

Using Your SET Data: Real Signals in the Noise

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PEARL SEMINAR SERIES
UNIVERSITY OF WINDSOR
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What we'll explore....

- Assessing the legitimacy of SET data – limits, cautions, myths and misperceptions
- How to get more and better insights from the SET data you already receive
- Simple ways to re-organize and view your SET data to get more out of them
- The kinds of questions you can ask about SET data that might help you with a path for better teaching
- Ways to tell your teaching story more effectively
- Basic cautions for how you can and can't use these data

Why Signal? Why Noise?

Signal

- a function that conveys information about the behaviour or attributes of some phenomenon
- a codified message

Noise

- undesirable random disturbance
- unwanted signals conflicting with the desired signal (such as crosstalk)

Crosstalk

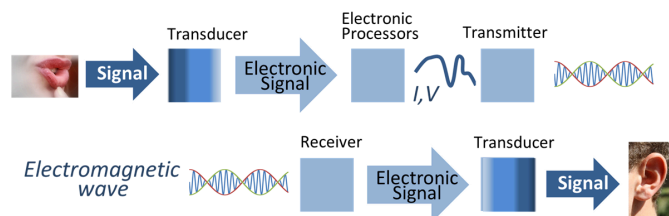
- a signal leaking from one channel, creating an undesired effect in another channel

R. Priemer (1991). *Introductory Signal Processing*. World Scientific.

Signal and Noise as a Communication System

In a *communication system*, a *transmitter* encodes a *message* into a *signal*, which is carried to a *receiver* by the *communications channel*.

- A person speaks a message into a telephone. The telephone transmitter converts the sounds into an electrical voltage signal. The signal is transmitted to the receiving phone; at the receiver it is reconverted into sounds.



B. Ohare (2012). *Steps in a signal processing system*. CC-BY-SA-3.0

...so why would we expect their SET responses to be identical?

Why Signal? Why Noise?

The SET captures the variety of experience in your classroom.

The **distribution** is very informative.

But some of the distribution is just 'background noise' and 'instrument error'.

Can we separate it?

Yes.

But maybe not the way you think.

But Signal and Noise is also:

Separating the results of legitimate, well-designed research from:

Bad research

Good research results, incorrectly reported

One limited-scope study that contradicts a large body of broader-scope, replicated, cross-tested, and corroborated studies

Statements that are accepted and repeated, but never tested

Anecdotes

Confirmation Bias

Defensive, self-protective reactions (your own or others)

Don't be "that person".



Perception Check: What Can Students Really Evaluate?

This is a list of 20 items often found on SET questionnaires.

1. Identify the ones you think students can LEGITIMATELY assess as “Y”.
2. Identify the ones you think students can NOT legitimately assess as “N”.
3. Identify the ones you are unsure about, or where you feel like the answer might be “it depends,” as “?”
4. Put a star (*) next to any that you think probably have very little to do with instructor effectiveness, even if it might be useful for another purpose.

You have **two** minutes. Go on your gut! If you’re not sure, put a “?” and move on.

Survey: What percentage of faculty believed each of these biases SET results?

Characteristic	% of Faculty (Marsh, 1987)	Fast Majority of Well-Designed Research Findings (Hativa, 2013)
Course difficulty	72%	no relationship
Grading leniency	68%	little or no relationship
Instructor popularity/rapport	63%	highly correlated, but not a bias – why are they popular?
Workload/course difficulty	60%	courses with a “good fit” appear to score highest – courses with lowest workloads tend to receive lower rather than higher ratings (Marsh and Roche, 2000).
Class size	60%	inconclusive so far – possibly curved at both ends
Elective/required	55%	slight
Student expected grade	53%	somewhat positive relationship
		little or no relationship

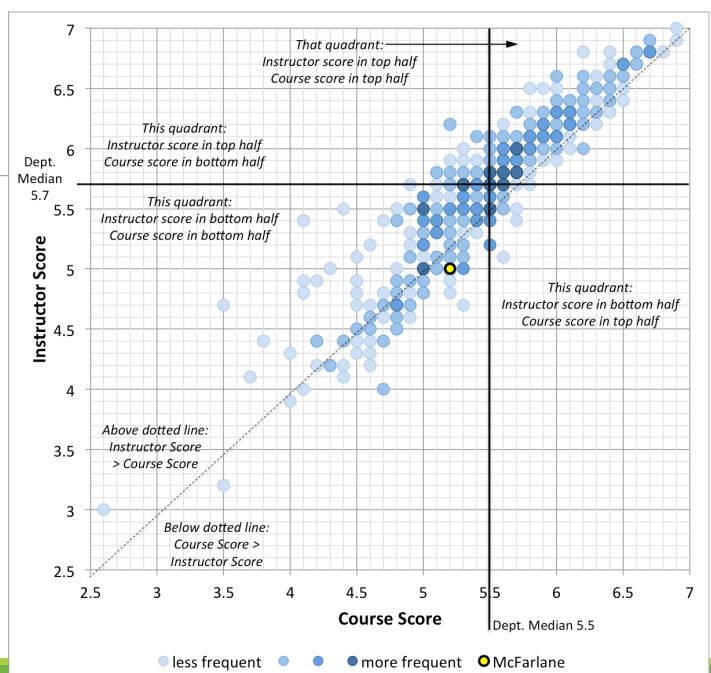
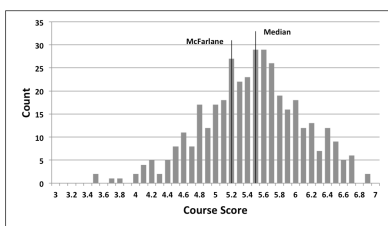
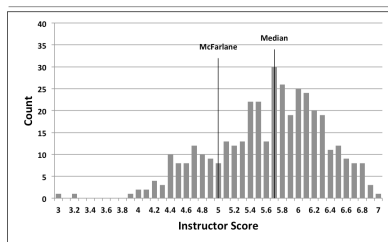
Other common beliefs

None of the following have been found by the preponderance of evidence to bias SET results:

- Academic rank
- Age
- Teaching experience
- Personal characteristics
- Research productivity
- Student age
- Student year in college
- Student personality
- Time of day the course is offered
- Race, ethnicity, nationality or other diversity issues

(Hativa 2013 a)

Departmental Context



Confirming your Claims

Prof. McFarlane teaches "A Survey of Venomous Arachnids".

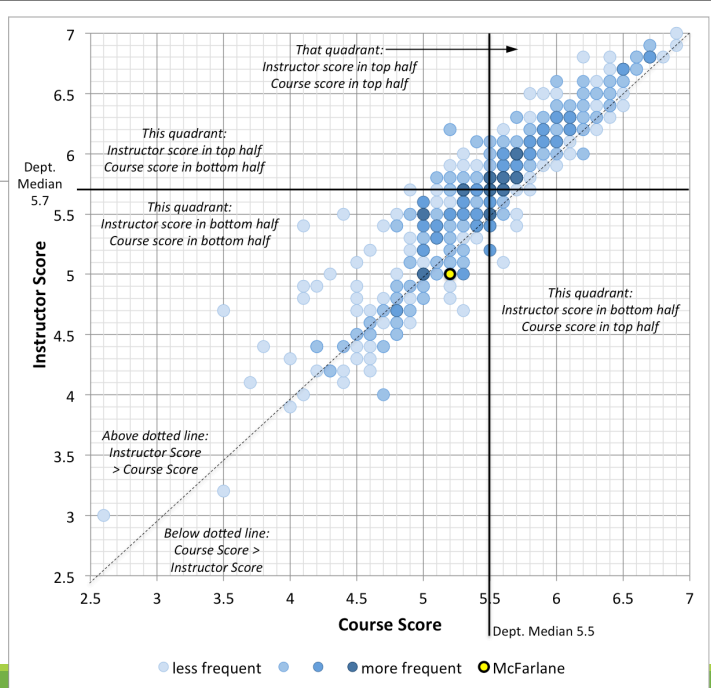
He gets an Instructor Score of 5.0 and a Course Score of 5.2, which spawns a discussion with his department head.

"It isn't amazing, but I think it's OK."

"Hmm.... remember when we looked at the departmental history in our Council meeting? Our mean was 5.7."

"Oh."

"Well.... it is a service course, and everyone in the department knows the service course scores are always low."



Norms for Context

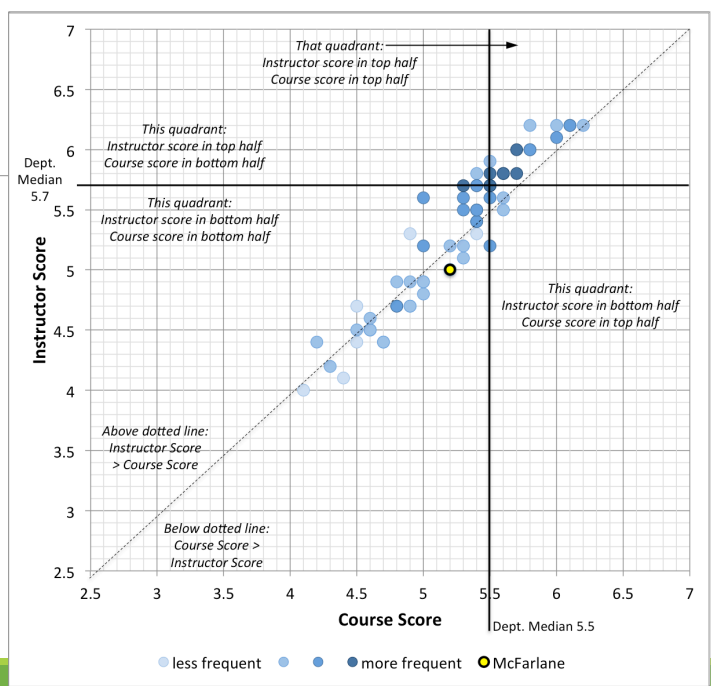
"Well.... it is a service course, and everyone in the department knows the service course scores are always low."

"OK, I've heard that too, but I've also heard that service course instructors always get high scores and an unfair advantage. Let's take a look at the service courses in our department."

"Let's make sure we're fair about it, and we'll just compare your course to the other service courses."

"Oh."

"Who teaches those higher ones? They might have some good ideas to share..."



Testing the Story: Fit or Myth?

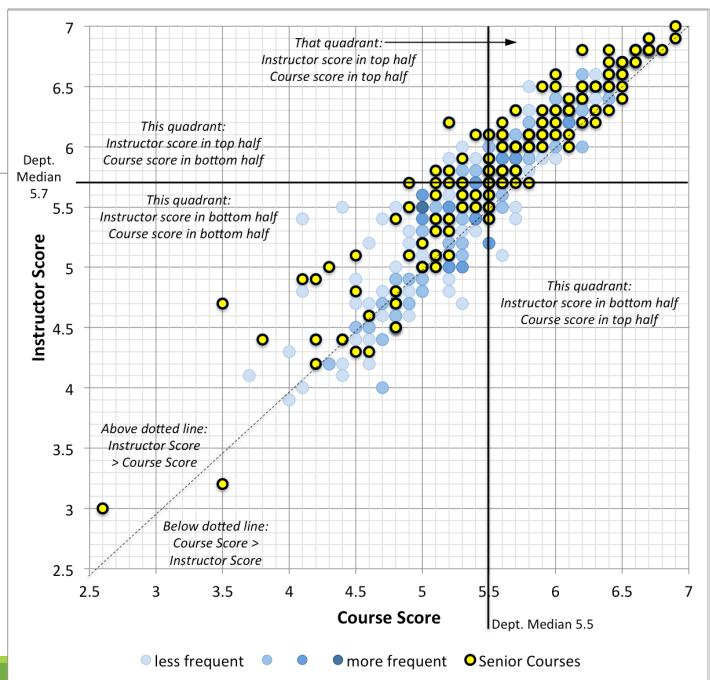
“Everyone knows the evaluations are lower in large courses.”

“Senior courses are small and the students are in their chosen field, so of course the scores are always high.”

If the story fits the data, then let’s find wise ways to use the information, or to inform the next useful question.

If the story is a myth, let’s stop telling it...

Be cautious: the answer may not be the same everywhere on campus. Test it.



Here’s a question:

Professor Marvel’s overall instructor score has averaged 5.6 over the last several years.

1	2	3	4	5	6	7
Extremely Poor	Very Poor	Poor	Adequate	Good	Very Good	Out- Standing

Is he a good teacher?

The numbers aren't really numbers...

Don't read too much into data from small classes.

If a small proportion respond, is it really a representative opinion?

- Sometimes it is, sometimes it isn't: depends on how big the class is, who shows up....

The difference between 4 and 5 is not the same as the difference between 5 and 6, etc.

Are 5.6 and 5.7 *really* different?

The numbers are imprecise: fat chisel markers, not mechanical pencils.

Calculations will give results, but may not measure what they're supposed to.

People will acknowledge all this, but still use the numbers as though they are precision instruments.

What do you get at UWindsor?

Report #1: Your results from one specific course

- one report for each course
- includes questions about the instructor and questions about the course
- includes overall/average instructor score and course score
- includes student enrolment and response rate
- includes basic demographic breakdown (year, faculty, expected grade, required/elective, gender)

Report #2: Your results combined together for all courses you taught, in one department, in one specific semester

- includes questions about the instructor and questions about the course
- if you taught in two departments, you will get a Report #2 from each department

What might you also get?

Depends on your department's habits

Transcribed, written comments (if they were collected from students)

Report #4 : Your average instructor score for all your courses in the department that semester, ranked against the average instructor score for all the other instructors in your department

- this is the overall instructor rating from Report #2
- separate reports for tenure-track and non-tenure track instructors
- does not include courses you taught in another department – you would get two reports

Report #5 TT: Same as #4, but for average course score

Here's what Report #1 looks like

REPORT #1
REPORT #1

University of Windsor
University of Windsor

May 3, 2013
May 3, 2013

Please distribute to appropriate instructors

Student Evaluation of Instructors by Course/section taught

Winter 2013

Course: [REDACTED] Section: 01

Enrollment: 50

Instructor: [REDACTED]

Forms Scanned: 32(=64% of enrollment)

A. Questions about the Instructor

Question	# of Responses to Scale Rating									No.	Avg.
	1	2	3	4	5	6	7	NA			
A1	0	1	0	5	7	10	9	0	32	5.6	
A2	3	1	1	4	4	11	8	0	32	5.2	
A3	0	1	0	4	6	15	6	0	32	5.6	
A4	0	0	2	1	6	9	14	0	32	6.0	
A5	0	0	1	1	4	9	17	0	32	6.3	
A6	0	0	2	3	4	11	11	0	31	5.8	
A7	0	0	1	4	2	14	10	1	31	5.9	
A8	0	0	0	4	4	8	16	0	32	6.1	
A9	0	0	1	3	6	9	12	0	31	5.9	
A10	0	1	1	3	3	9	15	0	32	6.0	
A11	0	2	0	2	3	9	15	0	31	6.0	
A12	0	1	1	4	4	9	12	0	31	5.8	

Overall Instructor Rating **5.8**

Here's a slightly more helpful version

Examine the yellow page.

**Student Rating of Instruction for Professor Marvel
Principles and Methods of Broccoli Chopping
Winter 2015**

Instructor Score	Course Score	Number Enrolled	Responses
6.1	5.4	41	26

yellow page

Instructor related questions:	1 2 3 4 5 6 7							Out- Standing	n/a
	Mean	Extremely Poor	Very Poor	Poor	Adequate	Good	Very Good		
1. presented material in an organized, well-planned manner	5.5	0	0	0	2	11	10	3	0
2. was approachable for additional help	6.7	0	0	0	0	1	7	18	0
3. was accessible to students for individual consultation (in office hours, after class, open-door, by e-mail, phone)	6.6	0	0	0	0	1	8	17	0
4. The overall effectiveness of the instructor was	6	0	0	0	0	7	12	7	0
5. used instructional time well	4.9	0	0	0	8	12	3	1	0
6. explained content clearly with appropriate use of examples	5.8	0	0	0	1	8	10	6	0
7. was a clear and effective speaker	6.1	0	0	0	0	5	14	7	0
8. communicated enthusiasm and interest in the course material	6.3	0	0	0	0	3	12	11	0
9. stimulated your interest in the subject and motivated your learning	5.9	0	0	1	1	5	12	7	0
10. attended to students' questions and answered them clearly and effectively	6.5	0	0	0	0	3	6	16	0
11. was open to students' comments and suggestions	6.5	0	0	0	0	1	10	15	0
12. was sensitive to students' difficulties	6.3	0	0	0	0	3	11	12	0

Wrong question.

Here's a question:

Professor Marvel has an overall instructor score of 5.0.

~~is he a good teacher?~~

Instructor Score	Course Score	Number Enrolled	Responses
5.0	5.0	41	24

Instructor related questions:	1 2 3 4 5 6 7							Out- Standing	n/a
	Mean	Extremely Poor	Very Poor	Poor	Adequate	Good	Very Good		
1. Presented material in an organized, well-planned manner	5.0	1	0	1	6	8	4	4	0
2. Was approachable for additional help	5.3	0	0	2	4	5	8	4	1
3. Was accessible to students for individual consultation (in office hours, after class, open-door, by e-mail, phone)	5.1	0	0	3	3	6	8	2	2
4. The overall effectiveness of the instructor was	4.8	1	1	4	2	7	5	4	0
5. Used instructional time well	5.3	0	0	3	3	7	7	4	0
6. Explained content clearly with appropriate use of examples	5.1	0	1	3	3	7	6	4	0
7. Was a clear and effective speaker	4.8	0	1	6	1	9	4	3	0
8. Communicated enthusiasm and interest in the course material	4.8	1	1	3	3	5	7	2	0
9. Stimulated your interest in the subject and motivated your learning	4.7	0	3	2	3	9	4	2	0
10. Attended to students' questions and answered them clearly and effectively	5.1	0	0	3	4	6	9	2	0
11. Was open to students' comments and suggestions	5.3	0	0	1	4	6	10	2	1
12. Was sensitive to students' difficulties	5.2	0	1	1	2	8	7	2	2

What is a better question?

What can Prof. Marvel learn about his teaching based on the patterns found in his SET data?

A totally different way of thinking about the data.

- an inquiry-based, improvement-based focus
- an approach that engages with the contradictions and challenges the data present
- an approach that is open to “next steps” based on both initial patterns, and initial contradictions

Getting past the summary...

Examine the **yellow page**.

Professor Marvel receives his SET and sees an overall Instructor Score of 6.1.

Help Professor Marvel interpret the results more deeply.

Together at your table:

Describe Professor Marvel’s strengths and weaknesses.

Identify any important patterns in the students’ responses on specific questions.

Identify anything that is confusing, contradictory, or difficult.

An improvement: Highlighting and Sparklines

Examine the blue page. Start on the back side.

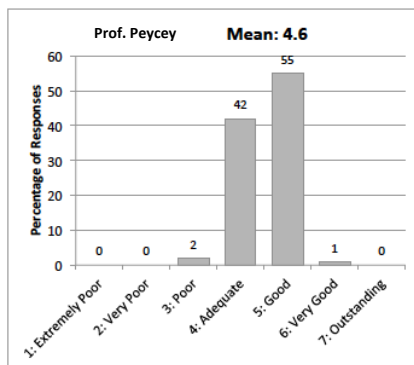
Mean	1 Extremely Poor	2 Extremely Poor	3 Poor	4 Adequate	5 Adequate	6 Good	7 Very Good	8 Outstanding	9 Outstanding	10 na	
6.1	0	1	0	12	4	60	19	115	37%	1289%	0%
6	0	0	0	0	7	27	12	46%	727%	0%	
6.5	0	0	0	0	9	7%	42	33%	780%	0%	
5.2	0	0	10	20%	23	46%	13	26%	4	8%	0%
6	0	1	1%	2	2%	21	20%	48	47%	330%	0%

Google "how to make a sparkline in Excel" – or come talk to us after. 😊

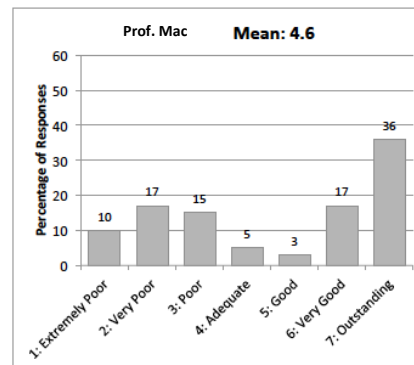
Same Means, Different Meaning

Same question, two different instructors

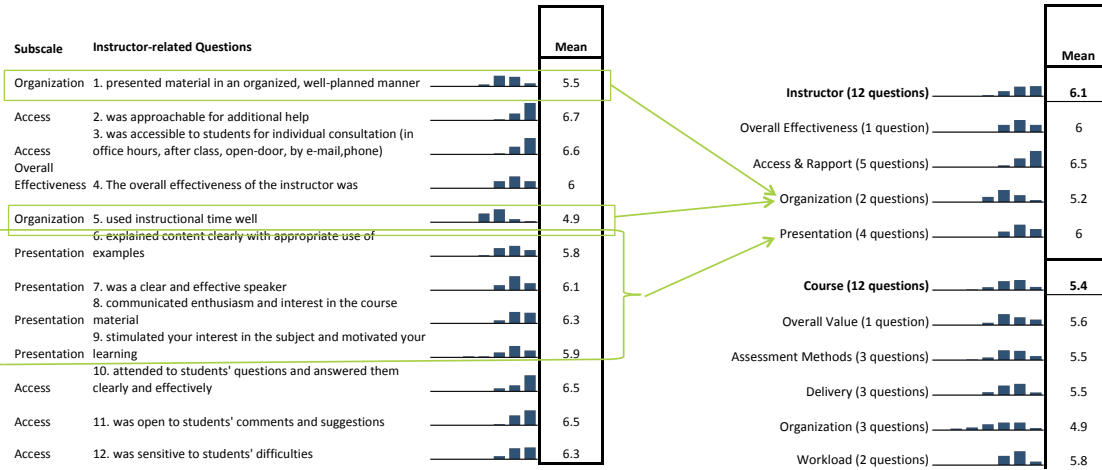
Consistently 'mediocre'



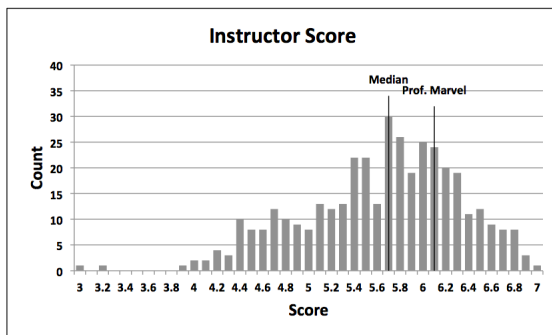
Polarized: either loved or hated



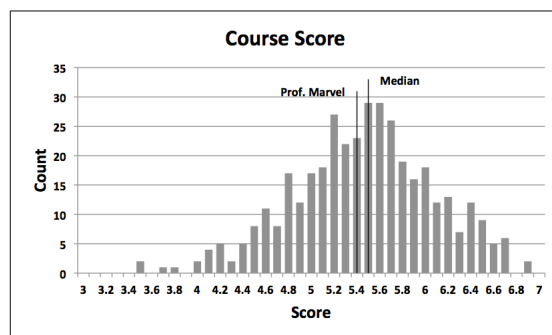
Another Improvement: Subscales



Context: Is a 6.1 Instructor Score "Good"? Is a 5.4 Course Score "Good"?



Your Instructor Score is in the 70th-90th percentile group.
 This means that you were rated higher on the instructor-related questions than 70% of the other courses taught in your department over the past ten years.
 Very good!



Your Course Score is in the 30th-70th percentile group.
 This means that your rating on the course-related questions was in the middle 40% of all courses taught in your department over the past ten years.

Let's Zoom Out..

We teach more than one course, right?

We teach it more than once, right?



Zoom

You are doing it wrong...

memecenter.com 

Here's another question:

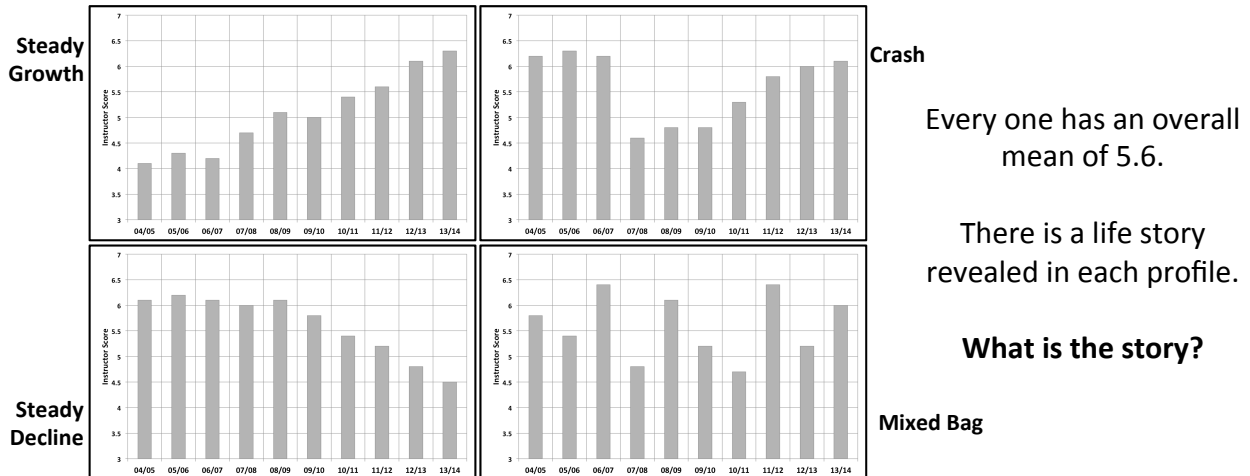
Professor Marvel's overall instructor score has averaged 5.6 over the last several years.

1	2	3	4	5	6	7
Extremely Poor	Very Poor	Poor	Adequate	Good	Very Good	Out- Standing

Is he a good teacher?

Wrong question – BIG SURPRISE.

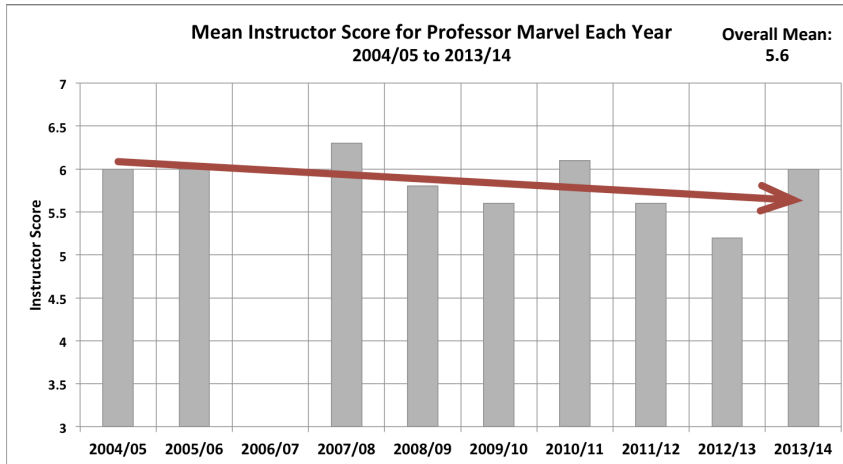
Same Means, Different Meaning



Getting beyond the one-course snapshot

- How has your teaching changed over time?
- Are your strengths and weaknesses the same in every course?
- What anomalies are there in your scores? Why?
- Do your students respond better to you in some courses than in others?
- What is the profile of what you've taught over time?
- Are there other influences that should be documented?

Prof. Marvel's Scores Over Time....

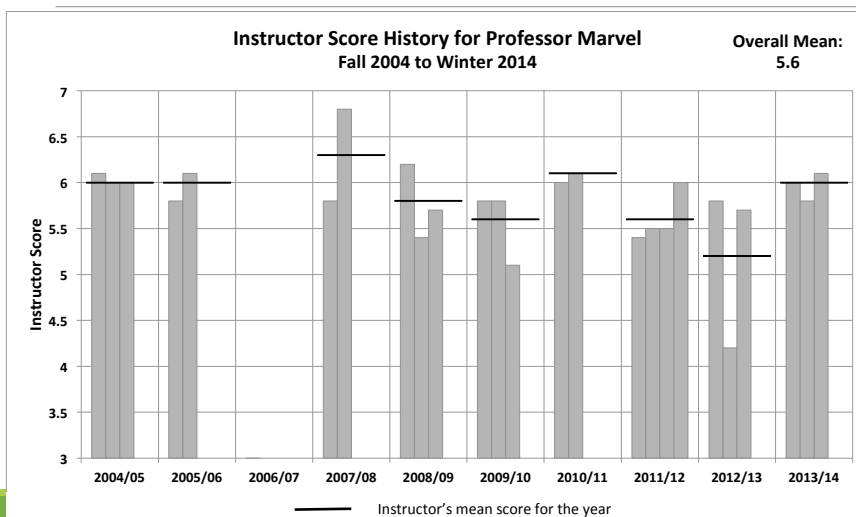


Prof. Marvel looks like he's in decline.

What's happening?

Let's look closer...

Prof. Marvel's Courses Over Time....



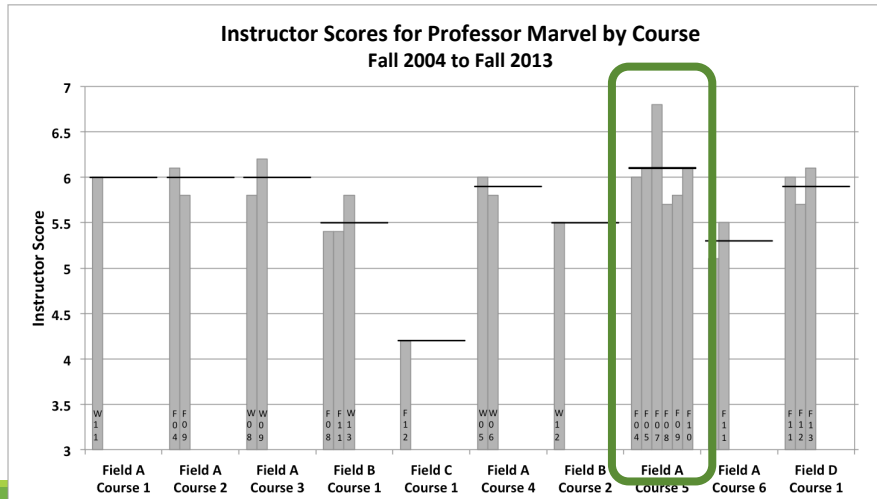
Prof. Marvel is actually a 'mixed bag'.

It's not clearly a decline anymore.

Most years, one score is high, one is low.

Is there a pattern in the scores?

Prof. Marvel's Teaching Scores by Course



Prof. Marvel has taught a *lot* of different courses, in four different fields, and only a couple of times each.

But this view doesn't show *why*.

What are some possible reasons?

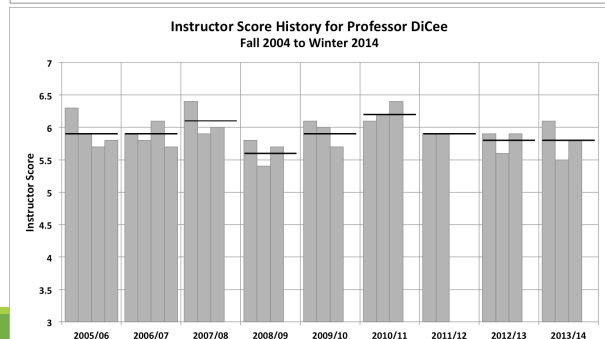
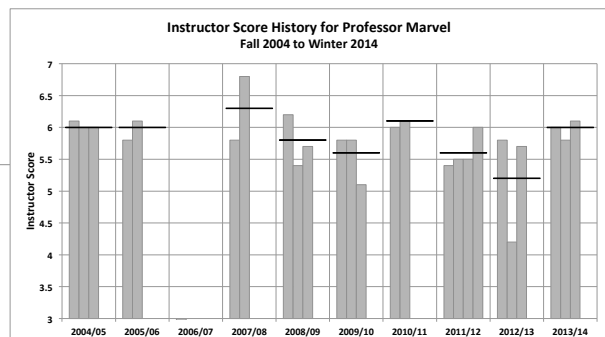
Understanding Teaching Profiles

Professor Marvel and Professor DiCee have different patterns over time.

Their overall mean scores across all years are nearly identical, but the pictures are different.

What might be different about the two professors' teaching?

What might be different about the context of their teaching?



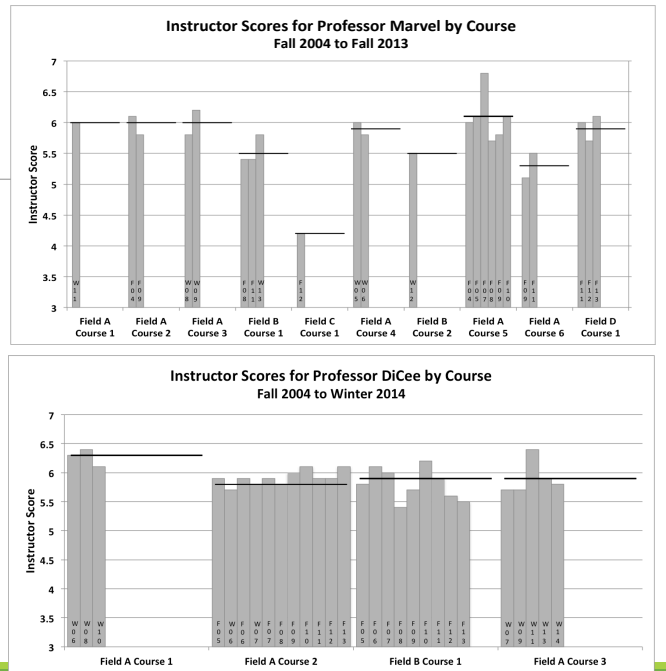
Understanding Teaching Profiles

Both instructors have an overall mean of 5.6, but they have very different course profiles.

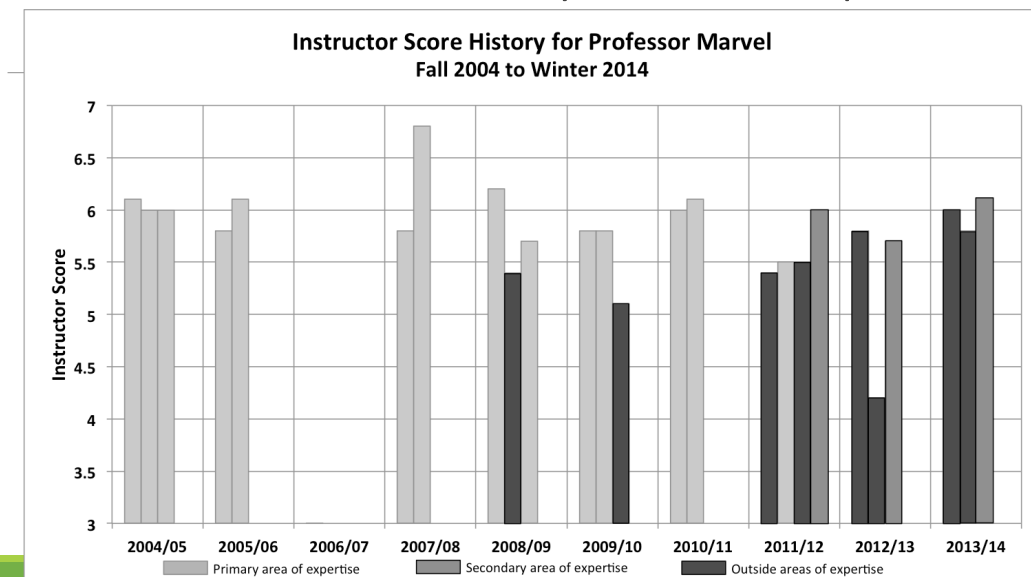
Lots of influencing factors:

- Number of distinct courses taught
- Number of times teaching the course
- Number of new courses per year
- Alignment of course subject to expertise
- etc. etc.

What else might be an influence, that we can't see from this view?



What if we colour-code by field of expertise?



An Inquiry-Based Approach

At the item level, the instructor feels quite strongly that what the students are saying is completely contradictory to what they believe they are actually doing.

- “I do double the number of office hours compared to anyone in my department, I stay after class, but they keep saying I’m not accessible. It was never a problem in the past, but for the past couple of years I’m getting hammered.”
- “I have all kinds of charts for them that outline the course and timeline, I give them planning guides for the midterm and the final, and I give them the PowerPoint slides and other prep material well in advance. It’s fine in some of my courses, but in the others I get slammed on organization every year.”

The written comments from the SET help a lot!!!

Peer observation can help a lot!!!

U Windsor Peer Collaboration Network (PCN)

An Improvement-Based Approach

How can you create a plan for improvement?

- ◆ Preliminary information gathering
- ◆ Specific focal points: points of clarity, points of tension
- ◆ Consultation
- ◆ Peer groups and peer collaboration
- ◆ Action plans
- ◆ Research
- ◆ Re-evaluation – multiple data sources

Getting past the noise to find the signal

- SETs are a useful *part* of an integrated approach to understanding your teaching.
- Describing your practice requires multi-faceted data and multiple forms of evidence.
 - Evaluation by colleagues
 - Formative / mid-term feedback from students
 - Curriculum evaluation and materials review
 - Feedback from former students
 - Student performance/success data
 - Grades & pass/fail/retake rates
 - Retention / withdrawals
 - Success in subsequent courses
 - GA/TA input
 - Self-reflection and self-evaluation
 - Video recording

Some more “better questions”

What can Prof. Marvel *demonstrate* about his teaching?

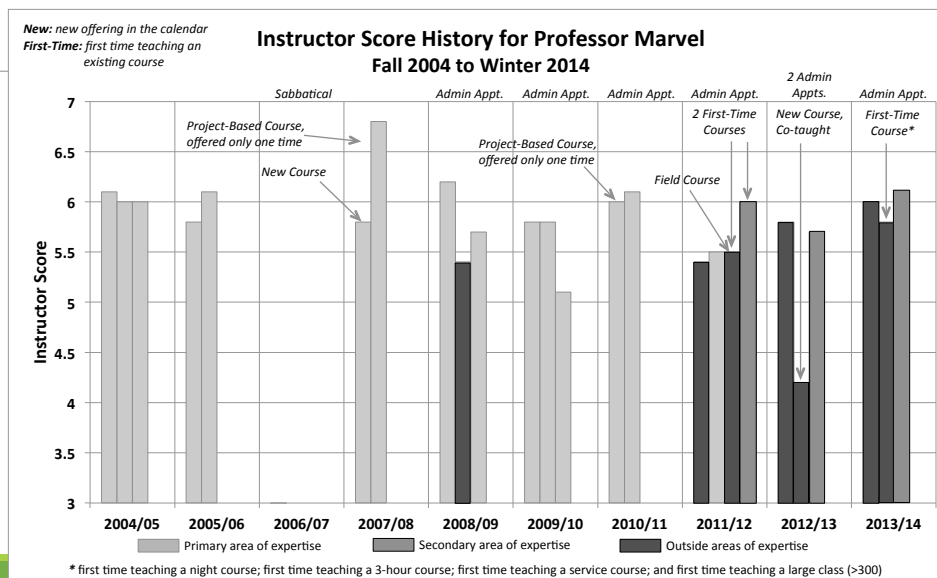
what does he do well?

what can he improve?

what is he improving?

**By better understanding context and
by better understanding patterns
he can tell his story more persuasively.**

Using Annotations



The Big Summary

- SETs are a useful **part** of an integrated approach to understanding and documenting your teaching.
- SETs are **not** just for personnel decisions – they **can** truly help you to improve your teaching.
- SETs **can** tell you a lot, but **only** with analysis, reflection, and inquiry.
- There **is** a story hiding in the numbers, and you **can** find it.
- There **is** a story hiding in the numbers, but **you** need to tell it.
- **Your** job is to articulate the profile, impact, and trajectories in meaningful and legitimate ways.

Want to learn more?

Ask now!!!

Email me any time:

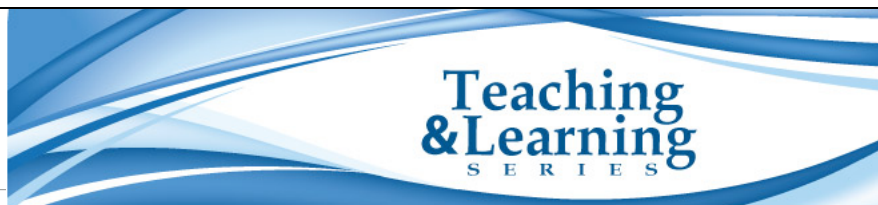
graniero@uwindsor.ca

Copies of the slides, friendly help interpreting your SETs, advice on working with your SET data, etc.

Read our summary of current research & methods:

Graniero, P.A., Hamilton, B. and Cramer, K. (2014). **SRI data aggregation and visualization: An evaluation of potential uses.** In A. Wright and B. Hamilton (Eds.), *The Ontario Universities' Teaching Evaluation Toolkit: Feasibility Study*. Ontario Ministry of Training, Colleges and Universities. pp227-283.

PDF available at: <http://ctl.uwindsor.ca/provincial-innovation-fund-reports/>



Friday, March 18, 2016

Informing Your Teaching Practice With Effective SET Visualization Techniques

Schedule: Friday, March 18, 2016, 01:30 PM – 04:30 PM

Location: Erie G141

Instructors: [Phil Graniero](#), [Bev Hamilton](#)

[To register, please log in.](#)

If you're beginning to see that there are useful insights hiding in your course evaluations (SETs), but you're not sure how to unlock the information trapped in those tables of numbers, this workshop is for you. How can you use SETs to examine facets of your teaching and continually improve the classroom experience for your students?

In this practical workshop, you will work with fellow participants to apply some simple techniques on a sample SET report, reorganizing and visualizing the data to reveal its story and devise follow-up teaching development questions. You will learn some 'on-paper' methods using tools as simple as highlighters and whiteout. You will also learn some 'on-screen' methods by trying some simple recipes from an Excel 'cookbook', so bring a laptop! After the workshop, armed with your new ideas, you'll be ready to unlock the stories hidden in your own SETs.

<http://cleo.uwindsor.ca/workshops/2/#wkshp-1280>