

# Statistics 1040, Sections 003 & 004, Quiz 12 (20+ Points)

April 23–25, 2003

**Your Name:** \_\_\_\_\_

This is a take-home quiz. You may work on it at your own pace but you have to complete it and turn it in at the beginning of class on Friday, April 25. If you cannot attend class on Friday, please FAX your answers to (435) 797-1822 **before** class starts. Solutions will be provided in class on Friday and will also be posted to the course Web site on Friday afternoon. Late turn-ins will not be accepted.

This quiz contains three questions, formulated as they may appear in the Final Exam. The first question is worth 20 points. The second and the third questions are extra-credit questions that are optional. These questions are worth 10 extra-points each.

Please work on this quiz independently, using as little help as possible from your friends, books, and notes. To get used to the formula sheet provided in the final, you should look at this sheet only and not at any of our previously used formula sheets. A copy of the formula sheet used in the final has been included on the Study Guide.

## Question 1:

(20 Points) *The Wall Street Journal* (June 26, 1996) reported on a study that compared cancer risks for three classes of hypertension drugs. For 4 years the study tracked 750 elderly patients who were being treated for hypertension with either beta blockers, ACE inhibitors, or calcium channel blockers (mainly short-acting form). The table below shows for each treatment the number of patients who developed cancer.

	Class of Hypertension Drugs		
Cancer	Beta Blockers	ACE Inhibitors	Calcium Ch. Blockers
Yes	28	6	27
No	396	118	175

Make an appropriate statistical test to determine whether the data suggest that for elderly patients with hypertension, the risk of developing cancer is related to the class of drugs used. Clearly state the null and the alternative hypotheses and your conclusions.

**Question 2:**

(10 Points) In a study to estimate the proportion of residents in a certain city and its suburbs who favor the construction of a nuclear power plant, it is found that 63 of 100 urban residents favor the construction whereas only 59 of 110 suburban residents are in favor. Is there a significant difference between the proportions of urban and suburban residents who favor construction of a nuclear plant? Set up a null and an alternative hypothesis, perform an appropriate test, and report your conclusions.

**Question 3:**

(10 Points) Freshmen at public universities work 12.2 hours a week for pay, on average, and the SD is 10.5 hours; at private universities, the average is 9.2 hours, and the SD is 9.9 hours. Assume these data are based on two independent simple random samples, each of size 1000.

Is the difference between the averages due to chance? If not, what else might explain it? Set up a null and an alternative hypothesis, perform an appropriate test, and clearly state your conclusions.