# Regression Lab Exercises

# Crosstabs

- Good to give a general picture
- Good to compare dependent varialbes between groups (countries, sex)
- Can visually see connection between depedent and independent variabls

# Crosstab to Compare Countries

# Choose the variables (country and dependent variable)

# Click "Cells…" then click percentages

# Then click "continue" then "OK"

File  Edit  View  Data  Transform  Insert  Format  Analyze  Graphs  Utilities  Add-ons  Window  Help

### Case Processing Summary
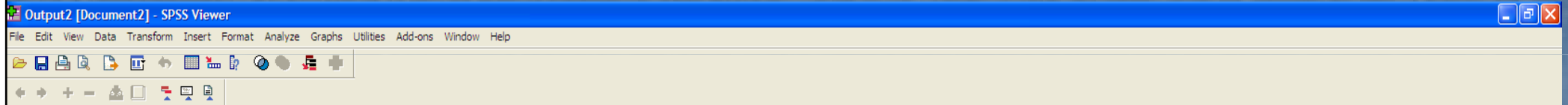
| | Cases | | | | | |
|---|---|---|---|---|---|---|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| LESSREG * Country/Sample (see V3A for codes for whole nation states) | 43728 | 89.9% | 4913 | 10.1% | 48641 | 100.0% |

### LESSREG * Country/Sample (see V...

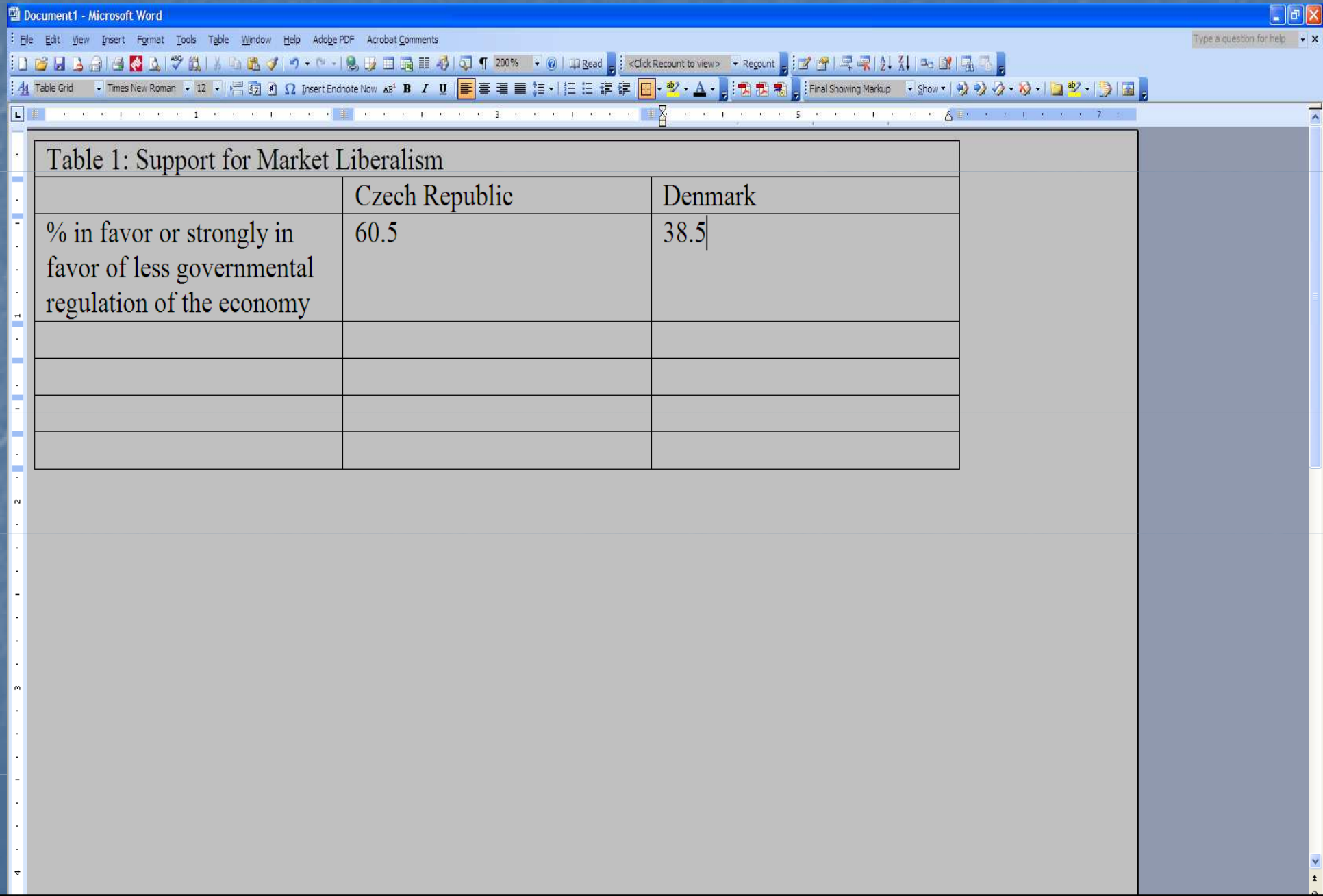| | | | AU-Australia | CA-Canada | CL-Chile | TW-Taiwan | HR-Croatia | CZ-Czech Republic | DK-Denmark | DO-Dominican Republic | FI-Finland | FR-France | DE-W-Germany-West | DE-E-Germany-East | HU-Hungary | IE-Ireland | IL-Israel-Je... |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LESSREG | strongly against | Count | 89 | 33 | 120 | 50 | 22 | 28 | 123 | 152 | 46 | 97 | 21 | 14 | 23 | 30 | |
| | | % within LESSREG | 4.1% | 1.5% | 5.6% | 2.3% | 1.0% | 1.3% | 5.7% | 7.1% | 2.1% | 4.5% | 1.0% | .7% | 1.1% | 1.4% | 2.3 |
| | | % within Country/Sample (see V3A for codes for whole nation states) | 3.6% | 3.9% | 8.3% | 2.8% | 2.1% | 2.5% | 11.0% | 7.5% | 5.0% | 5.7% | 2.1% | 2.8% | 2.6% | 3.1% | 5.1 |
| | | % of Total | .2% | .1% | .3% | .1% | .1% | .1% | .3% | .3% | .1% | .2% | .0% | .0% | .1% | .1% | . |
| | against | Count | 395 | 111 | 514 | 447 | 93 | 114 | 248 | 440 | 146 | 211 | 82 | 34 | 143 | 178 | 1 |
| | | % within LESSREG | 5.2% | 1.5% | 6.7% | 5.9% | 1.2% | 1.5% | 3.2% | 5.8% | 1.9% | 2.8% | 1.1% | .4% | 1.9% | 2.3% | 2.6 |
| | | % within Country/Sample (see V3A for codes for whole nation states) | 15.8% | 13.1% | 35.6% | 24.6% | 9.0% | 10.0% | 22.1% | 21.8% | 16.0% | 12.5% | 8.0% | 6.8% | 15.9% | 18.6% | 20.1 |
| | | % of Total | .9% | .3% | 1.2% | 1.0% | .2% | .3% | .6% | 1.0% | .3% | .5% | .2% | .1% | .3% | .4% | .5 |
| | neither nor | Count | 787 | 258 | 369 | 466 | 280 | 307 | 318 | 341 | 435 | 337 | 189 | 66 | 274 | 245 | 2 |
| | | % within LESSREG | 6.6% | 2.2% | 3.1% | 3.9% | 2.4% | 2.6% | 2.7% | 2.9% | 3.7% | 2.8% | 1.6% | .6% | 2.3% | 2.1% | 2.5 |
| | | % within Country/Sample (see V3A for codes for whole nation states) | 31.4% | 30.4% | 25.6% | 25.6% | 27.0% | 27.0% | 28.4% | 16.9% | 47.5% | 19.9% | 18.5% | 13.1% | 30.4% | 25.6% | 30.2 |
| | | % of Total | 1.8% | .6% | .8% | 1.1% | .6% | .7% | .7% | .8% | 1.0% | .8% | .4% | .2% | .6% | .6% | .7 |
| | in favor of | Count | 876 | 326 | 333 | 695 | 379 | 439 | 299 | 831 | 238 | 572 | 341 | 202 | 292 | 346 | 3 |
| | | % within LESSREG | 5.8% | 2.2% | 2.2% | 4.6% | 2.5% | 2.9% | 2.0% | 5.5% | 1.6% | 3.8% | 2.3% | 1.3% | 1.9% | 2.3% | 2.2 |
| | | % within Country/Sample (see V3A for codes for whole nation states) | 34.9% | 38.4% | 23.1% | 38.2% | 36.6% | 38.7% | 26.7% | 41.1% | 26.0% | 33.8% | 33.3% | 40.2% | 32.4% | 36.2% | 33.7 |
| | | % of Total | 2.0% | .7% | .8% | 1.6% | .9% | 1.0% | .7% | 1.9% | .5% | 1.3% | .8% | .5% | .7% | .8% | .8 |
| | strongly in favor of | Count | 360 | 122 | 106 | 160 | 262 | 247 | 132 | 256 | 50 | 474 | 391 | 187 | 169 | 157 | 1 |
| | | % within LESSREG | 5.2% | 1.7% | 1.5% | 2.3% | 3.8% | 3.5% | 1.9% | 3.7% | .7% | 6.8% | 5.6% | 2.7% | 2.4% | 2.2% | 1.5 |
| | | % within Country/Sample (see V3A for codes for whole nation states) | 14.4% | 14.4% | 7.4% | 8.8% | 25.3% | 21.8% | 11.8% | 12.7% | 5.5% | 28.0% | 38.2% | 37.2% | 18.8% | 16.4% | 10.9 |
| | | % of Total | .8% | .3% | .2% | .4% | .6% | .6% | .3% | .6% | .1% | 1.1% | .9% | .4% | .4% | .4% | .2 |
| Total | | Count | 2507 | 850 | 1442 | 1818 | 1036 | 1135 | 1120 | 2020 | 915 | 1691 | 1024 | 503 | 901 | 956 | 9 |
| | | % within LESSREG | 5.7% | 1.9% | 3.3% | 4.2% | 2.4% | 2.6% | 2.6% | 4.6% | 2.1% | 3.9% | 2.3% | 1.2% | 2.1% | 2.2% | 2.3 |
| | | % within Country/Sample | | | | | | | | | | | | | | | |

SPSS Processor is ready

# How to read the crosstab

- In the columns we have the countries
- In the rows we have the numbers and percentages of people giving a certain response to the question of whether they think the government should regulate industry less.
- In the first row we see that 28 people or 2.5% of Czechs were strongly against less government regulation, while 123 or 11% of the Danes were strongly against.
- In the second row we see that 114 Czechs or 10% were against less government regulation, while 148 Danes or 22.1% were against less government regulation.

# Making your own table

- You must decide what you are measuring
- For this example it is "degree of market liberalism" which is why we recoded to make 5 = strongly agree, rather than 1 = strongly agree as it originally was coded
- If we were measuring degree of support for social democratic policies, we would have kept the original coding for this question, but changed it for the other questions that gave the lowest score (1) for supporting state policies
- Calculate the % in favor or strongly in favor of LESSREG for 2 countries and make a table in Word
- These are the *last* two responses. The first two that we already discussed measured the % against or strongly against, that is it measured *OPPOSITION* to market liberalism, while the table we will make now will show *SUPPORT* for market liberalism.

# This is what the table would look like

**Table 1: Support for Market Liberalism**

| | Czech Republic | Denmark |
|---|---|---|
| % in favor or strongly in favor of less governmental regulation of the economy | 60.5 | 38.5 |
| | | |
| | | |
| | | |
| | | |

# Your Next Step

- Choose 5 questions that measure the issue you are interested in
- In the last session you recoded questions so that they are all in the same direction
- So use these questions again
- It could be anything, like support for welfare, tolerance toward immigrants, etc.
- Make a table based on combining these 5 crosstabs

# Crosstab showing dependent and independent variables

- Now we will go back to one question, like LESSREG
- We will see if women are more or less market liberal than men in the Czech Republic
- We must first add the Czech filter, so we only get answers for the Czech Republic
- Then we replace the variable for countries with the variable for gender

# First the filter

We no longer have to use the "if" function, because we have already created the Czech filter from it, so instead we choose the Czech filter from the "selected cases" and move it over to "Use filter variable" then press OK

# Go back now to the crosstab

# Replace "country" with "sex" and click OK

# This is what the result looks like



Output2 [Document2] - SPSS Viewer

File  Edit  View  Data  Transform  Insert  Format  Analyze  Graphs  Utilities  Add-ons  Window  Help

```
      /CELLS= COUNT ROW COLUMN TOTAL
```

## ➡ Crosstabs
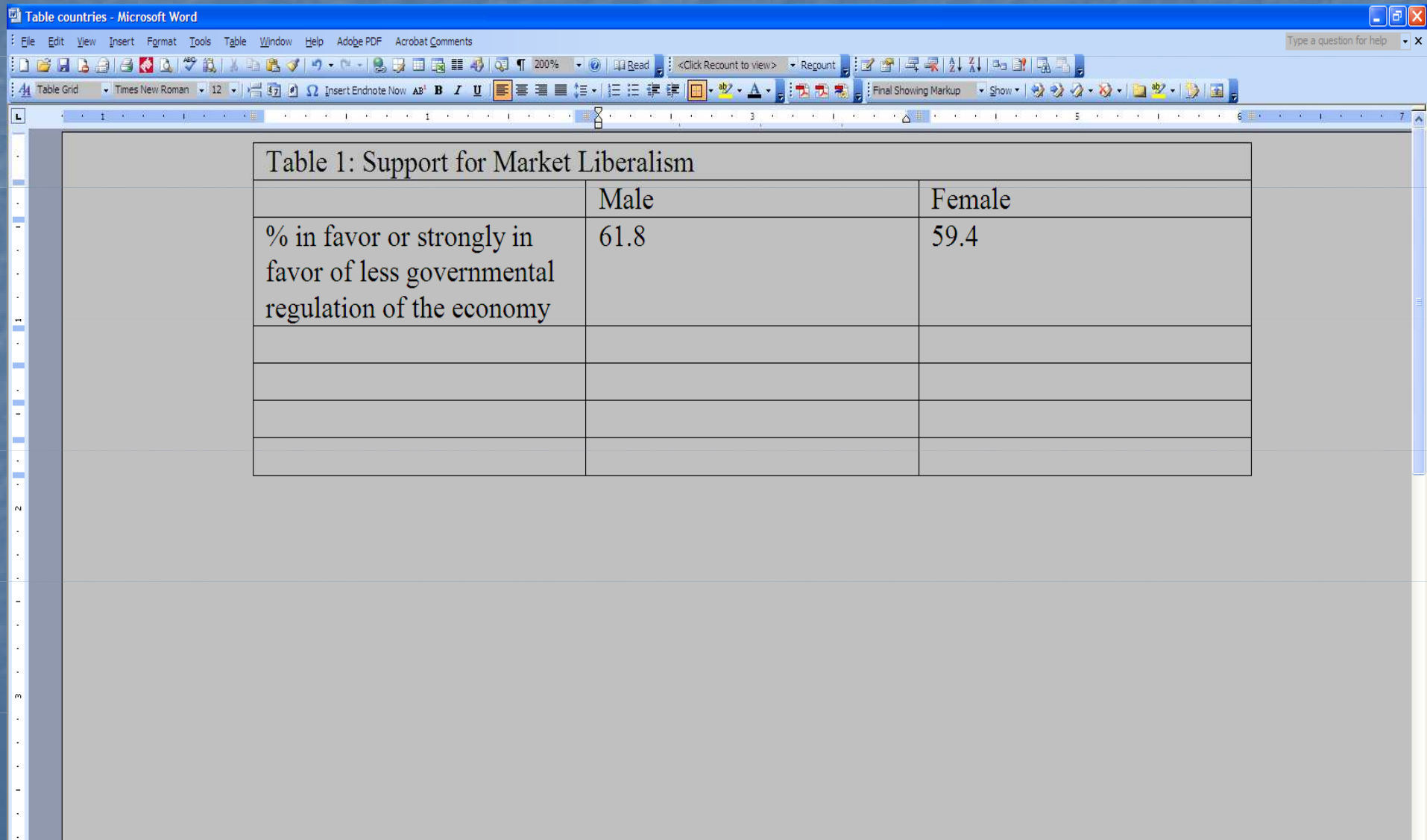
[DataSet1] D:\data bases\ISSP 2006\issp2006steve.sav

### Case Processing Summary

| | Cases | | | | | |
|---|---|---|---|---|---|---|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| LESSREG * R: Sex | 1135 | 94.5% | 66 | 5.5% | 1201 | 100.0% |

### LESSREG * R: Sex Crosstabulation

| | | | R: Sex | | Total |
|---|---|---|---|---|---|
| | | | Male | Female | |
| LESSREG | strongly against | Count | 14 | 14 | 28 |
| | | % within LESSREG | 50.0% | 50.0% | 100.0% |
| | | % within R: Sex | 2.9% | 2.1% | 2.5% |
| | | % of Total | 1.2% | 1.2% | 2.5% |
| | against | Count | 44 | 70 | 114 |
| | | % within LESSREG | 38.6% | 61.4% | 100.0% |
| | | % within R: Sex | 9.1% | 10.7% | 10.0% |
| | | % of Total | 3.9% | 6.2% | 10.0% |
| | neither nor | Count | 126 | 181 | 307 |
| | | % within LESSREG | 41.0% | 59.0% | 100.0% |
| | | % within R: Sex | 26.1% | 27.7% | 27.0% |
| | | % of Total | 11.1% | 15.9% | 27.0% |
| | in favor of | Count | 174 | 265 | 439 |
| | | % within LESSREG | 39.6% | 60.4% | 100.0% |
| | | % within R: Sex | 36.1% | 40.6% | 38.7% |
| | | % of Total | 15.3% | 23.3% | 38.7% |
| | strongly in favor of | Count | 124 | 123 | 247 |
| | | % within LESSREG | 50.2% | 49.8% | 100.0% |
| | | % within R: Sex | 25.7% | 18.8% | 21.8% |
| | | % of Total | 10.9% | 10.8% | 21.8% |
| Total | | Count | 482 | 653 | 1135 |
| | | % within LESSREG | 42.5% | 57.5% | 100.0% |
| | | % within R: Sex | 100.0% | 100.0% | 100.0% |
| | | % of Total | 42.5% | 57.5% | 100.0% |

Make your own table for the questions measuring your topic. We see men are more market liberal than women, but the difference is small. That question is whether the difference is big enough to be more than a random difference.

| Table 1: Support for Market Liberalism | | |
|---|---|---|
| | Male | Female |
| % in favor or strongly in favor of less governmental regulation of the economy | 61.8 | 59.4 |
| | | |
| | | |
| | | |
| | | |

# Now we will do a bivariate regression with the same two variables

# Choose the depedent variable and choose "sex" as the independent variable

# The Model summary:
R-square is very low. The model only explains 0.2% of the total variance in LESSREG

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .046[a] | .002 | .001 | 1.00205 |

a. Predictors: (Constant), R: Sex

Df total shows that there were 1134 cases, which shows you that your country filter is working, otherwise it would have been around 44,000. Sig. = .120 means the model is only significant at the 12% level which is much higher than the 5% level that is normally acceptable

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2.433 | 1 | 2.433 | 2.423 | .120[a] |
| | Residual | 1137.642 | 1133 | 1.004 | | |
| | Total | 1140.076 | 1134 | | | |

a. Predictors: (Constant), R: Sex

b. Dependent Variable: LESSREG

Here we see there is a negative correlation between being a woman and supporting less regulation (B= -.094), but the correlation is very small and is only -.046 on a scale |of 0-1| (the standardized coefficient. Furthermore, t < |1.96 | and is only significant at the 12% level. The t-significance for this variable (SEX) and the significance for the entire model is the same, since we only have one independent variable.

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 3.820 | .099 | | 38.448 | .000 |
| | R: Sex | -.094 | .060 | -.046 | -1.557 | .120 |

a. Dependent Variable: LESSREG

# Your Next Step at This Lab

- Now choose the questions that you have for measuring the attitude you chose.

- They should be at least 5 questions.

- Choose any independent variable, such as SEX, or INCOME, EDUCATION or AGE

- Run bivariate regressions on each of the questions using the same independent variable and think about why some might have been significant or not.

- Today choose only one independent variable, so you can see whether this variable is significant for some questions but not for others.

- When discussing multivariate regressions we will compare the importance of different indepedent variables and start to comtemplate whether, for example gender can explain attitudes better or worse than income, age or education.