Exploratory Data Analysis on Student Retention

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Introduction

All post-secondary institutions’ main source of revenue is tuition from undergraduate studies. Student retention is key to the success of any institution, not only for revenue but for their reputation.

Research Needs

The UOIT Registrar’s Office reached out to the vialab to build a tool to visualize student retention data for exploratory data analysis with an emphasis on patterns which are predictive of student withdrawal. The RetentionVis tool relies on user interaction through application of filters to the visualizations to assist the Registrar’s Office to answer the question: ‘Why are students dropping out?’

Research Goals

Create a dashboard for the Registrar’s Office which:
- Allow the analyst to freely explore the dataset.
- Aid the Registrar’s Office in finding potential problem areas within student retention.
- Offer a wide range of filtration methods to investigate patterns or groups in the dataset.

Are withdrawal rates dependent on faculty?

Why are students dropping out?

Problem areas in student retention are not easy to uncover. The Registrar’s Office cannot assume that the causation of a student withdrawing is dependent on a particular course, or professor. The RetentionVis tool can be used to find red flags in clusters of students.

Dashboard Usage

The dashboard is an online interactive tool created in JavaScript’s D3 library. The tool requires the user to make various selections including: faculties/programs, years, timeslots, and GPA ranges of interest with the goal of finding opportunities for improvement at UOIT.

Future Work

- Enhanced visualization to display course grade distributions, and how students perform following earning a particular grade in the course.
- Introduce clustering to group students based on their course performance and retention status.
- Implement machine learning to assist the Registrar’s Office in searching for problem areas.

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