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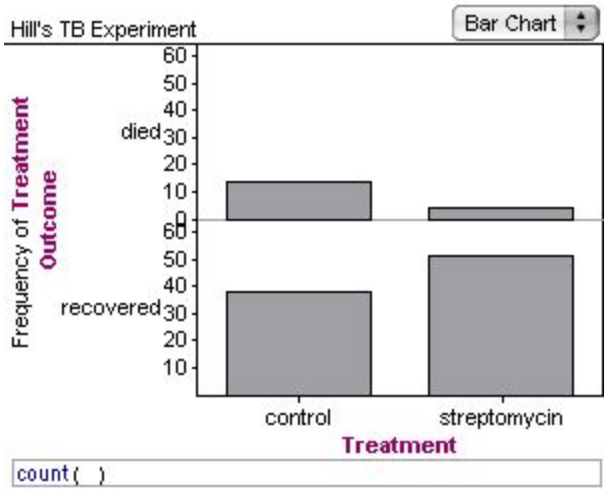
Lab 1A Chandler 1105A

Lab 3

1) It seems like Streptomycin is effective based of Hil's study. As shown in the graph below, the group that was treated with Streptomycin had a lower death count in comparison to the control group (the group that wasn't treated). Only 4 out of 51 (7.8 %) people died who were treated with Streptomycin in comparison to the 14 out of 38 that died who weren't treated (36.8 %). Thus, the percentage of people that died from Streptomycin are significantly lower than those who weren't treated. Thus, it seems as though the Streptomycin treatment is effective as less people died that were treated with it.



Hill's TB Experiment

		Outcome		Row Summary
		died	recovered	
Treatment	control	14	38	52
	streptomycin	4	51	55
	Column Summary	18	89	107

S1 = count( )

2) If treatment and outcome were independent, roughly 16.8% (18 patients died out of a population size of 108) of patients in each group would be expected to die. It wouldn't matter whether the group was treated with Streptomycin if treatment and outcome were independent. This means the death percentage would be the same regardless of treatment. Thus, in the case of the 55 people treated with Streptomycin, roughly (55 * 0.168) = 9.24 people would die if Streptomycin and the outcome were independent.

Hill's TB Experiment

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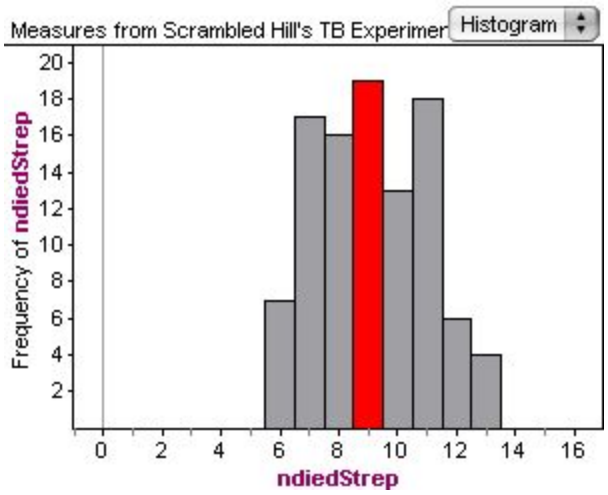
S1 = count( )

3) Based on the 100 simulation, the number of people that died with Streptomycin treatment if it was independant and ineffective was higher than in comparison to the original Hill's TB Experiment. Thus, it is more appropriate to determine that Streptomycin is an effective treatment because in Hill's TB experiment, the number of people that died with streptomycin treatment was 4 which is a lot lower than

the center of the simulation which is 9. Thus, it signifies that Streptomycin was significant in treating patients and unlikely that Streptomycin and outcome is independent.



4) Hill's study is an example of controlled experiment as Hill randomly divided the people into two groups and assigned the patients in one group Streptomycin and one without. Since Hill assigned Streptomycin to the patients, it is a controlled experiment. Thus, we can conclude that Streptomycin was effective and we can conclude the cause is the antibiotic since this was a controlled experiment and that the percentage of people who died in the group without Streptomycin was significantly higher than the percentage of people who died in the group treated with Streptomycin, meaning the antibiotic is effective. Also, based off 100 simulations, the center of people that would have died if Streptomycin was independent of outcome would have been 9, but Hill's experiment only had 4 die which is significantly lower meaning less people die if they are treated with Streptomycin. Thus, it signifies that Streptomycin is not independent from outcome.