

1. In the World Series, the teams have won at home 286 times and lost at home 243 times. Is there a "home-field advantage"?
2. Are the numbers of parasites per host different in multiply-infected vs. singly-infected hosts? (Answer if number of parasites per host is normally distributed, and if it is not.)
3. Are longevity and fecundity related?
4. The number of eggs per worm seems to decline curvilinearly with worm density. How can you test this relationship?
5. Longevity in response to cold temperature may be a function of environmental influences or of genotype. How can you test whether these two effects are independent?
6. The developmental pathway leading to the formation of spots on butterfly wings has been studied by surgical excision of a small amount of tissue on the left wings of a set of butterflies, with the right wings left untouched. The size of the spots on these wings was subsequently measured. How would you test whether the manipulation had an effect on spot size?
7. Does human height follow a normal distribution?
8. Is the variance of male weight equal to the variance in female weight?
9. Five different kinds of dog food were each tested on 25 young dogs, to determine which made them grow faster. Which test(s) might you use?
10. Five different kinds of dog food were each tested on 25 dogs, to determine whether they had an effect on whether or not the dogs developed diabetes. Which test might you use?
11. 25 dogs were grown in each of five different temperatures. Is there an effect on growth rate?
12. 25 dogs were each grown in five different temperatures. Data were collected on whether the dogs survived to an age of 5 years. Is there an effect of temperature on mortality?
13. An analysis of variance has successfully shown an effect of diet on the amount of bacon a pig produces. How do you determine whether a particular diet is significantly better than the others?
14. You discover that a data set you have addresses a very important question, but the analysis required to address that question does not fit any known existing statistical test. What are your options?
15. You wish to know whether eating oat bran has an effect on cancer rates. You go to the library and find 45 separate studies which have claimed to test this effect, but the results are contradictory. What do you do?