

## ***How to Grow a SAS® Programmer***

Joanna Koft, Somerville, MA

### **ABSTRACT**

Where does a SAS Programmer come from?? Join me on the journey of how one SAS Programmer came to be from an administrative assistant position and how this was accomplished in the best way. This paper will discuss in detail 4 phases of moving into Statistical Programming. These phases are discovery, practice, transition, and development. The discovery phase includes how interest was sparked and information gathered. The practice phase will discuss the projects that were introduced as a way to gain more exposure to programming. The transition phase will focus on the actual transition into a statistical programming role as well as discuss the programming position that was created. And finally, the development phase will discuss the ongoing role of the statistical programmer and where it can go from here.

### **INTRODUCTION**

Many statistical programmers come from various different educational backgrounds. Some went to college and pursued degrees in math, statistics, or computer programming. Others took a different route by way of sociology or anthropology. And still others became interested in programming through their work experience. I am one of the examples of someone who became a statistical programmer via a path unlike the traditional ones.

The purpose of this paper is to give an example of how people from different educational backgrounds and work experiences can become programmers as well as show how to easily facilitate a transition into a junior programming role. Then the focus of the paper will shift on how to expand the skills of the junior programmer to more advanced levels of programming.

### **BACKGROUND**

My bachelors degree from college was in Communication Sciences with a concentration in Health Systems Administration anticipating that I would go the route of hospital administration and managed care. My first job was working at the Visiting Nurse Association of Boston as a patient care coordinator so I was able to gain hands on experience on the business side of health care. After 1 year, I realized this was not for me and headed to a recruiter. I went on interviews at various hospitals in Boston for managed care administrative positions and while I was trying to decide which one was best, my recruiter sent me on an interview that she thought I might be interested in at a company called Biogen. The interview was for an administrative assistant position in the Biostatistics department, specifically Statistical Programming. Somewhat hesitantly I went on the interview, not having thought of the biotech industry as an option before. After much thought, I decided that working in managed care was no longer something I was really interested in and decided to try something new.....so I took the job at Biogen.

### **PHASE 1: DISCOVERY**

For the most part, I think there are 2 kinds of people: Those that love and understand math and science and those that are creative and enjoy languages, reading, etc. I am of the math and science type. So, when I started working in the Biostatistics department I was intrigued by the work that the group did. I had always had an interest in the field of epidemiology and biostatistics could be categorized right alongside it. I wanted to find out more about it and slowly started to learn what statisticians and programmers did in the biotech industry. I began talking to programmers and was pleasantly surprised by how much their work interested me. During the first year I worked at Biogen, I took a 2-day course on the Drug Development and Regulatory overview so that I had a better understanding of the industry as a whole as well as the drug approval process. In addition, I attended a 3-day workshop on Statistics for the Non-statistician so I could have a greater understanding of biostatistics specifically. It was after these steps that I decided I wanted to try this field and learn how to become a statistical programmer.

### **PHASE 2: PRACTICE**

Upon coming to this decision, I met with my manager to discuss how I would go about "becoming" a programmer. As most of the programmers at Biogen had significant previous programming experience before they were hired, I knew I had my work cut out for me. I began helping out programmers with small projects – rerunning programs after database lock, developing programming table of contents for studies, and putting together programmer study notebooks. Through these tasks, I started to become familiar with the duties of a programmer and their responsibilities to meet timelines of a given study. As an

administrative assistant I also went to team meetings to take notes for the group where the programmer, statistician, and data management team members would discuss timelines and project work assigned to each member. It is here that I started to become familiar with programming terms – for example, what keyvars were required for studies and what algorithms were necessary to calculate study day. To begin learning how to actually program, I went to the SAS Institute in Boston and took the course SAS Programming 1: Essentials. This was a turning point in my learning experience as I was already familiar with the output that SAS code produces, and now I was learning how to actually produce that code. In addition, I attended the SUGI conference in Orlando, Florida where I attended many presentations (mostly at the beginner level) which helped me gain further understanding on how to efficiently program in the biotechnology industry. It was at this point that I felt as if I was ready to make a transition into a junior programming position.

### **PHASE 3: TRANSITION**

A junior programming position was created for me after I had gained enough programming knowledge to make the transition. In this position, I would be responsible for assisting with various programming activities including creation of data listings, less complex table programs, and programming documentation. In addition, I began to attend study workgroup meetings for the studies I was assigned to and helped to standardize programming procedures for the department. Other duties included review of CRF's, database design, and edit check specifications from CDM with guidance. This position also included Biostatistics support on various user testing and validation tasks, data check diagnostic programming and any ad hoc requests as needed.

To further facilitate this transition, I continued with SAS classes at the SAS Institute. I attended SAS Programming II: Manipulating Data with the Data Step, SAS Macro Language, and SAS Macro Programming Advanced Topics within the first year in this position. These classes gave me some of the vital skills necessary to perform my job efficiently. I attended the PharmaSUG conference which was extremely helpful in learning new programming tips specifically related to the biotech industry.

Additionally, a mentor program was implemented where I was assigned to a Sr. Level Programmer who helped me with more difficult assignments as well as reviewed my work, and instructed me on how to use different departmental tools. I believe that this was instrumental in making my transition into programming successful as it allowed me to have hands-on training from an experienced programmer.

### **PHASE 4: DEVELOPMENT**

The ongoing development of my programming role has been very exciting and challenging. I have continued to attend SAS classes as needed – SAS Programming III: Advanced Techniques and Advanced Reporting Techniques and will continue to do so. I also continue to attend conferences such as SUGI/PharmaSUG to gain new knowledge and insight on how to perform my job more effectively and efficiently. Other elements have been added into my role such as having quarterly code reviews with my manager as well as self-study lessons that force me to challenge my skill level. These are also helping my programming skills advance and are allowing me to take on more difficult projects.

As my next step will be to move into the next level of programming, I feel as if the junior programming position has more than sufficiently trained and prepared me for this move. The next level in the career path of programming will include creating more tables, listings, and graphs, producing SAS analysis datasets from specs, reviewing CRF SAS datasets, and providing analytical support to biostatisticians.

### **CONCLUSION**

In conclusion, I have shown how it is possible to “grow” a SAS programmer from a non-programming background and the steps a manager can take to do just that. My experience has been very valuable and I look forward to taking my programming skills to the next level. All of the classes, mentoring, and projects that I have worked on have been crucial in expanding my knowledge of SAS programming and allowed me to have an exciting career opportunity ahead of me.

### **CONTACT INFORMATION**

Your comments and questions are valued and encouraged. Contact the author:

Joanna Koft  
5 Windsor Rd., Apt. 1  
Somerville, MA 02144  
Email: [jmkoft@gmail.com](mailto:jmkoft@gmail.com)

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