Design Critique: Week 7: “Job Market Tracker”

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Data Processing

The Job Market Tracker’s objective is to give an overview of the monthly unemployment rates in America since 1948; and also to show the numbers of jobs gained or lost in different industry sectors since 2005. The Tracker’s data is intended for anyone involved in economic research. The Tracker is composed of four different charts: the first is a graph emphasizing overall contrasts between work sectors gaining jobs and work sectors losing jobs (“winners” versus “losers”) since 2007. Whenever a point in the first graph is selected it will update a secondary chart containing a table with detailed information for the jobs gained/lost in the corresponding month. The third chart contains a color-mapped chart depicting monthly unemployment rates since 1948. The fourth and final chart shows a line graph for previously mentioned unemployment rates data. Interactivity added at the bottom of the page filters unemployment rate charts by gender, age, race and/or education.

The first point of critique discussed for Job Market Tracker relates to Tufte’s principles of graphical integrity[1]. Labels shown in both the sector job gains-and-losses charts and the national unemployment rate charts seem correct. The effect size shown in the graphs corresponds to the effect size in the data and therefore the overall lie factor is low - no out of context data is shown. Additionally, most chart explanations contain complete information and are logically displayed on top of its corresponding figure with its corresponding title. One exception however is the interactive chart’s title - containing detailed information for the jobs gained and lost in a specified month. The interactive chart’s title should be updated to whatever month is selected, yet it seems to be stuck on “Job Gains and Losses for November 2015”. In summary, the overall graphical integrity for the Job Market Tracker appears to be sufficient.

The second point of critique will be based on Tufte’s visualization design principles[1]. The data to ink ratio for all four Job Tracker charts is high: graphs have considerable data

density, no apparent chart junk is found and non-data ink is kept at a minimum. However the data to ink ratio for chart number three, which shows the unemployment rates per month, could be further improved. The height used for the colored month bins is quite large when compared to the smaller squared boxes (as shown in chart one). Downscaling the month bin sizes would result in a more condensed chart with maximized data to ink ratio.

The next criticism discussed for the Job Market Tracker is in regard to the usage of CRAP (Contrast, Repetition, Alignment and Proximity) graphic design principles[2]. The principle of proximity seems well-maintained - two job gains and losses charts are followed-up by two national unemployment charts and thus related data is grouped together. The most important visual attraction used in the Job Market Tracker is the contrast mediated by differences in color, font properties and positioning of elements on the webpage. Data is displayed in saturated colors and all charts are neatly aligned to the center of the page. In contrast, the corresponding title and description elements are represented in plain black text and have fixed page margins. Additionally, hovering your mouse over the different charts provides extra contrast for selected items through the use of black or gray highlighting. The design theme used for the charts is consistent throughout the Job Market Tracker and this allows for a natural navigation flow from the top to the bottom of the page.

The different types of visual encoding used for the series of charts are color values, bar sizes and x- and y- positioning[3]. The latter two types appear to have been used correctly. In both the first and the last chart x-position encodes time and y-position corresponds to a quantity: either the total amount of sectors falling and rising or the monthly change in unemployment rate. Subsequently the second chart uses another planar variable, in this case bar size, to represent the quantitative sector size in jobs. A divergent red-to-green color scheme is used to display monthly changes in payrolls as well as the monthly changes in unemployment rates. However for some unknown reason the color blue was added to the color scheme encoding monthly changes in payrolls and this inconsistency conflicts with the principle of design repetition[2]. Additionally, job sectors which show no monthly change are colored gray and aligned with the label “Unch”. Neither the meaning of the “Unch” acronym nor the corresponding gray color value is explained anywhere on the page. The choice to use a divergent color-scheme could be justified if the authors were to put as much emphasis on mid-data range values as on extreme values[4], yet the title emphasizes “winners” versus “losers” and therefore one would expect extremes to be more strongly represented.

Moreover, the colors used in these schemes are not ‘colorblind-friendly’ and should therefore be replaced to improve overall accessibility.

In this next section additional suggestions to improve the Job Market Tracker are discussed. First off is the shared interactivity between the first and second chart: whenever a column is sorted in the second chart this will re-order the first graph as well. The first graph’s re-ordering seems unnecessary since it confuses more than it does provide new information. For example, if one re-orders the data by sector sizes this would only result in an apparent scrambling of colors in the first chart. To determine the actual size of a given job sector one would still need to get back to the second chart and look this up. Another point of critique is the highlighting in the first chart where the nodes of a specific sector turn black when hovering the cursor over. The highlighting interactivity occludes the original colors encoding the monthly changes in payrolls and thus makes it harder for the viewer to interpret trends for particular sectors. An alternative use of interactivity would be to compute a line graph displaying only the monthly changes over time specific to the selected sector. Lastly, the Job Market Tracker is describing “national” unemployment rates, yet the data’s country of origin is not specified anywhere. The Tracker’s references suggest the data stems from the United States of America. The data’s origin should be made clear in either the title or description to avoid misinterpretation/confusion.

Overall, the Job Market Tracker scores high in terms of aesthetics. The graphic interface’s bright colors combined with a white background seems visually appealing and content is aptly positioned in the webpage’s center. The descriptions have little text yet sufficient explanation since most of the data speaks for itself. Playfulness is also high due to multiple opportunities for interactivity, encouraging further active exploration of the data. However, some of the interactivity seems superfluous and could be further improved. Finally, the visualizations’ vividness is also satisfactory: the different datasets are carefully formatted for the webpage, creating the overall coherent whole of the Job Market Tracker.

References:

1. Tufte, E. R. *The visual display of quantitative information*. *CT Graphics, Cheshire* (Graphics press, 1983).

2. Williams, R. *The Non-designer's Design Book: Design and Typographic Principles for the Visual Novice*. (Peachpit Press, 1994).

3. Dubakov, M. Visual Encoding. (2012). at <https://www.targetprocess.com/articles/visualencoding/>

4. Brewer, C. & Harrower, M. COLORBREWER 2.0. (2013). at <http://colorbrewer2.org/>