Do women bill fewer hours?

The firm measures associate performance with two numeric metrics: billable hours and revenue brought in by new clients. In this exercise we use billable hours only. Billable hours are important to the firm because they provide a source of revenue. However, not all work hours can be billed to clients, so even an associate working 80 hours a week may have no or few billable hours that week.

Your task is to explore whether women associates bill fewer hours, and if so, why.

One hypothesis is that women put in fewer billable hours because they are more likely to have child care duties than men. Another hypothesis is that demeaning comments and experience of discrimination discourage women from career advancement, hence they focus less on billable hours.

Luckily, the HR department has conducted a survey about family status and employee satisfaction.

Task: Explore variation in billable hours

You will use a regression to uncover variation in billable hours at the firm. Because departments have relative automony and you are interested in variation by gender, you will *control for* these two factors.

1. Find the data table holding performance measures of male and female associates hired in 2012. Start with DATA B and use operation J1 to find the corresponding table that also has billable hours.
2. Using "select rows" operations and the "summarize hours" operation, explore whether men and women bill different amount of hours. Can you reject the null hypothesis that mean billable hours are the same for men and women? Use the Spreadsheet to compute the p-value. What do you learn from the histogram?
3. Estimate a regression of billable hours on gender and departments, using operation R3 on DATA K. The result is a MODEL card, listing the estimated parameters of the model. They are reported in percentage difference in billable hours, holding all other variables constant. Interpret the coefficients.
4. Use the resulting MODEL card on the *same data card* on which you estimated the model. For example, if your model is 1X, and in the hole you see 5, take the card 1X5 as the result. This will evaluate the fit of your model *in sample*. Note the scatterplot and the R^2 indicator.
5. Include additional explanatory variables for child care and experience of discrimination. Use operation J2 to find the data table with these variables. Re-estimate your regression R3 on this data table. How do the estimated coefficients change relative to the previous model? How does the fit change?

Presentation and discussion

Can you construct an argument for why some employees, including women, bill fewer hours? Pick the exhibits that best support your case. Prepare a short presentation with 2-4 exhibits and precise verbal interpretation.