

**Psychosocial Factor Modeling  
and Retention Outcomes:  
Exploring the Efficacy of Early  
Intervention**

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Today's presentation

- Review an assessment of an intervention
- Designed to increase FTIC success (GPA, academic standing)
- Involved several campus units
  - Colleges and Schools
  - Institutional Research
  - Student Affairs
- Evidence of efficacy

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The outline...

- Context for the intervention
  - University of North Texas
  - Organization, student profile
- Psychosocial factors and retention
- The intervention plan
- The predictive model
- The assessment plan
- Results
- Recommendations for Research and Practice
- References

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### About UNT

- Main campus – Denton, TX
- Enrollment
  - 36,123 total headcount
  - 23,756 undergraduates
- Moderately selective
  - SAT 1095
  - ACT 23.4
- 11 Colleges/Schools
- Degrees
  - 97 Bachelor’s
  - 101 Master’s
  - 48 Doctoral
- Faculty
  - 988 FT
  - 519 PT
- Median Class Size - 28

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### A few more items of interest...

- Gender
  - Female (56.0%)
- Ethnicity
  - White (62.2%)
  - African American (13.2)
  - Latino (12.8)
  - Asian (5.5)
  - Native American (0.7)
  - Non-resident Alien (4.7)
- Over 80% from <100 mi
- 25% Pell eligible
- 49% first-generation
- Students admitted into colleges and schools
- Mandatory two-day summer orientation
- FTIC retention rate – 75.4% (2008 cohort)
- Six-year graduation rate – 45.6% (2002 cohort)

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### Psychosocial Factors (PSFs)

- How can we model retention (attrition)?
  - What are ways to predict departure?
  - Multiple regression
  - Re-enrollment as the dependent variable
- Start with fixed attributes
  - Gender
  - Ethnicity
  - Standardized test scores
  - HS class rank/GPA
  - Others?

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### More on PSFs

- Fixed attributes proved insufficient
- Add attitudinal factors
  - Non-cognitive attributes
  - Often gathered via survey
- Often summarized as the “Big Five”
  - Agreeableness
  - Conscientiousness
  - Extraversion
  - Neuroticism
  - Openness to experience

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### How to capture PSF data?

- A typical approach...
  - Population assessment
  - Completed at orientation
  - Include unique student identifier (ID number)
- COTS options (Student profile)
  - College Student Inventory (Noel-Levitz)
  - Student Readiness Inventory (ACT)
- Home-grown (e.g. Oklahoma University)

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### The Intervention Plan

- Survey FTICs at summer Orientation
  - 8 sessions
  - Approximately 450 students per session
- Use our nascent predictive model to select at-risk students for follow up (first six weeks of fall)
- Deploy academic advisors and student affairs staff to individually intervene
- Frame the intervention around a discussion of the assessment results

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### We used the SRI

- Pencil and paper survey
- 108 items
- Approximately 30 minutes to complete
- Economical
- Student reports on pdf.
- Excel file of individual student scores
- Results across 10 domains

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### The 10 Domains

- Academic discipline – I turn in my assignments on time
- Academic self-confidence – I am a fast learner
- Commitment to college – I'm motivated to get a college degree
- Communication skills – In reaching an agreement, I consider the needs of others as well as my own needs
- General determination – When I make plans, I follow through with them

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### The 10 Domains (more)

- Goal striving – I strive to achieve the goals I set for myself
- Social activity – I make friends easily
- Social connection – I have a sense of belonging when I'm on campus
- Steadiness – I'm a patient person
- Study skills – I highlight key points when I read assigned materials

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### Sample SRI Student Report

- Normalized scores
- Percentiles based on ACT norms
- Strengths
  - > 75<sup>th</sup> percentile
- Cultivate your skills
  - between 24<sup>th</sup> and 74<sup>th</sup> percentile
- Plan for improvement
  - < 25<sup>th</sup> percentile




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### The Treatment

- One-on-one, face-to-face meeting
- Discuss one strength and one area of improvement
- Validate the results
  - But...
  - The results aren't the point
  - The relationship is the point
- Refer to campus resources

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### Training

- SRI Users Guide
- Supporting literature
- Resource crosswalk
  - Campus resources
  - Organized by domain
- Role plays based on domain scenarios
- Handout (last page)

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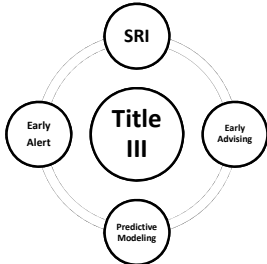
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### The Predictive Model (how we selected the students)

- The Foundation
  - Title III, proactive intervention, and the SRI
- Methodology
  - Logistic regression: 1-year retention
  - 3 Years of historical data
  - Pre-enrollment variables
  - Predicted probability scores
- Intervention for students that need it the most.



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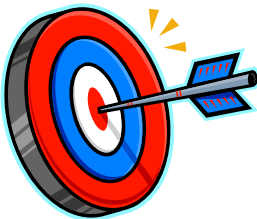
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### The Predictive Model (how we selected the students)

- 5<sup>th</sup> Quintile- 68.9%
- 4<sup>th</sup> Quintile- 72.8%
- 3<sup>rd</sup> Quintile- 76%
- 2<sup>nd</sup> Quintile- 80.6%
- 1<sup>st</sup> Quintile- 81.5%



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### The Assessment Plan

- Statistics
  - T-Tests
  - Logistic Regression
  - Nearest Neighbor Matching
- Rationale
  - Convergence
  - Reliability

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### The Assessment Plan: T- Test Results

- Academic Discipline Scale
  - Relevancy of the instrument
  - Significant
- The Treatment: Academic Standing
  - Relevancy of the treatment
  - Significant
- The Treatment: First Semester GPA
  - Relevancy of the treatment
  - Not Significant

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### The Assessment Plan: Regression Results

- Independent Variables
  - Standardized Test Scores
  - Course Load
  - Undetermined Status
  - Ethnicity
  - Percentile
  - Age
  - Sex
  - Treatment
- The treatment was *not* a significant predictor of academic standing.
- To this point, T-Tests & Regression have given mixed results regarding the efficacy of the intervention.

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### The Assessment Plan: Matching

- Pseudo-Experimental Design
  - Non-random assignment of treatment and control group classifications
  - Implications of a non-random sample
- Confounding variables & Selection Bias
  - Willingness to respond
  - Advisor conducting the interventions
  - Model Misspecification
  - Mindset

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The Assessment Plan: Matching cont.

- Nearest Neighbor Matching
  - Likelihood of assignment into the treatment or control group
  - Propensity Score Method
- The rationale for matching
  - Appropriate for observational data (non-randomly assigned)
  - Controls for inherent differences between the control & treatment group.
  - Displays the “true” effect of the treatment or intervention.

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Results (so, what happened?)

<p><b>Experimental Group Characteristics</b></p> <ul style="list-style-type: none"> <li>• Treatment group (n=160)</li> <li>• Control group (n=262)</li> <li>• 37.9% of student self-selected</li> </ul>	<p><b>Efficacy</b></p> <ul style="list-style-type: none"> <li>• Semester GPA                             <ul style="list-style-type: none"> <li>– No statistically significant difference</li> </ul> </li> <li>• Unmatched results                             <ul style="list-style-type: none"> <li>– 74% of treatment group in good standing vs. 63% in the control group.</li> </ul> </li> <li>• Matched results                             <ul style="list-style-type: none"> <li>– 74% of treatment group in good standing vs. 57% in the control group.</li> <li>– T-Statistic = 2.03 (95% significance level)</li> </ul> </li> </ul>
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Final Assessment

- The SRI can equip students with relevant and useful information.
- Predicted probability scores can be used to better identify “at-risk” populations.
- SRI interventions with targeted/at-risk student populations appear to contribute to a higher % remaining in good standing (GPA  $\geq$  2.0).

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Recommendations (things to work on)

- Include the SRI scores in the predictive model
- Capture and include whether the student followed up on the advisor’s recommendation
- Investigate the validity issues associated with the timing of data collection
  - When’s the best time to ask a student about their study skills?
- Figure out how to increase the intervention rate

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QUESTIONS?

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