Information of Interviewee

Name: Tong Zhu
Gender: Male
Age: 34
Company: Novartis China
Job Title: Senior Biostatistician
Location of work: Novartis Shanghai, 4278, Jinke Road, Pudong New Area, Shanghai
Education Background: Ph.D., The University of Auckland

Transcript (Edited and Rearranged)

Q: What is the difference between statistician and similar professions like data scientist, data analyst, data engineer etc.?

A: Actually, only in a large enough enterprise, these positions will co-exist, since only a large enough enterprise has the money and necessity of dividing that part of work so clearly. Anyway, generally speaking, data scientists and statisticians are responsible for the design part of a statistical task. They figure out what to do and how to do it so as to accomplish the task. Their difference mainly lies in statistician would use more basic testing and modeling methods to deal with relatively small data set, while data scientist would use more advanced methods like big data and machine learning so as to obtain insight via data mining and usually the data set is very large. Data engineers are responsible for actually conducting the work according to the design and requirement of statisticians or data scientists. Data engineers then would provide the results to data analysts, who will further interpret or present the result to clients or other target audience, during which certain techniques like data visualization would be applied. Usually, data scientists would also be responsible for supervising the work of data engineers and analysts.

The job of statisticians and data scientists require a solid knowledge in the corresponding statistical theory and techniques. While for data engineers, a strong ability of coding and manipulating database is required. For data analyst, the ability of data visualization is required, as well as a strong communication and presentation ability.

Q: What is the typical career path for statisticians?

A: Statisticians mainly work in the following entities: research teams, banks and banking regulatory departments and medicine developing enterprises (also consulting companies, but only mentioned and not discussed).

Research teams: Research team is usually of a relatively small scale. Therefore typically, there is only one statistician in a team that is responsible for the whole statistical task, including design, data cleaning and processing, modeling, testing, analysis, reporting,

etc. The workload is usually higher than the other two, and the salary would also be lower. However, the payoff is, you can learn many things and develop expertise in all those steps, as well as get familiar with the whole process.

Banks (& Banking related departments): Much higher salary, lower requirements for statistical knowledge, but need more knowledge other than statistics, especially economics and the insights into the banking industry. A successful career in this industry would much depend on your insights, not simply on your statistical skills.

Medicine developing departments: Lower salary than banks, but much higher than research teams. Higher requirements for statistical knowledge than banks. Need little knowledge of other fields. Success in this field largely depend (only) on statistical skills. As for Novartis, on top of senior statistician, there are direct statistician and head statistician. The higher the position is, the more knowledge and insight of the industry (and thus knowledge about fields other than statistics) would be required. Employees in data operation department can transfer to statistical consulting department, but it would take typically 3-5 years

The interpersonal relationship is *never* easy. Don't always expect that people are that virtuous. I have had some contacts with certain persons in the university including Tongji, East China Normal etc. It turned out that some of them seem to be of disgusting smell. Also, the interpersonal relationship in Novartis is also not that simple. Therefore, do get yourself prepared to face a much more complex world when you graduate (or even better right now).

Advice (extracted from different parts):

1. About finding and selecting job and career

- **Know yourself**. Know what's your disadvantages and weaknesses. Know what can be changed and what cannot. Disadvantages are those that can be improved, but weaknesses *are* weaknesses. Do think twice before (better avoid) entering a career that requires expertise in your weaknesses. Embrace Interview. Interview is a good chance to learn and to help you better know yourself. Personally, I had attended three other interviews before I got this job. Amazon kicked me out at the first round. McKinsey let me pass many rounds of interviews, but did not give me an offer in the end. However, it let me learn a lot. It let me learn about how to look at the question in a more macroscopic way. It also let me learn about how to effectively communicate with people, especially in a short period of time like an interview. Also, the welcomeness and openness of the interviewers have left a deep impression on me. Google gave me an offer in a research and design group, but in the interview, I found that I would have to learn new programming languages if I enter Google, and that I might not be used to the frequent updates of technologies in IT industry. Therefore, I did not take that offer.
- Take into serious consideration the **development** of the company (also consider the culture and atmosphere of the business). Will the company and the job offered

allow me to learn new things and always stay at the frontier of the industry? (Does the atmosphere of the business suit me?) Equally important is the **starting salary**. We cannot be a person that care nothing about physical life. After all, we need to food to eat, water to drink, place to live in. Besides, starting salary would largely decide the salary of your next employment (when "digging" people, usually 30% higher of the original salary would be offered). My personal advice is, set a line for salary. All the offers that are above the line can be taken into considerations. For these offers, carefully think about them, comprehensively comparing the development, the cultural atmosphere, treatment etc.

2. About career

   I am always asked by the employees in my team about what's the proper attitude towards promotion. The resources are limited, the places for promotion are limited. Therefore, the leader *has* to make a choice between the candidates. In some way, the decision must be unequal. However, if it is you that feel unequal, you do not need to care about that too much. What you should care about instead is: Have I learnt new things today? Am I improving each day? How can I **become more excellent** in this field and this industry? Always keep in mind, the industry *is eager* for talents. If you are excellent enough, chances and resources *will* come to you. If you are excellent enough and feel that the current treatment is not satisfying, just simply resign. There are *certainly* better places for you. Your current company simply does not deserve you. It is the duty of the company, the HRs to keep good employees. It is the HRs that have to make the choice of promotion. If they do it wrong, simply say goodbye to them (laughter).

3. About my own future plan

   For application, do ask seniors for information; Have a backup plan in view of the Covid and the visa of the US; It may also be a reasonable choice to pursue graduate study in China; Also pay attention to the new residency policy of Shanghai.

Concluding Thoughts

Although the interview did not go as I had expected, it is still a success in terms of the content. I really learn and benefit a lot from it.

Based on the information provided by my interviewer, I have reflected on my own plan. I had intended to pursue a master degree in data science and a career as a data scientist. From our discussion, I have confirmed that it would be a reasonably suitable choice for me. Personally, I am interested in some knowledge of statistics, but not enough for me to pursue a master in it, since it would involve a lot of solid maths, which I'm not very good at. Besides, I am interested in the new and advanced machine learning and deep learning techniques, and also big data. Although I have to admit I am not very good at coding, I think my level, with further study and improvement, would enable me to handle the coding involved in the job of a data scientist.

The interview also lets me realize that I should put efforts in the basic statistics theory as well. It reminds me not to always pursue those advanced techniques. To lay a solid statistical theoretical foundation is more than beneficial to a successful career in this field.

As for which kind of enterprise that I would like to enter, I may not be entering the biostatistics field, since personally I am not interested in the medicine industry. Maybe I will end up in a career in the financial industry, but I may also explore the consulting industry as well as the IT industry. This is left for me to be explored and decided in the future.

References

https://career.berkeley.edu/Info/InfoInterview#:~:text=%20Six%20Steps%20of%20Informational%20Inte