Find a visualization not discussed in class or used in a homework and answer the following questions pertaining to that visualization. Attach the visualization as a screenshot in your submission.

- Consider Bertin's characterization of visual variables (position, size, shape, value, color, orientation, and texture). Pick 2 of Bertin's visual variables, and discuss them in relation to your visualization.

Colour: There aren't many vivid colours in this visualisation, so the overall picture is quite bland. Thus, the colours that are used, stand out. The relatively high life satisfaction in Kensington & Chelsea and Bromly are easily spotted. The boroughs with the lowest satisfaction, coloured dark grey, are also prominent.

Position: The boroughs are positioned on the visualisation according to their position in London. This can be either outer London or inner London. However, their position within outer or inner London can't be retrieved from the visualisation. A borough's position in the outer London circle, for instance, is completely arbitrary. The fact that Merton is closer to the city center than Sutton, can only be discovered by looking at the map of London. It might have been interesting to place the visualisation's smileys on a map of London, so that a reader may spot patterns.

- Munzner proposed a nested model for visualization design and validation. Discuss/validate your visualization with respect to domain problem characterization and data/operation abstraction design.

Domain problem characterisation: according to Munzner, visualisation designers need to "characterize the task and data in the vocabulary of the problem domain" (p.1). The visualisation is about personal well-being. What is personal well-being? The designer understands personal well-being in terms of life satisfaction, worthwhile actions, happiness and anxiety. If an interviewee says he thinks his actions are worthwhile, that would amount to a higher personal well-being according to the designer. But would that be true for everyone? Can't someone have a superb personal well-being without thinking his actions are worthwhile? The designer needs to take this into account.

Data/operation abstraction design: the next thing a designer needs to do is "to map the domain problems into abstract operations and data types". In the case of this visualisation, the question is: what kind of data can describe the personal well-being of the people in the boroughs? The designer decided to take the aforementioned factors and ask the interviewees how they would rate those on a 5-point scale: from relatively low to relatively high. But can life satisfaction, for instance, really be translated into a number? I think this may be a bit blunt.

- Based on Cleveland and McGill's results, does your visualization embody good practices (i.e. can people accurately perform the tasks based on the encodings?)

From one smiley, a reader should be able to read off information on the borough's life satisfaction, worthwhile actions, happiness and anxiety. However, each of these factors is portrayed in a different way: through colour, the eyes, the mouth and the dots. For me, the colours are more prominent than the dots, so the colour of the smiley weighs more than the amount of dots it has, even though it may have the same effect on the personal well-being of that borough. Moreover, to decide the overall well-being, you'd have to add up all the factors of a borough and compare them to each other, which is hard to do. In line with Cleveland and McGill, it would be better to recreate the visualisation into a dot chart with grouping as in Figure 25 of the article. All the information that belongs to a borough would be grouped, and

would also be added up to form the total well-being of the borough. It would then be easier to see the scores of the boroughs in one look.

- Do you agree that visualization is a functional art? Explain.

Definitely. The reader of a visualisation should be able to retrieve the message of the designer and answer questions with it. Without a function, a visualisation is just art. It may be pretty, but without a goal it does not help the reader. Visualisation is a tool that carries characteristics of art, but should never only be art.

- Ask yourself what the designer is trying to convey and think of three to four possible tasks this visualization should help you with. Does the visualization achieve any of your tasks? (To view an example, see Albert Cairo, pages 26-28.)

How high do residents of a specific borough rate their life satisfaction? It does answer this. A reader can read that residents in Kensington & Chelsea on average rate their life satisfaction relatively high.

Is the personal well-being in the inner boroughs in London higher than in outer London? It does not answer this. There are a couple of boroughs with a reasonable high personal well-being, but there are a couple with low personal well-being as well. The same goes for the outer boroughs.

Do residents of Waltham Forest have a higher personal well-being than residents of Baxley? It is difficult to answer this. Life satisfaction is a bit higher in Baxley, but happiness is lower there. You have to manually add up the grades to come up with a total personal well-being.