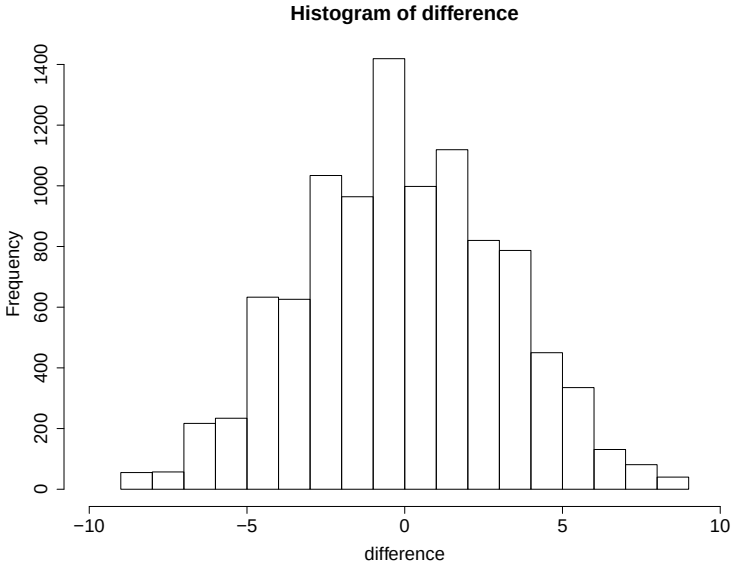
Statistics 411/511
Homework 1
Due in Lab Monday and Tuesday, October 3 and 4

- **Homework Guidelines** Homework must be typed and stapled. Please see the syllabus for more guidelines.
- **Academic Integrity** You are encouraged to *discuss* the homework with other students, but what you turn in must be your own work in your own words. The syllabus contains more details and links to OSU's Student Conduct Code.

1. Exercises 3, 6, and 12 pages 23-24.
2. The data in exercise 12 is available in the Sleuth3 R package. It's called `ex0112`. Using these data, do the following.
   (a) Produce side-by-side boxplots for the two groups. Turn in your plot and your R code.
   (b) I did a permutation test by calculating the difference in sample means for 10,000 random shuffles of the data into two groups. Below is a histogram (image available on Canvas in Files>Homework as HW1Hist.pdf and HW1Hist.png). Label the observed value of the difference on this histogram (by hand is fine). Comment on the plausibility of the null hypothesis of no difference between the diets.



   (c) Perform a two-sided t-test using R's `t.test` function. Turn in your R code, but *not* the output. Instead, write a brief "Statistical Conclusion" similar to those given for the two case studies in Chapter 1.