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HOW'D YOU GET THAT JOB?

# Sweet Spot: Where Data Analysis Meets Chocolate

A data scientist for Hershey plots the best way to route peanuts and stock the candy aisle



As a data scientist at Hershey, Todd Ferris uses advanced analytics to find solution to problems like ways to route peanuts.  
PHOTO: ANDREW MANGUM FOR THE WALL STREET JOURNAL

By *Ellen Byron*

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Todd Ferris used to deploy data science to manage ground-equipment logistics for the Marine Corps. Now, as a principal data scientist for Hershey Co., he can track a cocoa bean from harvest to chocolate bar on a store shelf. Here are edited excerpts from an interview about his career path.

## What does a principal data scientist do?

Our team goes after complex problems across the supply chain. Can we see our products from sourcing a cocoa bean in Western Africa all the way to manufacturing, shipping and getting it

to the customers? It's very difficult to keep track of all that data. The company's vision for our group is that we need to have the ability to sense an issue, make sense of the issue and then respond to the issue automatically.

We are always fighting this "bullwhip effect," the phenomenon of small changes at one end of the supply chain creating huge issues once you get back to manufacturing. If customer demand varies by 100 chocolate bars at retail, by the time that information gets back to us at manufacturing that signal may be 1,000 bars. This creates a lot of inefficiencies.

### What tools do you use?

We use a programming language called R. That's open-source software, its counterpart is called Python. You'll do your modeling inside one of those programs; they're not designed to be databases or manipulate large data sets so we'll use SQL to access, manipulate and filter data before we bring it into analytical tools.

### What is the most challenging part of the job?

One of the toughest things for data scientists is convincing others to use your model. I'll tell our team it doesn't matter if you build the best model in the world, if you can't convince others to use it. A lot of data scientists would say they're not good at sales and that's why they aren't in sales, but the reality is that you're going to be. I'm not selling confections; I'm selling my analytical output. You have to be able to translate what you've built to the business units and explain how it will help solve their problems.

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TODD FERRIS

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**Age:** 46

**Company:** Hershey Co.

**Job title:** Principal data scientist

**Location:** Hershey, Pa.

**Time on job:** 4.5 years

**Salary:** Average U.S. salary is \$140,000 - \$170,000

### What are some of the problems you try to tackle?

You can do procurement, like forecasting the health of crops or their availability. I've worked on manpower analysis—how we shape our manpower in our manufacturing plants in the best manner possible. We just worked on the best way to route peanuts from our suppliers to our plants. On one side we are forecasting crops and on the other we're at the store level trying to determine if we have too much inventory or too little. We try to

predict what's going to happen and then make sense of how we need to respond.

### Did you need particular education or training for this role?

My undergraduate degree was in mechanical engineering from the U.S. Naval Academy and my master's degree is in operations research, which involves applied math, applied probability and statistics. For the data-scientist role, you have a Venn diagram where you're looking for an analytical mathematics background and some coding capability so you can implement your math. The third circle is business knowledge, because it helps to know a little bit about the problems you're working on.

### **Did your business knowledge come on the job?**

Yes. When I applied here I was switching industries from government to consumer-packaged goods. I had an advanced-analytics background and I had been teaching analytical decision-making at the Naval Postgraduate School. There I developed the ability to translate analytical output to how it helps the end user or the decision maker.

### **How did you get this role?**

Before I was out of the Marine Corps I went to a career fair and spoke with Hershey representatives. Advanced analytics was new to Hershey, and also it was new for me to do anything outside of the Marine Corps. I felt safer in that transition and it's exciting when you're able to build something from the ground up as well.

### **How much experience did you need?**

I had about seven years of experience using my operations-research degree prior to applying to Hershey. I worked on complex problems for the Marine Corps involving which equipment to bring back from active areas of operations and when and what to fix and what not to fix.

### **How did you know the Hershey position was right for you?**

Because I was switching industries, I was looking for a job that didn't start out requiring management or leadership. I wanted to focus on building my business knowledge, not leading a team. When the role was offered it was an individual one and gave me time to focus on understanding the business while also working in my advanced-analytics role.

### **What's your favorite part of this job?**

If you're able to solve something that the company hasn't been able to solve in its history—and for Hershey that's 125 years—that's pretty cool. For example, Hershey had never previously used machine learning in any forecasting, and now it uses learning algorithms to effectively forecast cocoa production in Western Africa.

We have free candy in every conference room, so that's an excellent perk as well.

### **What do you wear to the office?**

I wear business casual if I'm presenting to anybody. Otherwise it's jeans and a collared shirt.

### **What is your view on work-life balance?**

For the data-scientist role, as long as we can connect to the databases we can work from anywhere. I work in the office but I have two young kids and it's great to be able to carve out time to take them to school or pick them up on certain days. Or if they're sick, stay home with them.

### **What's your pre-office routine?**

I mentioned I have young kids, right? When I feel organized I try to work out before work. Otherwise it's getting the kids ready for school and getting them to school. When I eat breakfast, it's usually eggs and toast or cottage cheese and fruit.

### **What's the single most important trait for succeeding at this job?**

You have to love problem-solving. People continuously bring you issues they can't answer or never even wanted to try to answer. You'll finish one, have a great sense of accomplishment, but the next one is already coming through the door and it's a completely different problem requiring completely different tools. You have to like that.

**Write to Ellen Byron at [ellen.byron@wsj.com](mailto:ellen.byron@wsj.com)**

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