

page 329. Expressing your views on this question.

6.62 Selective publication based on results. In addition to statistical significance, selective publication can also be due to the observed outcome. A review of 74 studies of antidepressant agents found 38 studies with positive results and 36 studies with negative or questionable results. All but 1 of the 38 positive studies were published. Of the remaining 36, 22 were not published, and 11 were published in such a way as to convey a positive outcome.²⁸ Describe how such selective reporting can have adverse consequences on health care.



6.76 An adjustment for multiple tests. One way to deal with the problem of misleading P -values when performing more than one significance test is to adjust the criterion you use for statistical significance. The **Bonferroni method** does this in a simple way. If you perform two tests and want to use the $\alpha = 5\%$ significance level, you require a P -value of $0.05/2 = 0.025$ to declare either one of the tests significant. In general, if you perform k tests and want protection at level α , use α/k as your cutoff for statistical significance. You perform six tests and obtain individual P -values of 0.075, 0.021, 0.285, 0.002, 0.015, and < 0.001 . Which of these are statistically significant using the Bonferroni procedure with $\alpha = 0.05$?

7.6 A one-sample t test. The one-sample t statistic for testing

$$H_0: \mu = 8$$

$$H_a: \mu > 8$$

from a sample of $n = 22$ observations has the value $t = 2.24$.

(a) What are the degrees of freedom for this statistic?


(b) Give the two critical values t^* from Table D that bracket t .

(c) Between what two values does the P -value of the test fall?

(d) Is the value $t = 2.24$ significant at the 5% level? Is it significant at the 1% level?

(e) If you have software available, find the exact P -value.

7.19 Tree diameter confidence interval. A study of 584 longleaf pine trees in the Wade Tract in Thomas County, Georgia, is described in Example 6.1 (page 329). For each tree in the tract, the researchers measured the diameter at breast height (DBH). This is the diameter of the tree at a height of 4.5 feet, and the units are centimeters (cm).

Only trees with DBH greater than 1.5 cm were sampled. Here are the diameters of a random sample of 40 of these trees:  PINES

10.5	13.3	26.0	18.3	52.2	9.2	26.1	17.6	40.5	31.8
47.2	11.4	2.7	69.3	44.4	16.9	35.7	5.4	44.2	2.2
4.3	7.8	38.1	2.2	11.4	51.5	4.9	39.7	32.6	51.8
43.6	2.3	44.6	31.5	40.3	22.3	43.3	37.5	29.1	27.9

(a) Use a histogram or stemplot and a boxplot to examine the distribution of DBHs. Include a Normal quantile plot if you have the necessary software. Write a careful description of the distribution.

(b) Is it appropriate to use the methods of this section to find a 95% confidence interval for the mean DBH of all trees in the Wade Tract? Explain why or why not.

(c) Report the mean with the margin of error and the confidence interval. Write a short summary describing the meaning of the confidence interval.

(d) Do you think these results would apply to other similar trees in the same area? Give reasons for your answer.