Answer the following one question only. This question is not a hands-on question.

1. Imagine the business context is the telecommunication customer churn problem. Churn is defined as a customer’s switch over to a competing provider. A predictive model tries to predict the value of churn. We refer churn to be the actual realized value and prediction to be the predicted value of churn. In a predictive model of churn:

* The primary outcome churn = 1 when the customer is a churner;
* TP (true positive) is when prediction = 1 and churn = 1;
* FP (false positive) is when prediction = 1 but churn = 0;
* TN (true negative) is when prediction = 0 and churn = 0;
* FN (false negative) is when prediction = 0 but churn = 1.

If interceding with (i.e., trying to change a customer’s mind by using some intervention) a potential churner is relatively cheap but losing a customer is expensive:

**Question: Which error is costlier** (i.e., more expensive)**: a FP or a FN? Explain why.**

This homework is worth 1 point (out of 100 points).

Due date: see syllabus section **Tentative Lecture Outline**

Requirements (Important! Read carefully): Use MS Word to build your answers; submit a Word file to Blackboard.

* For non-hands-on questions, elaborate your answers as much as you can. Include and elaborate your rationale if asked, and the main steps taken if relevant.
* For hands-on questions, you are required to use SAS EM. Do not only provide the short answer to the question. Besides the short answer, you are required to paste the appropriate screenshots of the relevant steps in SAS EM, including but not limited to, diagram, interface, results output, plot/chart, etc., wherever appropriate. You are advised to err on the side completeness in including screenshots, typically the more the better, as they will allow the Professor or TA to evaluate your competence with SAS.
  + You will receive substantial deduction in points if you only include a short answer, when it is indeed necessary to see relevant screenshots of your EM project and/or process for your Professor or TA to evaluate how you obtained the result in SAS EM.