*Hospital Charges*

*Data:*

The data set Hospital.xls includes 289 patient records for normal deliveries of babies.

The variables are as follows:

DAYS = days in the hospital (Column A)
CHRGS = total expenses charged to the patient (Column B)
PHYS = code identifying the physician (Column C)
PAYOR = type of insurance; = 1 for managed care; = 0 for commercial insurance (Column D)

*Situation:*

Put yourself in the position of a hospital administrator. Several members of your staff have raised concerns about equitable treatment of patients. Accordingly, you have decided to examine whether the type of insurance coverage influences a patient's overall and daily charges.

*Statistical Analysis:*

Compute the following descriptive statistics:

- the proportion of the patients with managed care insurance
- the average time spent in the hospital for a normal delivery
- the mean charges for a normal delivery
- the mean daily charges for a normal delivery

Now consider two patient populations: those with managed care insurance and those with commercial insurance.

Address following research questions:

On average, do the total charges for these two groups differ?
On average, do the daily charges for these two groups differ?

Conduct a hypothesis test to address each of these questions. Do not omit any observations. In other words, do not worry about outliers.

*Technical Report:*

In your technical report, present a table with descriptive statistics.

Also present each hypothesis test. In particular, indicate the null and alternative hypotheses and the t-statistic for each test. Label the t-statistics as follows: *** if the p-value < 0.01, ** if the p-value < .05, or * if the p-value < 0.10 (or no stars if the p-value is large).

*Memo:*

Write a memo to your staff.

The **audience** of the memo includes members of your staff who are not statisticians but who are familiar with the following concepts: mean, standard deviation, and statistical significance. Given their busy schedules, the memo should be able to stand alone; i.e., a busy staff member can understand the gist of your analysis without reading the technical report.

The **structure** of the memo should be as follows:

TO:             Audience
FROM:       Author's Name and Title
RE:             Subject of Memo
DATE:        Date

The body of the memo should be single-spaced with an extra space between paragraphs. The memo should fit on one page. Attach the technical report to the memo (i.e., present the memo before the technical report).

The memo should include the following **content** (in paragraph form):
- relevant background information (one or two sentence placing the memo in context)
- motivation (one or two sentences explaining why the analysis is important)
- description of the sample including the sampled population and the sample size
- discussion of select descriptive statistics (a few sentences painting a picture of the sample and one sentence referring the interested reader to the table of descriptive statistics presented in the technical report)
- explanation of the findings of the hypothesis test (including one sentence referring the interested reader to the technical report for more details)
- implications for hospital policy
- limitations of the analysis

The **scoring rubric** will be posted.

The original case study was published by Bryant and Smith in their book entitled *Practical Data Analysis*.