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Leadership Lessons from Another Life: How my Previous Career Helped Me as a Statistician

Christiana Hawn and Lily Ray, Catalyst Flex

ABSTRACT

Experienced statisticians and programmers recognize that successful clinical research projects depend on more than just technical skills. Statisticians and programmers must collaborate with cross-functional teams, negotiate for defensible methods and reasonable timelines, facilitate productive meetings, and communicate methods and results in a manner accessible to colleagues of different backgrounds. Statisticians and programmers who change careers may appear to be "starting over", and while this is true from a technical standpoint, the value of the leadership and collaboration skills they bring from their former careers should not be overlooked.

Prior to becoming a biostatistician, Christiana was a Coast Guard officer, driving ships across the Pacific Ocean. Lily was a social scientist in Alaska, conducting participatory environmental research and leading healthcare program evaluations. This paper will include reflections on our career changes and how the skills developed in our previous career fields, though not considered experience from a technical standpoint, have been invaluable for our transition into the world of biostatistics in clinical research. Going back to school provided the technical foundation for our new career, but there are intangible skills that we carried forward with us from the lives we left behind. We will share a few examples using stories and scenarios from the past and linking them to our challenges in the present. The intent of this discussion is to encourage both career changers and those hiring or managing them to consider and leverage the unique skills and perspectives they bring to the table from their previous experiences.

INTRODUCTION

Changing careers can feel intimidating. Even after extensive experience in a different profession, it can be stressful starting over in a highly technical field like biostatistics or programming. Additionally, we might wonder whether our prior experience will be viewed by hiring managers in a positive light and whether and how we should talk about it. But as career changers, we bring relevant skills to the table. Although succeeding in a statistician role depends on excellent technical skills, many clinical research jobs involve considerable learning, problem solving, relationship-building, and communication. A good statistician will work well with stakeholders and feel confident leading projects and facing new situations and analyses. These skills are generally developed through job experience rather than in school and take time to develop. Although career changers may have less experience applying technical skills on the job, they often have relevant leadership and collaborative skills that can help them to perform well in clinical roles.

In this paper we provide an overview of our prior career experiences, and how we have drawn on them for success in statistician roles. Finding a job that utilizes our diverse skills can be key, as organizations may differ in the amount of communication and leadership expected from technical professionals. We both found a great fit at Catalyst Flex, which places an emphasis on hiring professionals with diverse backgrounds, leveraging unique skills and perspectives for greater success. Additionally, we appreciate the direct communication with clients, the company values that prioritize listening and flexibility, and the opportunities to lead and manage the statistical aspects of team projects.

Christiana: My first career was as a Coast Guard Officer. I earned a Bachelor's in Marine and Environmental Science at the U.S. Coast Guard Academy before serving for total of six years on cutters in Alaska and California, the Eleventh District (California) law enforcement office, and the Eleventh District Command Center. On the CGC STORIS out of Kodiak, Alaska, we conducted fisheries law enforcement and search-and-rescue on the turbulent waters of the Gulf of Alaska and Bering Sea. Following that adventure, I transferred to the CGC MORGENTHAU out of Alameda, California, conducting counter-drug and migrant operations off the coast of Central and South America. My final few years were spent at the Eleventh District office in Alameda, California. I managed 13 coastal patrol boats spanning the coast of

California and oversaw the command center watch, coordinating and overseeing search-and-rescue and law enforcement operations for the entire West Coast.

Lily: My first career was as a social scientist. I completed my Ph.D. in human environment geography in 2010. My dissertation research focused on conflicts over wildfire management, in interior Alaska, between indigenous community members and land management agencies. I used social science methods to document tribal elder knowledge of land-use, the landscape, and environmental change. After defending my dissertation, I worked as a social scientist for a tribal organization in the Bering Strait region of Alaska. I collaborated with tribes and their elders, documenting traditional knowledge of ocean navigation, weather, and marine mammals. My final social scientist job was as a program evaluator for an Alaska Native non-profit healthcare system. I evaluated family wellness, behavioral health, and traditional healing programs, and various organizational policies while collaborating with clients, program staff, and hospital administrators.

LESSONS LEARNED AND APPLIED

When starting out as a programmer or statistician, the amount of technical knowledge required can be overwhelming – we found that previous experience in leadership or communication provided little help in this aspect of the role. In this early phase of learning a new skill and building expertise, it is hard to see how time spent in a previous career will matter – it can feel like a waste. But as we progressed past this initial learning curve, we realized there is a lot to be gained from our previous experiences and skill development. We share these lessons below in the form of stories from the past coupled with their applications in our current roles.

GATHERING AND INCORPORATING STAKEHOLDER FEEDBACK (LILY)

As a social scientist, I used participatory research design: meeting with community members, systematically gathering their input, and incorporating their suggestions into our research questions and methods. On a project in the Bering Strait, the funders wanted maps of key ice seal and walrus habitat areas. But community members worried that this information could be used for commercial fishing and could lead to exploitation rather than protection of habitat. Working with the communities, we developed interview questions that focused on habitat types, habitat protection, and topics of local interest, such as elders' marine safety practices. These modifications made the project stronger and taught me the value of incorporating stakeholder perspectives from the beginning.

I applied my stakeholder engagement skills at a recent job as a data scientist. Our team moved as part of a reorganization, and our role in our new division was less clear. We were asked to engage our new stakeholders and develop a plan. Since I had experience with needs assessments and participatory research design, I volunteered to lead this effort. We developed a question set on stakeholder analytical needs and we compiled examples from prior analyses conducted by our team. We ran meetings with the different stakeholders in the division, asking the list of questions, getting feedback on the analytical examples, and taking notes on their responses. I then used a grounded theory approach to code the notes for emergent themes. We presented the key themes to department leadership, and they used the information in planning our team's new role.

PROBLEMS SHOULD COME WITH SOLUTIONS (CHRISTIANA)

The Coast Guard Academy experience begins with swab summer, a seven-week intensive boot camp-like introduction to the Coast Guard and Academy life. The underlying concept is that to lead well you must first learn to follow. For seven weeks, not one moment of our life belonged to us. We were told when to wake up, when and how to work out, when to shower (in 5 minutes), when to eat (in 5 minutes). We had to ask for permission to tie our shoes. We had to walk or run everywhere at attention with our eyes straight ahead, could not talk in the hallways, and could only speak to an upper class cadre if spoken to or called upon. If asked a question by one of the cadre, there was a short list of appropriate swab responses that included "Yes, sir", "No, sir", "No excuse, sir", and "This swab will find out, sir". There was not an option for "I don't know". From the very beginning of our journey, we were taught to research and seek answers to questions and think critically to come up with solutions to problems. Fast-forward a few years later, when I was managing 13 coastal patrol boats spanning the coast of California, when I walked

into my boss's office to discuss a situation with one of the boats. Without fail, the follow-up question would be "Ok, so what is your plan?" The expectation was that I was showing up with at least an idea of how to solve the problem, not just passing it along.

This habit that was ingrained in my previous career has proven invaluable in my new role. If I come across a new type of analysis and I need to seek help from my boss or mentor, I first spend a reasonable amount of time doing research and trying to work it out on my own. I am still going to confirm I am on the right track and gain input from the expert before passing the specification on to the programmer or the solution onto the client. Instead of "I don't know how to do this, I need you to show me", the conversation starts with "I have been working on this and I wanted to confirm my plan." If my solution is correct, I have saved time for the person I am asking, and I have likely learned more by researching and working it out myself. Even if I am somewhat off-track, I am starting from a better foundation to learn the actual solution and I often find in the process of working it out that I have bookmarked resources that I will return to later or share with other colleagues.

CONFLICT RESOLUTION (LILY)

When I worked as a program evaluator at a non-profit healthcare system, I facilitated meetings with the programs that we were to evaluate. Meetings were often tense because program staff were afraid that an evaluation could produce negative results and threaten the future of their program. We could not move evaluations forward without collaboration, and program staff would often stall the evaluation through opposition. I learned not to impose a pre-defined agenda, but to start by listening, understanding their concerns, and recognizing their expertise. When possible, I would pull data from our electronic health record, do a pilot analysis, and have them help with interpretation. Once they saw the data, they got interested in what it might mean and how it might be useful to their program. With time, we could build trust and get the stakeholders to collaborate with us and to move forward.

Conflict resolution experience has been useful in statistical projects when there is tension among stakeholders. I start by listening, asking questions, and recognizing different stakeholders' expertise. I try not to take any opposition personally but to understand what pressures different collaborators may be facing. When there is time, a pilot analysis can get everyone on the same page and ease the fear of the unknown. Once, a statistically savvy stakeholder group spent over a year debating methods in general terms without finding a path forward. When given an opportunity to address the group, I applied the debated methods to the prior year's data, tested the assumptions, and presented tables showing where the different methods met or failed assumptions (this was done without sharing actual results, to avoid desired results from driving the decision). This allowed the conversation to move forward more productively, as it was immediately clear that some methods met assumptions and others did not.

ACT ON YOUR ABILITY (CHRISTIANA)

My first job after graduation was acting as Assistant Navigator on a 230-foot cutter based out of Kodiak, Alaska while learning to drive the cutter across the Gulf of Alaska and Bering Sea and manage all operations as Officer of the Deck. The conditions were harsh and the learning curve was steep. I spent much of that year out of my comfort zone. It was hard to see then the progress that I was making and the skills I was developing. When I received orders for my next assignment on a cutter in California conducting law enforcement patrols off the coast of South America, I asked my leadership for advice in my new role. They said, "Act on your ability; show up and act like you know what you are doing, because you do". It was apparent to them that after this year of quick learning through significant challenges, I had developed an ability to manage cutter operations, make the right decisions consistently, and lead the crew competently even in challenging circumstances. I was lucky to have someone to tell me this before I was even aware of it myself.

I carried these words into my subsequent jobs in the Coast Guard and the jobs I had in my first five years as a biostatistician in clinical research. There comes a moment when you know how to do something – or more importantly, where to find out how to do it if you do not know. This moment often happens before we are aware of it or confident about it. Being able to recognize this has allowed me to help clients answer their statistical questions or help colleagues come up with solutions to challenging problems. Even if I do

not know an answer, I know I can commit to finding one because I have the training and background to know where to look and or who I can ask.

SOLUTION-ORIENTED (LILY)

As a program evaluator, I often faced unusual requests, and it took creativity to turn these into something measurable. For example, when our organization changed its opioid prescribing policy and significantly reduced prescriptions, some board members worried that people would buy opioids in the street and overdose. I was asked to find out if people were overdosing on street opioids. At first, it seemed like an impossible request. It involved illegal drug use and activities happening outside of our healthcare system. But after thinking it over, I realized that people with overdose emergencies would probably come to our emergency room. Although ICD codes did not distinguish between prescription and street opioids, our board fundamentally cared about whether opioid emergency rates had changed since the new policy. I conducted an interrupted time series analysis of emergency room opioid overdose cases, and there was no evidence of any change in rates. I was able to present this to the board, and they were satisfied that the new policy seemed safe.

I have used similar problem-solving and creativity when working on registry studies as a statistician. We often get analysis requests with questions a registry was not designed to answer. I've learned that it's worth thinking things through before saying no, as there often is a defensible analysis that will meet the requestor's need, if the team is willing to define standard measures in terms of the data and to clearly communicate any assumptions or limitations. On one registry, I worked with a colleague to design an analysis request form. The form had structured questions that helped requestors design analyses better aligned with registry data. This sped up the process of matching investigator ideas with analyses that were possible using registry data.

CREW RISK MANAGEMENT: EVERYONE HAS A VOICE (CHRISTIANA)

Before every launch of an aircraft or major evolution on a cutter or law enforcement operation in the Coast Guard, the entire team meets to discuss the risks involved along with the gain or operational necessity of the mission. If the risk is determined to be unacceptable compared with the likely gain or outcome, the mission can be called off or action taken to mitigate the risk. In this process, every member of the team from the leader to the most junior person provides input from their perspective. Sometimes the newly qualified boat crew member catches something that everyone else missed because they are looking at it with fresh eyes and a lack of the complacency that often comes with repetitive experience.

This concept applies in our jobs as statisticians and programmers as well. Experienced statisticians and programmers should give those with less experience an open door to speak up if they see something that does not look right and to ask questions and clarify as needed. Be willing to say, "That's a good catch – thank you!" And as a new programmer or statistician, don't be afraid to bring up a question or clarification if you think you see a problem or a better way to do something. You might have the most updated information from your more recent education and training, or just the attention-to-detail that comes with working on something for the first time.

CONCLUSION

Although being a career-changer in a technical field can feel intimidating, we hope our stories can inspire other career changers to know their prior experiences can still apply and they can leverage skills from their previous career for success in their new one. We also hope that managers will recognize the transferable skills that can be brought over from other fields and the value of these diverse experiences.

Finally, we want to re-emphasize the importance of finding a job with a good fit. Some organizations keep technical professionals more separate from stakeholders and team meetings, and there are fewer opportunities for leadership, project management, and communication. Some statisticians and programmers may prefer this focus on technical work, but others may find it isolating. The extent of communication with clients as well as opportunities for collaboration and leadership are good topics to discuss at job interviews. Catalyst Flex prioritizes diversity in experience and backgrounds and knows that this strengthens the team. For both of us, this means that working at Catalyst Flex is a good fit

because we appreciate the opportunities to work directly with clients, to collaborate with cross-functional teams, and to lead and manage statistical projects.

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the authors at:

Christiana Hawn
Catalyst Flex
christiana.hawn@catalystcr.com

Lily Ray
Catalyst Flex
lily.ray@catalystcr.com