

4) From our survey we can calculate how well you think you'll do on Exam 1 as a function of how much you think you'll like this class. Here is a table of statistics based on our survey:

	Not at all	Just a little	A fair amount	Very much
n	14	56	75	6
mean	81.64	84.04	86.32	93.67
SS_{within}	1127.2144	2873.9296	4184.32	259.3334

n_{total}	151
grand mean	85.3311
SS_{total}	9219.4437

$$\sum (x - \bar{x})^2$$

↑
93.67

Calculate the standard errors of the mean for each of the 4 groups.

Make a bar graph of the means for each of the 4 groups with error bars as the standard error of the means.

Using an alpha value of $\alpha = 0.01$, is there difference in predicted Exam 1 score across the 4 groups of how much you think you'll like Psych 315?

$$SS_{within} = 1127.2144 + \dots + 259.3334 = 8444.8$$

$$df_{within} = N_{total} - k = 151 - 4 = 147$$

$$MS_{within} = \frac{SS_{within}}{df_{within}} = \frac{8444.8}{147} = 57.4476$$

$$SS_{between} = \sum n_i (\bar{x}_i - \bar{x})^2 = 14(81.64 - 85.3311)^2 + \dots + 774.655$$

short cut for $SS_{between}$ → $SS_{total} = SS_{between} + SS_{within}$, $SS_{between} = SS_{total} - SS_{within} = 9219.4437 - 8444.8 = 774.655$

$$df_{between} = k - 1 = 4 - 1 = 3$$

$$MS_{between} = \frac{SS_{between}}{df_{between}} = \frac{774.655}{3} = 258.2185$$

$$F = \frac{MS_{between}}{MS_{within}} = \frac{258.2185}{57.4476} = 4.4949$$

$$P = .0048$$

We reject H_0 .

Your predicted exam 1 score varies significantly with how much you think you'll like this class, $F(3, 147) = 4.4949$, $p = .0048$.

