MAP 4CI – CLA with business focus on statistics

Day 3 – What to do with Primary Data

Minds On
Class case study – Have the students read the case on pg. 224 “Women in the Workforce” Go through the questions on pg. 223 together as a class to look at issues discussed the previous day. Let the students respond to the reflection questions at the bottom of the page to hand in on their own.

Lesson
The Goal
- Once research is collected
- Analyze to find patterns
- Analyze to find connections (Correlations)
- Find the cause of these correlations (causality)

Finding patterns
- Create a list of each respondents answers
- Database
- Use Excel
- Number off possible choices for each question
- Categorize open ended questions
- Categorize observed responses

- Compare the answers in different categories using “countif” statements or putting the data filter on
- One variable analysis can be used to find averages or percents or totals.

- Compare the correlation between different categories (you will need questions that have numerical value)

- Two or more variable analysis can be done using the chart wizard icon and the skills learned previously in the course. Remember to use pg. 166 in the text as a guide for entering data and creating a scatter plot.

What is correlation?
- indicates the strength and direction of a linear relationship between two random variables
- Do the two variables appear to have a relationship or an effect on each other? Eg. As one variable increases does the other also increase or decrease?
- Eg. Grade vs. Average total spent on lunch

Correlation vs. Causality
- Correlation does NOT mean causality
- Causality is the cause of an event
- Just because B happened after A does not mean A caused B to happen

Example of false causality
- Example
- Hot weather may cause both crime and ice-cream purchases.
- Therefore crime is correlated with ice-cream purchases.
- But crime does not cause ice-cream purchases
- ice-cream purchases do not cause crime

How do we find causality?
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- More advanced statistical analysis
- Well designed and probing research
- Secondary research
- Multiple primary studies
- Educated guesses – can be wrong a lot

Pitfalls and Traps in Stats
- Errors in method
- Sample too small
- Sample too large
- Lack of replication

Problems with interpretation
- Accuracy/precision
- Universality
- Assumptions
- Interpreters bias
- False causation
- Lack of causation

Graphing
- Visual representation of the results
- Pie graphs – one variable
- Shows percentages that make up a total – one variable
- Bar graphs – one variable
- Line graph – one variable
- Scatter plots – two variable

To try…

Super quick survey
1. Are you ___ male ___ female?

2. How tall are you? ________

3. Do you enjoy watching soap operas?
   ___ Yes  ___ No

4. What religion are you? __________________

5. Do you think violence in sports is appropriate?
   ___ Always  ___ Sometimes ___ Rarely  ___ Never

6. What would you rather do on a Saturday night?
   ___ movie   ___ club   ___ house party ___ stay at home with friend(s)

7. How many fruits and/or vegetables do you eat in a day usually?
   ___0  ___1  ___2  ___3  ___4  ___5  ___6  ___7  ___8  ___9

E-mail your answers to your teacher!
Demonstrate how to use a “countif” and data filters using excel with excel demonstration page.

Consolidation
On the sample survey, identify all of the biased questions and rewrite them to eliminate any bias. Identify two questions that could be used to see if there is a correlation and predict what the correlation might be.