

HOMEWORK: TWO-SAMPLE HYPOTHESIS TESTING

Z-TESTS

PROBLEM 1:

Typing Speed on a pc. Who types faster, Men or Women?

| | <u>Men</u> | <u>Women</u> |
|-----------|------------|--------------|
| \bar{X} | 65 wpm | 68 wpm |
| s | 10 wpm | 14 wpm |
| n | 50 | 60 |

Test at $\alpha = .01$.

PROBLEM 2:

Take-Home Pay. Who earns more: Married or unmarried people?

| | <u>Married</u> | <u>Not Married</u> |
|-----------|----------------|--------------------|
| \bar{X} | \$639.60 | \$658.20 |
| s | \$60 | \$90 |
| n | 40 | 60 |

Test at $\alpha = .04$

PROBLEM 3:

Are the machine tools manufactured by Company X and Y different with regard to how long they last?

| | <u>Company X</u> | <u>Company Y</u> |
|-----------|------------------|------------------|
| \bar{X} | 16.2 weeks | 15.9 weeks |
| s | .2 weeks | .2 weeks |
| n | 40 | 40 |

Test at $\alpha = .08$

PROBLEM 4:

Who lives longer, married or unmarried women? Test at $\alpha = .01$

Single women

$$\bar{X}_1 = 78.5 \text{ years}$$

$$S_1 = 14.0 \text{ years}$$

$$n_1 = 140$$

Married Women

$$\bar{X}_2 = 77.0 \text{ years}$$

$$S_2 = 16.0 \text{ years}$$

$$n_2 = 160$$

PROBLEM 5:

Who misses work more often at the ABC Company: Smokers or non-smokers? Test at .05 significance level.

Smokers: Average number of days absent = 14.7; standard deviation = 5.0; n = 44

Non-Smokers: Average number of days absent = 8.3; standard deviation = 4.0; n = 60

PROBLEM 6:

Who has the higher hourly wage at the ABC Company: Men or Women? Test at .05 significance level.

Men: Average hourly wage = \$12.50; standard deviation = \$1.60; n = 80

Women: Average hourly wage = \$11.40; standard deviation = \$3.20; n = 120

PROBLEM 7:

Who has a longer life span? Test at .05 significance level.

Non-drug user: Average life span = 82.5 years; standard deviation = 12 years; n = 120

Drug user: Average life span = 72.5 years; standard deviation = 12.5 years; n = 50

PROBLEM 8:

Who earns more? Test at .01 significance level.

High school graduates: Average salary = \$35,000; standard deviation = \$15,000; n = 150

High school dropouts: Average salary = \$26,000; standard deviation = \$10,000; n = 100

TWO-SAMPLE T-TESTS

PROBLEM 9:

Who lives longer, married or unmarried men? Test at $\alpha = .01$

Single Men

$$\bar{X}_1 = 72.5 \text{ years}$$

$$S_1 = 7.0 \text{ years}$$

$$n_1 = 14$$

Married Men

$$\bar{X}_2 = 74.5 \text{ years}$$

$$S_2 = 8.0 \text{ years}$$

$$n_2 = 16$$

PROBLEM 10:

Who does better on the CPA EXAM? Test at .05 significance level

College A: Average score = 70.5; standard deviation = 15.0; n = 12

College B: Average score = 66.5; standard deviation = 10.0; n = 18

PROBLEM 11:

Who misses work more often: male managers or female managers? Test at .05 significance level

Female Managers: Average number of times absent from work = 10.9 days;
standard deviation = 2.4 days; n = 10

Male Managers: Average number of times absent from work = 9.9 days;
standard deviation = 1.8 days; n = 20

PROBLEM 12:

Which yogurt ice cream has less fat? Test at .05 significance level

Company A: Average amount of fat = 10.6 milligrams; standard deviation = 2.6 milligrams;
n = 13

Company B: Average amount of fat = 10.2 milligrams; standard deviation = 2.4 milligrams;
n = 18

PROBLEM 13:

Which approach to treating brain cancer works best ? Test at .05 significance level

Approach A: lived on average and additional = 6.8 years; standard deviation = 1.6 years;
n = 14 patients

Approach B: lived on average and additional = 5.4 years; standard deviation = 2.4 years;
n = 12 patients

PROBLEM 14:

Who makes more money at Company X ? Test at .05 significance level

Men: Average gross income = \$48,500; standard deviation = \$1,000;
n = 18 employees

Women: Average gross income = \$43,600; standard deviation = \$2,000;
n = 11 employees

PROBLEM 15:

Who makes a better motor ? Test at .05 significance level

Company ABC: Average life= 14.50 years; standard deviation = 1.50 years;
n = 10

Company QQQ: Average life = 13.60 years; standard deviation = 2.10 years;
n = 11