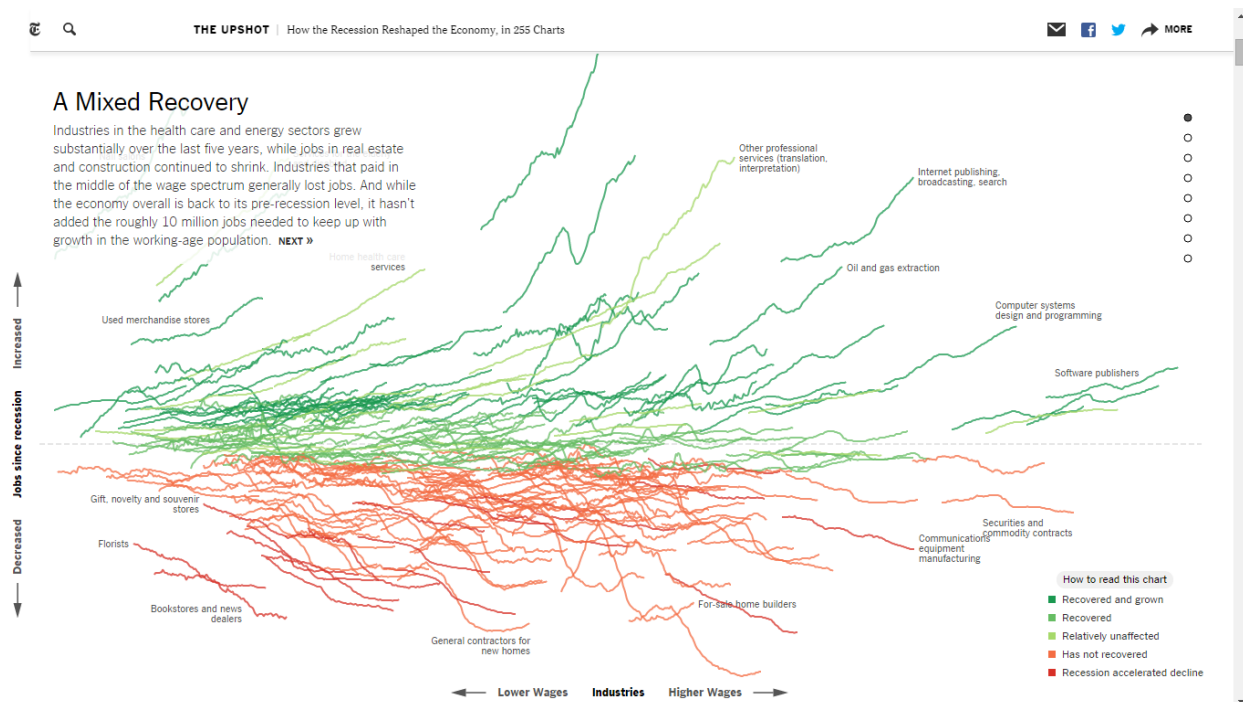**Kim de Bie – 11077379**

Homework week 2 – How the Recession Reshaped the Economy

1. This visualization aims to show how the financial crisis has affected the labor market. For each industry, lines are drawn that indicate a growth or loss of certain job types. It was created in 2014 by the New York Times.
   http://www.nytimes.com/interactive/2014/06/05/upshot/how-the-recession-reshaped-the-economy-in-255-charts.html?_r=1&abt=0002&abg=1

2. Color: in this visualization, shades of red and green are used to show how demand for certain jobs fared. Naturally, green means that job demand has increased (or has remained unaffected) since the financial crisis, whereas red means that demand decreased. Here, color is a i) *selective* variable, because it helps us distinguish some lines from others; ii) an *associative* variable, because we see patterns of red and green lines; iii) a variable that has some *length*: we can quite clearly distinguish five different groups (although perhaps the colors are somewhat too close to each other).
   Position: position of the lines indicates firstly the wage level of the jobs (on the x-axis) and secondly the relative growth or decline in the field (on the y-axis). Partially, the position of the lines therefore has the same function as its color (namely to indicate increase or decline). However, the *length* of the position variable is greater than of color: whereas with color only 5 groups could be distinguished, more 'shades of grey' can be indicated with position. Besides this, position is *selective*, because we can clearly see how one line differs from the others in terms of demand and wage. Position is also *associative*, because we can determine what lines group together and are thus similar in demand and wage. Lastly, position allows us to *order* jobs in terms of their wage and demand.

3. Munzner's first step is to characterize the tasks at hand in the "vocabulary of the problem domain". This means that the designer of a visualization should frame the story that he aims to tell in a language that is understood by those who will use the visualization. In this case, the "problem domain" entails the need for a clearer understanding by the general of how the job market was affected by the economic crisis. The threat to this level is that the wrong or a non-existing problem is addressed, which does not seem to be the case; the issue seems relevant to the audience of the New York Times. The next task according to Munzner is to abstract into operations and data types. For this visualization, the most important operation involved is comparison (of the status of the labor market at different points in time). The comparison relies on quantitative data on job loss/growth and wages in specific fields between 2004 and 2014. This operation combined with the data (so, comparing job demand at different points in time) seems to address the problem at hand (which is the threat to this level). However, what seems to be missing is the status of the overall job market at different points in time; the visualization thus only allows us to compare the status of different industries at different points in time, but understanding the performance of the overall job market is more difficult.

4. The lines in this visualization share a common scale, which Cleveland and McGill find facilitates easier comparison. The task of viewers of this visualization is to determine position along this scale, which is also found to be a relatively 'easy' task that leads to little bias (as compared to judging length). This common scale exists for determining the position of lines as a whole in the graphic that is initially shown, but it also pops up if we hover over specific lines (allowing us to compare movements 'within' a line). Thus, this visualization is relatively easy to understand following the criteria of Cleveland and McGill.

5. I think that visualizations have long been seen as a form of art, where art comprises something that is focused on aesthetics without necessarily being backed by objective laws and scientific truths. However, articles like that of Cleveland and McGill show that there is much room for scientific criticism of data visualizations. In that sense, visualizations depart from the area of (functional) art and enter the realm of science. Nonetheless, I believe that there will always be an element of artistic expression (with indeed a strong focus on functionality over aesthetics) involved in data visualization, so in that sense the term remains somewhat applicable.

6. *Firstly*, this visualization should show me how different industries have fared through the crisis. This visualization helps me with that: besides position and color, hovering over a line gives me a very clear timeline of how the demand for an industry has grown or shrunk. On the other hand, it is hard to find a specific industry; lines are clustered together tightly and there is no search function. *Secondly*, the visualization should help me understand how the overall labor market has performed since the crisis. This is somewhat more difficult: I see that many industries have grown and others have shrunk, but I see no clear pattern. Also, because the sizes of the industries are not indicated (except when hovering over an industry) I do not know if overall there were more or less jobs created. *Lastly,* this visualization should show how different segments (groups of jobs) have performed. This is done by the highlighting of several groups of jobs on the different pages of the visualization (by clicking the bullets on the right or scrolling down). This is an interesting and helpful addition, but it is difficult to determine (from this visualization) if the author was objective in selecting these subgroups; perhaps there are jobs that completely contrast the stories the author tries to tell?