Making Sense of Your Evaluation Data

January 19, 2011

Introductions

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Available from
www.evalu-ate.org/resources

Keyword search: making sense

Objectives

By the end of this webinar, you will

- Understand the fundamentals of quantitative data analysis
- Know how to systematically analyze qualitative data
- Be able to use website data for evaluation
- Know how to integrate findings from multiple sources of data
What’s your familiarity and comfort level with quantitative analysis for ATE evaluation?

A. Statistics is my middle name
B. Pretty familiar
C. I’ve used it, but I need some refreshing
D. I’m a beginner
E. Quanty whaty?
Once upon a time, there was an ATE project...

Descriptive Statistics

Aren’t descriptive statistics just baby statistics?
Only if they’re describing babies.

When do I get to use inferential statistics?
When you have something to infer.

Why don’t I have anything to infer?
Because you’re (probably) examining the whole population.
Clean Up Any Messy Data

- Strange values
- Extreme outliers
- Contradictory responses

Strange Values

Q: What was your firm’s average employment in 2010?  A: 50
Q: What is your firm’s projected average employment for 2011?  A: 750
Outliers

Q: How many credits did you earn in the Spring 2010 semester?  
A: 150

Internal Contradiction

Q: Please indicate your agreement with the following statements (1=strongly disagree, 2= disagree, 3=neutral, 4=agree, 5=strongly agree)

– The program met my expectations.  
A: 1

– The program served my needs.  
A: 1

– I would recommend this program.  
A: 1

Q: Any additional comments?  
A: This program is A #1! Tops! Aces! Primo! It met my needs, served my expectations, and I will recommend it! I strongly agree!
Correcting Errors

- No standard for corrections
- Correct if intent is clear
- Otherwise – call it missing

Missing Data

- No standard for “too much missing”
- BUT: under 5%, don’t worry

Most important consideration: Is there a pattern?
Missing Data Patterns

- Process patterns
  - Survey length
  - Confusing questions
  - Conditions of survey completion
- May need to eliminate items
- Content patterns – more interesting and troublesome

Content Patterns

Q: What is your yearly income?

<table>
<thead>
<tr>
<th></th>
<th>Answered</th>
<th>Didn’t answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>Women</td>
<td>74%</td>
<td>26%</td>
</tr>
<tr>
<td>All</td>
<td>65%</td>
<td>35%</td>
</tr>
</tbody>
</table>
Coping with Missing Data

- Listwise deletion – not recommended
- Pairwise deletion – sometimes recommended
- Estimation
  - Mean substitution – not recommended
  - Imputation – sometimes appropriate

Bottom line:
Explain and defend your choice

Show Your Work

<table>
<thead>
<tr>
<th>Wrong</th>
<th>Mean Annual Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>$32,741</td>
</tr>
<tr>
<td>Women</td>
<td>$27,602</td>
</tr>
<tr>
<td>Total</td>
<td>$30,172</td>
</tr>
</tbody>
</table>

Note: data manipulated using wishful thinking and a Magic 8 Ball

<table>
<thead>
<tr>
<th>Right</th>
<th>Mean Annual Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men (n = 56; 56% response rate to item)</td>
<td>$32,741</td>
</tr>
<tr>
<td>Women (n = 74; 74% response rate to item)</td>
<td>$27,602</td>
</tr>
<tr>
<td>Total (n = 130; 65% response rate to item)</td>
<td>$29,816</td>
</tr>
</tbody>
</table>

Note: non-responses determined to be missing completely at random; missing values estimated by multiple imputation. See Appendix C for formulae, calculations, and extended explanation.
Data neat and clean...

... now what?

**Data Types**

**Continuous**
inherently numeric (height, weight, test scores)

**Categorical**
represents mutually exclusive categories (gender, political party, ice cream flavors)
Continuous Data

<table>
<thead>
<tr>
<th>Snack Foods and Rates of Consumption by Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snack</td>
</tr>
<tr>
<td>Number of doughnuts</td>
</tr>
<tr>
<td>Pounds of cookies</td>
</tr>
<tr>
<td>Slices of pizza</td>
</tr>
<tr>
<td>Pints of ice cream</td>
</tr>
</tbody>
</table>

Analyzing Continuous Data

Central tendency

Range

Spread
Which of these do you eat most frequently?

<table>
<thead>
<tr>
<th></th>
<th>Cookies</th>
<th>Doughnuts</th>
<th>Pizza</th>
<th>Ice Cream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>196</td>
<td>52</td>
<td>175</td>
<td>77</td>
</tr>
<tr>
<td>Percentage</td>
<td>39%</td>
<td>10%</td>
<td>35%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Crosstabs

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Cookies</th>
<th>Doughnuts</th>
<th>Pizza</th>
<th>Ice Cream</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 24</td>
<td>44</td>
<td>6</td>
<td>63</td>
<td>12</td>
</tr>
<tr>
<td>25 - 34</td>
<td>18</td>
<td>24</td>
<td>69</td>
<td>14</td>
</tr>
<tr>
<td>35 - 44</td>
<td>41</td>
<td>13</td>
<td>41</td>
<td>30</td>
</tr>
<tr>
<td>45 - 54</td>
<td>34</td>
<td>8</td>
<td>42</td>
<td>41</td>
</tr>
</tbody>
</table>
Preference Patterns

Percentage Distributions
Rankings

Please rank these in order of deliciousness:

A. cookies
B. doughnuts
C. pizza
D. ice cream

To tally rankings:

1\textsuperscript{st} = 3 points
2\textsuperscript{nd} = 2 points
3\textsuperscript{rd} = 1 point
4\textsuperscript{th} = 0 points

Rankings by Points

<table>
<thead>
<tr>
<th></th>
<th>Cookies</th>
<th>Doughnuts</th>
<th>Pizza</th>
<th>Ice Cream</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Points</td>
<td>#</td>
<td>Points</td>
<td>#</td>
</tr>
<tr>
<td>1st</td>
<td>81</td>
<td>96</td>
<td>245</td>
<td>78</td>
</tr>
<tr>
<td>2nd</td>
<td>78</td>
<td>137</td>
<td>208</td>
<td>77</td>
</tr>
<tr>
<td>3rd</td>
<td>125</td>
<td>102</td>
<td>179</td>
<td>94</td>
</tr>
<tr>
<td>4th</td>
<td>94</td>
<td>221</td>
<td>103</td>
<td>82</td>
</tr>
<tr>
<td>524</td>
<td>664</td>
<td>1,330</td>
<td>482</td>
<td></td>
</tr>
</tbody>
</table>
Visuals for Ranking Data

Sarah

If I could have only one food for the rest of my life, it would be pizza.
**Power of Disaggregation**

<table>
<thead>
<tr>
<th></th>
<th>18 - 24</th>
<th>25 - 34</th>
<th>35 - 44</th>
<th>45 - 54</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>12</td>
<td>18</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>17</td>
<td>21</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>Neutral</td>
<td>27</td>
<td>18</td>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>39</td>
<td>44</td>
<td>51</td>
<td>39</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>30</td>
<td>24</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

Looking for love in all the wrong demographic subgroups.

**Visual Disaggregation**

[Bar chart showing visual disaggregation by age groups and response levels]
Visual Disaggregation

Sarah

Qualitative Data Analysis

Stephanie
Qualitative Analysis

You Have...

1. Chosen a philosophy (or not)
2. Established research questions
3. Decided how you’d like to talk about your findings
4. Cleaned and typed up your data
Quick and Dirty

Evaluator Strengths

Our evaluator is very familiar with ATE and knows how to make
the evaluation fit the requirements of NSF.

She is a statistical expert and she delivers reports when we need
them for decision making.

We switched to an internal evaluator, who has been better able to
give quick answers to our questions.

Inductive Immersion
**Fresh and Bubbly**

Stephanie’s Seven Steps of Qualitative Analysis

---

### Sketch a Coding Structure

<table>
<thead>
<tr>
<th>Step</th>
<th>Evaluator</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strengths</td>
<td>Strengths</td>
</tr>
<tr>
<td></td>
<td>Limitations</td>
<td>Limitations</td>
</tr>
</tbody>
</table>

What do you view as the most important strengths and limitations of your evaluator(s) and/or evaluation?
Evaluator

Strengths

REPORTING STYLE

EXPERTISE

SATISFACTION

PI COMMUNICATION

2

Read & Code

25%
16. What do you view as the most important strengths and limitations of your evaluator(s) and/or the evaluation?

**Strengths:** She is a statistical expert and she delivers reports when we need them for decision making.

**Limitations:** This is her first time working on an NSF grant.
Turn Notes into Subcodes

Tip

Evaluator
Strengths
Expertise
NSF
ATE
Evaluation
Statistics
Content area
Accessibility
Proximity
Frequent visits

Evaluator
Strengths
Limitations

Good quote
Unexpected outcome
4
Read & Code Everything

5
Read & Think
6

Write It Up

Conclusions
Evaluator expertise was a central strength for ATE PIs and their projects, which should be incorporated into the Evaluator Directory on EvaluATE’s website.
However, expertise fell across several areas. Experience with NSF and/or ATE was important to PIs. As one noted, “Our evaluator ... knows how to make the evaluation fit the needs of NSF.”

Summary statement
Explanation from subcodes

7

Read It Again
SSSQA

1. Sketch a Coding Structure
2. Read & Code 25%
3. Turn Notes into Subcodes
4. Read & Code Everything
5. Read & Think
6. Write It Up
7. Read It Again

Making Sense of Website Data

Kurt
Poll

What is your background with Google Analytics?

A. I use it once a week.
B. I use it once a month.
C. I’ve used it a few times.
D. It is linked to our site but I don’t use it.
E. I don’t know if it is linked to our site.

Where Do I Start?

Search “Google Analytics Installation Guide” for step by step instructions.

URL will be on handout.
Evaluation Questions

1. How many people are we reaching through the web?
2. Are people using our resources?
3. Did our promotion work?
4. How strong are our partnerships?
5. How engaged are people with our content?
6. Where are the people we are reaching located?

Evalu-ate.org Dashboard
Timeframe

EvaluATE Webinar: Making Sense of Your Evaluation Data 1/19/2011

Time Series Graph
Benchmarking

- Benchmarking Overview

- Traffic Sources Overview

- Traffic Sources:
  - Direct Traffic
  - Referring Sites
  - Search Engines

- Top Traffic Sources:

- Benchmarking:
  - 433 Visits
  - 63.74% Bounce Rate
  - 980 Pageviews
  - 00:02:12 Avg. Time on Site
Traffic Sources

All traffic sources sent a total of 3,920 visits

- 59.21% Direct Traffic
- 26.25% Referring Sites
- 14.54% Search Engines

Top Traffic Sources

<table>
<thead>
<tr>
<th>Sources</th>
<th>Visits</th>
<th>% visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>(direct) (phone)</td>
<td>2,321</td>
<td>59.21%</td>
</tr>
<tr>
<td>people (organic)</td>
<td>477</td>
<td>12.11%</td>
</tr>
<tr>
<td>amsurvey.org (referral)</td>
<td>268</td>
<td>6.60%</td>
</tr>
<tr>
<td>resources.evalu-ate.net (referral)</td>
<td>151</td>
<td>3.80%</td>
</tr>
</tbody>
</table>

Keywords

<table>
<thead>
<tr>
<th>Keywords</th>
<th>Visits</th>
<th>% visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>eval-ate</td>
<td>35</td>
<td>0.82%</td>
</tr>
<tr>
<td><a href="http://www.evalu-ate">www.evalu-ate</a></td>
<td>20</td>
<td>4.91%</td>
</tr>
<tr>
<td>eval-ate.org</td>
<td>24</td>
<td>4.21%</td>
</tr>
<tr>
<td>eval-ate</td>
<td>20</td>
<td>5.01%</td>
</tr>
</tbody>
</table>

Content Overview

Pages on this site were viewed a total of 7,707 times

- 7,707 Pageviews
- 6,007 Unique Views
- 56.77% Bounce Rate

Top Content
Triangulation

Stephanie

Multiple Views

Stephanie
Multiple Views

Camera 1

Camera 2

Camera 3

Convergence

Student survey

Student focus group

Yeah! Program met student needs.
Inconsistency

Student survey
Well, survey said X
AND focus group said Y

Student focus group

Contradictory

Student focus group

Student survey
Contradiction Happens

Take a deep breath

Contradiction Happens

Check for errors
Contradiction Happens

Stephanie

Survey
- Males 65%
- Females 35%

Focus Group
- Males 95%
- Females 5%

Examine characteristics

Contradiction Happens

Stephanie

Ask around
Contradiction Happens

Construct an explanation

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Conduit Newsletters
ATE Evaluator Directory
Digital Resource Library
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Upcoming Webinars

March 16
Claims + Evidence: Assessing the Impact of Your ATE Grant

May 18
Developing & Validating Data Collection Instruments

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AEA

Coffee Break Webinar Series
Jan 20 Evaluating Data Visualization
Jan 27 Photo Journaling for Evaluation
Feb 10 Developing Evaluation Reports That Are Useful, User-friendly, and Used

Annual Conference
Oct 31-Nov 5 in Anaheim
Proposals due March 18

Get more information/join at www.eval.org
Thank You!
Have a great day!

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