



CALIFORNIA STATE SCIENCE FAIR 2017 PROJECT SUMMARY

Name(s) Adrian S. Derderian	Project Number J1502
Project Title The Wisdom of the Crowd	
Objectives/Goals The effects of the Wisdom of the Crowd can be measured if the sample size of the group is large enough. An experiment was conducted using various sample sizes of people who guessed the amount of jellybeans in a jar. If the people's guesses in one of the larger sample sizes were averaged, it would be likely that the average guess would come within the close vicinity of the actual amount. However, if a smaller sample size of people's guesses were averaged, the results would not come as close compared to that from the larger sample size.	
Abstract The effects of the Wisdom of the Crowd can be measured if the sample size of the group is large enough. An experiment was conducted using various sample sizes of people who guessed the amount of jellybeans in a jar. If the people's guesses in one of the larger sample sizes were averaged, it would be likely that the average guess would come within the close vicinity of the actual amount. However, if a smaller sample size of people's guesses were averaged, the results would not come as close compared to that from the larger sample size.	
Methods/Materials Materials: Jar, Unknown amount of jellybeans, 81 participants, Ballots. Procedures: 1. Put an unknown amount of jellybeans in a jar. 2. Create a ballot asking for guess, age, and gender. 3. Choose a sample size of people and ask them to fill out the ballots. 4. Collect the ballots and enter the data into Excel. 5. Partition the people's guesses using 5 groups with sample sizes 7, 17, 27, 37, and 47. Do this 10,000 times. 6. Plot the results and draw conclusions.	
Results A Java program was coded to randomly select guesses from an 81 sample size. It was inconvenient to repeat this experiment multiple times because another 81 people would have to become participants for each new trial. To solve this, the Java program performed random selections of people 10,000 times into the 5 groups. This is called bootstrapping. The five groups that were bootstrapped were 7, 17, 27, 37, and 47. The largest sample size, 47, only had an average error of 188 jellybeans. However, the smallest sample size, 7, had an average error of 354 jellybeans. This confirmed my hypothesis.	
Conclusions/Discussion In conclusion, this project confirmed my hypothesis that as the sample size increases, the error between the average guess and the actual amount decreases. This is because as a large amount of data flows in, the overestimates and underestimates cancel each other out producing a result that is near the actual amount. Collecting data from diverse groups of people will help cancel noisy outliers in their guesses.	
Summary Statement The accuracy of the combined independent opinions of a group increases with the size of the group.	
Help Received My Java teacher Dave Dunn taught me how to read from and write to a file.	