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# DESIGN CRITIQUE: NATIONAL UNEMPLOYMENT TRACKER

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## PURPOSE OF THE VISUALIZATION

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The visualization is in the social domain, particularly in the socio-economic. It shows the changes in employment in several sectors in the United States.

You can find for twenty categories of sectors the percentage of change in the amount of jobs from 2009 until now. Furthermore it shows the absolute numbers of change per sector per month within the same timespan when clicked upon on one of the entries of a month. At the end a visualization of the total unemployment from the 1940's until now is shown.

The national unemployment tracker seems to aim at broadening the understanding about unemployment. However this is not particularly clear because no explanation is given. For each of the visualizations a small (one sentence) introduction is given about what is shown in the particular visualization. Context is missing however. The current status of this visualization only enables in the exploration of data. There is no story being told by the designers, so understanding is completely up to the viewer. This can indeed be appropriate in some cases; in this case however it brings down the overall level of the visualization. By missing context, for most viewers, there is no new understanding, at this point the visualization only enables for the viewing of the data.

## VISUALIZATION PRINCIPLES

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All axes are labeled but are unambiguous. The y-axis is labeled as the total employment, while the y of the data points signifies one sector, which makes the y-axis hard to perceive. This misleads the viewer on first view. The x-axis is however unambiguously labeled using a normal linear date scale. This use of appropriate axes enables to accurately link a data point in the graphs to the value in the dimension. By using focus, by means of a partial crosshair, this is further enhanced. It would have been better to create a full crosshair, but because on mouseover the data the y-data is shown in a tooltip, this is not entirely necessary. This tooltip, also compensates for the ambiguous y-axis.

A point of consideration is always the so called lie-factor. This depicts the fact that a change in data should be reflected by the same change in visualization. A change of 5% in data should be represented by a change of 5% in the visualization. This has not been done. Because each of the data points is represented by a block of the same size depicting the sector, stacked hierarchal, the difference between a block of 0,02% and 0,04% and the difference between a block of 0,2% and 0,4% can be different. Therefore the lie factor changes all the time in the first graph.

According to Tufte the data-inkratio should be maximized. This has been done according to Tufte's guidelines in these visualizations. In short: the space should be used utilized as much as possible and as little "nondata" as possible should be shown. This has been implemented correct. Each of the graphs uses as much space for the data as possible (minimizing whitespace for example) and only data that is of value to the message is shown.

Furthermore the layering of data has been implemented correct. Times of recession are shown (in the last graph only optional) on top of the other data, therefore enabling to compare these layers of data, thus showing that unemployment rises during recession.

## DESIGN PRINCIPLES

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According to Robin Williams the following four principles should be taken into considering when designing: Contrast, Repetition, Alignment and Proximity.

Contrast involves the notion that similar data should be similarly encoded and different data should therefore be differently encoded. This has been fairly right implemented. Sets of data representing (almost) the same value are (almost) the same encoded. It would however been better to have some option (for example by selecting a subset) to distinguish datapoint of almost the same value. It is very hard to distinguish by means of the encoded color the difference between a sector with a 0,20% or a 0,02% change.

Repetition involves using the same encodings throughout the visualization. This is fairly well done by using almost the same color scale throughout the page. The only thing is the blue from the top graph doesn't return on the rest of the page, so is unique, which goes against the repetition.

Alignment is for example the linking of different graphs by means of using some same dimension. This hasn't been done for the first graph (which is wider than the rest). Furthermore it could have been better to link the separate graphs using the same time scales (the last two) by something like a connecting line. The alignment is the same now, but some kind of linking could enhance the understanding.

Proximity deals with the same principle as contrast, showing similar data the same way. For proximity this means that related data (or graphs) should be shown in proximity to each other and differences should be emphasized by separation. Because the data has only one variable in one dimension for each set, proximity is not hard to encode. Higher values are placed higher and lower values are placed lower. Placing the bar chart under the national unemployment could be better, so to group the values based on percentage and on separate it from graphs about absolute numbers.

## ENCODING OF VARIABLE

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All of the data in the first (area chart) and second graph (bar chart) is primarily encoded by position, meaning higher in the visualization also means a higher value of the data. This is a good choice, because it is the easiest to perceive. The data is also encoded by color, therefore supporting the position. But the color encoding could have been better chosen. The diverging color scale is not a natural one. A diverging scale is indeed possible, but the amount of hues used should be minimized. Removing the blue from the color scale would be beneficial. Conclusion in this is that the first and second should use the encoding color encoding of the third graph (small multiples), which has been properly encoded. The fourth graph (time series) is a textbook example of a simple visualization, only position encoding is used.

## INTERACTION

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The interaction design is also implemented fairly well, but some improvements could be made.

It is good that there is a form of view manipulation (selecting) used. By using this you can distinguish some particular subset of interest. This enables closer inspection of some variable of interest. But an improvement could be made by making a selection persistent on screen. At present the trend in the data is shown per sector on mouseover, it is however not possible to click on a sector and let the line of the trend show or even better: select multiple sector and thus enable to compare the trend between sectors.

There are also multiple views depicting various perspectives (percentage or absolute). However the two of these combined is a strong combination but this hasn't been done. Selecting something in the first graph should also highlight the data in the second graph.

Furthermore the principle of organization has been used in the third graph. By using so called small multiples data from different sets (years) is shown in one view and therefore enabling the comparison between these.

## IMPROVEMENTS

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To conclude the national unemployment tracker has been pretty good visualized. There are some recommendations regarding specific details, but overall the message is clear.

Some improvements have already been suggested but the main improvements would be to enhance the storytelling. At present only a short explanation about each of the graphs is given. This is however not set into context. For example some explanation about some sectors being hit harder during certain times could enhance the understanding of the context and therefore the understanding of the represented data.