Data Visualization Critique on "The Changing Nature of Middle-Class Jobs"

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"The Changing Nature of Middle-Class Jobs"[1] was selected by the "Kantar Information is Beautiful Awards" as one of the New York Times' best data visualizations of 2015. This data visualization aims to show the changes in the shares of middle-class jobs from 1980 to 2012, with a special attention to the gender breakdown of each occupation. This visualization is made of three parts. The first part is a line chart showing the shares of middle-class jobs in year 1980 and 2012, which is decomposed into 10 subplots of job categories. The colors of the lines represent the gender proportions: a deeper red line represents a job with more females, a deeper blue line represents a job with more males, while a grey line represents a job with balanced gender proportions. The second part is two lists showing the top 20 occupations that gained share from 1980 to 2012 and the top 20 occupations that lost share. Still, there are colored dots in front of each occupation showing the gender proportion of it. Finally, there's a line chart showing the changes in the shares of middle-class jobs by industry.

The source of the data is IPUMS from U.S. Census Bureau, Minnesota Population Center, which combines the fifteen federal censuses and the American Community Surveys(ACS) of 2000-Present. The decennial U.S. Census includes citizens, non-citizen legal residents, non-citizen long-term visitors and undocumented immigrants. The coverage of the census is high, although some may argue it's biased. The Census Bureau estimates that in 1970 over six percent of blacks went uncounted, whereas only around two percent of whites went uncounted. Another concern of using older census data is that modern sampling techniques were not used at that time, and thus the data may not be representative of the U.S. population. The more recent ACS data, on the other hand, is much more reliable in terms of random sampling. So on the whole, this data visualization is truthful, with some concerns about the census data.

Generally, this data visualization is functional. Below the head of each figure, there are some brief explanations, some of which provide just enough information about the figures but others are a bit redundant. In the first figure, the text explains how they define middle-class jobs–jobs that pay between $40,000 and $80,000 in 2014 dollars. It also provides the main takeaway of this figure: Fewer of them are in male-dominated production occupations, while a greater share are in workplaces more open to women. The text in the second graph, however, is just a repetition of the information contained in the first line of the "Top 20 occupations that gained share" list, which everyone can notice easily. The text in the third graph extracts the two most striking changes in the line plot, which is helpful. Another key feature of the first figure is that it's interactive. There are quite a few lines in the plot, showing each line's corresponding occupation would make the figure too crowded. So only the occupations with the most striking changes are shown in the figure. But readers can still put the cursor on the line they are interested in and the corresponding occupation will be shown. However, this kind of interaction may cause a loss of information, since only 10–15% of people interact with the New York Times' graphics, as revealed by Gregor Aisch, a former graphics editor at The NYT.

This data visualization is undoubtedly beautiful. Thanks to the interaction technique and the subplots, the first figure is clean and clear even with so many lines. The blue and red colored lines and dots clearly show the different trends in male-dominated and female dominated occupations. Another detail worth mentioning is the color spectrum in the first figure. This spectrum is strange at first glance, because the two edges of it are both 100%. But the "men" and "women" labels on the two edges indicate that it's a bidirectional spectrum, which saves more space than two separate spectra for the two genders.

This data visualization is generally insightful, but a little biased. The brief texts under the heads of each figure provides the main information of the figures: from 1980 to 2012, female-dominated middle-class jobs have gained more proportions, while most male-dominated occupations have fallen behind. The dominating red dots in the "Top 20 occupations that gained share" list in the second figure and the dominating blue dots in the "Top 20 occupations that lost share" list further support this. In the first figure, however, the authors select some occupations with the most striking changes to be labeled, which can be misleading. To strengthen the major takeaway of these graphs, the authors selected some red lines with sharp increase and blue lines with large decrease. In this case, the readers may not notice the blue lines that grow significantly, for example, mathematical and computer scientists.

This data visualization is enlightening, since it provides comprehensive and inspiring information of the changes in middle-class occupations. Not only the changes in the proportions of each job are shown, but also their gender breakdowns, which lead to readers to think further about the interactions between social economic changes and gender equality. At the bottom of the second graph, there's a "SHOW ALL OCCUPATIONS" button, so that reader can see the changes in the proportions of all jobs if they are interested. The third graph shows the aggregated changes in each industry, which inspires the readers to think further about the interactions between social economic changes and the technological upgrading in different industries.

Combining the above five aspects, this data visualization is generally truthful, reader-friendly and provides the readers with a deeper understanding of the topic.

References

1. The changing nature of middle-class jobs. https://www.nytimes.com/interactive/2015/02/23/business/economy/the-changing-nature-of-middle-class-jobs.html. Accessed: 2019-05-18.