AP Stats – Chap 23
Comparing Means

Pulse Rates

Resting pulse rates for a random sample of 26 smokers had a mean of 80 beats per minute (bpm) and a standard deviation of 5 bpm. Among 32 randomly chosen nonsmokers, the mean and SD were 74 and 6 bpm, respectively. Both sets of data were roughly symmetric and had no outliers. Is there statistical evidence of a difference in mean pulse rates between smokers and nonsmokers? If so, how big is it?

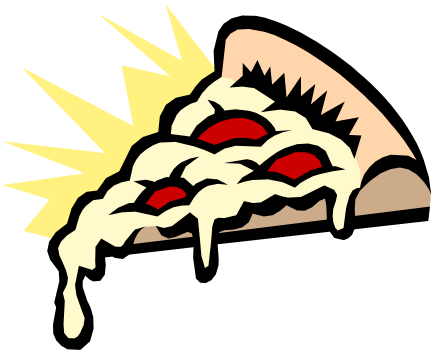
Steps…

- Hypothesis
  - null and alternative **(same as before!)**
- Model
  - random? **(same as before!)**
  - **Independent Group Assumption** (replaces the 10% Condition)
  - nearly normal? **(same as before!)**
  - "We will use a Student's t-model and a two-sample t-Test."
- Mechanics
  - 4:2-SampTTest
- Conclusion
  - reject the null / fail to reject **(same as before!)**
  - confidence interval…0:2-SampTInt **(same as before!)**

To pool or to not pool the data?

A pooled t-test is correct only when we have a good reason to believe that the variances are equal. There are times when this makes sense. **Keep in mind, however, that it is never wrong *not* to pool.**

Pizza Fat



Here are the saturated fat content (in grams) for several pizzas sold by two national chains. Do the chains have significantly different mean saturated fat contents?

Brand D	17	12	10	8	8	10	10	5	16	16
	8	12	15	7	11	11	13	13	11	12
Brand PJ	6	7	11	9	4	4	7	9		
	11	3	4	5	8	5	5			

Athletic Scholarships

A total of 23 Potomac Falls High School students were admitted to the University of Virginia. Of those students, seven were offered athletic scholarships. The guidance department looked at the students' composite ACT scores (shown in the table), wondering if UVA might admit people with lower scores if they were also athletes. Assuming that the group of students is representative of students throughout the state, what do you think?

Composite ACT Scores		
Non-athletes		Athletes
25	21	22
22	27	21
19	29	24
25	26	27
24	30	19
25	27	23
24	26	17
23	23	

Test an appropriate hypothesis and state your conclusion.

The Top 200

Every year favorite songs compete to be on a Top 200 list based upon sales and rankings by experts in the music industry. These songs have many characteristics, such as song length and beats per minute, which vary from category to category. A disc jockey wondered if the number of beats per minute in songs classified as dance music were lower than the number of beats per minute in the songs that were ranked on the Top 200 list from 2001. A random sample of songs from each group was selected and the beats per minute are listed here. Does this sample indicate that songs classified as dance music have fewer beats per minute than the songs ranked on the Top 200 list?

Beats per Minute			
Dance Songs		**Top 200 Songs**	
121	119	122	120
122	121	121	118
117	122	121	121
120	119	122	123
120	119	121	118
121	118	119	120
118	120	120	124
120	123	119	
117	118		

Test an appropriate hypothesis and state your conclusion.