



Southern African Association for Institutional Research

Foundations of Institutional Research 2015

Data sourcing to support student success



Presented by Innocent Mamvura

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A graphic for Castlight Health featuring a blue background with a white bar chart and a black silhouette of a person jumping over it. The text reads: "I believe that the data will set you free. At the end of the day, it's about how do you turn those pieces of information into insights that will improve business." - Steven Rice, Executive VP, HR, Juniper Networks. Below the quote is the Castlight Health logo and a row of links: www.castlighthealth.com, @CastlightHealth, #EnterpriseHealth, and #HealthCloud.

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Purpose of this session

The purpose of this session is to **discuss the various data types, data sourcing methods and how data science is helping educational institutions to predict student success.**



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Content

- Definition
- Types of data
- Data Sourcing Techniques
- Who collects data?
- Data Analysis Tools
- Data Analysis Methods
- Data Visualisation
- Early Warning System



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Definitions'



- Data is a plural of datum which means something given or distinct pieces of information formatted in special way.
- Data can exist in a variety of forms as **numbers** or **text**, as **bits and bytes** stored in electronic memory or as facts stored in person's mind.



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What are the types of data?

- Primary Data is the data collected for a specific purpose directly from the field of enquiry for example interviews, surveys and observations.
- Secondary Data is the data which is already been collected by and readily available from other sources for example manuscripts, books, journals, newspapers and magazines

Data Sourcing Techniques

- Qualitative Methods- deals with data that cannot be measured, descriptions.
- Quantitative Methods-deals with data that can be measured. The method relies on random sampling and structured data collection instruments.

Data Sourcing Techniques cont

- Surveys-method designed to collect individuals' opinions, emotions and feelings.
- Focus Groups-method designed to bring a homogenous group of participants together to discuss their opinions and insights
- Interviews- a qualitative method that provides invaluable insight into the behaviors and attitudes
- Questionnaire-list of prepared questions
- Observation- an inexpensive method for discovering more about learners behaviors

Research Instruments

- Clerical tools are used when researchers studies people and gather information on feelings, emotions, thought and opinions
- Mechanical tools includes all tools used in science

Who collects data?

- Researchers
- External contractors
- School Administrators
- Faculties
- Academics
- Government ministries

Challenges of Data

- Volume of the data
- Variety-types and formats
- Variability-daily, seasonal
- Speed & Complexity
- Integration of data

Data Analysis Tools

- SPSS
- SAS
- Atlas.ti
- Tableau
- Qlikview
- Survey Monkey, Google Forms
- Weka and Knime



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Data Analysis Methods

- Content Analysis
- Cronbach Alpha-coefficient of reliability
- Principal Component Analysis
- Social Network Analysis
- Descriptive Analysis
- Classification Algorithms
- Predictive modeling
- Text Mining, Sequence analysis
- Mathematical Modeling



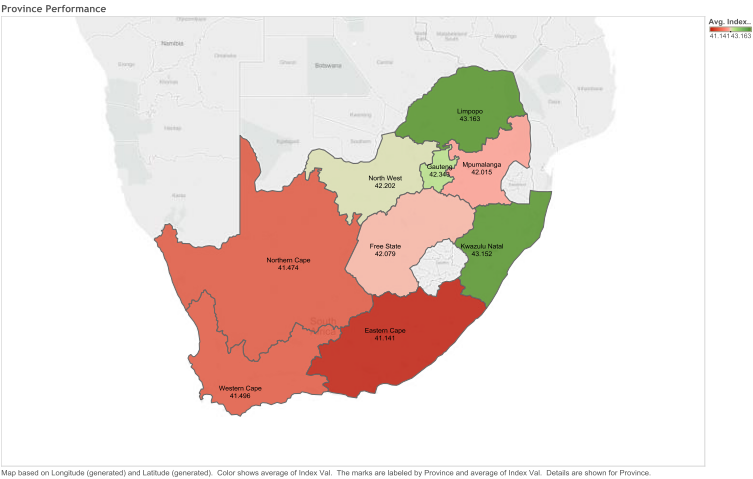
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Data Visualisation



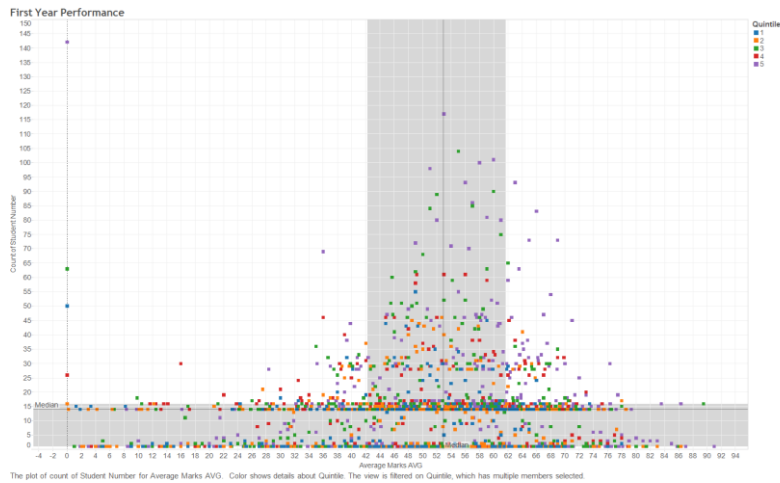
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Matric Province Performance



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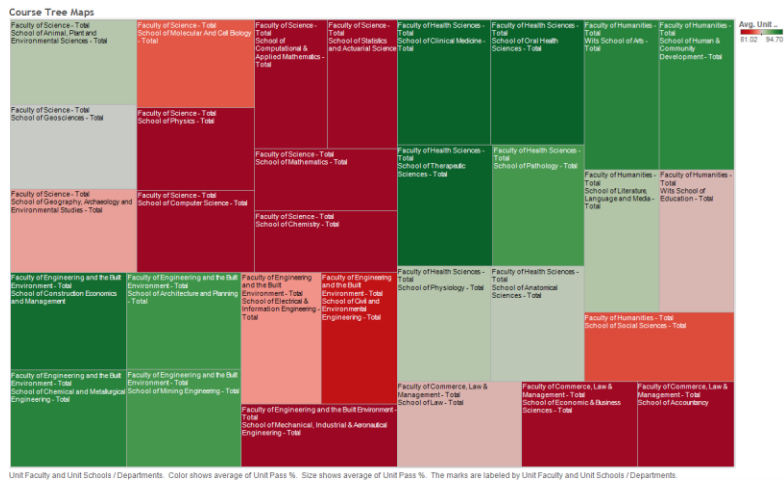
First Year Performance



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Course Tree Maps



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Early Warning System

- Enhancing student success by identifying At Risk Students early and instituting appropriate assistance.
- At Risk Student System approved by Senate, November 2013.



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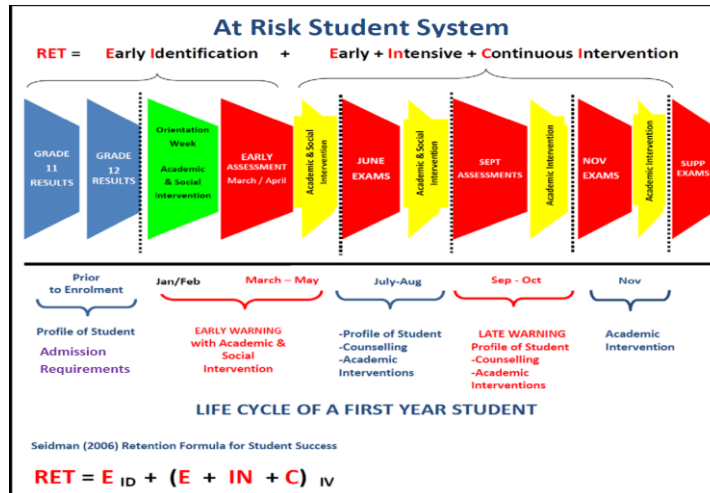
What is the Portal?

- An early warning data-based tool that can be used to indicate whether students will succeed in the first year.
- Mechanism to allow staff at the School, Faculty and University level to gain access to data.
- A tool to guide further investigation of students needs.



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The Life Cycle



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Key Components

- Grade 12 data
- APS Scores regressed against university performance
- First year university courses
- Students Readmissions
- Social Factors

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Objectives

- Identify students at risk and provide intervention
- Identify problematic courses
- Improve student performance
- Provide academic and social interventions
- Maintain confidentiality



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Benefits

- Immediate access to students' academic performance at School & Faculty level.
- Provide a snap shot of trends and patterns to identify issues in time to ensure students are kept on track.
- Improve quality of student learning experiences
- Data from one source



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The Dashboard

- Student Profile Report
- Aps @Risk Students Report
- Student Readmissions
- At Risk Quarter Snapshot
- At Risk Course Reports



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The Student Intervention Site

- Student course creation
- Course Group Creation
- Program Group Creation
- Student Non Academic Intervention



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Student Success



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Thank You

Innocent.Mamvura@wits.ac.za



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