

## **STUDENT SUCCESS & THE QUANTIFIED STUDENT PROGRAM**

### **Introduction**

At Fontys University we run a Quantified Student Program. In this program we are doing different kinds of projects aimed at creating a better learning experience for students. In this article we zoom in on the relation between student success and the program.

### **Improper Linear Predictions rule**

Suppose that you want to know if you have a happy marriage and if it is going to last. You are trying to learn this by having an interview with a specialized person. Your wife is having the same the interview and there will be a conclusion. Now you are doing the same thing but by answering all kind of questions that are input for a proper (weighted) linear model. It is well documented that proper linear models outperform the intuition of the specialist. However, there is more.

In 1974 Dawes and Corrigan published a research paper that indicated that simple linear models may be highly predictive. A famous example is their model for self-ratings of marital happiness. It goes as follows:

### **Rate of sexual intercourse minus rate of arguments.**

The idea is that humans are very good at collecting information but not so good at integrating the information, weighing it and drawing conclusion. More information can lead to worse conclusions. This is a well documented phenomena. Improper (unweighted) linear models often outperform clinical intuition and even proper linear models.

Now take a look at study success. If we define study success in a simple way: graduating within a certain period (4-6 years) we can try and predict this by:

- Having interviews with students and their counselors and predicting study success (not so good);
- Building a weighted linear model with all kinds of variables like former education, age, education of parents, time on campus, time online and so on... (better, but hard to do);
- Or finding a improper, simple linear model (maybe better and easier).

The formula could be something like this:

### **Number of hours on campus minus schedule**

At Fontys University we have 45.000 students. If we can find a simple (but improper) linear model (formula) we can predict study success. This will make it possible to look for students that have a negative result and talk to them. If we can successfully intervene with a 100 students a year there is a lot of money to be saved.

That is why we run a project in the Quantified Student Program that is aimed at collecting data about the behavior of our students. Using WIFI data we (anonymously) track our students and combine that dataflow with other data like sleep, smartphone – usage, exercise and study progress. By doing this we can try and find a working simple linear model and save a lot of students.

And money.