

## Design Critique

Name: Maarten Alblas

Student-id: 10152032

### Context and Problem Domain

In this design critique I will evaluate the visualizations in the dashboard with the title “Track National Unemployment, Job Gains and Job Losses”. The dashboard consists of four visualizations. The first visualization is determined to job gains and losses per industry. In this visualization you can track the number of sectors gaining or losing jobs each month. This first visualization is interactive with the second visualization, when you click on a specific year; the detailed info of that specific year is visualized in visualization number two. In visualization two you can look up all the sectors accompanied by the size, monthly change in jobs, and the monthly change in percentage for the specific year you selected in visualization number one. Visualization number three gives an overview of the national unemployment rate in a wider timeframe. In this visualization you can look up the unemployment rate of every month in the period 1948 – 2015. Visualization number four is supporting the function of visualization three, by showing a line graph of the unemployment rate in the period. Both of these visualizations could be filtered and compared on gender, age, race or education.

In 2009 Munzner argued that the first step in designing visualizations is to identify the task at hand and the data available in the domain area, so you can build something that is specified on the target group. When you want to design a visualization that is centered on the user, it is really important to truly understand the problems that your audience is facing. In this visualization, the audience seems to be anyone who is interested in the cycles of unemployment in general or the job gains and losses of specific industries. This could be people who are looking for a job, journalist who are interested in which sectors are doing well, politicians who write policy in the field of employment, or anyone else. The main objective of the visualisation is to give the viewer a chance to study the relation between

unemployment rates over different sectors and the occurrence of an economic crisis. Whether this objective is reached depends on the graphical integrity and design choices made. In the following paragraphs I will evaluate those design choices and if they succeeded in the main objective.

### Graphical Integrity

Visual representation of data must tell the truth. In his paper Tufte introduces six principles of graphical integrity. In this critique I will base my graphical integrity critique around two questions that are originated from Tufte's six principles. First, is there clear detailed labeling used to defeat graphical distortion? In visualization number one the data is well labeled, especially the labeling of the recession supports the main objective of the visualizations really well. In visualization number two and three the data is well labeled, and again the labeling of the recession in visualization four supports again the main objective of the visualization. Because of the labeling the recession it is easy to search for the unemployment rates over different sectors in that specific period. Second, is the lie factor high in the visualizations? In visualization number one the representation of job growth is represented by the color of a dot. Above 0.75% is blue, in between 0.75% and 0% is green, in between 0 % and -1% is yellow and below -1% is red. The lie factor in this visualization is not fully correct because the color-coding is not linear. In this case the visualization does not tell the truth.

### Design

Are the visualisation design principles of Tufte well used? Those principles relate for example to the data to ink ratio and the minimization of additions to the visualisation, also called 'chart junk'. In the first visualisation a well amount of variables is visualized (job gains and job losses per sector over time, the amount of sectors with job losses and gains in percentage compared to the previous month, the patterns in these percentages and the relatedness of all these variables to the recession). First this amount of data density was a bit confusing, but after a while I grasped the entirety of it. Visualization number two, three

and four are less layered and easier to grasp. Meanwhile visualization three and four display the exact same information, and one of those can therefore be seen as unnecessary.

Are the graphic design principles of Ware (2010) well used? Those principles relate to the use of contrast, repetition, alignment and proximity. Contrast is used a lot in the first two visualizations, with the use of highly contrasting colors. For example in the first visualization, the difference between job losses and job gains is very effective because of the use of contrasting colors. In the second visualization, colors help you to link the data to visualization number one. Repetition is also used quite a bit with the same use of colors throughout the dashboard and the repetition of colored dots in the first visualization; each dot indicates a job sector per month.

### Conclusion

The main objective of the visualisation is to give the viewer a chance to study the relation between unemployment rates over different sectors and the occurrence of an economic crisis. It seems that van Dam and Lightner succeeded sufficiently in this objective. Some of the design choices that are made in the process of developing these visualizations are very successful. However, there is still some room for improvement.

First I would decrease the data density of the first visualisation so that at first sight the visualization is not so confusing. When the data density is lower users can intuitively read and interpret the data. Right now the user still has to put in too much effort to get a grasp of the visualization. Second for the third visualization I would introduce a neutral color for the 0% encoding. Then I would instantly see what the colors mean in the color raster. Third, the third and fourth visualization are the same in the information that they give to the user. One of them is actually unnecessary.

## Literature

Munzner, T. (2009). A nested model for visualization design and validation. Visualization and Computer

Tufte, E. R., & Graves-Morris, P. R. (1983). The visual display of quantitative information (Vol. 2, No. 9). Cheshire, CT: Graphics press.

Ware, C. (2010). Visual thinking: For design. Morgan Kaufmann.