

Program Evaluation Through Alignment of Student Perceptions, Outcomes Assessment, and Faculty Perceptions in an Undergraduate Statistics Major

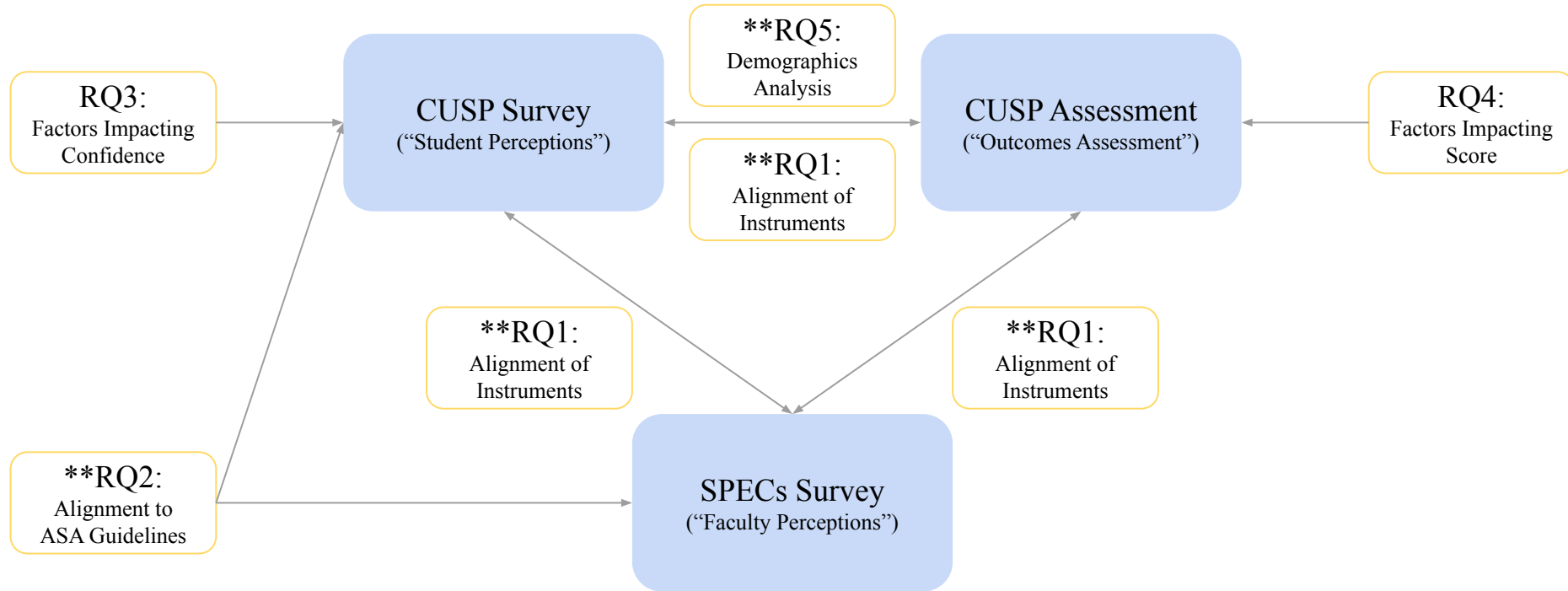


Presented by Alyssa Hu (awh70@psu.edu)

Co-authored with Dr. Matthew Beckman and Dr. Dennis Pearl

USCOTS 2021

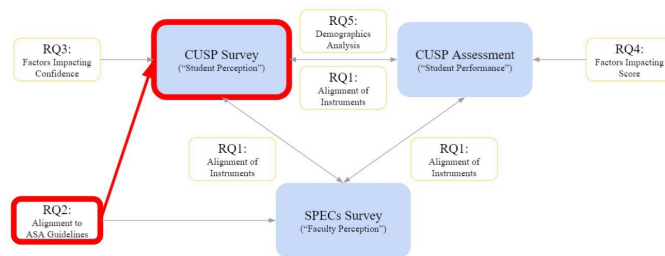
Overview



CUSP = Comprehensive Undergraduate Statistics Program; SPECs = Statistics Program Emphases and Contents

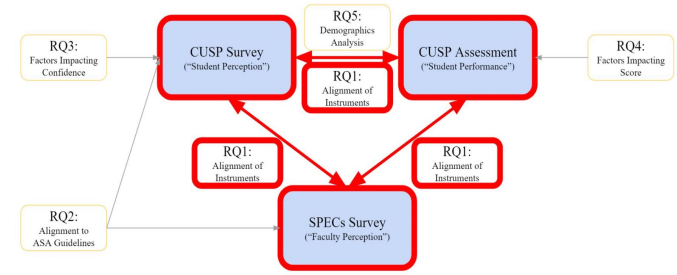
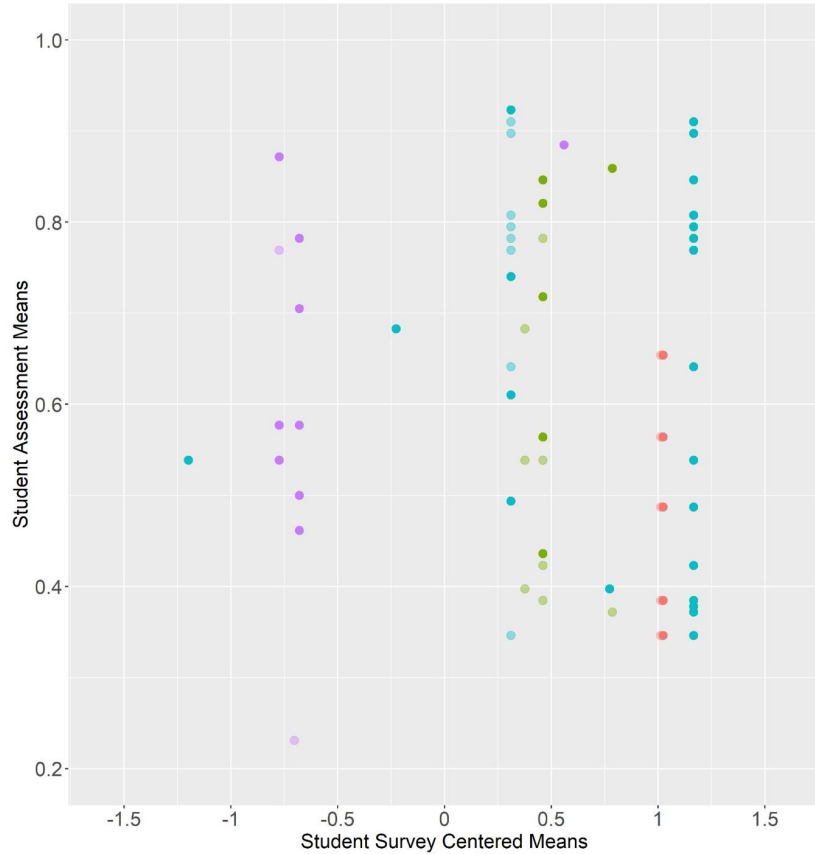
Exploratory Factor Analysis

Factor	Loadings > 0.5 [Subsection (Number of Topics)]
ML1	<p>Statistical Practice entire section:</p> <ul style="list-style-type: none"> Communication (6/6 topics) Collaboration (3/3 topics) Ethical Issues (4/4 topics) <p>Problem Solving entire section:</p> <ul style="list-style-type: none"> Complex Open-Ended Problems (2/2 topics) Scientific Method and Statistical Problem-Solving Cycle (7/7 topics)
ML2	<ul style="list-style-type: none"> Computationally Intensive Statistical Methods (4/4 topics) Statistical Models (9/15 topics) Exploratory Data Analysis (3/5 topics) Design of Studies (2/10 topics) Statistical Theory (1/7 topics)
ML3	<p>Mathematical Foundations entire section:</p> <ul style="list-style-type: none"> Calculus (2/2 topics) Linear Algebra (5/5 topics) Probability (3/3 topics) Connections between Mathematical Foundations and Applications in Statistics (1/1 topics)
ML4	<ul style="list-style-type: none"> Design of Studies (8/10 topics) Statistical Theory (1/7 topics)
ML5	<ul style="list-style-type: none"> Programming Concepts (5/5 topics) Accessing and Manipulating Data (2/5 topics) Software & Tools (1/2 topics)

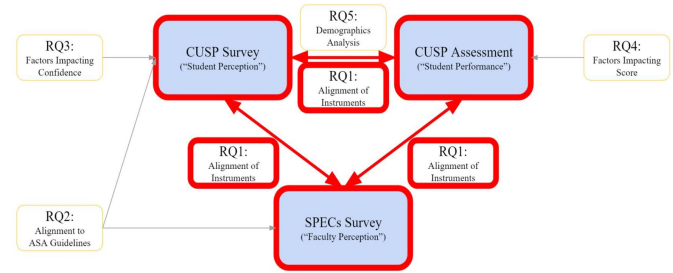


Alignment of Instruments

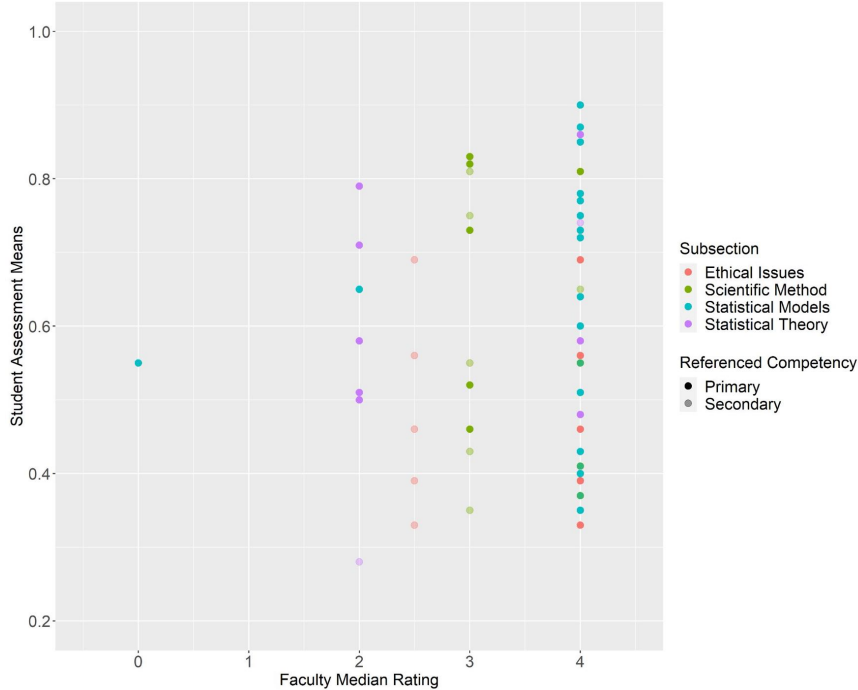
Student Assessment Means vs Student Survey Centered Means



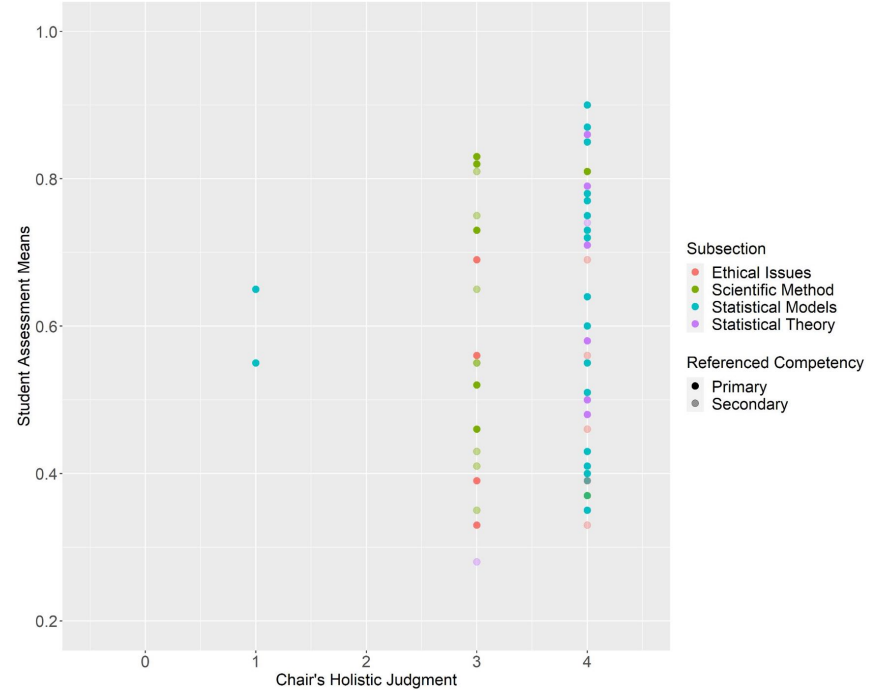
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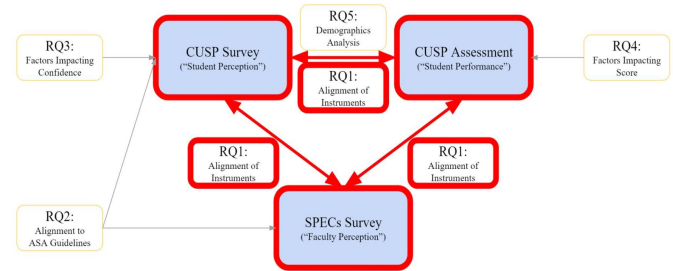
Student Assessment Means vs Faculty Median Rating



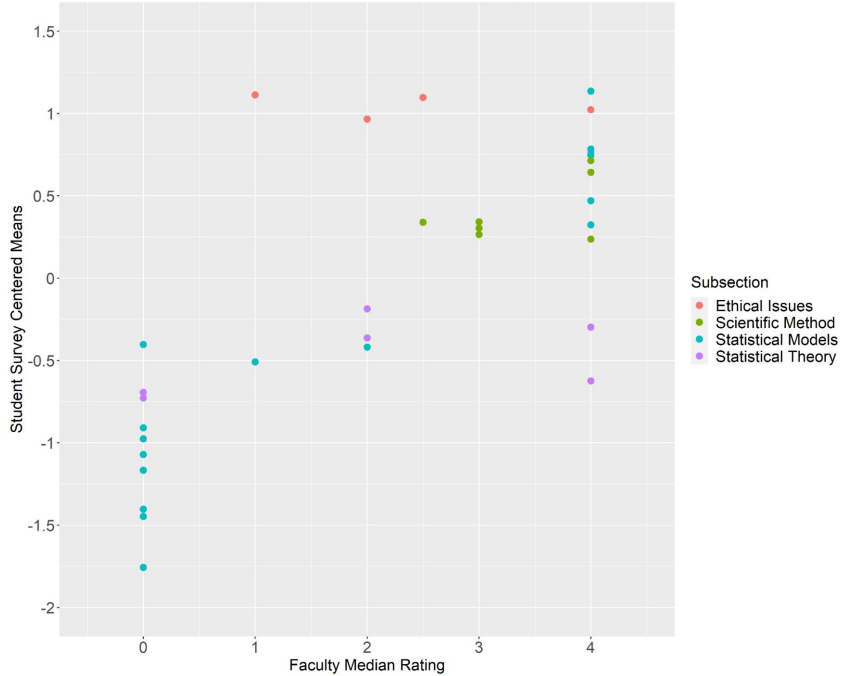
Student Assessment Means vs Chair's Holistic Judgment



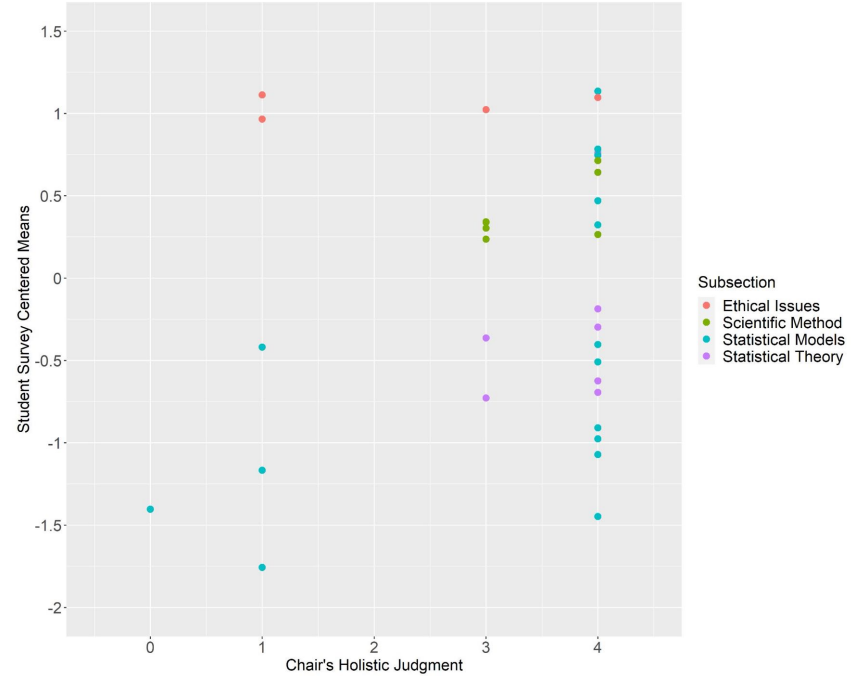
Alignment of Instruments



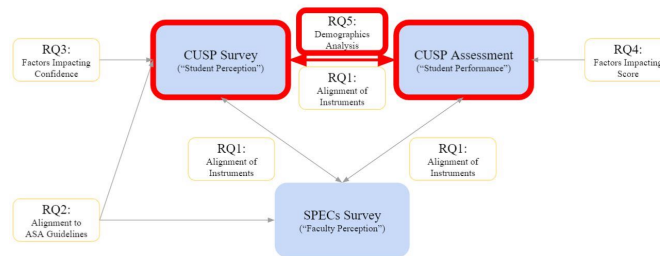
Student Survey Centered Means vs Faculty Median Rating



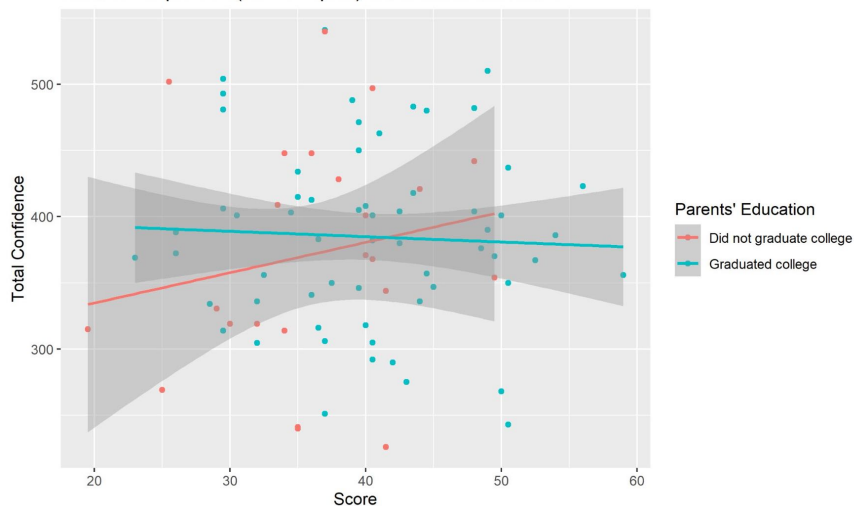
Student Survey Centered Means vs Chair's Holistic Judgment



Demographics Analysis

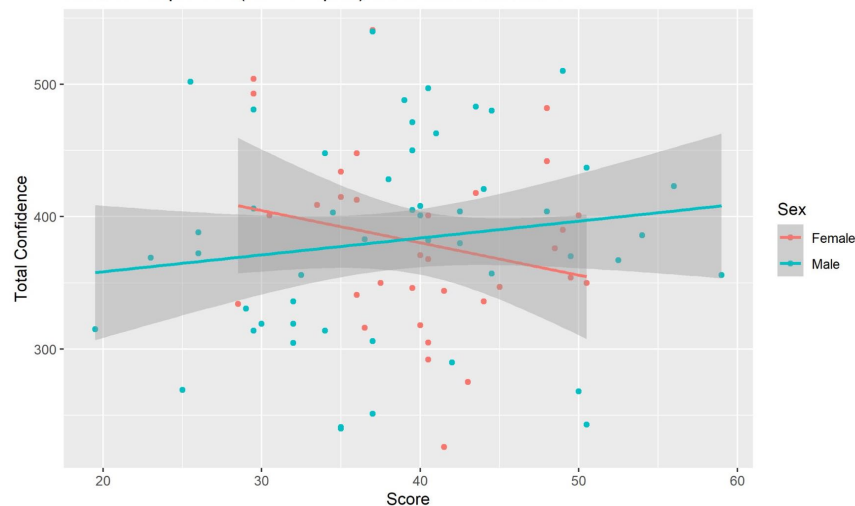


Sum of Responses (All 86 Topics) vs Assessment Score



Parents' Education (Grouped)	Correlation	CI
Did not graduate college	0.190	(-0.241, 0.559)
Graduated college	-0.048	(-0.296, 0.207)

Sum of Responses (All 86 Topics) vs Assessment Score



Sex of Student	Correlation	CI
Male	0.149	(-0.132, 0.407)
Female	-0.224	(-0.527, 0.129)

Thank You!

Feel free to contact Alyssa Hu (awh70@psu.edu) if you have any questions.

Reference for CUSP Instruments:

[Capstone assessment for the undergraduate statistics major](#)
