WSC Senior College and University Commission

EDUCATIONAL PROGRAMS

Analytics for Academics: Producing Actionable Information about Students and Learning to Improve Effectiveness

February 3, 2017

Pitzer College, Claremont, CA

Resource Binder

WASC Senior College and University Commission | EDUCATIONAL PROGRAMS

MARK YOUR CALENDARS
2016-2017 EDUCATIONAL WORKSHOPS

WASC Senior College and University Commission is pleased to announce a selection of educational programs for 2016-17*. Developed by regional and national experts, they cover topics of vital interest to all higher educational institutions – and particularly to those in the WSCUC region. They are entirely optional, but our hope is that member institutions will find them of service. WSCUC staff will be present at each session to answer any questions related specifically to WSCUC accreditation expectations.

- ★ **Meaning, Quality, and Integrity of Degrees: Exploring Approaches, Models, & Tools**
  October 19, 2016. Kellogg West, Pomona, CA

- ★ **The Big Five: Addressing The Five Core Competencies (2-day Retreat)**
  October 20-21, 2016. Kellogg West, Pomona, CA

- ★ **Assessment 201: Advanced Topics in Assessment**
  November 18, 2016. University of San Francisco, San Francisco, CA

- ★ **President/Trustee Retreats**
  December 8, 2016. Woodbury University, Burbank, CA
  December 9, 2016. Mills College, Oakland, CA

- ★ **NEW! Building a Culture of Quality: A Retreat for Institutional Leaders –** *with Linda Suskie*
  January 17, 2017. Kellogg West, Pomona, CA

- ★ **NEW! The Changing Faculty: Exploring & Creating Models for Institutional and Educational Effectiveness –** *with Adrianna Kezar*
  January 18, 2017. Kellogg West, Pomona, CA

- ★ **Assessment 101: The Assessment Cycle, Clear and Simple**
  February 2, 2017. Pitzer College, Claremont, CA

- ★ **NEW! Analytics for Academics: Producing Actionable Information about Students and Learning to Improve Effectiveness**
  February 3, 2017. Pitzer College, Claremont, CA

- ★ **Meaning, Quality, and Integrity of Degrees: Exploring Approaches, Models, & Tools**
  May 19, 2017. Hawai'i Pacific University - Honolulu, Hawai'i

Check the WSCUC website for details!
www.wascsenior.org

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Table of Contents

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Analytics for Academics: Producing Actionable Information about Students and Learning to Improve Effectiveness

Pitzer College, Claremont, CA
Friday February 3, 2016 8:30 am – 4:30 pm

WORKSHOP SCHEDULE

8:00 – 8:30	**Arrival, check-in, registration**
8:30 – 8:45	**Welcome / Introductions** Facilitated by David Chase
8:45 – 9:15	**Framework for Purposeful Integration of IR and Assessment Activities** Facilitated by Monica Stitt-Bergh and John Stanley
9:15 – 11:00 **(with 10 min. break)**	**Use Data Analytics to Engage Stakeholders in Decision Making** Facilitated by John Stanley *Participants work with examples of data analytics that have been used in multiple ways by stakeholders to understand and respond to student learning patterns and needs.*
11:00 – 12:30	**Connect Learning Theory, Analytics, and Use of Assessment Results** Facilitated by Monica Stitt-Bergh *Participants become familiar with the intersection of learning theory and data analytics; apply that knowledge to a case study involving student achievement in written communication; and explore how analytics and good visualization can help faculty interpret and use assessment results for learning improvement.*
12:30 – 1:45	**Networking Lunch (Founders Room, located in McConnell Center- #9 on the map)**
1:45 – 3:00	**Build a Culture of Inquiry** Facilitated by Monica Stitt-Bergh and John Stanley *Participants learn about the challenges of building a culture of inquiry based on analytics, including ethical implications, affordability, data availability, and expertise. Participants review strategies for overcoming such challenges as they consider different campus contexts.*
3:00 – 3:15	**Break**
3:15 – 4:30	**Take Lessons from Analytics, Learning Theory, and Visualization to Make Progress Back Home** Facilitated by Monica Stitt-Bergh and John Stanley *Participants consider integrative practices in action on their campus; chart ideas for integrating analytics, learning theory, and visualization; receive feedback from facilitators and peers on their planned next steps; and reflect on workshop take-aways.*
4:30 pm	**Workshop Conclusion**

Pitzer College Campus Map

1. Edythe & Eli Broad Center
- Advancement Office
- Classrooms
- Faculty Offices
- Nichols Gallery
- Performance Space
- Pitzer Store
- President's Office

2. Broad Hall
- Claremont Infant Study Center
- Classrooms
- Faculty Offices
- Fletcher Jones Intercultural & Language Lab
- Memory & Aging Lab

3. Gold Student Health & Wellness Center
- Gym
- Multipurpose Room
- Pilates Studio
- Ranslow Terrace & Pool
- Shakedown Café
- Student Affairs Staff
- Student Activities Office
- Yoga Studio

4. Avery Hall
- Benson Auditorium
- Classrooms
- Faculty Offices
- Institutional Research

5. Fletcher Hall
- Classrooms
- Faculty Offices
- Registrar

6. Scott Hall
- Career Services
- Community Engagement Center
- Dean of Faculty
- Faculty Offices
- Information Technology
- Student Affairs

7. Bernard Hall
- Classrooms
- Computer Labs
- Duplicating Services
- Faculty Offices
- Pit-Stop Café

8. Glass Commencement Plaza & Recreation Area

9. McConnell Center
- Art Studios
- Audio Visual Services
- Dining Hall
- Facilities & Campus Services
- Financial Aid
- Founders Room
- Human Resources
- Living Room
- Salathé Gallery
- Student Accounts
- Treasurer's Office

10. Holden Garden

11. Mead Hall
- Center for Asian Pacific American Students (CAPAS)
- Office of Communications
- Pitzer Archives Office
- Rabbit Hole
- Residential Suites
- Writing Center

12. Pellissier Mall (The Mounds)

13. Brant Clock Tower

14. Grove House
- Barbara Hinshaw Gallery
- Bert Meyers Poetry Room
- Grove House Kitchen
- Meeting Rooms
- Outdoor Classroom

15. East Mesa Parking

16. Holden Parking

17. Sanborn Parking

18. Rodman Arboretum

19. Pitzer Hall
- ★ Admission Office
- Residential Rooms

20. Sanborn Hall
- Residential Rooms

21. Atherton Hall
- Art Faculty Offices
- Art Studios
- Campus Mail Center
- Jumpstart
- Lenzner Family Art Gallery
- Residential Rooms

22. Green Bike Program

23. Founding Faculty Amphitheater

24. Keck Science Center
- Classrooms
- Faculty Offices
- Laboratories

25. Keck Science Center II

26. Greenhouse

27. West Hall & 2014 Hall
- Classrooms
- Demonstration Kitchen
- Intercollegiate Media Studies
- Kallick Family Gallery
- Mosbacher/Gartrell Center for Media Experimentation & Activism
- Pitzer Archive and Conference Center
- Residential Rooms
- Study Abroad & International Programs

28. East Hall
- Residential Rooms

29. Organic Garden & Chicken Coop

30. Citrus Grove

31. Outback Preserve

Interactive Campus Map: www.pitzer.edu/map/

PITZER COLLEGE

Analytics for Academics: Producing Actionable Information about Students and Learning to Improve Effectiveness

Biographies

Facilitators

Monica Stitt-Bergh

Monica Stitt-Bergh is an associate specialist in the Assessment Office at the University of Hawai'i at Mānoa. Her specialization is in assessing written communication. In her current position, Monica serves as an internal consultant for and offers workshops on learning outcomes assessment, and she plans and conducts institutional assessment projects. She has spent the last eight years working to create a positive view of assessment and increase use of assessment findings. Previously, Monica assisted with the University of Hawai'i at Mānoa's writing-across-the-curriculum program and implementation of a new general education program. Her classroom experience includes teaching courses on writing as well as social science research methods. Monica received her BA in English from the University of Michigan and her MA in Composition and Rhetoric and PhD in Educational Psychology from the University of Hawai'i. She has published and given conference presentations on program learning outcomes assessment in higher education, writing program evaluation, self-assessment, and writing-across-the-curriculum.

Email: bergh@hawaii.edu

John C. Stanley

John Stanley is the Director of Institutional Research at the University of Hawai'i - West Oahu, where he is responsible for assessment and institutional research functions. Mr. Stanley has served in institutional research positions at four-year institutions and community colleges. He has published institutional research articles and has instructed workshops on using analytics to improve student outcomes at regional and national conferences. He was awarded best presenter at the 2012 California-AIR Conference. He received his BA in mathematics from the University of Texas at Austin and MEd in higher education from the University of Hawai'i at Manoa. He is currently in the fourth year of his PhD in Educational Psychology at UH Manoa.

Email: jstanley@hawaii.edu

Analytics for Academics: Producing Actionable Information about Students and Learning to Improve Effectiveness

Biographies

WSCUC Representative

David Chase

David Chase is the Associate Vice President, Educational Programs at the WASC Senior College and University Commission. Prior to joining WSCUC in 2017, David was responsible for leading Academic Affairs at the American Film Institute Conservatory in Los Angeles, California, which included the planning, development, and evaluation the Conservatory's academic programs and serving as the Accreditation Liaison Officer. David also held the position of Senior Associate Director of Institutional Effectiveness at the University of the Pacific, where he also served as the Assistant Dean of the Conservatory of Music and taught courses in the Music Management program and in the core seminars of Pacific's General Education program. He earned Bachelor of Music and Master of Arts in Music degrees from Pacific's Conservatory. David has published and presented workshops on assessing student learning and on teaching, learning, and assessment in higher education arts disciplines. He is a graduate of the third class of WSCUC's Assessment Leadership Academy.
Email: dchase@wascsenior.org

Attendee Directory

Analytics for Academics

Pitzer College, Claremont, CA

February 3, 2017

	First Name	Last Name	Job Title	Institution	Email
1	Sisi	Chen	Director of Institutional Research and Assessment	American University of Health Sciences	schen@auhs.edu
2	Kim	Dang	Interim President	American University of Health Sciences	kdang@auhs.edu
3	Danie	Wright	Scientist	Aspire University	danielw@aspire.university
4	Kristina	Alvarado	Director of Student Success Initiatives	Azusa Pacific University	kalvarado@apu.edu
5	Vicky	Bowden	Accreditation Liaison Officer/Vice Provost for Undergraduate Programs	Azusa Pacific University	vbowden@apu.edu
6	Annika	Gittins	Data Analyst Intern	Azusa Pacific University	agittins13@apu.edu
7	LaTesha	Hagler	Director of TRiO Programs	Azusa Pacific University	lhagler@apu.edu
8	Houri	Hagopian	Data Analyst	Azusa Pacific University	hhagopian@apu.edu
9	Hall	Keith	Executive Director, Undergraduate Academic Success Center	Azusa Pacific University	khall@apu.edu
10	Bryant	Mathews	Professor, Department of Engineering and Computer Science	Azusa Pacific University	bmathews@apu.edu
11	Chase	Molenaar	Data Analyst Intern	Azusa Pacific University	cmolenaar15@apu.edu
12	Chris	Olson	Director of Institutional Research	Azusa Pacific University	colson@apu.edu
13	Stephanie	Orona	Director for Academic Advising	Azusa Pacific University	sorona@apu.edu
14	Raul	Villalobos	Assistant Director of IMT Business Intellegence	Azusa Pacific University	rvillalobos@apu.edu
15	Bruno	Giberti	Faculty Associate for Academic Programs and Planning	Cal Poly San Luis Obispo	bgiberti@calpoly.edu
16	Elizabeth	Lowham	Dept Chair, Political Science	Cal Poly San Luis Obispo	elowham@calpoly.edu
17	Mary	Pedersen	Senior Vice Provost Academic Programs & Planning	Cal Poly San Luis Obispo	mpederse@calpoly.edu
18	Jack	Phelan	Director of Academic Assessment	Cal Poly San Luis Obispo	jgphelan@calpoly.edu
19	Jennifer	Juras	Director of Institutional Research	California College of the Arts	jjuras@cca.edu
20	Dominick	Tracy	Director of Learning Assessment & Accreditation	California College of the Arts	dtracy@cca.edu
21	Wendy	Duncan	Provost, Sr. VP Acad. Affairs	California Health Sciences University	wduncan@chsu.org
22	Carolyn	Harris	VP Student Affairs and Enrollment	California Health Sciences University	charris@chsu.org
23	Julie	Marty-Pearson	Director of Assessment, Inst. Effectiveness, Research & Compliance	California Health Sciences University	jmarty-pearson@chsu.org
24	William	Ofstad	Asst. Dean for Education	California Health Sciences University	wofstad@chsu.org
25	Jyenny	Babcock	Sr. Assessment and Research Analyst	California State University, Fullerton	babcockj@fullerton.edu
26	Pamella	Oliver	Interim Associate Vice President, Academic Programs	California State University, Fullerton	poliver@fullerton.edu
27	Su	Swarat	Director, Assessment & Educational Effectiveness	California State University, Fullerton	sswarat@fullerton.edu
28	Ryan	Feyk-Miney	Research Coordinator	California State University, Northridge	ryan.feyk-miney@csun.edu
29	James	Solomon	Director of Academic Assessment and Program Review	California State University, Northridge	james.solomon@csun.edu
30	Donald	Smythe	Professor	California Western School of Law	DSmythe@cwsl.edu
31	Susanna	Branch	Director, Accreditation and Assessment	Chapman University	branch@chapman.edu
32	Dianna	Graves	Assistant Vice President for Strategic Initiatives	Claremont McKenna College	dgraves@cmc.edu
33	Nyree	Gray	Assistant Vice President for Diversity and Inclusion	Claremont McKenna College	nyree.gray@claremontmckenna.edu
34	Cynthia	Humes	Associate Vice President	Claremont McKenna College	cynthia.humes@claremontmckenna.edu
35	Shana	Levin	Associate Dean of the Faculty for Research	Claremont McKenna College	shana.levin@claremontmckenna.edu
36	Elizabeth	Morgan	Registrar/AVP for Academic Affairs	Claremont McKenna College	emorgan@cmc.edu
37	Amy	Peterson	Assistant to the Dean of Faculty	Claremont McKenna College	apeterson@cmc.edu

Attendee Directory

Analytics for Academics

Pitzer College, Claremont, CA
February 3, 2017

	First Name	Last Name	Job Title	Institution	Email
38	Lee	Skinner	Associate Dean of the Faculty for Teaching	Claremont McKenna College	lee.skinner@claremontmckenna.edu
39	Colleen	Wynn	Director of Institutional Research	Claremont McKenna College	colleen.wynn@claremontmckenna.edu
40	Alexis	Sanderson	Vice President of Academic Affairs	Columbia College Hollywood	LSanderson@columbiacollege.edu
41	Marita	Mahoney	Associate Academic and Institutional Studies	CSUSB	mmahoney@csusb.edu
42	Eric	Ditwiler	Director of Academic Operations	Harvey Mudd College	ditwiler@g.hmc.edu
43	Colleen	Lewis	Assistant Professor of Computer Science	Harvey Mudd College	lewis@cs.hmc.edu
44	Kathy	Van Heuvelen	Assistant Professor of Chemistry	Harvey Mudd College	vanheuvelen@g.hmc.edu
45	Alex	Gradine	Administrative Support Assistant	Humboldt State University	acg19@humboldt.edu
46	Peter	Pokorny	SCRUM Master	International Technological University	ppokorny@itu.edu
47	Jane	Rosenthal	Assistant Dean	Keck Graduate Institute	jane_rosenthal@kgi.edu
48	Laura	Alipoon	Department Chair	Loma Linda University	lalipoon@llu.edu
49	Katherine	Davis	Senior Assessment Specialist	Loma Linda University	kdavis@llu.edu
50	Nancy	Kawahara	Associate Dean, Assessment and Professional Affairs	Loma Linda University	nkawahara@llu.edu
51	Brigit	Mendoza	Assessment Specialist	Loma Linda University	bcmendoza@llu.edu
52	Rashid	Mosavin	Executive Associate Dean	Loma Linda University	rmosavin@llu.edu
53	Farnoosh	Zough	Assistant Professor	Loma Linda University School of Pharmacy	fzough@llu.edu
54	Michelle	Hamilton	Assessment Specialist	Loma Linda University School of Public Health	mhamilton1@llu.edu
55	John	Alexander	Assistant Dean of Arts and Sciences	Marymount California University	jalexander@marymountcalifornia.edu
56	Adam	Mitchell	Educational technology Specialist and Testing Coordinator	Marymount California University	amitchell@marymountcalifornia.edu
57	Kristin	Ryan	Chair, Business & Leadership	Marymount California University	kryan@marymountcalifornia.edu
58	Blue	Wade	Dean of Arts	Marymount California University	bwade@marymountcalifornia.edu
59	Sonny	Calderon	Dean of the College	New York Film Academy	sonny.calderon@nyfa.edu
60	Evelyn	Chandra	Associate Dean for Institutional Accreditation	New York Film Academy	evelyn.yves@nyfa.edu
61	Prarthana	Mohan	Associate Dean for Academic Affairs	New York Film Academy	pmohan@nyfa.edu
62	Mary	Samuelson	Chair of Liberal Arts and Sciences	New York Film Academy	mary.samuelson@nyfa.edu
63	Rosa	Belerique	Director of Institutional Reserch	Otis College of Art and Design	rbelerique@otis.edu
64	Gregory	Gorman	President	Phillips Graduate University	p_office@pgu.edu
65	Michael	Ballagh	Associate VP for International Programs	Pitzer College	michael_ballagh@pitzer.edu
66	Marco Antonio	Cruz	Director of Institutional Research & Assessment	Pitzer College	marcoantonio_cruz@pitzer.edu
67	Robert	Goldstein	Director of Information Technology	Pitzer College	Robert_Goldstein@pitzer.edu
68	Melinda	Herrold-Menzies	Associate Dean of Faculty	Pitzer College	mmenzies@pitzer.edu
69	Tessa	Hicks	Director, Community Engagement Center, Asst VP	Pitzer College	Tessa_Hicks@pitzer.edu
70	Jeff	Lewis	Associate Professor of Organizational Studies	Pitzer College	Jeff_Lewis@pitzer.edu
71	Ming	Ma	Professor	Pitzer College	ming-yuen_ma@pitzer.edu
72	Cheryl	Morales	Associate Registrar	Pitzer College	cheryl_morales@pitzer.edu
73	Tricia	Morgan	Associate Director of CEC/Pitzer in Ontario	Pitzer College	Tricia_Morgan@pitzer.edu
74	Iliana	Perez	Research Analyst	Pitzer College	iliana_perez@pitzer.edu

Attendee Directory

Analytics for Academics

Pitzer College, Claremont, CA
February 3, 2017

	First Name	Last Name	Job Title	Institution	Email
75	Norma	Rodriguez	Professor	Pitzer College	Norma_Rodriguez@pitzer.edu
76	Andrea	Scott	Director, Writing Center	Pitzer College	Andrea_Scott@pitzer.edu
77	Arianna	Stelling	Research Associate	Pitzer College	arianna_stelling@pitzer.edu
78	Jennifer	Rachford	Director of Institutional Research	Pomona College	jennifer.rachford@pomona.edu
79	Hector	Sambolin Jr	Assoc. Dean of Students for Academic Success and Assessment	Pomona College	hector.sambolinjr@pomona.edu
80	Monika	Kress	Professor	San Jose State University	monika.kress@sjsu.edu
81	Thomas	Moriarty	Professor and Director of Writing Across the Curriculum	San Jose State University	Thomas.Moriarty@sjsu.edu
82	Wendy	Ng	Associate Dean - Undergraduate Studies	San José State University	Wendy.Ng@sjsu.edu
83	Ron	Rogers	Associate Dean - College of Social Sciences	San José State University	Ronald.Rogers@sjsu.edu
84	Mary	Bradley	Manager, Graduate Program Administration	Sanford Burnham Prebys Medical Discovery Institute	mbradley@SBP.edu
85	Gretchen	Edwalds-Gilbert	Associate Dean of Faculty and Associate Professor of Biology	Scripps College	gedwalds@scrippscollege.edu
86	France	Lemoine	Faculty	Scripps College	flemoine@scrippscollege.edu
87	Junelyn	Peeples	Director of Assessment and Institutional Research / ALO	Scripps College	jpeeples@scrippscollege.edu
88	George	del Hierro	Full-Time Instructor	Trident University International	George.delHierro@trident.edu
89	Marlene	Lowe	Assessment Director	UC San Diego	mlogan@ucsd.edu
90	Joanne	Itano	Associate VP for Academic Affairs	University of Hawaii	itano@hawaii.edu
91	Sammy	Elzarka	Director of Faculty Development	University of La Verne	sammy.elzarka@laverne.edu
92	Corie	Schwabenland	Academic Data and Assessment Analyst	University of San Francisco	ceschwabenland@usfca.edu
93	Diana	Avans	Professor of Kinesiology; TUG Educational Effectiveness	Vanguard University	davans@vanguard.edu
94	John	Kim	Associate Director of Institut, Office Institutional Research	Vanguard University	john.kim@vanguard.edu
95	Amanda	Lebrecht	Director of Student Success and Retention	Vanguard University	amanda.lebrecht@vanguard.edu
96	Ludmila	Praslova	ALO	Vanguard University	LPraslova@vanguard.edu
97	Lisa	Schaffer	Director of Accreditation & Licensing	West Coast University	lschaffer@westcoastuniversity.edu
98	Dr David	McKinney	Provost	Westcliff University	davidmckinney@westcliff.edu
99	Linda	Garavalia	Professor and Associate Dean for Assessment	Western University of Health Sciences	LGaravalia@westernu.edu
100	Enhsien	Liu	Senior Research Analyst	Western University of Health Sciences	liue@westernu.edu
101	Kathleen	Satterfield	Assistant Dean of Outcomes Assessment	Western University of Health Sciences	vsatterfield@westernu.edu
102	Satoko	Siegel	Assessment Coordinator	Western University of Health Sciences	ssiegel@westernu.edu
103	Stephanie	Monney	Assessment Analyst	Western Univversity of Health Sciences, College of Optometry	samonoomonney@westernu.edu

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Welcome / Introductions / Overview of and Preparation for Workshop

David Chase

Analytics for Academics

Producing Actionable Information about Students and Learning to Improve Effectiveness

WSC
Senior College and University Commission

February 3, 2017

David Chase – WSCUC Educational Programs

1

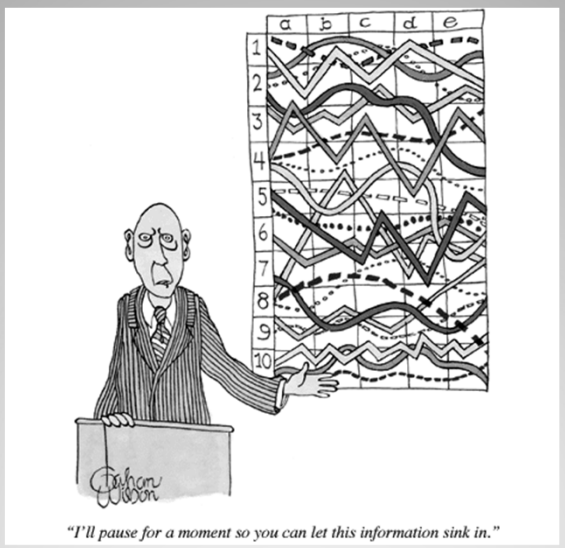


Image courtesy of The ILOVESTATS blog

WHY WE'RE HERE …???

2

- Examine the benefits and challenges of **strategically aligning and integrating** teaching and learning, assessment, analytics/IR, and a culture of inquiry at your institution.
- Develop an understanding of the role **analytics** can play in higher education decision-making and integrated planning.
- Expand your institution's ability to **integrate** analytics and assessment and **connect and use** them to improve learning.

WORKSHOP INTENTIONS

3

- Explore **strategies for engaging** faculty and other stakeholders in organizational learning resulting from analytics and assessment.
- Assess institutional status and readiness for creating a sustainable culture of evidence-based improvement, and **identify next steps** for fully embedding these integrated processes within your institutional culture.
- Develop a **community of colleagues** with whom to share ideas, resources, and good practices

WORKSHOP INTENTIONS

4

- This is a brand new workshop … with some brand new ideas.
- The ideas and strategies build on good practices in IR/analytics and assessment, - AND …
- Some ideas are emergent to respond to changes in higher ed.
- The approaches are not prescribed by WSCUC - BUT …
- They are intended to help institutions use data better to support student achievement and institutional vitality.

AN INVITATION TO PLAY …

5

John Stanley
Director of Institutional Research
University of Hawai'i - West Oahu

OUR EXPERT FACILITATORS

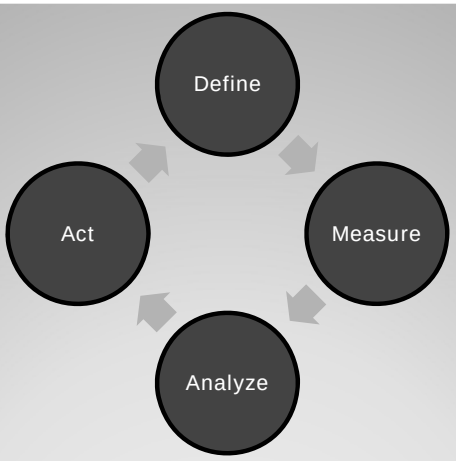
6

Monica Stitt-Bergh

Associate Specialist, Office of Assessment,
University of Hawai'i at Manoa

OUR EXPERT FACILITATORS

7



ONE IDEA TO BEGIN WITH…

8

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Framework for Purposeful Integration of IR and Assessment Activities

Monica Stitt-Bergh

John Stanley

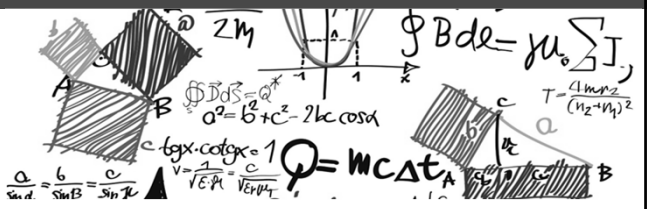
Analytics for Academics

Producing Actionable Information about Students and Learning to Improve Effectiveness

Monica Stitt-Bergh, University of Hawai‘i – Mānoa
John Stanley, University of Hawai‘i – West O‘ahu

Analytics

Analytics – using data, statistics, and models to increase understanding



Not Dr. John

Not Dr. Monica

Analytics—Today's Workshop

Not a stats class. Not a math class.

Introductory. Conceptual.

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Framework for purposeful integration of institutional research and assessment activities

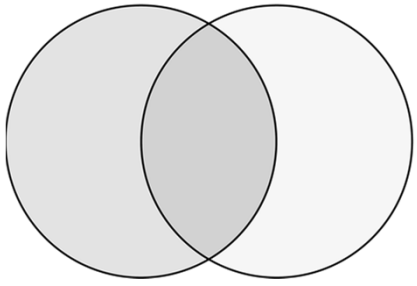
Driving Forces

1. Volume of data
2. Demand for data (accountability)
3. Data use no longer limited to reporting

Purposeful Integration of IR and Assessment Functions

Institutional Research

Assessment



WSC Definitions:

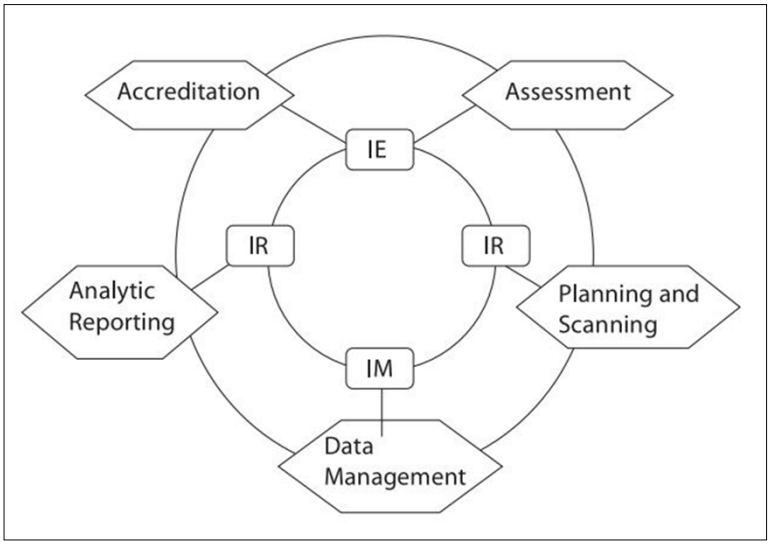
Institutional Research

1. collection of institutional data useful for analysis, planning, & accreditation review; 2. the office that collects, organizes, & reports such data.

Assessment (of student learning)

an ongoing, iterative process consisting of four basic steps: 1. defining learning outcomes; 2. choosing a method or approach & then using it to gather evidence of learning; 3. analyzing & interpreting the evidence; and 4. using this information to improve student learning.

Diversity of Organizational Structures & Overlapping Needs



From: Posey, J., & Pitter, G. (2012). Integrating the functions of institutional research, institutional effectiveness, and information management. *The AIR Professional File, 126,* 1-31.

Activity 2A

Reflection Activity

Take 3 minutes to ✓ the column you believe best represents your campus (or program).

Framework for Purposeful Integration of IR and Assessment Activities

Reflection Activity 2A

To what extent does your campus already have institutional research (IR) and assessment capacity?
To what extent is your campus or program using their combined energies?

Please make a "✓" in the column you believe best represents your campus (or program).

Data management and reporting	**Large Extent**	**Moderate Extent**	**Small Extent**	**Unsure**
Centralized institutional data (i.e., one source to ensure data accuracy).				
Interactive online reporting.				
Data security measures.				

Comments/notes:

IR analytical reporting	**Large Extent**	**Moderate Extent**	**Small Extent**	**Unsure**
Utilize research from the literature or other campus's IR & assessment offices.				
Use statistics to predict or explain gradation & retention data (or other IR data).				
Develop visualization tools to convey data and findings.				
Present research studies and key findings to campus stakeholders.				

Comments/notes:

continued on next page

Assessment[1]	**Large Extent**	**Moderate Extent**	**Small Extent**	**Unsure**
Use an electronic system for assessment reporting.				
Monitor assessment reporting.				
Analyze survey responses (e.g., motivation, behaviors, self-assessments).				
Evaluate learning evidence (e.g., projects, assignments, performances, exams).				
Provide technical assessment expertise to faculty, staff, & administrators.				
Distribute key findings from assessment in a <u>useable</u> format (e.g., good visualizations).				
Use assessment findings to improve learning quality.				

Comments/notes:

Integration of IR and assessment[1] **activities**	**Large Extent**	**Moderate Extent**	**Small Extent**	**Unsure**
Use student information (e.g., prior performance, motivation, socio-economic class) to **aid the interpretation** of assessment findings and student outcomes.				
Use student information (e.g., prior knowledge, prior performance, motivation, socio-economic class) to **predict** student (learning) outcomes.				
Use multiple data sources to develop action plans to improve learning quality and student success (Data sources such as student information system, learning management system, evaluation of learning evidence, survey responses).				
Use statistics to examine equity in student (learning) outcomes across groups of students.				

Comments/notes:

[1] *Assessment* refers to student learning assessment, which is an "ongoing, iterative process consisting of four basic steps: 1. defining learning outcomes; 2. choosing a method or approach and then using it to gather evidence of learning; 3. analyzing and interpreting the evidence; and 4. using this information to improve student learning" (WASC Handbook Glossary)

Framework for Purposeful Integration of IR and Assessment Activities

Think – Pair – Share 2A

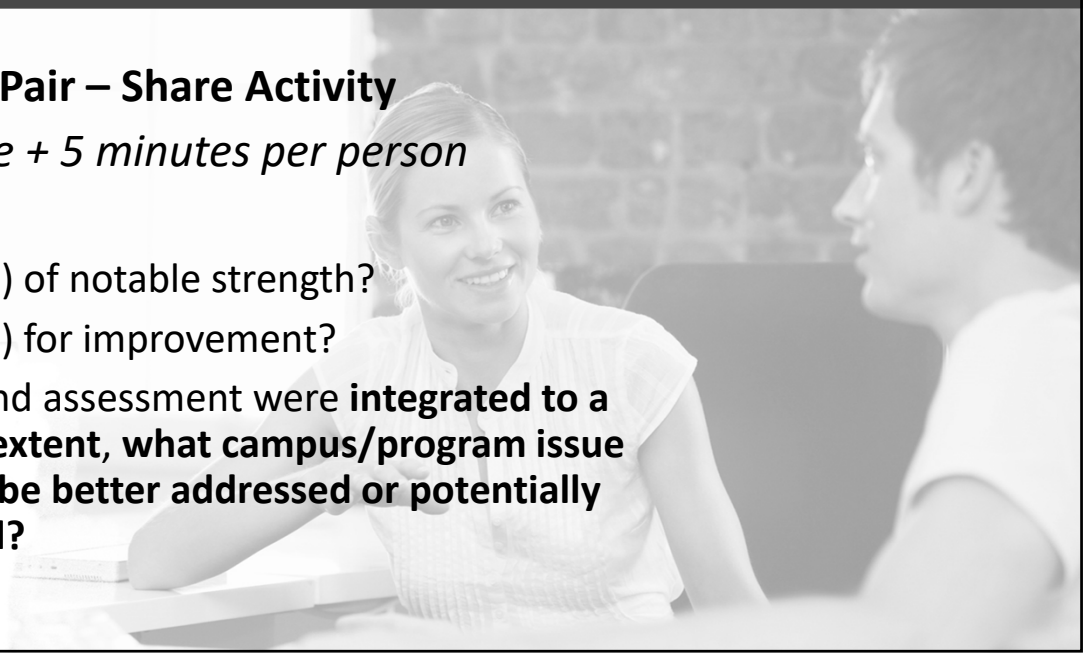
1. On your campus (or program), what's an area(s) of notable strength? (i.e., checked "large extent" above)

2. What's an area(s) that may need improvement? (i.e., checked "small extent" above)

3. If IR and assessment were integrated to a large extent, what campus/program issue(s) could be better addressed or potentially solved?

When you've finished, discuss with and get feedback from someone nearby.

Activity 2A

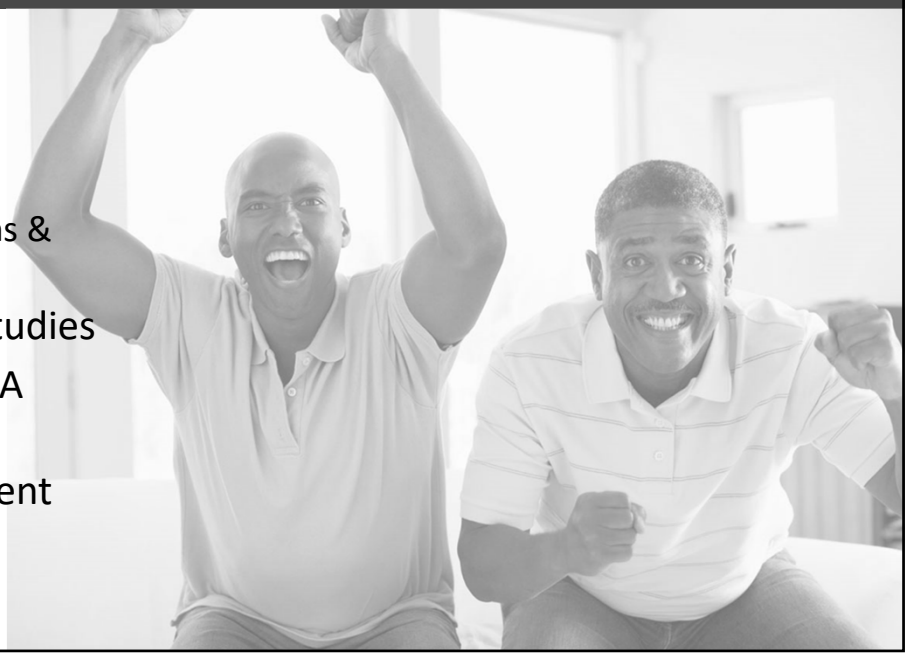


Think – Pair – Share Activity

1 minute + 5 minutes per person

1. Area(s) of notable strength?
2. Area(s) for improvement?
3. If IR and assessment were **integrated to a large extent**, **what campus/program issue could be better addressed or potentially solved?**

Workshop Methodology

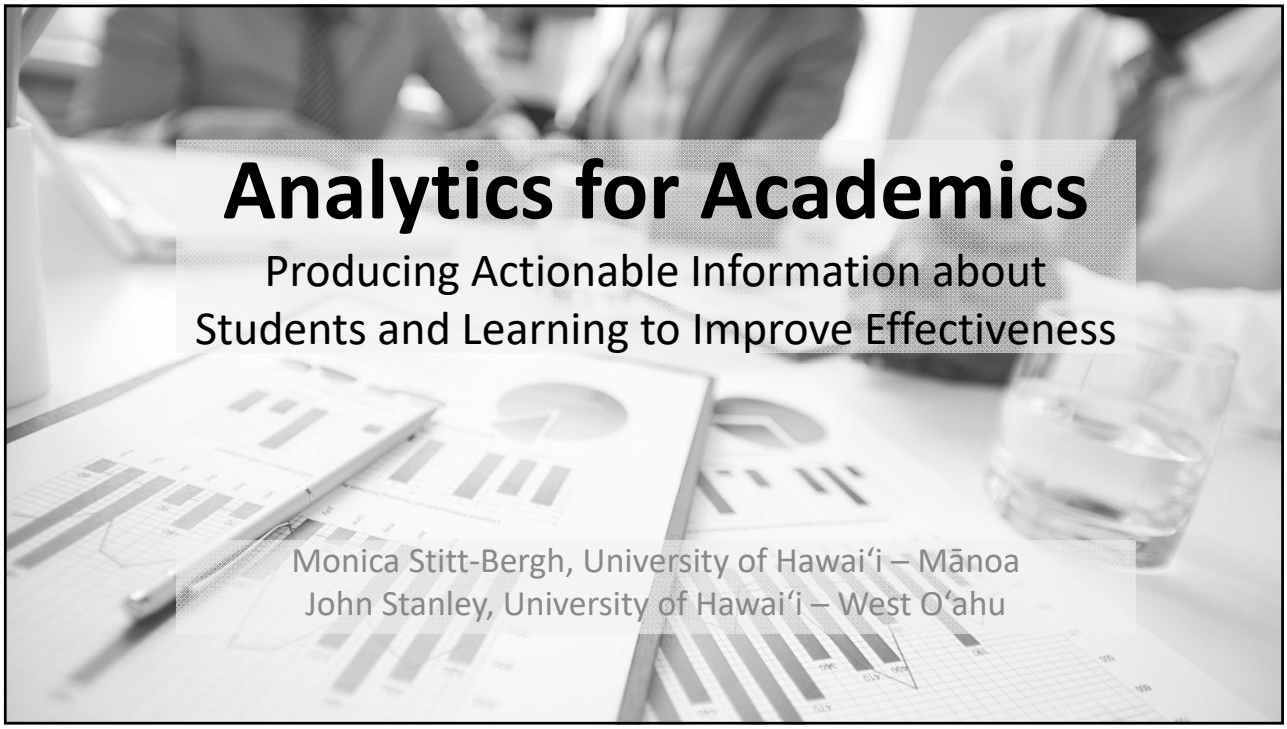


- Mini workshops
  - Analytics
  - Learning theory
  - Ethical implications & feasibility
- Concepts & case studies
- Activities and Q & A
- Take home lessons learned & excitement about your vision

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Use Data Analytics to Engage Stakeholders in Decision Making

John Stanley



WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

USE DATA ANALYTICS TO ENGAGE STAKEHOLDERS IN DECISION MAKING

John Stanley
Director, Institutional Research
University of Hawaii – West Oahu
jstanley@hawaii.edu

Session objectives

1. Define “analytics” and discuss challenges.
2. Examine several case studies that used analytics to improve institutional effectiveness.
3. Warm-Up Activity: Visualization
4. Next Step Activity: Predictive Analytics

Challenges for Institutional Research

- Compliance vs. Self-Improvement
- Developing a culture of evidence
- From reporting to analysis
- Converting data into ‘actionable’ information
- Follow highest standards, best practices
- Know your customers, mission
- Leverage technology, stay abreast of tech
- Empower staff, continuous honing of skills
- Effective senior-management support working with IR (and IT)

AIR Newsletter March 2016

"I've seen too many IR offices that operate like a reporting agency and focus IR analysis only on what has happened in the past. Decisions, however, are made about the future – specifically, about the expected outcomes of future events… For the future of IR, professionals should become active in helping to minimize the risks of a decision by providing insightful analysis about possible outcomes."

– Bob Daly, eAIR Newsletter, March 2016

SOURCE: https://www.airweb.org/eAIR/specialfeatures/Pages/The-Future-Of-IR.aspx

What is analytics?

"Analytics is the use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues."

-EDUCAUSE Center for Applied Research

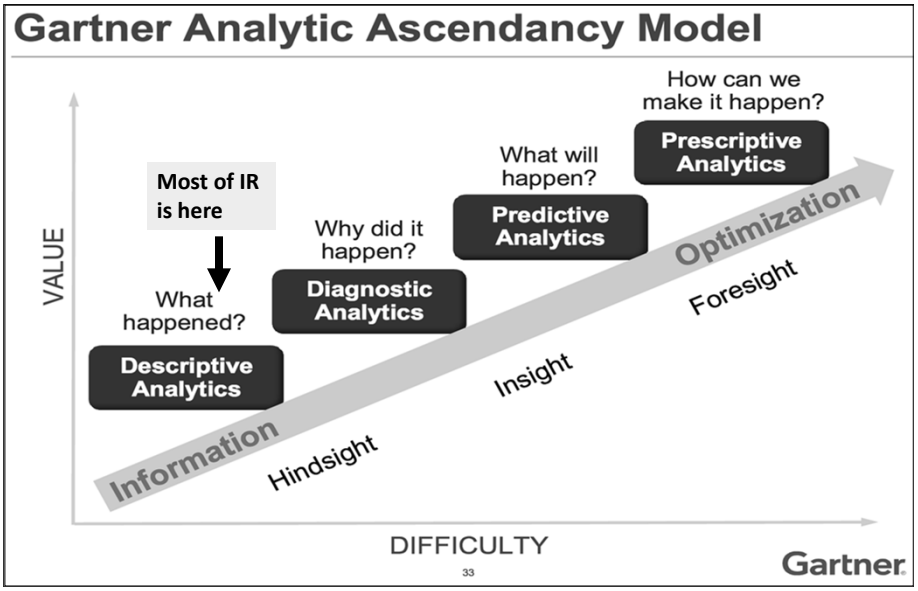
EDUCAUSE Center for Applied Research Video: "What is Analytics?"

Downloaded from:
http://www.educause.edu/ero/article/video-what-analytics

Examples of analytics

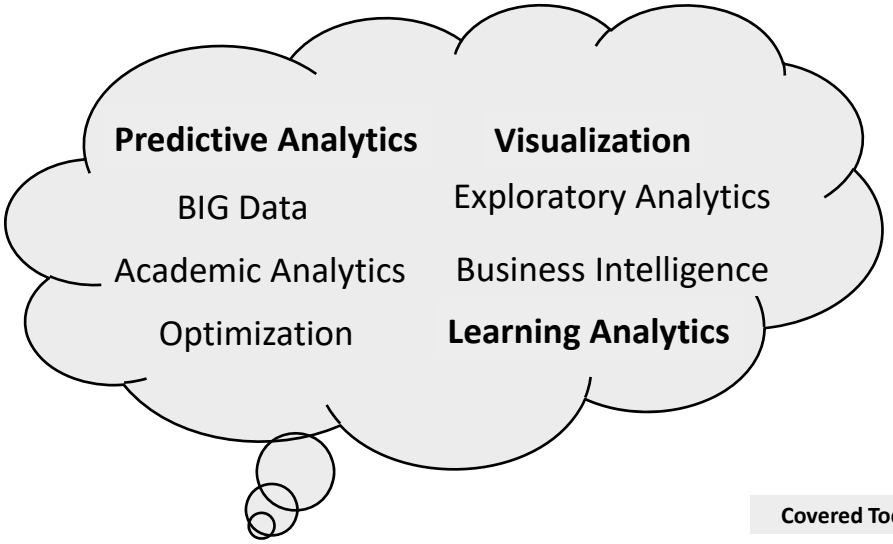
NOT Analytics	Analytics
• Disaggregating student retention rates by gender, ethnicity, or other groups. • Descriptive data in tables, charts, and graphs. • A cross-tabulation showing retention rates for students in learning communities versus non-learning community students.	• Building an explanatory or prediction model to identify students at-risk of dropping out, or to find important drivers of behavior hidden in your data. • Interactive data with slicers, drop downs; presented in dashboards. • An analysis that controls for self-selection using student matching techniques

From hindsight to foresight



SOURCE: http://evolllution.com/wp-content/uploads/2016/02/From-Hindsight-to-Foresight.png

Types of analytics



Covered Today

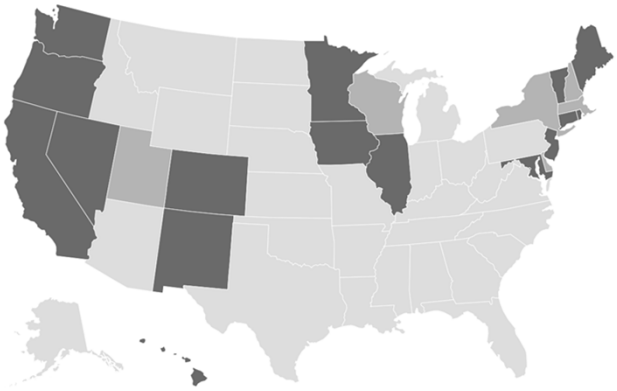
Visualization

- Data visualization is used to communicate data or information by representing it as visual objects (e.g., heatmaps, chords, sankeys).
- The goal is to communicate information clearly and efficiently to help users make:
  - faster insights
  - clearer choices
  - faster decision making

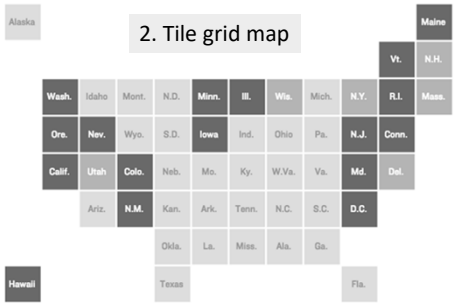
Source: http://designtaxi.com/news/376549/Infographic-72-Ways-To-Think-Present-Your-Ideas/

Visualization example: maps

1. Choropleth map



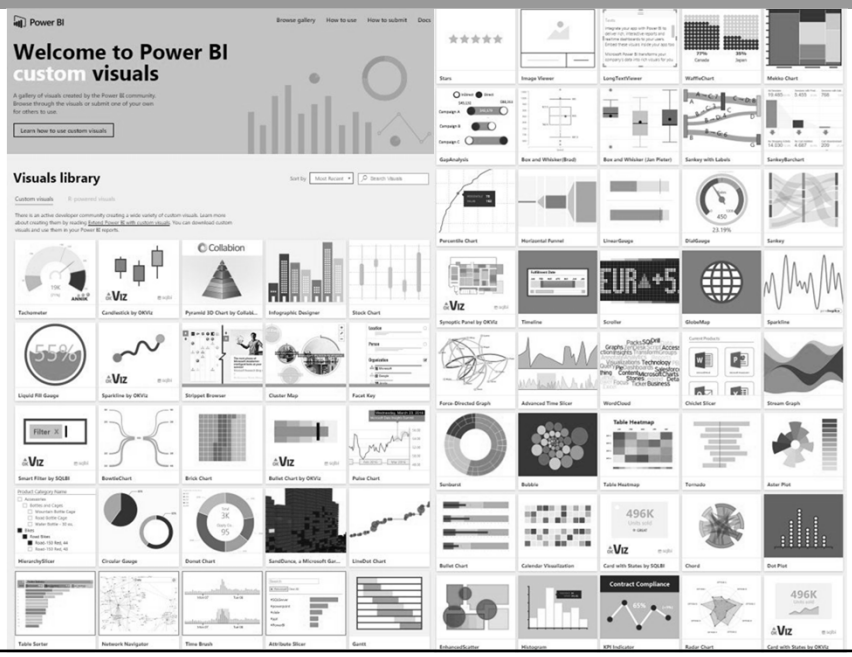
2. Tile grid map



3. Hex tile grid map

Source: http://blog.apps.npr.org/2015/05/11/hex-tile-maps.html/

Visualization with Microsoft Power BI (free)

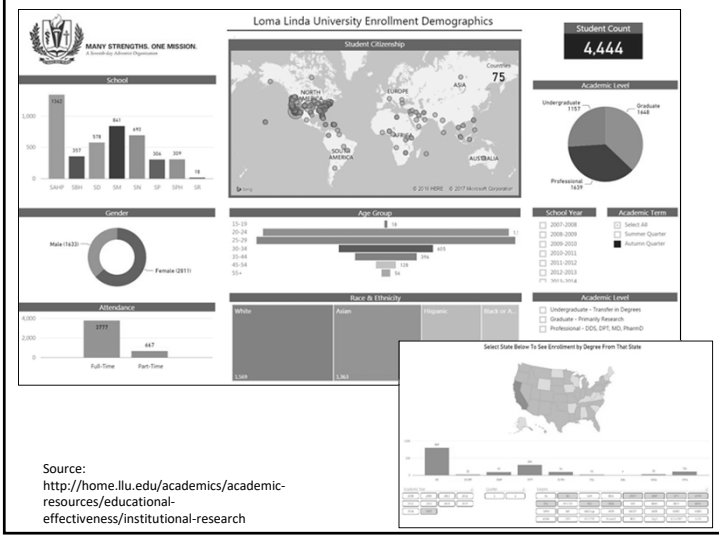


Source: https://app.powerbi.com/visuals/

Data dashboards

LOMA LINDA UNIVERSITY

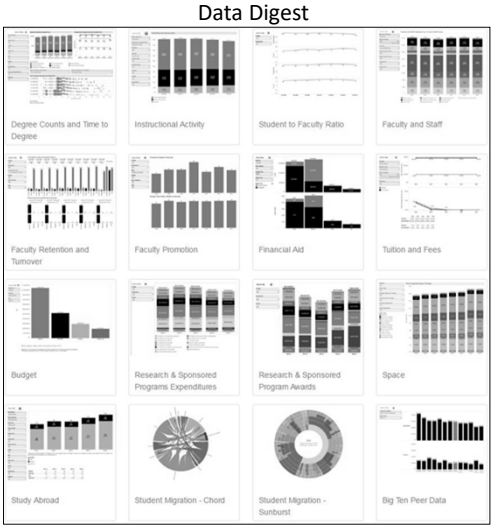
Institutional Research



Source: http://home.llu.edu/academics/academic-resources/educational-effectiveness/institutional-research

PURDUE UNIVERSITY

Data Digest



Source: https://www.purdue.edu/datadigest/

Warm-Up Activity #1

3A

Instructions: Take three minutes to examine the tables and answer the following questions:

1. Which classroom/s is consistently underutilized relative to other classrooms?

2. Which classroom has the lowest headcount enrollment?

3. If you were the class scheduler for the campus, what would your recommendation be to accommodate anticipated growth in student enrollment over the next five years?

WSC
Senior College and University Commission

Data Analytics Warm-Up Activity #1: Visualization (3 minutes)

Data visualization is used to communicate data or information by representing it as visual objects (e.g., heatmaps, chords, sankeys). The goal is to communicate information clearly and efficiently in order to help users make faster insights, clearer choices, and faster decision making. Microsoft Power BI is a free software that was used to develop these exercises. To learn more about Power BI's powerful visualization capabilities, visit: https://app.powerbi.com/visuals/

Background: The University of Hawai'i West Oahu (UHWO) is in a period of unprecedented enrollment growth and has experienced double digit percentage increases in enrollment for the last five years. UHWO is challenged with absorbing additional growth given the limited classroom space on campus. The campus offers the majority of its in-person classes Monday through Thursday. The tables below report the headcounts of students enrolled in the "Classroom Building" on these days in a given hour block.

Instructions: Take three minutes to examine the tables and answer the following questions:

1. Which classroom/s is consistently underutilized relative to other classrooms?
2. Which classroom has the lowest headcount enrollment?
3. If you were the class scheduler for the campus, what would your recommendation be to accommodate anticipated growth in student enrollment over the next five years?

Monday

Room	D140	D141	D145	D146	D150	D151	D237	D238	D250	D253	D254
0800	34	0	38	37	25	0	11	0	20	20	0
0900	63	13	59	71	45	19	11	21	40	40	25
1000	29	13	21	34	20	19	0	21	20	20	25
1100	37	20	41	20	41	11	5	39	20	20	23
1200	74	40	64	25	72	11	11	61	37	38	65
1300	37	20	23	5	31	11	6	22	17	18	42
1400	24	0	42	0	18	18	30	20	7	18	5
1500	24	17	42	9	25	18	48	40	14	18	5
1600	0	17	0	9	7	0	18	20	7	0	0
1700	0	12	0	6	0	0	18	0	0	20	0
1800	0	12	0	6	0	0	18	0	0	20	0

Tuesday

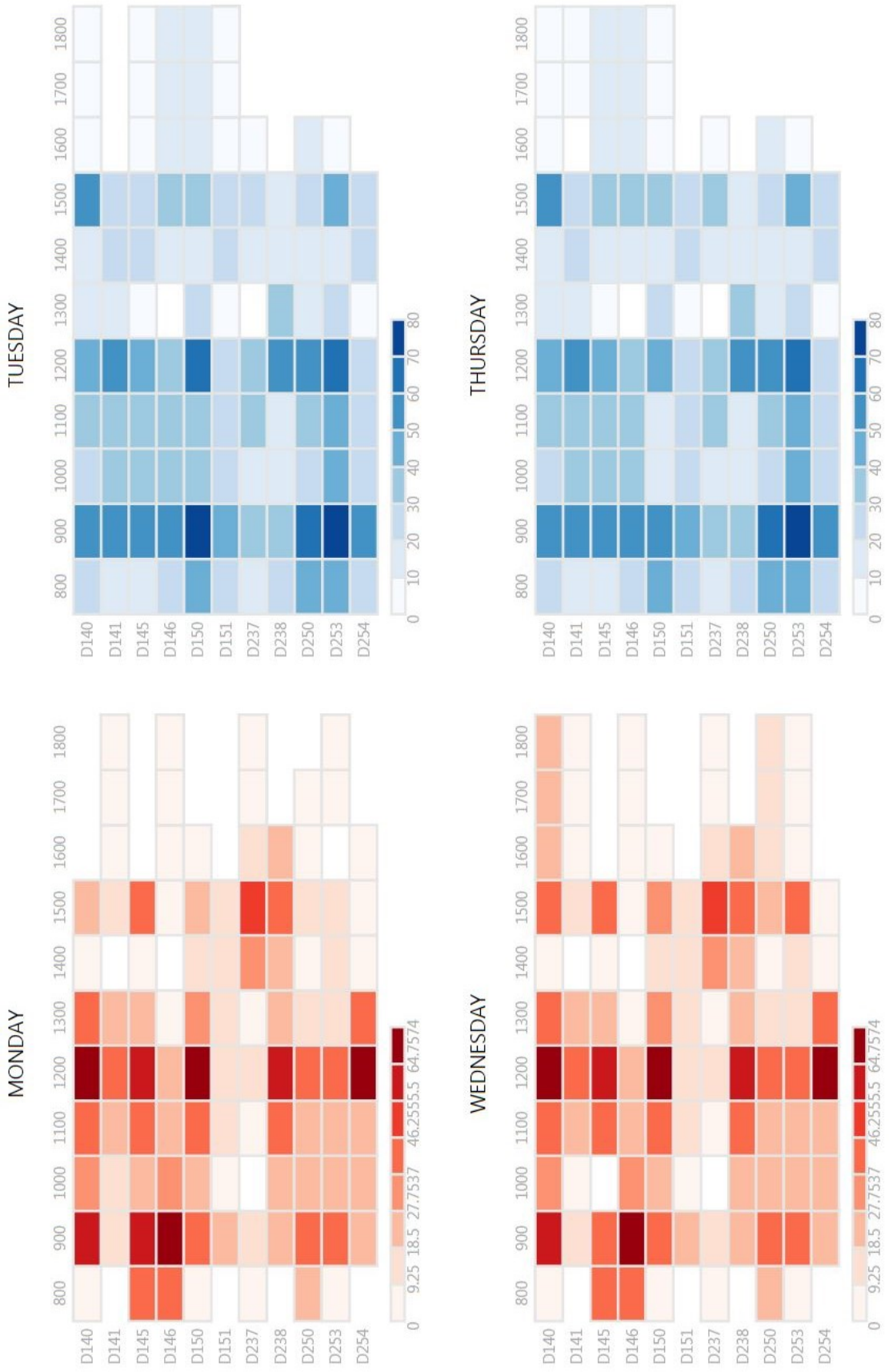
Room	D140	D141	D145	D146	D150	D151	D237	D238	D250	D253	D254
0800	23	19	15	26	40	29	14	25	40	40	25
0900	52	55	54	59	74	49	33	35	69	80	53
1000	29	36	39	33	34	20	19	10	29	40	28
1100	30	38	34	39	34	20	30	11	38	40	20
1200	49	52	48	39	61	20	30	50	57	60	28
1300	19	14	14	0	27	20	0	39	19	20	8
1400	18	21	22	15	14	26	13	10	16	19	20
1500	52	21	26	30	30	29	26	10	26	40	20
1600	34	0	4	15	16	3	13	0	10	21	0
1700	2	0	4	16	11	3	0	0	0	0	0
1800	2	0	4	16	11	3	0	0	0	0	0

Wednesday

Room	D140	D141	D145	D146	D150	D151	D237	D238	D250	D253	D254
0800	34	0	38	37	25	0	11	0	20	20	0
0900	63	13	38	71	44	19	11	21	40	40	25
1000	29	13	0	34	19	19	0	21	20	20	25
1100	37	20	41	20	41	11	5	39	20	20	23
1200	74	40	64	25	72	11	11	61	37	38	65
1300	37	20	23	5	31	11	6	22	17	18	42
1400	24	0	42	0	10	18	30	20	8	18	5
1500	44	17	42	9	28	18	48	40	26	40	5
1600	20	17	0	9	18	0	18	20	18	22	0
1700	20	20	0	18	0	0	18	0	18	22	0
1800	20	20	0	32	0	0	18	0	18	22	0

Thursday

Room	D140	D141	D145	D146	D150	D151	D237	D238	D250	D253	D254
0800	23	19	15	26	40	29	14	25	40	40	25
0900	52	55	54	59	54	49	33	35	69	80	53
1000	29	36	39	33	14	20	19	10	29	40	28
1100	30	38	34	39	14	20	30	11	38	40	20
1200	49	52	48	39	41	20	30	50	57	60	28
1300	19	14	14	0	27	20	0	39	19	20	8
1400	18	21	15	15	14	26	13	10	16	19	20
1500	52	21	34	30	30	26	35	10	26	40	20
1600	34	0	19	15	16	0	22	0	10	21	0
1700	2	6	19	11	11	0	0	0	0	0	0
1800	2	6	19	11	11	0	0	0	0	0	0


TUESDAY
THURSDAY
MONDAY
WEDNESDAY
800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800
D140 D141 D145 D146 D150 D151 D237 D238 D250 D253 D254
0 10 20 30 40 50 60 70 80
0 9.25 18.5 27.7537 46.2555.5 64.7574
UNIVERSITY of HAWAI'I' WEST OAHU
Fall 2015
Registration Count by Day, Time, and CL Bldg Room.

Warm-Up Activity #2 3B

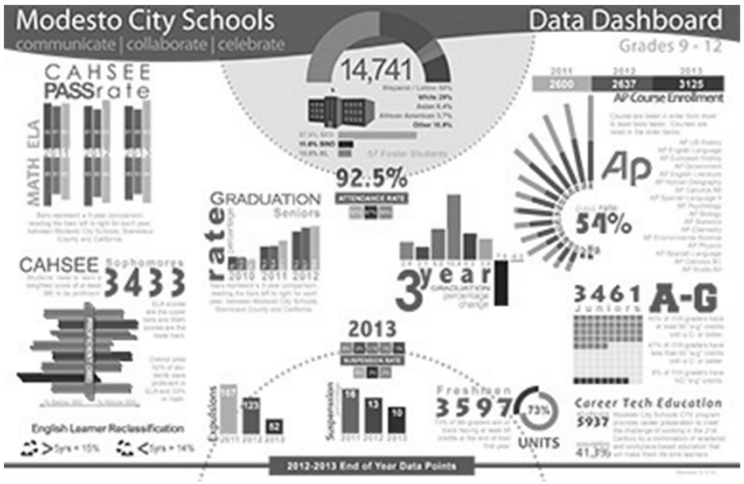
Instructions: Take three minutes to examine the table and answer the following questions:

1. Which meta major had the largest numbers of students migrating out? Which had the second most?

2. How many students migrated out of the West Oahu campus to another UH campus?

Data dashboards…

- Primarily used to monitor what's happening now.
- Don't always provide "actionable" information.



WSC
Senior College and University Commission

Data Analytics Warm-Up Activity #2: Visualization (3 minutes)

Background: College students often change majors several times during their post-secondary years. It is also common for students to move back and forth between institutions (i.e., swirling) as they try to find the best, and most economical, ways to complete their degrees. At the University of Hawai'i West Oahu (UHWO), major changes and swirling occur regularly. The UHWO Institutional Research Office refers to this as "student migration." To better understand migration patterns, the UHWO IR Office created a student migration report. The table below reports the number of students that migrated from their respective meta majors between Fall 2014 and Fall 2015.

Instructions: Take three minutes to examine the table and answer the following questions:

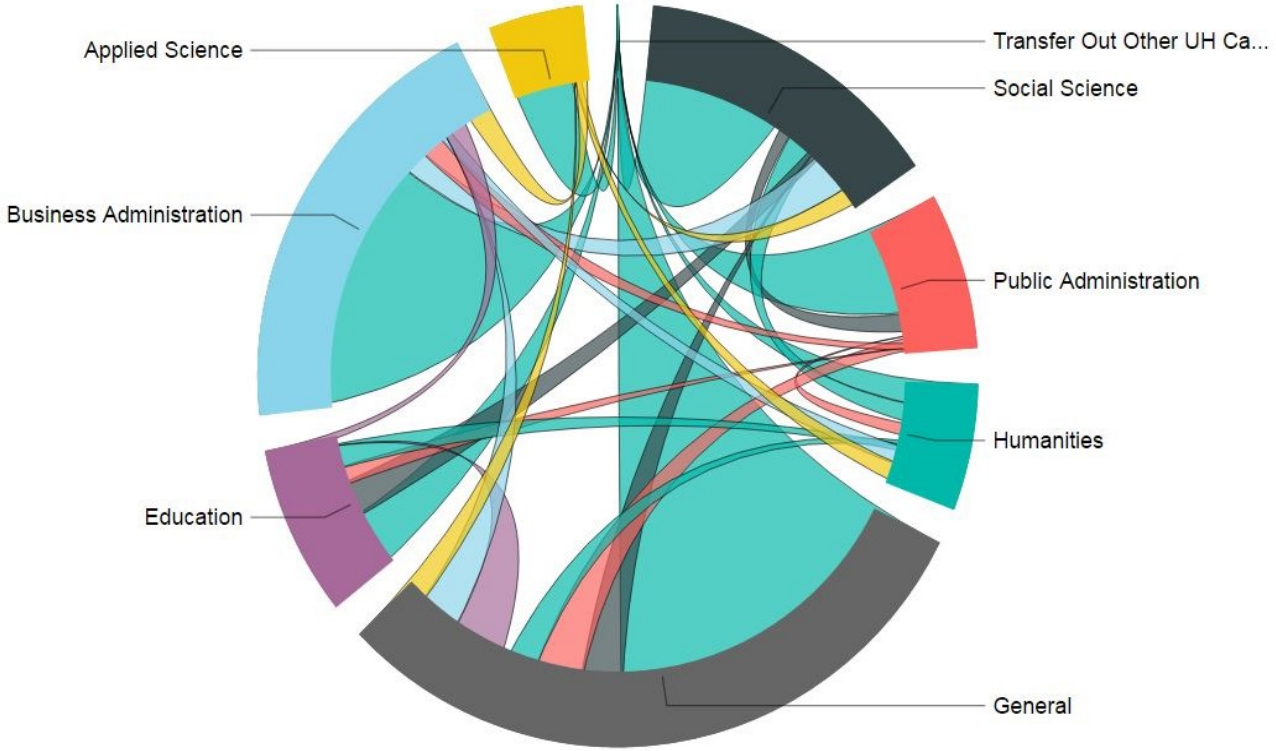
1. Which meta major had the largest numbers of students migrating out? Which had the second most?

2. How many students migrated out of the West Oahu campus to another UH campus?

Fall 2014 Meta Major	Fall 2015 Meta Major	Migration Count
Applied Science	Business Administration	2
Applied Science	Humanities	1
Applied Science	Transfer Out Other UH Campus	10
Business Administration	Applied Science	4
Business Administration	Education	4
Business Administration	Humanities	2
Business Administration	Public Administration	4
Business Administration	Social Science	4
Business Administration	Transfer Out Other UH Campus	42
Education	Business Administration	1
Education	Humanities	4
Education	Public Administration	3
Education	Social Science	6
Education	Transfer Out Other UH Campus	9
General	Applied Science	4
General	Business Administration	7
General	Education	9
General	Humanities	5
General	Public Administration	8
General	Social Science	7
General	Transfer Out Other UH Campus	54
Humanities	Applied Science	3
Humanities	Business Administration	3
Humanities	Education	1
Humanities	General	1
Humanities	Public Administration	2
Humanities	Social Science	3
Humanities	Transfer Out Other UH Campus	4
Public Administration	Business Administration	1
Public Administration	General	2
Public Administration	Social Science	3
Public Administration	Transfer Out Other UH Campus	15
Social Science	Applied Science	3
Social Science	Business Administration	7
Social Science	Education	2
Social Science	Humanities	5
Social Science	Public Administration	2
Social Science	Transfer Out Other UH Campus	24

UNIVERSITY of HAWAI'I® WEST O'AHU

Student Migration Report (Fall 2014 to Fall 2015 Migration)



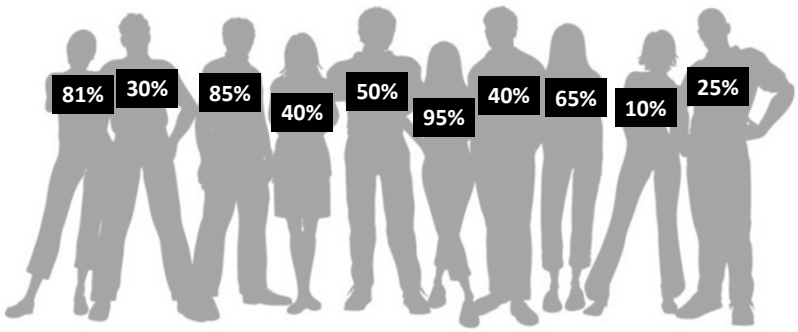
Transfer-Out Headcount by Destination

Fall 2014 Major	Transfer-Out Destination	Count
Applied Science	Other UH Campus	8
Applied Science	UH Manoa	2
Business Administration	Leeward CC	23
Business Administration	Other UH Campus	13
Business Administration	UH Manoa	6
Education	Leeward CC	6
Education	Other UH Campus	3
General	Leeward CC	22
General	Other UH Campus	16
General	UH Manoa	16
Humanities	Leeward CC	1
Humanities	Other UH Campus	2
Humanities	UH Manoa	1
Public Administration	Leeward CC	6
Public Administration	Other UH Campus	7
Public Administration	UH Manoa	2
Social Science	Leeward CC	10
Social Science	Other UH Campus	7
Social Science	UH Manoa	7
Total		**158**

Predictive Analytics

- Uses historical data to predict or forecast future behaviors, trends, or outcomes

  (i.e. enrollment likelihood, retention, course pass/fail, degree completion, gainful employment, etc.)



Benefits of predictive analytics

- Can generate “actionable” data (i.e., data used by academic support services to effectively assist students).
- Powerful and accurate predictive models can be constructed using matriculation data from your Student Information System (SIS).

Possible uses of predictive analytics

- Admissions recruitment
  - Predict which students are likely to enroll at your institution (Goenner & Pauls, 2006)
- Identifying at-risk students
  - Predict which students are likely to drop out or fall behind (Herzog, 2006 ; Sujitparapitaya, 2006)

- Students' price responsiveness to tuition increases or financial aid incentives (Des Jardins, 2001; Herzog & Stanley, 2017)
- Other uses?
  - Student Learning
  - Strategic Planning
  - Finance

A few colleges using predictive analytics…

University of Nevada, Reno

TEXAS
The University of Texas at Austin

FLORIDA STATE UNIVERSITY 1851

Missouri State

UC San Diego

Georgia State University

SJSU SAN JOSÉ STATE UNIVERSITY

ASU
ARIZONA STATE UNIVERSITY

UNIVERSITY of HAWAI'I WEST O'AHU

UC DAVIS
UNIVERSITY OF CALIFORNIA

VirginiaTech

University of Nevada, Reno

University of Nevada, Reno

- Predictive analytics used to improve student success.
- Institutional Analysis Office "pushes" dropout risk scores for individual students to academic advisors.
- > 4 percentage point increase in retention rates since deploying predictive analytics.

Source: Serge Herzog, Director of Institutional Analysis, University of Nevada, Reno.

Impact of U. of Nevada Work:

SCRIPPS HOWARD FOUNDATION WIRE

University Retention Rates Hold Steady As States Balance Access with Success. Scripps Howard Foundation Wire, April 15, 2011.

CAMPUS TECHNOLOGY

Managing Talent: HCM and Higher Education. Campus Technology Magazine, October 2010, Vol. 24 Number 2, pp. 36-42.

UB University Business

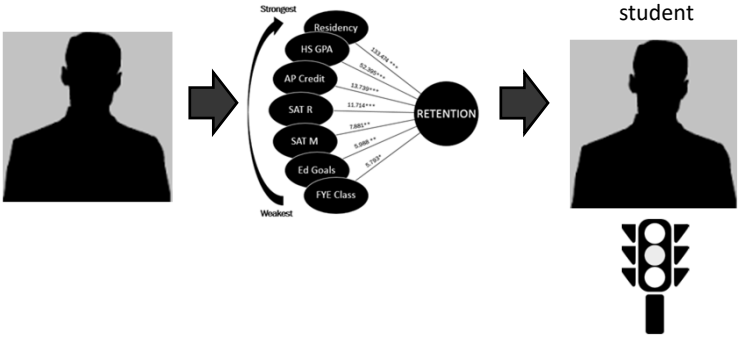
From Data to Information: Business Intelligence and Its Role in Higher Education Today. University Business Magazine, January 2009, pp. 25-27.

How does 'dropout-risk prediction' work?

1. Student data collected from SIS

2. Build prediction model using standard regression techniques

3. Prediction estimates are calculated per individual student

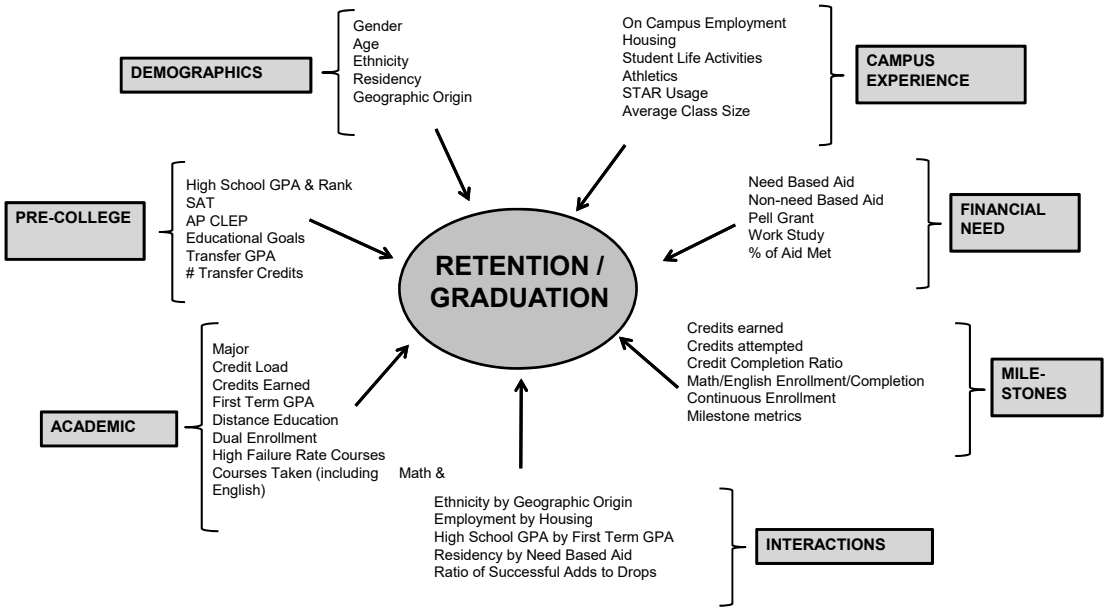


Student John Doe at the beginning of the semester:

- First Generation Student
- < Average high school GPA (3.00)
- Attempting 12 credits (12)
- Low % of financial need met (65%)
- Undeclared major
- Not enrolled in a campus learning community
- No educational goals in survey
- Not working on campus

Probability of Dropping Out:
75%

SIS data used for prediction



Academic advising intervention example

John

- First Generation
- SAT-M/SAT-R = 900
- H.S. GPA = 3.00
- 85% Unmet Financial Need
- Undeclared
- 12 credits registration

- Dropout risk probability: **60%**
- Risk group: **6 of 10**

Intervention strategy:

- Proactive advising
- Meta major pathway mapping
- Revisit financial aid support and other academic/personal support
- Check for possible ill-advised registration choices

Steve

- SAT-M/SAT-R = 1100
- H.S. GPA = 3.50
- Declared major (Accounting)
- Local address within 5 miles
- 15 credits registration
- Educational Goals = “Earn B.A.”

- Dropout risk probability: **15%**
- Risk group: **1 of 10**

Intervention strategy:

- Monitor *Starfish* reporting
- Mid-semester check-in
- Re-assess dropout risk at end-of-semester

Sample data for advisors/success coaches

ID	LAST NAME	FIRST NAME	EMAIL	CURRENT CREDITS	RESIDENT	AP/ CLEP	HS GPA	WORK ON CAMP	1st YR EXP CLASS	% FIN NEED MET	STAR LOGINS	ADVISOR PREVIOUS CONTACT
001				15	HI	6	3.80	Y	Y	77%	5	Y
002				14	HI	0	3.33	N	Y	63%	3	N
003				12	CA	6	3.00	N	N	45%	0	N

ID	AGE	GENDER	ETHNICITY	COLLEGE	MAJOR	DEGREE	Ed Goal Specified	Relative Risk Value	Risk Level
001	18	F	CH	CA&H	ART	BA	Yes	14.92	LOW
002	18	F	HW	CSS	SOC	BA	Yes	36.88	MEDIUM
003	18	M	UNDEC	UNDEC	UNDEC	UNDEC	No	89.18	HIGH

University of Texas at Austin

David Laude, PhD
"Graduation Champion"

University of Texas at Austin

For the Class of 2017:

- 94.6 percent retention, up from 93.6 percent prior year, resulting in the highest one-year retention rate in the university's history for returning freshmen.
- Average GPA of 3.28, up from 3.22 for the previous class.
- Students enrolled in and passed more SSH (average 13.32 hours passed) than any entering class in the past five years. Taking more credit hours each semester will help these students stay on track to graduate in four years.

The New York Times

Who Gets to Graduate?

By PAUL TOUGH MAY 15, 2014

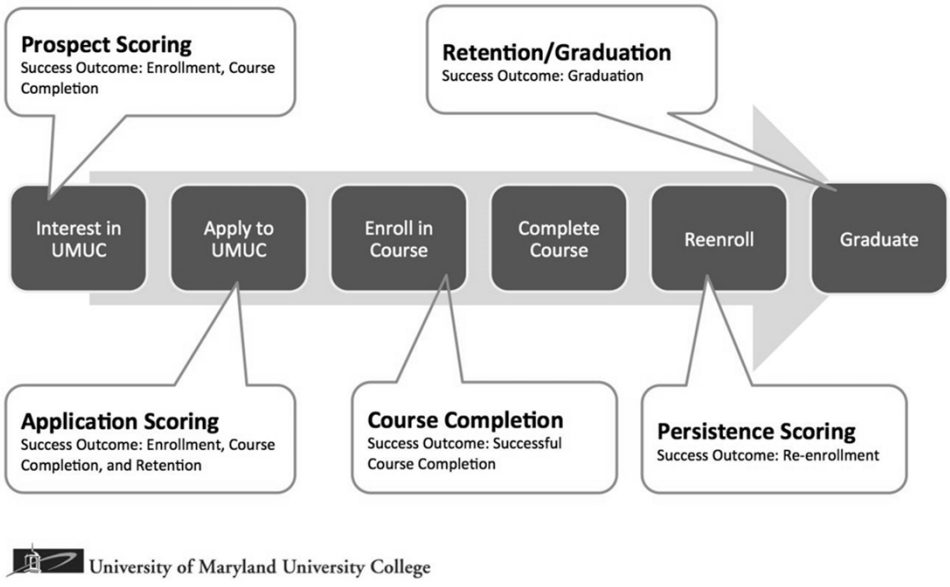
For as long as she could remember, Vanessa Brewer had her mind set on going to college. The image of herself as college student appealed to her — independent, intelligent, a young woma full of potential — but it was more than that; it was a chance to rewrite the endi to a family story that went off track 18 years earlier, when Vanessa's mother, then a high-achieving high-school senio in a small town in Arkansas, became pregnant with Vanessa.

Vanessa's mom did better than most teenage mothers. She married her high-

Vanessa Brewer Bill McCullough for The New York Times

Source: https://www.nytimes.com/2014/05/18/magazine/who-gets-to-graduate.html?_r=0

Predictive analytics at critical milestones



Source: http://evolllution.com/wp-content/uploads/2016/02/Analytics-at-Critical-Milestones.png

Enrollment management: UT Austin example

Jane Doe

- First Generation
- SAT scores sent to TAMU, TCU, Baylor
- 1250 SAT
- 3.95 H.S. GPA
- No admissions recruitment card received
- Low family income

- Probability of accepting admissions offer: **33%**

Admissions offer:

- **$5** admission packet
- President's Merit Scholarship
- Hello phone call from faculty member

John Doe

- Second Generation, parents attended UT
- SAT scores also sent to Rice
- Average SAT/H.S. GPA
- Early Application Date
- Attended recruitment fair
- Geographic proximity of local address within 10 miles

- Probability of accepting admissions offer: **85%**

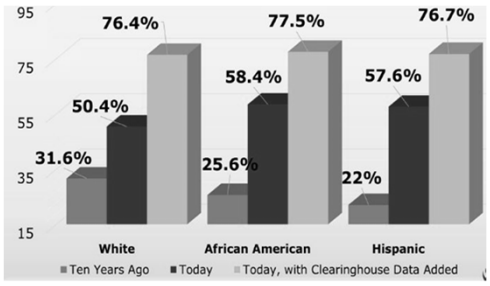
Admissions Offer:

- **$3** admission packet

Georgia State University

Georgia State University

- Predictive analytics used to reduce achievement gaps.
  - Major matching
  - Guided registration interface with linkages to career data
  - Scholarships and learning communities targeted to appropriate students

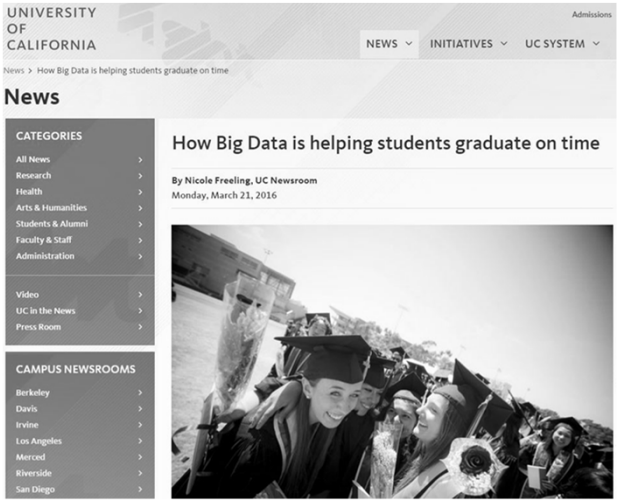


Source: Tim Renick, VP Enrollment Management, Georgia State University.

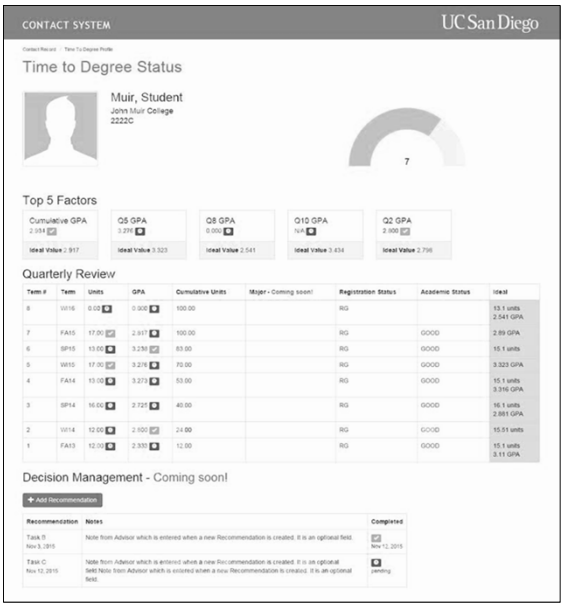
Impact of Georgia State Work:

Tim Renick, PhD.
The Student Success Czar

University of California analytics



Source: http://universityofcalifornia.edu/news/how-big-data-helping-students-graduate-time



Source: https://www.insidehighered.com/sites/default/server_files/images/ucsd.jpg

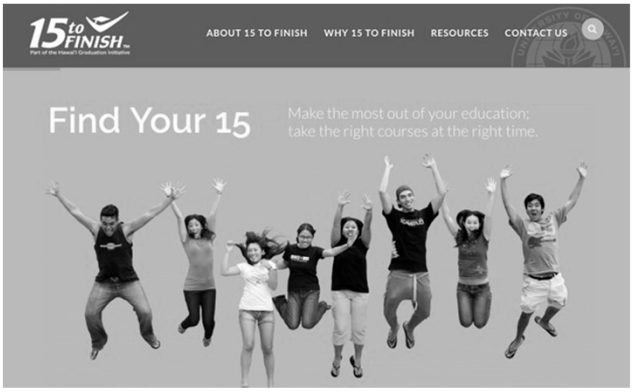
Predictive analytics training for IR staff

Challenges to predictive analytics

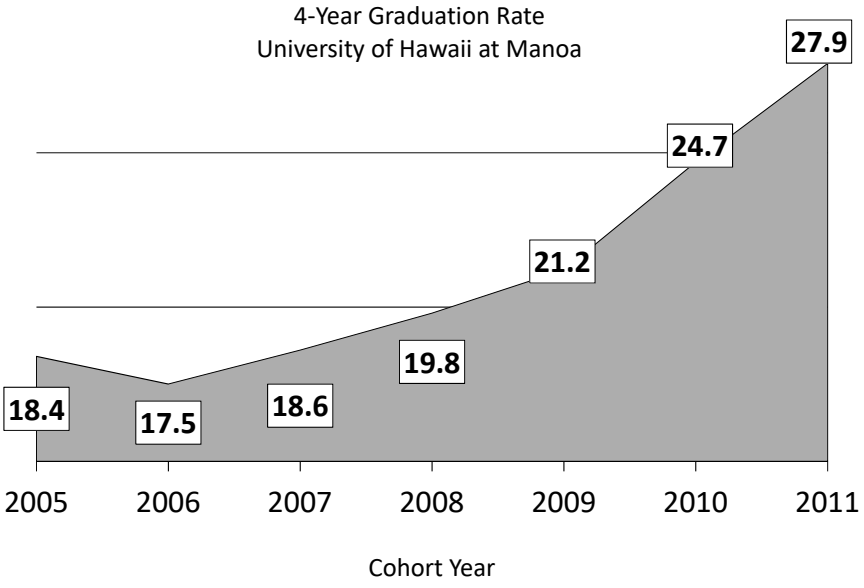
- Culture change (business model stigma)
- Wary of misuse of data
- Questions about data used in model to generate risk scores
- Students' rights to access risk scores
- More accountability
- Profiling/ Self-fulfilling prophecy

We will discuss these in an activity after lunch!

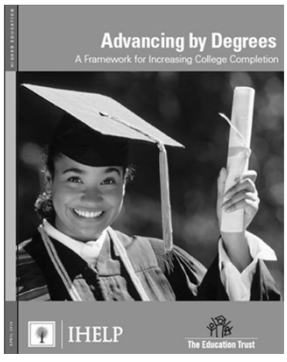
Analytics and 15 to Finish



4-Yr grad rate improvement - UH Manoa



15 to Finish Campaign: How it started



UH Participated in The Education Trust's "Leading Indicators" Initiative in 2011.

Research for Leading Indicators Initiative focused on:

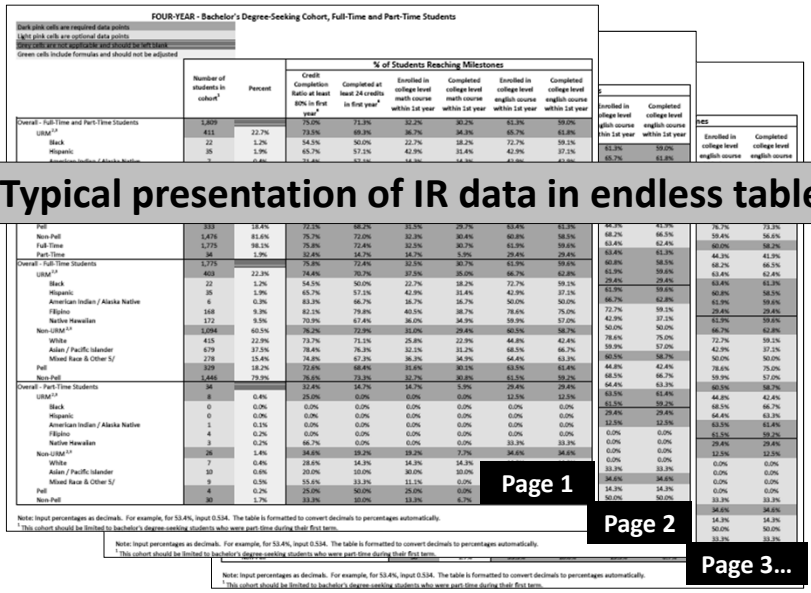
1). Milestones and on-track indicators (i.e., measurable educational achievements).

2). Student characteristics (i.e., demographics, financial ability to pay), academic and enrollment patterns.

3.) Focus was on "analysis", not reports.

The data analysis and best practices learned from the "Leading Indicators" Study gave rise to UH's "15 to Finish" campaign and the subsequent work in CCA 2013 .

Early 15 to Finish Data



Typical presentation of IR data in endless tables

Leading Indicators Activity

Step 1: Analyze the descriptive data:

2017 WSCUC 'Analytics for Academics' Workshop
Exercise #3

Table 1

	# Students in Cohort 1/	Percent	% of Students Reaching Milestones: Credit Completion Ratio at least 80% in 1st year	Completed at least 24 credits in 1st year	Enrolled in college level english course within 1st year	Completed college level english course within 1st year	Enrolled in college level math course within 1st year	Completed college level math course within 1st year
Total Headcount	1,809	100%	75.0%	71.3%	67.8%	64.3%	61.3%	59.0%
URM 2/,3/	411	22.7%	73.5%	69.3%	63.3%	59.8%	65.7%	61.8%
Black	22	1.2%	54.5%	50.0%	77.3%	73.8%	72.7%	59.1%
Hispanic	35	1.9%	65.7%	57.1%	57.1%	53.6%	42.9%	37.1%
American Indian / Alaska Native	7	0.4%	71.4%	57.1%	85.7%	82.2%	42.9%	42.9%
Filipino	172	9.5%	80.2%	77.9%	60.5%	57.0%	76.7%	73.3%
Native Hawaiian	175	9.7%	70.9%	66.3%	64.6%	61.1%	59.4%	56.6%
Non-URM 2/,3/	1,398	77.3%	75.5%	71.9%	69.2%	65.7%	60.0%	58.2%
White	422	23.3%	73.0%	70.1%	74.4%	70.9%	44.3%	41.9%
Asian / Pacific Islander	689	38.1%	77.5%	75.3%	67.9%	64.4%	68.2%	66.5%
Mixed Race & Other 4/	287	15.9%	74.2%	66.2%	64.5%	61.0%	63.4%	62.4%
Pell	333	18.4%	72.1%	68.2%	68.5%	65.0%	63.4%	61.3%
Non-Pell	1,476	81.6%	75.7%	72.0%	67.7%	64.2%	60.8%	58.5%
Full-Time	1,775	98.1%	75.8%	72.4%	67.5%	64.0%	61.9%	59.6%
Part-Time	34	1.9%	32.4%	14.7%	85.3%	81.8%	29.4%	29.4%

1/ This cohort should be limited to bachelor's degree seeking students who were full-time and part time during their first term.
2/ Disaggregation by URM/Non-URM is required. Disaggregation into more specific racial/ethnic categories is optional.
3/ Hawaii may include Filipinos and Native Hawaiians in their URM category and exclude them from the Non-URM category.
4/ "Mixed Race (2 or more)" = Asian Indian, No Data, Portuguese, Blank, "Other Asian" =Chinese, Guamanian or Chamorro, Japanese, Korean, Laotian, Micronesian, Mixed Asian, Mixed Pacific Islander, Other Asian, Other Pacific Islander, Pacific Islander, Samoan, Thai, Vietnamese;

Table 1: Frequency of cohort participation in selected milestones

Table 2

	Number of Students in Cohort 1/	Number of Completers	Graduation Rate	6-Year Graduation Rate, by Whether Students Reach Key Milestones: Credit Completion Ratio at least 80% in first year 2/			Completed at least 24 credits in first year 2/			Completed college level english course within 1 year			Completed college level math course within 1 year		
				Yes	No	Difference	Yes	No	Difference	Yes	No	Difference	Yes	No	Difference
Total	1,809	1,022	56.5%	67.6%	23.0%	44.6%	69.3%	25.6%	43.7%	65.1%	49.3%	15.8%	66.1%	43.6%	22.5%
URM 2/,3/	411	204	49.7%	60.6%	19.7%	40.9%	63.5%	23.5%	40.0%	55.9%	44.7%	11.2%	61.0%	40.3%	20.7%
Black	22	7	31.8%	67.0%	33.0%	34.0%	66.6%	24.6%	42.0%	59.0%	41.2%	18.0%	58.5%	38.6%	19.9%
Hispanic	35	19	54.3%	66.6%	33.4%	33.2%	62.5%	23.1%	39.4%	52.0%	48.0%	4.0%	53.4%	35.2%	18.2%
American Indian /	7	6	85.7%	66.6%	33.4%	33.2%	67.0%	24.8%	42.2%	66.6%	33.4%	33.2%	59.6%	39.3%	20.3%
Filipino	172	92	53.5%	57.0%	43.0%	14.0%	61.2%	22.6%	38.6%	54.0%	46.0%	8.0%	62.0%	40.9%	21.1%
Native Hawaiian	175	80	45.7%	60.0%	40.0%	20.0%	62.0%	22.9%	39.1%	56.0%	44.0%	12.0%	60.5%	39.9%	20.6%
Non-URM 2/,3/	1,398	818	58.5%	70.5%	30.0%	40.0%	71.2%	26.3%	44.9%	68.2%	51.0%	17.2%	67.6%	44.6%	23.0%
White	422	239	56.6%	71.0%	29.0%	42.0%	71.5%	26.5%	45.0%	69.4%	30.6%	38.8%	68.2%	45.0%	23.2%
Asian / Pacific Islander	689	420	61.0%	72.0%	28.0%	44.0%	73.2%	27.1%	46.1%	70.2%	29.8%	40.4%	69.0%	45.5%	23.5%
Mixed Race & Other 4/	287	159	55.4%	69.0%	31.0%	38.0%	68.0%	25.2%	42.8%	66.9%	33.1%	33.8%	65.9%	43.5%	22.4%
Pell	333	169	50.8%	62.9%	19.4%	43.5%	61.9%	22.9%	39.0%	55.6%	47.1%	8.5%	55.8%	36.8%	19.0%
Non-Pell	1,476	853	57.8%	68.7%	24.0%	44.7%	70.9%	26.2%	44.7%	67.2%	49.9%	17.3%	68.4%	45.1%	23.3%
Full-Time	1,775	1,010	56.9%	67.8%	22.8%	45.0%	69.4%	25.7%	43.7%	65.4%	49.7%	15.7%	66.2%	43.7%	22.5%
Part-Time	34	12	35.3%	54.5%	26.1%	28.4%	50.0%	18.5%	31.5%	33.3%	35.7%	-2.4%	50.0%	33.0%	17.0%

Table 2: Cohort 6-Yr graduation rates by achievement of selected milestones

Leading Indicators Activity

3C_1, 3C_2

Instructions: Take 12 minutes to interpret and discuss the three "Leading Indicators" reports (Table 1, Table 2, and Figure 1). As a group, answer the following questions:

1. Based on the tables and graphs, what do you think is the strongest 'early' indicator of degree completion likelihood? What is the relative strength of this predictor?

2. Which factor is stronger in predicting degree completion likelihood: completing math in the first semester or students' URM status?

3. What additional information could be provided to draw richer insights (eg., what variables are missing)?

4. What are the strengths and weaknesses of presenting data in tables, graphs, dashboards, and statistical models?

Moving beyond descriptive data

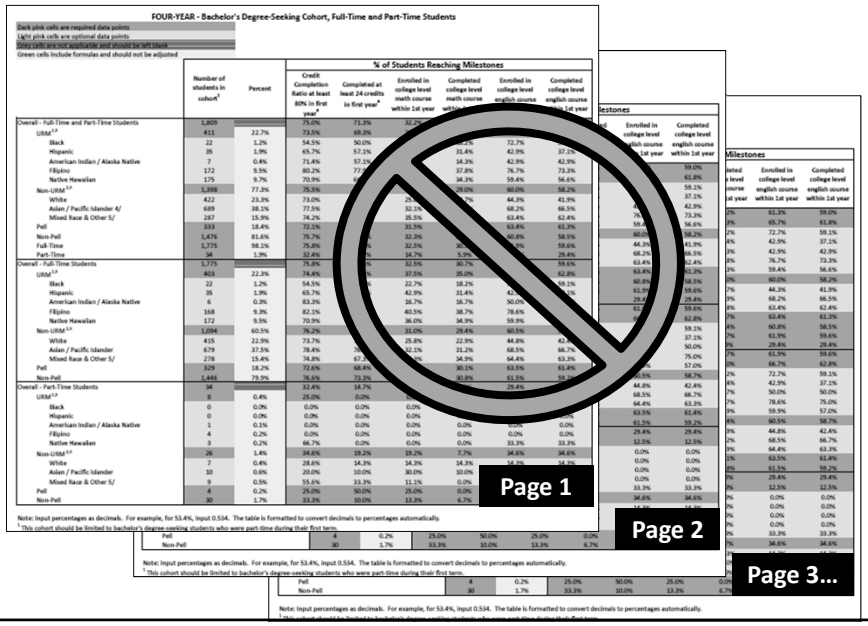


Table data helps establish a starting point… but it is insufficient in drawing valid/generalizable conclusions, nor is it palatable to faculty and administration working on committees.

WSC
Senior College and
University Commission

Data Analytics Activity #3: Leading Indicators Model (15 minutes)

Background: In 2012, the University of Hawai'i (UH) embarked on an aggressive campaign to increase students' credit momentum in a campaign called "15 to Finish." Before this program gained national recognition through the Complete College America initiative, data on credit momentum was spotty. Participating in initiatives like Complete College America challenged the UH to look more analytically at credit momentum. Analyzing the impact of taking 15 credits per semester on student success was difficult at first and the effects of increasing credit loads were hidden in a massive document of 2x2 data tables produced by the IR office. It wasn't until an institutional researcher began using higher-level analytic techniques that UH began to uncover trends that were otherwise inaccessible in the dozens of pages of descriptive tables.

Instructions: Take 12 minutes to interpret and discuss the three "Leading Indicators" reports (Table 1, Table 2, and Figure 1). As a group, answer the following questions:

1. Based on the tables and graphs, what do you think is the strongest 'early' indicator of degree completion likelihood? What is the relative strength of this predictor?

2. Which factor is stronger in predicting degree completion likelihood: completing math in the first semester or students' URM status?

3. What additional information could be provided to draw richer insights (eg., what variables are missing)?

4. What are the strengths and weaknesses of presenting data in tables, graphs, dashboards, and statistical models?

Leading Indicators Study
Fall 2003 Bachelor's Degree-Seeking Cohort
University of Hawaii (Sample Report)
Table 1

	# Students in Cohort 1/	Percent	% of Students Reaching Milestones					
			Credit Completion Ratio at least 80% in 1st year	Completed at least 24 credits in 1st year	Enrolled in college level english course within 1st year	Completed college level english course within 1st year	Enrolled in college level math course within 1st year	Completed college level math course within 1st year
Total Headcount	1,809	100%	75.0%	71.3%	67.8%	64.3%	61.3%	59.0%
URM 2/,3/	411	22.7%	73.5%	69.3%	63.3%	59.8%	65.7%	61.8%
Black	22	1.2%	54.5%	50.0%	77.3%	73.8%	72.7%	59.1%
Hispanic	35	1.9%	65.7%	57.1%	57.1%	53.6%	42.9%	37.1%
American Indian / Alaska Native	7	0.4%	71.4%	57.1%	85.7%	82.2%	42.9%	42.9%
Filipino	172	9.5%	80.2%	77.9%	60.5%	57.0%	76.7%	73.3%
Native Hawaiian	175	9.7%	70.9%	66.3%	64.6%	61.1%	59.4%	56.6%
Non-URM 2/,3/	1,398	77.3%	75.5%	71.9%	69.2%	65.7%	60.0%	58.2%
White	422	23.3%	73.0%	70.1%	74.4%	70.9%	44.3%	41.9%
Asian / Pacific Islander	689	38.1%	77.5%	75.3%	67.9%	64.4%	68.2%	66.5%
Mixed Race & Other 4/	287	15.9%	74.2%	66.2%	64.5%	61.0%	63.4%	62.4%
Pell	333	18.4%	72.1%	68.2%	68.5%	65.0%	63.4%	61.3%
Non-Pell	1,476	81.6%	75.7%	72.0%	67.7%	64.2%	60.8%	58.5%
Full-Time	1,775	98.1%	75.8%	72.4%	67.5%	64.0%	61.9%	59.6%
Part-Time	34	1.9%	32.4%	14.7%	85.3%	81.8%	29.4%	29.4%

1/ This cohort should be limited to bachelor's degree-seeking students who were full-time and part-time during their first term.

2/ Disaggregation by URM/Non-URM is required. Disaggregation into more specific racial/ethnic categories is optional.

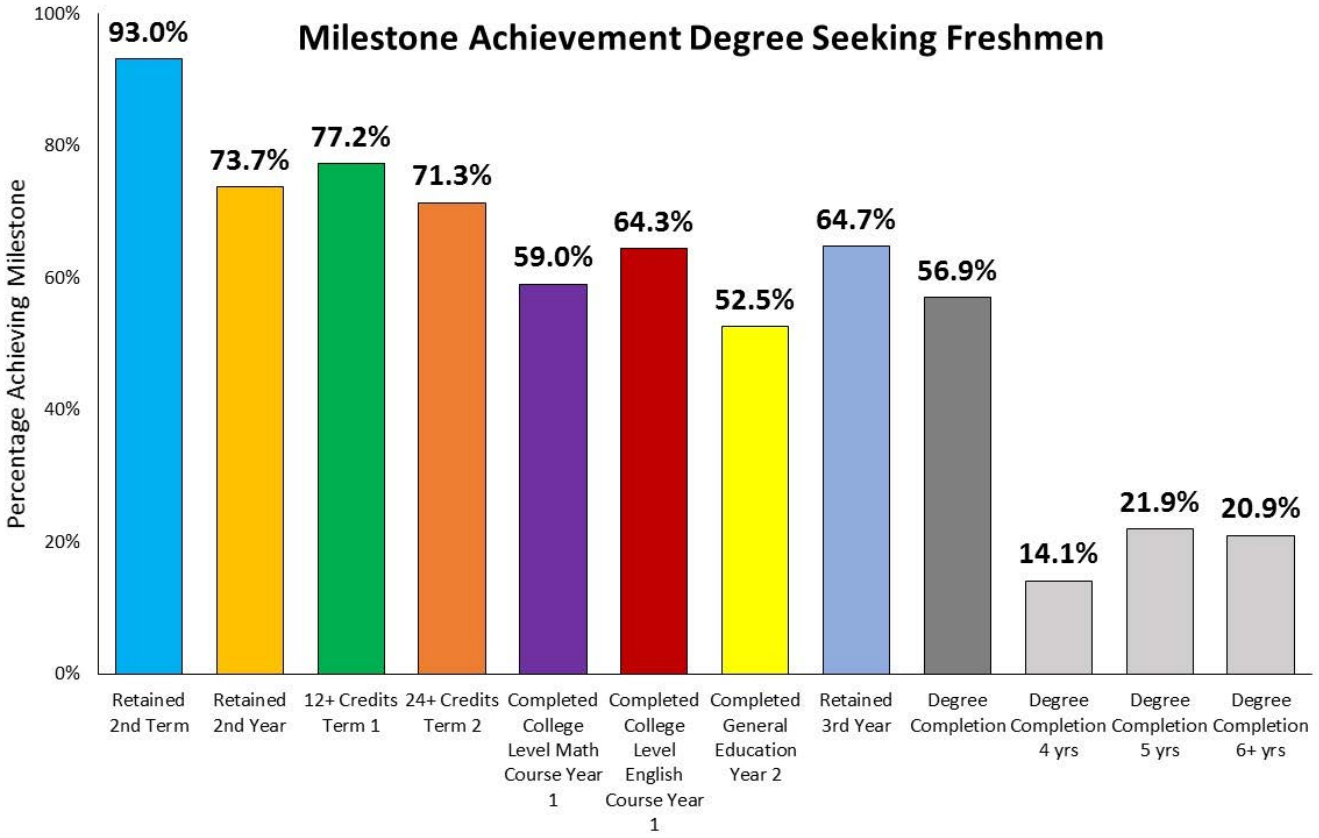
3/ Hawaii may include Filipinos and Native Hawaiians in their URM category and exclude them from the Non-URM category.

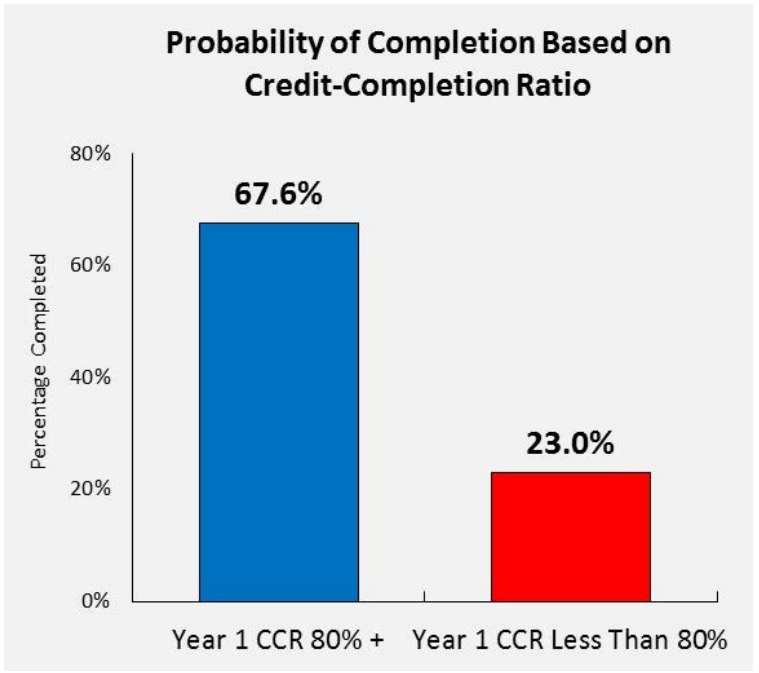
4/ "Mixed Race (2 or more)" = Asian Indian, No Data, Portugese, Blank; "Other Asian" =Chinese, Guamanian or Chamorro, Japanese, Korean, Laotian, Micronesian, Mixed Asian, Mixed Pacific Islander, Other Asian, Other Pacific Islander, Pacific Islander, Samoan, Thai, Vietnamese;

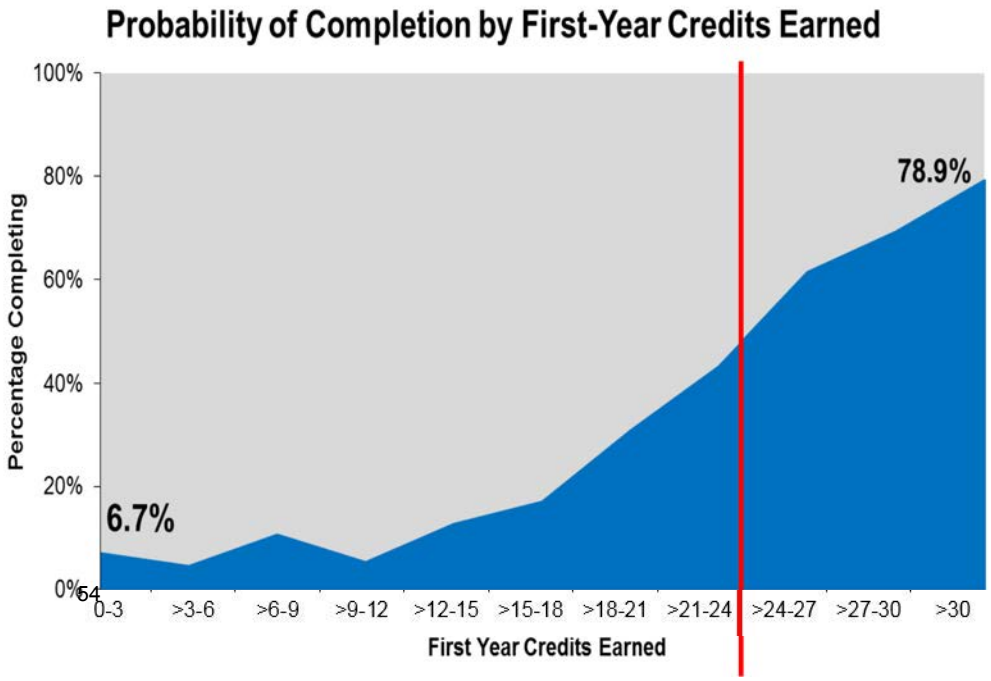
Leading Indicators Study
Fall 2003 Bachelor's Degree-Seeking Cohort
University of Hawaii (Sample Report)
Table 2

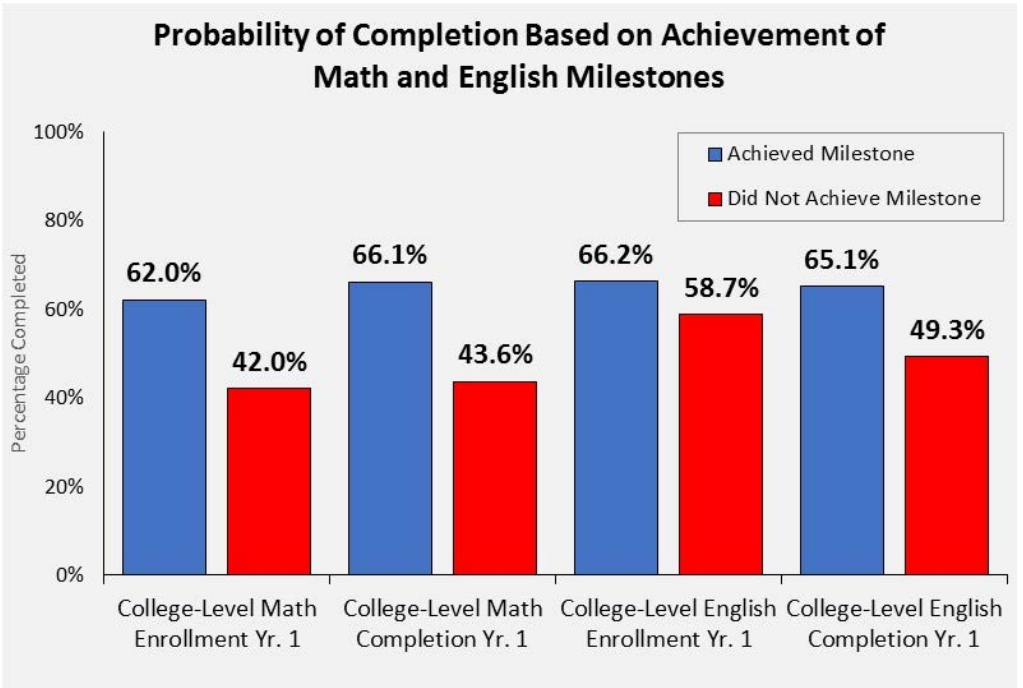
	Number of Students in Cohort 1/	Number of Completers	Graduation Rate	Six-Year Graduation Rate, by Whether Students Reach Key Milestones											
				Credit Completion Ratio at least 80% in first year 6/			Completed at least 24 credits in first year 6/			Completed college level english course within 1 year			Completed college level math course within 1 year		
				Yes	No	Difference	Yes	No	Difference	Yes	No	Difference	Yes	No	Difference
Total	1,809	1,022	56.5%	67.6%	23.0%	44.6%	69.3%	25.6%	43.7%	65.1%	49.3%	15.8%	66.1%	43.6%	22.5%
URM 2/,3/	411	204	49.7%	60.6%	19.7%	40.9%	63.5%	23.5%	40.0%	55.9%	44.7%	11.2%	61.0%	40.3%	20.7%
Black	22	7	31.8%	67.0%	33.0%	34.0%	66.6%	24.6%	42.0%	59.0%	41.0%	18.0%	58.5%	38.6%	19.9%
Hispanic	35	19	54.3%	66.6%	33.4%	33.2%	62.5%	23.1%	39.4%	52.0%	48.0%	4.0%	53.4%	35.2%	18.2%
Am.Indian/Alask.Native	7	6	85.7%	66.6%	33.4%	33.2%	67.0%	24.8%	42.2%	66.6%	33.4%	33.2%	59.6%	39.3%	20.3%
Filipino	172	92	53.5%	57.0%	43.0%	14.0%	61.2%	22.6%	38.6%	54.0%	46.0%	8.0%	62.0%	40.9%	21.1%
Native Hawaiian	175	80	45.7%	60.0%	40.0%	20.0%	62.0%	22.9%	39.1%	56.0%	44.0%	12.0%	60.5%	39.9%	20.6%
Non-URM 2/,3/	1,398	818	58.5%	70.0%	30.0%	40.0%	71.2%	26.3%	44.9%	68.2%	51.0%	17.2%	67.6%	44.6%	23.0%
White	422	239	56.6%	71.0%	29.0%	42.0%	71.5%	26.5%	45.0%	69.4%	30.6%	38.8%	68.2%	45.0%	23.2%
Asian / Pacific Islander	689	420	61.0%	72.0%	28.0%	44.0%	73.2%	27.1%	46.1%	70.2%	29.8%	40.4%	69.0%	45.5%	23.5%
Mixed Race & Other 4/	287	159	55.4%	69.0%	31.0%	38.0%	68.0%	25.2%	42.8%	66.9%	33.1%	33.8%	65.9%	43.5%	22.4%
Pell	333	169	50.8%	62.9%	19.4%	43.5%	61.9%	22.9%	39.0%	55.6%	47.1%	8.5%	55.8%	36.8%	19.0%
Non-Pell	1,476	853	57.8%	68.7%	24.0%	44.7%	70.9%	26.2%	44.7%	67.2%	49.9%	17.3%	68.4%	45.1%	23.3%
Full-Time	1,775	1,010	56.9%	67.8%	22.8%	45.0%	69.4%	25.7%	43.7%	65.4%	49.7%	15.7%	66.2%	43.7%	22.5%
Part-Time	34	12	35.3%	54.5%	26.1%	28.4%	50.0%	18.5%	31.5%	33.3%	35.7%	-2.4%	50.0%	33.0%	17.0%

1/ This cohort should be limited to bachelor's degree-seeking students who were full-time and part-time during their first term.
2/ Disaggregation by URM/Non-URM is required. Disaggregation into more specific racial/ethnic categories is optional.
3/ Hawaii may include Filipinos and Native Hawaiians in their URM category and exclude them from the Non-URM category.
4/ "Mixed Race (2 or more)" = Asian Indian, No Data, Portugese, Blank; "Other Asian" =Chinese, Guamanian or Chamorro, Japanese, Korean, Laotian, Micronesian, Mixed Asian, Mixed Pacific Islander, Other Asian, Other Pacific Islander, Pacific Islander, Samoan, Thai, Vietnamese;


Milestone Achievement Degree Seeking Freshmen
Percentage Achieving Milestone
100%
80%
60%
40%
20%
0%
93.0%
73.7%
77.2%
71.3%
59.0%
64.3%
52.5%
64.7%
56.9%
14.1%
21.9%
20.9%
Retained 2nd Term
Retained 2nd Year
12+ Credits Term 1
24+ Credits Term 2
Completed College Level Math Course Year 1
Completed College Level English Course Year 1
Completed General Education Year 2
Retained 3rd Year
Degree Completion
Degree Completion 4 yrs
Degree Completion 5 yrs
Degree Completion 6+ yrs


Probability of Completion Based on Credit-Completion Ratio
Percentage Completed
80%
60%
40%
20%
0%
67.6%
23.0%
Year 1 CCR 80% +
Year 1 CCR Less Than 80%


Probability of Completion by First-Year Credits Earned
Percentage Completing
100%
80%
60%
40%
20%
0%
6.7%
78.9%
0-3
>3-6
>6-9
>9-12
>12-15
>15-18
>18-21
>21-24
>24-27
>27-30
>30
First Year Credits Earned


Probability of Completion Based on Achievement of Math and English Milestones
Achieved Milestone
Did Not Achieve Milestone
Percentage Completed
100%
80%
60%
40%
20%
0%
62.0%
42.0%
66.1%
43.6%
66.2%
58.7%
65.1%
49.3%
College-Level Math Enrollment Yr. 1
College-Level Math Completion Yr. 1
College-Level English Enrollment Yr. 1
College-Level English Completion Yr. 1

University of Hawaii (Example)
Optimal Logistic Regression Model of Degree Completion
First-Time Freshmen Fall 2003

Adj. R Square = .344

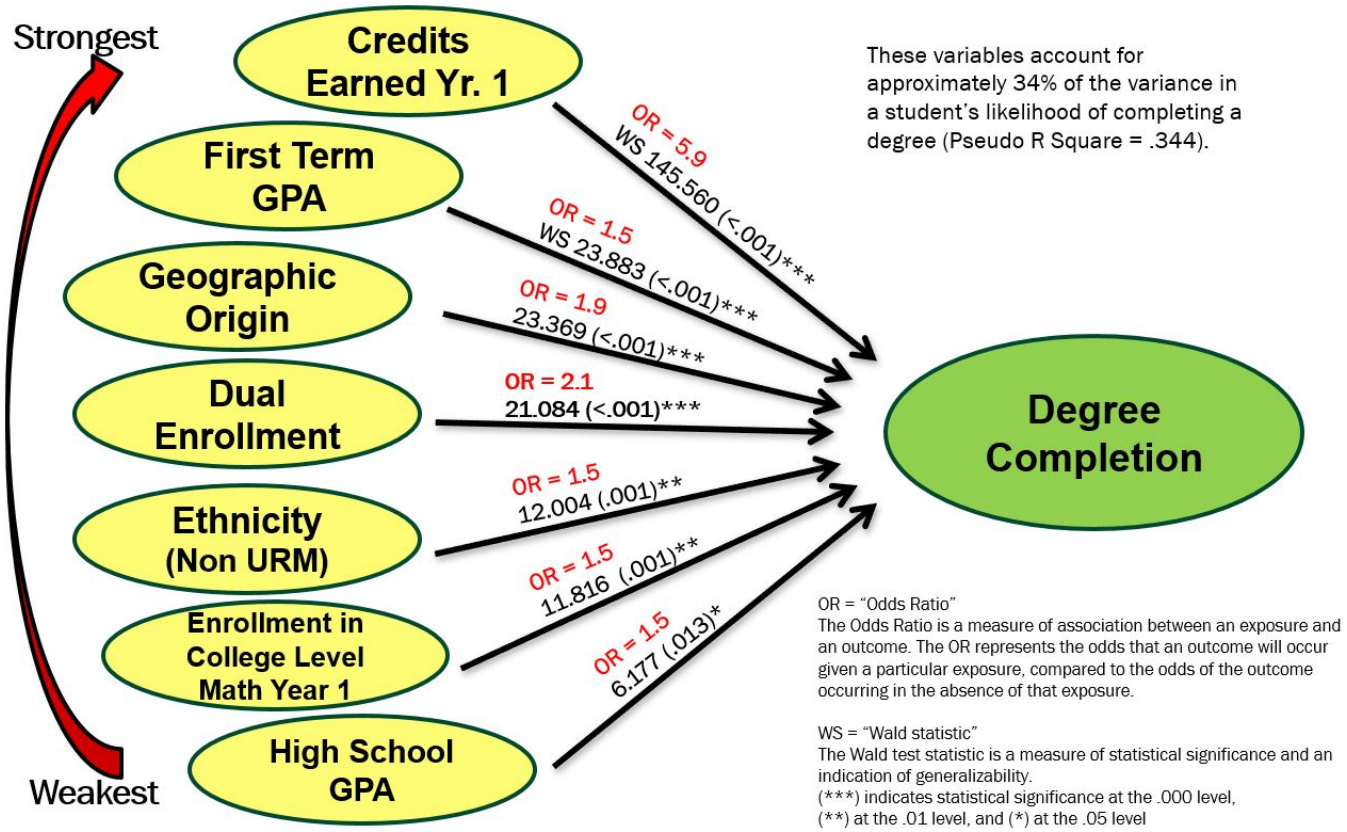
Classification Table (Holdout Set)

Prediction	Actual Outcome		
	Graduated	Did Not Graduate	Total
Predicted To Graduate	752	276	73.2%
Predicted Not To Graduate	270	511	65.4%

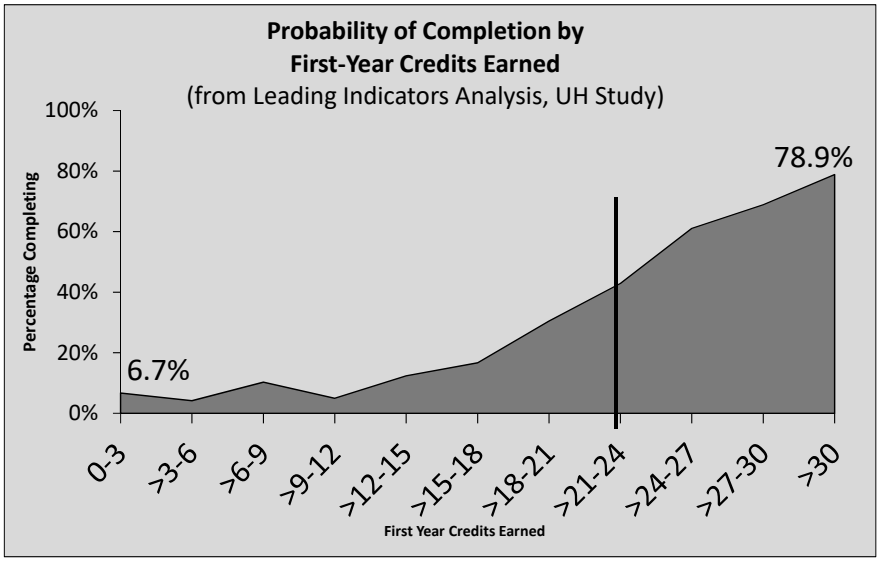
Overall Percentage Correctly Classified: 69.8%

Regression Equation:

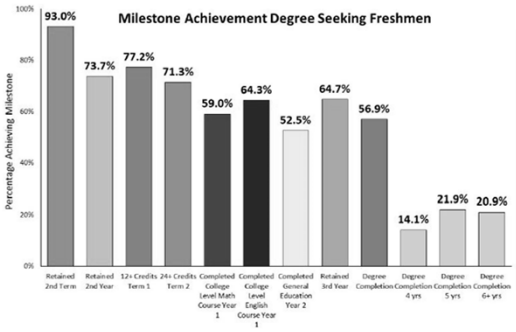
Parameter	Estimate	Standard Error	Wald Statistic	Significance	Odds-Ratio
Constant	-4.952	0.545	70.887	0.000	0.010
Credits Earned Yr. 1	1.780	0.148	145.560	0.000	5.931
First Term GPA	0.400	0.082	23.883	0.000	1.491
Geographic Origin	0.617	0.128	23.369	0.000	1.853
Dual Enrollment	0.728	0.159	21.084	0.000	2.071
Ethnicity	0.436	0.126	12.004	0.001	1.546
Enrollment in College-Lvl Math Yr. 1	0.385	0.112	11.816	0.001	1.470
High School GPA	0.415	0.167	6.177	0.013	1.491
Prior Credits Earned	0.398	0.178	4.980	0.026	1.488

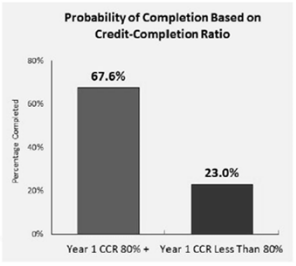


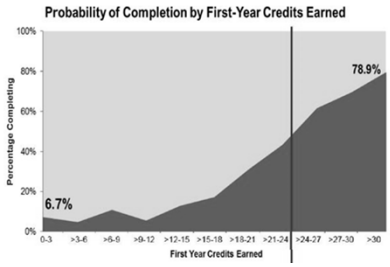
First, illuminate the salient findings

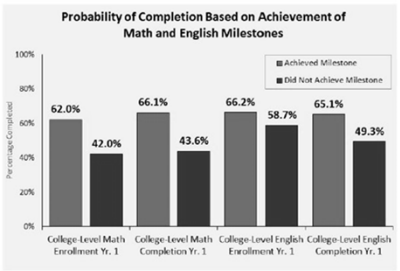


…illuminate the salient findings

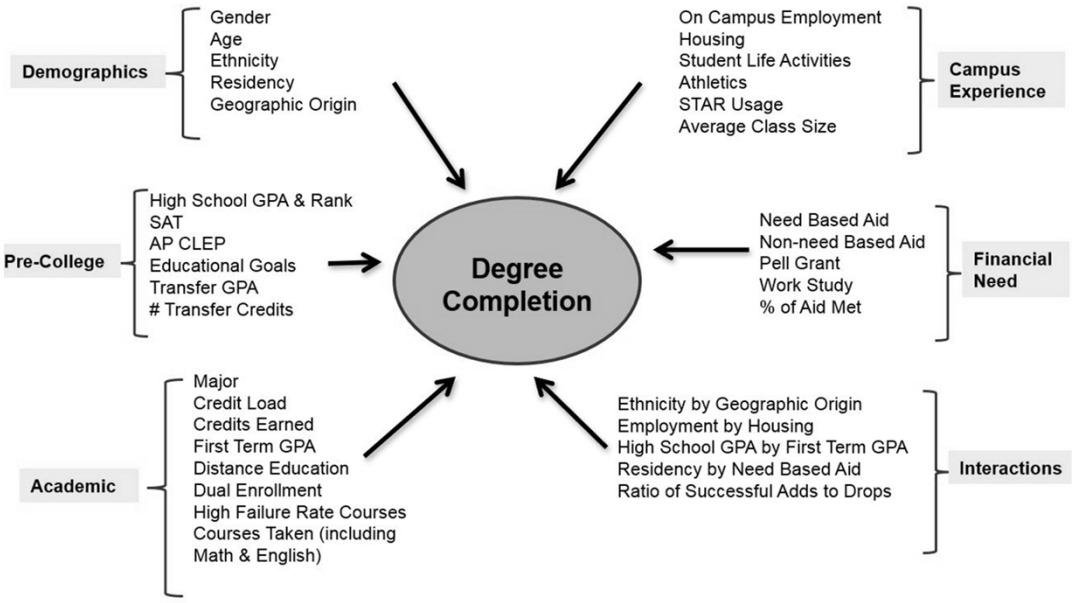




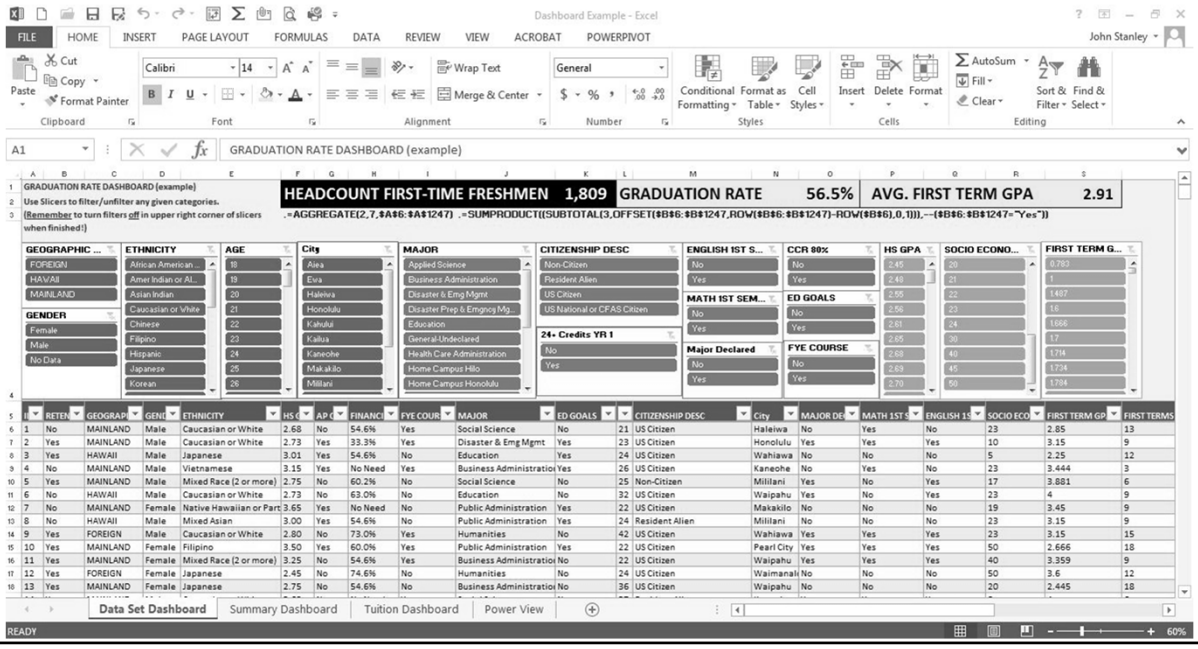




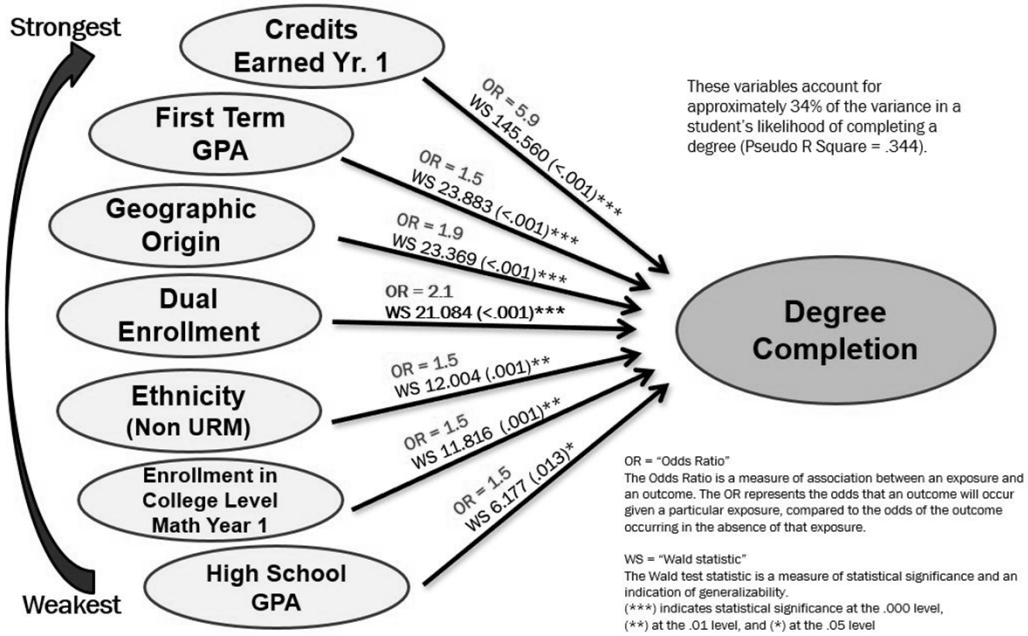
With so many variables, which are most important?



Excel dashboard: faster tabulation, quicker insights



Estimation models draw stronger, more reliable inferences



Benefits of inferential analysis

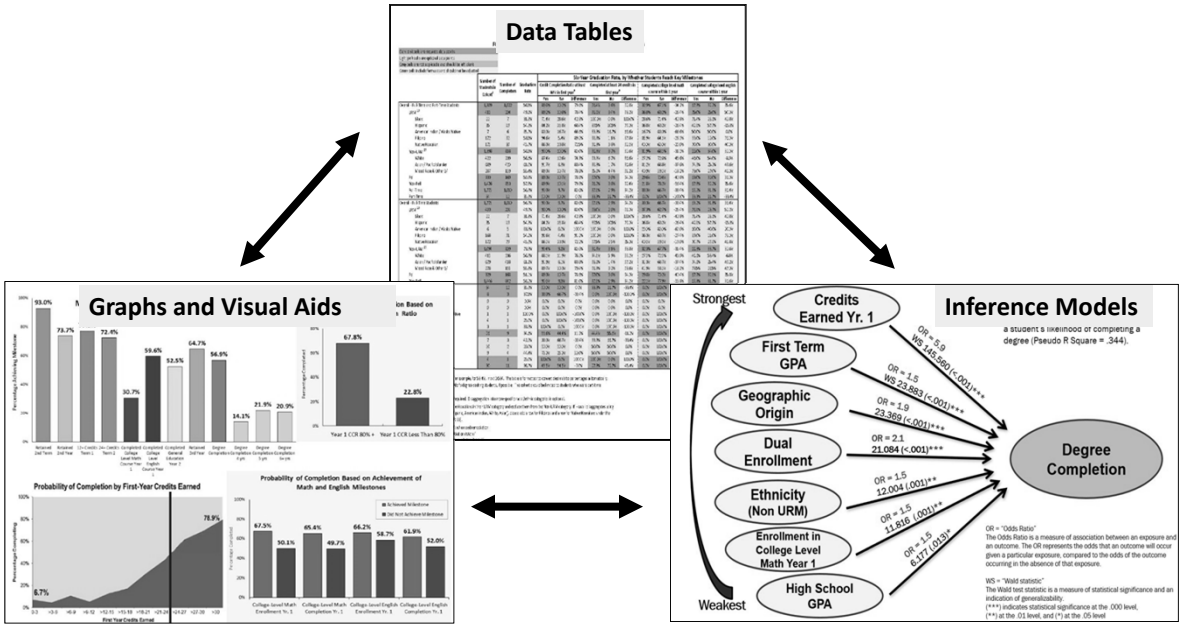
Inferential statistics (i.e., correlational estimation models) are powerful in allowing us to see beyond the immediate data. For example, with a regression model we can:

1. Measure the associated correlation and variance in our data, and identify and rank the drivers of behavior.

2. Determine the strength of a specific predictor relative to other predictors.

3. Measure how much an incremental change in one variable can impact the likelihood of an outcome (i.e. the impact of each additional credit earned on the likelihood of graduation).

Triangulate the three sources of information



Remember

- Analytics is a tool, not a solution.
- Invest in people first.
- Beware of 'hype' examples.
- You can accomplish a lot at no cost.

Tools

People

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Connect Learning Theory, Analytics, and Use of Assessment Results

Monica Stitt-Bergh

Analytics for Academics

Producing Actionable Information about Students and Learning to Improve Effectiveness

Monica Stitt-Bergh, University of Hawai‘i – Mānoa
John Stanley, University of Hawai‘i – West O‘ahu

Test score =
first-year math grade +
peer group +
study time +
interest

Connect Learning Theory, Analytics, and Use of Assessment Results

Outcomes

Before lunch, you will be able to

1. Explain how a "theory of learning" and a "theory of change" can help design an analytics project
2. Name several factors/variables to include in an analytics project

"Assessment"

Learning Outcomes Assessment

It provides tools & processes to **develop** (or evolve) a curriculum that is

- Coherent & cohesive
- Effective
- Equity-minded

We can use **analytics** to **investigate** whether the curriculum is coherent & cohesive, effective, and equity-minded.

Use of Analytics

Analytics for individual alerts, feedback, etc.

Analytics for program and institutional decision making.

Typical Questions

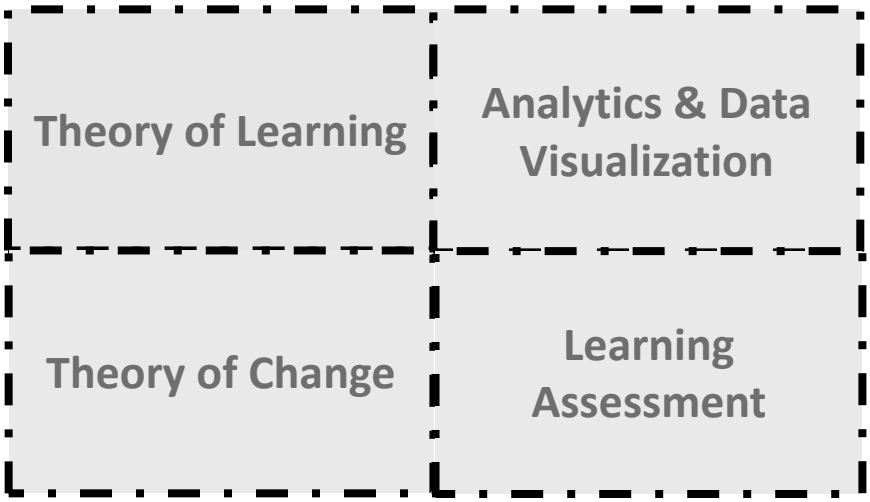
- To what extent do seniors meet our performance expectations?
- Does learning achievement vary across groups of students?
- What factors impact learning achievement?
- Does [X] impact learning achievement? To what extent? For which students?
- If we do [X], what is likely to happen to learning achievement?

Start with a Conceptual Model

Prevent garbage in / garbage out and avoid misleading or damaging inferences:

use a **theory of learning** and a **theory of change**.

Interconnected



Learning is . . .

A permanent change that is not solely due to biological maturation or aging

Activity: Theory of Learning 4A

Brainstorm, Pair & Share Activity

What is involved in the <u>process</u> of learning?

Three-minute brainstorm

Four-minute pair & share

Connect Learning Theory, Analytics, and Use of Assessment Results

Brainstorm, Pair & Share 4A

1. What is involved in the process of learning? (three-minute brainstorm)
How does something get "stuck" in our brains so it's a permanent change?

2. Pair & Share (four minutes)

Theory of Learning

Learning involves two linked processes:

(a) interaction between **learner** and **environment**

(b) integration of **content** (knowledge, skills, etc.) & **incentive** (emotion, motivation, volition)

Learning is an **addition** to or a **reconstruction** of **existing structures/schemes**

Theory of Learning

Processes (learner—environment—content—intention)

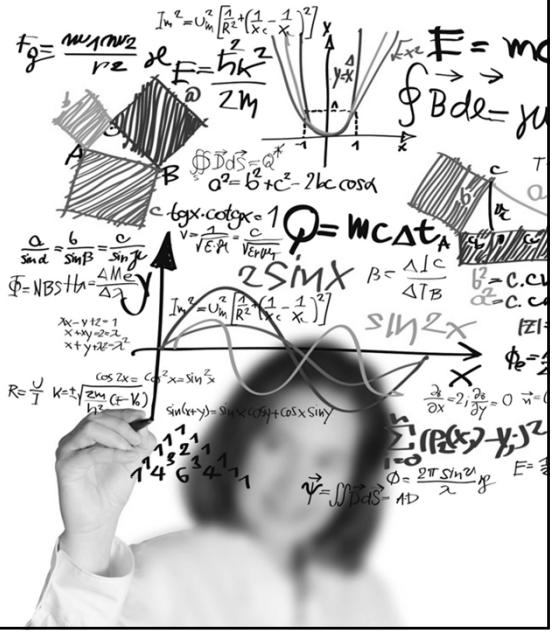
Learning as addition to or reconstruction of existing structures

***** Regardless of age *****

Theory of Learning: Implications for Analytics

Include in your model:

1. Student prior knowledge
2. Environmental & experiential factors
3. Incentive/motivation



Theory of Learning: Implications for Analytics

"The most important single factor influencing learning is what the learner already knows."

David Ausubel

Theory of Learning: Implications for Analytics

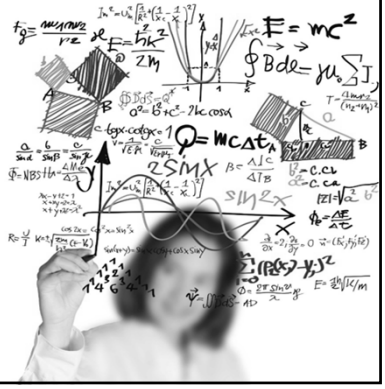
1. Student prior knowledge examples

- High school GPA
- Entrance exam score
- Placement exam score
- Pre-requisite course grade
- Number of courses taken/credits earned
- Pre-test score
- Etc.

Theory of Learning: Implications for Analytics

2. Environmental & experiential examples

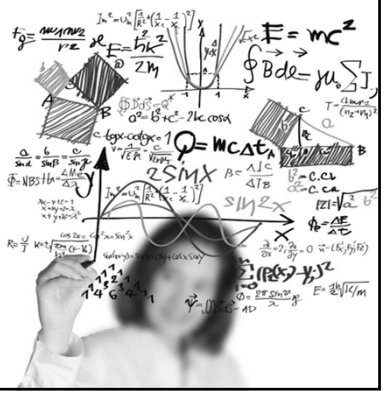
- Characteristics of assignments
- Characteristics of classes (size, teaching method)
- Co-curricular/student organization participation
- Time spent on school, work, etc.
- Visits to advising, tutoring, office hours, etc.
- Student's peer group
- Participation in study abroad, honors, remedial, etc.
- Etc.



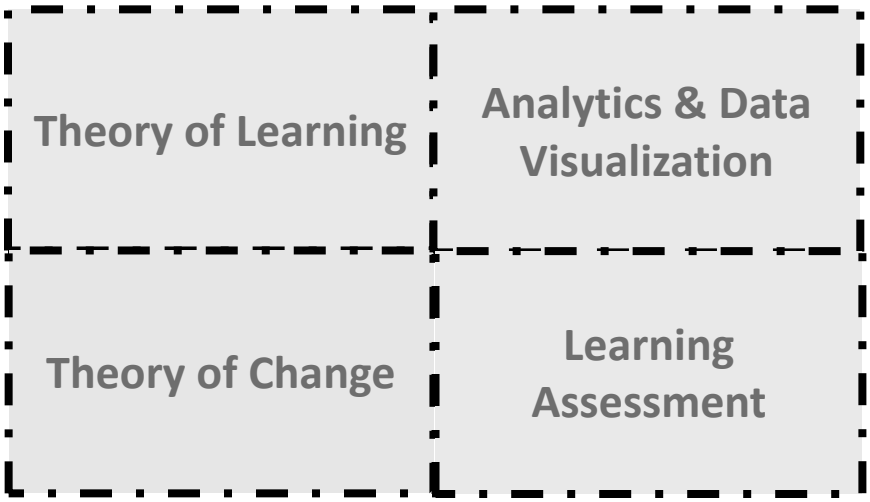
Theory of Learning: Implications for Analytics

3. Incentive/motivation examples

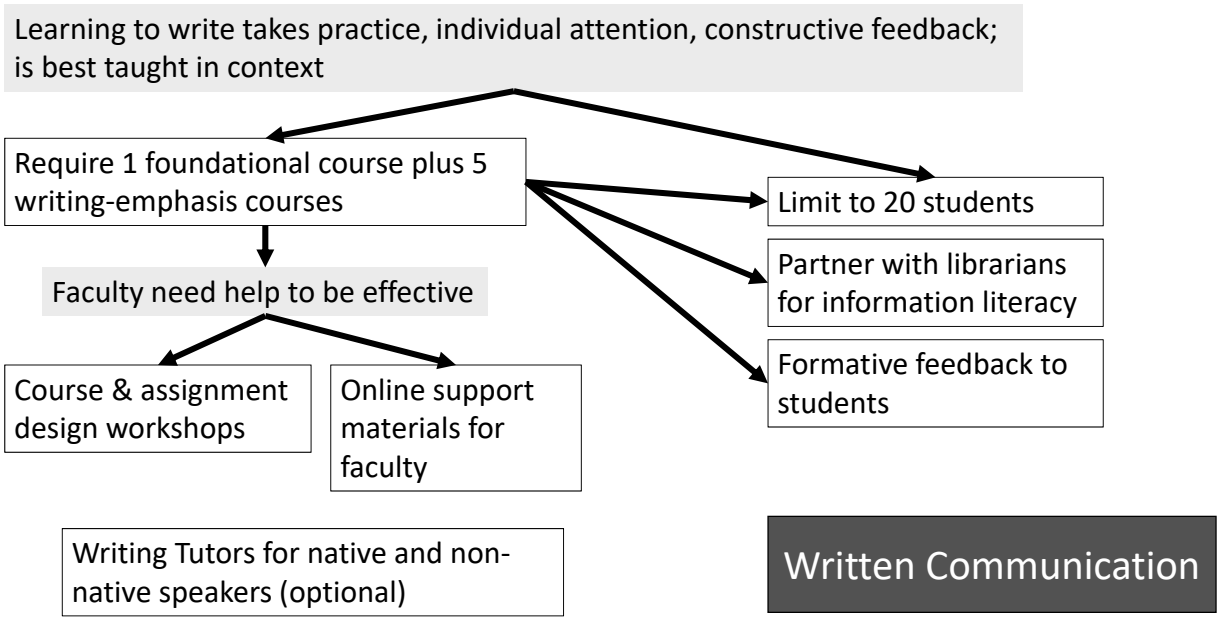
- Interest in learning or desire to learn
- Incentive to learn (compulsory, license, reward or punishment)
- Beliefs about the value of the knowledge or skill
- Barriers to learning (defense, fear, low self-efficacy)
- Etc.



Interconnected



Theory of Change: Implications for Analytics



Theory of Change: Implications for Analytics

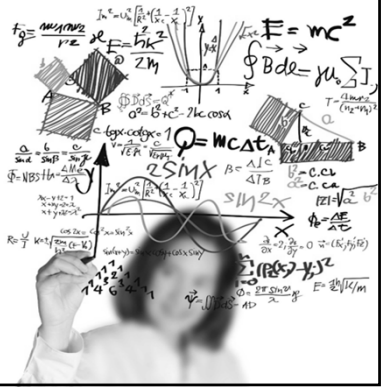
Examine the theory of change:

What may be appropriate to add to a model?

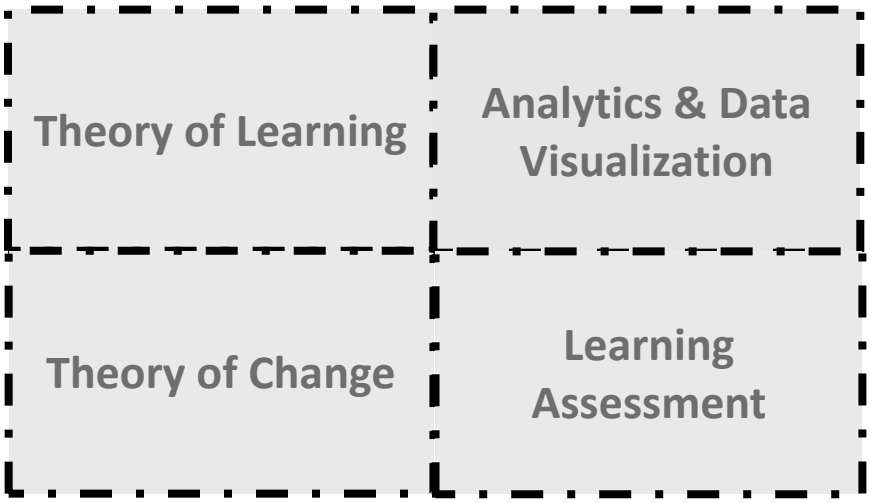
<u>Written Communication Example</u>

- Formative feedback received

What else?



Interconnected



Quantitative Reasoning Pilot Project

Meaningful questions:

1. Do students in different groups perform equally well in quantitative reasoning?
   - Gender
   - Hawaiian/non-Hawaiian
   - Pell eligibility
2. What factors/variables impact student achievement?

Quantitative Reasoning Pilot Project

Applying a theory of learning

Student prior knowledge = grade in prior math course

Environment = time spent studying

Incentive/motivation = assignment counts toward course grade

Self-report: importance of grade

Quantitative Reasoning Pilot Project

Applying a theory of change

Require 1 foundational course

Tutors, supplemental instruction groups, and a *Math Emporium* are available (optional)

Quantitative Reasoning Pilot Project

Conceptual Model

Score on rubric =

prior math grade +

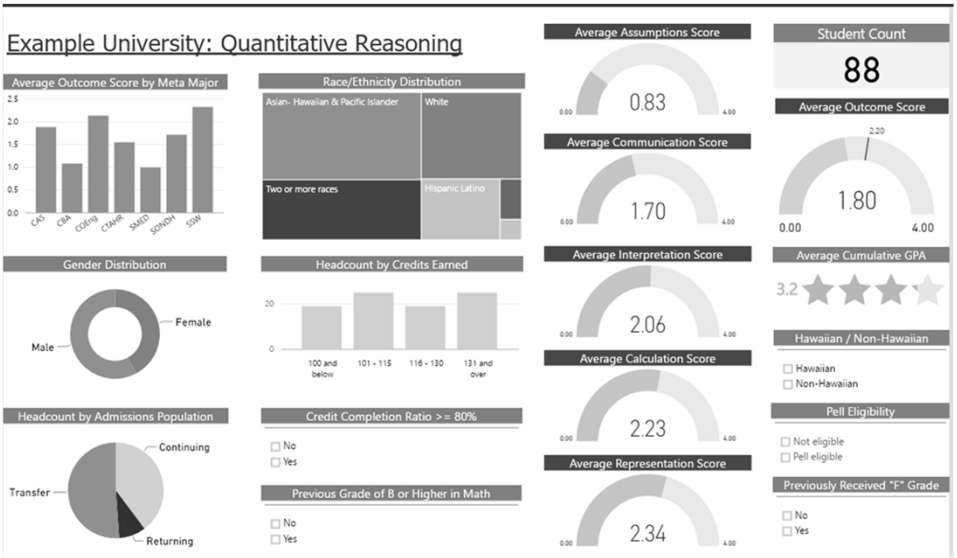
study time +

importance of good grade

But what data are available?

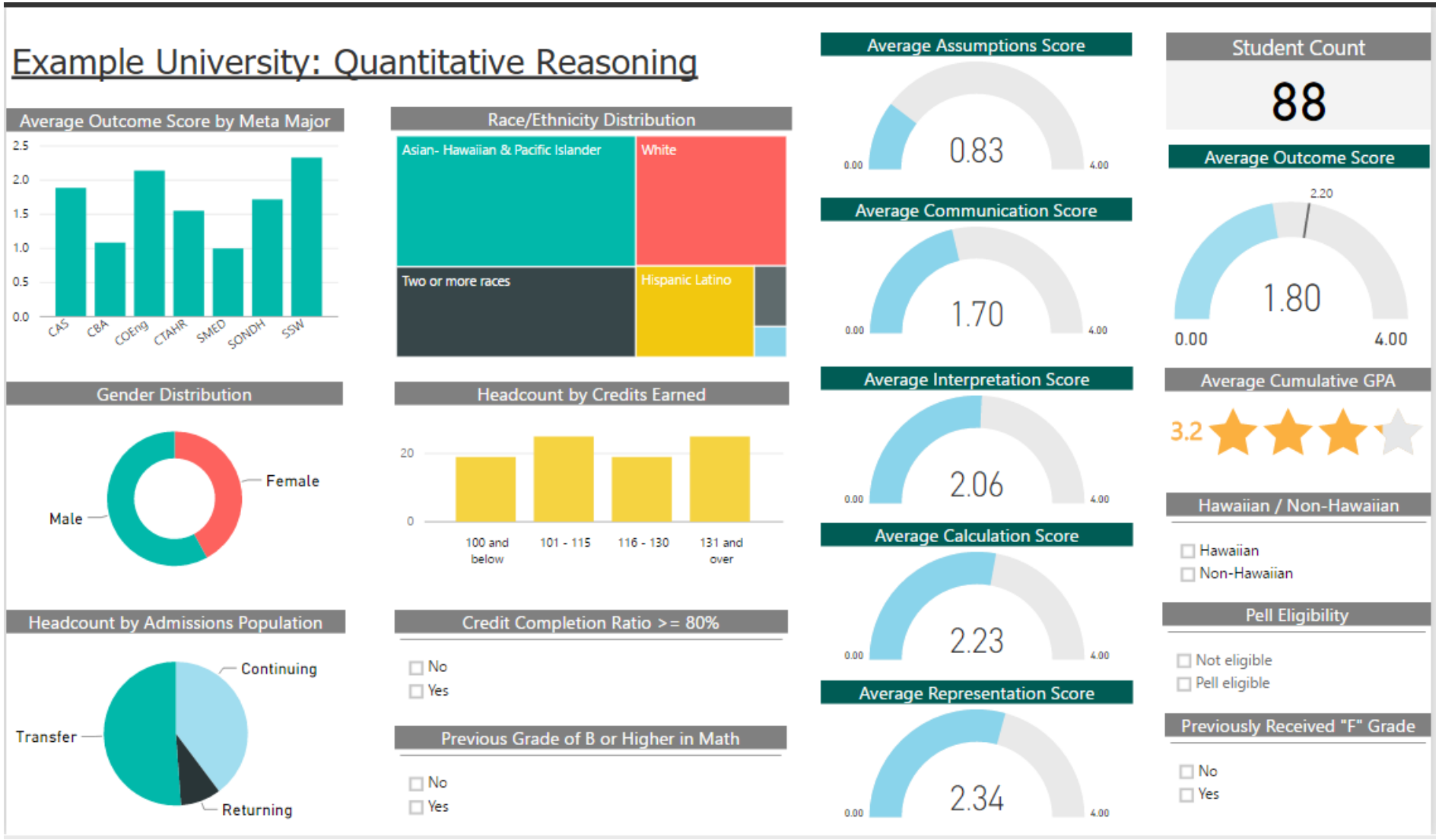
Quantitative Reasoning Pilot Project 4B

http://tinyurl.com/hdg78cu



Connect Learning Theory, Analytics, and Use of Assessment Results

Internal Dashboard Example—Interactive 4B



Activity 4C

Table Activity

Answer the discussion questions for <u>one</u> scenario (CT or WC).

20 minute table-talk

Table share-out & full group discussion

Take Aways

- Use a theory of learning & change
- Plan for use <u>before</u> data collection & analysis
  - Tip: discuss hypothetical results before collecting
- Balance cost and value
  - Number of items in the model = theory + resources
- Collaborative effort & transparency with stakeholders

Connect Learning Theory, Analytics, and Use of Assessment Results

Table Activity 4C

Critical Thinking (CT)

This scenario does not give you all the information you need. Just roll with it. Do your best using what you know about higher education institutions. Make reasonable assumptions and share them with your table.

Context

To ensure undergraduates exit with competency in critical thinking, the campus requires undergraduates to take the following general education courses, offered at the 100- and 200-levels (i.e., first & second year):

- Math and Logical Thinking (one 3-credit course): Clarity of thought, critical thinking, and problem solving are developed by these courses that require students to understand the use of mathematics, logic, or other formal systems.
- Global Perspectives (two 3-credit courses): The global perspectives requirement introduces students to the political, social, economic, and cultural development of the world's major civilizations while expanding their critical thinking skills.
- Arts and Humanities (two 3-credit courses): Through study of artistic, literary, and philosophical masterworks, students gain an appreciation of history and achievements and build their critical thinking skills.

In addition, each degree program is asked to include the development of critical thinking as part of their major's core curriculum.

Meaningful Questions

A. To what extent are students meeting our performance expectations? Minimum expectation = "3" or higher on the Critical Thinking (CT) VALUE Rubric (0-4 point scale).
B. Which factors predict student achievement on the CT Rubric?

Planned Use of Results

As needed, make changes to or increase students' learning opportunities inside the target courses.

Evaluation of Learning Evidence

Important: for the purpose of this activity, assume validity and reliability requirements have been satisfied and the student sample is representative of the undergraduate population.
Measurement tool: Critical Thinking VALUE Rubric
Evidence collected: 125 senior portfolios containing two written projects that exhibit critical thinking skills
Evaluation: Ten trained faculty scored. Two faculty independently scored each piece and their scores were averaged.
Results: Students' average scores were aggregated.

Mean score = **2.0**
Standard deviation = **0.9** (this statistic indicates how clustered around the mean the scores are)
Correlation: student's GPA and CT score = **0.04** (very weak relationship between GPA and CT score)

Continued on next page

Chart. Critical Thinking Mean Score: Overall and By Student Characteristics

Discussion Questions for the Table

1. If the campus could collect only 3-4 types of additional information to help answer *meaningful question B*, what information does your table think should be collected?

2. How might that additional information help the campus predict student achievement?

3. Who on the campus could help get the additional information?

4. What other insights or concerns does your table have?

Connect Learning Theory, Analytics, and Use of Assessment Results

Table Activity 4C

Written Communication (WC)

This scenario does not give you all the information you need. Just roll with it. Do your best using what you know about higher education institutions. Make reasonable assumptions and share them with your table.

Context

The campus has an entry-level writing placement exam, two course requirements, and a writing center with tutors to help undergraduates meet the expected performance level in written communication.
Requirements:

- Writing Placement Exam. Students who perform poorly must complete a remedial writing course before taking the first-year writing course.
- First-year Writing Course. A 3-credit course focused on written communication. Students complete at least 16 pages of polished writing, including a 5-page research paper.
- Upper-division Writing Course: A 3-credit course focused on writing in the major. Students complete at least 25 pages of polished writing, included a research-based paper (or equivalent) written in a common genre in their major field.

Meaningful Questions

A. To what extent are students meeting our performance expectations? Minimum expectation = "3" or higher on the Written Communication (WC) VALUE Rubric (0-4 point scale).
B. Which factors predict student achievement on the WC Rubric?

Planned Use of Results

If needed, change policy, change requirements, or change pedagogy in the required writing courses.

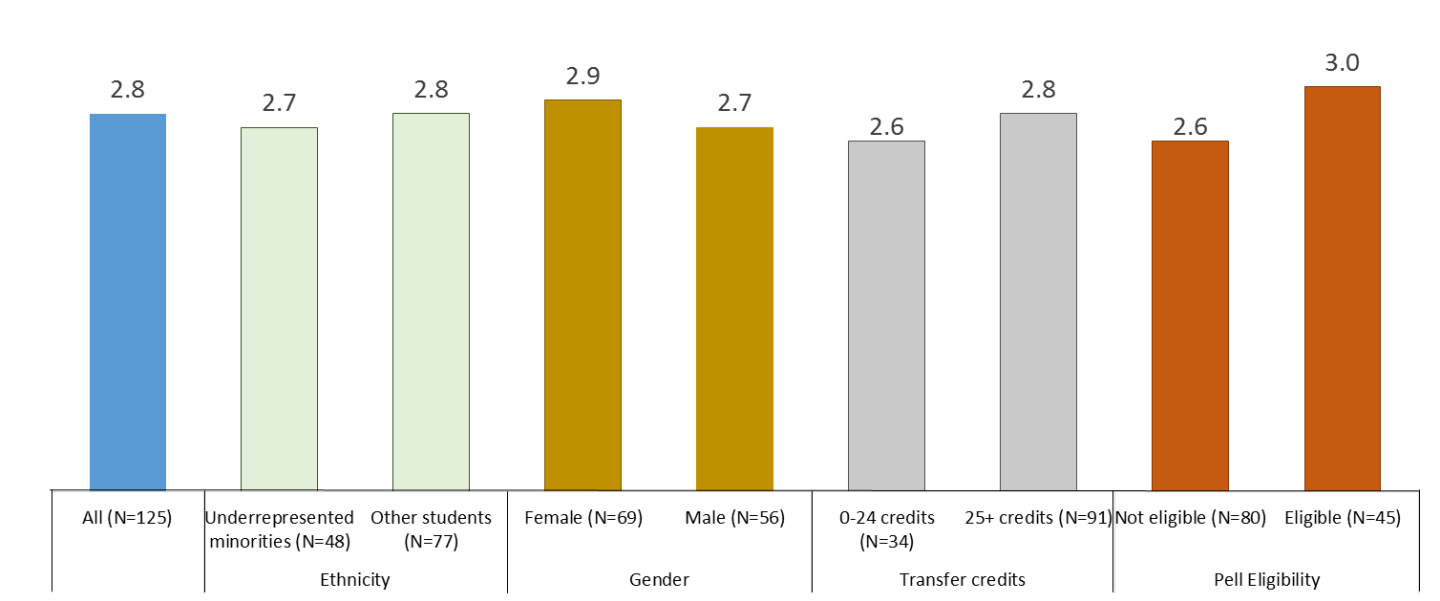
Evaluation of Learning Evidence

Important: for the purpose of this activity, assume validity and reliability requirements have been satisfied and the student sample is representative of the undergraduate population.
Measurement tool: Written Communication VALUE Rubric
Evidence collected: 125 writing assignments from students in the upper-division writing course.
Evaluation: Ten trained faculty scored. Two faculty independently scored each piece and the two scores were averaged.
Results: Students' average scores were aggregated.

Mean score = **2.8**
Standard deviation = **0.7** (this statistic indicates how clustered around the mean the scores are)
Correlation: student's GPA and WC score = **0.08** (very weak relationship between GPA and WC score)

Continued on next page

Chart. Written Communication Mean Score: Overall and By Student Characteristics



Discussion Questions for the Table

1. If the campus could collect only 3-4 types of additional information to help answer *meaningful question B*, what information does your table think should be collected?

2. How might that additional information help the campus predict student achievement?

3. Who on the campus could help get the additional information?

4. What other insights or concerns does your table have?

Use of Analytics

Analytics for individual alerts, feedback, etc.

Analytics for program and institutional decision making.

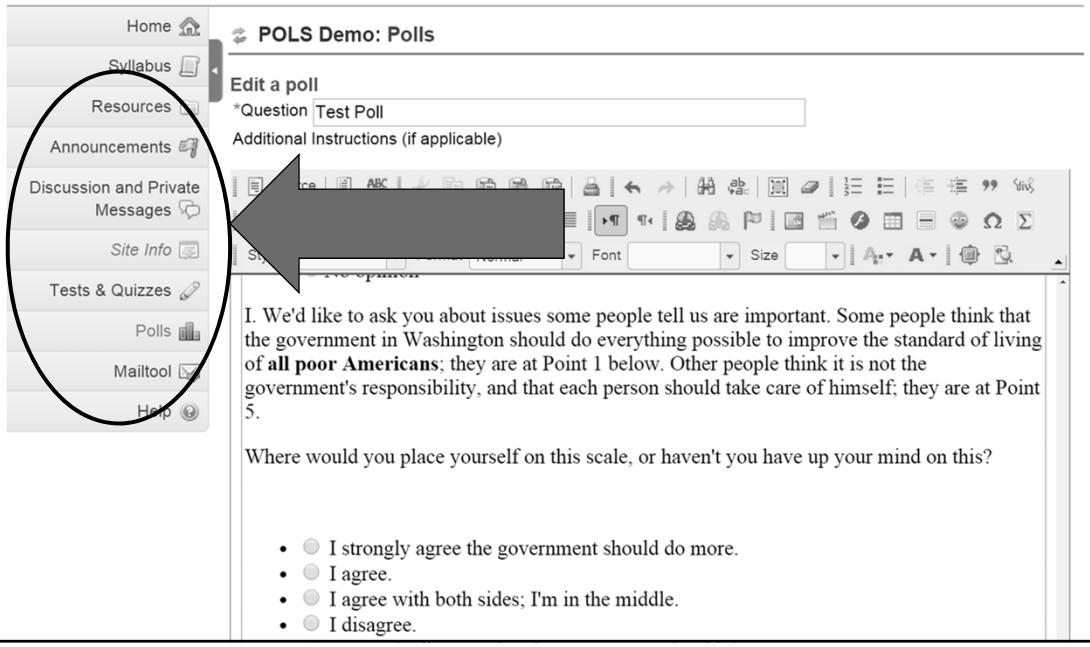
Learning Analytics for Individual Use

Automatically send individual students . . .

- Alerts
- Individualized feedback
- Summary of strengths and difficulties
- Customized problem sets or readings

See also: Mayer-Schönberger, V., & Cukier, K. (2014). *Learning with Big Data: The Future of Education*.

Example of a Learning Mgt. System (LMS)



Potential Factors/Variables 4D

See list in binder.

Potential Factors/Variables for Individual Use

Connect Learning Theory, Analytics, and Use of Assessment Results

Potential Factors/Variables: Analytics for Individual Use 4D

1. Matriculation Predictors (from Student Information System (SIS))
    a. Demographics (age, gender & ethnicity), GPA, pre-collegiate HS GPA, standardized test scores, first-generation, socio-economic class & financial need
2. Activity & Performance Indicators in Class (from Learning Management System (LMS))
    a. Number and frequency of LMS logins
    b. Amount of time spend on course website
    c. Number of discussion posts
    d. Responses to class polls
3. Grades and Formative Quiz Scores
    a. Percentage of points earned in course to date
    b. Change between past and current test/quiz scores
4. Student Artifacts (from LMS or hard-copy in-class assignments)
    a. Blogs, discussion forum posts
    b. Essays, written assignments
5. Student Learning Outcomes
    a. Measurement of student achievement in core competencies (from in-class assignments/tests)

Other Noteworthy Examples 4D

Source: Dietz-Uhler & Hurn (2013): http://www.ncolr.org/jiol/issues/pdf/12.1.2.pdf

Institutions and Learning Analytics Tools

Institution	Learning Analytic Tool	Uses of Data
University of Central Florida	EIS (Executive Information System)	Data management
Rio Salado Community College	PACE (Progress and Course Engagement)	Track student progress in course; intervention
Northern Arizona University	GPS (Grade Performance System)	Student alerts for academic issues and successes
Purdue University	Course Signals System	Student alerts for academic issues; intervention
Ball State University	Visualizing Collaborative Knowledge Work	Enhance knowledge-building work
University of Michigan	E^{2}Coach	Student support and intervention
University of Maryland Baltimore County (UMBC)	Blackboard LCMS	Track performance and predict student success
Graduate School of Medicine, University of Wollongong	BIRT (Business Intelligence and Reporting Tools)	Reveal continuity of care issues

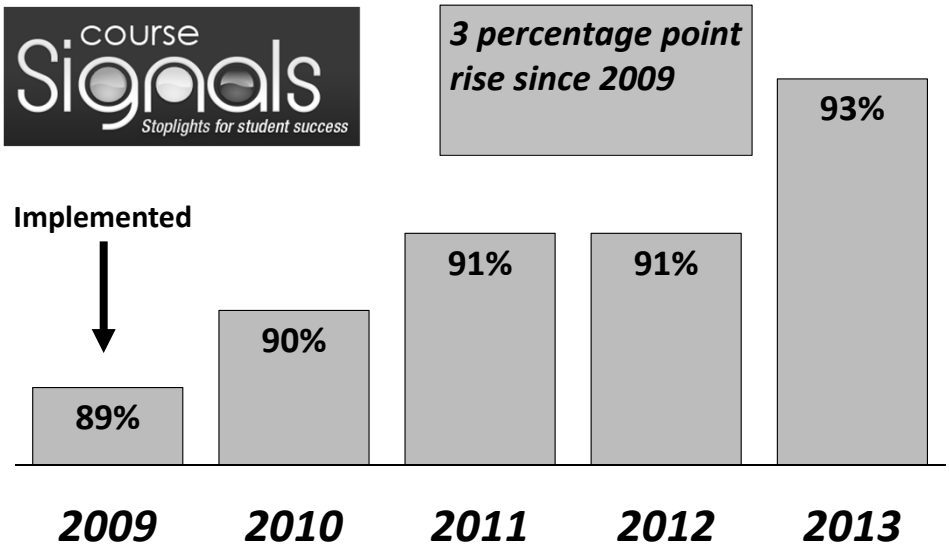
Purdue University Example

https://www.itap.purdue.edu/studio/signals/

http://www.nbcnews.com/id/21134540/vp/32634348#32634348

http://www.nbcnews.com/id/3032619/vp/32634348#32634348

Purdue University Example



Other Noteworthy Examples 4D

See list in binder.

Other Noteworthy Examples

On the bottom of the page "Potential Factors/ Variables . . ."

Source: Dietz-Uhler & Hurn (2013): http://www.ncolr.org/jiol/issues/pdf/12.1.2.pdf

Challenges

We'll discuss after lunch:

- Ethics
- Availability of data
- Affordability
- Expertise

Analytics necessarily involves a theory, even if the creators are not aware of it.

Self-assessment

Can you . . .

- explain how a “theory of learning” and a “theory of change” can help design an analytics project?
- name several factors/variables to include in an analytics project?

Lunch Time

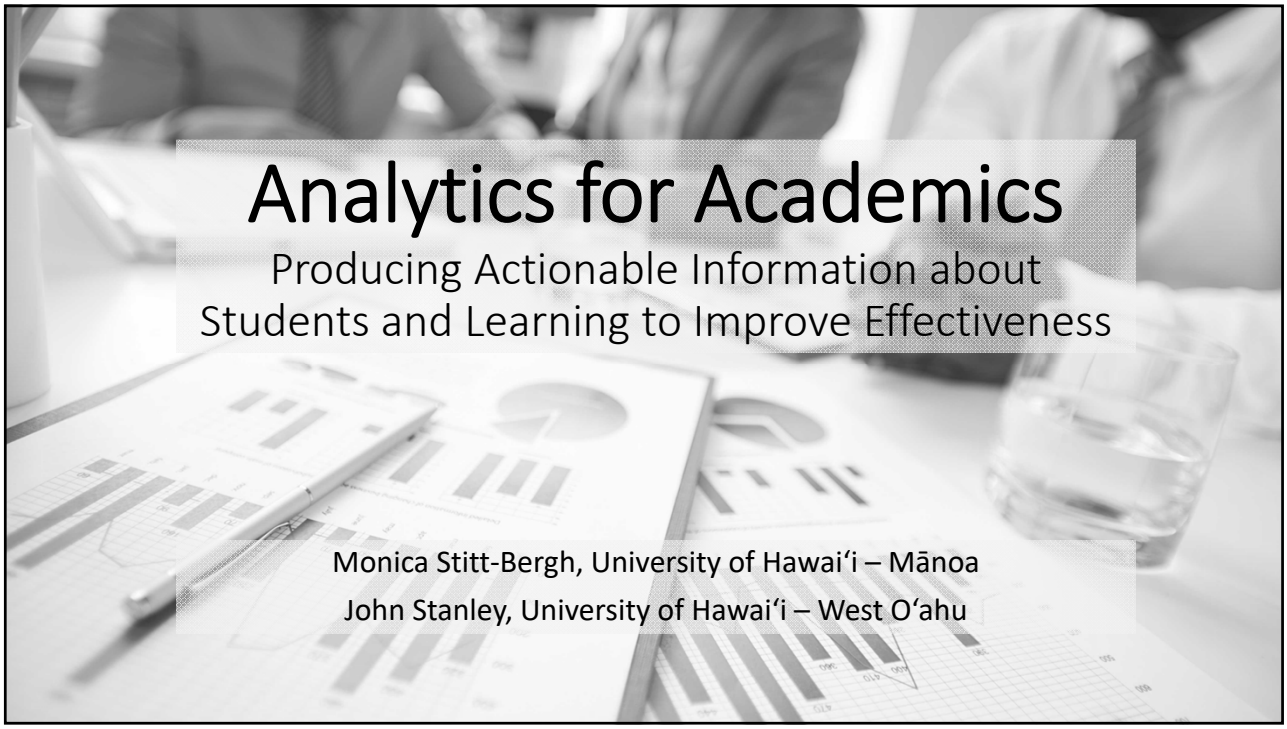
Let’s talk more during lunch!

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Build a Culture of Inquiry

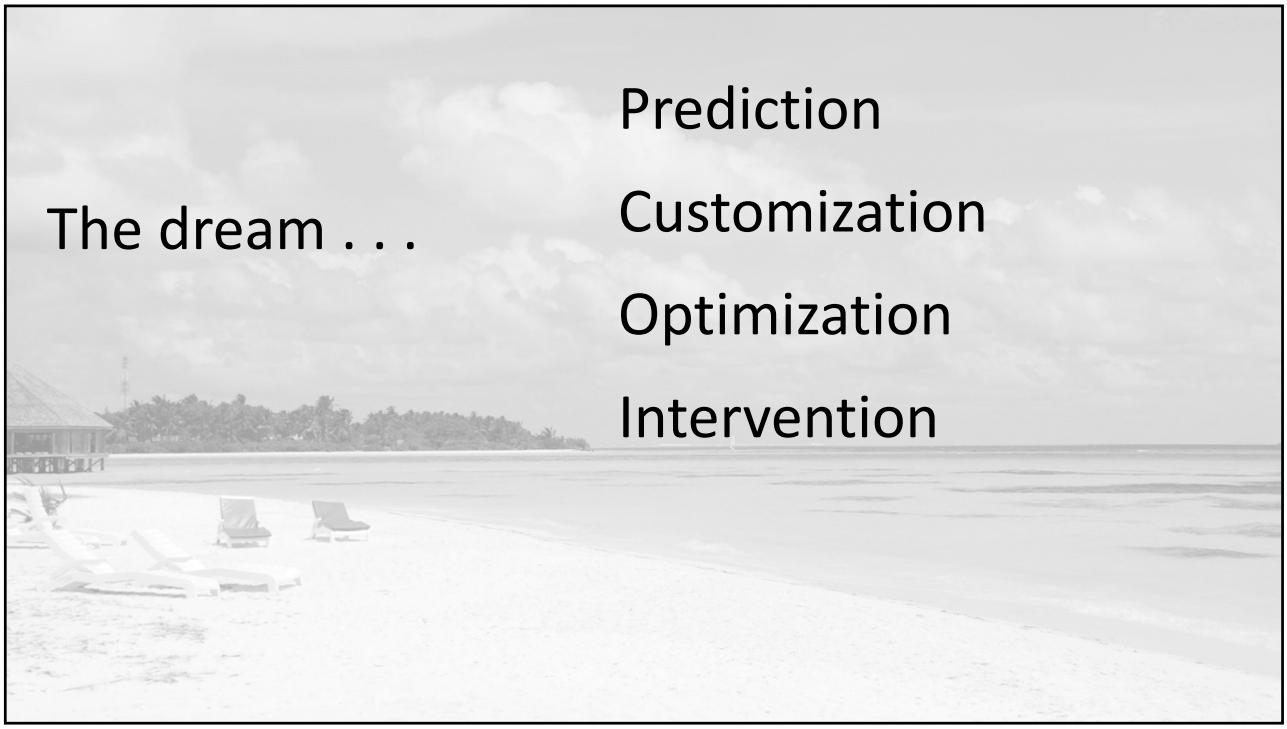
Monica Stitt-Bergh

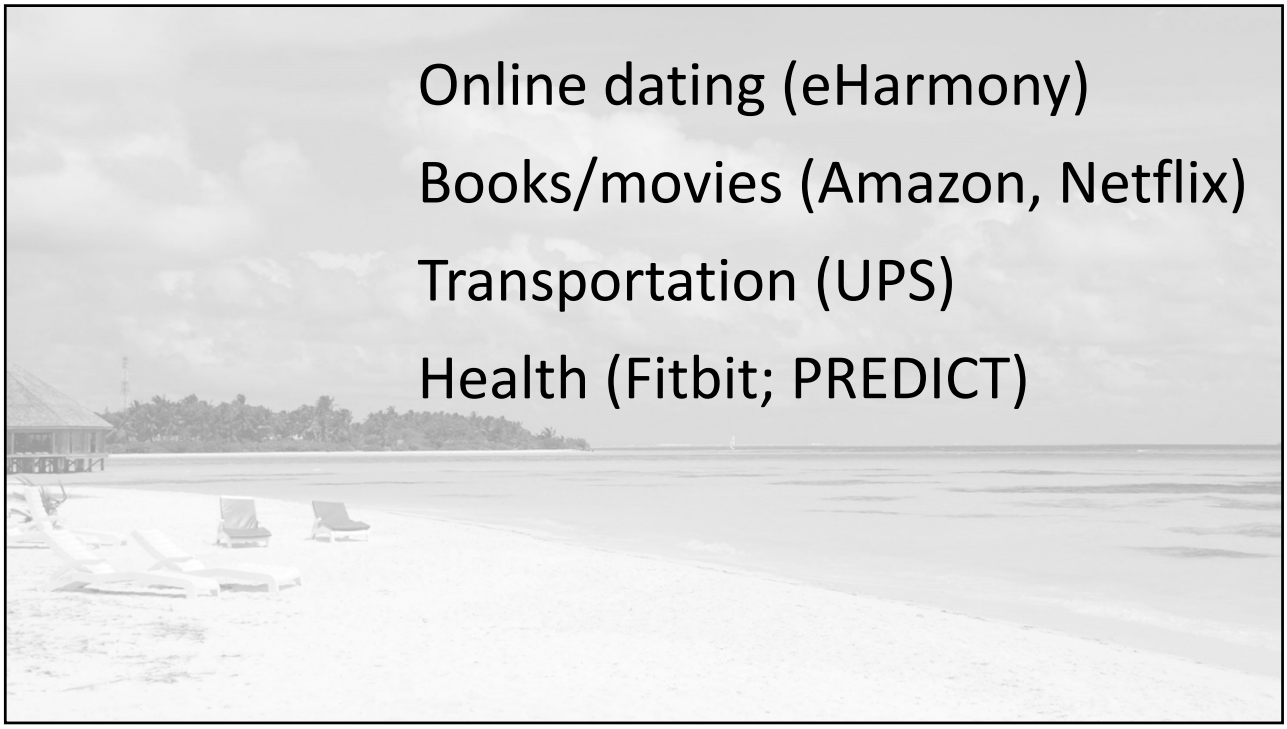
John Stanley



Build a Culture of Inquiry

Ethical implications, affordability, data availability, and expertise


The dream . . .
Prediction
Customization
Optimization
Intervention


Online dating (eHarmony)
Books/movies (Amazon, Netflix)
Transportation (UPS)
Health (Fitbit; PREDICT)

Examples to Consider

Policing

College rankings

College recruiting

Brainstorm, Pair & Share Activity

5A

Analytics in higher ed: What might go wrong?

2-minute brainstorm. 4-minute pair & share

Build a culture of inquiry: Ethical implications, affordability, data availability, and expertise

Brainstorm, Pair & Share Activity 5A

1. Analytics in higher education: What might go wrong?
   2-minute brainstorm to list as many ideas as you can.

2. Pair & Share.
   4-mintues to share an idea from above that's important to you.

Ethical Implications

"Models are opinions embedded in mathematics"

"These models encoded human prejudice, misunderstanding, and bias into the software systems that increasingly managed our lives"

Cathy O'Neil, *Weapons of Math Destruction*

Ethical Implications

Models are never "theory free" – always subjective because the creators include and exclude variables.

E.g., college rankings that exclude financial data

Ethical Implications

Most models are based on correlation (not causation).

Spurious correlations are everywhere
http://www.tylervigen.com/spurious-correlations

E.g., go to Disneyland to increase Political Sci doctorates awarded?

Political Science doctorates awarded (US) has a very strong, positive relationship with visitors to Disneyland (0.999!)

Ethical Implications

Stereotyping/profiling can occur when (a) building the model and (b) interpreting the model's results.

Some do not investigate the positive & negative and the intended & unintended consequences.

Useful Frameworks 5B

See document: *Useful Frameworks for Ethical Practice*

1. Drachsler & Greller (2016)—DELICATE
2. Cormack (2016)—Purpose-oriented
   (#1 & #2 based in part on European data protection law)

3. U.S. Federal Trade Commission (2016)

Challenges to Establishing Analytics

Affordability
- Infrastructure
- Technology
- People/Expertise
- Opportunity Costs

Data availability
- Student Information System
- Learning Management System
- Budget/ Human Resource Silos

Build a culture of inquiry: Ethical implications, affordability, data availability, and expertise

Useful Frameworks for Ethical Practice 5B

1. Drachsler & Greller (2016)—*DELICATE*

Use the following to guide analytics project planning (based on Drachsler & Greller's *Privacy and analytics—it's a DELICATE issue* paper):

1. Determine the project's **value**—is it worthwhile? Explicitly state the rights of the students (or other data subjects).
2. Explain the **intentions and objectives**—including the data to be collected, how long data will be kept, who has access, limits to the use of results.
3. **Legitimate use** of data: why are you allowed the data? Explicitly state why existing data is insufficient and why you are allowed to collect new data.
4. **Involve all stakeholders, including the students**. Be open about privacy concerns, the personal data collected, and staff training and safeguarding during discussions with stakeholders.
5. **Consent** from the students before data collection and an opt-out option may be needed. Cormack (below) differentiates between data used for personal decisions and data used for program and institutional decisions. In the latter case, he suggests that student consent is not needed.
6. **Anonymize** the data as far as possible and aggregate data.
7. Technical procedures to **guarantee privacy** should be established.
8. **External parties**, if involved, need to sign a contract stating they will follow data security rules. Everyone must use the data only for the stated intentions and nothing else.

2. Cormack (2016)—Purpose oriented

Purpose determines practice (based on Cormack's *A data protection framework for learning analytics* paper):

1. **If purpose is to collect and analyze data to discover patterns:**
    a. No informed consent
    b. Ensure legitimate interest; clearly state expectations about intended use
    c. Reduce risk to individuals through standard data-security measures
2. **If purpose is institutional/program-level use and initiatives:**
    a. Follow safeguards and data-security measures
    b. Examine for bias & unintended consequences, etc.
3. **If purpose is student-level use and intervention:**
    a. Informed consent needed
    b. Offer interventions as a choice between standard practice and personalized support.
    c. Provide sufficient information for a student's knowledgeable, freely given response

3. U.S. Federal Trade Commission's guiding questions

The *Big Data* report offers important questions to consider during the process:

1. **How representative is your data set? What information is missing that may bias the model?** This is not limited to the students (and student groups) that may be missing. Think about what information might be missing (e.g., student financial data, student access to transportation or childcare services).

2. **Does the data model account for biases?** Are biases built into the model – either during collection or analysis? What hidden biases might exist? What are the unintended consequences of using the model? What strategies help overcome them?
3. **How accurate are the predictions based on the model?** Is the model grounded in theory? Analytics is good at detecting correlations but is not good at explaining which correlations are meaningful so use a theory to select variables.
4. **Does the reliance on the model raise ethical or fairness concerns?** Balance the predictive value with fairness. Omit a variable if there are concerns about discrimination of a particular group. Consider how the data can be used to advance opportunities for underrepresented populations.

Citations (also in *Additional Resources*)

Cormack, A. N. (2016). A data protection framework for learning analytics. *Journal of Learning Analytics*, 3(1), 91-106. http://learning-analytics.info/journals/index.php/JLA/article/view/4554/5432

Drachsler, H. & Greller, W. (2016, April). *Privacy and analytics: it's a DELICATE issue a checklist for trusted learning analytics*. Proceedings of the Sixth International Conference on Learning Analytics & Knowledge. Edinburgh, UK. https://www.researchgate.net/publication/293415524

Federal Trade Commission. (2016, January). *Big data: A tool for inclusion or exclusion? Understanding the issues.* Washington, DC. Report: https://www.ftc.gov/reports/big-data-tool-inclusion-or-exclusion-understanding-issues-ftc-report

Press release: https://www.ftc.gov/news-events/press-releases/2016/01/ftc-report-provides-recommendations-business-growing-use-big-data

Human expert judgment is crucial; machines cannot evaluate for fairness.

Challenges to Predictive Analytics

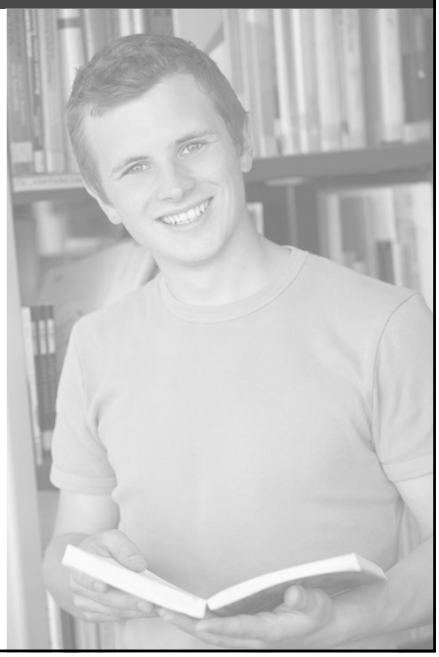
- Culture change (business model stigma)
- Wary of misuse of data
- Questions about data used in model to generate risk scores
- Students' rights to access risk scores
- More accountability
- Profiling/ Self-fulfilling prophecy

Activity 5C, 5D

Pre-mortem Activity #1

Read *Ethical use . . .*, see spreadsheet, and then

A. Generate list of reasons from multiple perspectives.
B. Draft techniques/strategies to address reasons.
C. Share with a neighboring table.



Build a culture of inquiry: Ethical implications, affordability, data availability, and expertise

Pre-mortem Activity #1 5C

The pre-mortem discussion is a technique to anticipate and address reasons why something may fail; it answers the question, "What could go wrong with this plan?" before the plan is implemented and then uses the answers to modify the plan to increase the likelihood of success.

Activity overview: Generate a list of reasons—from different perspectives—why an analytics project may fail because of ethical concerns, affordability, data availability, and/or lack of expertise. Then, draft possible techniques to increase the likelihood of project success.

Ethical use of student-level records and predicted behaviors

Context: A large (20,000+ students), public four-year university with approximately 2,000 incoming freshmen and a first-year advising office comprised of 5 FTE advisors (400 freshmen per advisor ratio). The campus averages a 75% fall-to-fall retention rate, and has a goal of increasing retention to 80%. Advisors are tasked with identifying at-risk freshmen students after their initial matriculation for a new early intervention program. The campus institutional research office reports the relative dropout risk of each freshman to advising staff via a secure online portal. The goal of the early intervention program is to identify at-risk students early and provide these students with timely academic or personal support services/interventions.

The spreadsheet (next page) lists new freshmen: selected student characteristics and a relative dropout risk score for each student. It is currently the second week of the fall semester and the advising office plans to contact the students who are identified as being at-risk.

A. Take four different perspectives and generate at least two reasons why the project may fail from each perspective. Perspectives: (1) advising staff, (2) institutional researchers, (3) provost, (4) student.

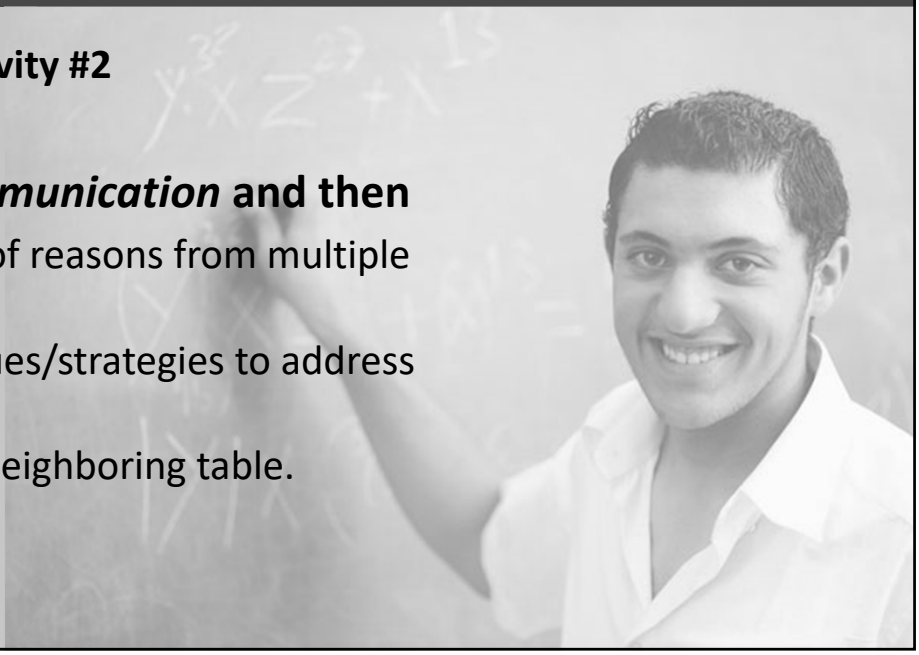
B. Select two (challenging) reasons from the list above and then draft possible techniques or strategies to address it and increase the likelihood of project success.

C. Share your table's two reasons and techniques/strategies with a neighboring table.

ID#	Student Name	Email	Retention Likelihood Score	Retention Likelihood Decile	Geographic Origin	Age	Ethnicity	Gender	Major	High School Desc	SAT Math	SAT Reading	SAT Comp.	High School GPA	First Gener-ation Ind	First Semester Math	Advanced Placement Credits	Current Attempted Credits	Pell Ind	Total Unmet Need	Total Offer Amount
1	Last Name, First	email@...	98%	1	MAKAKILO	18	Mixed Race (2 or	F	Finance	Kapolei H.S.	560	490	1050	4.07	No	No	Yes	15	Yes	$ -	$14,015
2	Last Name, First	email@...	98%	1	WAIANAE	17	Filipino	F	Education	Waianae H.S.	660	560	1220	4.06	No	Yes	No	16	No	$ -	$12,940
3	Last Name, First	email@...	97%	1	EWA	18	Filipino	F	Gen Business	James Campbell H.S.	470	480	950	3.96	No	No	Yes	17	No	$ 2,454	$11,200
4	Last Name, First	email@...	96%	1	WAIPAHU	18	Filipino	M	Education	Waipahu H.S.	450	360	810	3.28	Yes	No	No	12	Yes	$ -	$15,898
15	Last Name, First	email@...	93%	1	KALIHI	18	Filipino	F	Accounting	W R Farrington H.S.	570	520	1090	3.17	No	No	No	16	Yes	$ 3,583	$12,315
16	Last Name, First	email@...	93%	1	WAIPAHU	18	Filipino	M	Gen Business	Waipahu H.S.	600	430	1030	4.02	Yes	No	No	12	No	$ -	$ 8,024
17	Last Name, First	email@...	93%	1	MILILANI	19	Mixed Asian	N	Creative Media	Mililani H.S.	440	410	850	3.53	No	Yes	No	17	No	$ 546	$ 7,500
18	Last Name, First	email@...	92%	1	AIEA	18	Mixed Asian	F	Management	Aiea H.S.	380	380	760	3.88	No	Yes	No	16	No	$ -	$ 6,500
19	Last Name, First	email@...	92%	1	MAKAKILO	18	Filipino	F	Psychology	Kapolei H.S.	320	420	740	2.90	No	No	No	17	Yes	$ 3,583	$12,315
20	Last Name, First	email@...	92%	1	EWA	18	Native Hawaiian	F	Gen Business	James Campbell H.S.	460	430	890	3.80	No	No	Yes	12	Yes	$ 1,233	$14,665
21	Last Name, First	email@...	92%	1	WAIANAE	18	Native Hawaiian	F	Education	Waianae H.S.	750	600	1350	3.70	Yes	No	No	13	Yes	$ 583	$14,815
22	Last Name, First	email@...	92%	1	MILILANI	18	Filipino	M	Psychology	Mililani H.S.	540	520	1060	3.12	Yes	Yes	No	17	No	$ -	$ 5,500
32	Last Name, First	email@...	90%	2	WAIPAHU	18	Filipino	M	Education	W R Farrington H.S.	450	410	860	3.38	No	No	No	14	Yes	$ 3,583	$12,315
33	Last Name, First	email@...	90%	2	WAIANAE	17	Mixed Race (2 or	F	Creative Media	Nanakuli High Interme	470	440	910	2.91	No	No	No	16	Yes	$ 10,813	$14,815
81	Last Name, First	email@...	81%	4	KALIHI	17	Filipino	F	Gen Business	W R Farrington H.S.	550	450	1000	3.96	No	No	Yes	12	No	$ 12,361	$ 6,500
82	Last Name, First	email@...	81%	4	WAIPAHU	18	Filipino	F	Management	McKinley H.S.	630	500	1130	3.48	No	No	No	12	No	$ -	$ 5,500
83	Last Name, First	email@...	81%	4	WAIPAHU	18	Filipino	M	Undeclared	Waipahu H.S.	300	450	750	3.36	No	Yes	No	13	No	$ -	$ 5,500
84	Last Name, First	email@...	81%	4	PEARL CITY	18	Japanese	M	Undeclared	Pearl City H.S.	510	590	1100	3.65	No	Yes	Yes	15	No	$ -	$ 5,500
85	Last Name, First	email@...	81%	4	WAIANAE	18	Filipino	F	Undeclared	Waianae H.S.	370	390	760	3.50	No	No	No	17	No	$ 2,718	$ 5,500
86	Last Name, First	email@...	81%	4	WAIANAE	17	Mixed Race (2 or	M	Undeclared	Waianae H.S.	400	270	670	2.85	No	No	No	15	Yes	$ 3,583	$12,315
87	Last Name, First	email@...	80%	4	WAIANAE	18	Native Hawaiian	F	Finance	Mililani H.S.	500	420	920	3.71	Yes	Yes	No	17	Yes	$ 6,546	$ 6,265
95	Last Name, First	email@...	78%	4	MAKAKILO	18	Caucasian or Whi	M	Psychology	Floyd B Buchanan H.S.	460	450	910	3.80	No	No	Yes	15	No	$ -	$ -
96	Last Name, First	email@...	78%	4	SALT LAKE	17	Filipino	F	Psychology	Radford H.S.	440	460	900	3.46	No	Yes	No	15	No	$ -	$ -
97	Last Name, First	email@...	78%	4	WAIANAE	18	Mixed Asian	F	Psychology	Waipahu H.S.	450	440	890	3.54	No	No	No	12	Yes	$ 5,576	$ 8,565
98	Last Name, First	email@...	78%	5	WAIANAE	18	Native Hawaiian	F	Psychology	Kamaile Academy Publ	560	510	1070	3.23	Yes	No	No	12	Yes	$ 3,083	$12,815
99	Last Name, First	email@...	77%	5	MAKAKILO	18	Filipino	M	Undeclared	Kapolei H.S.	500	470	970	3.85	No	Yes	Yes	13	No	$ -	$ -
100	Last Name, First	email@...	77%	5	KAPALAMA	19	Chinese	F	Finance	Roosevelt H.S.	490	440	930	3.41	No	Yes	Yes	12	No	$ 9,075	$ 5,065
101	Last Name, First	email@...	77%	5	WAIPAHU	18	Mixed Asian	F	Psychology	Waipahu H.S.	330	340	670	3.54	No	No	No	15	No	$ -	$ 5,500
188	Last Name, First	email@...	59%	8	MILILANI	18	Mixed Race (2 or	F	Undeclared	Leilehua H.S.	330	430	760	3.16	No	Yes	Yes	15	No	$ -	$ -
189	Last Name, First	email@...	59%	8	WAIANAE	18	Caucasian or Whi	M	Undeclared	Hawaii Technology Aca	500	450	950	2.69	No	Yes	No	12	No	$ -	$ 5,500
190	Last Name, First	email@...	59%	8	WAIANAE	17	Native Hawaiian	F	Psychology	Aiea H.S.	400	400	800	2.63	No	Yes	Yes	15	No	$ -	$ -
191	Last Name, First	email@...	59%	8	WAIANAE	17	Native Hawaiian	F	Gen Business	Waianae H.S.	520	450	970	2.94	No	No	No	12	Yes	$ 15,313	$10,315
192	Last Name, First	email@...	59%	8	WAIALUA	18	Mixed Asian	N	Psychology	Waialua H.S.	480	430	910	3.39	Yes	No	No	12	Yes	$ 15,313	$ 9,315
193	Last Name, First	email@...	58%	8	PEARL CITY	18	Native Hawaiian	M	Gen Business	Pearl City H.S.	380	310	690	2.98	No	Yes	No	12	Yes	$ 8,283	$ 7,615
194	Last Name, First	email@...	58%	8	AIEA	18	Mixed Asian	F	Undeclared	Christian Academy	600	360	960	3.89	No	Yes	No	15	No	$ -	$ -
195	Last Name, First	email@...	58%	8	WAIPAHU	18	Filipino	M	Undeclared	Waipahu H.S.	250	620	870	3.42	No	No	No	13	No	$ -	$ -
196	Last Name, First	email@...	58%	8	WAIANAE	17	Filipino	M	Undeclared	Kapolei H.S.	380	450	830	2.74	No	Yes	No	14	No	$ -	$ -
205	Last Name, First	email@...	54%	8	KUNIA	18	Filipino	F	Management	Leilehua H.S.	490	540	1030	2.32	No	No	No	14	Yes	$ 9,083	$ 6,815
206	Last Name, First	email@...	54%	8	MILILANI	18	Mixed Race (2 or	F	Gen Business	Mililani H.S.	550	360	910	3.23	No	No	No	12	No	$ -	$ -
207	Last Name, First	email@...	54%	8	MILILANI	18	Mixed Race (2 or	F	Education	Mililani H.S.	520	420	940	3.20	No	Yes	No	13	No	$ -	$ -
208	Last Name, First	email@...	54%	8	EWA	18	Mixed Race (2 or	F	Undeclared	Kapolei H.S.	450	260	710	3.02	No	No	No	12	No	$ -	$ 5,500
209	Last Name, First	email@...	54%	8	EWA	18	Mixed Race (2 or	M	Management	James Campbell H.S.	430	400	830	3.00	Yes	No	No	12	No	$ -	$ -

Activity 5E

Pre-mortem Activity #2



Read *Oral Communication* and then

A. Generate list of reasons from multiple perspectives.
B. Draft techniques/strategies to address reasons.
C. Share with a neighboring table.

A Key to Success: Transparency

Bring many voices to the table

Possible players
Accreditation liaison
Administration
Advising
Career center
Faculty development
Faculty—instruction
Faculty—governance
Information tech (IT)
Institutional research
Student group(s)
Student affairs

Build a culture of inquiry: Ethical implications, affordability, data availability, and expertise

Pre-mortem Activity #2 5E

Oral Communication (program/institutional level)

Context: a small (fewer than 4,000 students) campus that offers liberal arts combined with professional education; undergraduate and graduate degrees. The campus has two IR staff; nearly all faculty use Moodle (a learning management system/courseware). Undergraduates are required to take two courses designed to improve oral communication (OC) skills. Graduate students are required to give an oral presentation as part of their graduate degree program. The Institutional Effectiveness Committee works on quality assurance of student learning and is planning an analytics project related to oral communication. The Committee's goals include the following:

- Collect and analyze data: (a) oral performance results of seniors in OC courses and graduate students; (b) student responses to an oral communication survey on experiences and confidence; (c) number of courses taken that included oral presentations; (d) incoming GPA (high school or undergraduate degree GPA); and (e) current GPA.
- Use the results for program-level changes: (a) increase faculty development opportunities related to teaching oral communication skills and (b) increase student opportunities to learn oral presentation skills (if results fall short of expectations).

A. Take three different perspectives and generate at least two reasons why the project may fail from each perspective. Choose three perspectives: faculty, student, administrator or institutional researcher.

Consider:
Ethical data collection & use?
Affordability?
Data availability?
Expertise on hand?

B. Select two (challenging) reasons from the list above and then draft possible techniques or strategies to address it and increase the likelihood of project success.

C. Share your table's two reasons and techniques/strategies with a neighboring table.

Recap

- Analytics is a tool, not a solution
- Analytics is subjective
- Expert and stakeholder perspectives are always needed
- Attend to intended and unintended consequences

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

Take Lessons from Analytics, Learning Theory, and Visualization to Make Progress Back Home

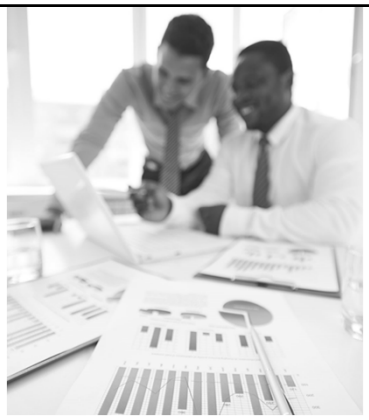
Monica Stitt-Bergh

John Stanley

Analytics for Academics

Producing Actionable Information about Students and Learning to Improve Effectiveness

Monica Stitt-Bergh, University of Hawai‘i – Mānoa
John Stanley, University of Hawai‘i – West O‘ahu


Take home lessons from analytics, learning theory, & visualization

Recap

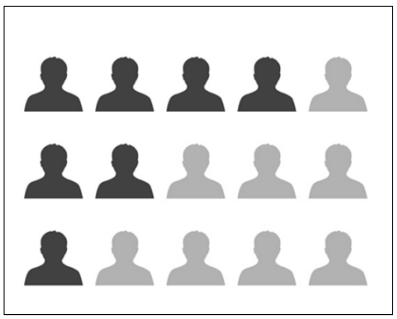
Integrate IR and assessment—intentionally & meaningfully—to

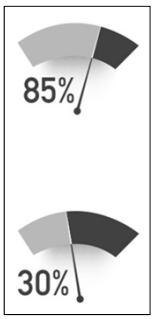
- collect useful data
- interpret "big data"
- improve learning quality and student outcomes for all student groups
- satisfy accountability requirements

Recap

Build models to predict future behaviors or outcomes.

"Story-at-a-glance" & interactive visualizations increase likelihood of use.

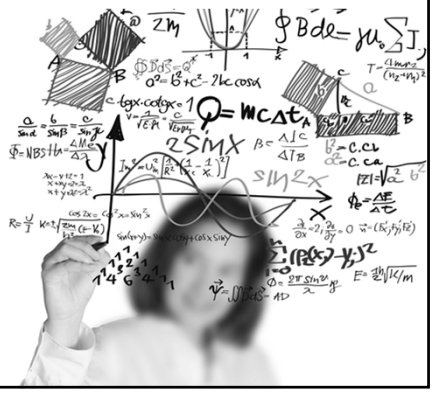




Recap

Use a *theory of learning* and a *theory of change* to create a **meaningful** model.

Meaningful models increase likelihood of use.



Recap

Build a culture of inquiry.

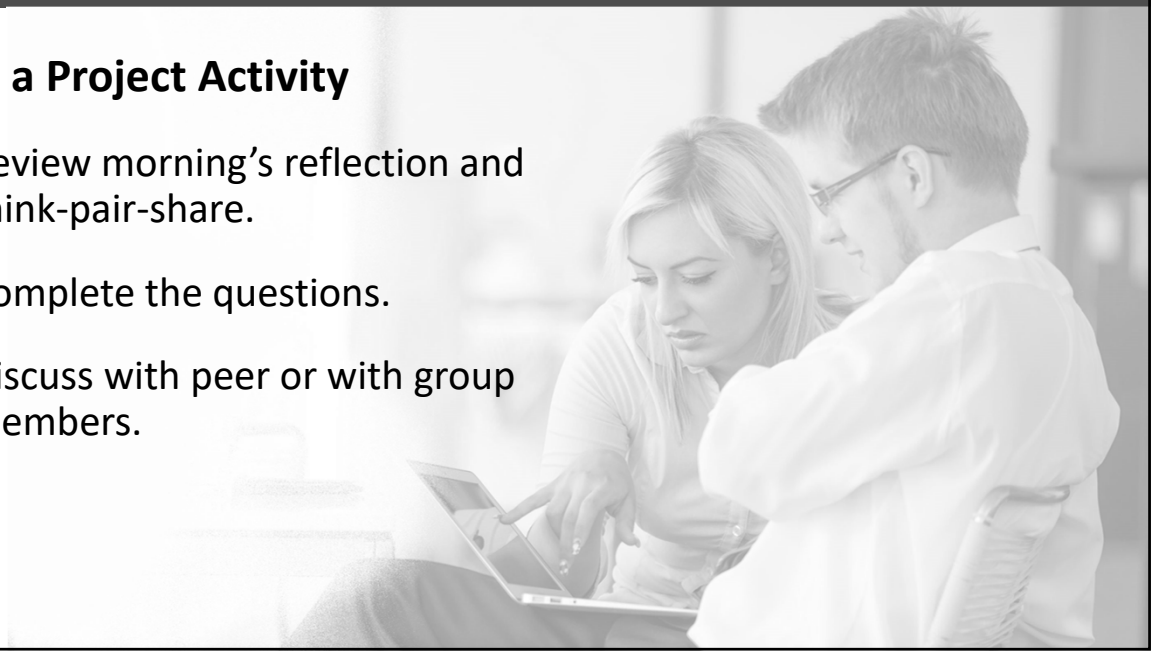
Attend to ethical concerns:

- use a framework
- many voices & transparency

Worth the cost:

- infrastructure & technology to collect and analyze useful data
- statistics and visualization expertise
- time for purposeful collaboration

Activity 6A



Plan a Project Activity

1) Review morning's reflection and think-pair-share.
2) Complete the questions.
3) Discuss with peer or with group members.

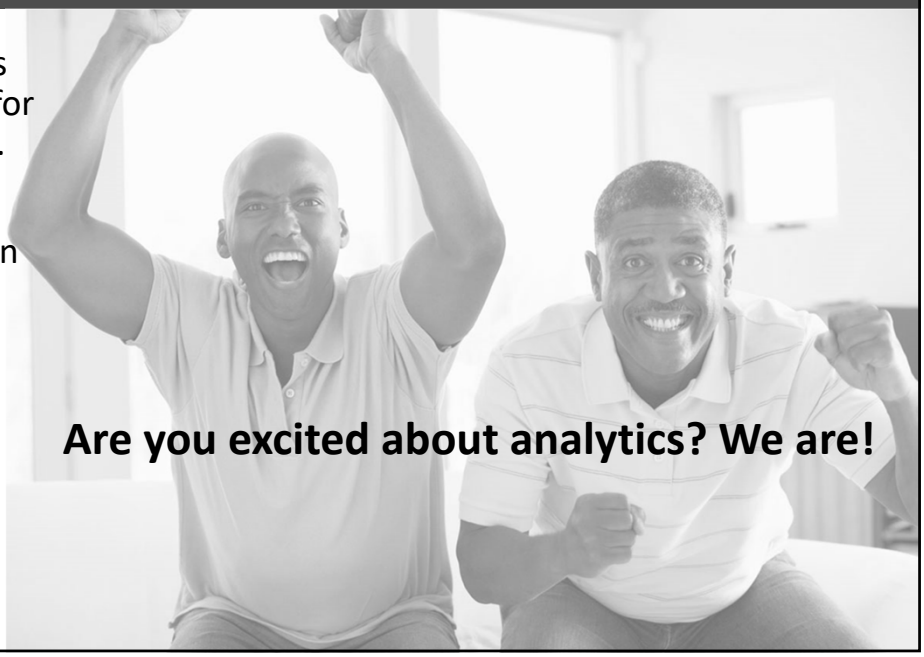
Sharing Final Thoughts

Ethically use analytics to optimize learning for the students' benefit.

Analytics is one tool in a large toolbox.

Findings can be daunting, but not knowing is worse.

Mahalo! Thank you!



Are you excited about analytics? We are!

Take lessons from analytics, learning theory, and visualization to make progress back home

Plan a Project Activity 6A

First, review your reflection and thoughts from this morning's *Reflection Activity* and Think-Pair-Share (completed during the *Framework for Purposeful Integration* session).

Second, answer the questions below in a small group or by yourself. (Individuals: when you've finished, find another person to share with and get feedback from.) Use the *Questions to Aid Discussion* below to shape feedback to group/peers.

1. If your campus (or program) effectively used analytics, what specific positive benefits may occur?

Envision a specific project for your campus (program) that uses analytics and/or integrated assessment & IR.

2. Briefly describe the **purpose** of the project and state a **meaningful question** to be answered.

3. Briefly describe how the results would be **used** and by whom.

4. Do the data already exist? (circle one) Yes, all Yes, some No Unsure

5. Who else would value this project? (For whom is it meaningful?)

6. What are **ethical concerns** regarding the project? (remember: consider from multiple perspectives)

 Continued on next page

7. Who (or what groups) would be involved because they have **expertise or an interest**? (Consider including experts in statistics, data management, data collection, visualization, teaching, learning theory, as well as students, opinion leaders on campus, etc.)

8. What are **barriers** you will likely encounter?

9. What will be **two keys to the project's success**?

10. What do you still need to find out in order to plan and implement the project?

11. To start the project, what's **the first thing you will do** when you get back to campus?

Questions to Aid Discussion

- Is it a meaningful project? Will people care enough to use the results?
- Does the intended use of results align with the purpose?
- Are the right people/groups involved? Anyone missing?
- Good awareness of ethical concerns?
- What other barriers may exist?
- What else may help ensure project success?

WSC Senior College and University Commission | EDUCATIONAL PROGRAMS

ADDITIONAL RESOURCES

WSC
Senior College and University Commission

ADDITIONAL RESOURCES

Analytics for Academics: Producing Actionable Information about Students and Learning to Improve Effectiveness

Case Studies

California State University (Visualization): http://www.calstatela.edu/associateprovost/csu-student-success-dashboard

Georgia State University (Predictive Analytics): https://www.eab.com/technology/student-success-collaborative/members/videos/the-challenge-at-georgia-state-university

Loma Linda University (Visualization): http://home.llu.edu/academics/academic-resources/educational-effectiveness/institutional-research/university-statistics

Purdue University (Learning Analytics):
NBC news special: http://www.nbcnews.com/id/21134540/vp/32634348#32634348

Campus link: https://www.itap.purdue.edu/studio/signals/

Purdue University (Visualization): https://www.purdue.edu/datadigest/

Rio Salado Community College (Learning Analytics):
http://www.riosalado.edu/riolearn/Pages/RioPACE.aspx

University of Nevada at Reno (Predictive Analytics): http://www.shfwire.com/university-retention-rates-hold-steady-states-balance-access-success/

University of Texas at Austin (Predictive Analytics):
Campus link: http://studentsuccess.utexas.edu/approach

New York Times article: http://www.nytimes.com/2014/05/18/magazine/who-gets-to-graduate.html?_r=0

Webpages & Videos

Analytics Resources (Educause): https://library.educause.edu/resources/2015/5/analytics-in-higher-education-2015

Annotated Bibliography – Learning Analytics in HE:
http://www.umuc.edu/innovatelearning/upload/learning-analytics-in-higher-education-annotated-bibliography.pdf

Blending Human Intelligence and Analytics for Student Success (Educause):
http://er.educause.edu/articles/2016/9/blending-human-intelligence-and-analytics-for-student-success

Driving Toward Greater Postsecondary Attainment Using Data: A Tactical Guidebook (Published by Institute of Higher Education Policy – IHEP): http://www.ihep.org/guidebook-data-home-page

"Use this guidebook to learn more about different data tools that communities use to support students and improve educational outcomes and how you could potentially adopt these tools in your own communities."

Effective Learning Analytics: Using data and analytics to support students (Jisc) [website]: https://analytics.jiscinvolve.org/wp/

Integrated Planning and Advising (Educause): https://library.educause.edu/topics/information-technology-management-and-leadership/integrated-planning-and-advising-for-student-success-ipass

International Learning Analytics & Knowledge Conference (March 2017 in Vancouver) [website]: http://lak17.solaresearch.org/; 2011 conference: https://tekri.athabascau.ca/analytics/

Journal of Learning Analytics [open access journal]: http://learning-analytics.info/journals/index.php/JLA/index

Learning Analytics Community Exchange [YouTube channel]: https://www.youtube.com/user/LaceprojectEu

Open Learning Analytics: Erik Duval at TEDxUHowest [TEDx Talk]: https://www.youtube.com/watch?v=LfXDzpTnvqY

Society for Learning Analytics Research (SoLAR) [website]: https://solaresearch.org/

Student Experience Traffic Lighting – Engagement Analytics [You Tube video]: https://www.youtube.com/watch?v=rH9roN8NFv0&list=PL440A0EBE129587E2&index=9&feature=plpp_video

Articles, Books & Presentations

Astin, A. W. & Antonio, A. L. (2012*). Assessment for Excellence: The Philosophy and Practice of Assessment and Evaluation in Higher Education* (2nd Ed.). New York: Rowman & Littlefield. [book, $50-$60]

Blaich, C.F. & Wise, K.S. (2011, January). *From gathering to using assessment results: Lessons from the Wabash National Study* (NILOA Occasional Paper No.8). Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment. http://www.learningoutcomeassessment.org/occasionalpapereight.htm [report]

Herzog, S. & Stanley, J. (2016). *A step-by-step introduction to building a student at-risk prediction model*. Presented at the AIR Forum, New Orleans, Louisiana. http://www.uhwo.hawaii.edu/academics/oie/research-and-presentations/

Larusson, Johann Ari, & White, Brandon (Eds.) (2014). *Learning Analytics: From Research to Practice.* New York: Springer. http://www.springer.com/us/book/9781461433040 [book, $149-$189]

Mayer-Schönberger, V., & Cukier, K. (2014). *Learning with Big Data: The Future of Education*. New York: Houghton Mifflin Harcourt. [e-book 60 pages, $2.99]

Nelson, K. (2016). *Creating and publishing interactive dashboards with Excel Power Pivot, Power BI, and Sharepoint Online.* Presented at the CAIR Conference, Los Angeles, California. http://www.cair.org/wp-content/uploads/sites/474/2016/11/Power-Pivot-and-Power-BI-CAIR-2016.pdf

Posey, J., & Pitter, G. W. (2012). Integrating the functions of institutional research, institutional effectiveness, and information management. *AIR Professional File, 126*. https://www.airweb.org/EducationAndEvents/Publications/Documents/126.pdf

Sclater, N., Peasgood, A., & Mullan, J. (2016, April). *Learning analytics in higher education: A review of UK and international practice*. https://www.jisc.ac.uk/reports/learning-analytics-in-higher-education [report]

Siemens, G. (2013). Learning analytics: The emergence of a discipline. *American Behavioral Scientist, 57*, p. 1380-1400.

Stanley, J. & Herzog, S. (2016). A primer on analytics in higher education. Presented at WASC Senior College and University Commission ARC Conference, Anaheim, California. http://www.uhwo.hawaii.edu/academics/oie/research-and-presentations/

Terkla, D. G., et al. (2012). Institutional Dashboards: Navigational Tool for Colleges and Universities, *AIR Professional File, 123*. https://www.airweb.org/EducationAndEvents/Publications/Documents/123.pdf

Ethical Practice

Code of practice for learning analytics: Setting out the responsibilities of educational institutions to ensure that learning analytics is carried out responsibly, appropriately and effectively. (2015, June). https://www.jisc.ac.uk/guides/code-of-practice-for-learning-analytics

Code of practice for learning analytics: A literature review of the ethical and legal issues. (2014, November). http://repository.jisc.ac.uk/5661/1/Learning_Analytics_A-_Literature_Review.pdf

Cormack, A. N. (2016). A data protection framework for learning analytics. *Journal of Learning Analytics*, 3(1), 91-106. http://learning-analytics.info/journals/index.php/JLA/article/view/4554/5432

Drachsler, H. & Greller, W. (2016, April). *Privacy and analytics: it's a DELICATE issue a checklist for trusted learning analytics*. Proceedings of the Sixth International Conference on Learning Analytics & Knowledge. Edinburgh, UK. https://www.researchgate.net/publication/293415524

Federal Trade Commission. (2016, January). *Big data: A tool for inclusion or exclusion? Understanding the issues.* Washington, DC. Report: https://www.ftc.gov/reports/big-data-tool-inclusion-or-exclusion-understanding-issues-ftc-report

Press release: https://www.ftc.gov/news-events/press-releases/2016/01/ftc-report-provides-recommendations-business-growing-use-big-data

O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequity and Threatens Democracy*. New York: Random House. https://weaponsofmathdestructionbook.com/

Interesting apps

BigML. https://bigml.com/ Free version for education and small data sets. Brings machine learning to everyone to uncover the hidden predictive power of data with ease. Upload raw data sets.

Use caution when uploading to a cloud—it may not be secure and thus unsuitable for non-anonymized data.

Power BI. https://powerbi.microsoft.com/en-us/ Free version. Import summarized data and generate various visualizations. Option: install the Power BI publisher for Excel add-in.

National news—tales that encourage caution or inspire

How UPS uses analytics to drive down costs (and no, it doesn't call it big data). (2014). Network World. http://www.networkworld.com/article/2850874/big-data-business-intelligence/how-ups-uses-analytics-to-drive-down-costs-and-no-it-doesn-t-call-it-big-data.html

Pinterest Accidentally Congratulates Single Women on Getting Married. (2014). New York Magazine. http://nymag.com/daily/intelligencer/2014/09/pinterest-congratulates-single-women-on-marriage.html

When algorithms discriminate. (2015). The New York Times. http://www.nytimes.com/2015/07/10/upshot/when-algorithms-discriminate.html

APPLY NOW!

Join a Free Community of Practice for Advancing Learning Outcomes Visibility

Starting in Spring 2017, with funding from Lumina Foundation, WSCUC is offering institutions an opportunity to participate in a free Community of Practice to lend support, guidance, and consulting around projects related to assessing student learning and demonstrating visibility of that learning.

Through participating, institutions will have opportunities to:

- Engage in student learning assessment and visibility projects that are informed by national and regional thought leadership, knowledge generation, capacity building, and resource sharing within the Community of Practice, with the intention of broad-based engagement across the region over time.
- Engage with expert consultants to help guide projects and highlight best practices. Regional and national content and/or assessment experts who will provide advice, guidance, and resources are paid for as part of the grant.
- Build networks and support among participants in the Community of Practice, which support similar projects.
- Have WSCUC support, guidance, and input from dedicated facilitator of the Community of Practice.
- Engage in opportunities that build sustainable assessment practices to support student learning and accreditation requirements.

Participating institutions will:

- Create and implement an assessment visibility project to developed, implemented, and shared within the Community of Practice;
- Experiment with adopting or adapting existing frameworks, models, and resources to promote alignment and coordination of work across institutions;
- Share strategies, resources, and examples broadly within and outside of the WSCUC community;
- Interact regularly in virtual Community of Practice discussions and activities.

Contact Errin Heyman, Project Manager, for more information: eheyman@wascsenior.org

Proposals for the new WSCUC Community of Practice are due February 15, 2017

Check the WSCUC website for more information!

www.wascsenior.org

WSC Senior College and University Commission

ASSESSMENT LEADERSHIP ACADEMY

An Opportunity for Your Institution to Develop Assessment Expertise and Leadership
March 2017 - January 2018
Applications will be accepted November 15, 2016 - February 15, 2017

Purpose of the Academy

The WSCUC Assessment Leadership Academy (ALA) prepares postsecondary professionals to provide leadership in a wide range of activities related to the assessment of student learning, from facilitating workshops and supporting the scholarship of assessment to assisting administrative leadership in planning, budgeting, and decision-making related to educational effectiveness. ALA graduates have also provided consultation to the WSCUC region and served on WSCUC committees and evaluation teams; some have moved on to new positions with greater responsibilities. The Academy curriculum includes both structured and institutionally-tailored learning activities that address the full spectrum of assessment issues, and places those issues in the national context of higher education policy on educational quality, accreditation, and accountability.

Who Should Participate in the Academy?

Higher education faculty, staff, and administrators who are committed to:

- Developing assessment expertise;
- Serving in an on-going assessment leadership role at their institution;
- Devoting significant time to complete ALA reading and homework assignments.

Assessment Leadership Academy Faculty

ALA participants will interact with and learn from nationally-recognized higher education leaders. Faculty lead interactive class sessions and are available to participants for one-on-one consultations.

Faculty Facilitators of the ALA:

- **Amy Driscoll**, Former Director of Teaching, Learning, and Assessment, CSU Monterey Bay
- **Carole Huston**, Associate Provost, University of San Diego

Guest Faculty Include:

- **Peter Ewell**, President Emeritus, National Center for Higher Education Management Systems
- **Adrianna Kezar**, Associate Professor for Higher Education, University of Southern California
- **Jillian Kinzie**, Associate Director, Center for Postsecondary Research & NSSE Institute
- **Kathleen Yancey**, Kellogg W. Hunt Professor of English, Florida State University
- **Laurie Dodge,** Vice Chancellor of Institutional Assessment and Planning, Brandman University (ALA Alum)
- **Kevin Grant,** Assistant Dean of Student Development, Biola University (ALA Alum)
- **Susan Platt,** Executive Director of Assessment, CSU Long Beach (ALA Alum)
- **And others!**

Learning Goals

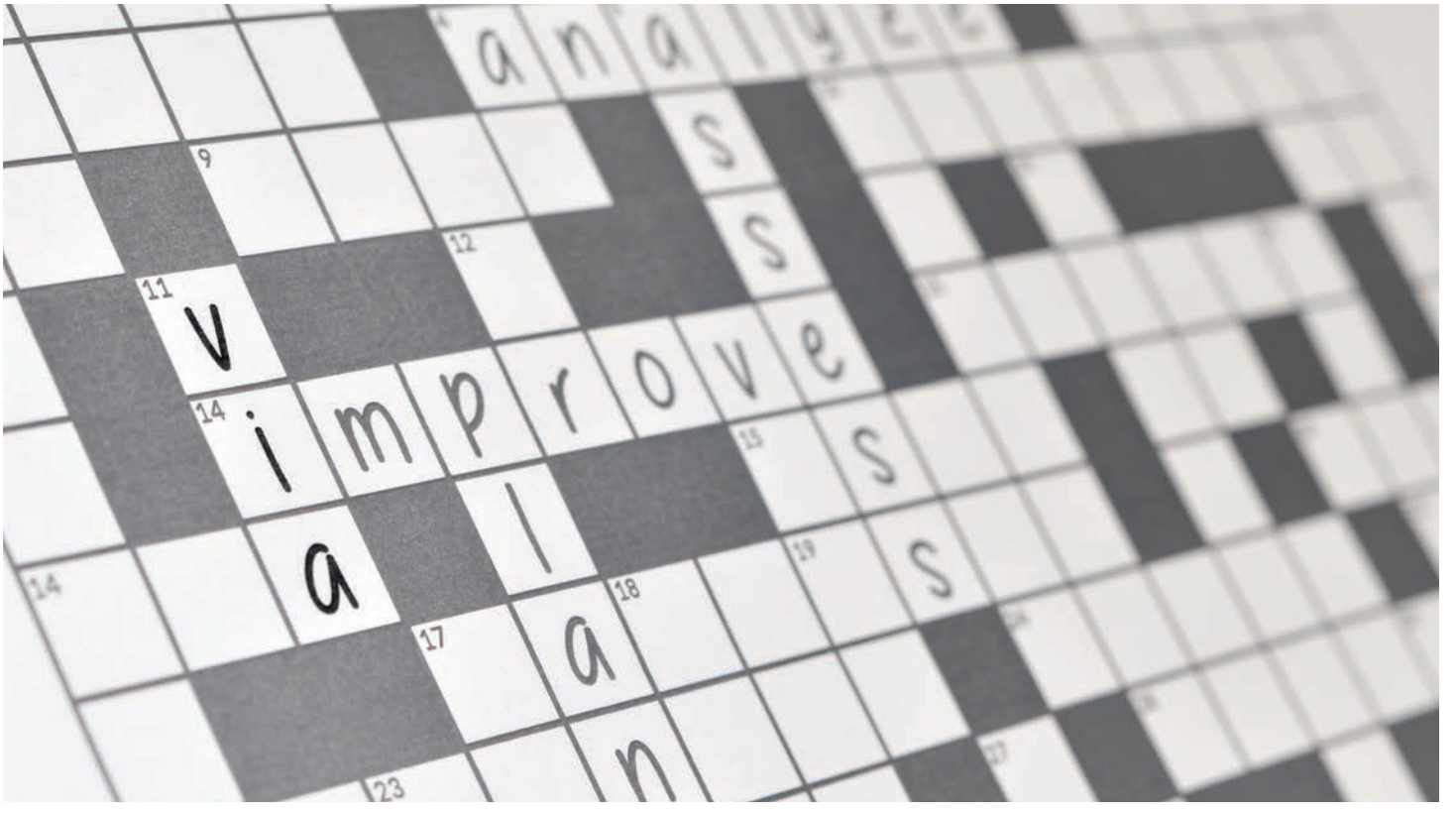
Participants who complete Academy requirements will acquire foundational knowledge of the history, theory, and concepts of assessment; they will also develop expertise in training and consultation, institutional leadership for assessment, and the scholarship of assessment.

Application Deadline and More Information

Applications for the 2017-18 cohort will be accepted from November 15, 2016 until February 15, 2017.

For more information and application materials, please see **Assessment Leadership Academy** on the WSCUC website http://www.wascsenior.org/ala/overview

Looking to solve the assessment puzzle?



via™ is your answer!

Can't find that *one answer* to your assessment puzzle? LiveText®'s revolutionary assessment platform — via —curates evidence of learning from students and faculty to deliver administration a wealth of information:

- **Program planning**
- **Assessing student progress**
- **Gathering evidence for accreditation**
- **Showcasing artifacts in student e-Portfolios**

The question of how to provide analytics and reporting for accreditation just got solved!

Need more clues?

Learn what's possible. Request a demo of via at **www.livetext.com** and visit our booth at **WASC-ARC, April 19 – 21, 2017.**

www.LiveText.com
(866) LiveText (866) 548-3839

LIVETEXT®
Learn what's possible.

MISSION POSSIBLE

Honoring the Past,
Ensuring the Future

WSC
Senior College and University Commission

ARC 2017

ACADEMIC RESOURCE CONFERENCE

Join The Conversation!

April 19 - 21, 2017

Manchester Grand Hyatt
San Diego, CA