Final Grade Calculation: A Guide for the Perplexed

Let M be your Midterm exam score. Let F be your Final exam score. Your final grade for this course will be:

$$G = 0.3M + 0.3F + 0.4J^A$$

, where J^A is your adjusted non-exam score.

The adjusted non-exam score is an adjustment of your "raw" non-exam score J. In this course,

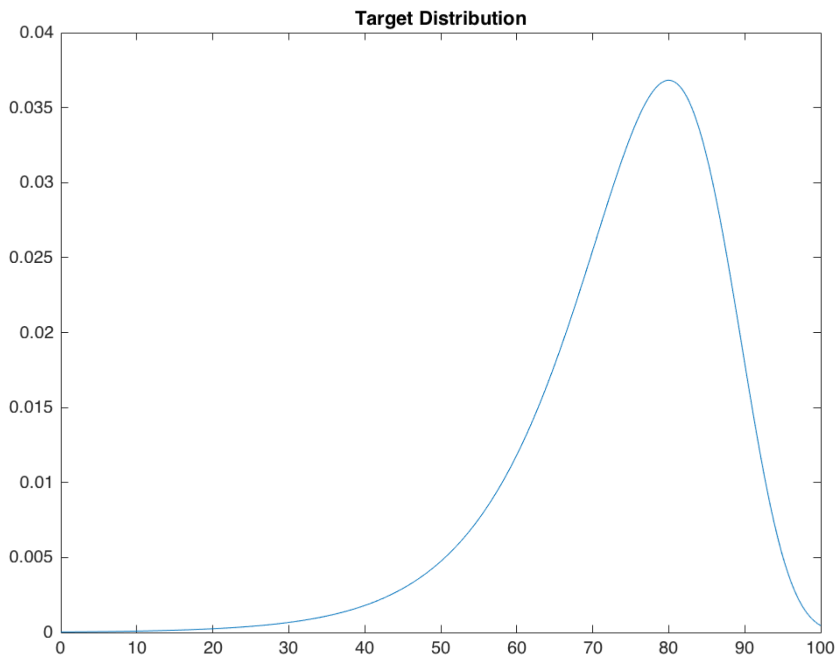
$$J = \frac{\text{sum of your homework scores}}{\text{total homework points}} \times 100$$

How we adjust the non-exam score

In order to ensure fairness, it is desirable that non-exam scores across different sessions of the same course taught by different professors are comparable[1]. One way to do this is to adjust the non-exam scores such that their mean is the same in every class. For example, suppose there are only three students in one class: A, B, and C. Their "raw" non-exam scores are $J(A) = 60, J(B) = 70, J(C) = 80$. Then the mean non-exam score for this class is 70. Suppose our target mean is 80 (i.e., we could like the mean of adjusted non-exam scores to be 80 in each class), then to make the adjustment, we will let $J^A = \frac{8}{7}J$. As a result, the adjusted non-exam scores for the three students are $J^A(A) = 68.6, J^A(B) = 80, J^A(C) = 91.4$. This practice is called curving.

[1] Since we already take exams together.

In addition to targeting the mean, we can also target the entire distribution. For example, we might want the distribution of J^A to look like this in every class:



To do this, we can use statistical methods that can help us transform any distribution of J into our target distribution of J^A[2]. Figure 1 shows one such example. Given an arbitrary set of J scores, we are able to transform its distribution, which is plotted in the upper panel, into a distribution that looks like our target distribution of J^A, which is plotted in the lower panel. Figure 2 shows how this transformation works. For example, $J = 10 \Rightarrow J^A = 51$, $J = 30 \Rightarrow J^A = 62$, $J = 60 \Rightarrow J^A = 72$, $J = 70 \Rightarrow J^A = 75$, $J = 80 \Rightarrow J^A = 79$, $J = 90 \Rightarrow J^A = 84$, and $J = 100 \Rightarrow J^A = 100$. Note that in making the transformation, we change the distribution of non-exam scores while preserving their ranking, i.e. if $J(A) < J(B)$, then $J^A(A) < J^A(B)$.

[2] Here is one method.

Figure 1

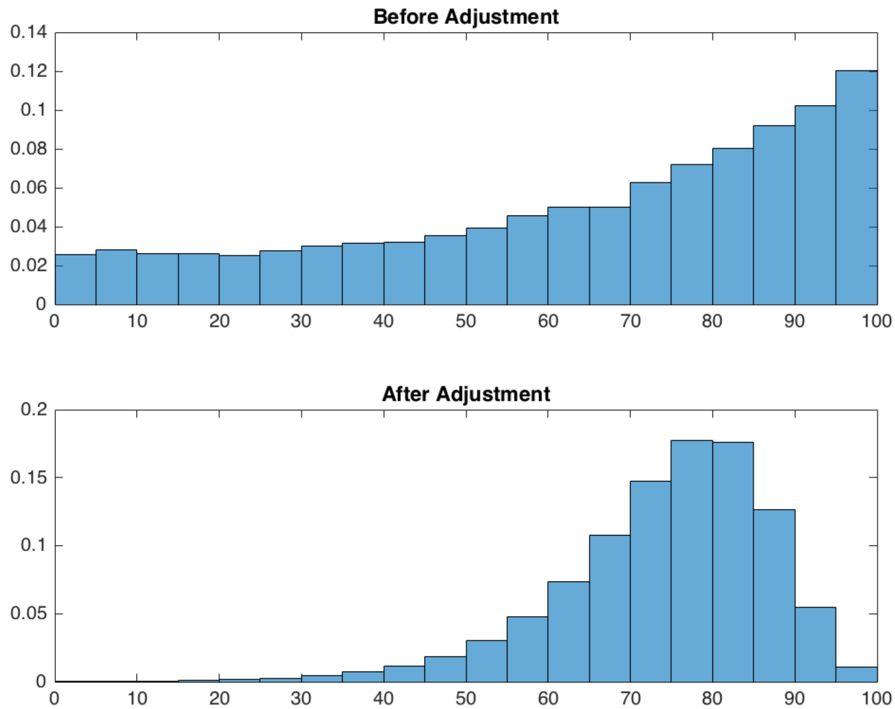


Figure 2