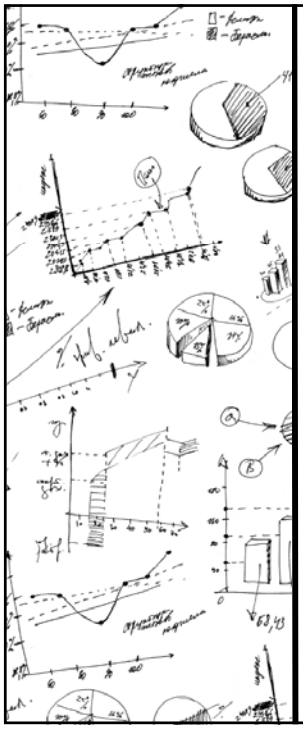


Making Sense of Your Evaluation Data

January 19, 2011

Evaluate
EVALUATION RESOURCE CENTER for advanced technological education

This material is based upon work supported by the National Science Foundation under grant number. 0802245. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Introductions

Lori

Lori Wingate

Stephanie Evergreen

Sarah Butzen

Kurt Wilson

Evaluate @ WMU

Right Brain Strategies

Compass Outreach Media

Mark Viquesney

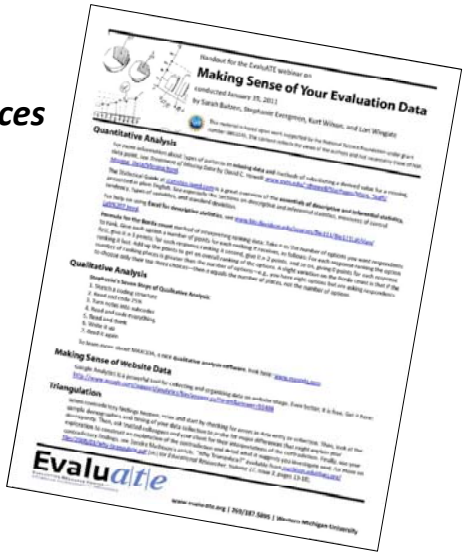
MARICOPA COMMUNITY COLLEGES

Handout

Lori

Available from
www.evalu-ate.org/resources

Keyword search:
making sense

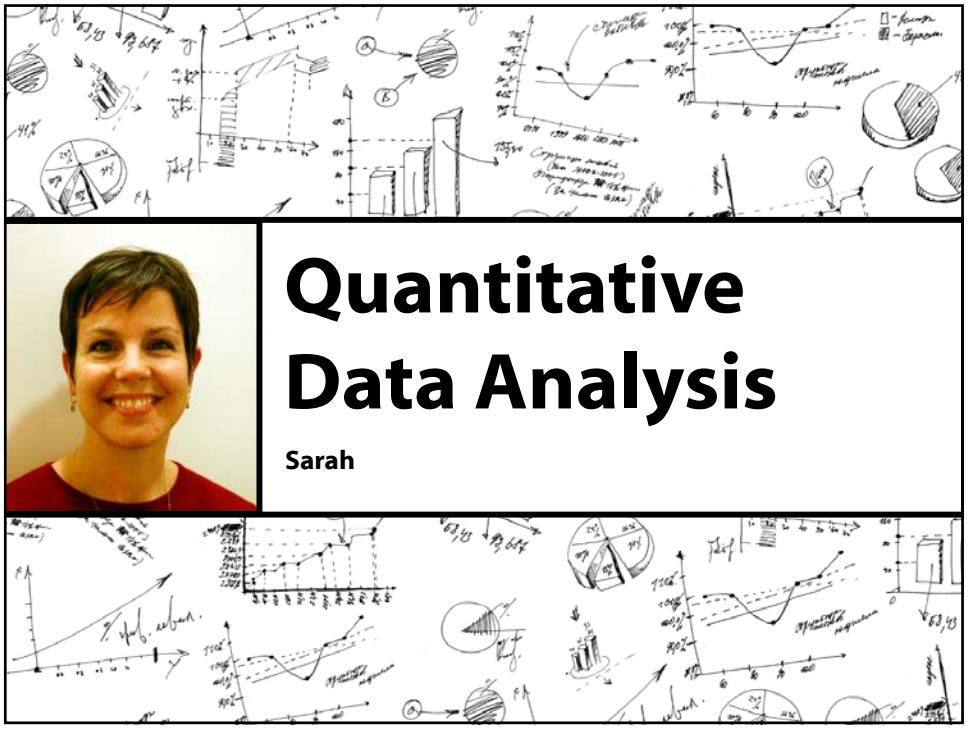

Handout for the EvaluATE webinar on
Making Sense of Your Evaluation Data
conducted January 19, 2011
by Sarah Baker, Stephanie Evergreen, Kurt Wilson, and Lori Wingate
Quantitative Analysis
Qualitative Analysis
Making Sense of Website Data
Triangulation
Evaluate

Objectives

Lori

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

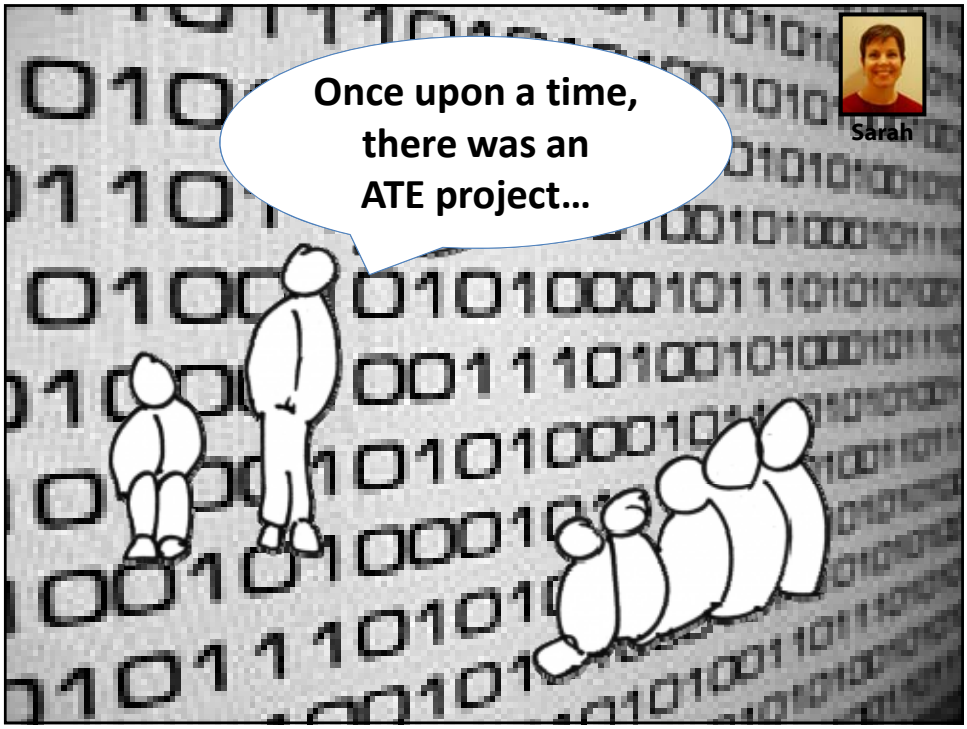


Poll

Sarah

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?



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.

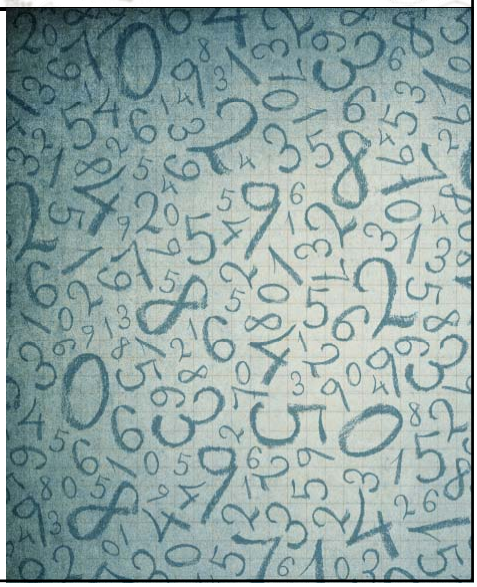
Why don't I have anything to infer?

Because you're (probably) examining the whole population.

Clean Up Any Messy Data

Sarah

- Strange values
- Extreme outliers
- Contradictory responses

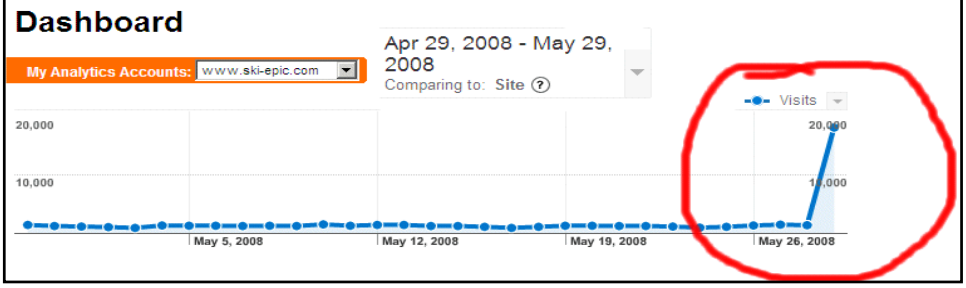


Strange Values

Sarah

Q: What was your firm's average employment in 2010? **A: 50**

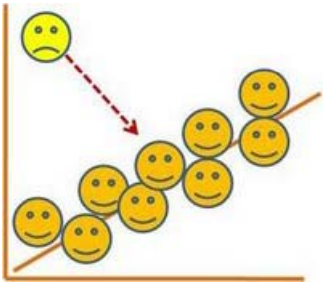
Q: What is your firm's projected average employment for 2011? **A: 750**

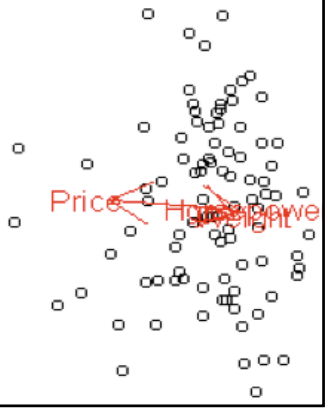


Outliers

Sarah

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





Internal Contradiction

Sarah

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

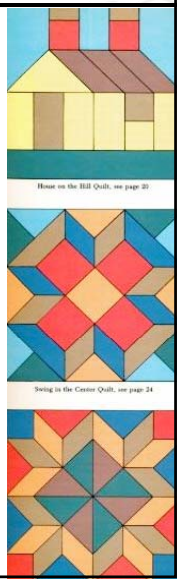
- No standard for "too much missing"
- BUT: under 5%, don't worry

Most important consideration:
Is there a pattern?

Missing Data Patterns

Sarah

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



Content Patterns

Sarah

Q: What is your yearly income?

	Answered	Didn't answer
Men	56%	44%
Women	74%	26%
All	65%	35%

Coping with Missing Data

Sarah

- 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

Sarah

Wrong

	Mean Annual Income
Men	$32, 741
Women	$27, 602
Total	$30,172

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

Right

	Mean Annual Income
Men (n = 56; 56% response rate to item)	$32,741
Women (n = 74; 74% response rate to item)	$27,602
Total (n = 130; 65% response rate to item)	$29,816

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.

OK

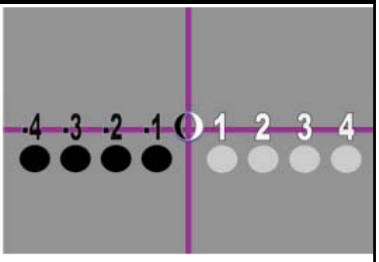
Sarah

Data neat and clean…

Data Types

Sarah

Continuous
inherently numeric (height, weight, test scores)



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

Continuous Data

Sarah

Snack Foods and Rates of Consumption by Age		
Snack	18 - 39	40 +
Number of doughnuts	8	14
Pounds of cookies	3	5
Slices of pizza	15	22
Pints of ice cream	6	12

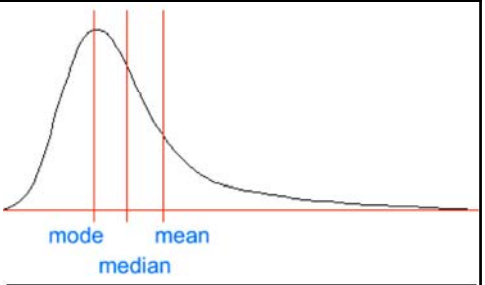
Analyzing Continuous Data

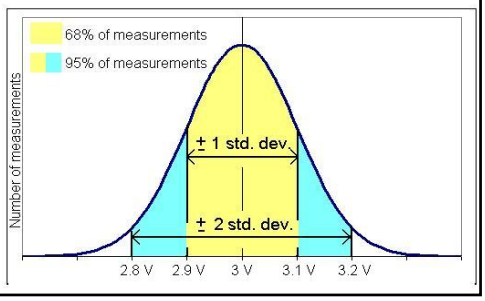
Sarah

Central tendency

Range

Spread

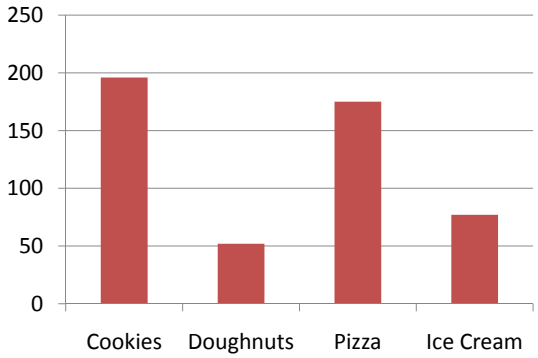




Which of these do you eat most frequently?

Sarah

Cookies	Doughnuts	Pizza	Ice Cream
196	52	175	77
39%	10%	35%	15%

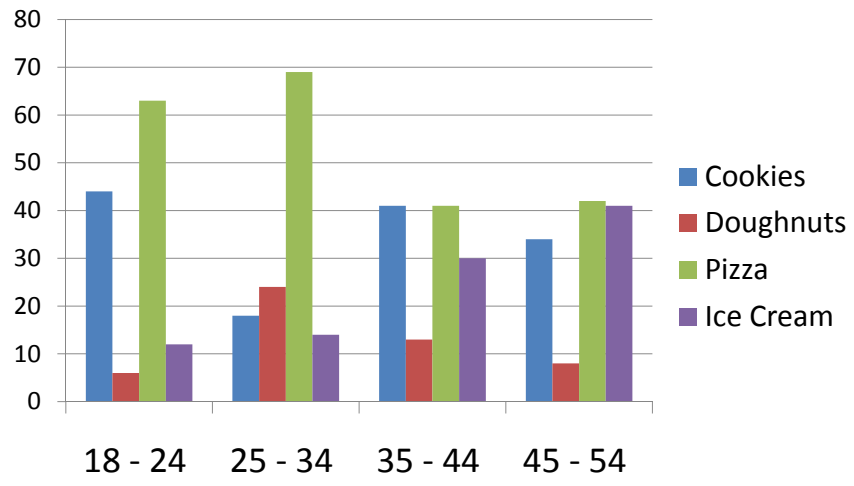


Crosstabs

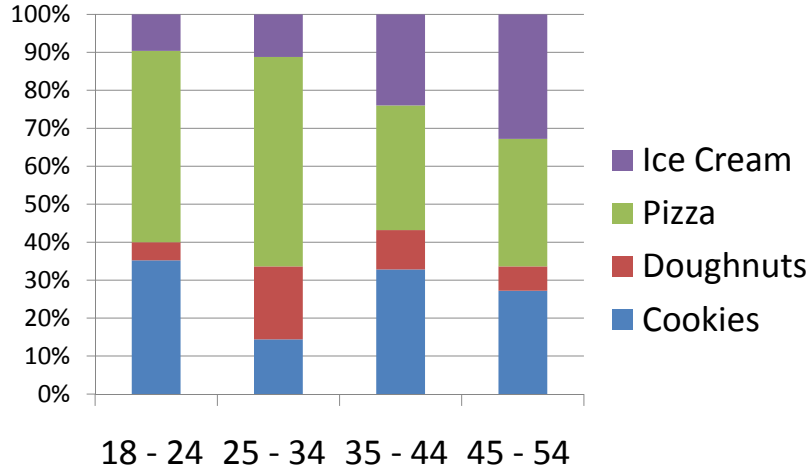
Sarah

Age Group	Cookies	Doughnuts	Pizza	Ice Cream
18 - 24	44	6	63	12
25 - 34	18	24	69	14
35 - 44	41	13	41	30
45 - 54	34	8	42	41

Preference Patterns



Percentage Distributions



Rankings

Sarah

Please rank these in order of deliciousness:

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

To tally rankings:

1st = 3 points

2nd = 2 points

3rd = 1 point

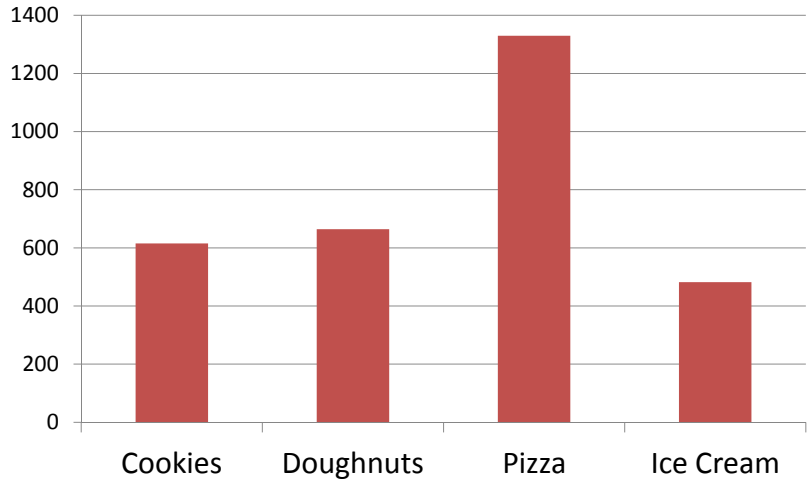
4th = 0 points

Rankings by Points

Sarah

	Cookies		Doughnuts		Pizza		Ice Cream	
	#	Points	#	Points	#	Points	#	Points
1st	81	243	96	288	245	735	78	234
2nd	78	156	137	274	208	416	77	154
3rd	125	125	102	102	179	179	94	94
4th	94	0	221	0	103	0	82	0
		524		664		1,330		482

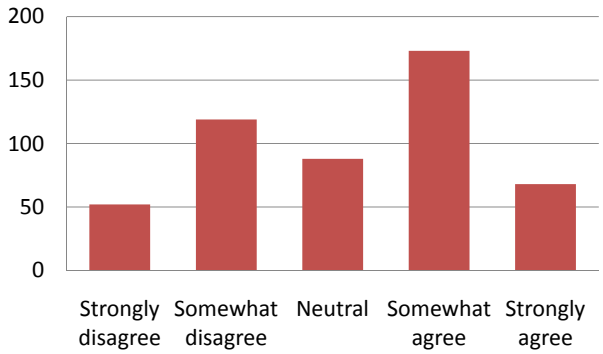
Visuals for Ranking Data



Likert

Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
52	119	88	173	68

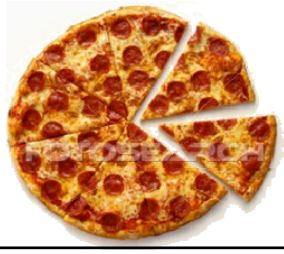
If I could have only one food for the rest of my life, it would be pizza.



Power of Disaggregation

Sarah

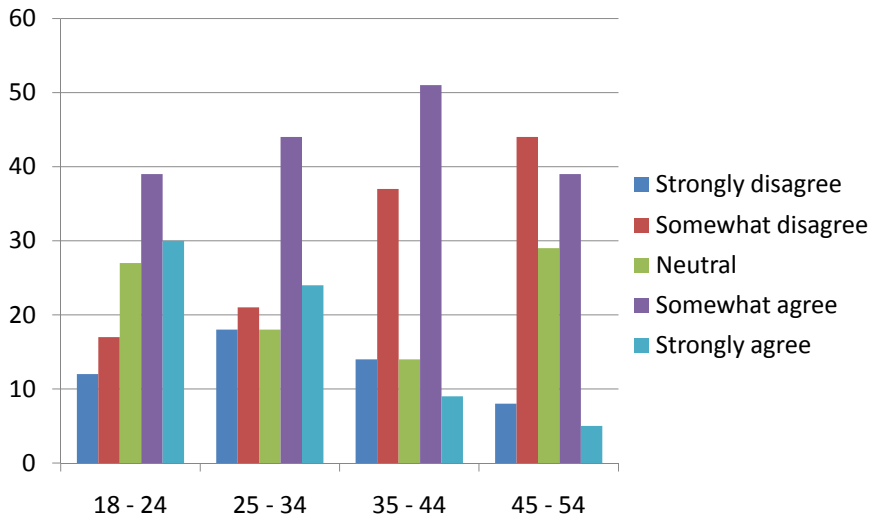
	18 - 24	25 - 34	35 - 44	45 - 54
Strongly disagree	12	18	14	8
Somewhat disagree	17	21	37	44
Neutral	27	18	14	29
Somewhat agree	39	44	51	39
Strongly agree	30	24	9	5



Looking for love in all the wrong demographic subgroups.

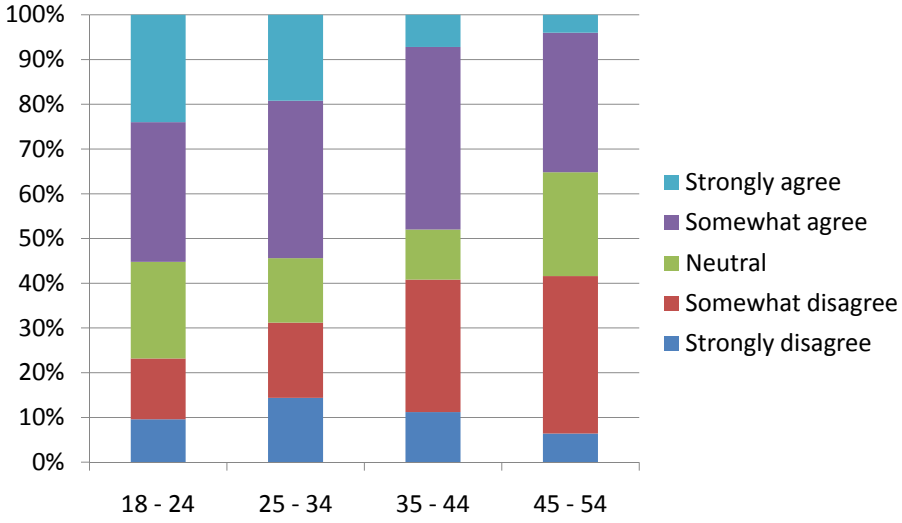
Visual Disaggregation

Sarah



Visual Disaggregation

Sarah



Qualitative Data Analysis

Stephanie

Qualitative Analysis

Stephanie

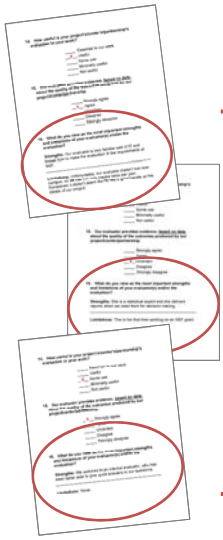
You Have…

Stephanie

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

Stephanie



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

Stephanie

Fresh and Bubbly

Stephanie

Stephanie's Seven Steps of Qualitative Analysis

Stephanie

1

Sketch a Coding Structure

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

Evaluator	Evaluation
Strengths	Strengths
Limitations	Limitations

Tip

Stephanie

Evaluator

Strengths

REPORTING STYLE

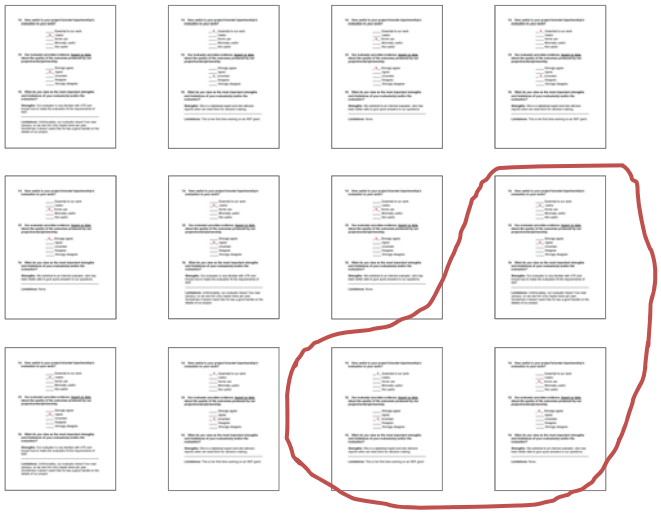
EXPERTISE SATISFACTION

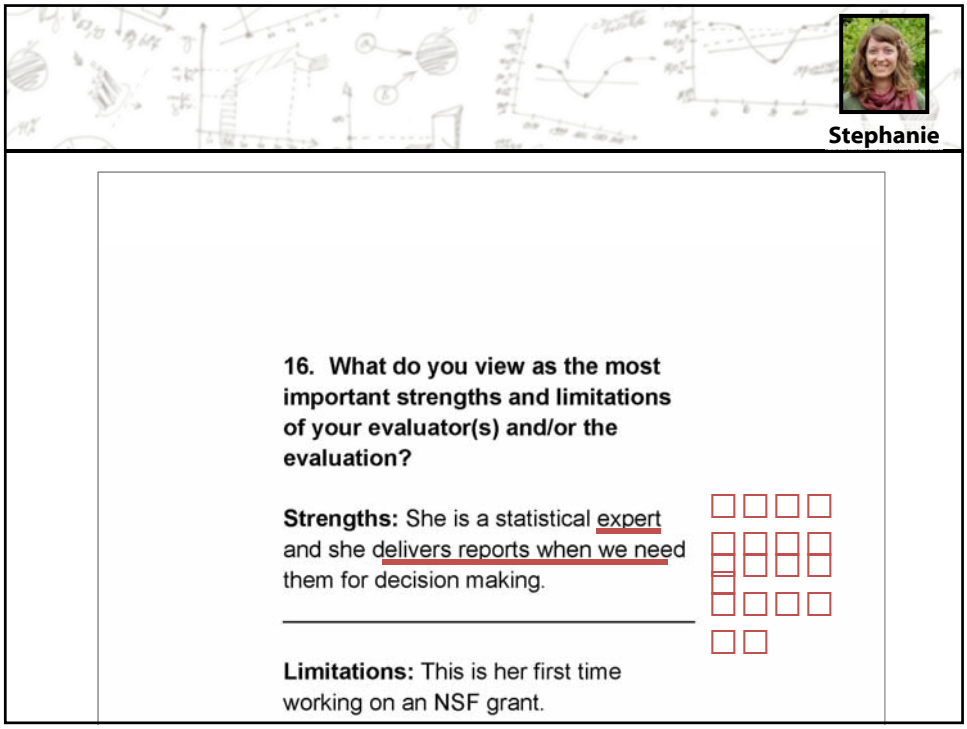
PI COMMUNICATION

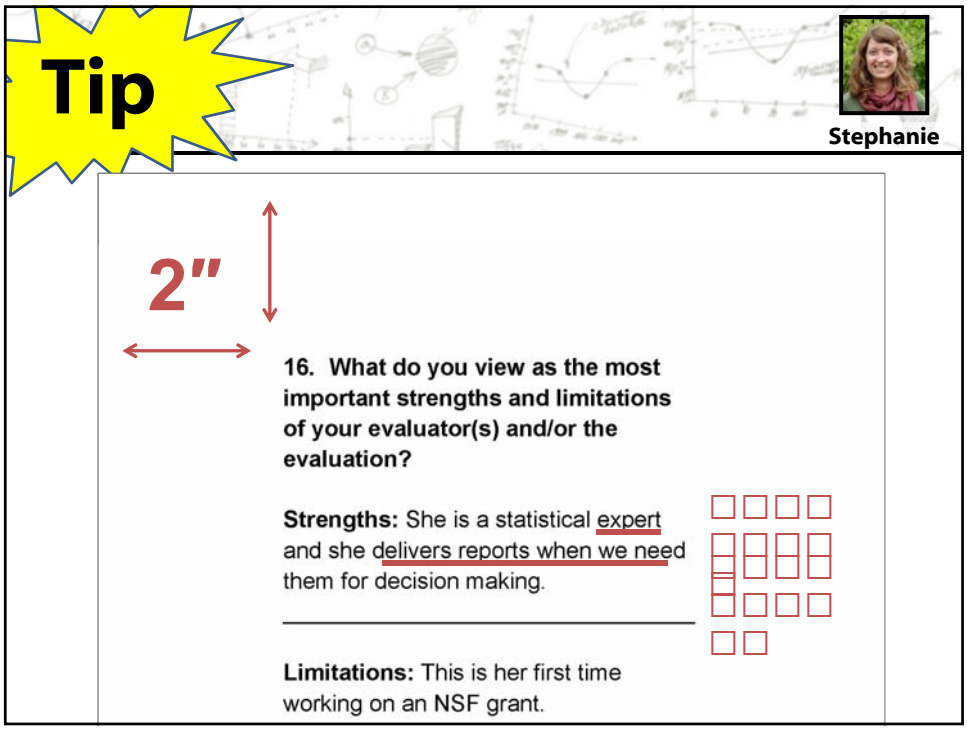
Stephanie

2

Read & Code 25%




Stephanie
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.


Tip
Stephanie
2″
16. What do you view as the most important strengths and limitations of your evaluator(s) and/or the evaluation?
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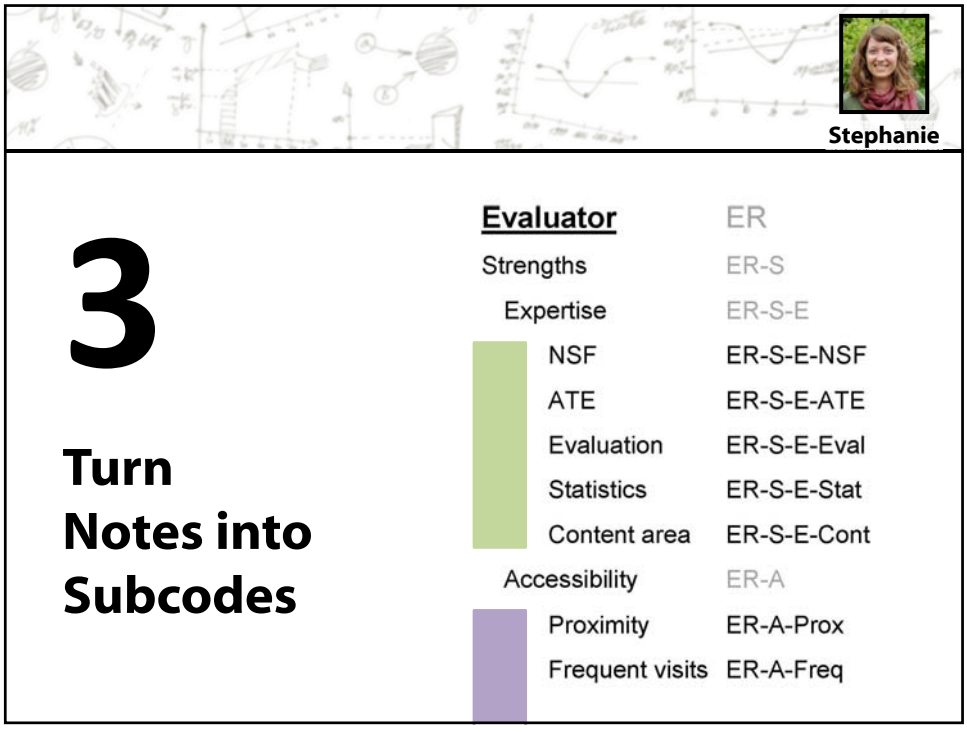
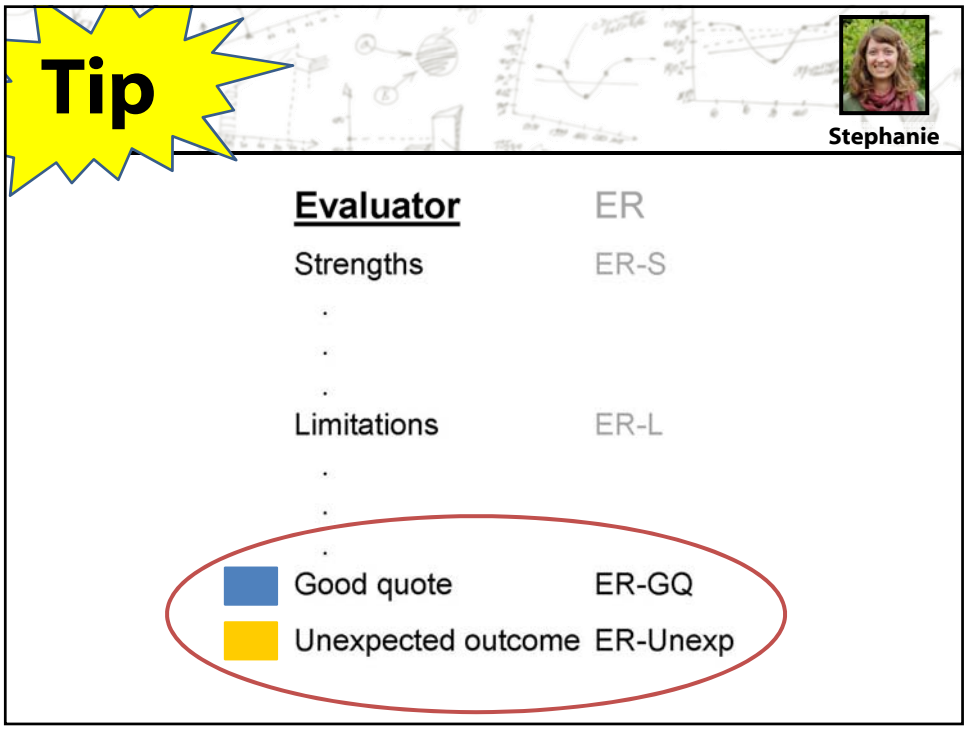
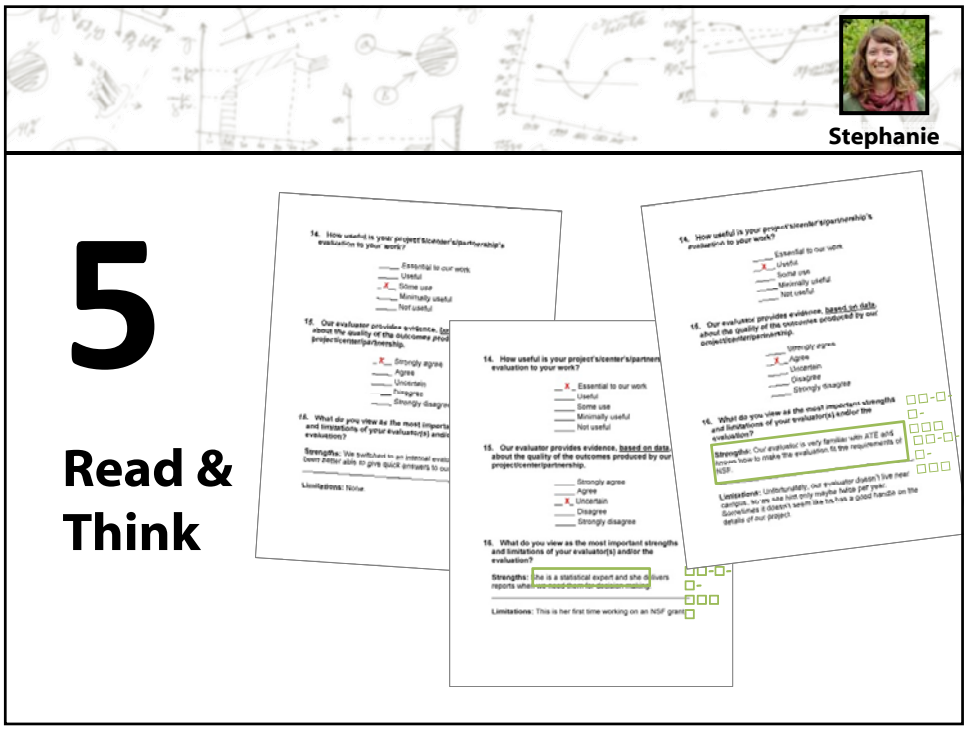
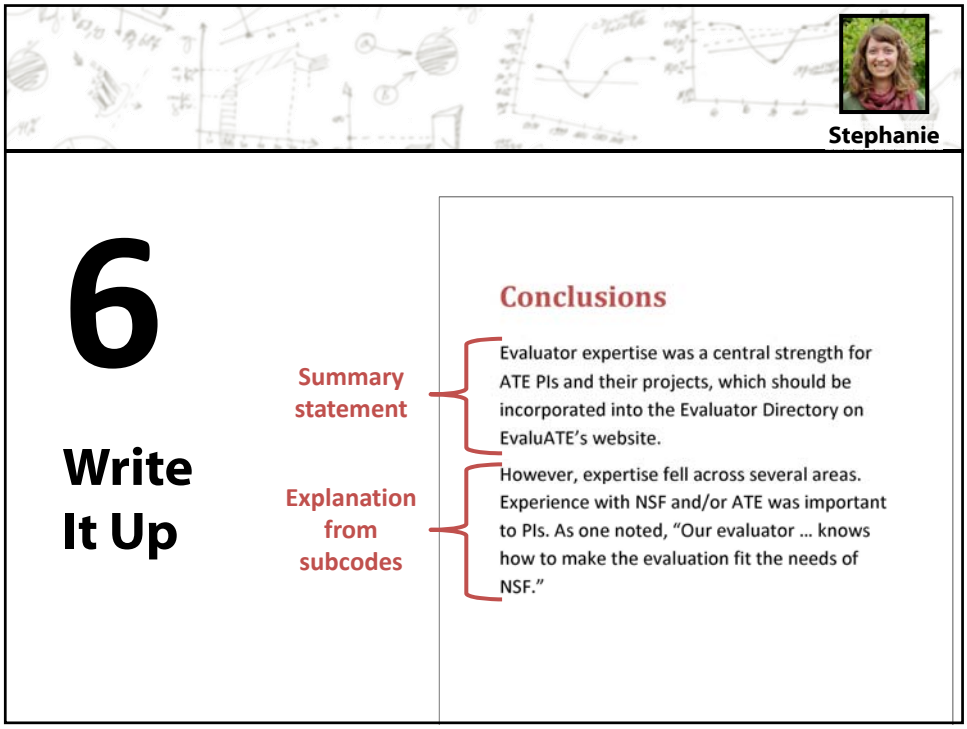
Limitations: This is her first time working on an NSF grant.


Stephanie
3
Turn Notes into Subcodes
Evaluator ER
Strengths ER-S
Expertise ER-S-E
NSF ER-S-E-NSF
ATE ER-S-E-ATE
Evaluation ER-S-E-Eval
Statistics ER-S-E-Stat
Content area ER-S-E-Cont
Accessibility ER-A
Proximity ER-A-Prox
Frequent visits ER-A-Freq


Tip
Stephanie
Evaluator ER
Strengths ER-S
Limitations ER-L
Good quote ER-GQ
Unexpected outcome ER-Unexp

Stephanie
4
Read & Code Everything
Please Do not Disturb


Stephanie
5
Read & Think

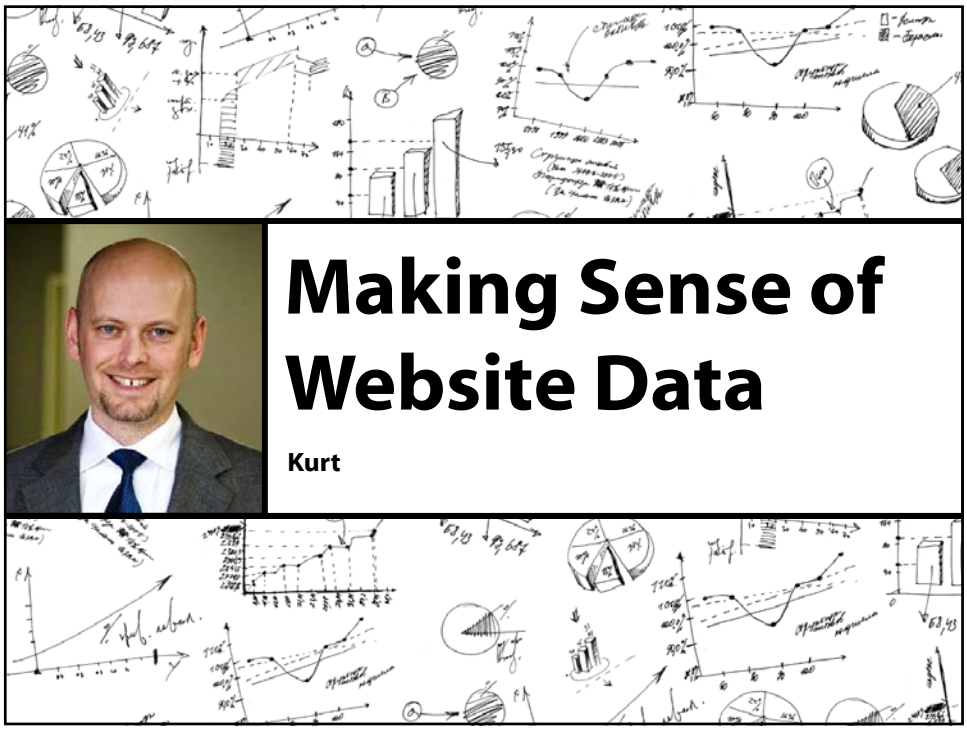

Stephanie
6
Write It Up
Summary statement
Explanation from subcodes
Conclusions
Evaluator expertise was a central strength for ATE PIs and their projects, which should be incorporated into the Evaluator Directory on EvaluATE's website.
However, expertise fell across several areas. Experience with NSF and/or ATE was important to PIs. As one noted, "Our evaluator … knows how to make the evaluation fit the needs of NSF."

Stephanie
7
Read It Again

SSSQA

Stephanie

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?

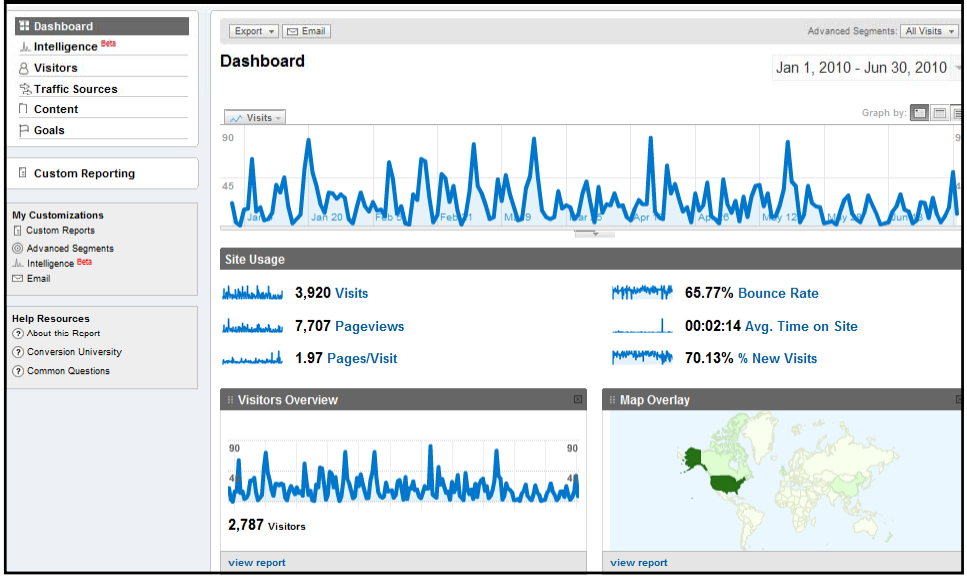
Search "**Google Analytics Installation Guide**" for step by step instructions.

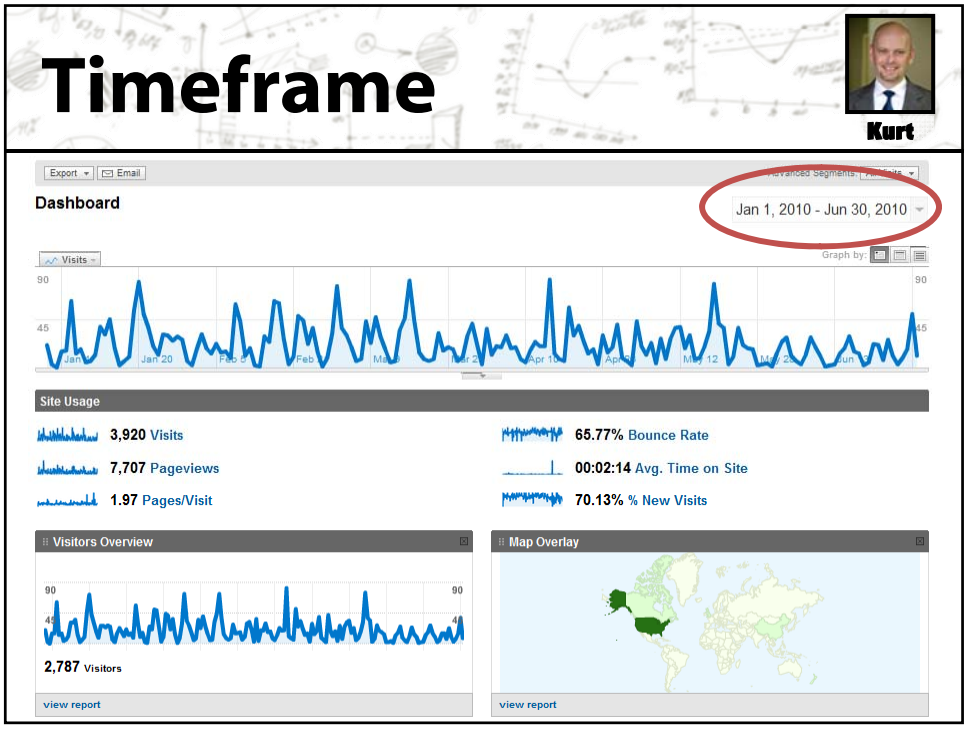
URL will be on handout.

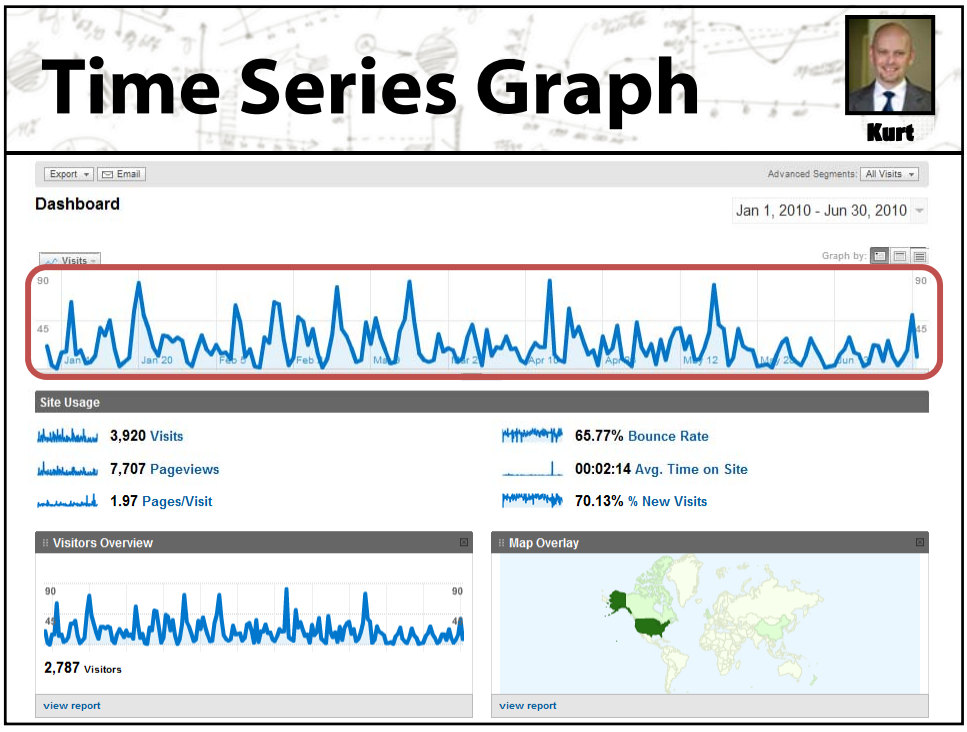
Evaluation Questions

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?

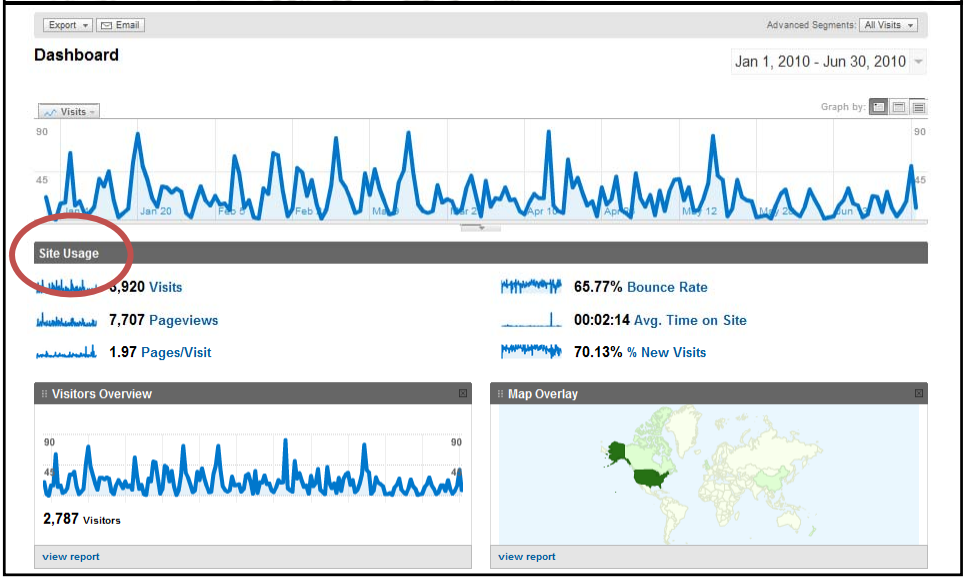
Evalu-ate.org Dashboard



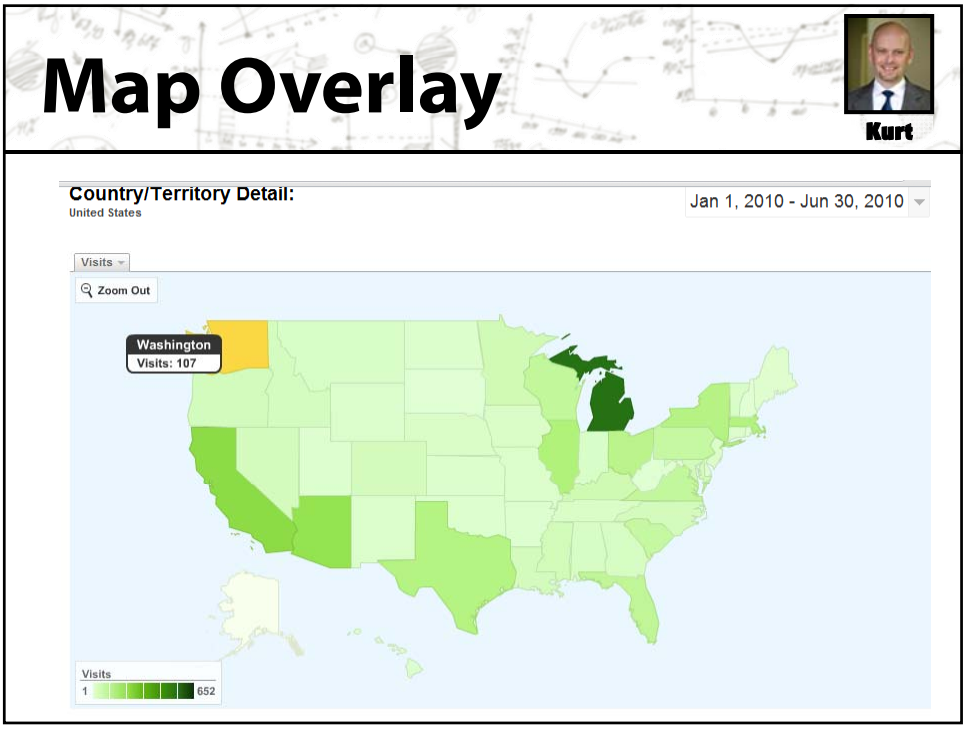

Timeframe
Kurt
Export
Email
Dashboard
Jan 1, 2010 - Jun 30, 2010
Visits
Graph by:
Site Usage
3,920 Visits
7,707 Pageviews
1.97 Pages/Visit
65.77% Bounce Rate
00:02:14 Avg. Time on Site
70.13% % New Visits
Visitors Overview
2,787 Visitors
view report
Map Overlay
view report

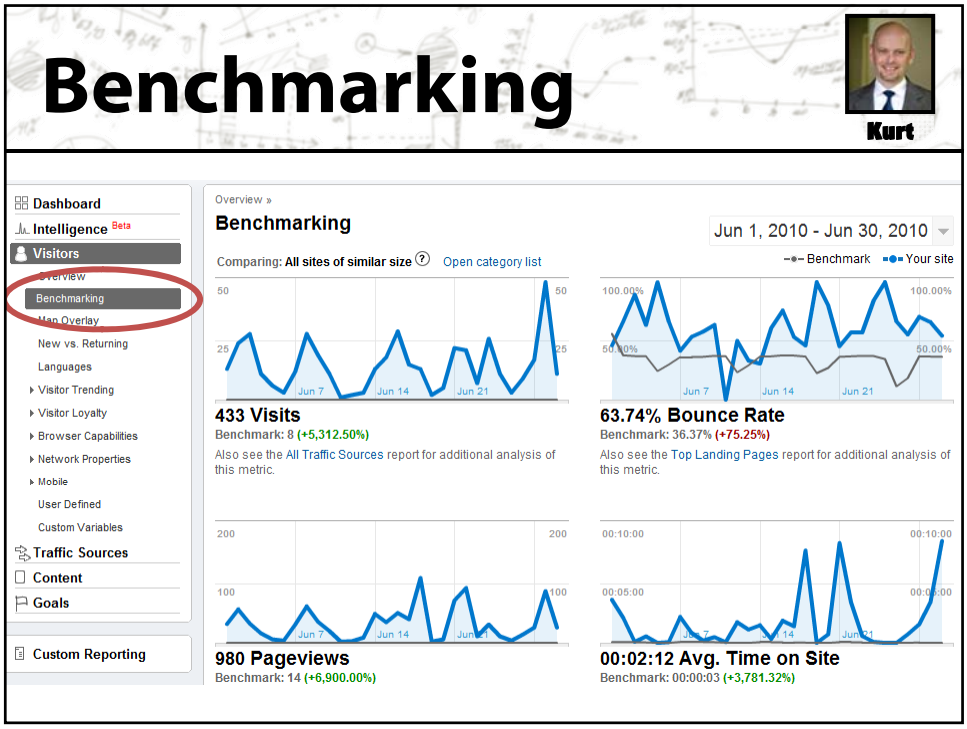

Time Series Graph
Kurt
Export
Email
Advanced Segments:
All Visits
Dashboard
Jan 1, 2010 - Jun 30, 2010
Visits
Graph by:
Site Usage
3,920 Visits
7,707 Pageviews
1.97 Pages/Visit
65.77% Bounce Rate
00:02:14 Avg. Time on Site
70.13% % New Visits
Visitors Overview
2,787 Visitors
view report
Map Overlay
view report

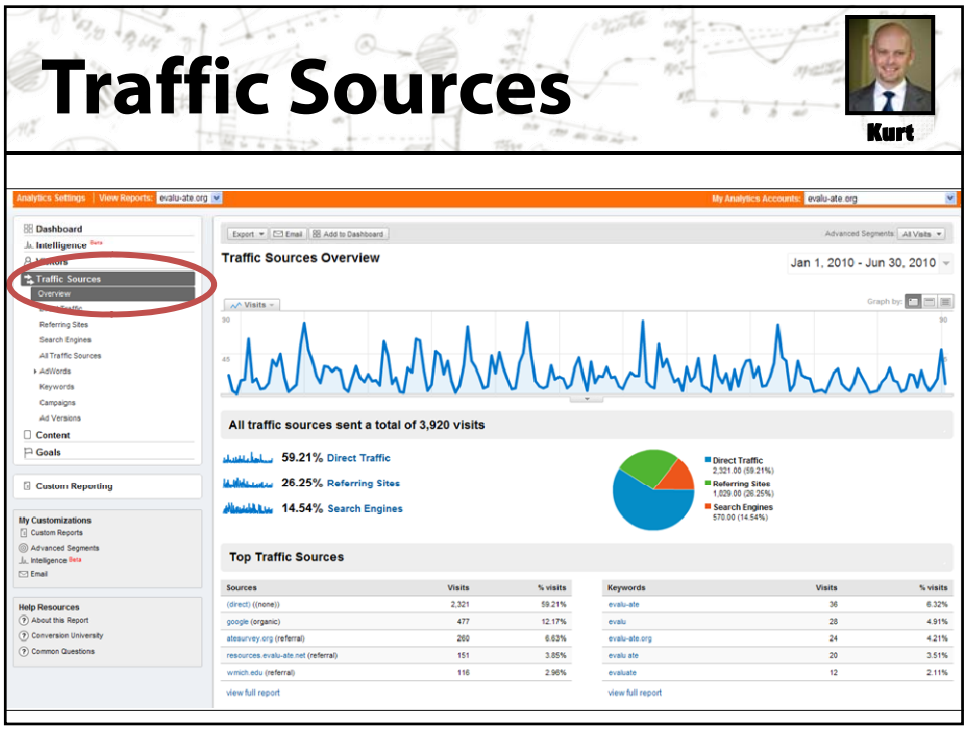
Site Usage Overview



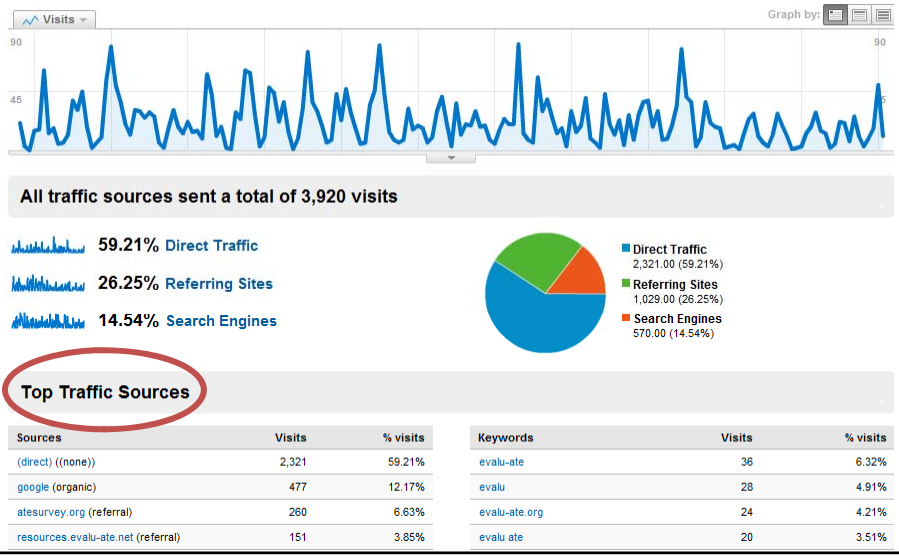
Map Overlay



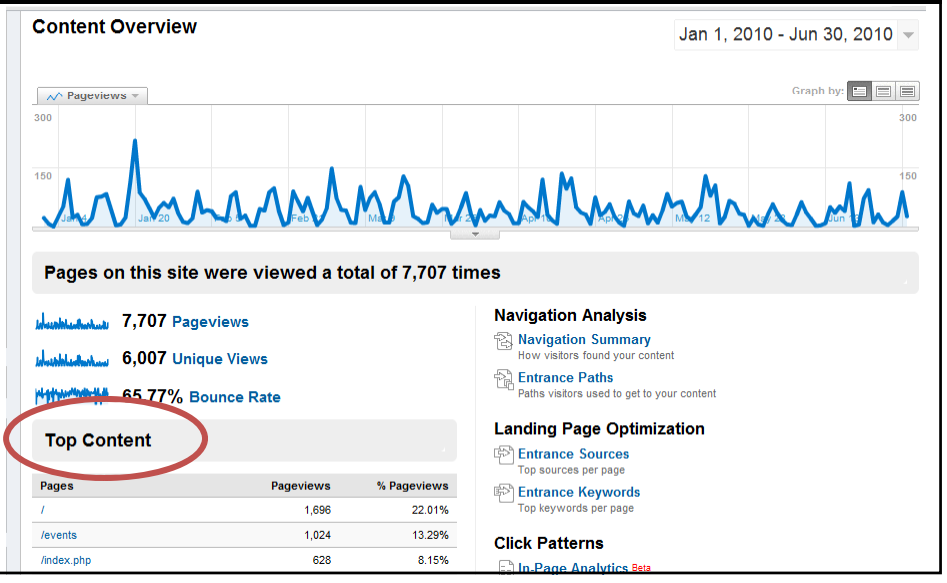

Benchmarking
Kurt
Dashboard
Intelligence Beta
Visitors
Overview
Benchmarking
Map Overlay
New vs. Returning
Languages
Visitor Trending
Visitor Loyalty
Browser Capabilities
Network Properties
Mobile
User Defined
Custom Variables
Traffic Sources
Content
Goals
Custom Reporting
Overview »
Benchmarking
Jun 1, 2010 - Jun 30, 2010
Comparing: All sites of similar size
Open category list
Benchmark
Your site
433 Visits
Benchmark: 8 (+5,312.50%)
Also see the All Traffic Sources report for additional analysis of this metric.
63.74% Bounce Rate
Benchmark: 36.37% (+75.25%)
Also see the Top Landing Pages report for additional analysis of this metric.
980 Pageviews
Benchmark: 14 (+6,900.00%)
00:02:12 Avg. Time on Site
Benchmark: 00:00:03 (+3,781.32%)

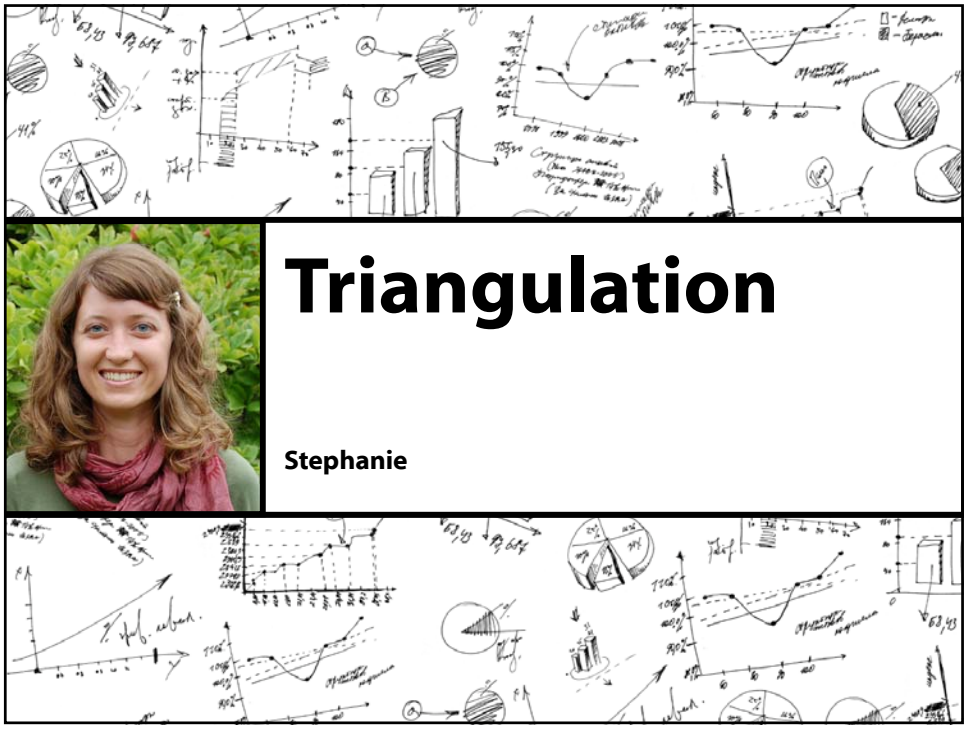

Traffic Sources
Kurt
Traffic Sources Overview
Jan 1, 2010 - Jun 30, 2010
All traffic sources sent a total of 3,920 visits
59.21% Direct Traffic
26.25% Referring Sites
14.54% Search Engines
Top Traffic Sources

Traffic Sources



Content Overview




Triangulation
Stephanie

Multiple Views
Stephanie

Multiple Views

Stephanie

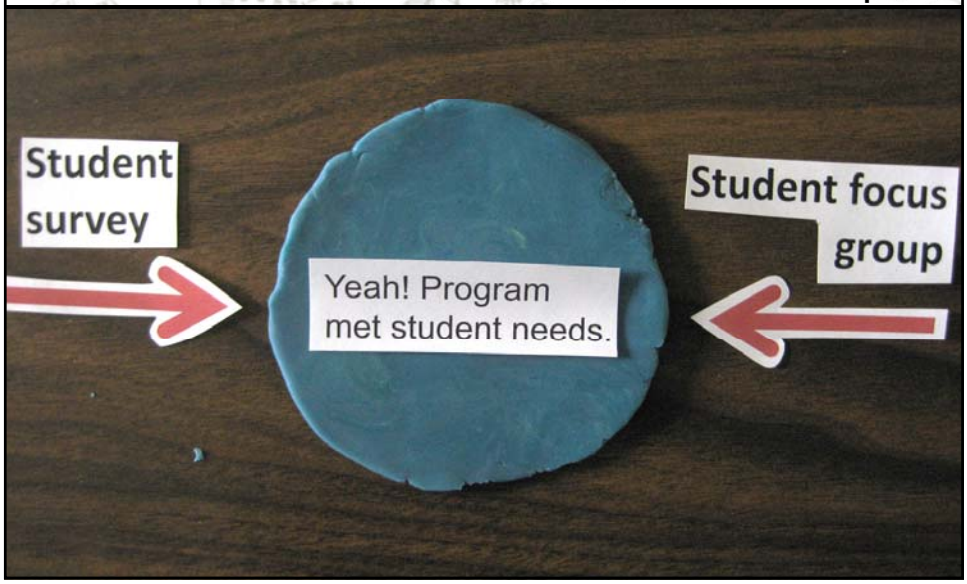
Camera 1

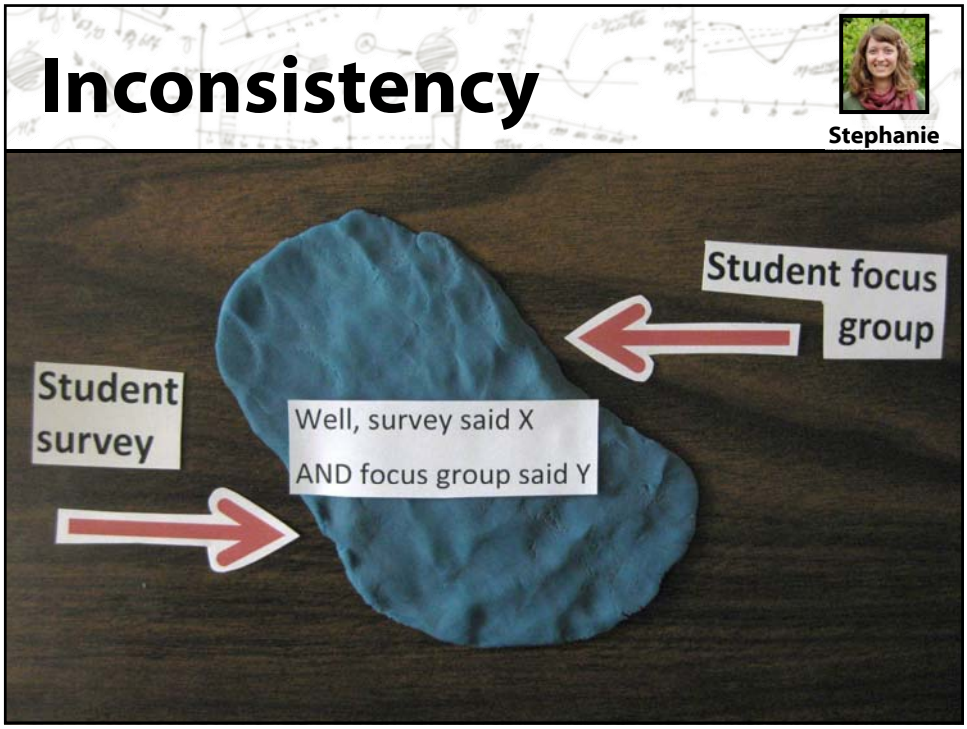
Camera 2

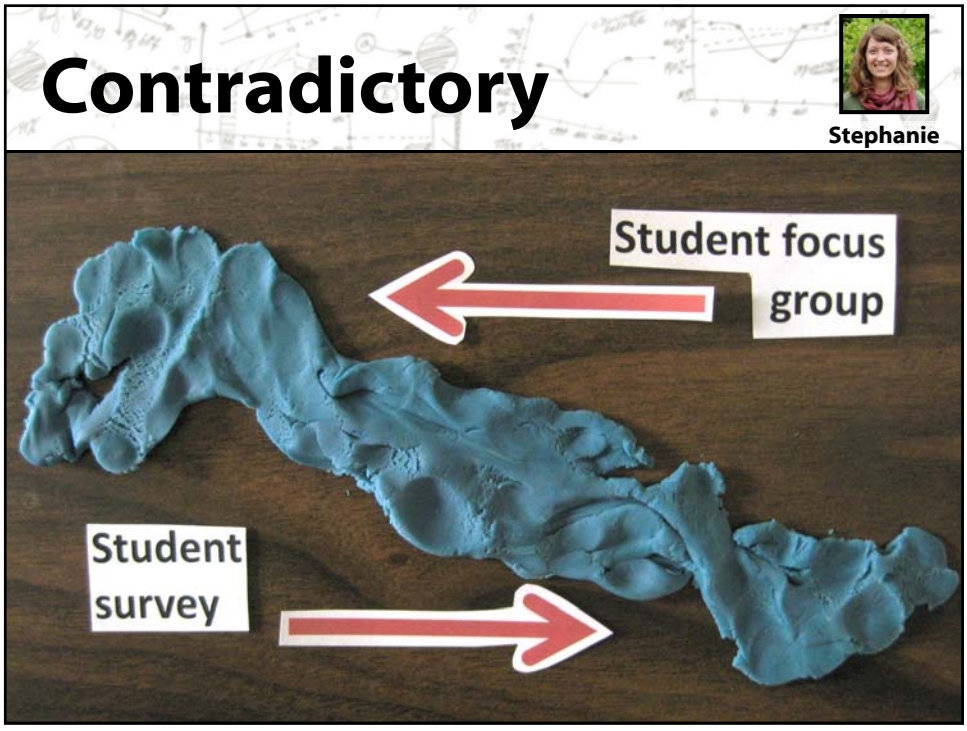
Camera 3

Convergence

Stephanie




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

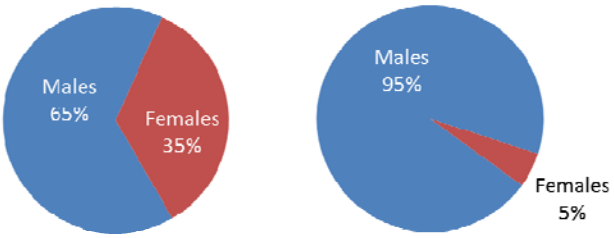

Contradictory
Stephanie
Student focus group
Student survey

Contradiction Happens
Stephanie
Take a deep breath

Contradiction Happens
Stephanie
Check for errors

Contradiction Happens

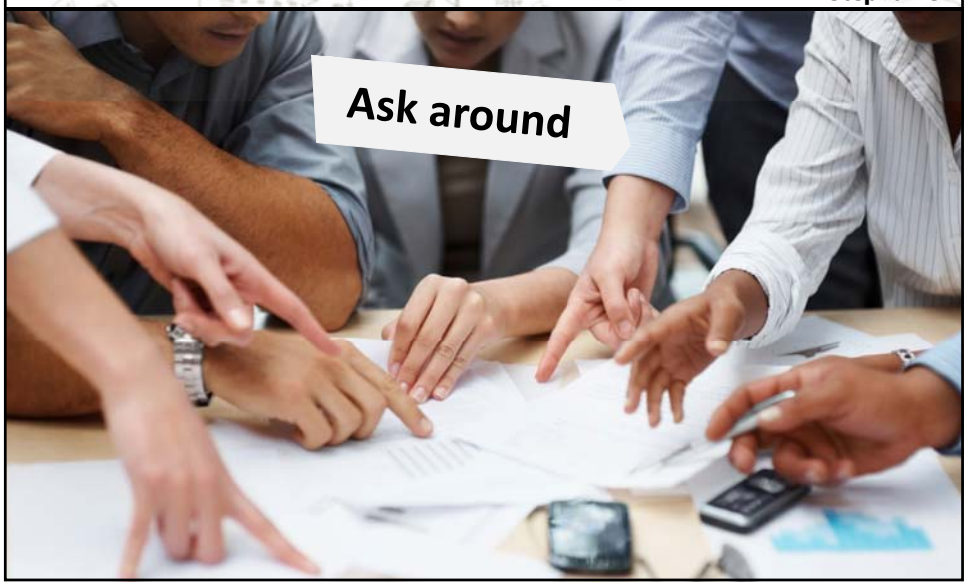
Stephanie



Examine characteristics

Contradiction Happens

Stephanie



Contradiction Happens

Stephanie

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