
Red Cross and the Accuracy Illusion

Natalie Ferman listened as the discussion circled around the results of the Red Cross's latest campaign. Across the table, staff members flipped through reports and empty coffee cups, waiting for the next slide. She touched the small Red Cross pin on her jacket, the same one included in the "*Thank You for Your Support!*" packages sent out a few months earlier. This time, though, she wasn't a donor. She was a volunteer consultant, invited to help the Blood Donation Department make sense of what had just happened.

The Red Cross, a humanitarian organization providing half of the country's blood to hospitals, depended on the generosity of ordinary people—for money, and for blood.

The campaign had been simple in concept but ambitious in scale. They had sent a letter to thank past financial donors for their contributions, along with an invitation to give something even more valuable—blood. Nearly two hundred thousand packages were mailed nationwide, each containing a personalized thank-you letter, a Red Cross pin, and a QR code to schedule a blood-donation appointment.

At the front of the room, Alicia Park, who led the campaign, was reporting the results. "Each package cost \$5 to produce and send," she said. "We wanted to thank people who had already supported the Red Cross and invite them to help in another way. About five percent responded—roughly ten thousand blood donations."

Dr. Singh, who oversaw medical operations, nodded. "Each pint can save up to three lives," he said. "That's dozens of thousands of people helped."

From the far end of the table, Raj Mehta, the treasurer, leaned back in his chair. "And it cost nearly a million dollars to do it," he said.

Alicia met his gaze. "You're right," she said evenly. "That's been the main concern across the organization. We even reached out overseas to get help from HKUST—your recommendation, Natalie—but in the end, all we could afford was a recent graduate from another school." She smiled faintly. "Budget reality."

A few chuckles broke the tension.

"Still," she continued, "the new hire used the data from the campaign to build a model that predicts who's most likely to donate blood. If we can identify those people ahead of time, next time we can focus our budget where it makes the biggest difference."

Raj raised an eyebrow. "That's assuming there *is* a next time," he said. "Our outreach fund is still recovering from this campaign."

Luis Ortega, the analyst accompanying Natalie, shifted in his seat beside her. He had been silent so far, taking notes in his notebook.

This case study was written by Carlos Fernández-Loría for class discussion, not to illustrate correct or incorrect management practices.

"I'm curious," he said. "If hospitals depend on the Red Cross for half their blood supply, is there a way for them to help fund campaigns like this? It sounds like the benefits go far beyond what the organization can capture financially."

Several heads turned toward him, half surprised, half intrigued.

Dr. Singh smiled. "In theory, yes," he said. "Hospitals pay us around \$140 per pint. About \$50 of that covers collection and storage costs, and the rest supports our operations. But as for how campaigns like this are funded" he glanced toward Raj, "that's more his territory."

Raj nodded. "They rely mostly on financial donations," he said. "Hospital contracts keep the blood supply running, but recruitment campaigns like this one have their own budgets, and they're always tight. It doesn't really make sense to sell blood to pay for thank-you packages asking people to donate more of it."

A few people around the table smiled.

Natalie smiled too, though for a different reason. *He's finally thinking about the economics behind the data*, she thought, glancing at Luis.

Alicia continued. "That's exactly what I wanted to discuss—how to make campaigns like this more efficient. As I was saying, we've started experimenting with business analytics. Using the data from this campaign, we built a predictive model to identify who's most likely to donate blood."

She clicked to the next slide. A large number in bold appeared on the screen: **95%**.

"It reached ninety-five percent accuracy," she said, her tone brightening. "It's early work, but if we can focus our next campaign on those people, we might reach the same number of donors at a fraction of the cost."

Alicia turned toward Natalie, smiling. "So, what do you think?"

Natalie returned the smile. "It's great that you're exploring this," she said. "Can you tell me a bit more about how you came up with that number?"

"Well," Alicia said, "I'm not sure about all the technical details, but as I understand it, the model looks at past data from our financial donors, things like how much they've given and how recently. It uses that information to predict who's more likely to donate blood. The analyst built it using part of the campaign data—the training set, I think he called it—and then checked the predictions with what actually happened on a separate test set. Apparently, it got it right about ninety-five percent of the time."

Natalie nodded. "And about five percent of people actually donated, right?"

Alicia nodded.

Luis looked up. "So if the model just predicted that nobody would donate, it would already be ninety-five percent accurate."

Alicia blinked, then frowned slightly. "Oh... so is the model just doing that?"

"It's possible," Natalie said. "That's why accuracy alone can be misleading. It can look great even when the model isn't really helping us make better decisions."

Luis nodded. "The question is whether the model can actually spot the ones who *will* donate. Because that's what we'd need to act on."

"That could be," Natalie said. She turned to Alicia. "Do you have records of these financial donors giving blood in the past, outside of this campaign?"

Alicia thought for a moment. "Not systematically," she said. "Some people might have, but in this case we could link blood donations to the financial donors only because the QR code connected them to the letters we sent."

Natalie nodded. "That's helpful to know. I'll keep it in mind."

Alicia glanced back at the slide. "So the model might look great on paper but still not tell us anything we can use?"

"Maybe," Natalie said. "Or maybe there's something valuable in there. We just need to look at it differently. Could you send us the analysis, the code, and the campaign data you used?" she asked. "We'll go through everything and send you a short memo with any insights or value we find."

Luis nodded, already flipping to the next page of his notebook.

Across the table, Alicia exhaled, half anxious, half hopeful. "Of course," she said. "I'll send it to you, Natalie. Thank you so much for volunteering to do this. If we can make this work, it could really change how we run these campaigns."

Natalie glanced at her, then back at the screen. "Let's find out."

Appendix — Campaign Data

Column	Description
<i>Income</i>	Household income.
<i>Firstdate</i>	Data associated with the first gift by this individual.
<i>Lastdate</i>	Data associated with the most recent gift.
<i>Amount</i>	Average amount by this individual over all periods (incl. zeros).
<i>rfaf2</i>	Frequency code.
<i>rfaa2</i>	Donation amount code.
<i>pepstrfl</i>	Flag indicating a star donator.
<i>glast</i>	Amount of last gift.
<i>gavr</i>	Amount of average gift.
<i>class</i>	Whether the person donated blood (1 represents yes).