## horizontal line



Design Report

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# Report Goal

The goal of this design report is to justify the design of each visualization, especially with respect to possible alternatives.

# Instructions

Fill in the template provided on the following pages for each of your project's visualizations.

*Note: If a chart on itself is meaningless (you don’t expect the user to perform any task by looking at that chart individually), you can group multiple charts until there is a task a user would be able to fulfill with them.*

[12:07, 5/20/2020] Jim Wang: Final report: 3 pages, explain the effort that went into the project, add reflections, what vizes chosen and why, how work distributed in group, DUE 30 May

Design report: per viz or group of viz, (for us I think it naturally breaks down to each chapter), must specify alternatives, reference course material

[12:08, 5/20/2020] Jim Wang: Design report: 50% of course grade, elaborate benefits/downsides of each choice,

[12:13, 5/20/2020] Jim Wang: Design report: alternative for each viz (viz is defined as for one purpose), Diego/Katrien preference for in depth discussion of comparison for one/two viz and alternatives, no page limit, think about plotting encoding in table, more specific is better

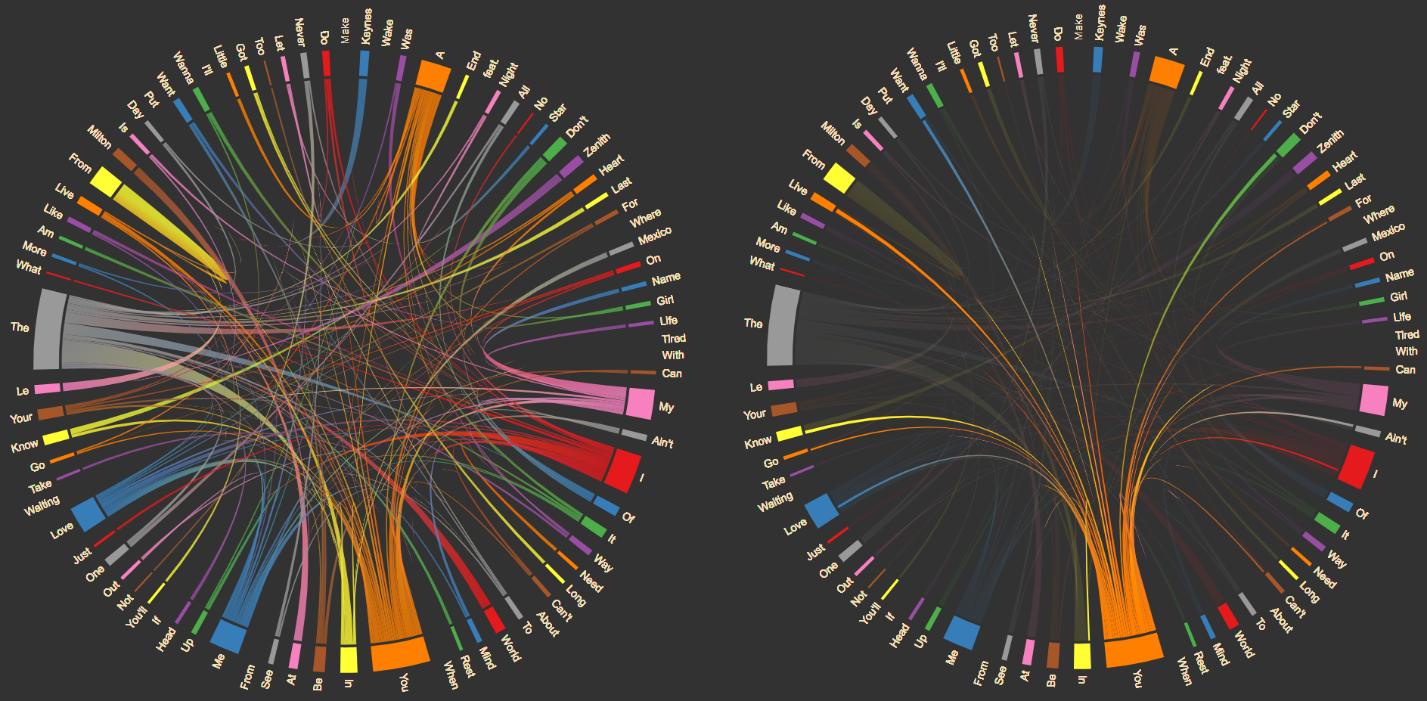
[12:14, 5/20/2020] Jim Wang: Design report: DUE 17 June, 2-3 pages for describing alternative, look at example for guidance on structure and complexity

# Visualization Design Report Template

### Another Viz

## XXXScreencap here

### Chord Diagram - Hot Song Titles



# Insight

### Another Viz

## XXXWhat Is the Insight

### Chord Diagram - Hot Song Titles

Hot titles use uncommon word pairs to create descriptive and memorable titles. Poorly-ranked songs use more common words. We can also use this to create new titles for existing songs.

|  |  |  |
| --- | --- | --- |
| **Artist** | **Original Title** | **Generated Title** |
| Kesha | Tik tok | Rest the Day, Out All Night |
| TLC | No Scrubs | You Ain’t Got It |
| John Denver | Country Roads | Wake Me Up On the Way |

Some common words are not here, most noticeably being the word “Love.” “Love” is one of the most used, or overused words, in every bottom-ranked song. Great love songs describe the theme, they don’t need to put it directly in the title.

# Data

What data does the user see in this visualization? Only variables that are encoded in some way in the visualization (which can include a tooltip encoding) should be listed here.

### Another Viz

### Chord Diagram - Hot Song Titles

The linkages between words used in the hottest song titles are shown lines connecting them. The size of each node on the border represents the relatively popularity. The magnitude of the linkage is shown as a tooltip.

# Tasks

Why should the user utilize this visualization? What task do you expect a user to fulfill with this visualization? You should list at least the main task, but you can include some secondary tasks that the visualization also allows the user to do.

1. **Main task**
2. Secondary task
3. Secondary task
4. Secondary task
5. Chord Main Task: find new and interesting song titles

# Design Decisions: Visual Encodings & Interactions

How are visual encodings constructed in terms of design choices? What interactions are supported by the visualization system? What other design decisions were taken?

### Another Viz

### Chord Diagram - Hot Song Titles

Goal:

Since this chart starts out interactive, every element starts out equally readable. The interaction and connections between nodes likewise. As the user explores each word, I used a visualization which aligns the focus of the chart with the user’s cursor, dimming irrelevant nodes.

Colors:

Background: I used the color rgb(50, 50, 50). A dark (but not black) background serves the dual purpose of to 1) reducing eyestrain and 2) enhancing readability of fine, light-colored edge lines. XXXCitation

Text: Wheat (#F5DEB3) gives a pleasant contrast to the dark background and does not replicate any of the colors of the chords. In this way, it avoids giving any impression that all labels are tied to a specific subsets of chord.

Node and edge palette: Using D3 color palettes. For ~30 nodes, each color is repeated 3 times. Colors represent separation only, not encoding other meaning so can choose something visually pleasing. Unfortunately, no way to avoid pairs of colors in common colorblindness space. However, bright edges against dark background would still help with finding connections.

Fonts:

Sized to maximum that will fit on screen. This is dependent on maximum word length as width, rather than height, is the biggest limiting factor. Why? Desktop displays are 16:9 aspect ratio, horizontal. Ex: Samsung galaxy S10 3200x1440, iphone 11 1792x828, both 20:9 aspect ratio VERTICAL.

And yeah, you can make people turn their phones but it’s an extra second of work which is a meaningful amount.

Font selected: Arial, it’s a classic, it’s web-safe, it’s free. Pretty well readable.

Probably little difference in serif vs sans: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4612630/>

Tested on: [San Francisco, Salt Lake City, Washington]

Rotation:

Struggled so much with rotation. Rotation helps to fit in more nodes. But diminishes readability especially near 12 and 6 o clock. Not rotation requires smaller font sizes and destroys the visual entry angle (follow the direction of the word to the chord and then along the curve). I don’t know dawg, choices be hard.

Layout:

(Referring to integration in Tableau Story) Title up top naturally. Chords are less popular so needs some explanation of what the user can do with it.

Diagram in the middle, large. Bright colors draw the eye and interactivity encourages users to play with it.

Samples at the bottom. If the user gets bored or lost and starts to scroll, samples help capture their attention for what’s possible. Even if they leave, they still leave with something and not empty-handed.

Number of nodes and edges: This is a huge part of testing. The more nodes and edges, the more complex and interesting connections are revealed. There is a massive tradeoff in usability and readability beyond a certain point.

Interactivity:

Mid-chord node circle: node already have so much going on, helps the user match the label with the node, most importantly FIND THE HOVEROVER activation. Minimally distracting. Set to black to give slight offset to background. [REPLACE: enable hover over on big node bar]

Admittedly, testing not scientifically rigorous but indicates the problem: too few nodes doesn’t give enough choices. Too many nodes makes it impossible to follow or overloads the mental map.

Can help the user by weight of edges. Too many edges of weight = 1 clutters up the space but introduces options which are simply not very popular in practice i.e. only one song title has this combination of words. Whereas, setting edge weight of 4 means four songs had this combination of words.

Even better, and this is what is implemented, choosing by node weight. If a word has weight 4, then it was used in some combination 4 times. So user has more possible paths from that word.

Retain definite and indefinite article since it’s a useful origin and intermediate

References:

Based on D3 wrapper by https://shahinrostami.com/ and package from http://holoviews.org/.

# Alternatives

*Note: you should include at least 1 alternative. If you haven’t thought of any alternatives during the design process, think now if you could not use the visualization described before, how would you visualize the same data to support the main task.*

Describe as many alternatives as you wish and justify why your encodings or the design of your visualization may be better. You should use, when possible, research results or heuristics from class material or bibliography. If you are not able to do that, explain your reasoning for taking the design decision. Note that the data used for the alternatives and the task that they try to fulfill should be the same.

## Alternative Visualization 1

Describe the alternative chart or add a screenshot of it. If you have not implemented the alternative chart you can add some sketches, images from a similar concept with a different dataset, or any other graphical support that helps understand the alternative chart.

### Design Decisions

Describe how you have or will encode the previously described data in the alternative chart.

### Comparison

Justify why the design of your final visualization is more effective for the described tasks. Note that the final visualization should be more effective on the listed main task, but an alternative visualization can be more effective for some of the secondary tasks.

*Note: to get a better idea of how these justifications can look like, you can read through this Lisa Charlotte Rost post:* [*https://blog.datawrapper.de/dualaxis/*](https://blog.datawrapper.de/dualaxis/)*. In the article, she justifies how dual charts are a worse alternative than, for example, having two line charts side-by-side, not only by explaining intuitively how dual axis can be misleading but also by research results. In particular, she uses results from the following article:*

*Isenberg, Petra, et al. "A study on dual-scale data charts." IEEE Transactions on Visualization and Computer Graphics 17.12 (2011): 2469-2478.*

## Alternative Visualization 2 - Holoviews for Chords

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### Design Decisions

Describe how you have or will encode the previously described data in the alternative chart.

### Comparison

Much better UI – mousewheel zoom, click and drag to pan

Worse -

## Alternative Visualization 3

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