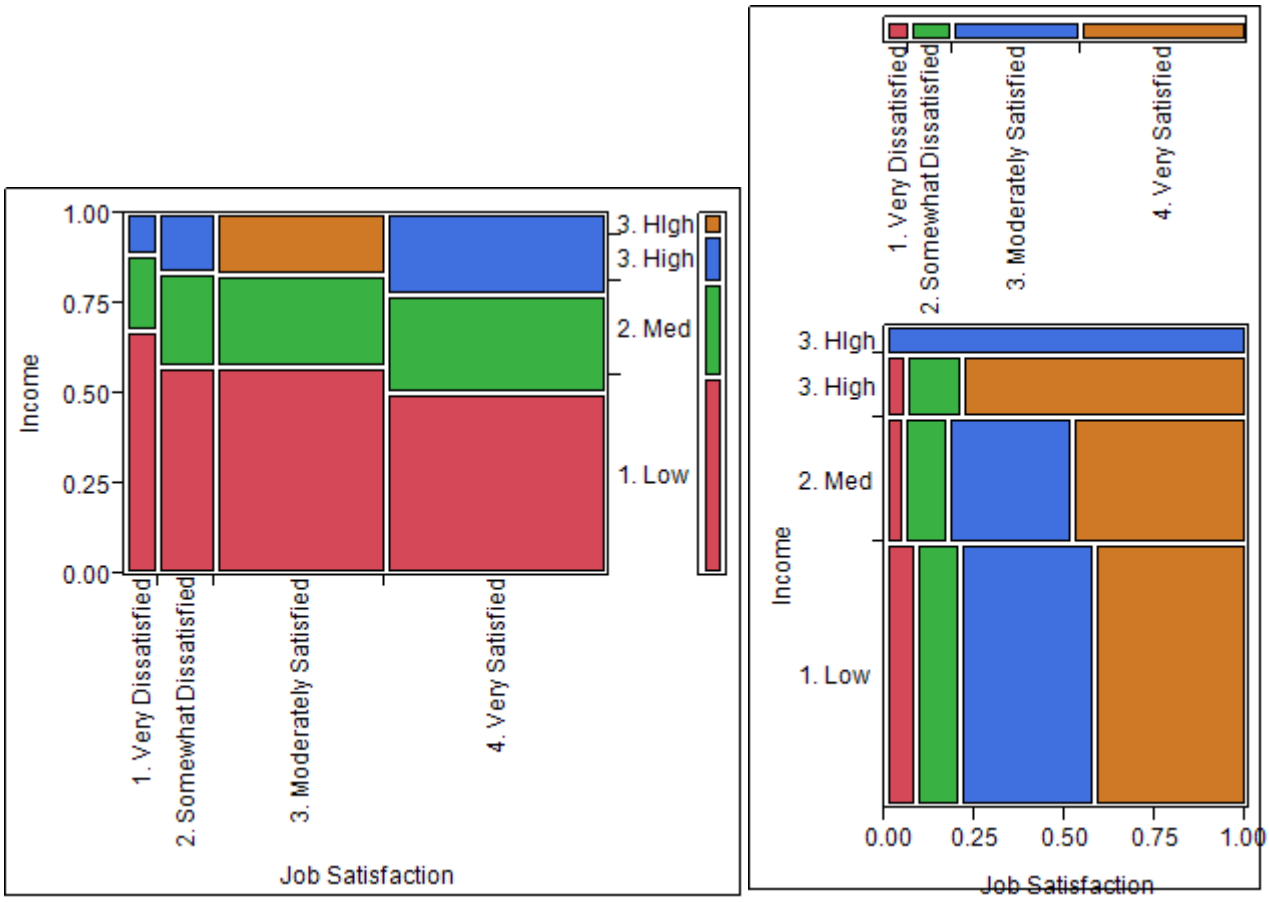
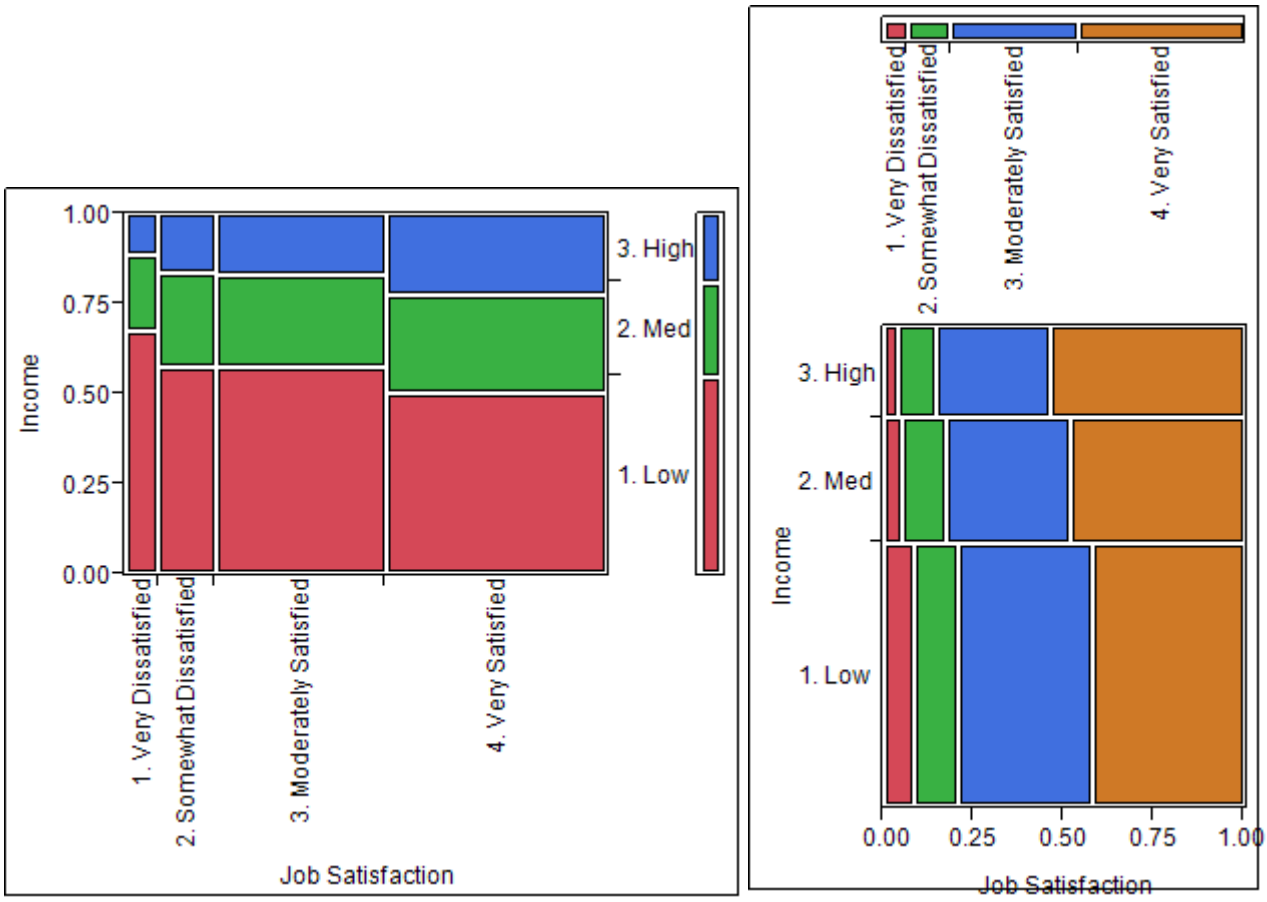
# STAT 445/645 Assignment #9
# Due at 4:30 pm on Wednesday, April 2, 2014

1. Consider the data in Table 12.15 on page 753 of the text.
    a. Construct a reformatted table of these data in Excel in a format suitable for exporting into a J*MP* spreadsheet for doing a correspondence analysis. Provide a printed copy of your spreadsheet. *Note that you do not need to do the analysis in* JMP*. The results will be provided below.*
    b. The following mosaic plots were constructed by *JMP*. They contain evidence of a data entry error. Describe in as much detail as you can what this error appears to have been.



c. The following mosaic plots were constructed after the error was fixed. Can you detect any pattern of interest in these? If so, describe it, and comment on what insight this might provide on the relationship between income and job satisfaction.




d. Provide two distinct reasons why the evidence in these plots does not prove that higher income levels create more job satisfaction.

e. Following is a summary of the test results that *JMP* provides for these data. What null hypothesis is being tested here? Is it rejected? What relationship, if any, does this test result have to your answer to part (d) above?

**Contingency Analysis of Job Satisfaction By Income**

Freq: Frequency

**Tests**

| N | DF | -LogLike | RSquare (U) |
|---|---|---|---|
| 901 | 6 | 5.2994432 | 0.0051 |

| Test | ChiSquare | Prob>ChiSq |
|---|---|---|
| Likelihood Ratio | 10.599 | 0.1016 |
| Pearson | 10.407 | 0.1085 |

2. The following output is from the same *JMP* analysis, but this time, for the related, correspondence analysis.
    a. How are the *Inertia Values* related to the *Singular Values*?
    b. How many dimensions are needed to capture almost all of the variation in this contingency table? Justify your answer by reference to the appropriate portion of the output.
    c. Use the output below to construct a standard, two-dimensional correspondence analysis graph. *Make it as neat and professional as you reasonably can. Marks will be deducted for sloppy graphs. (The graph generated by* JMP *is almost impossible to read. It is important to be able to draw better ones yourself.)*
    d. Does your graph confirm your answer to part (b)? Explain in at most one sentence.

## Correspondence Analysis

### Details

| Singular Value | Inertia | Portion | Cumulative |
|---|---|---|---|
| 0.10695 | 0.01144 | 0.9902 | 0.9902 |
| 0.01062 | 0.00011 | 0.0098 | 1.0000 |

| Income | c1 | c2 |
|---|---|---|
| 1. Low | 0.0905 | 0.0034 |
| 2. Med | -0.0619 | -0.0168 |
| 3. High | -0.1769 | 0.0131 |

| Job Satisfaction | c1 | c2 |
|---|---|---|
| 1. Very Dissatisfied | 0.2651 | 0.0270 |
| 2. Somewhat Dissatisfied | 0.0600 | -0.0182 |
| 3. Moderately Satisfied | 0.0611 | -0.0056 |
| 4. Very Satisfied | -0.1030 | 0.0051 |