

Assignment 3: Visualising and Visceralising

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Introduction

For this assignment I decided to create visual analytics about a data set of students that aims to explore the relationship between academic life and mental well-being among a selection of university students. The data set contains data such as grade average (CGPA), depression/anxiety, gender, study year and if they have seeked treatment. Since this had to be a paper and not an interactive showcase, I decided to simulate an interaction with my visual analytic.

Visual analysis 1: The flow

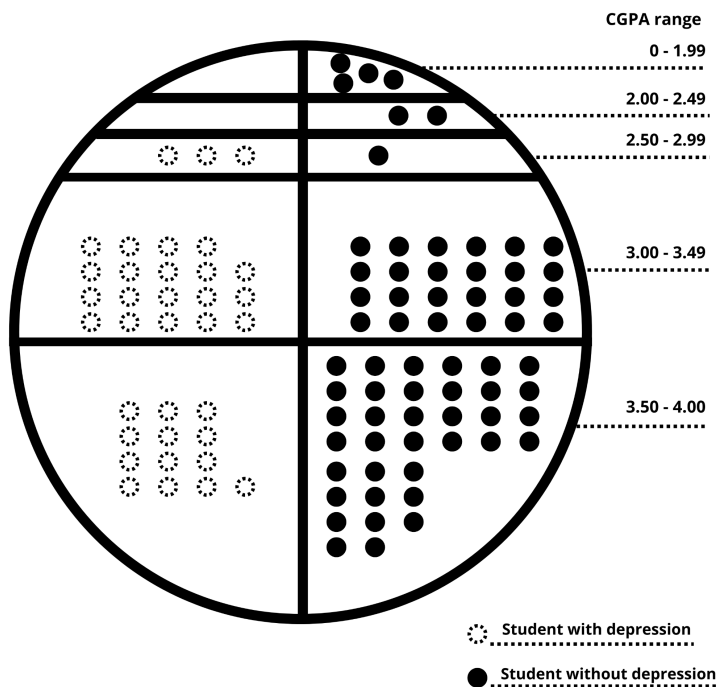
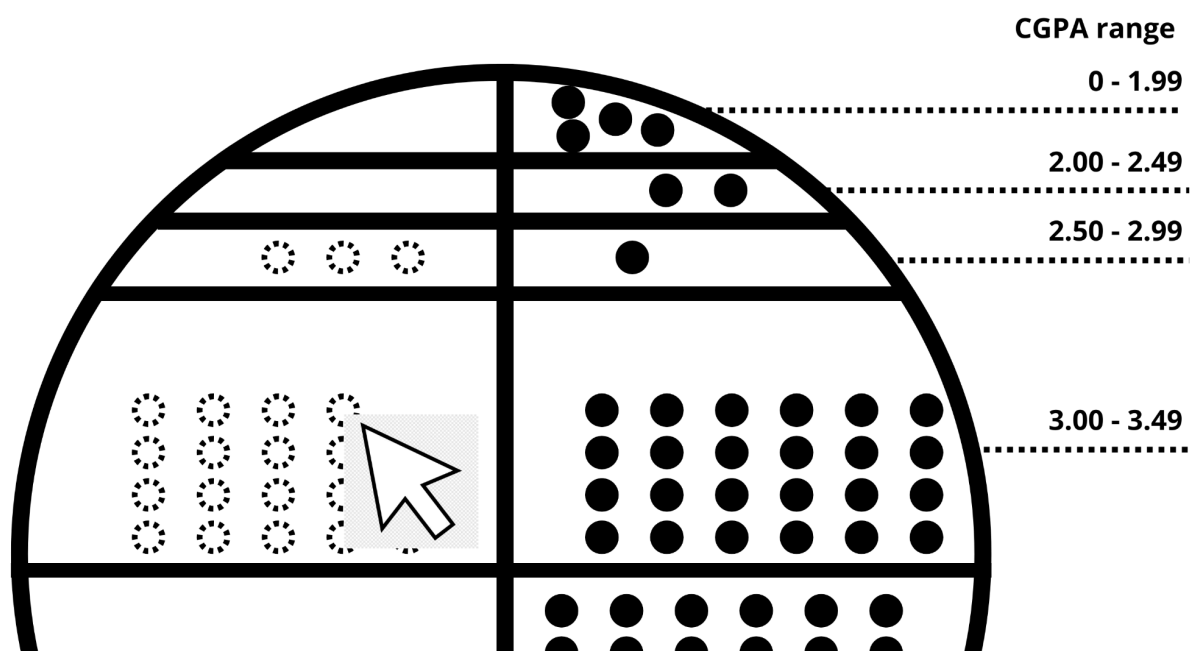
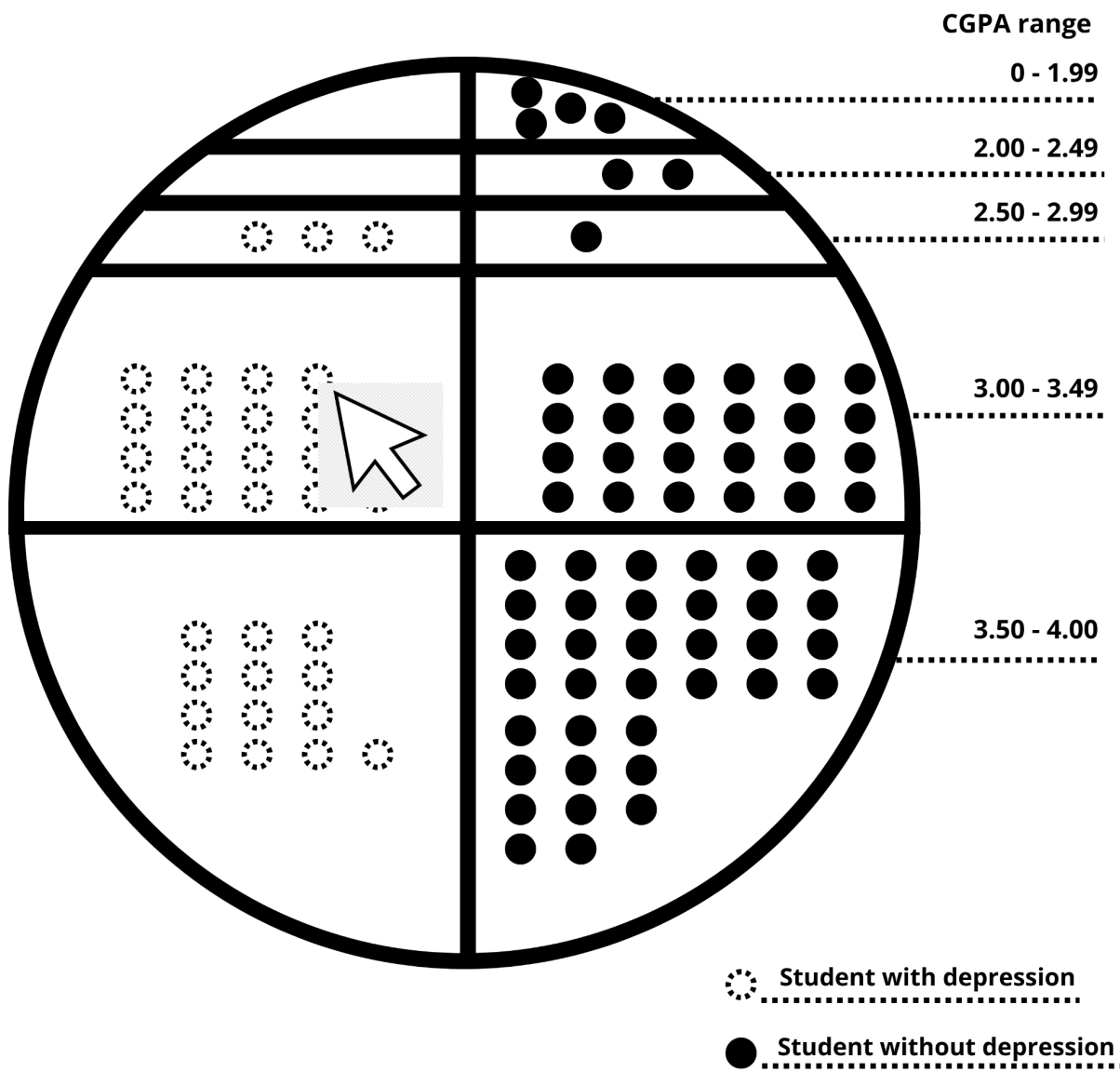


Figure 1: The visual analytic as is, a showcase of how few (if any) of the low grading CGPA students have depression

Figure 2: The visual analytic becomes interactive when the user clicks a coloumn





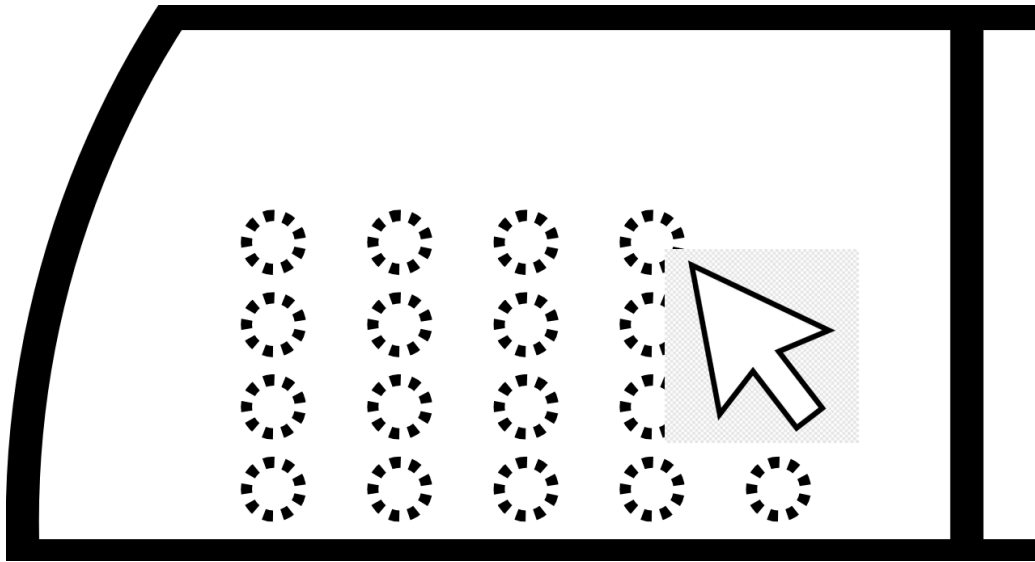


Figure 3: The visual analytic zooms in on the chosen coloumn

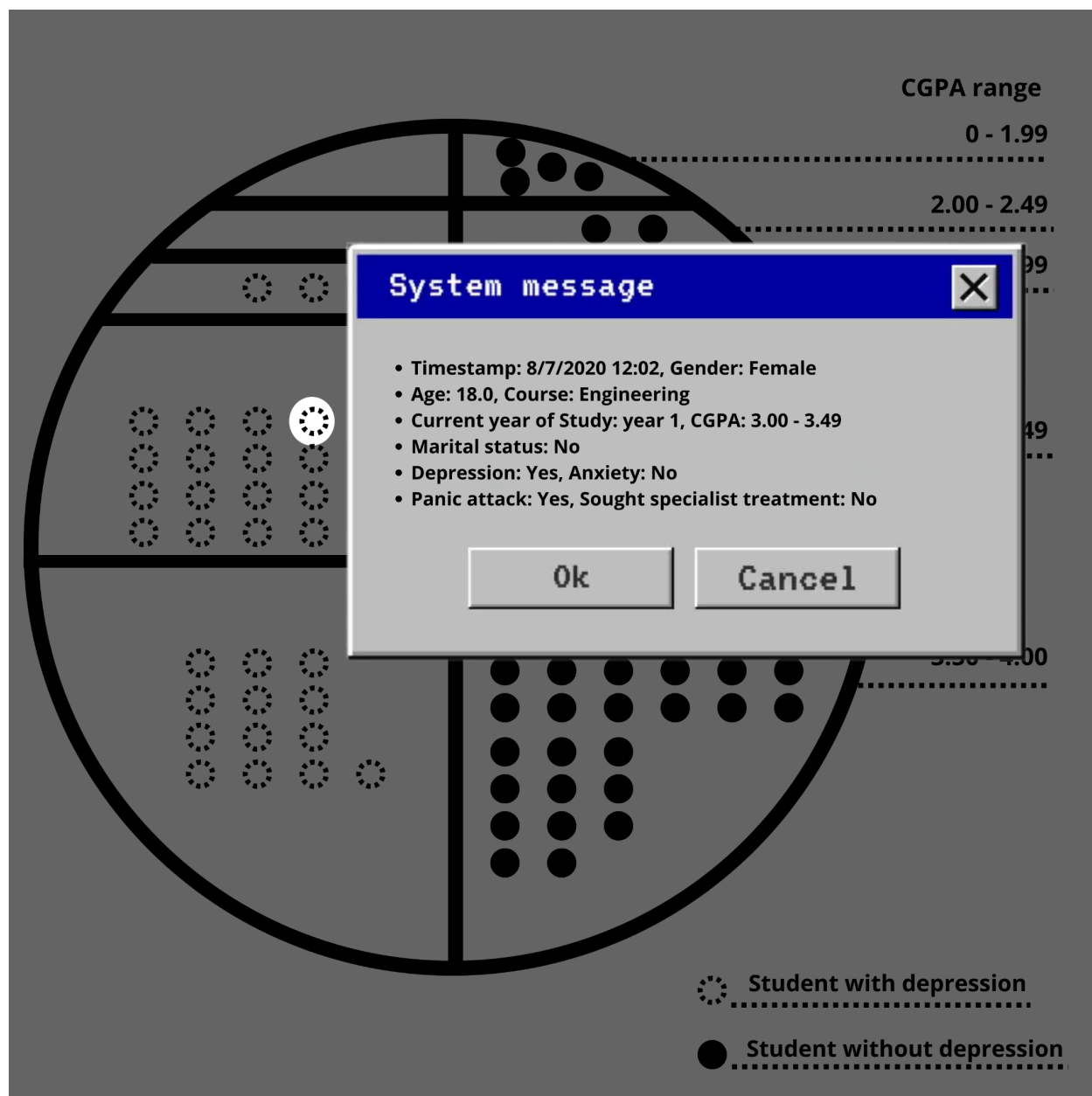


Figure 4: The details-on-demand is shown for the clicked person.

CGPA Interval	Students with Depression (Yes)	Yes (%)	Students without Depression (No)	No (%)	Total Students
0 - 1.99	0	0.00	4	100.00	4
2.00 - 2.49	0	0.00	2	100.00	2
2.50 - 2.99	3	75.00	1	25.00	4

3.00 - 3.49	19	44.19	24	55.81	43
3.50 - 4.00	13	27.08	35	72.92	48

Figure 5: Data table

Visual flow

I tried to follow the Shneiderman (1996) approach of providing an overview first, but allow for zooming in (I could also have made a concept for filtering here), and then to provide details-on-demand. Figure 1 gives an overview of the distribution via a graphical home-made dotplot, where each dot is a student. The dot design separate the groups, where ○ is with depression, and ● are the students without depression. Figure 2 and 3 represents a zoom function, where clicking a column zooms in on the column, making getting more detail on demand from a specific person more accessible. Figure 4 shows the details-on-demand, to illustrate what would happen if the user clicked one of the depressed dots in this column of CGPA range (real data, randomly chosen person). Figure 5 is the table I made from the bigger dataset, to be able to create the visual analytics.

Reflection

When designing the first visual analytic, I tried to apply Tufte (2018) principles and keep the “data-ink ratio” high. The visual is light on variants, as it’s a main dimension of CGPA crossed with two groups (depressed and not depressed). Then, with more info on-demand, you can get information such as gender and semester. In that way, it’s up to the user how many information they want, and what information they want. My first idea was to create a kind of sinking ship, where the depressed students on the left were drowning in sea water, and the ones on the top (which are the ones with the lowest grades) were spared by the depression. This didn’t seem to live up to Tufte’s principles though, so I left out the blue, and yet, I still kept them separated, so you could easily see and compare the two groups.

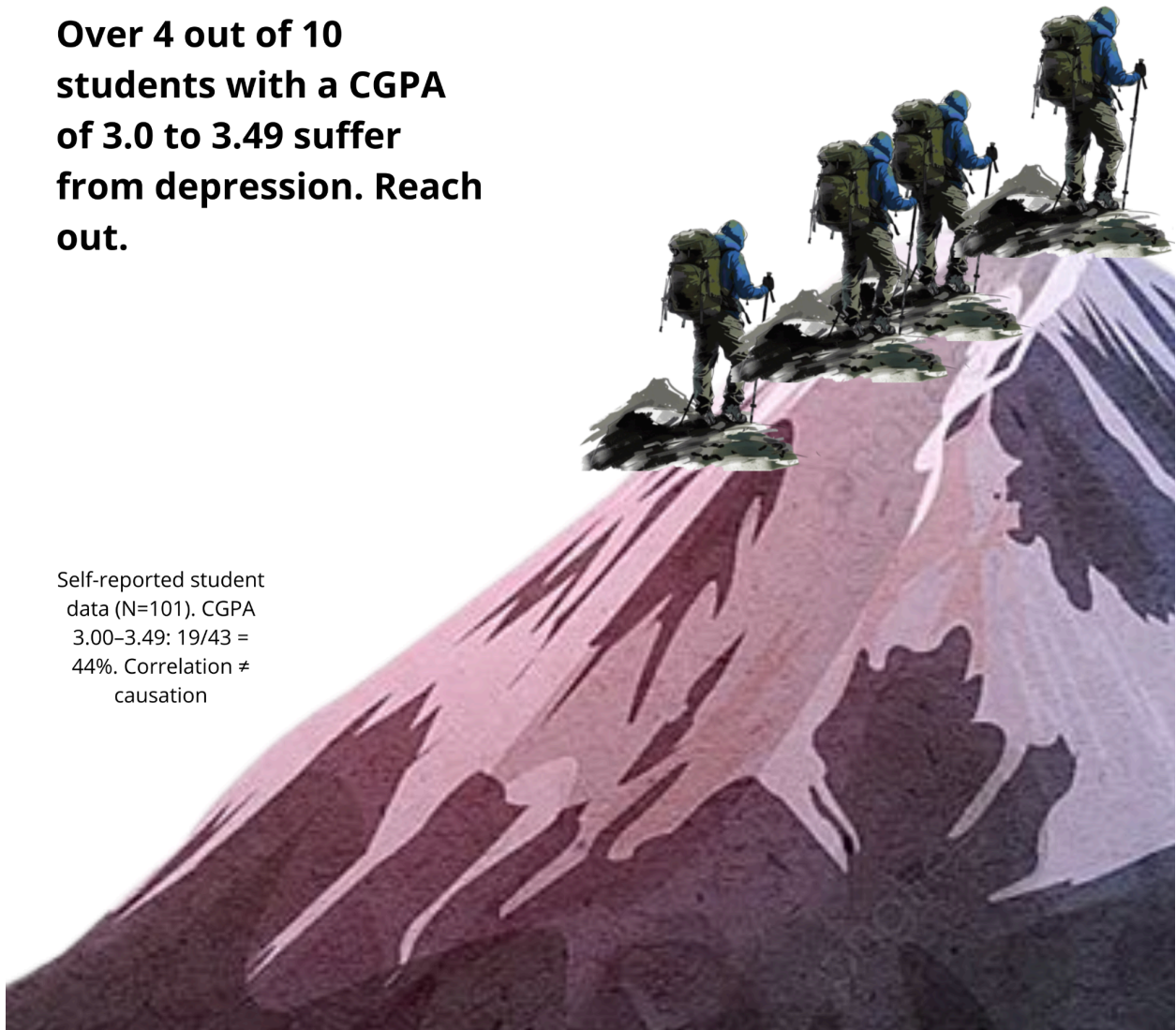
The data is self-reported data from students, and I try to be transparent by showing how many participated. The visual I created shows a pattern, but yet it tries to keep it somewhat neutral and more about seeking information. It’s a more neutral way to display information, and yet, it can be more boring, and forgettable. Displaying information in a more memorable way is something I will explore in visual analytic 2.

Visual analytic 2 - “Getting to the top isn’t without its costs. Remember to seek therapy if you need help.”

Getting to the top isn’t without its costs.
Remember to seek therapy if you need help.

**Over 4 out of 10
students with a CGPA
of 3.0 to 3.49 suffer
from depression. Reach
out.**

Self-reported student
data (N=101). CGPA
3.00–3.49: 19/43 =
44%. Correlation ≠
causation



For making my visual analytic part 2, I tried to change from an analytic that supported further research to visceralization instead, where I tried to awaken emotion and empathy in the viewer. Using the same dataset, I tried here to use a mountain metaphor with the message: “Getting to the top isn’t without its costs. Remember to seek therapy if you need help.”. Here I deliberately chose to focus on the specific CGPA range of 3.00 to 3.49, and write a text about how over 4 out of 10 in this group had reported depression (19/43 = around 44%). The point is to show how focusing and zooming on this specific section can make it seem more prevalent that it really is at the “top”, where “only” 27% of students dealt with depression at the CGPA range of 3.5 to 4.0.

I also intended for the mountain visualisation to have a kind of double meaning, where the closer to the top the students got, the less air they would have, and the more blue they would turn. I tried to design this in a few things but it ended up taking away from the visualisation, and it kept feeling like less was more when designing it. I considered adding 10 students and making 4 blue as well, but once again, I felt the simple way of just having the 4 depressed students was more powerful, simpler, and faster to understand, which was one of my most important design principles for this visual.

I included the call-to-action advice of “seek therapy” to make the visualization more action oriented, and more emotion-based, hinting at a correlation between having depression and being “at the top”. So on one hand, it can make the viewer stop, reflect, and think more about the data than they otherwise might have had, but on the other hand, it is not a very neutral way to display it.

References

Shneiderman, B. (1996). The eyes have it: A task by data type taxonomy for information visualizations. IEEE Symposium on Visual Languages, 336–343.

Tufte, E. R. (2018). The visual display of quantitative information (2nd ed.). Graphics Press.