thousand dollars they received a short report and the attached graphic.

The Director says:

> "While the attached graphic may give you, and us, some guidance, we are wondering if you can produce anything that is a little simpler, a little more straightforward, and a little more clear."

Figure 2: Preliminary Visualization of Donors