

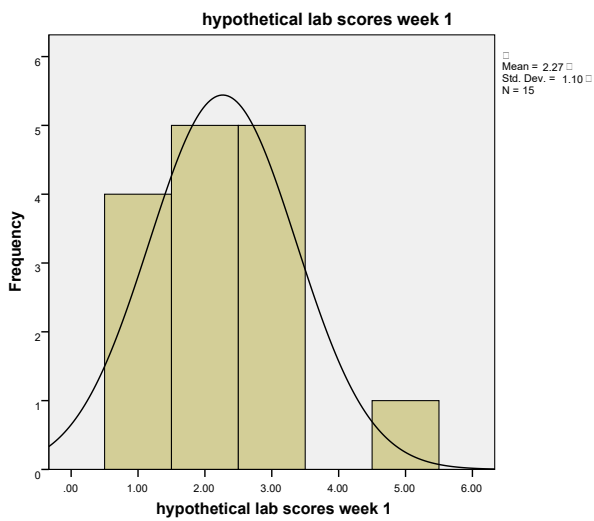
### Effects of Combining Data

**Hypothetical Lab 1 Scores**

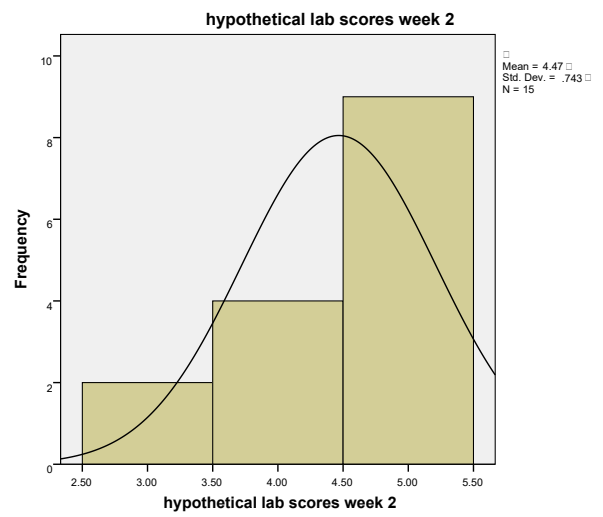
1.00  
 3.00  
 2.00  
 3.00  
 5.00  
 1.00  
 1.00  
 2.00  
 3.00  
 2.00  
 2.00  
 3.00  
 2.00  
 1.00  
 3.00

**Hypothetical Lab 2 Scores**

4.00  
 5.00  
 3.00  
 5.00  
 5.00  
 5.00  
 3.00  
 4.00  
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 4.00  
 4.00  
 5.00

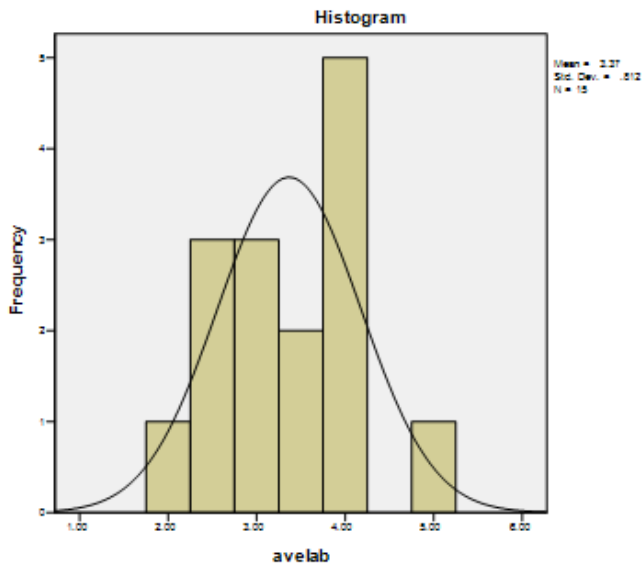


Mean = 2.27, Skewness = .87, kurtosis = 1.3



Mean = 4.47, Skewness = -1.07, kurtosis = -.106

If I average the scores from the two labs. In SPSS, I used: compute avelab=mean(lab1,lab2). The distribution for the combined scores then looks like:



Mean = 3.37, Skewness = .15, kurtosis = -.445

The more extreme values tend to average together to make more middle values. When there are multiple causes acting on an object (or a person), with countervailing effects, the result tends toward the middle. Some of the effects are random or atypical. The atypical effects tend to average out. Had I used more cases for the two sets of lab scores, we probably would have had an even more normal looking distribution when they were averaged.

### Galton Board



Galton Laboratory, University College, London  
<http://www.cabinetmagazine.org/issues/34/burnett.php>

### Galton board illustration<sup>1</sup>

[https://www.youtube.com/watch?v=b216a8O\\_IVU](https://www.youtube.com/watch?v=b216a8O_IVU)

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<sup>1</sup> Francis Galton (1822-1911) was a cousin of Charles Darwin and made a wide variety of important contributions to science and statistics, including heredity and genetics, geography, meteorology, forensic science, correlation, regression, psychometrics, and survey methodology, but he was also an originator of eugenics, and held some highly problematic views on race, heredity, and intelligence, <https://mathhistory.st-andrews.ac.uk/Biographies/Galton/>.