

ASSESSMENT FOUNDATIONS WORKSHOP SERIES:

Gather Data - Quantitative

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May 2016



Session Outcomes

1. Recognize research or assessment question types that lead to the use of quantitative methods.
2. Identify assessment projects that require IRB approval.
3. Describe the concept of inferential statistics.
4. Describe common quantitative measures such as mean, median, mode, frequencies, and correlations.
5. Differentiate between practical and statistical significance.
6. Describe five ways to keep data secure.



Quantitative Methodology

“use structured, predetermined response options that can be summarized into meaningful numbers and analyzed statistically. Test scores, rubric scores, survey ratings, and performance indicators are all examples of quantitative evidence”

(Suskie, 2009, p. 32)



Types of Quantitative Data

1. Scores (rubric, quiz, etc.)
2. Survey responses
3. Performance indicators (dashboard)
4. Tracking



Research Designs

1. Experimental
2. Correlation
 1. Relationships between variables
 2. Not causality



Quantitative Perspective Assumptions

Assumption	Question	Characteristics
Ontological	What is the nature of reality?	Objective, apart from the researcher
Epistemological	What is the relationship between the researcher and participants?	Researcher is independent from what is being researched
Axiological	What is the role of values?	Value free and unbiased, values are emotive and therefore outside the scientific inquiry
Rhetorical	What is the language of research?	Formal, based on a set of definitions, impersonal voice
Methodological	What is the process of research?	To explain and predict

Adapted from (Creswell, 1994)



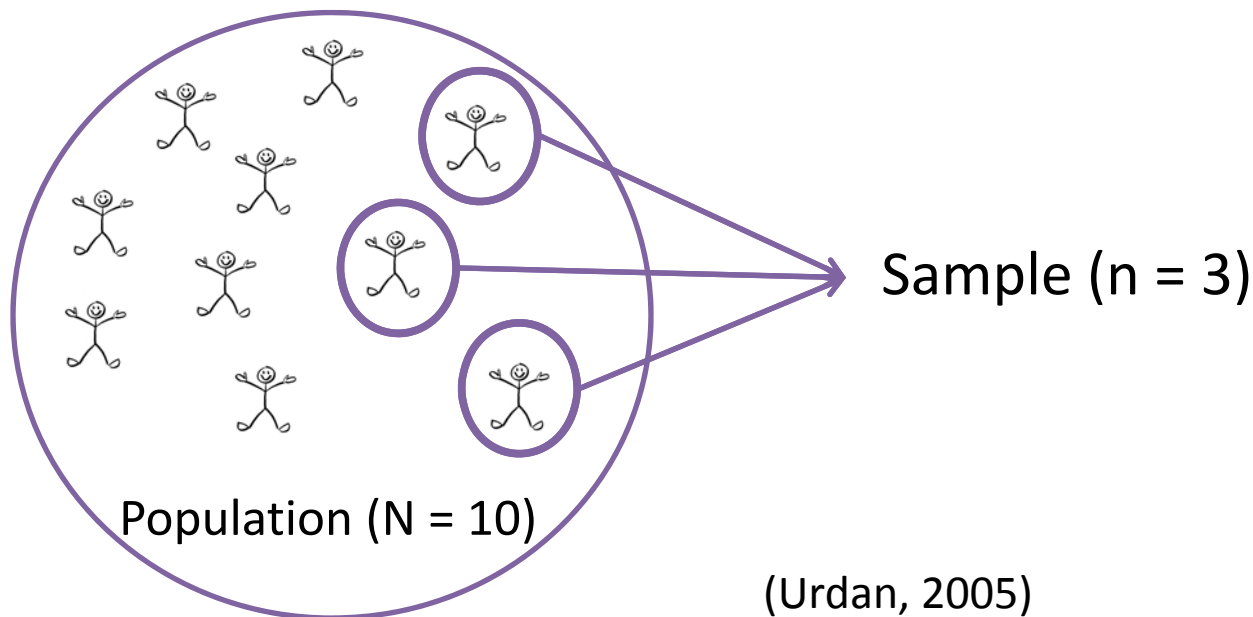
Types of Statistics

1. Descriptive

1. Describes the characteristics of a given set of data

2. Inferential

1. Use the sample to make inferences about the full population



(Urdan, 2005)



Common Statistical Analyses - Descriptive

1. Frequencies
2. Measures of Central Tendency

5, 4, 5, 3, 2, 1

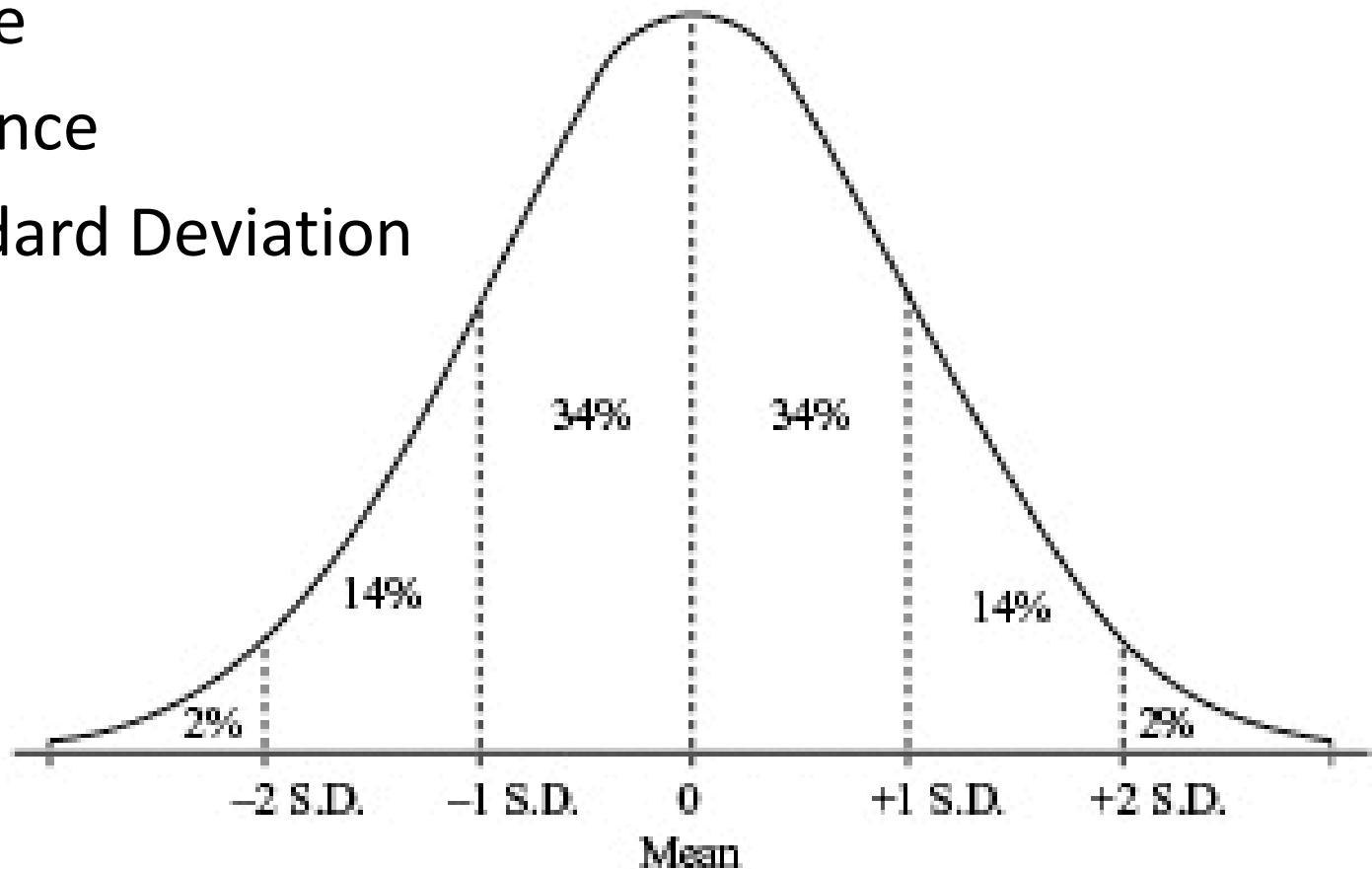
Mean	Median	Mode
3.33	3.5	5



Common Statistical Analyses - Descriptive

1. Measures of Variability

1. Range
2. Variance
3. Standard Deviation



Qualtrics Examples



Inferential Statistics

1. Statistical significance
2. Effect size
3. Confidence intervals

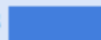







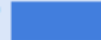













NSSE Results

Summary of Indicator Items

Quality of Interactions

Percentage rating a 6 or 7 on a scale from 1="Poor" to 7="Excellent" their interactions with...

	NSSEville State	GLC Peers	Private Master's S	NSSE 2014 & 2015
13a. Students	68 	61 	59 	58 
13b. Academic advisors	56 	53 	55 	49 
13c. Faculty	67 	58 	56 	50 
13d. Student services staff (career services, student activities, housing, etc.)	55 	47 	48 	44 
13e. Other administrative staff and offices (registrar, financial aid, etc.)	52 	47 	48 	41 

Supportive Environment

Percentage responding "Very much" or "Quite a bit" about how much the institution emphasized...

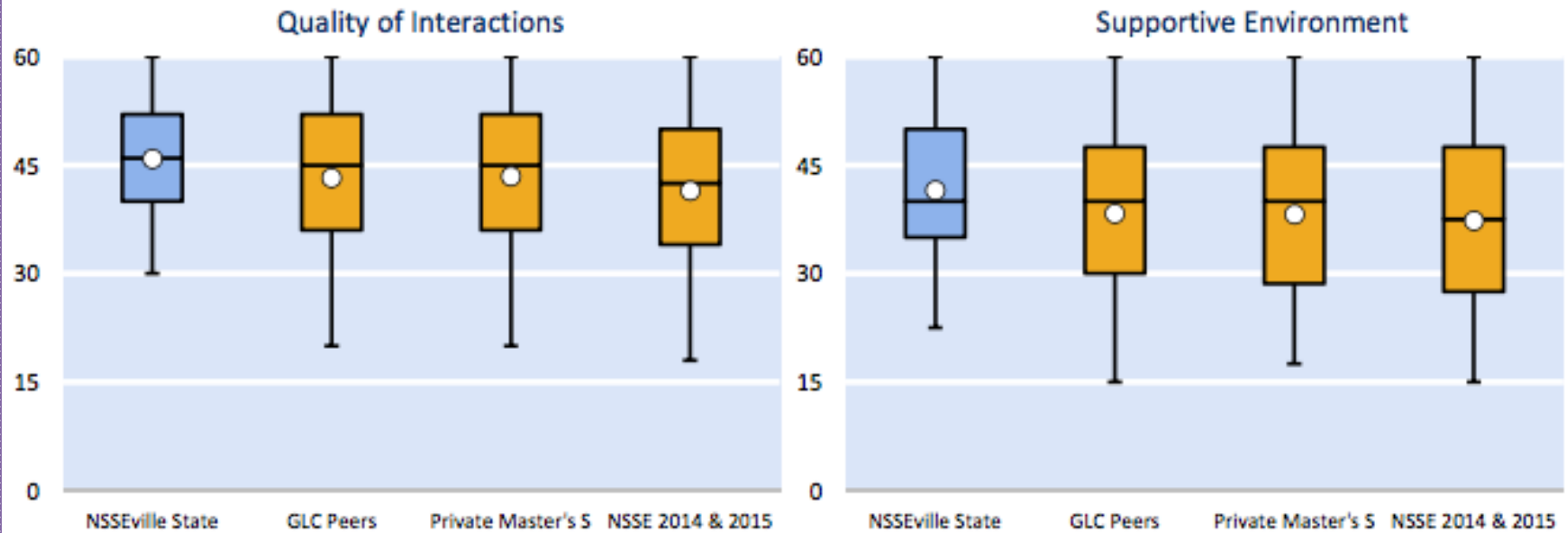
14b. Providing support to help students succeed academically	87 	81 	83 	77 
14c. Using learning support services (tutoring services, writing center, etc.)	85 	80 	81 	78 
14d. Encouraging contact among students from diff. backgrounds (soc., racial/eth., relig., etc.)	68 	63 	60 	60 
14e. Providing opportunities to be involved socially	85 	75 	75 	73 
14f. Providing support for your overall well-being (recreation, health care, counseling, etc.)	79 	72 	71 	72 
14g. Helping you manage your non-academic responsibilities (work, family, etc.)	43 	45 	45 	45 
14h. Attending campus activities and events (performing arts, athletic events, etc.)	79 	69 	69 	67 
14i. Attending events that address important social, economic, or political issues	74 	56 	53 	53 

Notes: Refer to your *Frequencies and Statistical Comparisons* report for full distributions and significance tests. Item numbering corresponds to the survey facsimile included in your *Institutional Report* and available on the NSSE website.



NSSE Results

Score Distributions



Notes: Each box-and-whiskers chart plots the 5th (bottom of lower bar), 25th (bottom of box), 50th (middle line), 75th (top of box), and 95th (top of upper bar) percentile scores. The dot represents the mean score. Refer to Detailed Statistics for your institution's sample sizes.



NSSE Results

Mean Comparisons

<i>Engagement Indicator</i>	NSSEville State <i>Mean</i>	<i>Your first-year students compared with</i>					
		GLC Peers		Private Master's S		NSSE 2014 & 2015	
		<i>Mean</i>	<i>Effect size</i>	<i>Mean</i>	<i>Effect size</i>	<i>Mean</i>	<i>Effect size</i>
Quality of Interactions	45.8	43.2 ***	.22	43.4 ***	.21	41.5 ***	.35
Supportive Environment	41.5	38.3 ***	.24	38.2 ***	.25	37.3 ***	.30

Notes: Results weighted by institution-reported sex and enrollment status (and institution size for comparison groups); Effect size: Mean difference divided by pooled standard deviation; Symbols on the Overview page are based on effect size and *p* before rounding; **p* < .05, ***p* < .01, ****p* < .001 (2-tailed).



Qual or Quant?

1. Career Aspirations and the First Generation Student: Unraveling the Layers with Social Cognitive Career Theory.

1. Do differences exist in career-related parental support, college self-efficacy, college outcomes expectations, expected degree attainment, perceived career barriers, and coping efficacy for barriers depending on students' generation status, ethnicity, or social class?



Qual or Quant?

1. Postsecondary Strengths, Challenges, and Supports Experienced by Foster Care Alumni College Graduates.

1. What strengths and supports do foster care alumni draw upon to succeed in college?
2. What challenges do foster care alumni face during college?
3. What are some of the keys to overcoming these challenges?



IRB Approval?

1. Is your project considered research?
2. Harm or discomfort?
3. Target underrepresented population?
4. Report illicit or illegal behavior?
5. Receiving funding from federal or state government?
6. Departmental, institutional, federal, or state government require IRB approval?



Data Security

1. Login password and sleep when unattended
2. Use the eduroam network
3. Remove identifying information
4. Password protect files with identifying information
5. Remove old data files
6. Turn your computer off when you leave for the day
7. Keep confidential materials in a locked cabinet
8. Never share your login information.



References

Creswell, J. W. (1994). *Research design: qualitative and quantitative approaches*. Thousand Oaks, CA: Sage Publications.

Suskie, L. (2009). *Assessing student learning: A common sense guide*. San Francisco, CA: Jossey-Bass.

Urduan, T. C. (2005). *Statistics in plain english*. Mahway, NJ. Lawrence Erlbaum Associates.

