Survival Analysis with Base SAS Course

Project 1

# Due Date: 06/27/2017 Tuesday 11:59 PM

1. Last year, you met Larry Hansen, COO of a very famous pharmaceutics company, FermaLogis, during a networking event. You told him about your background on analytics and, especially, the survival analysis projects you have been involved and how survival analysis can make an impact on business. He told you although he didn’t have thorough knowledge of Survival Analysis, he started to hear the term more and more in the recent years, so he was very interested. You exchanged contact information and parted.

After seven months, you received an e-mail from Larry. The message is below:

“Dear ......,

I hope you are doing well and life is good over CT. I know it is summer time, and you have your own obligations but I need a small favor from you.

A few days after we chatted at the meeting, I encountered an essay on Survival Analysis on LinkedIn by a very esteemed colleague of mine. He wrote about many uses of survival analysis in many industries. So, my interest increased even more on the subject. I studied it but only on the theory part. My mathematics and analytics skills are not enough to do analytics myself. I came up with an idea to use it with the company data by some hand from you.

As I mentioned in my speech at the event, employees are very important for the FermaLogis operations as the main resource and input. So, we care about our employees a lot. However, there is this issue, employees are leaving the company and that is not a good thing for us for sure. Let me elaborate in two groups:

1. Young employees: We are investing a lot on the new employees in terms of professional training and salary without return for the first three years. Only after three years, we are starting to benefit from that new employee. But, at that time, they become more competent professionally and seek new career opportunities with higher salary and leave the company. This is a big problem because of two reasons. First, we can’t harvest what we invested and secondly, a talent gap hinders our operations.
2. Experienced employees: As I told you in the meeting, our company has an Executive Training Program. It is a very intense and useful program. Every year, our experienced employees (with the company for 5 years or more) are sent to a training center for two weeks and trained there by professors and consultant from top universities and firms. They gain a lot and they become even more competent each year.

We have enjoyed the benefits of the training program a lot. But, recently rival companies are recruiting our well-trained employees with high transfer fees and higher salaries. We definitely don’t want that for many reasons you can understand.

The reason why I am contacting you is that we want to know who are leaving our company and why they are leaving. If we can understand that, we believe we can take the necessary measures to prevent our employees from leaving.

I think that would be a very good application field for survival analytics. I am sending you our Employee Attrition data. If you are interested, please take a look at this and let me know what we can do about this.

Thanks,

Larry Hansen

Chief Operating Officer at FermaLogis

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1. You take a look at the data and see that this data can be used for the study. You agreed on the project details, fees and all the other payments. Your company, ......, is expected to **write a report** on,
   1. **Who are leaving the company?**
   2. **Why are they leaving?**
   3. **When is the biggest danger for employees to leave?**
   4. **Is there any difference of attrition between different employee groups or categories?**
   5. **Any other findings about the company.**
2. You are expected to use the techniques in Chapter 10 and 11 to give an answer to the business problem.
3. **The project deadline is 06/27/2017.**
4. Grading will be based on your report. You must answer the general business needs of the company. The above questions on item 2 are only examples and they should be enriched.