Improving Math Course Pass Rates
"Actionable Intelligence"

Andy T. Clark
Vice President for
Enrollment Management
atclark@valdosta.edu

Barrie D. Fitzgerald
Senior Research Analyst
bdfitzgerald@valdosta.edu

Brian A. Haugabrook
Chief Information Officer
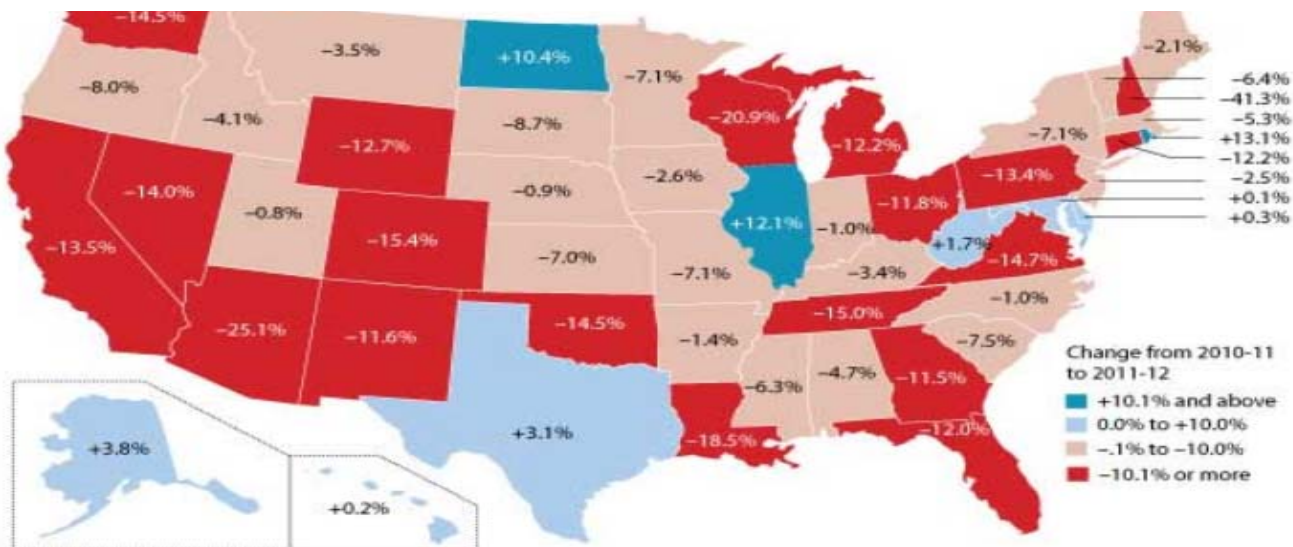**bahaugab@valdosta.edu**

October 2014

Summary of Presentation

1. Changes in Funding and Strategy
2. Business Intelligence in Higher Education
3. Faculty Portal with Student Intervention
4. Math Placement Initiative
5. Next Steps: Data Discovery

# Changes in State Appropriations for Higher Education

Note: Figures include state tax appropriations, other state money, and federal stimulus money. North Dakota, Oregon, Washington, and Wyoming enact state appropriations every two years. Figures for New York include only state support for the City University of New York, State University of New York, and student aid. These figures do not include appropriations for capital outlays and debt service, nor do they include appropriations from local governments. The data were collected from September to mid-January and may be subject to change. Percentages shown are rounded to one decimal. Different budgeting practices among the states make it impossible to ensure that all figures are perfectly comparable.

sources: "Grapevine" survey of the Center for the Study of Education Policy at Illinois State U. and State Higher Education Executive Officers

U.S.
RANKS
16TH

2002
2006
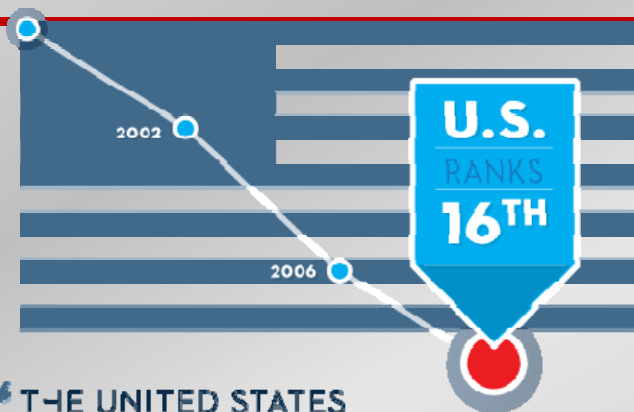
" THE UNITED STATES
USED TO LEAD THE WORLD
IN THE NUMBER OF 25-34 YEAR OLDS WITH COLLEGE DEGREES. "
WE ARE NOW 16TH AMONG 36 DEVELOPED NATIONS.

33
of 50
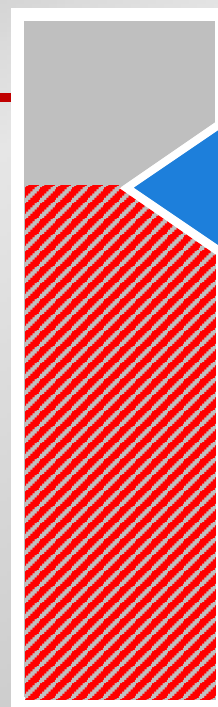
STATES MOVING TO
PERFORMANCE-
BASED FUNDING

Organizations Are Focusing on Their Customers

**Corporate America has renewed focus
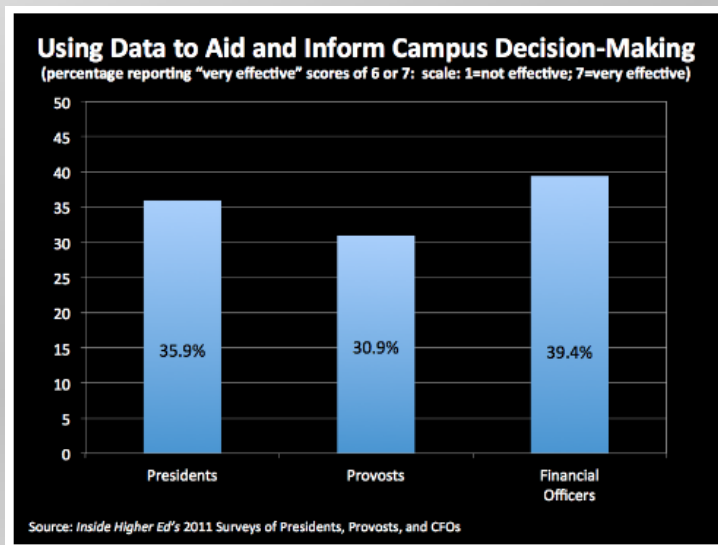on what is most fundamental to business: THE CUSTOMER**

Jack Welch

"We have only two sources of competitive advantage:

1. The ability to learn more about our customers faster than the competition.

2. The ability to turn that learning into action faster than the competition."

Business Analytics in Higher Education
Today and in the Future

. . . less than two-fifths of the presidents, provosts, and CFOs surveyed by *Inside Higher Ed* this past year report that their institution does a "very effective" job of "using data to aid and inform campus decision-making."

http://www.insidehighered.com/blogs/not-using-data-decisions#ixzz2QBub102C

Inside Higher Ed
December 2011

Optimizing student success is the "killer app" for analytics in higher education. Intelligent investments in optimizing student success garner wide support and have a strong, justifiable return on investment (ROI). Moreover, improving performance, productivity, and institutional effectiveness is the new gold standard for institutional leadership in the 21st century. Enhanced analytics is critical to both optimizing student success and achieving institutional effectiveness.
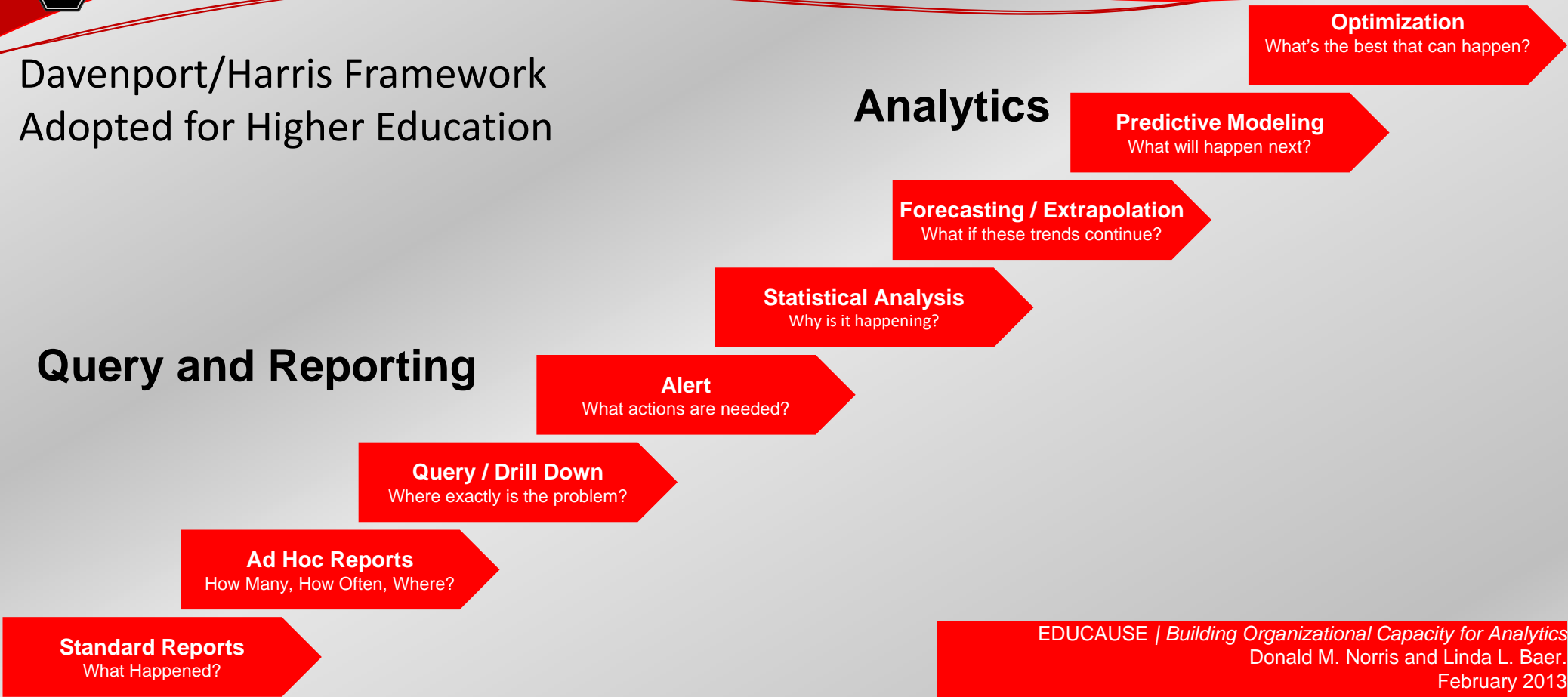
EDUCAUSE | *Building Organizational Capacity for Analytics*
Donald M. Norris and Linda L. Baer.
February 2013

Davenport/Harris Framework
Adopted for Higher Education

Analytics

Query and Reporting

Optimization
What's the best that can happen?

Predictive Modeling
What will happen next?

Forecasting / Extrapolation
What if these trends continue?

Statistical Analysis
Why is it happening?

Alert
What actions are needed?

Query / Drill Down
Where exactly is the problem?

Ad Hoc Reports
How Many, How Often, Where?

Standard Reports
What Happened?

Reporting and Analytics (Past)

1. How long does it take on average to get a new report created? (hours, days, weeks, months)

2. How are you using data to make decisions and provide support where needed?

3. Must you find information or does information find you?

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   ID            Name                     Address
   Q62100933     Clifford, Stephanie      22 EAST MAPLE ROAD
                                          DETROIT, MI 82134


   Q81337923     Serum, Tracy             6658 NORTH 69TH STREET
                                          HOUSTON, TX 02344


   PAGE: 2                                BANNER University
06-MAY-2004        03:12 PM
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   ID            Name                              Address


   *********REPORT CONTROL INFORMATION*********
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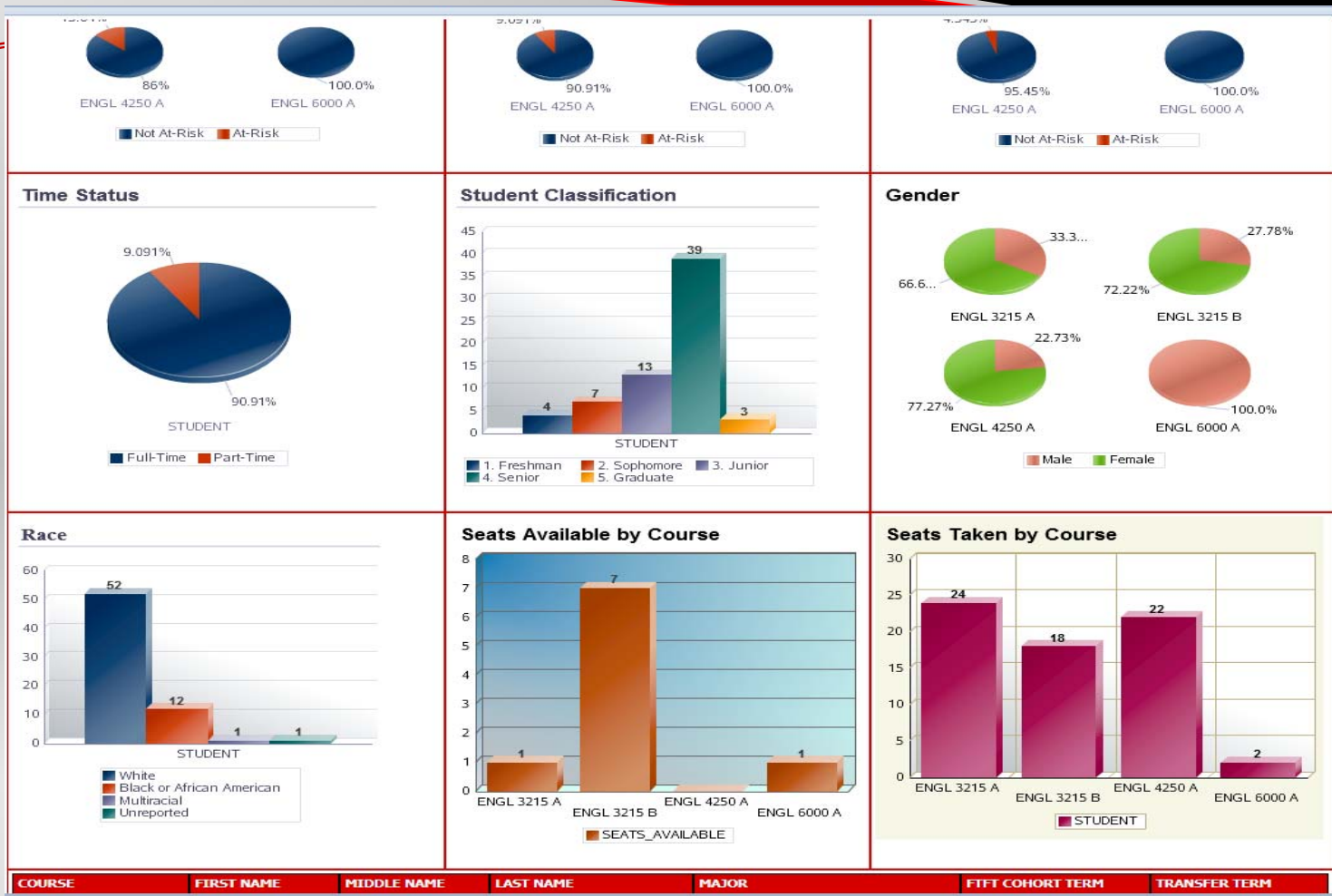
Reporting and Analytics (Current)

Drag-n-Drop Reports and Charts

Faculty Course Reports

Course								

Select Term Fall 2012 ▼

🔍 [_____] Rows 200 ▼ [Go] ⚙▼

1 - 200 of 2465 ▶

Term Desc	Crn	Subject	Crse Numb	Course Section	Course Title	Students Enrolled	Seats Available	Instructors Email
Fall 2012	00000	ACCT	2101	A	Principles of Accounting I	84	0	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2101	B	Principles of Accounting I	34	0	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2101	C	Principles of Accounting I	35	3	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2101	D	Principles of Accounting I	49	1	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2101	E	Principles of Accounting I	44	4	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2101	F	Principles of Accounting I	34	0	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2101	G	Principles of Accounting I	35	3	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2102	A	Principles of Accounting II	14	12	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2102	B	Principles of Accounting II	30	8	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2102	C	Principles of Accounting II	46	-1	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2102	D	Principles of Accounting II	43	2	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	2102	E	Principles of Accounting II	36	-2	bahaugab@valdosta.edu
Fall 2012	00000	ACCT	3100	A	Intro to Fraud Examination	32	6	bahaugab@valdosta.edu

Interactive Roster with At-Risk Alerts

Automatic Alerts, Triggers, and Events

- Sends notification to the student's advisor and academic success center

- If the student lives on campus, a wellness check is automatically triggered through the housing office

- If the student is in an FLC, all other instructors are notified

Math Placement Integration

1. Automate Predictive Model in Banner SIS
2. Design Test Scores to Drive Registration Restrictions
3. Create Process to Integrate ALEKS Assessment
4. Modify Advisor/Student Checklist
5. Staff/Advisor Training

Math Level Flow Chart

Level I	Level II	Level III	Level IV

MATH 1111 → MATH 1112 → MATH 2261

MATH 1112 → MATH 1113(H) → MATH 2261

or

MATH 1111 → MATH 1261

or

MATH 1101 → MATH 1261
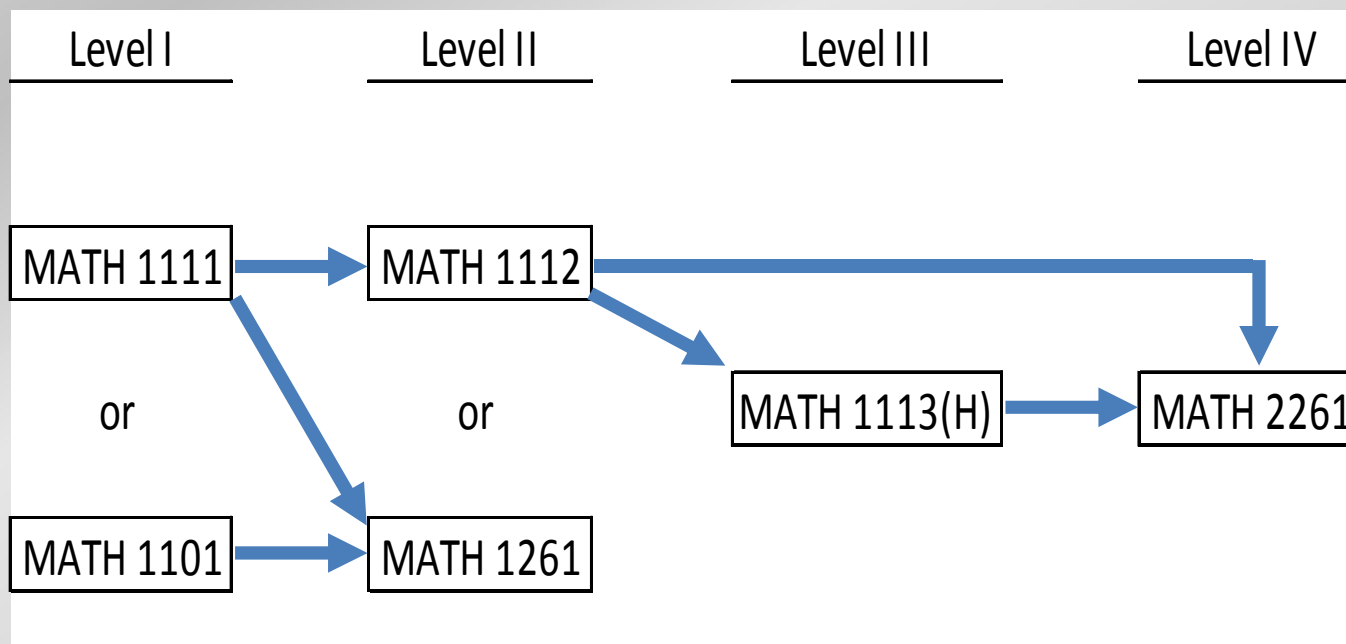
At-Risk Factors

- A two part process that examined:
  - High School Grade Point Average (HS GPA)
  - SAT Scores (ACT converted)

HS GPA - **SAT Score**

Math Placement Index

- Based on a combination of the quartiles of high school grade point average and standardized test scores.

Value	HS GPA	
	Low	High
1	3.41	4.00
2	3.04	3.40
3	2.69	3.03
4	0.00	2.68

Value	SAT Math	
	Low	High
1	531	800
2	486	530
3	446	485
4	0	445

Valdosta Math Index

- 5 cohorts years
- First math course
- Combination had 70% pass rate.
- Some Level 1 students are extremely high risk

HS GPA	SAT MATH	VMI Math Level	Math Courses
1	1	Level 4	MATH 2261
1	2	Level 3	MATH 1113
1	3	Level 2	MATH 1112 or 1261
1	4	Level 1	MATH 1101 or 1111
2	1	Level 2	MATH 1112 or 1261
2	2	Level 1	MATH 1101 or 1111
2	3	Level 1	MATH 1101 or 1111
2	4	Level 1	MATH 1101 or 1111
3	1	Level 1	MATH 1101 or 1111
3	2	Level 1	MATH 1101 or 1111
3	3	Level 1	MATH 1101 or 1111
3	4	Level 1	MATH 1101 or 1111
4	1	Level 1	MATH 1101 or 1111
4	2	Level 1	MATH 1101 or 1111
4	3	Level 1	MATH 1101 or 1111
4	4	Level 1	MATH 1101 or 1111

Key Math Courses

- MATH 1111
  3.5% increase

- MATH 1112
  9.6% increase

Cohort	MATH 1111		MATH 1112	
	Pass	Number	Pass	Number
Fall 2009	58.2%	1,363	46.8%	139
Fall 2010	66.4%	1,465	60.9%	110
Fall 2011	63.1%	1,386	61.2%	121
Fall 2012	66.8%	1,194	66.9%	139
Fall 2013	70.3%	1,003	76.5%	81
Total	64.6%	6,411	61.2%	590

Key Math Courses

- MATH 1113
  1.8% decrease

- MATH 1112
  13.1% increase

Cohort	MATH 1113		MATH 2261	
	Pass	Number	Pass	Number
Fall 2009	56.4%	165	66.7%	18
Fall 2010	61.7%	154	83.3%	18
Fall 2011	60.2%	113	75.0%	24
Fall 2012	68.4%	114	68.4%	19
Fall 2013	66.7%	90	81.5%	27
Total	61.9%	636	75.5%	106

Key Math Courses

- Overall a 4.0% increase in all level courses

Cohort	All Courses	
	Pass	Number
Fall 2009	58.3%	1,847
Fall 2010	65.4%	1,908
Fall 2011	63.8%	1,796
Fall 2012	67.7%	1,604
Fall 2013	71.7%	1,325
Total	64.9%	8,480

Fall 2014 Modifications

- Level I math students divided into two types of risk.
  - Low Risk:
    - Not at risk for MATH 1111
    - Regular section
  - High Risk:
    - At a high risk of struggling in MATH 1111
    - MATH 1111 Extended Learning

Comments and Questions