



## Profile: Jean Steiner

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### EARLY INFLUENCES

**What sparked your interest in mathematics? When did you know that you would use math as a path to your career?**

*I found math to be really challenging and beautiful: the best moments of mathematical discovery are like looking into a kaleidoscope and seeing the blurry colored bits come into focus. Some of my favorite math concepts are eigenvalues and eigenfunctions, and symmetry, and I love the way that abstract mathematical concepts describe and model the real world.*

*I pursued math because I thought it was fascinating. When I decided to major in math, I didn't think too hard about what career would follow. When I went to graduate school I assumed I would become a math professor, but I really hadn't thought very broadly about careers, so math was actually a circuitous path to my current career as a data scientist, but it was a very fun path!*

**Was there a pivotal moment/experience/ influential person that led you in this direction?**

*There were two teachers who really inspired me as an undergraduate: John Horton Conway, who had incredibly contagious energy and excitement, and Ingrid Daubechies, who motivated abstract subjects such as real analysis by connecting them to applications such as image recognition and digital communications.*

**Any memorable courses or experiences that made a difference in directing you to your career?**

*There wasn't any particular moment that stands out, more a series of realizations that I wanted to do something concrete and quantitative.*

**Any obstacles you needed to overcome?**

*When I decided to change careers and go to industry, I did not know much about different career paths which might fit my interests. I had to do a lot of informational interviews to learn what might be a good fit, and also to learn the language of different industries and businesses I was interested in so that I would sound like a plausible candidate even if I had minimal relevant experience.*

### CAREER/CAREER PATH

**Describe your current position and briefly, the path you took to get there.**

*I am a data scientist at Google in the ads organization within engineering. I analyze data to understand how our advertisers manage their Adwords accounts, and how we can provide them with better tools and make it easier for them to manage their accounts. I try to tease out the story in the data to help our software engineers build good products. Most of the people in the data scientist role have backgrounds in fields like statistics, bioinformatics, cognitive science, physics, mathematics, economics, etc.*

*I started out doing pure mathematics in an academic setting (I did a Ph.D. and then a post-doctoral fellowship doing research and teaching). Then, I decided I wanted to do something applied, but still quantitative. After doing informational interviews to explore many possible careers (e.g., epidemiology, quantitative finance, management consulting), I found a job that was a good fit for my interests at Google, combining some data analysis, a bit of light-weight shell-scripting (coding), and an interest in business. Initially I was doing revenue forecasting, analysis, and reporting in the finance organization. Eventually I wanted to do more in-depth analysis and less reporting, so I moved to the data scientist role.*

**What is a typical day at work for you? Please list your job responsibilities. What are you responsible for?**

*My days are a mix of working with data (writing code against log sources or queries against data bases to get data, cleaning data with statistical software, and using statistical software and lots of visualization tools to analyze and model the data), and also meeting with software engineers to make sure that we are interpreting and analyzing the data in the right way. I also spend some time working with other data scientists to share and review findings.*

*I am currently the Quantitative Tech Lead for a team of three data scientists and five software engineers. In addition to my individual contributor work with data, I spend some time setting priorities for the team, doing project management, coordinating projects with the software engineers and other teams that we partner with, and coaching the more junior data scientists and engineers.*

**What do you like best and least about your profession? What is the stress level associated with this type of position?**

*I love being able to have impact on products and provide engineers with insights about how the products they built are performing. I also really like the other data scientists I work with. I just wish there were more hours in the day because there are so many interesting questions and not enough time to work on them!*

*I think the stress level can vary considerably depending on particular projects. I probably have a moderate stress level for my job because I want to do good work and ensure my team is doing good work. However, I think it is a relatively low level of stress given the amount of responsibility and potential impact that we can have.*

*How many hours per day or week do you typically work? Do you have flexibility that allows a good life/work balance?*

*45 - 50 hours. I have a lot of flexibility in scheduling which helps keep a decent work/life balance. As a company, I think Google makes an effort to encourage employees to maintain healthy work/life balances*

## **CAREER EXPECTATIONS FOR YOUR FIELD/POSITION**

*How/why are applied mathematics and/or computational science important to your industry? How are they used?*

*A quantitative background and some exposure to programming are critical to data science and the tech world. The quantitative background is important for learning different methods in statistics, data mining, and machine learning, which are important tools for data science and have many applications in technology.*

*Where do you see the future of math in industry or in your particular career?*

*Math will continue to be important in the data science field and technology because as more businesses and activity moves online, there will be more data to analyze, and so a need for more people to analyze it. According to the Harvard Business Review, data science is "The sexiest job of the 21st century" (<https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century/ar/1>).*

*Have you worked other jobs, or held other job titles as an applied mathematician or computational scientist?*

*Business analyst at Google was my first non-academic job, and I probably spent about 40-50% of my time doing quantitative work and 50-60% communicating results to business leaders. The role was less technical than my current role as data scientist. I produced several forecasts for the revenue generated on google.com (65% of Google's revenue) at various levels of granularity to help monitor the health of our systems, did business planning (it's an input for things like how many people can be hired!), and made strategic decisions about the business. I presented the forecasts and analyses about how well the forecasts were performing to senior executives on a weekly and monthly basis.*

## **ADVICE**

*If you could advise someone currently pursuing the same degree or profession, what would you say?*

*Mathematics is a great foundation for many career paths, so it's a great thing to study. It's also good to explore a range of your interests and try to get a broad range of experience. In addition to pursuing your interests, you should also take at least one computer programming class—it will greatly expand your career options.*

*What are some steps you would recommend to students, or to those in their early careers, that perhaps you wish you had taken earlier? Are there things you would have done differently?*

*Know yourself and your interests well so that you can find a job that fits (both in terms of technical areas and personality type). It's important to know in what kinds of environments you work most effectively (e.g., small groups, individually, etc.), what kinds of problems you enjoy most, and whether you like short-term projects or longer project cycles. I strongly recommend that students do informational interviews and read about different careers: talk to people who are in different careers that you are curious about and find out how they got there, what they like and dislike about their jobs, and so on—I didn't do this until the end of my post-doctoral fellow, but I think I would have benefitted from exploring careers as an undergraduate.*

*Any specific supplementary skills or training you can name that a person pursuing this profession should acquire?*

*If you are interested in becoming a data scientist, it's important to take statistics and computer science classes. Ideally you should get some experience working with data (this could be course-projects, but more in-depth experience such as an internship or research project will give you valuable experience).*