

Health Tip.

A Visualization for Personal Fitness

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Process book

Health Tips

Your personal health tracker

A Balance Between Health and Food

This interactive website will keep track of the amount of exercise and food you do/intake for 30 days. The site will tell you whether you are at a good balance of exercise and food for each day. The actual amount of calories you intake while eating and burn while exercising will be compared to set goals for each day of the month. You can also compare the foods you eat with your friends.



Care Yourself

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Date. 03/26/2014

Overview and Motivation:

The Objective and Motivation of this project is to allow people to know their health status in the most direct ways. Normally we have all sorts of different apps that provide you with all kinds of data and visualizations, but most of them just show numbers and users may not completely understand what these numbers mean. Although some apps will give you a hint of what is the threshold and allow you to track your history, such as Nike+ or lose it, they are hard to understand. For Nike+, the fancy expression will sometimes confuse the user, hampering him to really understand how much exercise he really needs. Instead, he may be encouraged to exercise more than he is comfortable with. For lose it, the numbers lack an efficient way to visualize. Sometimes the user is consuming more calories than he should have. But he may fail to realize how much the difference in number matters. Furthermore, there are few visualizations that takes consideration of both food and exercise.

Related Work:

We drew inspiration from the different types of products out there that help people maintain their health. We are both young and interested in health and fitness and figured that we might as well put our knowledge and passion into something that might be able to help someone else out.

Questions (User Experience):

Our main question is: How can we visualize this kind of health information in a clear, concise way that will encourage and also educate people to take a deeper look into their health.

This visualization is for individuals who want to track their everyday health. Most people are not experts or doctors. Therefore, what they need is a quick glance at the result, which shows how they are doing. After seeing the conclusion, they then have the opportunity to browse this information in detail.

Also, this ideally would be an expression of personal data. People would be able to input data inside and the website would automatically calculate the numbers and provide the

result.

It is also important to have a food data to look at. Users will have no idea how many calories the foods they are eating have, they only know the name of the food. When they are using this, they will just input the name of the food and the system will calculate calorie for them.

Date. 03/28/2014

Data:

There are several data sets that we need. We obtained our main source of food information by web scraping <http://bilaras.hubpages.com/hub/food-calorie-chart>. Our data was then formatted in another file and used to calculate the necessary information for each user's diets.

1. Each different person's health standards will be calculated using the BMI (body mass index) test. This test takes into account height and weight and allows a calculation to determine whether someone is at a healthy index or not. The BMI standards are as follows:

- Underweight: < 18.5
- Normal Weight: 18.5-24.9
- Overweight: 24.9-29.9
- Obese: 29.9 or greater

These different categories are what the goals of the people are based off of. If they want to lose weight, the calculation will give a goal of how many calories to eat in a month and then that will help them reach their goal weight and put them in a healthy position.

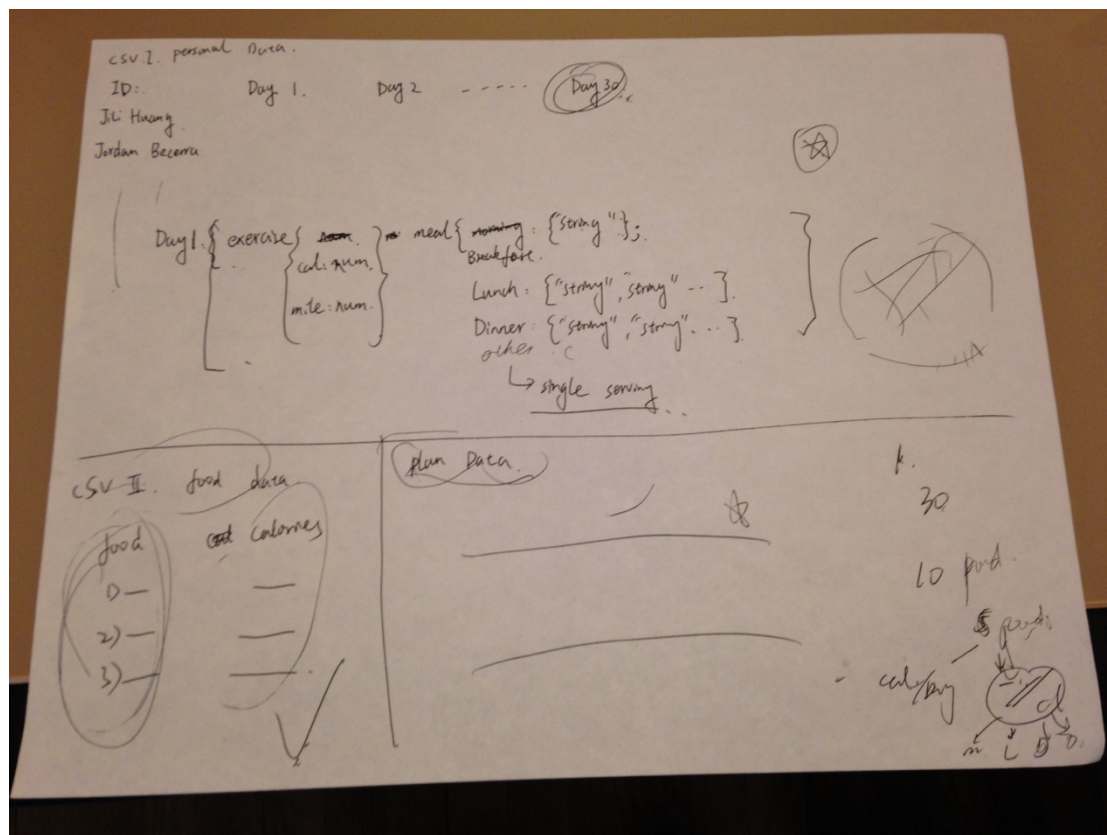
2. Food chart. Find a food database that each food correspond with a number of calorie value. To make the problem simpler, we don't want to deal with quantity. Single-servings will do the job.

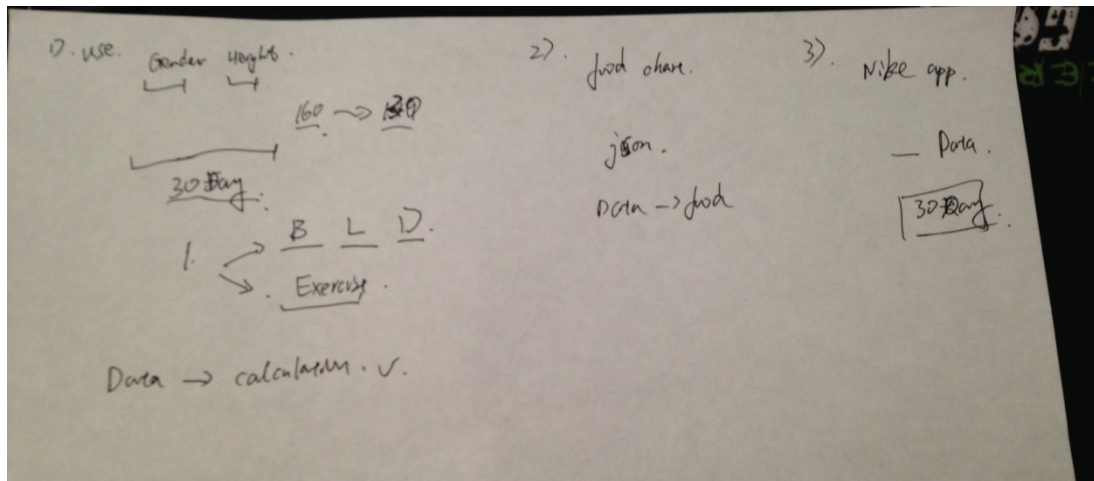
3. Personal data. Use Nike+ to accumulate your personal exercise data. Make your friends data. The main data that we are going to be looking at on the personal level consists of calories burned by exercise along with calories gained by eating.

Data (personal data) :

This is the data structure of personal data. We determine this is gonna be a 30 days plan. We have an ID of the person is

name. They will have 30 children for 30 days. Each child has two items, exercise and food. For exercise there will be mile and calorie. For food there will be breakfast, lunch dinner and others. each of these nodes will have items that is from the food data csv. In order to make it work we should browse the food database to determine the value of the food strings (calorie of the food) before we put this into the main visualization code.

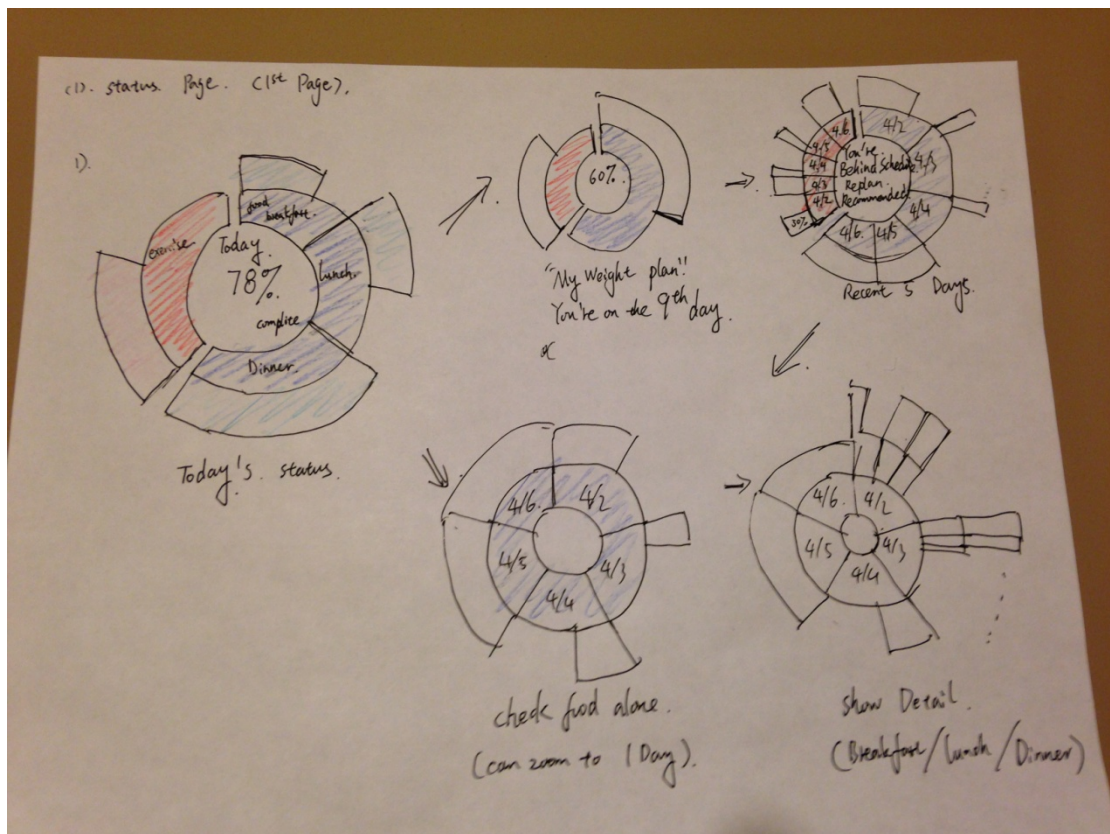




Exploratory Data Analysis/Design Evolution :

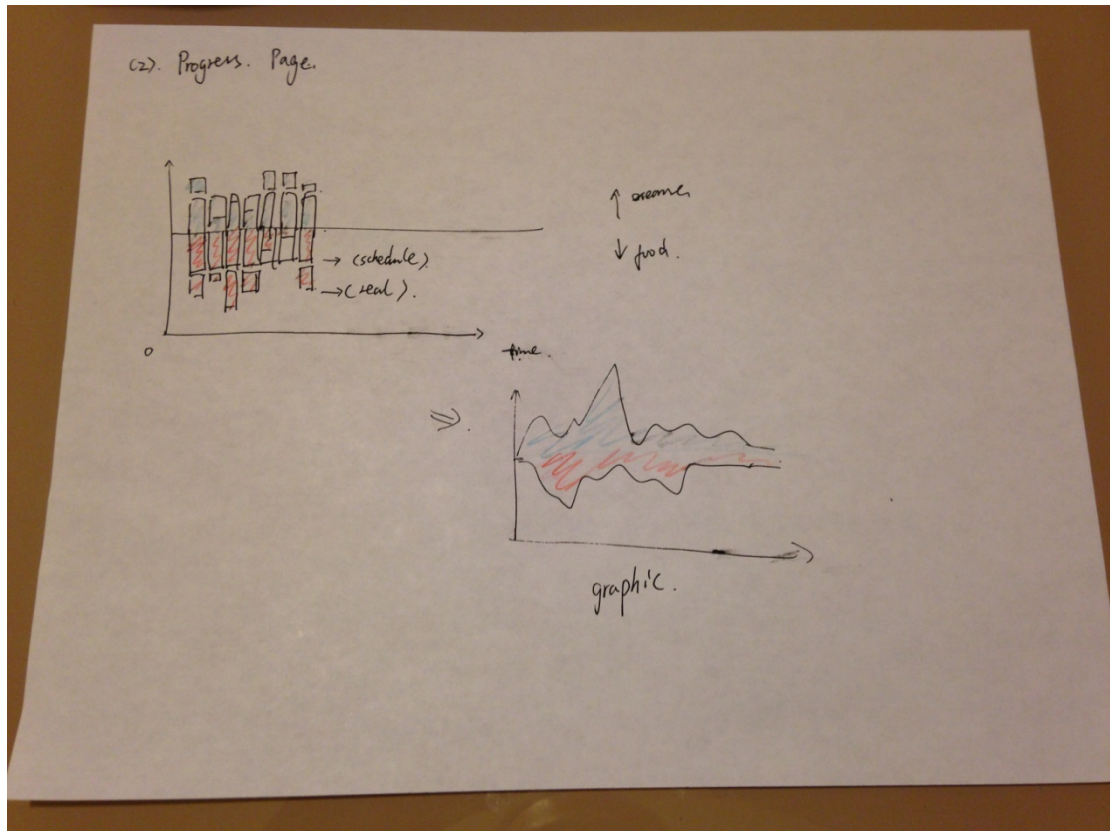
The initial visualizations that we considered to display our data were donut charts, line charts, and bar graphs.

We first thought of the donut chart and decided to implement it because we wanted to give a sense of completeness that came from each day. We wanted to be able to show how the users were doing in terms of balancing out the amount of calories burned and the amount of calories gained from eating. A circle chart does that nicely and also allowed us to display needed text in the big center that would give more information on percentages and what is actually going on in the chart.

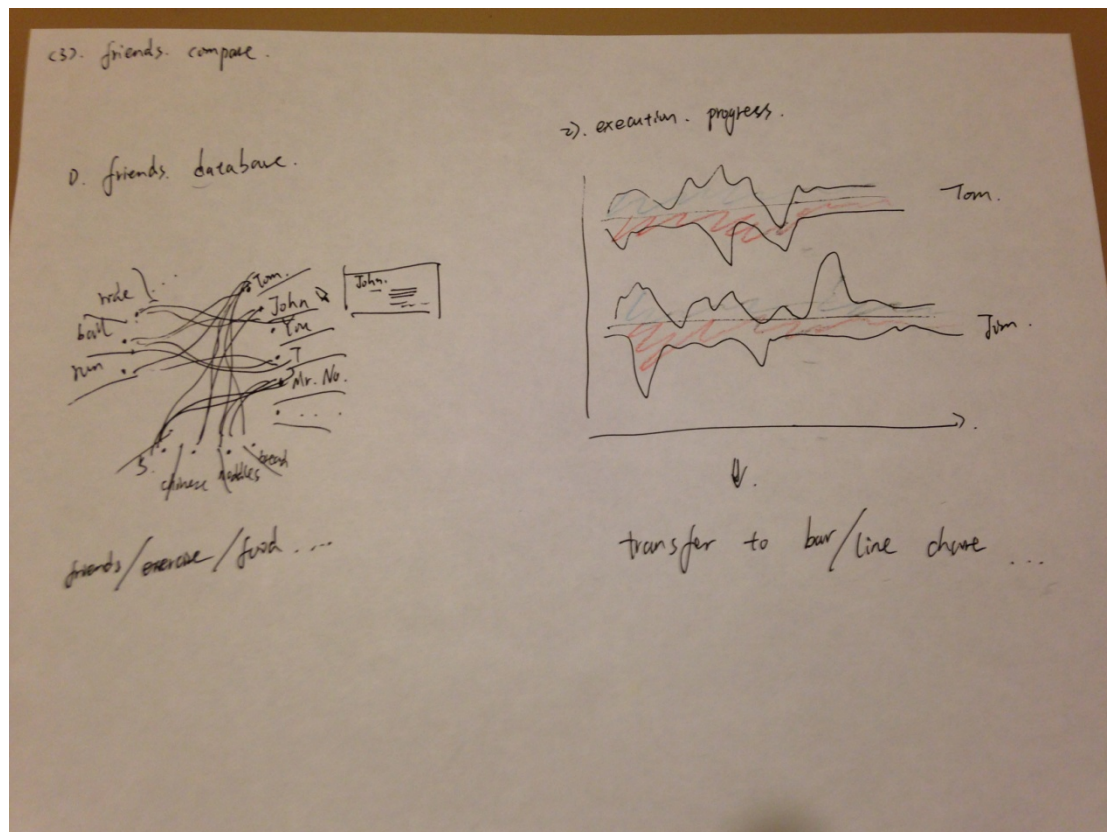


Another visualization that we considered was just a simple comparison bar chart. It would be simple and to the point, but not a very good choice for standing alone and showing all of the data that we intended to show.

Additionally, we thought that maybe a line chart showing the differences would also be good. However, this turned out to be a little bit too 1-dimensional for our data and we decided to not run with it.



The final visualization that we considered was one that allowed to user to relate to his or her friends. Nowadays, everything is about being social so we thought that we would implement something that allowed the user to see what his or her friends were eating.



Date. 04/08/2014

Peer feedback:

1. The donut bar is less comprehensible than bar chart. This may be the case but there is something else. First, the center text will be a focus point if you are using donut. Second, the movement of zoom in and zoom out make more sense of showing details and overviews.

2. To compare plan and real data. There is a very good point that it is the ratio that matters. In terms of our project, it is showing whether the ratio expression falls in the right shape.

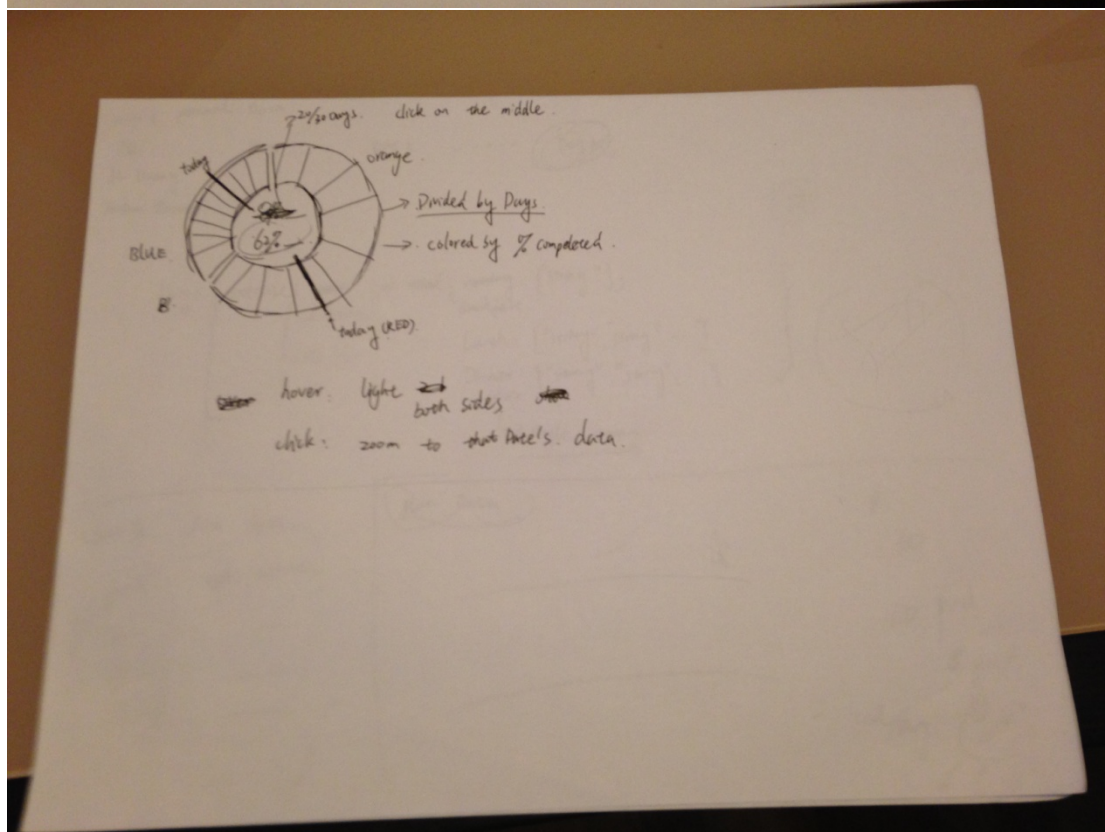
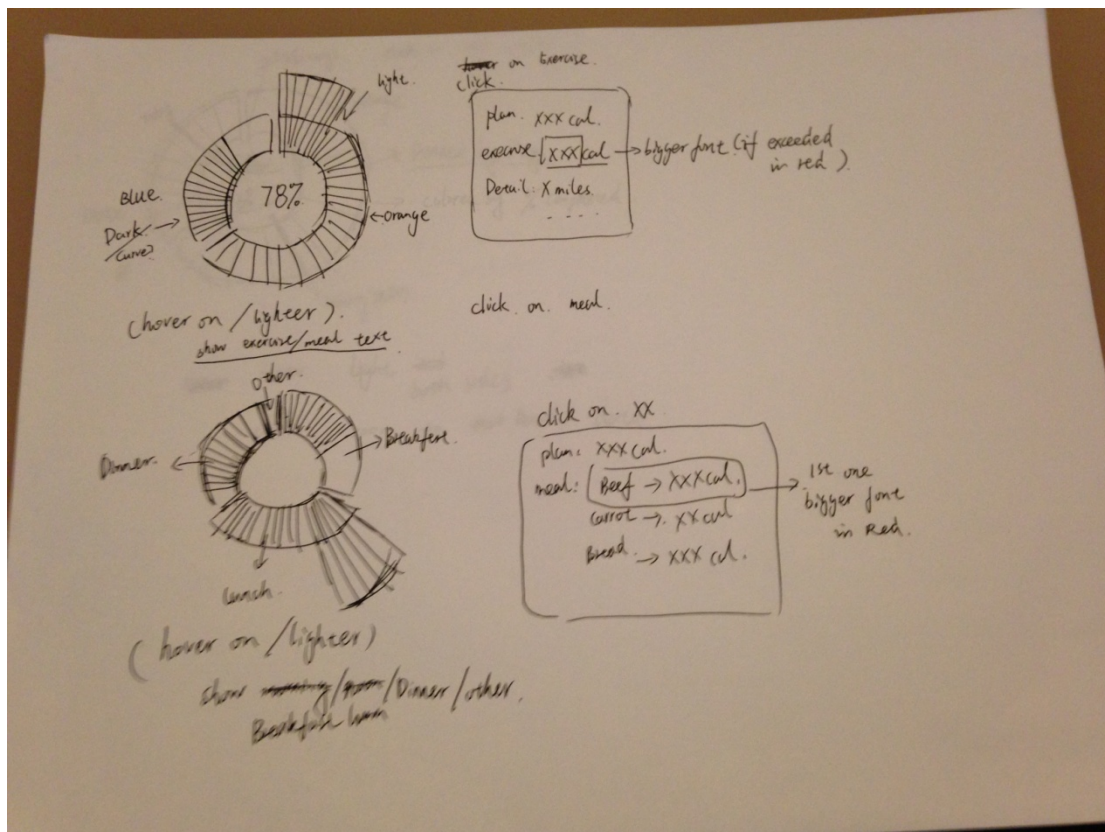
The balance is the key of healthiness.

3. UX sequence. First see today's conclusion, then have the opportunity to zoom into details or zoom out to overviews.

More Design Evolution/Implementation:

After thoughtful consideration of the previous visualizations, we decided to go with the donut chart, the bar chart, and the relation chart.

We decided on the bar chart because it is able to successfully show not only each day of the month and its size, it is very interactive and able to also show a daily breakdown of exercise calories and food calories and also a breakdown of the amount of calories eaten for breakfast, lunch, and dinner. It goes nicely with the other parts of our visualization and will make it easy for the user to understand how many calories they are consuming and burning.



The first part of the donut chart is the overview of the entire month. It has 30 sections in it, each section representing a

different day of the month. The size of each section is dependent on the amount of calories consumed for that day and how they contribute to your overall monthly goal. The donut is accompanied by a bar chart to the right of it that shows the amount of calories for each day in a bar chart that clears up the size of the segments and gives you the average calories for all of the days and the go calories per day in text. You will be able to switch between users so that you can look at a specific person's data or your own data.

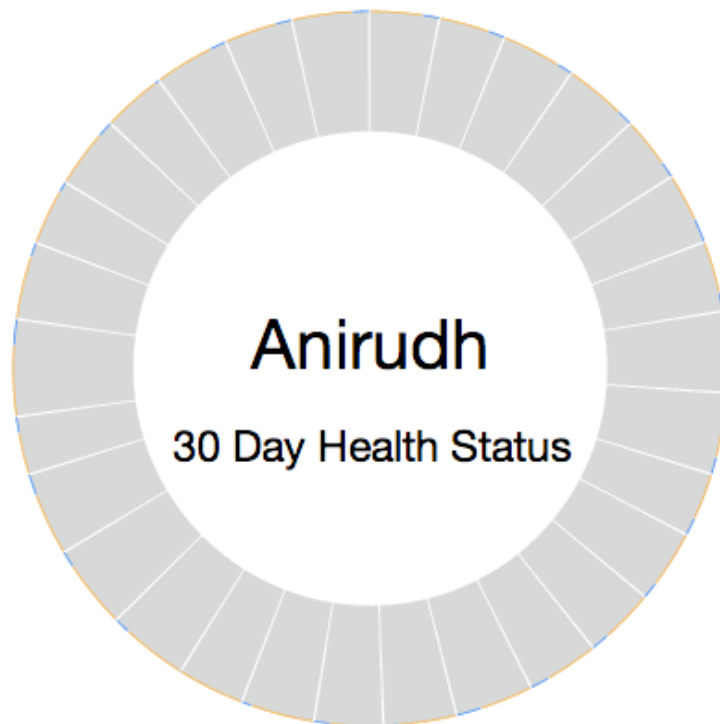
This chart is based off of two different examples we found on the internet. The first is the "Bilevel Partition" (<http://bl.ocks.org/mbostock/5944371>) which was where we got the idea for the clicking that switches the view. The second example is the "Sequences Sunburst" (<http://bl.ocks.org/kerryrodden/7090426>) which is where we got the idea of the highlighting and the different percentages in the center.

Personal Statistics

Select A User :

Anirudh ▾

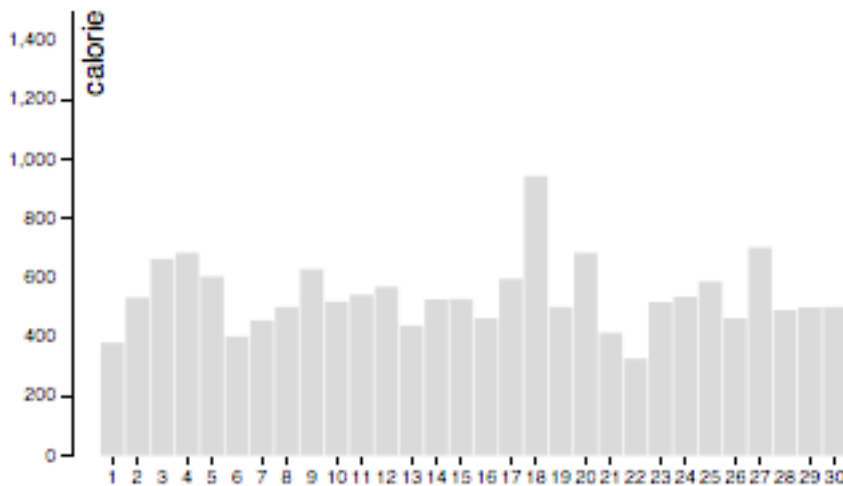
Friends' Status



Jili

Goal Calorie Surplus (avg): 250.00 cal

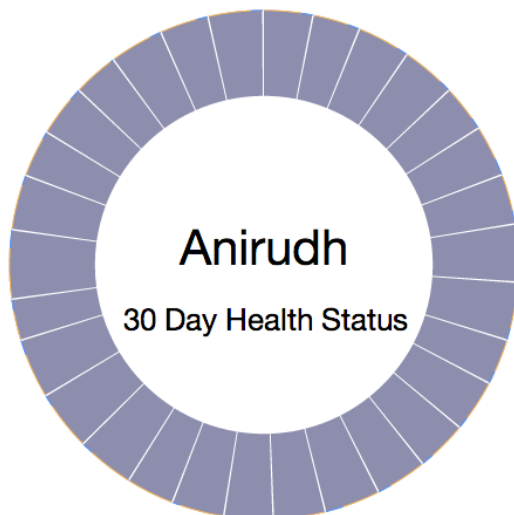
Actual Calorie Surplus (avg): 1129.93 cal



Select A User :

Anirudh

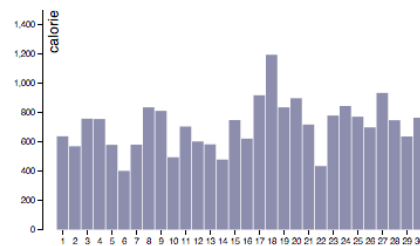
Friends' Status »



Anirudh

Goal Calorie Surplus (avg): 400.00 cal

Actual Calorie Surplus (avg): 710.63 cal



The next part of the donut chart is the daily breakdown of the calories. After you select a certain segment, it will zoom in to reveal the breakdown of exercise calories in blue, and food

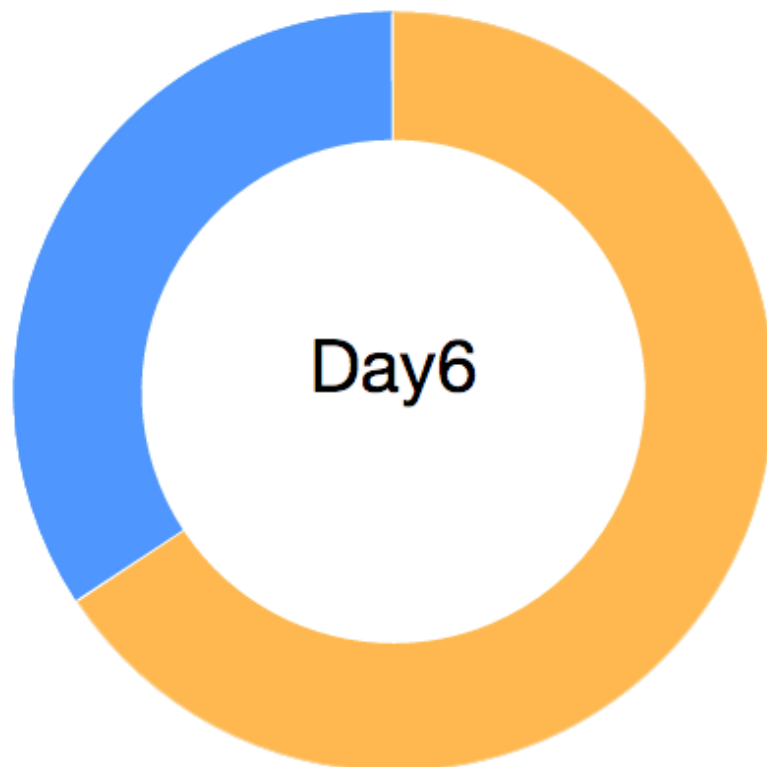
calories in orange. By clicking on the segment, the bar chart will also update. It will now show your daily goals against your daily actual food consumption and exercise. To return to the 30 day overview, click in the center of the donut.

Personal Statistics

Select A User :

Jili

Friends' Status



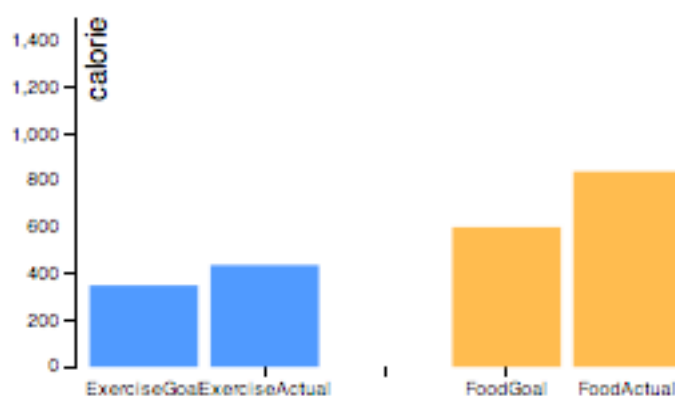


Jili

Exercise Goal (Day6) :350.00 cal

Exercise Actual (Day6) :437 cal

Food Goal (Day6) :600.00 cal

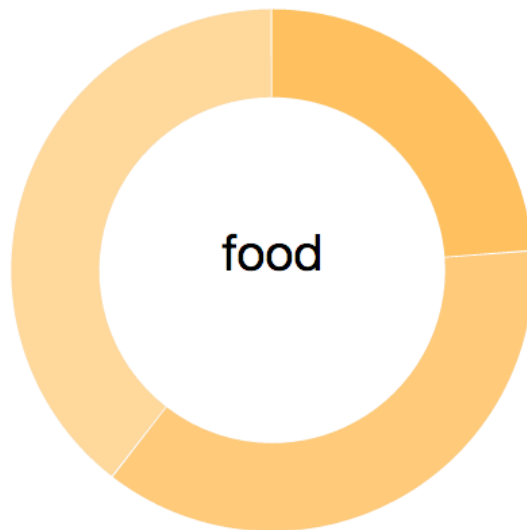


By clicking on the yellow food segment of this chart, you will come to one final donut that breaks down the amount of calories you consumed that day into breakfast, lunch, dinner, and other (snack). These are spaced out so that they show how much each part is of the total amount of calories for that day. There is no longer a bar chart, just simply some text that shows how many calories go to each category.

Personal Statistics

Select A User : Jordan

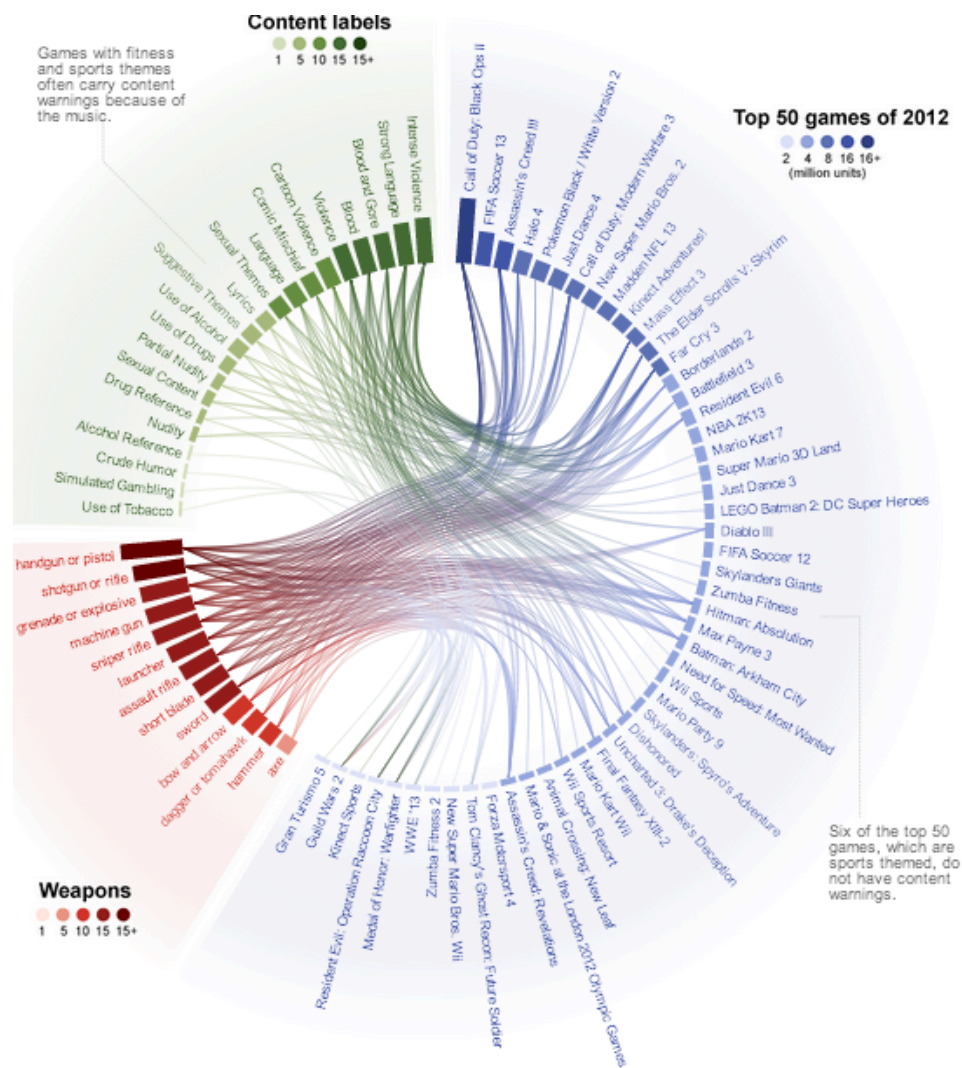
Friends' Status



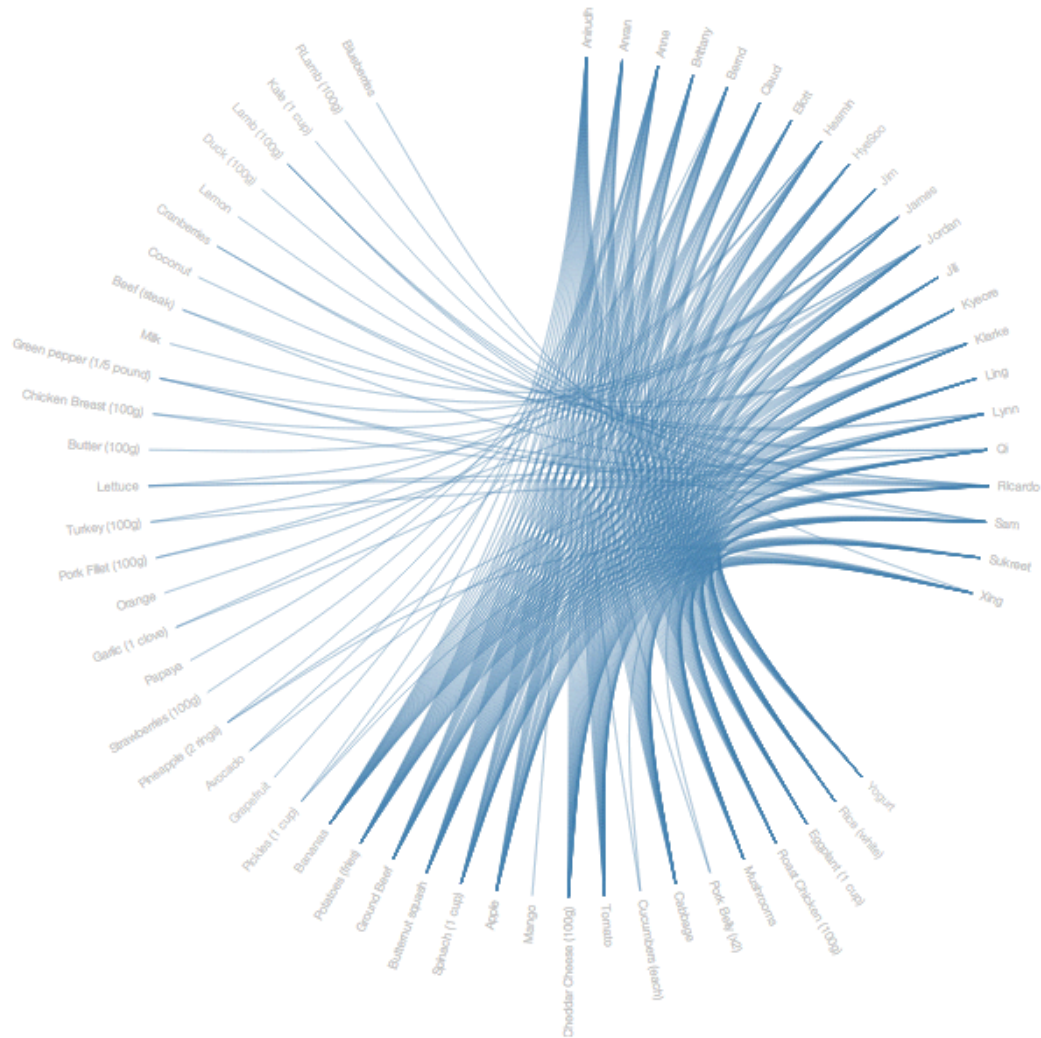
Jordan
Breakfast: 234 cal
Lunch: 360 cal
Dinner: 387 cal

The next part of our visualization is the food relation chart. We decided to go with this so that a user will be able to see what his or her friend's are also eating. When you hover over a specific user, the foods that the person has consumed over the past month will be highlighted. If you hover over the food, the people that consume that food will all be highlighted.

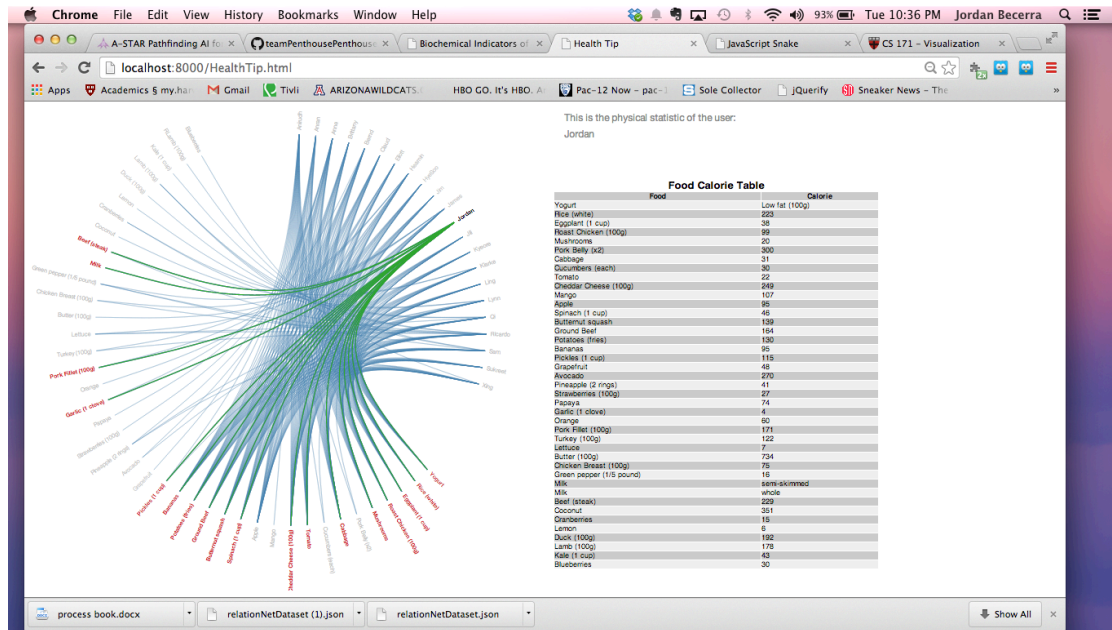
We drew inspiration from an example on Theguardian.com that was about violence and guns in video games (<http://www.theguardian.com/world/interactive/2013/apr/30/violence-guns-best-selling-video-games>)



Our version is a little simpler, but it still gets the main point across by showing the relationship between the user's friends and their food and vice versa.



Along with this visualization, we have included a food calorie table that will show all of the foods that the users have consumed over the past month and the amount of calories that accompanies each. This will allow the users to look at what a friend eats and maybe gain a new diet that consists of foods with less calories or that are more healthier. They can also see how their intake compares to their friends.



Evaluation:

By implementing our visualizations, we learned a lot about our data. Since our data was mainly about calories, we learned a lot about the relationship between certain foods and how they contribute to your daily calorie intakes. We also learned some new information about burning calories by exercising and how those burned calories are cancelled out by eating foods. We also learned a little bit more about our diets and how we can change them to become healthier.

We feel that we answered our question completely. We have 3 nice visualizations that do just what they are meant to do. They are meant to show people their health status and how they are doing for each day of the month and they really give insight to the user. They are fairly simple and straight to the

point with enough interactivity to not just throw boring data at the user and hope they are interested enough to actually read it. The visualizations allow for the user to click things and see changes in the data so they aren't looking at everything at once.

Our visualization works just as we planned. We were able to rid the site of almost all of the bugs so the visualizations run smoothly and don't freeze. However, there are a few things we would have liked to improve if we had enough time. We would have liked to make the website be able to take actual user input so that this could be a live website, not just a representation of how a person's data would look if they entered it. To do this, we would have all of the food split up into categories so the user could do a 24-hour recall of the foods they ate and then base the averages off of that. We would also have the user select their exercise levels (low, moderate, high, very high) to see how many calories they burn on average. This could be a step we take when we get more time.

