

Data Collection and Analytics Workshop_2



SOL PLAATJE
UNIVERSITY

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Eli Nimy





Content

- Reflection – Purpose and Objectives
- Data Shared
- Demo centralised student information application
- Descriptive and Predictive (triangulation) Data Analysis
- Data inventory and standards: Pitfalls & Solutions
- Responsibility and task sharing

Reflections

Purpose

To advance the learning analytics within Sol Plaatje University to enhance student support initiatives through collaborative partnerships with the Centre for Teaching, Learning and Programme Development (CTLPD), Library and Information Services and the Division of Student Affairs (DSA). Further, to create a shared system integrating student service data, academic support, library, residence, sport, health and wellness, and student development collaboratively. The system will allow for the creation of learning support pathways, including developing an early warning system to identify students at risk and proactively develop personalised support programmes.

Objectives:

- Create tools in the system that make use of a standard data format and vocabulary to maintain costs and improve research outputs
- Create a purposeful shared dashboard that leads to data that provides deeper educational insights (using predictive analytics).
- Ensure strong documentation and implementation guidance.
- Provide professional staff capacity development in learning analysis literacy.

Key Metrics

- Reduction in manual data capturing and reconciliation time.
- Increased cross-divisions' data visibility.
- Increased number of early identification of students at risk.
- Increased number of students participating in proactive interventions.
- Reduction in at-risk student dropout rates.
- Increase in the percentage of staff using the dashboard weekly.

Reflections

Topic	Activities	Tasks
Planning and stakeholder engagement	• Introduce learning analytics aims and objectives. • Data inventory and standards • Governance framework	• Audit existing datasets (e.g., format and accessibility) • Agree on a common data vocabulary • Draft data sharing agreements, including who inputs, maintains and accesses the data.
Capacity Building and Training	• A series of training and development on learning analytics	• Interpreting dashboard metrics • Ethical use of data •
System design and integration	• Create a centralised student information application. • Create a shared dashboard with role-based access.	• Centralised student information application • Prototype dashboard- integrate academic, psychosocial, library and performance data. • Early system warning logic- define risk threshold. • Integrate systems (IT)
Pilot testing and iterations	• Roll out the dashboard prototype for inputs.	• Rollout to small group (e.g., 1st years in campus housing) • Track false/negative alerts • Conduct surveys/focus groups on the usefulness of the dashboard
Documentation, Research Integration and scaling	• Develop procedures and guidelines for data management. • Publish findings on student success using system data • Scale deployment across faculties and divisions	• Outline purpose, principle, procedures, roles and responsibilities. • Develop user and technical guides. • Publish on student success- retention, holistic well-being, effective support services, etc. • Map annual scale deployment. •

Data Shared

Division/Department	Data Received and analysed
Campus Housing and Accommodation	2023 Graduate Data
	2025 Student Registration
	2025 Student Residence Data
	2025 Student Residence Data- Disability
	2025 Student Residence Check In Report
Library and Information Services	2025 Library Resources Service Data
	2025 Core Curriculum Attendance (Information Literacy)
Student Health and Wellness	2025 Thrive Programme Data
	2025 Mid-year Examination Prep H&W
Student Life and Development	None

Student Success Model



Student Academic Support - Student Success Model



Student Profile

Choose Input Mode:

☒ Select Student ☐ Manual Input

Select Student:

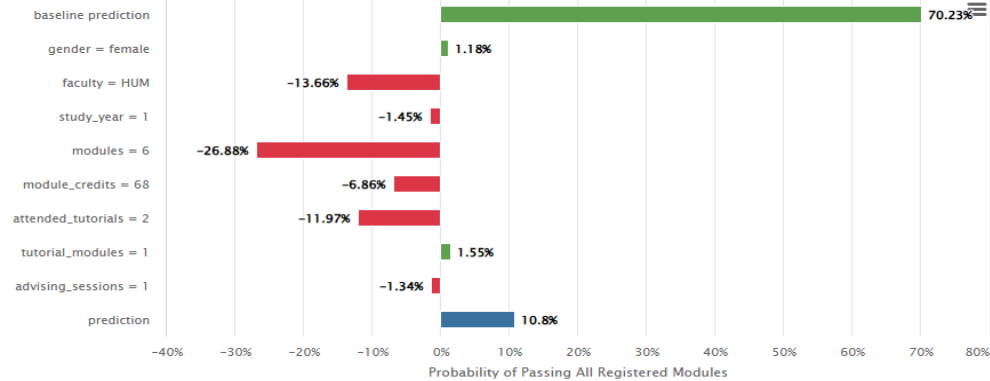
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[Model and Prediction Information](#)

[Counterfactual Information](#)

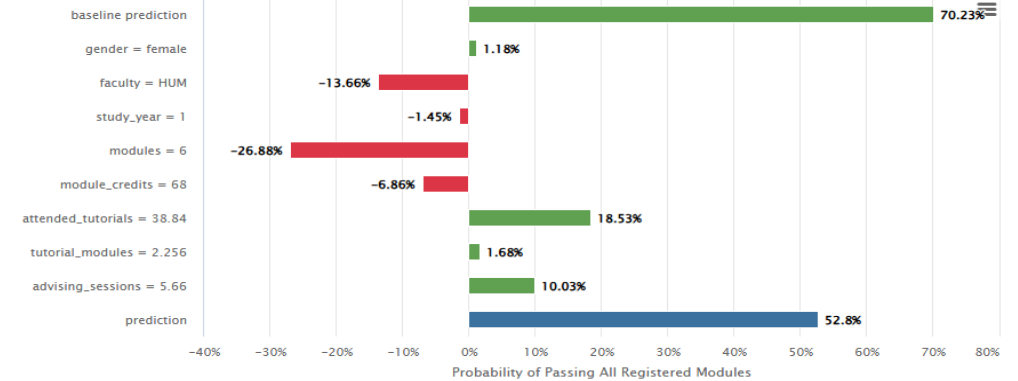
Prediction Results

Generate Prediction



Counterfactual Results

Generate Counterfactual



Student Success Model

Student Academic Support - Student Success Model



Student Profile

Choose Input Mode:

☐ Select Student ☒ Manual Input

Gender:

female

Faculty:

HUM

Year of Study:

1

Modules Registered:

5

Module Credits:

60

Tutorial Attendance:

5

Tutorial Modules:

3

Advising Sessions:

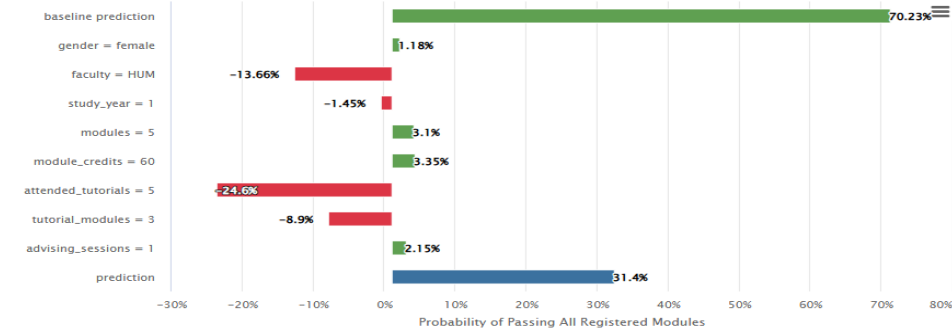
1

1 Model and Prediction Information

1 Counterfactual Information

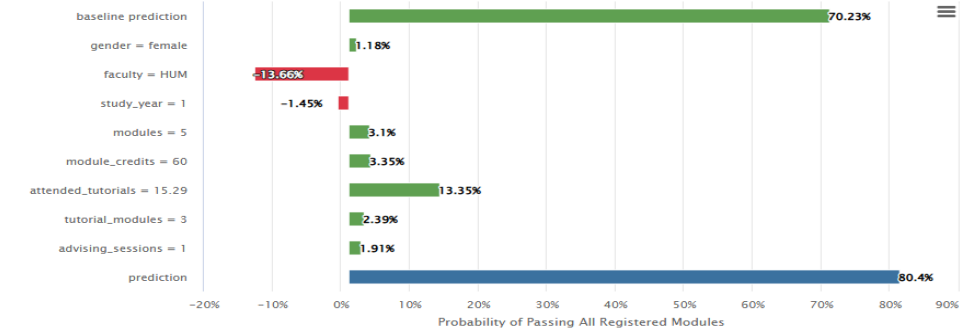
Prediction Results

Generate Prediction



Counterfactual Results

Generate Counterfactual



Student Experience

Activities/Initiatives

Student Engagement	%	Student Development	%
Environmental Sustainability Awareness	92.9%	Pre-Exposure Prophylaxis	91.0%
Wellness and Wellbeing Initiatives	92.6%	Student Development	90.7%
Sport Clubs Activities	90.9%	Alcohol & Drug Abuse	89.6%
Clubs & Societies Activations	89.1%	Sports Codes management and support	85.7%
Mental Health Support	88.6%	Student Governance	79.8%

Satisfaction with University Resources



Centralised student information application

>

Student Profile

CSV Excel PDF Print

Show 5 entries

Search:

Year	Student Number	Name	Gender	Faculty	Qualification	Study Level	Academic Advising	Academic Writing	Tutorship Support	Disability	Residence	Thrive Support
All	All	All	All	All	All	All	All	All	All	All	All	All
2025	202436393	Temogo Cindy Kenosi	Female	Natural & Applied Sciences	Bsc Biological Sciences	1st year	No	No	Yes	Quadriplegic	Umnandi Hall of Residence	Yes
2025	202473094	Thato Dinkwe	Female	Natural & Applied Sciences	Dip In Info And Comm Tech App Dev	1st year	Yes	No	Yes	Quadriplegic	Moroka Hall of Residence	No
2025	202549532	Kabo Reabetsoe Rorisang Mosane	Female	Education	Bed Foundation Phase Teaching	1st year	Yes	No	Yes	Quadriplegic		No
2025	202557074	Botshelo Gideon Mothate	Male	Economic & Management Sciences	Bcom In Accounting	1st year	Yes	Yes	Yes	Quadriplegic	Hannetjie Hall of Residence	No
2025	202565481	Didintle Moncho	Female	Education	Bed Teach.of:Acc/Eco/Bus/Sc Management	1st year	No	No	Yes	Quadriplegic		No

Showing 1 to 5 of 7,242 entries

Previous 1 2 3 4 5 ... 1449 Next



Centralised student information application

Centralised Student Information Hub

Student Profile

Profiled Data

Logout

Upload Student Numbers File

Browse...

Examination Prep H&W_#

Upload complete

Select Student Number Column

Student Number

Select Academic Year

2025

Select Profile Fields to Merge

used_tutorship_support

Download Merged File

Preview Data

CSV

Excel

PDF

Print

Show 10 entries

Search:

Name	Surname	Student Number	used_tutorship_support
All	All	All	All
Kagisano	Malesiwe	202547691	Yes
Muzamosse	Mosinki	202502599	Yes
Masetshaba	Monchusi	202328991	No
Oleseng	Mongale	202427866	Yes
Moabi	Kolomote	202432542	No
Thuto	Phahle	202424686	No
Solofelang	Maine	202237700	No
Kearabetswe	Ntoko	202429400	Yes
Rethabile	Maine	202519863	Yes
Omogolo	Secwambung	202540631	Yes

Showing 1 to 10 of 125 entries

Previous

1

2

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4

5

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13

Next

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High-level Descriptive Statistics

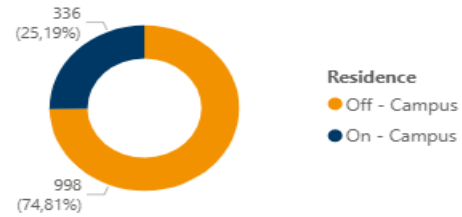


Health and Wellness - Thrive Programme

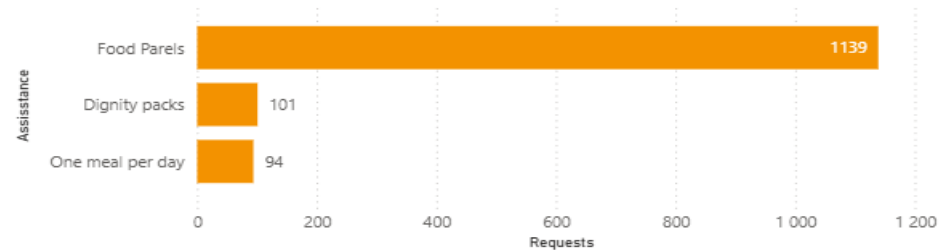
Faculty: Filter Request Date: to

1334
Requests

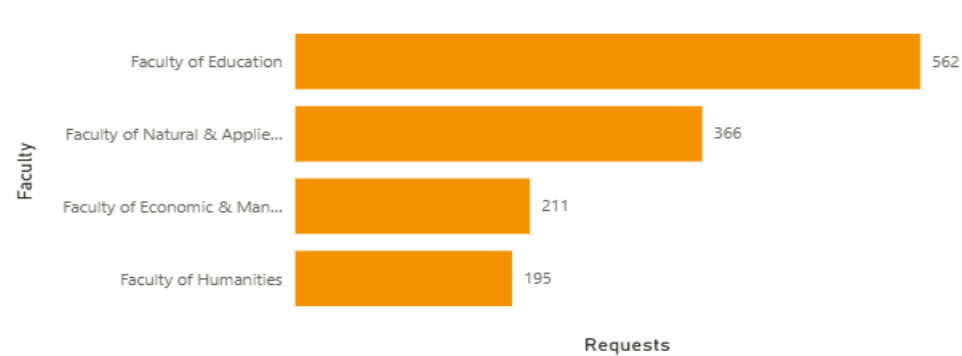
Requests by Residence



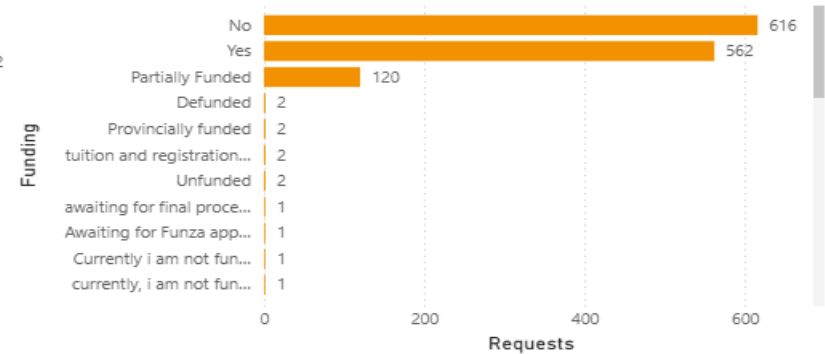
Requested Assistance



Requests by Faculty



Student Funding



Descriptive and Predictive (triangulation) Data Analysis

Hypotheses

- Benefits for Online Self-paced CBE developed modules: accessible, flexible and outcome-based.
- The framework ensures that students attain the same high standards by intentionally teaching durable skills to prepare students to actively apply learning to new problems in novel contexts (Gagnon, 2023).

Therefore, the following hypotheses are tested:

- H1: There is a positive relationship between academic orientation participation and student retention and progression in a South African higher education institution.
- H2: Academic advising moderates the relationship between academic orientation and student retention and progression in a South African higher education institution.

Results: Descriptive Analytics

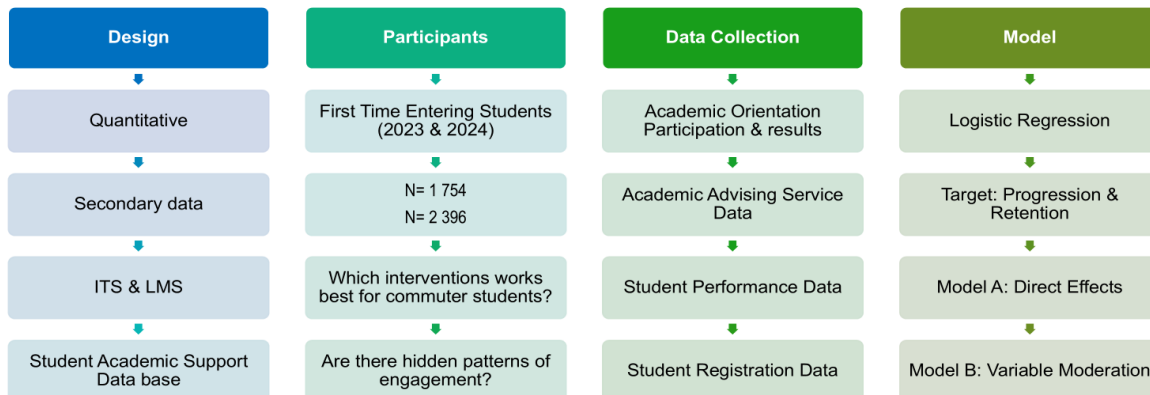
Table 1: 2023 and 2024 First-Year Cohorts

Variable	2023 (N=1754)	2024 (N=2396)	2023 & 2024 (N=4150)
% of Academic Orientation Course Sections Passed			
0	294 (17%)	359 (15%)	653 (16%)
20	32 (1.8%)	17 (0.7%)	49 (1.2%)
40	74 (4.2%)	29 (1.2%)	103 (2.5%)
60	205 (12%)	30 (1.3%)	235 (5.7%)
80	431 (25%)	128 (5.3%)	559 (13%)
100	718 (41%)	1,833 (77%)	2,551 (61%)
Participated in Academic Advising	858 (49%)	1,264 (53%)	2,122 (51%)
Retained the following year	1,522 (87%)	2,117 (88%)	3,639 (88%)
Progressed successfully the following year	718 (41%)	1,103 (46%)	1,821 (44%)

Table 1: Retention into the second year increased from 87% in 2024 to 88% in 2025.

Progression also increased from 41% to 46%, indicating that most student passed all their first-year.

Methodology: Design, Sample, Data Collection & Model



Results: Regression Model Outcomes

Table 2: Academic Orientation and Retention Model

Variable	OR	p-value
% of Academic Orientation Course Sections Passed	1.02	<0.001

Abbreviation: OR = Odds Ratio

The percentage of academic orientation course sections passed was positively associated with student retention.

Table 3: Academic Orientation and Progression Model

Variable	OR	p-value
% of Academic Orientation Course Sections Passed	1.01	<0.001

Abbreviation: OR = Odds Ratio

Performance in the academic orientation course was a statistically significant predictor of progression to the following year.

H1: Supported

Table 4. Interaction Retention & Progression Model

Variable	Retention		Progression	
	OR	p-value	OR	p-value
% of Academic Orientation Course Sections Passed	1.02	<0.001	1.01	<0.001
Used Academic Advising				
no	1.00		1.00	
yes	4.17	<0.001	2.29	<0.001
% of Academic Orientation Course Sections Passed * Used Academic Advising				
% of Academic Orientation Course Sections Passed * yes	0.98	<0.001	0.99	<0.001

Abbreviation: OR = Odds Ratio

H2 is supported, Academic advising serves as a buffer for students, specifically those who did not perform well in academic orientation, to enhance their retention and progression.

Data inventory and standards: Pitfalls & Solutions

- **Missing Data** – complete data set – **data collection platform standardised**
- **Consolidated data** – unique student IDs – **negotiate with system administrators for access**
- **Inconsistent data** – use mainly student number – **standardise data collection forms** (e.g., attendance registers)
- **Data ownership & maintenance** – **assign a responsible individual** – ensure quality & maintenance.
- **Data complexity** (large data sets) – **clear guidelines – purpose of data**

INDICATION DETAILS				Jan	Feb	Mar
GENDER	ETHNIC GROUP	SENIOR SECONDARY SCHOOL	SCHOOL QUINTILE			
M	AFRICAN	MAATLA HIGH SCHOOL	1			
F	AFRICAN	UNKNOWN SCHOOL	5			
F	AFRICAN	BARNATO PARK HIGH SCHOOL	5			
F	COLOURED	NORTHERN CAPE HIGH SCHOOL	5			
F	AFRICAN	TETLANYO SECONDARY SCHOOL	2			
F	AFRICAN	EDU COLLEGE PRIVATE SCHOOL	5			
F	AFRICAN	TLHOAFALO SECONDARY SCHOOL	2			
M	AFRICAN	VRYBURG HIGH SCHOOL	4			
M	AFRICAN	RIVUBYE	2			
M	AFRICAN	BANKSDRIFT SECONDARY SCHOOL	5			
M	AFRICAN	POTCHEFSTROOM BOYS HIGH	5			
F	AFRICAN	SOUTH COAST ACADEMY	1			
F	AFRICAN	THABANE PUBLIC SECONDARY SCHOOL	5			
M	AFRICAN	KIMBERLEY TECHNICAL HIGH SCHOOL : HADISON PARK	5			
M	AFRICAN	SWOBANI	2			
M	AFRICAN	HOERSKOOLO KALAHARI	5			
M	AFRICAN	GCMUBUZWU COMBINED SCHOOL	3			
M	AFRICAN	WESSEL MAREE S/S	5			
M	AFRICAN	IMMANKALA TECHNICAL AND COMMERCIAL SECONDARY	3			

Pressreader traffic insights	8309	10340	10402
Scopus	Searches 378	Literature discovery 25669	
OpenAthens authentications	315	2843	4257
RefWorks page views	61	151	711
RefWorks references added	38	27	949
RefWorks accounts Created	1	71	100
Institutionary Repository Item views	12,758	12,289	14,672
Institutionary Repository D	6325339	3979001	1030511
ScienceDirect total requests/downloads	2059	3420	
ScienceDirect total searches	268	829	
LibGuides Views	296	18408	10027

Student First Name	Student Last Name	Emergency Contact No.	Contact No.	Student Email Address	Student Number	Res
Sthandiwe	Kunene	0634061962	0710068911	202585457@spu.ac.za	202585457@spu.ac.za	On
Maimela	Nditsheni	0825443517	0825443517	202414457@Spu.ac.za	202414457@Spu.ac.za	Off
Katlego	Charmain	0729065600	0729065600	ramalepekatlego99@gmail	ramalepekatlego99@gi	On
Tanki	Letsatsi	0726277193	0760946185	202502814@spu.ac.za	202502814@spu.ac.za	On
Apleni	Apleni	0712078144	0781175500	202442668@spu.ac.za	202442668@spu.ac.za	On
Molefi Lawrence	Maano	076 017 6961	076 017 6961	202587368@spu.ac.za	202587368@spu.ac.za	On
Mthunzi	Makhoba	0672195126	0664423035	202353503@spu.ac.za	202353503@spu.ac.za	Off
Lwandle	Nhlengethwa	0664104950	0740104101	202416963@spu.ac.za	202416963@spu.ac.za	Off
Gaentswe	Mphonyane	0660623277	0660623277	202457458@spu.ac.za	202457458@spu.ac.za	On
	Kgololo	0663403986	0723570306	202537007@spu.ac.za	202537007@spu.ac.za	On
Oyena Khuliswa	Mbutuma	066 556 6487	066 556 6487	Mbutumakhuliswa@gmail	202577525@spu.ac.za	On

Responsibility and task sharing

Topic	Activities	Tasks
Planning and stakeholder engagement	• Introduce learning analytics aims and objectives. • Data inventory and standards • Governance framework	• Audit existing datasets (e.g., format and accessibility) • Agree on a common data vocabulary • Draft data sharing agreements, including who inputs, maintains and accesses the data.
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Thank You



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