Ex 13.1 / Pg 442 / Xm 13-01

$M_1 \rightarrow$ DIRECT PURCHASED FUNDS

$M_2 \rightarrow$ BROKER PURCHASED FUNDS

FIRST STEP: CAN WE ASSUME EQUAL VARIANCES ?

$\alpha = 5\%$

$H_0: \frac{\sigma_1^2}{\sigma_2^2} = 1 \Rightarrow$ EQ. VAR.

$H_1: \frac{\sigma_1^2}{\sigma_2^2} \neq 1 \Rightarrow$ UNEQ. VAR

2-tailed test

F Test for 2 Sample Variances

Data Analysic

p-val $\simeq 0.60$

p val > alpha } DO NOT REJECT NULL

∴ Assume Equal Variances

Second Step | $\mu_1 \rightarrow$ DIRECT

$\mu_2 \rightarrow$ BROKER

$H_0: \mu_1 - \mu_2 = 0$

$H_1: \mu_1 - \mu_2 > 0$

Assume Eq. Var, $\alpha = 5\%$. NO, ∴
DO WE KNOW σ ? → Use t distrib.

t test, 2 Means, Eq. Var.

t test: 2 samples: Eq. Var
↳ DA

t stat = 2.29 Rej. Null;
critical t = 1.66 Direct
p val = 0.012 Outperforms
Broker

CH. 13 - Sec. 5

Difference Between 2 Proportions

Ex 13.9 / Pg. 491 / Xm 13-09

$p_1 \rightarrow$ proportion of soap sales coded 9077 at Store 1

$p_2 \rightarrow$ proportion of soap sales coded 9077 at Store 2

$H_0: p_1 - p_2 = 0$ $\quad \alpha = 5\%$

$H_1: p_1 - p_2 > 0$

Test Stat $\rightarrow$ 2.9 $\quad$ p val = .0019

Critical Val $\rightarrow$ 1.65

Rej. Null

CH. 14 – ANOVA

Assumptions

1. observations are independent
2. Normally distributed data
3. Populations have equal variances.

Response Variable → Variable of Interest

ANOVA – { ONE WAY, ONE FACTOR, SINGLE FACTOR } SAME

TESTING FOR DIFFERENCES

H_0: ALL MEANS EQUAL

H_1: AT LEAST 2 MEAN "DIFFER"

ANOVA → 2 SOURCES OF VARIATION

SST (1) VARIATION BETWEEN SAMPLES

SSE (2) VARIATION WITHIN SAMPLES

TEST PERFORMANCE OF 2 BRANDS OF BATTERIES

BRAND → ONE FACTOR

WALMART, COSTCO } LEVELS OR TREATMENTS

ANOVA → Determine if BRAND has a significant effect on Variable being measured → Lifetime of Battery.

If BRAND IS significant, mean lifetimes for different brands WILL NOT BE EQUAL.

SST → Sum of Squares for Treatment
SSE → " " " for Error

SS Total

SSE → amount of variation in response variable NOT caused by Treatments.

↳ "WITHIN"

VARIATION IN RESPONSE VARIABLE
(around its mean)

- Explained Variation — DUE TO FACTOR

+

Unexplained Variation — RANDOM ERROR

Ex 14.2 / Xm 14-02

REVIEW THIS EXAMPLE AS WE WORKED IT THE SAME WAY IN CLASS.

Problem 14.7 / Pg. 534

NULL: ALL MEANS EQUAL

ALTERNATIVE: AT LEAST TWO MEANS DIFFER

ANOVA: SINGLE FACTOR

F TEST STATISTIC = 0.87

CRITICAL VALUE = 5.09 **P VALUE = 0.445** **DO NOT REJECT NULL**

WHAT ARE THE VALUES OF:
SUM OF SQUARES FOR TREATMENT?
SUM OF SQUARES FOR ERROR?
SUM OF SQUARES TOTAL?

USE TUKEY'S OMEGA TO FIND DIFFERENCES WITHIN AN ANOVA SINGLE FACTOR TEST.

KNOW HOW TO USE TUKEY'S OMEGA.
WHAT IS TUKEY'S OMEGA?
WHERE ARE THE DIFFERENCES?
HOW DO YOU FIND THE DIFFERENCES ON A TUKEY'S OMEGA PRINTOUT?