AP Stats – Chap 21
Comparing Two Proportions

90% of this chapter…you know how to do!

- Hypothesis
- Model
- Mechanics
- Conclusion

So, what's new?

- we're going to be comparing two proportions, so we'll have two of everything…use subscripts to differentiate:

  p_{males} $\hat{q}_{lefties}$ $n_{stopped\ cars}$

- the Hypothesis is now the **difference between the two proportions**
- the Independence Condition changes a bit
- the name of the test is **2-PropZTest** (calculator option 6)
- the Confidence Interval is now related to the **difference** between the groups (calculator option B)

Pooling

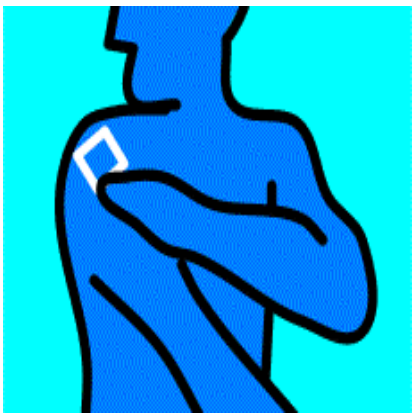
Whenever we have data from different sources or different groups but we believe that they really came from the same underlying population, we **pool** them to get better estimates.

When testing the hypothesis that the two proportions are equal, we pretend they are…so use the same value…the **pooled** estimate for each.

When finding a confidence interval for the difference, there is an implied assumption that the two proportions could be different…so use different estimates…**don't pool**.

The best news…your calculator will know when to pool and when not to! ☺

The Nicotine Patch



Would being part of a support group that meets regularly help people who are wearing the nicotine patch actually quit smoking? A county health department tries an experiment using several hundred volunteers who were planning to use the patch to help them quit smoking. The subjects were randomly divided into two groups. People in Group 1 were given the patch and attended a weekly discussion meeting with counselors and others trying to quit. People in Group 2 also used the patch but did not participate in the counseling groups. After six months, 46 of the 143 smokers in Group 1 and 30 of 151 smokers in Group 2 had successfully stopped smoking. Do these results suggest that such support groups could be an effective way to help people stop smoking?

Chicken Contamination

In the December 2002 issue of *Consumer Reports*, Consumers Union reported on their investigation of the presence of bacteria in packages of chicken sold in supermarkets.

They purchased both brand name (Perdue) and store brand chicken in 25 US cities. Laboratoty tests found campylobacter contamination in 33% of the 75 Perdue packages, and in 45% of the 75 store brand packages. Does this indicate that shoppers would be safer buying the name brand product?

They also collected 75 packages of Tyson brand chicken and found campylobacter in 56% of them. Create a 90% confidence interval for the difference in contamination levels between Tyson and Perdue chicken.