

Dataset 1 - MyFitness Pal Nutrition Tracker

Background

As someone trying to lose body fat and put on muscle, I've found it pretty important to track what I was eating, caloric consumption, as well as relevant macronutrients. I eat roughly 2300 calories and exercise 5 times a week, maintaining a modest caloric deficit. I try to eat roughly 0.7 grams of protein per lb body weight (~ 130 grams) every day. Beyond that, my day to day diet varies fairly, depending on what I've meal-prepped, if I'm eating out and how lazy I'm feeling depending on how busy I am on a given day.

Question

Keeping my daily calories consistent during a cut, how does increased fat intake correspond to decreased protein intake? How does snacking play a role in protein intake?

Data Collected

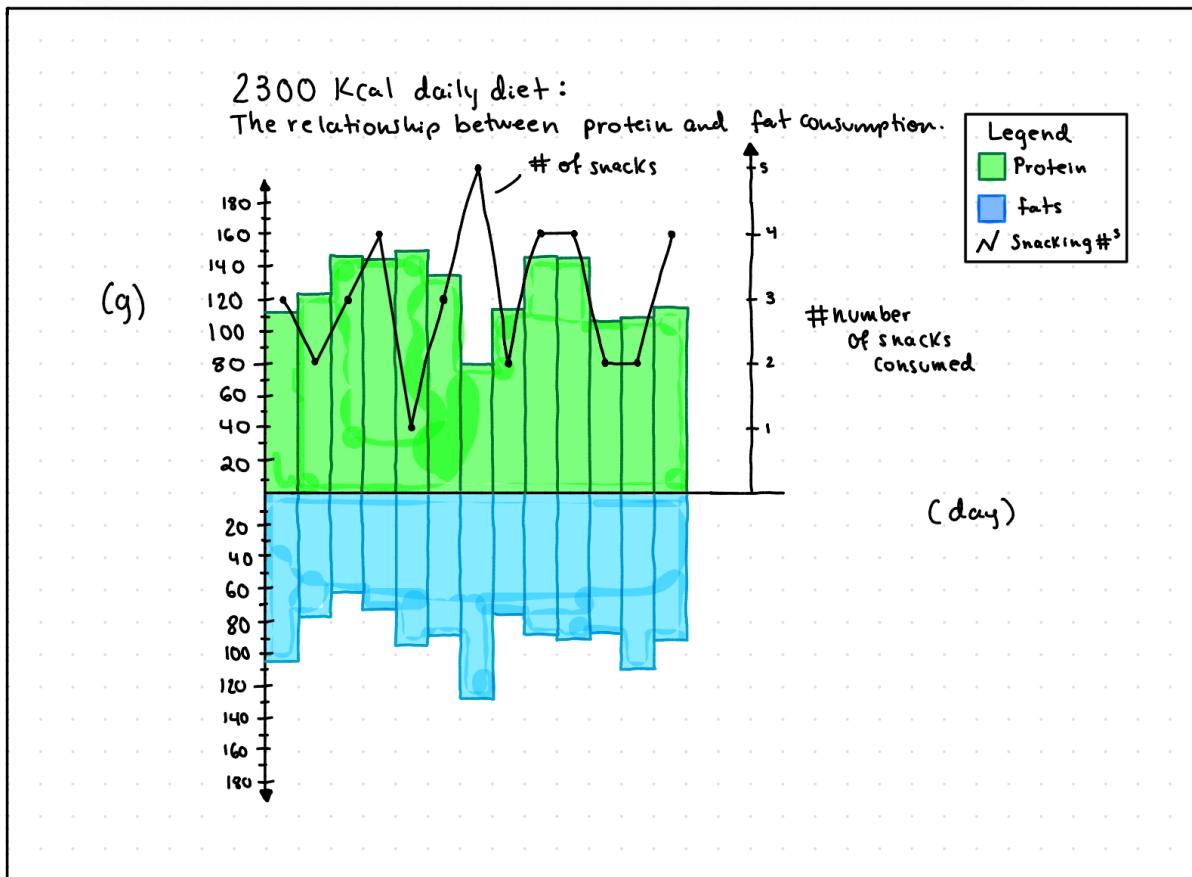
Over the course of 13 days, from January 19-31st, I kept a log of the food I consumed in the app MyFitnessPal, tracking home cooked meals as well as food I ate out. For home cooked meals, I used a food scale to measure ingredient portions to the highest degree of accuracy possible, and used restaurant figures/ comparable meals for what I ate out.

After every meal, I would log onto the mobile app, find the corresponding meal/ ingredients with the search feature, then add that to my daily log. The application handled much of the tracking for me, updating my calories left, as well as relevant macronutrients. As I got deeper into the 2 week stretch, the process became quicker, as I grouped the ingredients and quantities used as easy-add meals, and could also just copy over meals from previous days.

My day-to-day usually consisted of breakfast, lunch and dinner, with calories usually left over for 1-2 servings of snacks every day. I would try to get some vegetables in, some meat, and overall just eat a well balanced diet. I was also curious to see how the thing that is often destructive to measured dieting – snacking – impacted my protein/ fat consumption.

At the outset of this experiment, I approached my guesses about the outcome with skepticism and excitement about the possibility of learning new things about my dietary habits.

Visualization + Explanation



I chose this design pattern for the visualization because I thought visually, the comparative bar heights either side of the x-axis would provide an easy-to-interpret look at the relationship between the two variables I was most interested to explore. As I began to go through the data at the end of the experiment period, I saw my snacking consumption vary, and it led to adjusting my target question and adding another feature to my chart. I think this honestly made the chart even more thought provoking, as it was another potential correlation to uncover.

I think the way I organized this chart highlights what I was most concerned with – trying to see if a relationship existed between two macronutrient variables. Every time you look for a pattern in the protein section, you can easily look towards the bottom half to see if that maps onto a similar trend in fat variation. This facet of design is what makes it precisely so visually effective in answering my original target question. Combine this with the snacking line graph, and you have a pretty good picture about how my goals of fat loss and muscle increase fared over the 13-day period, as well as the categories of food I was consuming (snacking vs meals).

Key Takeaway

The chart above details the results of my 10+ day experiment. On my protein consumption, I was happy to see that I had consistently gotten over 110g of protein a day, usually hitting 120-140g. The initial pattern that I saw was how as my protein intake rose on day 3 from about ~120g to ~145g, my fat intake actually decreased. This seemed to make sense as I was less in the experimental phase of high protein eating, and had developed a routine of home cooked meals that was working with my daily schedule. Thus with respect to the target question, I believe the data reflects how lower fat consumption (70-80g) lends itself to a higher protein intake (140-150g) when eating in a caloric deficit. I also had assumed since my snacks weren't optimized for protein, less snacking would lend itself to higher protein consumption. I was wrong because establishing lower calorie high protein meals over these 13 days allowed me to snack 3 times reliably and also maximize my protein consumption.

Before this experiment, I had come to think that the biggest predictor of protein consumption would be my fat consumption, and while that was true to an extent, it also missed a larger point. My high protein consumption thrived in predictability. On day 7 of this experiment (Sunday, Jan 25th) one of my friends had his 21st birthday. This meant eating dinner out and not vigilantly optimizing for protein, and at the end of the night, enjoying a slice of cheesecake. As someone focused on losing weight primarily, that meant not overeating on the calories to counter the lack of protein I was consuming in my meals and treats. After this day, my daily protein intake rose again, and once again my fat intake declined to more reasonable levels. The second event was my Comp 455 Quiz on day 11 (January 29th) that again made me resort to eating out as I ran out of meal-prepped food.

With the target question in mind and with the result of the experiment in front of me, I appreciate most of how my understanding of the target question itself has evolved. Rather than viewing a strong relationship between fat consumption and protein intake, or snacking and protein intake, the most important thing is predictability and routine. That was the biggest predictor of how well I optimized my protein intake. With that being said, the data did also seem to show that protein optimized homemade meals that were low in fat were best for my protein consumption, and they in fact enabled me to snack multiple times a day.

Dataset 2 - Sleep vs Nighttime Routine

Background

Throughout my college journey, my classes have changed, my schedule has changed, I've had periods of good academic performance and some not so good, but the one constant has been my failure to have a strict bedtime routine. Now a junior, I can remember my sophomore year. I went on a stretch of a couple months where I slept around midnight reliably, but my junior year has brought with it a similar challenge. Before I sleep, I try to clean up any clutter in my room, floss my teeth, brush, mouthwash, then facewash. All of these tasks are done in that order.

I feel this experiment will provide me with the nudge I need to rectify my sleep schedule, learning more about how my habits impact my consistency and personal health when it comes to completing my nighttime routine. As it was the case with the last experiment, I approach this with an open mind and maximum curiosity, seeing the potential to learn more about how those extra hours up doing homework or watching tv demonstrably alter my completion of various pre-sleep tasks.

Question

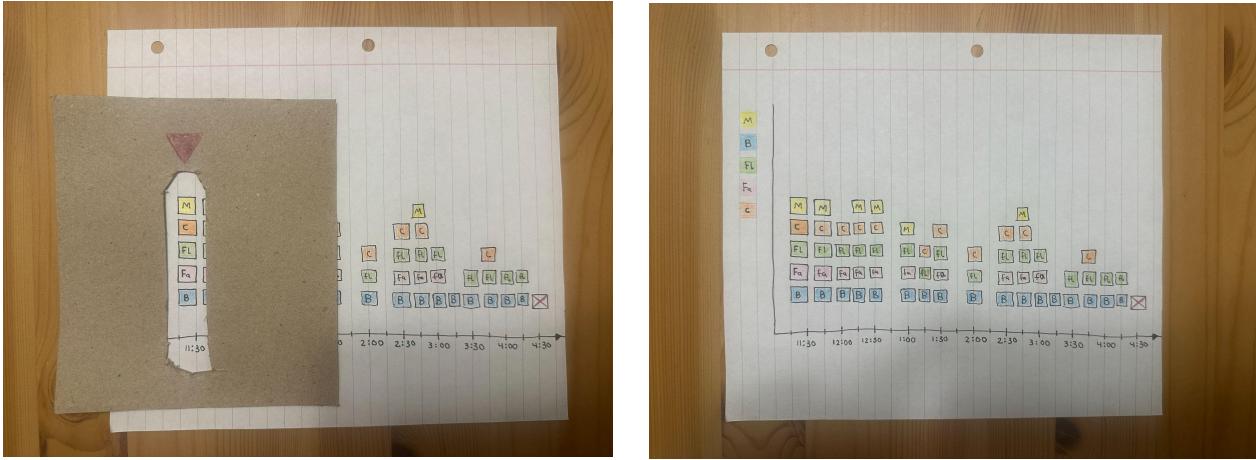
How does the time I go to sleep affect how many nighttime routine tasks I complete?

Data Collected

Over the course of this assignment, done from January 19th to February 7th, I collected data on the time I went to bed, tracking it in my notes app as well as keeping a note of the tasks I completed for the given night. On any given day, my hope was to complete the maximal number of tasks, and I was curious to see how the amount of sleep I got impacted that goal. My hypothesis was the later I slept, the less nighttime routine tasks I would complete. To me the most important was to brush and floss, so I went in knowing I would do those practically everyday.

I was curious to see how between cleaning, mouthwash and facewash, what tasks "fell off" the later into the night I got. I feel like we all report feeling less and less motivated later into the night, opting to forgo tasks that require effort or don't seem the most important. When it was close to bedtime, I would perform the tasks I had the energy and desire to perform, and right before falling asleep, just make a note of them on my phone.

Visualization + Explanation



Rather than tracking the specific nights and charting those, the pattern I was most curious to see was how certain nighttime routine tasks became less likely as the night went on. The tasks I regularly performed and showered here were brushing (B), flossing (FL), facewash (Fa), mouthwash (M), and cleaning (C). The important thing wasn't if it was a Sunday or a Wednesday, I was most interested in seeing if I was sleeping around 3am or 12am on a given night, how did this impact what tasks I completed before falling asleep.

Seeing this activity as an opportunity to learn more about myself and my habits, I was really excited to see what the data revealed. I think this desire to learn more about myself is shown by my use of interactive physicalization, because the viewer is able to slide the window on top of the data to narrow in on a specific sleep time within the range from 11pm-4am and gain some information on what habits I reported performing before I went to bed. This decision effectively meant for any given sleep time shown on the X axis, I effectively provided the viewer with an interactive window into what my personal habits tended to be given that I slept around then. I think without the interactive element (perhaps as a plain chart on the right), the difference between hours wouldn't be as striking and that is important when trying to tell a story effectively. It was also a fun way to get hands-on, switching out the online sketches in the first visualization.

Key Takeaway

There were many things to learn from this experiment. The most interesting takeaway was how my task completion changed the later I slept. When I slept around 1am or later, I usually would skip at least one task, commonly mouthwash or cleaning. It was the tasks I considered negotiable -- cleaning could be pushed to tomorrow, and mouthwash didn't seem crucial after I had brushed and flossed. Add another couple hours, and I was reliably just brushing and flossing. I think fundamentally, this exercise and the previous one, as well as others like it, reveal important facts to the person doing the analysis, and these reveal much about my habits.

It was also interesting to see how my approach to the visualization revealed more about my habits than a more "conventional" approach. Instead of a chart that could've perhaps had days on the x-axis and number of tasks on the y, it was interesting to show how the task completion

dwindled the later into the night I slept, shown through an interactive window. I think it speaks to how interactive visualization can be an effective technique for making information more easy to understand, and certain takeaways to be made more apparent.

Dataset 3 - Tracking Site Engagement with Varied Methods

Background

The last question I wanted to explore rounded off my exploration of health and wellness, with a look at my productivity. Question 1 helped me learn about how my protein and fat intake were related, and what optimized my protein consumption, while Question 2 showed me the importance of a healthy sleep schedule with respect to maintaining a healthy nighttime routine.

This final question was a 72-hour exploration of sites I visited leading up to my Comp 455 Exam, and how many times I visited each of them. I was curious how on task I remained as I was studying. My hope was during this period, I was heavily focused on learning the topics necessary to succeed on the test, meaning using ChatGPT to dissect lecture material, and the 455 website to read through the slides too. With that being said, especially in the initial 24-hours, further away from the test, I could see myself getting sidetracked more from studying.

Question

Leading up to my Comp 455 Quiz, how on track do I remain studying in terms of the sites I visit? What causes the amount of distractions to vary?

Data Collected

As I began studying Monday evening, I made careful note of the sites I was visiting. My plan was to naturally go through the motions of dissecting slide shows, googling questions I had, and discussing concepts with ChatGPT. Instead of actively tracking, I tried to go about my day naturally, and from time to time make note of what site I was on if it was on the top of my mind. Otherwise, I would try to go back through my search history at the end of every hour and just make sure my data was accurate.

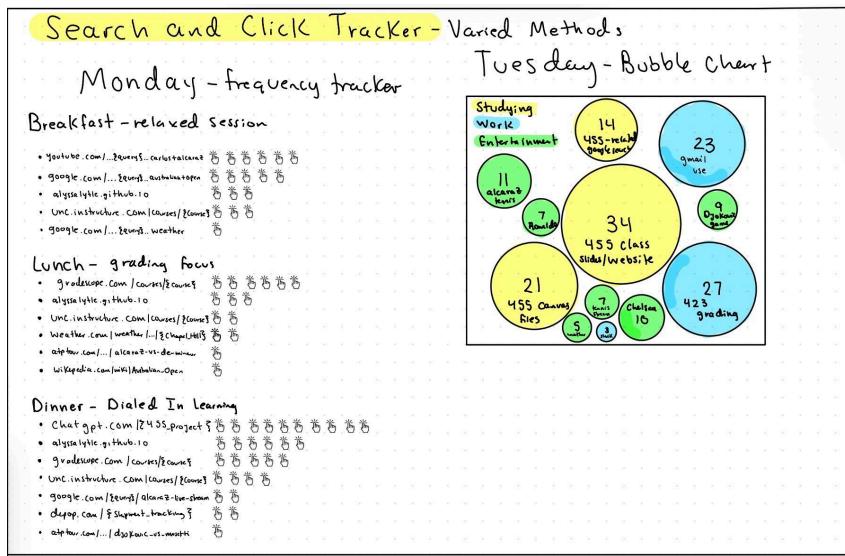
I expected my data collection to accurately display how distractions crept up at different parts of the day based on factors like hunger, boredom, and just getting tired of studying for hours. How close I was studying to the exam was also a factor, because I definitely studied more on Wednesday when compared to Monday. As part of my hypothesis, I also kept track of when I was having meals, because taking breaks to eat is an important part of increasing productivity for the duration where you are locked in on a task. Going into this exercise, I hoped to uncover key periods of high productivity, as well as key periods of distraction and time wasting on the flip side.

Instead of devising a uniform approach to data collection and display across the 3 days, I decided to vary my methods. For the collection process, this meant on Monday and Tuesday I

was tracking specific websites, but on Tuesday I grouped the data across categories. By Wednesday, I changed my collection approach altogether, opting for a mix.

Coffee grounds representing net productive clicks per hour →

Visualization + Explanation



When I was thinking of ways to model my findings, I first recognized the structure of my data. Every time I visited a website, switched tabs, or googled something, I wanted to make a note of the action. If I had been studying, and switched to tennis highlights, that was a relevant data point to track. At the same time, I realized that to make my studying session effective, I couldn't get bogged down tracking specific site changes and clicks, noting each because I would lose focus on studying. I also knew that the most important factor in studying would be planning around meals. Rather than choosing a single optimal approach, I varied my data presentation each day, and I think this made the insights more interesting, and honestly the data collection more enjoyable.

On Monday, I wanted to begin with the simplest approach. Every time I visited a new website, or clicked a specific page on a website (ex. a slides deck on my profs website), I would record the click. The only time guided aspect was how I grouped the data – after breakfast, after lunch and after dinner. This would provide key insights on what block was particularly productive, and also let me know after which meal I got the most done.

On the second visualization, I wanted to group my data. Sure, you can tell how productive I was on Monday by reading through the site links I provided with the corresponding clicks, but bubble size and color is much simpler. I think the most effective data reveals much to the analyst as they visualize it, and that is what I hoped to convey here. The largest bubbles were yellow -- for studying, followed by tasks I did for work, as a TA checking slack and grading. The smaller but more common bubbles were predictably entertainment. This visualization choice meant you saw

I was locked in for large periods of the day, with persistent distractions in the realm of my interests and hobbies (soccer, tennis, etc.).

For final visualization the day before the test, I changed my approach. Now, I opted for an hourly view of how productive I was. If I was looking at something entertainment related, I added a -1 to the net score for that hour, and if I clicked on a study tool, slides deck or a ChatGPT educational request, I added 1 to the net score. I originally did this in a similar sketch format, but I decided to change to a third and final medium to experiment with food. This was a fun way to think of how to show impact. Sure colored charts are visually clean, but with coffee grounds as bars, I had to consider ways to show the impact of distractions. To show precisely when I was productive, I represented net distracting hours (bars negative on the x-axis) with crushed grounds, showing a destructive force to my studying. Productive hours (positive on the x-axis) had my coffee grounds in their original state.

Key Takeaway

By completing this experiment and varying my presentation methods, I learned much about how I spent the days leading up to my test studying. On Monday for example, I felt pretty productive, but as I was putting together the visualization I realized I greatly overestimated what I got done. The studying clicks for the most part occurred at night, not consistently throughout the day. On further reflection, this makes sense, as people are less likely to study if the exam doesn't feel "impending".

When I got to Tuesday, I wanted a more spatially focused visualization approach, and I opted for the bubble chart. This felt more meaningful as a method, as I saw groups of activities, studying work and entertainment, along with their frequencies. Seeing the studying bubbles so large was a positive takeaway, but I also noted the persistent, smaller entertainment bubbles across the visualization that signaled I got frequently distracted.

By Wednesday I decided I wanted hour-by-hour insights, and I approached this with net measurements on productive (studying, work) vs non-productive (entertainment) clicks, across each hour as the night progressed. Here I learned that I am the least productive in the hour right before my meal, and most in the hours after. This wasn't as true for dinner, but by Wednesday night I was fairly comfortable about the material and opted to relax.

Overall, I think this final exercise was a nice way to cap off my data gathering efforts, learning about when I study best and how I allocate my time as an exam approaches. With my first exercise revealing how I eat throughout the data, the studying here zoomed in on how hours and hours of studying made for some of the meal choices in the first dataset that was fat-heavy and low protein. Not only that, but some of the long nights where I just brushed and flossed, were the nights I was studying for my exam, decided to scroll when I finished, and was in the mood to do the bare minimum before going to bed. With that in mind, I think these activities have empowered me to make healthier decisions, whether it be eating healthier, sleeping at a reasonable hour for optimal task completion, or studying more in advance of exams while controlling for distractions.

Comparing the methods

Overall, I think all 3 methods yielded important insights about different aspects of my personal life. I went into this activity with the desire to learn more about myself, and I can definitely say that I have now. On the first activity, my approach of sketching a bar chart on my iPad with protein and fat mapped on showed me the relative quantities of consumption. As someone trying to be more health conscious, I wanted the height of the protein to exceed the height of the fat. While I found more protein to decrease fat consumption, I think consistency and regularity was the greatest predictor of my protein intake, which I hadn't considered.

Without this approach, I wouldn't have noticed the dip in protein consumption and the spike in fat before my 455 quiz. Consistency and regularity was also the theme in my second dataset, where I showed hour by hour sleep times with what tasks I completed. Unlike the first dataset, I didn't track days, because what was more interesting was task completion at later sleep times. It didn't matter what days late sleep came at, what mattered when answering my question was how that impacted task completion, and my use of a tangible medium with a cardboard slider supported this. Between both of these activities, I learned that whether it is sleeping at a reasonable hour for task completion or following a healthy routine for dieting, consistency and preparation went a long way to ensuring the healthiest outcomes.

This was especially true for the third dataset, as I found myself studying the heaviest when it was crunch time, due to my lack of effort further away from the test. This was unique in contrast to my previous two visualizations, as I treated every day as an opportunity to learn something new, having a variety of mini-vizualizations revealed how distractions impeded my learning as my exam grew closer. While it meant more to interpret, the groupings and color coding I provided on Tuesday gave visual cues similar to my approach on Dataset 1. Dataset 2 provided much less, but the frequency mapping was similar to that of Dataset 3. My use of physicalization on attempt 2 was something I wouldn't have thought of in many other contexts, but it made the most sense, controlling for sleep time to show what nighttime tasks "popped up". Lastly, I also thought using coffee grounds touched on how losing focus studying likely led to me staying up later, and then drinking coffee to focus and stay awake. All in all, I think this project was a great way to reflect on my personal habits, in the realm of health, wellness and academics, teaching me more about myself as I came up with different presentation techniques and mediums.

Publicly available Notion presenting this document –

https://www.notion.so/My-Dear-Data-Redux-Hamzah-Yousuf-15f801d9a542804f8349c8aac9c45423?source=copy_link

GitHub Link -

<https://github.com/VisDesignStudies/module-one-dear-data-redux-hamzahyous>