Assessment of CCSU General Education Learning Objectives/Outcomes (LO):
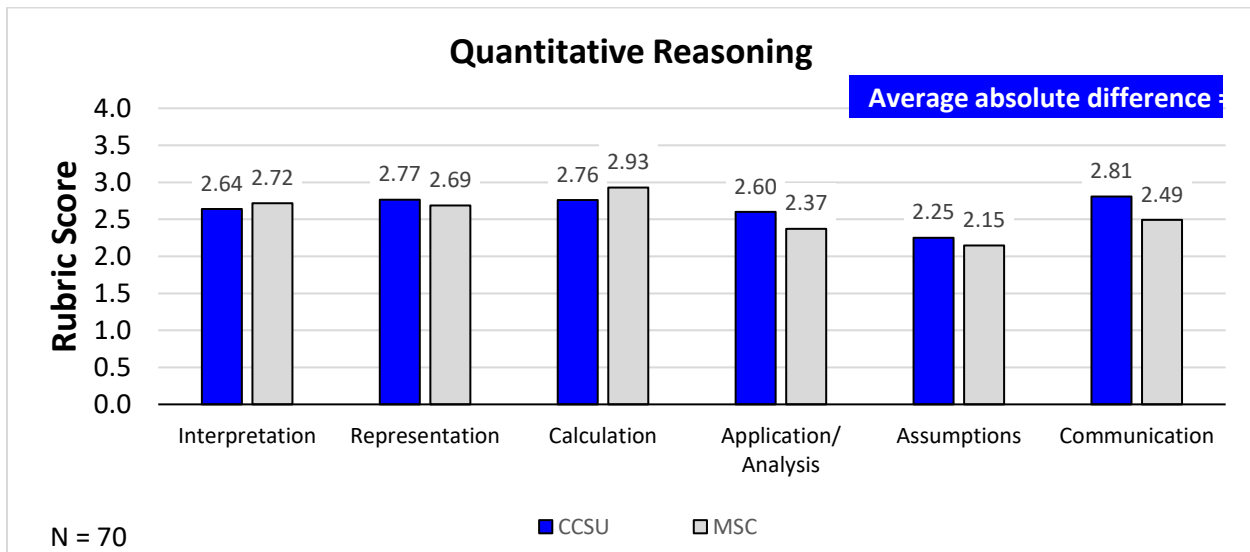
Quantitative Reasoning (LO#6)

A complete report on our institution-wide General Education Assessment efforts is available here.

Partnering with the Multi-State Collaborative (MSC) for General Education Assessment

Pilot Year Data (2014-2015: Year 1)

In the 2014-15 pilot year of CCSU's General Education Assessment of Learning Objectives/Outcomes, student artifacts assessing Quantitative Reasoning (LO#6) were collected by CCSU and assessed by both CCSU Faculty and MSC Faculty.

As reported in Figure 1 below, data clearly indicated areas of strength and weakness. In Quantitative Reasoning, student performance in *Calculation* and *Representation* ranked highest among the criteria/dimensions with students' ability to *Apply/Analyze* data and make and evaluate *Assumptions* scoring lowest.

Figure 1. Multi-State Collaborative 2014-15 (Year 1) LO#6: Quantitative Reasoning. (Same artifact scored by CCSU Faculty and MSC Faculty, zeros excluded)

Post-Pilot Data (2015-16 and 2016-17, Years 2 and 3)

Beyond the 2014-2015 pilot year, student artifacts addressing Quantitative Reasoning (LO#6) continue to be collected and assessed.

<u>Quantitative Reasoning (Seniors)</u>

Nationally, CCSU Seniors' average in Quantitative Reasoning was higher with an overall score of 2.6 compared to the national score of 2.1 and 2.3, respectively. As reported in Table 1 and

Figure 2 below, our students are particularly skilled at *Representing* mathematical forms (e.g., graphs, tables, equations, etc.), interpreting quantitative information *(Interpretation),* and successfully and comprehensively performing *Calculations*. However, our students exhibit greater difficulty effectively connecting quantitative evidence to an argument (*Communication*) and making/evaluating important *Assumptions* in estimation, modeling, and data analysis. With the exception of the *Communication* dimension, CCSU seniors exceed national averages. We should note that the low score in *Assumptions* may be related to artifacts not aligning well with the rubric. Even at the national level, scoring *Assumptions* is challenging. Nevertheless, the parallels between expressing assumptions in quantitative reasoning and more generally in critical thinking warrant further exploration.

Table 1. CCSU Faculty Scoring Quantitative Reasoning Artifacts from CCSU Seniors vs. National MSC Results

Quantitative Reasoning	Application/Analysis		Assumptions		Calculation		Communication		Interpretation		Representation		Overall Avg
	N	Avg	N	Avg	N	Avg	N	Avg	N	Avg	N	Avg	
Seniors only	**179**	**2.6**	**84**	**2.0**	**189**	**2.9**	**165**	**2.1**	**179**	**2.7**	**160**	**3.0**	**2.6**
Retreat 1	69	2.6	69	2.1	78	2.8	78	2.7	69	2.6	69	2.8	2.6
Retreat 2	46	2.7	15	1.4	48	3.1	29	1.9	46	2.8	46	3.1	2.7
Retreat 3	64	2.6			63	2.9	58	1.5	64	2.8	45	3.2	2.6
Nat'l - 2016	2.2		1.5		2.3		2.3		2.4		2.3		2.1
Nat'l - 2015	2.4		1.7		2.6		2.5		2.5		2.4		2.3

Figure 2. CCSU Faculty Scoring Quantitative Reasoning Artifacts, CCSU Assessment Retreats 1, 2 & 3