Homework 9, due date is April 14th

1. The average wind speed in Casper,

Wyoming, has been found to 12.7 miles per hour, and in

Phoenix, Arizona, it is 6.2 miles per hour. To test the

relationship between the averages, the average wind

speed was calculated for a sample of 31 days for each

city. The results are reported below. Is there sufficient

evidence at a \_ 0.05 to conclude that the average wind

speed is greater in Casper than in Phoenix?

**Casper Phoenix**

Sample size 31 31

Sample mean 12.85 mph 7.9 mph

Population standard deviation 3.3 mph 2.8 mph

2. At age 9 the average weight

(21.3 kg) and the average height (124.5 cm) for both

boys and girls are exactly the same. A random sample

of 9-year-olds yielded these results. Estimate the mean

difference in height between boys and girls with 95%

confidence. Does your interval support the given claim?

**Boys Girls**

Sample size 60 50

Mean height, cm 123.5 126.2

Population variance 98 120

1. A survey of 1000 students nationwide

showed a mean ACT score of 21.4. A survey of 500

Ohio scores showed a mean of 20.8. If the population

standard deviation in each case is 3, can we conclude

that Ohio is below the national average? Use a \_ 0.05.

1. Whiting, Indiana, leads the “Top 100

Cities with the Oldest Houses” list with the average age

of houses being 66.4 years. Farther down the list resides

Franklin, Pennsylvania, with an average house age of

59.4 years. Researchers selected a random sample of 20

houses in each city and obtained the following statistics.

At a \_ 0.05, can it be concluded that the houses in

Whiting are older? Use the *P*-value method.

**Whiting Franklin**

Mean age 62.1 years 55.6 years

Standard deviation 5.4 years 3.9 years

1. Health Care

Knowledge Systems reported that an insured woman

spends on average 2.3 days in the hospital for a routine

childbirth, while an uninsured woman spends on

average 1.9 days. Assume two samples of 16 women

each were used in both samples. The standard deviation

of the first sample is equal to 0.6 day, and the standard

deviation of the second sample is 0.3 day. At a \_ 0.01,

test the claim that the means are equal. Find the 99%

confidence interval for the differences of the means.

1. The number of points

held by a sample of the NHL’s highest scorers for both

the Eastern Conference and the Western Conference is-

shown below. At a \_ 0.05, can it be concluded that there

is a difference in means based on these data?

**Eastern Conference Western Conference**

83 60 75 58 77 59 72 58

78 59 70 58 37 57 66 55

62 61 59 61

1. **PGA Golf Scores** At a recent PGA tournament (the

Honda Classic at Palm Beach Gardens, Florida) the

following scores were posted for eight randomly

selected golfers for two consecutive days. At a \_ 0.05,

is there evidence of a difference in mean scores for the

two days?

**Golfer** 1 2 3 4 5 6 7 8

**Thursday** 67 65 68 68 68 70 69 70

**Friday** 68 70 69 71 72 69 70 70

1. A composition

teacher wishes to see whether a new grammar program

will reduce the number of grammatical errors her

students make when writing a two-page essay. The data

are shown here. At a \_ 0.025, can it be concluded that

the number of errors has been reduced?

**Student** 1 2 3 4 5 6

**Errors before** 12 9 0 5 4 3

**Errors after** 9 6 1 3 2 3

1. A survey found that 83% of the men questioned preferred

computer-assisted instruction to lecture and 75% of

the women preferred computer-assisted instruction to

lecture. There were 100 individuals in each sample. At

a \_ 0.05, test the claim that there is no difference in the

proportion of men and the proportion of women who

favor computer-assisted instruction over lecture. Find

the 95% confidence interval for the difference of the

two proportions.

1. In a sample of 50 men, 44 said that they

had less leisure time today than they had 10 years ago.

In a sample of 50 women, 48 women said that they had

less leisure time than they had 10 years ago. At a \_

0.10 is there a difference in the proportion? Find the

90% confidence interval for the difference of the two

proportions. Does the confidence interval contain 0?

Give a reason why this information would be of interest