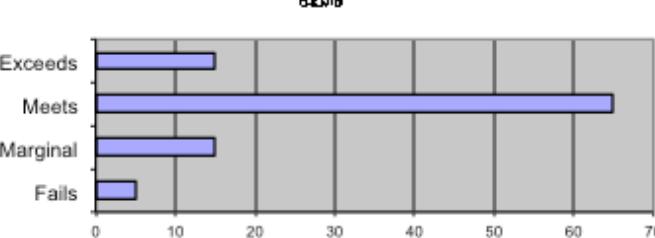
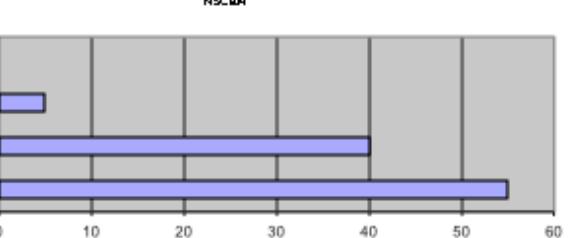
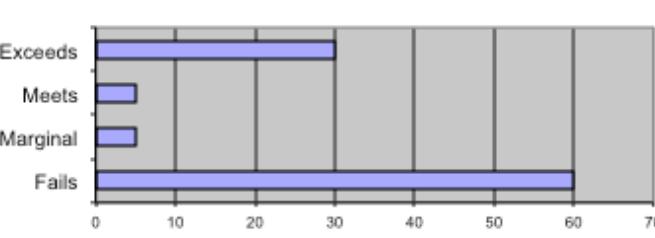
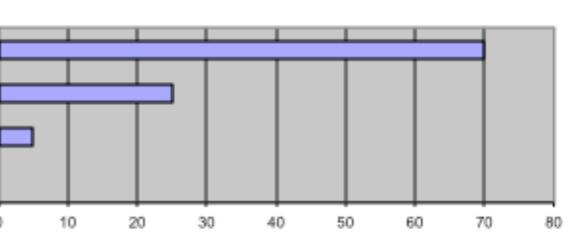


SESSION 4: ANALYZING AND INTERPRETING DATA

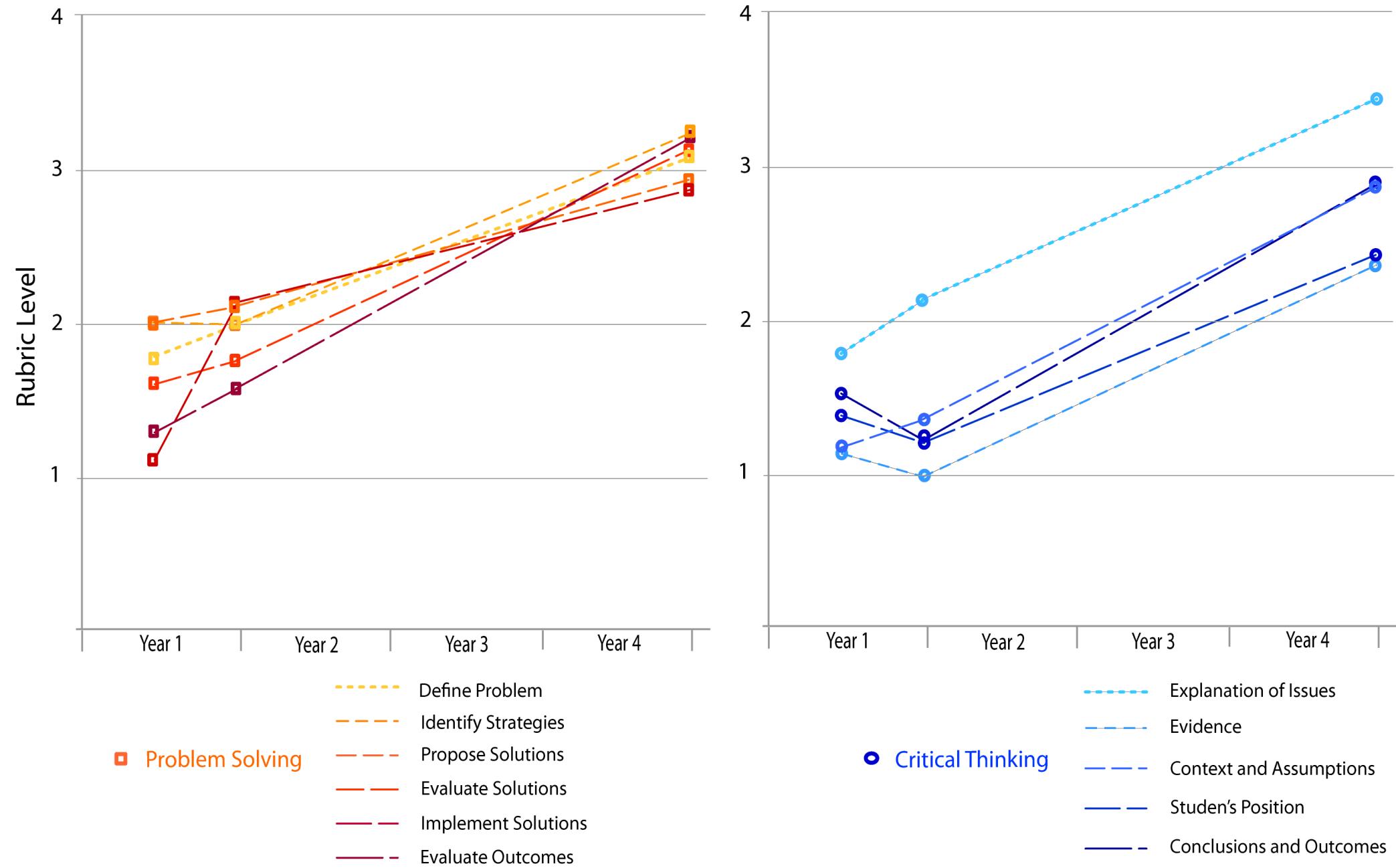
CEAB reporting requirement

Table 3.1.4: Examples of Assessment Results		Results (add more columns as required)			
Graduate Attribute	Indicator	QHND		NSC004	
Knowledge base	<i>Recalls and describes fundamental concepts in chemistry</i>	Exceeds		Exceeds	
Problem analysis	<i>Creates process for solving problem including approximations and assumptions</i>	Exceeds		Exceeds	

Approaches to Analyzing data

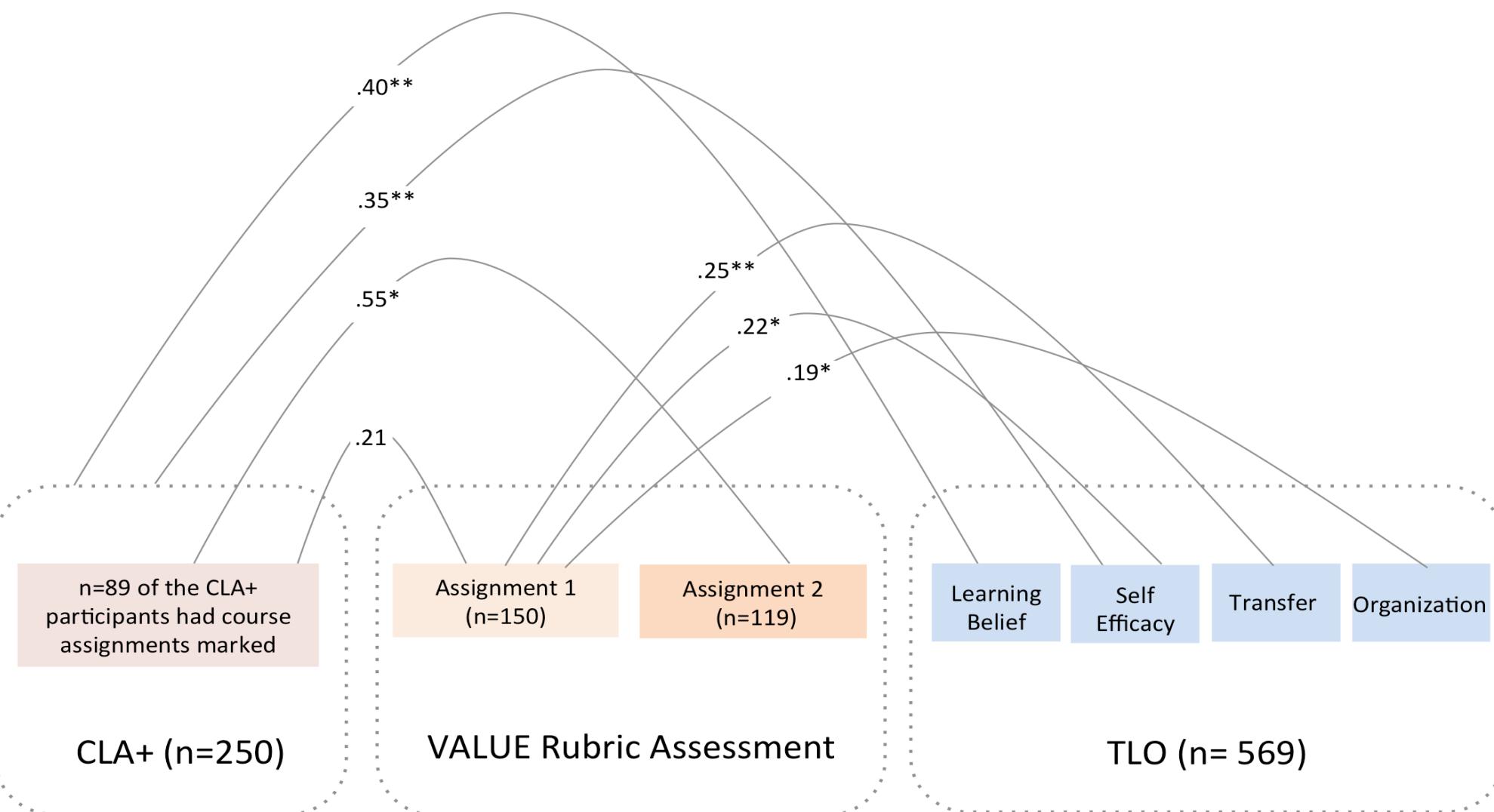
- Look at data by indicator/attribute
- Aggregate indicators and plot
- Cross sectional comparison (e.g. 1st vs 4th year)
- Compare correlation between measured of the same indicator (reliability)
- Longitudinal
- Compare between institutions
- Compare special programs within institutions

Student development



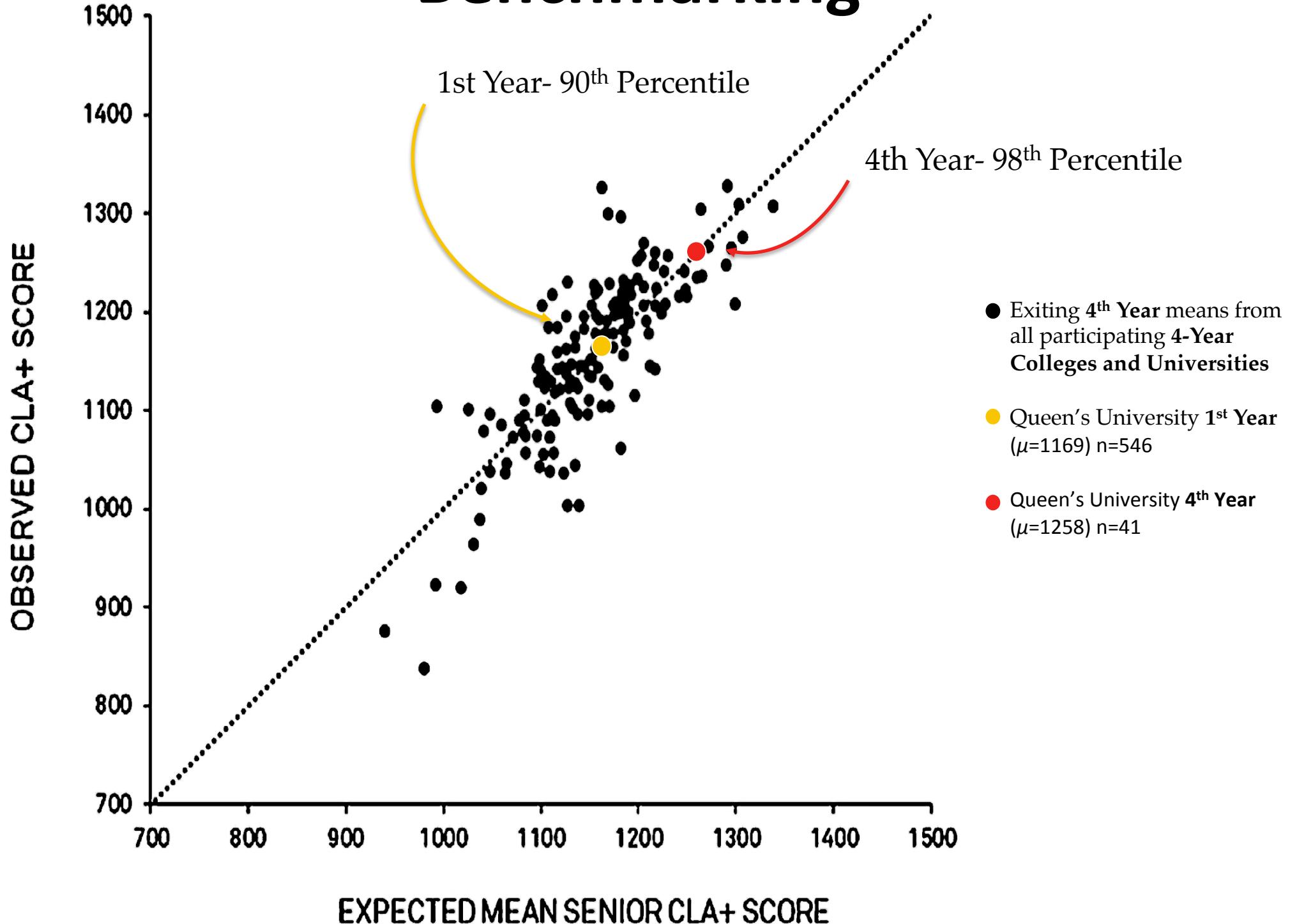
Can we trust our data? Triangulation

Relationship Between Critical Thinking/ Problem Solving/ Written communication (CLA+ and VALUE Rubric assessment) and Learning Orientations (TLO) in First Year Engineering

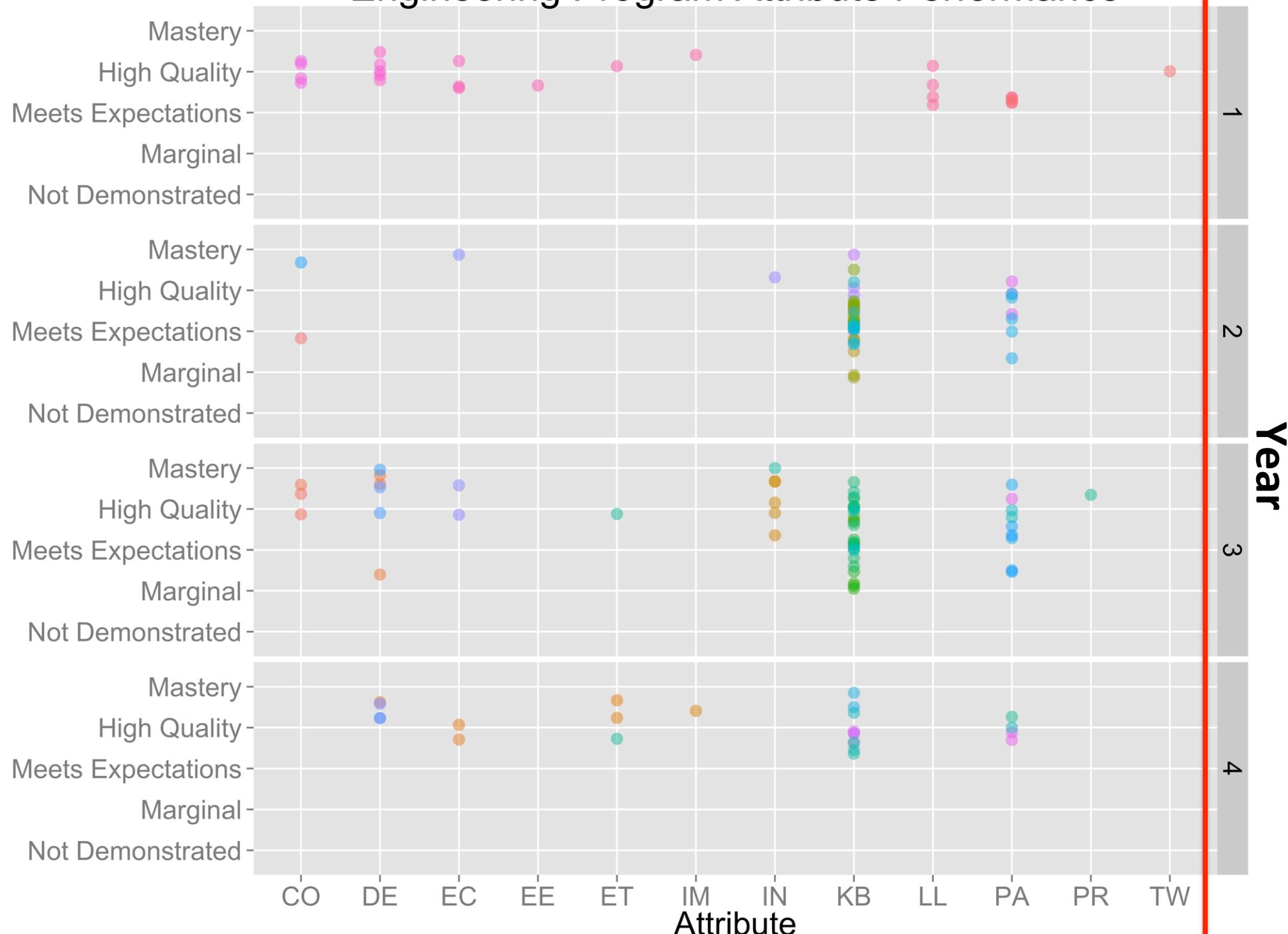


Note: ** $p < .01$, * $p < .05$

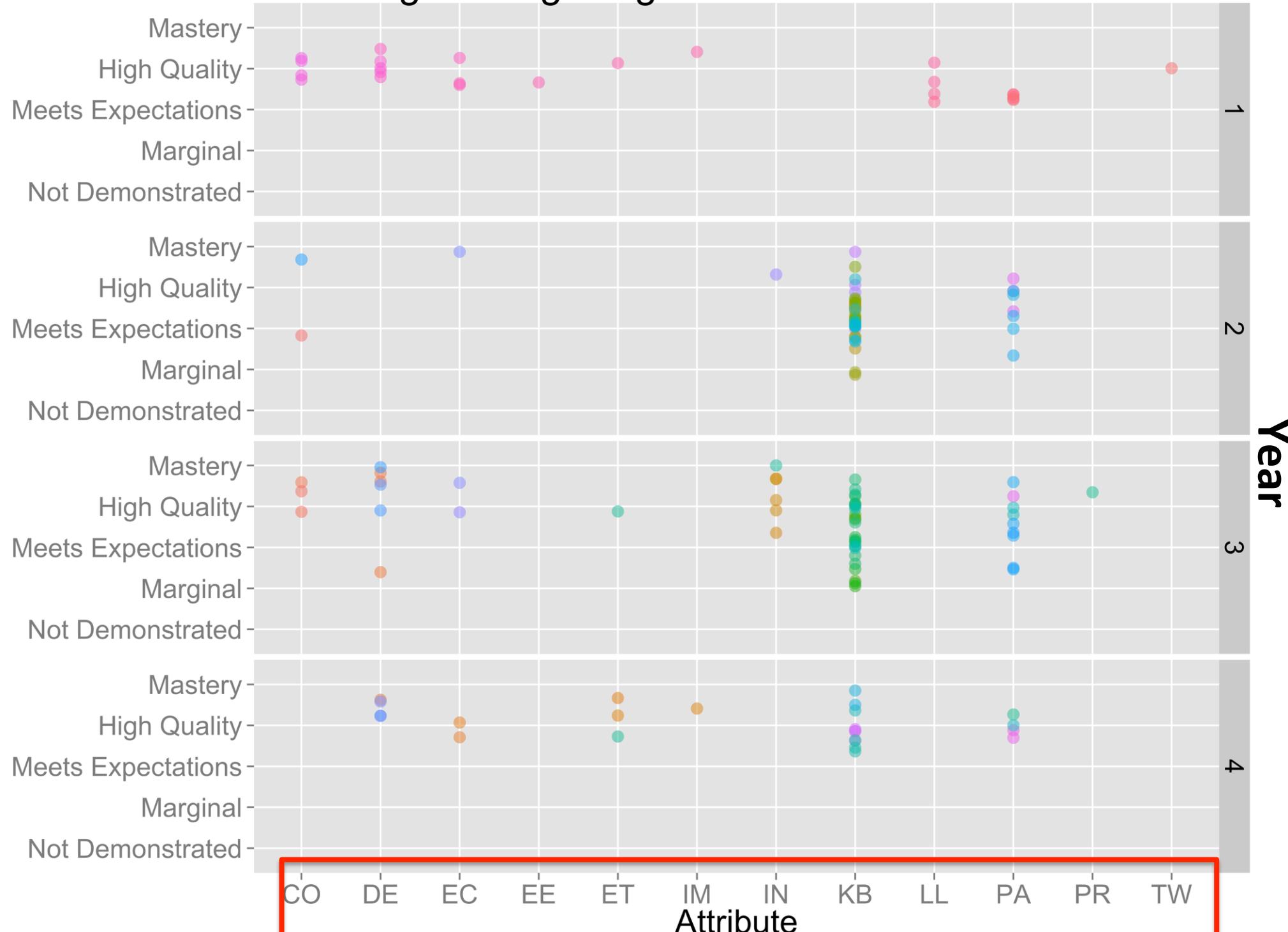
Benchmarking



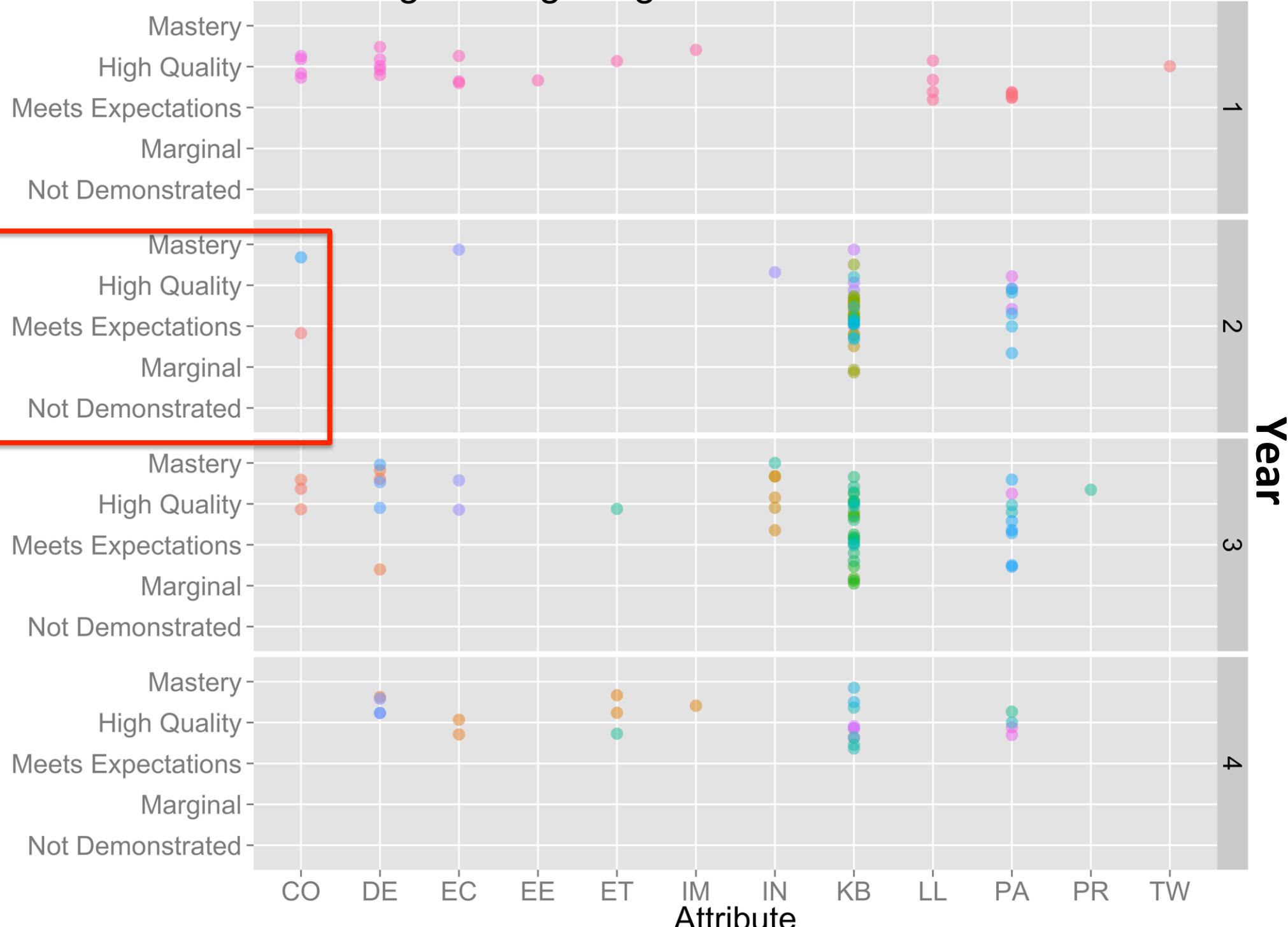
Engineering Program Attribute Performance



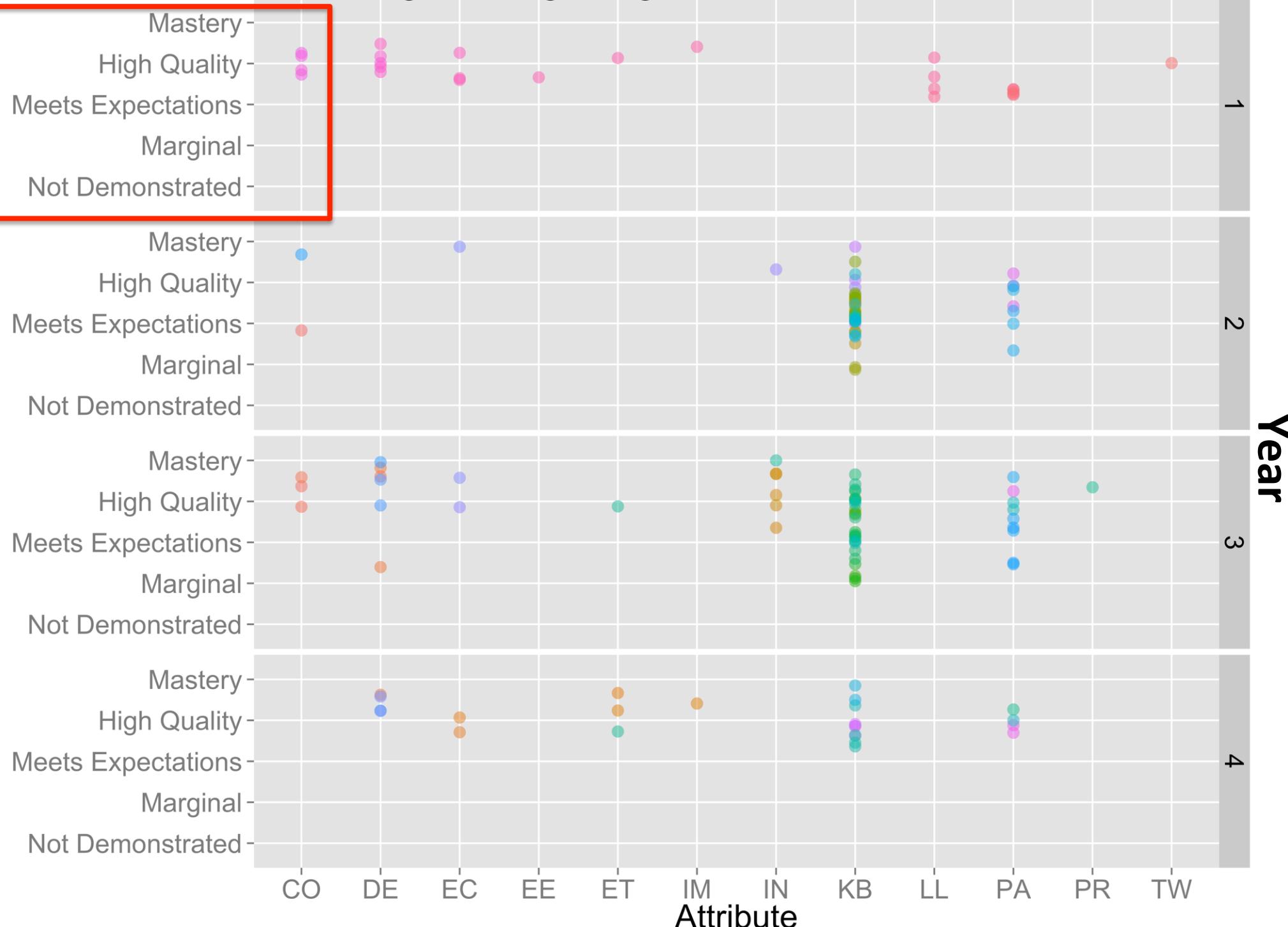
Engineering Program Attribute Performance



Engineering Program Attribute Performance



Engineering Program Attribute Performance





EGAD Project

Continuous Improvement Case Study

Data sources

- In-course assessment (exams, reports, etc.)
- Program wide assessment (e.g. common rubrics)
- Standardized tests (concept inventory, etc.)
- Surveys: NSSE, exit surveys, alumni surveys
- Advisory board
- Retention/failure/withdrawal rates
- Research studies
- Employers
- Co-op/internship reports

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Case study context

All programs in an engineering faculty

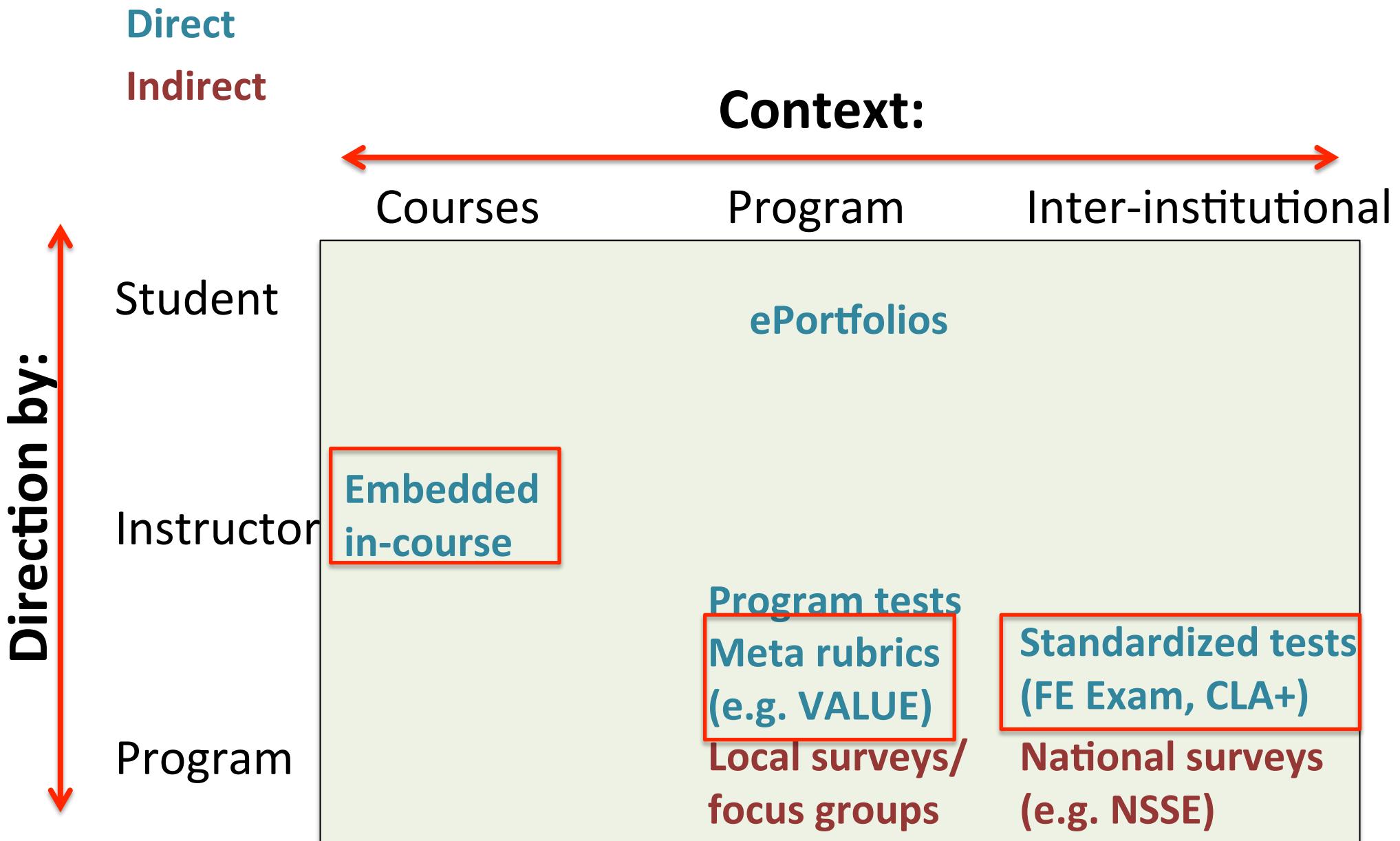
Drill down to first year design course

Attributes	Problem analysis Design Communication Lifelong learning
Assessment	<ol style="list-style-type: none">1. In-class assessment in first year design course2. Data from other courses3. Standardized test of critical thinking and writing of first and fourth year students4. Program-wide rubrics used to score first and fourth year design reports

Assessment in the study

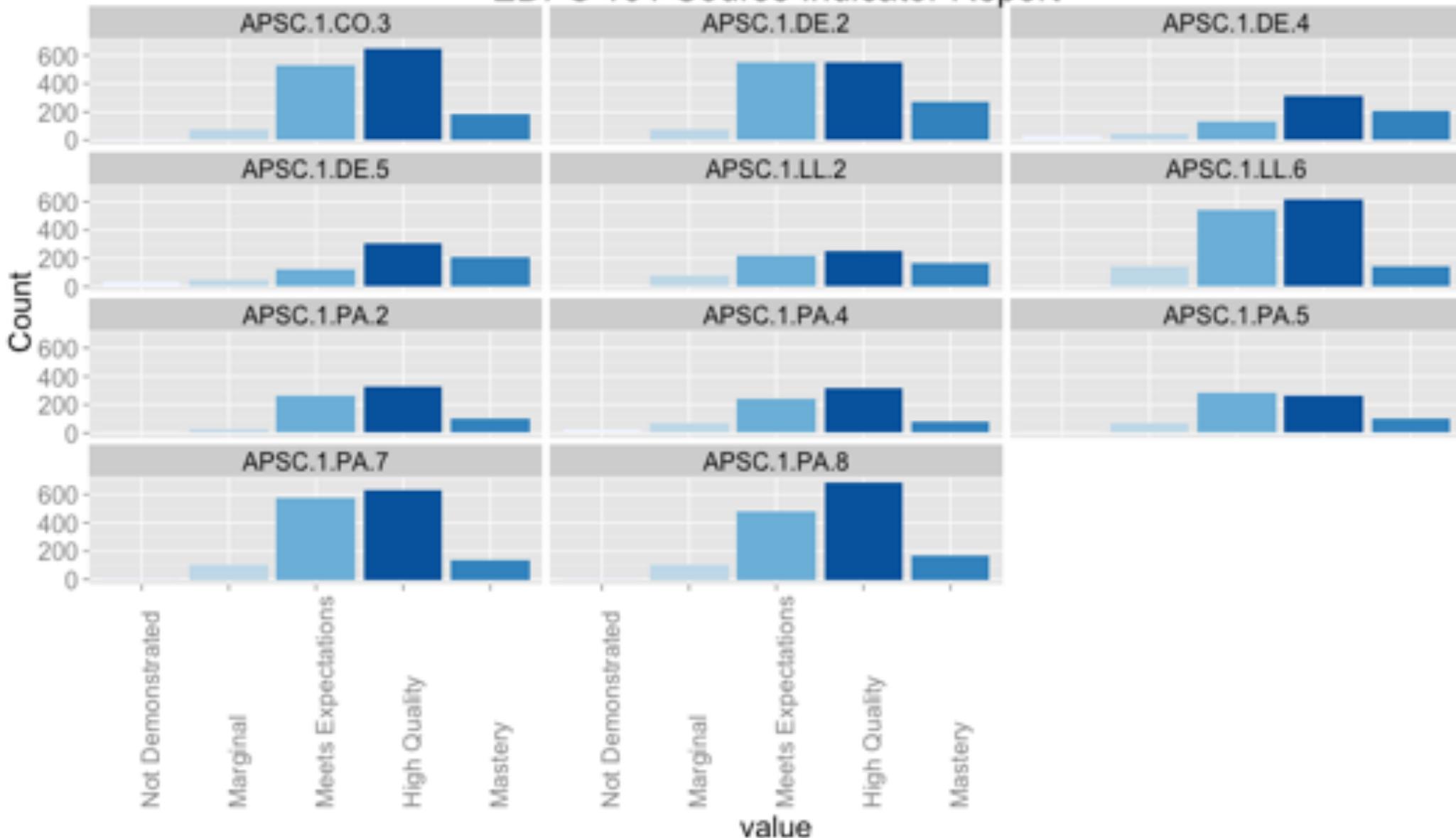
Attribute	Course level assessment	Program level assessment	
		Direct methods	Indirect methods
Problem analysis	Project 1 & 2	Standardized Instrument	Graduating student survey Faculty Survey
Design	Project 1 & 2	Standardized Instrument	Graduating student survey Faculty Survey
Communications	Project 1 & 2	Standardized Instrument Program-wide Rubric	NSEE Graduating student survey Faculty Survey
Lifelong learning	Project 1 & 2		NSEE Graduating student survey Faculty Survey

Programmatic assessment approaches



1. Course data

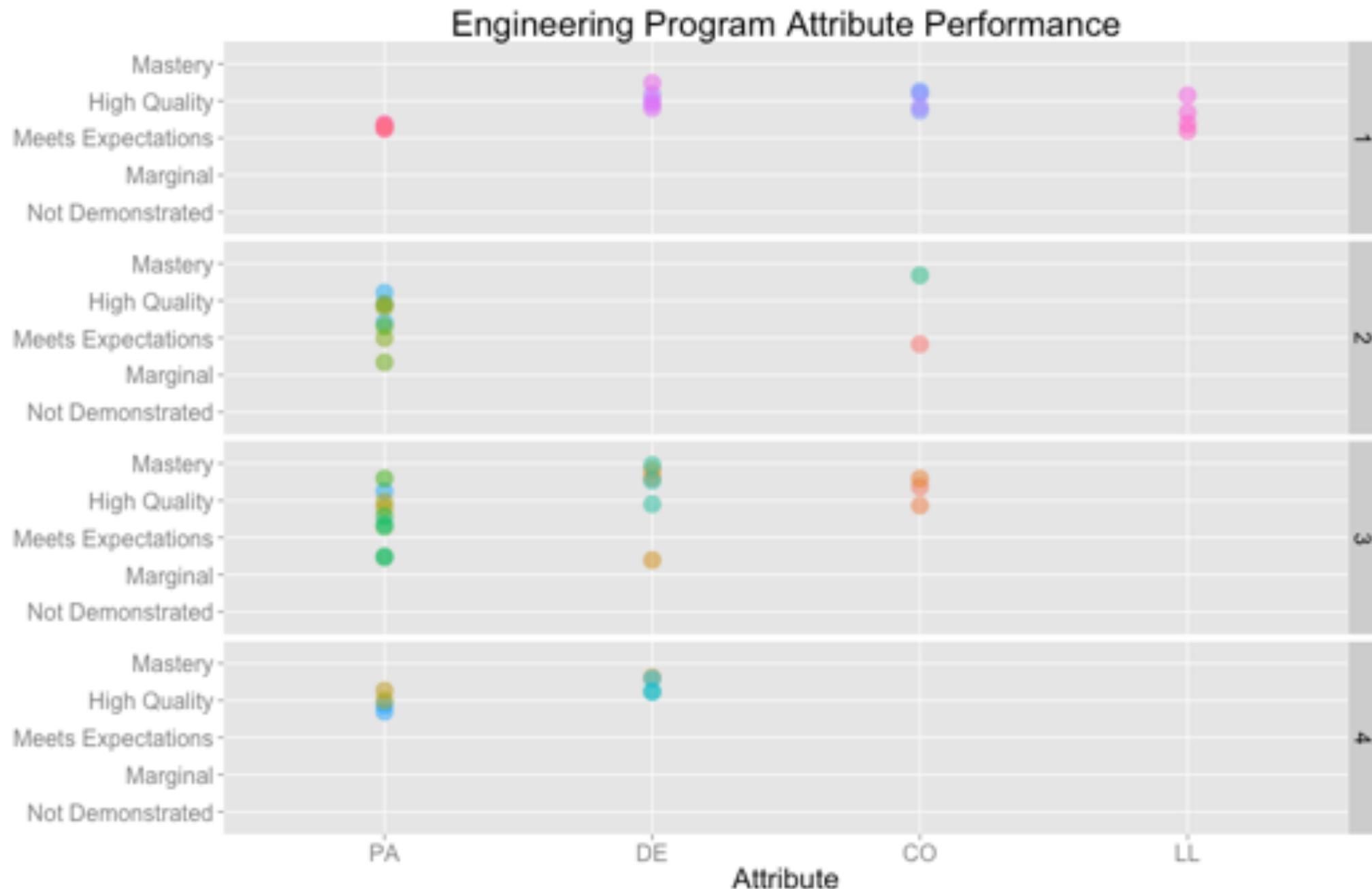
EDPS 101 Course Indicator Report



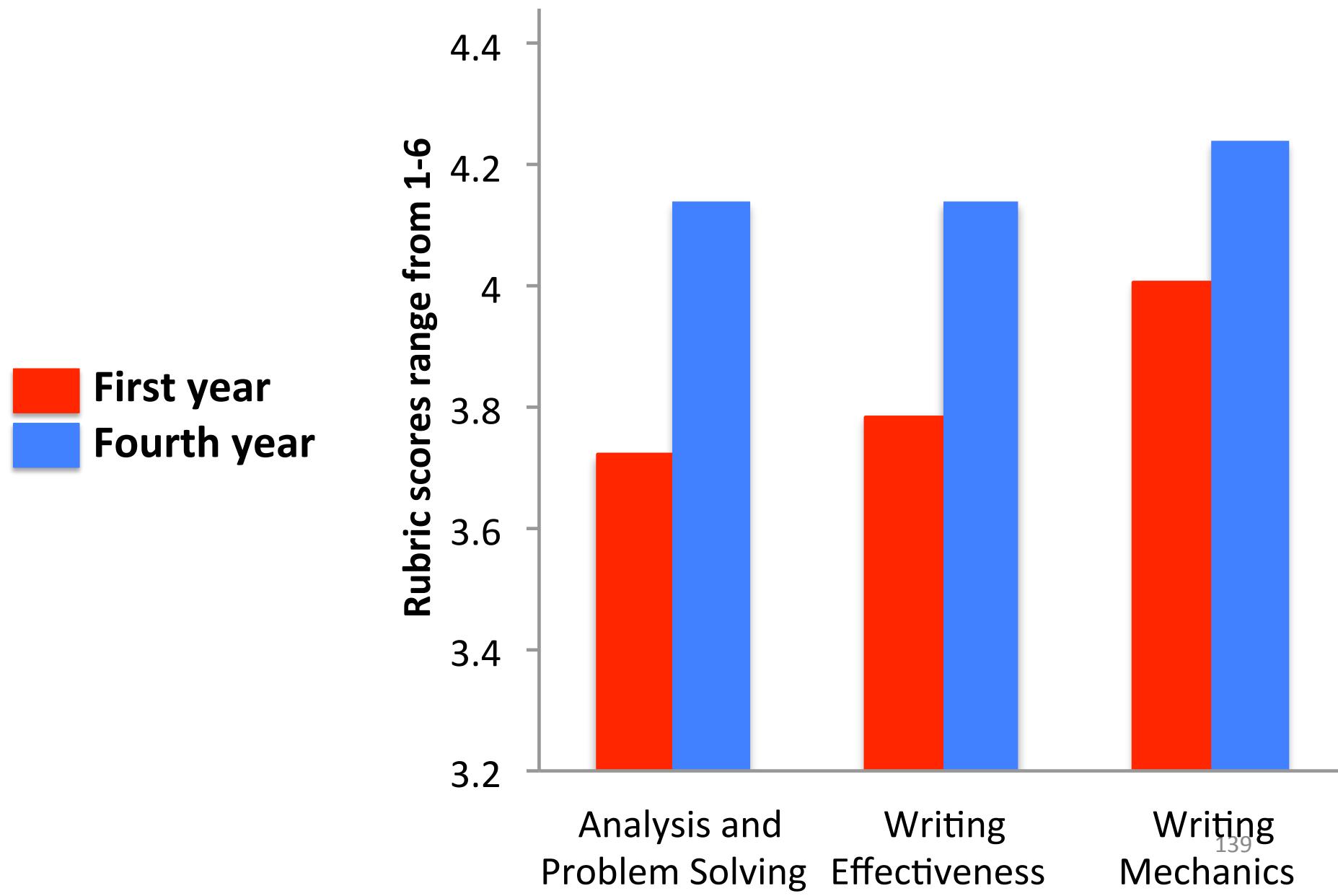
1. Course data over time



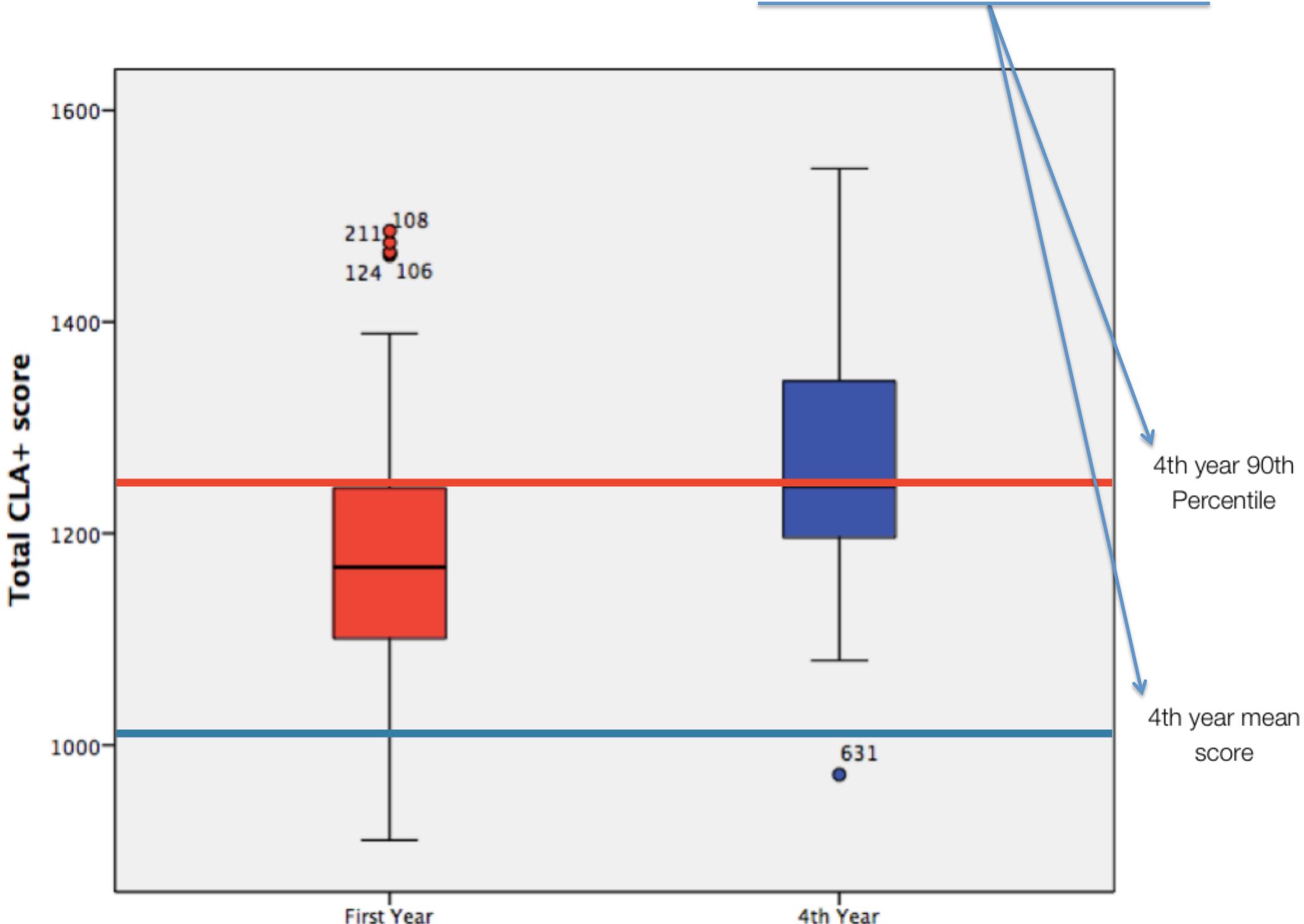
2. Data from 1st-4th yr courses



3. Standardized test of critical thinking and Communication (Collegiate Learning Assessment)

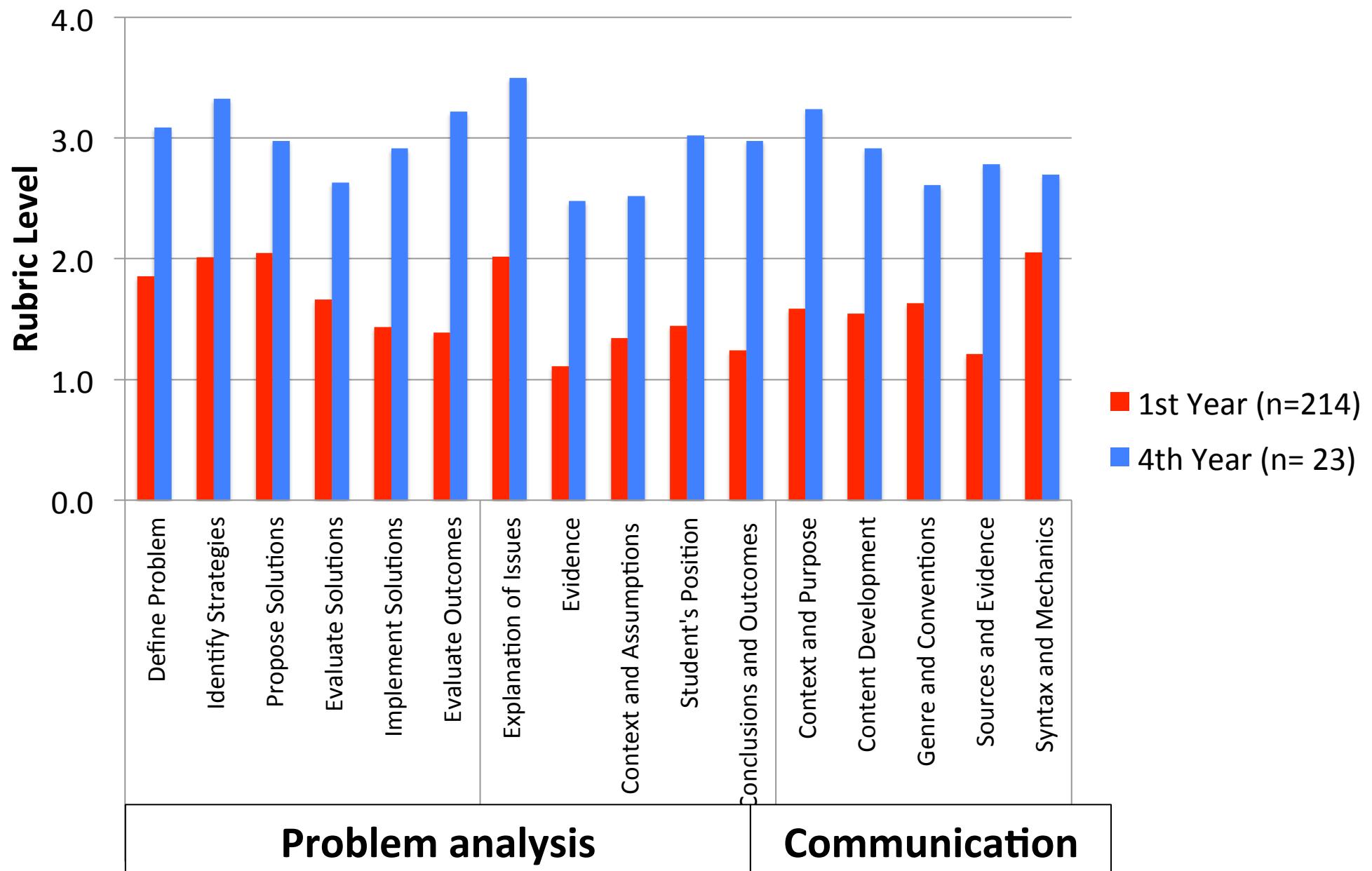


3. Standardized test results vs. other universities



4. Design reports scored using program-wide rubrics

VALUE Rubric Mean- Engineering 1st- 4th Year



TASK: Case study

DURATION: 60 MINUTES

Your team is the **curriculum committee** tasked with reviewing data from your program. Currently focusing on **problem analysis (PA)**, **design (DE)**, **communications (CO)**, **lifelong learning (LL)**.

1. Assess quality and quantity of data
2. Make recommendation to the course/program, and process.

Detailed instructions are in the case study on pg. 2

TASK: Case study

DURATION: 30 MINUTES

Phase 1: Review context (pages 3-6)

Phase 2: Break up the data between team members, for example:

- first year course assessment (pages 7-8)
- overall course-based program assessment (page 9)
- standardized instrument (pages 10-11)
- program-wide rubrics (page 12)

Phase 3: Address questions

1. Is there enough data, and do you trust it?
2. What improvements would you recommend to the course/program, and process?

PA=Problem analysis

DE=Design

CO=Communication

LL=Lifelong learning

TASK: Debrief case study

DURATION: 10 MINUTES

- 1. Do you think there is enough data present to make any decisions regarding course and program improvement, and do you trust the data? Why or Why not?**

- 2. Do you see any particular problems, areas of concern or weaknesses in the EDPS 101 course or the first year program, what data-informed improvements would you recommend to the course or first year program?**



Using assessment data for
program improvement

<http://bit.ly/EGADCU>

- Order of attributes, common format
- Definitions – what do acronyms mean
- What are expectations
- Interpreting too many plots, different formats
- What are targets in the plot
- CEAB – targets/thresholds
- Team vs individual – context
- Exam vs report, rubric – all the context in the same place as the plot
- Std deviation, p values between

Areas for improvement

- Problem analysis, specifically effective argumentation and self-evaluation. First year students are at least on par with students other programs in those areas, and considerably better than many other institutions. However, it is still an area of relative weakness.
- Communications: Communication skill development was weak in early iterations of the program first year. The program was overhauled, including greater clarity about written communication format, more frequent and rich feedback, and direct instruction. Syntax and mechanics better than sources and evidence. This is an area for development in future years.