Reminders: HW #9 due Monday after Thanksgiving break, assigned by Wednesday.
Report 2: Due date changed. Friday AFTER Thanksgiving break.
Assignment will be given out Wednesday.
Office hours: M 1-2, W 1-3, Th 9-11 or BY APPOINTMENT

Exam 2: Divide score by 150, multiply by 100, then add 7.
Key outside my office – see me with any questions…
Mean: 74.5  Std. dev.: 22.7  Median: 77  IQR: 64.3 – 94.3

Variation high on most problems: Numbers 2 (probability), 4 (probability), and 6 (hyp. Tests) caused the most problems.
Statistical inference for sample proportions: (the z strikes back)

Confidence interval for proportions:

Recall from chapter 5 that the mean and standard deviation for the sampling distribution of the sample proportion $\hat{p} = \frac{X}{n}$ (where $X$ is the count of “successes”) are (from the Binomial):

Mean: $\mu_{\hat{p}} = p$ and Std. dev.: $\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}}$.

Also recall that for large samples, the sampling distribution of $\hat{p}$ is approximately Normal.

$\hat{p} \sim N\left(p, \sqrt{\frac{p(1-p)}{n}}\right)$

Finally, remember that the margin of error for a confidence interval is some critical probability value times the Standard Error of the statistic. The SE is just the standard deviation of the sampling distribution:

$SE_{\hat{p}} = \sigma_{\hat{p}} = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$

Because the sample proportion is approximately normal and we can define the standard deviation, we can use a critical z value $z^*$, like before. The level C confidence interval is then

$\hat{p} \pm z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$ where $\hat{p}$ is the point estimate of the sample proportion and the margin of error is $m = z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = z^* SE_{\hat{p}}$.

Hypothesis tests for a single proportion:

Just as with sample means, the confidence intervals also correspond to an hypothesis test based on the standard normal distribution.

In minitab: Stats > Basic Stats > 1 Proportion

$H_0$: $p = p_0$  \hspace{1cm}  $H_A$: $p \neq p_0$, or $p < p_0$, or $p > p_0$

All of the usual hypothesis testing considerations apply.

Example, Problem 2b.) on Exam 2.