I decided to use data about motor vehicle fatalities in the United States from the Insurance Institute for Highway Safety (http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/overview-of-fatality-facts#Age-and-gender). Their data set contains a great historical overview of trends, as well as a more detailed breakdown of more recent data.

Fatalities per 100M Vehicle Miles Traveled (U.S.)

1953: Airbags Invented
"Their early airbag designs inspired others in the automotive industry to work on this safety feature. Ford and General Motors, for example, started experimenting with inflatable restraints in the late 1950's."
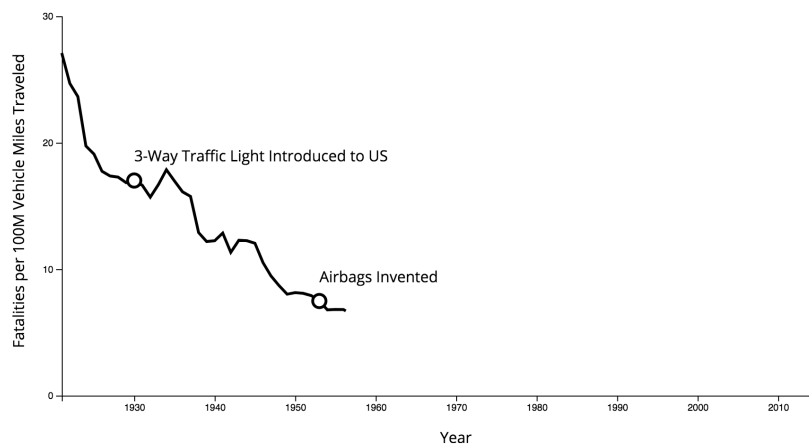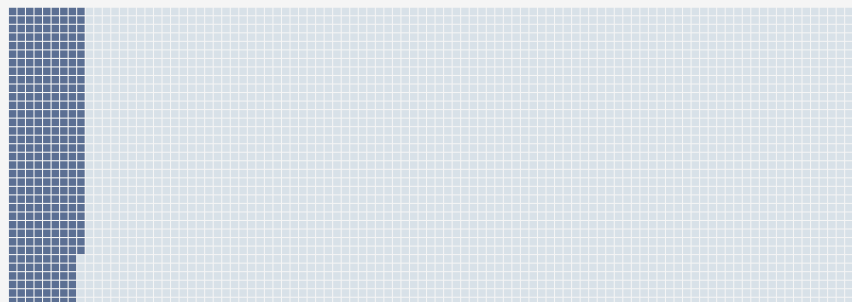

Motor vehicle crash deaths per 100,000 people by age and gender, 2015
Each square represents approximately 100 fatalities.

3095 motor vehicle crash deaths 26.5 deaths per 100,000 men ages 20-24

I wanted to take this data and figure out a way to show both the historical data going back to the 1921s and rich breakdown of 2015 data in detail, and in way that users could explore. Although the 2015 data is broken down by BAC, vehicle type and other metrics, age and gender are the only disaggregations with data at the intersection, which I thought would allow for a richer user experience.

In the case of historical data, I was hoping to let users discover the general trend of things (sharp, consistent decrease) in a way that still felt interactive and exploratory, without obscuring the fairly straightforward pattern. Additionally, I wanted to better contextualize this decrease over time as a result of innovations in safety technology and improved regulations. In both cases, rollouts across the U.S. were slow, tending to take anywhere from 5 to 25 years, from initial conception or invention to widespread use, and so it's difficult to portray individual events as singlehandedly responsible for trends. Instead, I aimed to show a small sampling of a few important events, with a focus on the progression of the data through them.

With the breakdown of 2015 data, my biggest goals were to let users explore individual populations, while also viewing the entire thing in the context of the historical data above. I wanted people exploring the visualization to get a kind of visceral sense of the human cost of these fatalities, while still operating with the understanding that this was all a dramatic improvement over almost any previous year. Simultaneously, I hoped to avoid some of the pitfalls we've seen with pictograms and icons and opted instead to use squares, alongside proportional statistics to lend greater statistical rigor to the project. A similar visualization was produced about gun deaths here (https://fivethirtyeight.com/features/gun-deaths), though I didn't agree with their insistence on keeping the shape of affected populations in squares. Given what

we've learned about the fallibility of area encodings, I found it more appropriate to stick with length as much as possible, though technically fatalities are still encoded more accurately by area.

Feedback from my group project prompted me to decrease the scope of my work, and focus more heavily on animations and persistent user interaction through scrolling to build engagement with the piece. I was hoping to include statistics about world data, and possibly an addendum of the emergence of self-driving cars, but ended up realizing from my group discussion that it could be more effective to focus on this smaller subset of tasks. I found that the people I talked to had been extremely impressed with the kind of scrollable storytelling visualizations they had seen elsewhere, and felt that these kinds of animations (as well as the ones in the grid view) were an effective way to draw user interest without actually disrupting reading of the static visualization.

The biggest challenge was realizing early on that age data could be more useful at different granularities depending on the user task at hand. As a result, I decided to create a new kind of filter system that actually allows users to determine the granularity of the dropdown before selecting options.

I was also surprised at how effective I found the animations and scrolling. Stepping through the line graph this way feels intuitive, allows for a dynamic representation, and goes a really long way towards encouraging users to read the accompanying text, and viscerally feel the accompanying historical trends. In all our talk of Gibsonian affordances, I found that his view of embodied cognition was largely lacking. Through scrolling, an action we've already come to understand as an extension of our will in other contexts, users can more viscerally feel the data.