

Medical School and Healthcare: After

Healthcare, and the effective utilization of healthcare technologies, has become increasingly important due to our aging society, rising healthcare costs, and the emergence of antibiotic resistant diseases. The demand for medical breakthroughs, new drugs, and new procedures has outpaced the resources of doctors and hospitals. The solution to our society's health problems must be based on biostatistics -- applying rigorous statistical methods to biology. My goal is to complete a Master's degree in biostatistics from ***** University to utilize mathematical theories to solve pressing biological problems, which will ultimately improve society.

I have always excelled at mathematical problem-solving, and decided to major in statistics at ***** University in Taiwan. Initially, I assumed that statistics would lead me into a commercial field, but I became enamored with how statistics could benefit humankind when I completed the course, "Statistics in Epidemiology." I discovered that I could use my mathematical abilities to improve and refine methods for medical research.

I expanded this interest by successfully completing similar courses including Categorical Data Analysis, Survival Analysis, Design and Analysis of Clinical Trials, Analysis of Longitudinal Data, and Statistical Consulting. My passion for finding new methods to contribute to medical breakthroughs allowed me to achieve top grades, and be awarded the prestigious Medical Statistics Program Certification -- an honor awarded to only three of the 64 students in my major. In addition to theoretical knowledge, I also focused on obtaining practical skills which motivated me to complete the course, "Statistical Packages," which taught students how to use SPSS, SAS, and R-project. This course gave me the tools to complete several projects that required working with large databases; it also gave me a better foundation for graduate studies.

Although I focused on my studies at ***** University, I found it personally rewarding to participate in extracurricular activities. Even though I was not initially the most physically talented player, I joined the Statistics Department volleyball team. Due to my perseverance, practice, self-discipline, and most important of all, teamwork -- I eventually became one of the best players on the team and helped lead our team to the Statistics Cup Championship. I also developed my interpersonal skills by becoming an elementary math school tutor for two years. This experience taught me the importance of patience, communication, and understanding different students'

learning techniques; even though they were children, I found that understanding how different people learn and communicate helped me with team-oriented projects with adults as well.

Following graduation, I was determined to obtain some practical experience to supplement my academic knowledge and was fortunate to have been selected as a research assistant for the ***** in Taiwan. I worked under the guidance of Dr. ***** who was responsible for the research project, “Improving Outcomes of Multi/Extensively Drug-Resistant Tuberculosis Through Intensive Directly Observed Treatment; Short Course Program.” Dr. ***** became my mentor who taught me how to transform what appeared to be a bunch of numbers into a fascinating story that potentially could yield solutions to biological dilemmas that could help real people.

Gaining practical experience was important for another reason. I found it exhilarating to work with “real data;” these numbers were not a fabricated dataset arranged by a college professor, but represented real people, real outcomes, and real variables that had to be studied. Unfortunately, I learned that real data also has real problems. For example, the nurse collecting this data sometimes made recording errors, and there was missing data. This made it even more difficult to make inferences from the data. I also discovered specific problems endemic to the data itself such as abnormal collinearity, correlations between independent variables, and that the experimental assumptions were not consistent with the modeling. Although I was aware of several statistical methods to overcome these problems -- it made me realize that undergraduate academic study was not enough. Professional experience combined with graduate studies was required to solve these complex problems.

To overcome some of the problems in this research, I utilized survival analysis to compare the outcomes of the two groups. Since the research was from a cohort study, we also had the opportunity to use longitudinal analysis (time-series analysis). The more that I used these two methods -- the more I realized their potential to contribute to breakthroughs in medical research. One of my goals is to explore these methods more thoroughly during my Master’s studies at *****. At this point in my career, I realize that international study at an elite American university like ***** will most benefit my professional and personal development. In addition to the Master’s in biostatistics coursework, I am excited about the one-term practicum which will give me field experience in an American laboratory alongside American professionals and international students.

I also will benefit enormously from seminars, interactions with other students, and learning the differences in how medical research functions in the Western World. The ***** resource books and research studies in statistics, mathematics, and probability are unparalleled, and will also contribute to my overall understanding. While my goal is to obtain a Master's in Biostatistics from your elite Ivy League School and return to my native Taiwan, I do have another objective: I hope to develop a network of like-minded professionals from around the world that want to encourage international collaboration on important medical issues. Countries like the United States and Taiwan should not be competing to create new drugs -- but collaborating. I will contribute to this spirit of collaboration in the classroom at ***** , and in my future professional career.

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