

EPPS 2302 : Make-up Exam

To get full credit for your answer, you must show your work. Use the space provided on this sheet to show your work.

General Knowledge(40pt)

Problem 1(20pt)

- 1 List the four levels of measurement, we've discussed this semester. For each, provide the measurements of central tendency that are mathematically appropriate to consider given the level of measurement (ex : level of measurement : appropriate measurement of central tendency)

Nominal : Mode

Ordinal : Mode, Median

Interval : Mode, Median, Mean

Ratio : Mode, Median, Mean

- 2 Determine the level of measurement of the variable

(1) Height of a tree

ratio

(2) A student's favorite sport

nominal

Problem 2(10pt)

- 1 We have two variables. One is income, and the other is race(White, Black and others). We want to test if they are associated. Which test is the most appropriate for them and show your H_0 for the test.

One-way Anova, $H_0 = \mu_1 = \mu_2 = \mu_3$

- 2 We have an IV, region(North, South, East, West) for our regression model. We want to compare DV for people in Northern area to those in the other areas in the model. In this case, (1)what is your base group ? When you put all dummies in the regression model, Stata omitted one of them automatically. (2)Why did Stata do ?

North, Perfect collinearity.

Problem 3(10pt)

- 1 In ANOVA test, as F test score increases, p-value (increases or decreases)
decreases

- 2 In a bivariate regression model, your correlation coefficient for IV and DV is 0.5. What is coefficient of determination for the model ?
0.25

Computation(60pt)

Problem 4(10pt)

- 1 In how many different ways can the four starting players of a team be introduced to the public ?
 $4! = 24$
- 2 When the probability, $P(A) = \frac{1}{4}$, what is $P(A^c)$?
 $\frac{3}{4}$

Problem 5(10pt)

How much money does the average professional hockey fan spend on food at a single hockey game. That question was posed to 10 randomly selected hockey fans. The sampled results show that sample mean and standard deviation were \$19.00 and \$2.6, respectively.

Use this information to create a 95% confidence interval for the mean.

$$19 \pm 2.262 \frac{2.6}{\sqrt{10}} = 19 \pm 1.86$$

Problem 6(10pt)

- 1 Find the area under the standard normal curve to the left of $z=1.5$
0.9332
- 2 Find the area under the standard normal curve between $z=0$ and $z=3$
0.4987

Problem 7(10pt)

(1) Fill two blanks (Assumption for this test: unequal variance)

(2) When our research claim is $\mu_{asvab2} - \mu_{asvab3} > 0$, show the critical value and your decision for this test.

```
ttest asvab2== asvab3,unpaired
```

Two-sample t test

```
-----+-----
Variable |      Obs      Mean   Std. Err.   Std. Dev.   [95% Conf. Interval]
-----+-----
  asvab2 |     2714   50.11754   .1879071   9.789218   49.74908   50.48599
  asvab3 |     2714   49.68681   .1807146   9.414519   49.33246   50.04116
-----+-----
  diff   |           .4307296   (?      )           -.0803558   .9418149
-----+-----
      diff = mean(asvab2) - mean(asvab3)           t = (?      )
Ho: diff = 0           degrees of freedom =      5426
```

0.2607, 1.6522

$Z_{crit} = 1.645$, Reject H_0 ,

Problem 8(10pt)

We have data about unemployment for four groups. Test the null hypothesis that average number of weeks of unemployment was identical across the groups.

Show correct (1) H_0 (2) test score, (3) critical value and (4) your decision.

	Group A	Group B	Group C	Group D	Total
Mean for # weeks of unemployment	30	25	35	35	31.25
S.d.	10	10	10	10	10
# of cases	50	50	50	50	200

$H_0 = \mu_A = \mu_B = \mu_C = \mu_D$

F = 11.46

$F_{crit} = 2.68$ or 2.60

Reject H_0

Problem 9(10pt)

- (1) Fill the three blanks
 (2) Correctly interpret the coefficient for female (female : 1, male : 0)

```
reg earnings school female
```

Source	SS	df	MS	Number of obs = 2714		
Model	143003.096	(?)	71501.548	F =	391.54	
Residual	495069.745	(?)	182.615177	Prob > F	=	0.0000
Total	638072.841	2713	235.190874	R-squared	=	0.2241
				Adj R-squared	=	0.2235
				Root MSE	=	(?)

earnings	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
school	2.577625	.1049666	24.56	0.000	2.371803	2.783448
female	-6.996192	.5187948	-13.49	0.000	-8.013465	-5.978919
_cons	-12.15295	1.480822	-8.21	0.000	-15.05661	-9.249301

DF : 2, 2711, Se : 13.514