**STAT 477/STAT 577**

**HW 6**

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1. President Bush Approval Ratings

a. Contingency Table



b. Proportion of Approval for First Rating = 944/1600 = 0.59

Proportion of Approval for Second Rating = 880/1600 = 0.55

c. Why are the two ratings not independent from each other?

The estimates aren’t independent because they are based on the same group of individuals surveyed twice. The responses in the second rating are likely influenced by the responses in the first rating, indicating a relationship between the two time periods’ approval estimates.Top of Form

d. Null Hypothesis: The proportion of adults in the US who approved of the job President Bush was doing is the same between the two time periods.

Alternative Hypothesis: The proportion of adults in the US who approved of the job President Bush was doing is different between the two time periods.

Test Statistic: 17.356

P-value: 3.099e-05

Conclusion: There is sufficient evidence to conclude that the proportion of adults in the US who approved of the job President Bush was doing differs between the two time periods.

d. 95% Confidence Interval = (0.02128388, 0.05871612)

Interpretation: We are 95% confident that the true difference in the proportion of adults in the US who approved of the job President Bush was doing between the two time periods lies between 0.0213 and 0.0587. This indicates that there is a statistically significant difference in the approval rates between the two time periods, with a higher proportion of approval during the first time period compared to the second time period.

2. At the Movies

a. Contingency Table

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b. Distribution of Ratings for Siskel = Down: 0.51875, Mixed: 0.20000, Up: 0.28125

Distribution of Ratings for Ebert = Down: 0.5500, Mixed: 0.1875, Up: 0.2625

Who had more Thumbs Up reviews? = Siskel

Who had more Thumbs Down reviews? = Ebert

c. Null Hypothesis: There is no difference in the distribution of reviews between the two critics.

Alternative Hypothesis: There is a difference in the distribution of reviews between the two critics.

Test Statistic: 0.585

P-value: 0.746

Conclusion: There is not enough evidence to conclude that there is a difference in the distribution of reviews between the two critics.

d. Proportion of reviews the same = 0.63125

e. Cohen’s kappa = 0.389

f. Weighted Cohen’s kappa = 0.458

g. Agreement?

Based on the calculated Cohen’s Kappa values, both unweighted (0.389) and weighted (0.458), it appears that Siskel and Ebert had a moderate level of agreement on their movie reviews. This suggests that while there was some level of consensus between the two critics, there were also instances of disagreement in their assessments of the movies.

3. Scores

a. Contingency Table

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b. Proportion of scores the same = 0.8081108

c. Cohen’s kappa = 0.688

d. Weighted Cohen’s kappa = 0.77

e. Agreement?

Based on the calculated Cohen’s kappa values, both unweighted (0.688) and weighted (0.77), it appears that there is substantial agreement on scores between the computer and the person. These kappa values indicate a strong level of agreement beyond what would be expected by chance alone. So, it can be concluded that there is agreement on scores between the computer and the person.