

UNDERSTANDING AND USING PREDICTED TARGETS FOR REGENTS EXAMS AND SLOS



Nassau BOCES, Department of Curriculum, Instruction and Technology

Longitudinal SLO Project Team

Brandi Bakshi Ì Strategic Data Fellow Jane Boyd Ì IDW and Test Scoring Supervisor Jeffrey Davis Ì Data Analyst

Longitudinal Study

How can historical data be used to effectively predict rigorous targets for Student Learning Objectives for courses ending in Regents exams? What methods are used to create these predictions? What was considered in the process? In what form will districts/schools receive this information for each student/teacher? How does this information fit into the SLO and the Roster?



Regression Fundamentals

Understand correlation and regression



Start with the Line of Best Fit

Observe the effect of manipulating an equation



Regression Fundamentals

Correlation and regression are used regularly in statistical analysis.

Correlation is used to see



Regression Fundamentals

Correlation is used to see if a relationship exists between two variables and can be used to answer questions.

Or, is there a relationship between students past performance and success on the multiple assessments.

How do we use that relationship to make predictions?





Linear Regression

A linear equation, y = a + bx

- " y" is the outcome variable, the target
- " a" indicates the point on the y-axis crossed by the line and is referred to as the constant
- " b" is the multiplier of input variable or coefficient
 " x" is the input variable; the data being used to predict

In the following example, "y" is the predicted Physics target and "x" is Algebra II/Trig



Scatter Plot with Trend Line

Linear Regression

The next step is to manipulate the equation and see what happens to the line and where it falls among the plotted data.









A Constant of the second of the second s **T** The second of the second state and 577 1 Tomas and the start 8 + .5x 5 V1 = 0 ARCAL -4 + .5x ۲ y 3





Historical Data



Previous assessment results are used to dfYX]\//iU`gh XYbh\gg\//fY" Predictor assessments (SLO baseline assessments) have a strong alignment with the target assessment (SLO summative assessment).



Demographic Data



Challenge Ì Special Education Economic Disadvantage Ì Poverty English Language Learner Ì LEP



Relationship Between Variables



Different demographic characteristics are variables Different assessments are variables The strength of the relationship between assessments is determined by a statistical procedure called correlation



Strength of Relationship



0 x	O. 1	weak
0.1 <x< td=""><td>0.3</td><td>modest</td></x<>	0.3	modest
0.3 <x< td=""><td>0.5</td><td>moderate</td></x<>	0.5	moderate
0.5 <x< td=""><td>0.8</td><td>strong</td></x<>	0.8	strong
0.8 <x< td=""><td>1.0</td><td>very strong</td></x<>	1.0	very strong

0 0.2 0.4 0.6 0.8 1



Prediction

The equation is developed using known data. Living Environment 2012 + Integrated Algebra 2012 + Poverty + LEP + Challenge = Global Studies 2013

The equation is then used to predict to the unknown. Living Environment 2013 + Integrated Algebra 2013 + Poverty + LEP + Challenge = Global Studies 2014



Developing the Equation

- Data from the entire county was used for each input assessment.
- Three assessments for each student were used to create the equation.
 - Two assessments were the baseline assessments.
 - One assessment was the target assessment.
- SPSS, statistical software, was used to create the regression equation.



Usefulness for SLOs



The input variables are two NYSED prior assessments which are your baseline assessments and are used on your roster replacing the need for a pre-assessment at the beginning of the year.

The outcome variable is the target score of the summative assessment for the course culminating in a Regents exam. Poverty, LEP and Challenge (Special Education) are included variables in determining the target.





Target Adjustments

The original equation shows about 50% of students above the line.

How can we change this to have a higher percent of students above the line?





Modification of Equation



Purpose ì adjust formula so that 80% of all students score at or above the predicted target gWtfY'ftfilUVcjY'h\Y``]bY'i Ł'' Goal of Rigor ì Data were used for all students in Nassau County





Target Considerations

- The equation could predict scores that were over 100.
 - The highest predicted score will be 95.
 - This will benefit teachers of gifted students.
- The equation also produced target scores that were not whole numbers.
 - Round predicted score down
 - This will benefit the teachers.



Tweaking the Formula Unadjusted Formula Using the Coeffients table from SPSS



Set-i d 'h\Y 'Î i bUX↑ g\YX 'Zcfa i `UÏ

Are the students meeting or exceeding the 80% target?

Unadjusted Formula





Tweaking the Formula Adjust the Formula



Adjusted Formula (Capped at 95)

Predicted Global Studies Score for 2013 = ROUNDDOWN(1.38092681000844 + (Living Environment Score 2012 * 0.632108472993918) + (Integrated Algebra Score 2012 * 0.288717503147546) + (-3.72653353306825 * Poverty) + (0.228375694773735 * LEP) + (-3.78306313917123 * Challenge))





Sample Prediction Equations



-189.906 + (0.163)(656) + 0.230(545)=42.378 Actual = 56 Student met target

-189.906 + (0.163)(668) + 0.230(658)=70.324 Actual = 55 Student did not meet target



SLO Roster

	Ms. Smith	n - Global	Base	eline	Target	Actual	Met or	
	Student	Student	Living Environment	Integrated Algebra	Global Studies	Student	Exceeded Target	
	Name	ID	Score 2013	Score 2013	Regents	00010	Yes or No	
			81	72	73			
			82	66	72			
			86	84	79			
			84	86	79			
/===			74	68	64			
			92	83	83			
			74	79	67			
			86	75	77			
			80	82	71			
			87	83	76			
			75	76	67			
			95	89	83			
			83	76	72			
			84	84	75			
			84	86	79			
			73	71	64			
			68	65	63			
			83	78	76			
			81	79	75			
			72	76	68			
			76	60	63			
			90	84	82			
			72	79	69			
s a u				Perce	nt of Students	- Yes		-
TC					HEDI Score			



8

SLO HEDI Score



That percent is aligned to your HEDI gwYZcf'h\Y'HYUVXYfly[fck h\gwfY" Anchor point Ì District Decision

9 an a lastair 194 <u>1 d' a sta Martin Canada Canada Canada a contra Oltimatica Tarradata a Prato ∎attoro a ca=500</u>					
	A DE TELEVISION DE LA COMPACTION DE LA COMP				
s SIQ_ all students who are assianed in the course section(s) must he included in the SIQ					
	in fine assessment triffere side side side and a second descent age and				
ariad amarad). Commune Care Martine of Wate standards) Will this and analysis of standard	h mulicitely				
n a s_s a u					







Predicted Targets



Where do I go to access these scores? In what form will the baseline and target scores be delivered? How do I distribute and put them into our SLO rosters?



Predicted Targets



Where do I go to access these scores?

Spreadsheet



In an Excel format. Ready for you to sort. By Teacher Ì Staff-Student-Course Predictor assessments Ì baseline

Predictor assessments 1 baseline assessments and scores Target assessment and predicted score



Other Questions?



What if a student does not have

References



Muijs, D. (2004). Doing Quantitative Research in Education with SPSS. London: Sage Publications.