

Data, Determination, and Decisions: A Branch Campus Project for HLC Persistence and Completion Academy

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Project Origins

The University project began in October 2013

Divided into 4 teams to focus on different student populations:

- Macomb Team - freshmen to sophomore retention
- **Quad Cities Team - retention of transfer students**
- Distance Learning Team - retention of online students
- Data Team - creating the tools needed to gather and understand patterns of retention

Methodology

- The goal was to allow the data to show us what was most important rather than start with assumptions that we test for statistical significance.
- Used data warehouse to gather information on undergraduate transfer students from 2011-14
- N = 947
- 14 attributes including gender, ethnicity, transfer GPA, class level, enrollment status, application submission period, home state and academic status after first term among others
- Used Weka (machine learning) to build a model visualizing data; Classified data with J48 (C4.5) algorithm with 10-fold cross-validation, and Information Gain Attribute Evaluator
- Weka correctly classified 82.7% instances
- Used attribute evaluator to cross-validate decision tree results
- Plan to re-run J48 using only the top n attributes (number to be determined by team)

Cross-Validation Attempts

Ranked Attributes using Weka's Information Gain Attribute Evaluator

1. Enrollment Status (0.288724)
2. Academic Status After First Semester (0.12733)
3. Application Submission Period (0.037529)
4. State of Residency (0.014678)

Project Relationship to University initiative

- Similar goals, processes, and tools
- Identify and define targeted student population
- Discover retention patterns among targeted group
- Detect factors that inhibit student persistence
- Select student attributes for data warehouse development and analysis
- Communicate progress university-wide

Institutional Characteristics

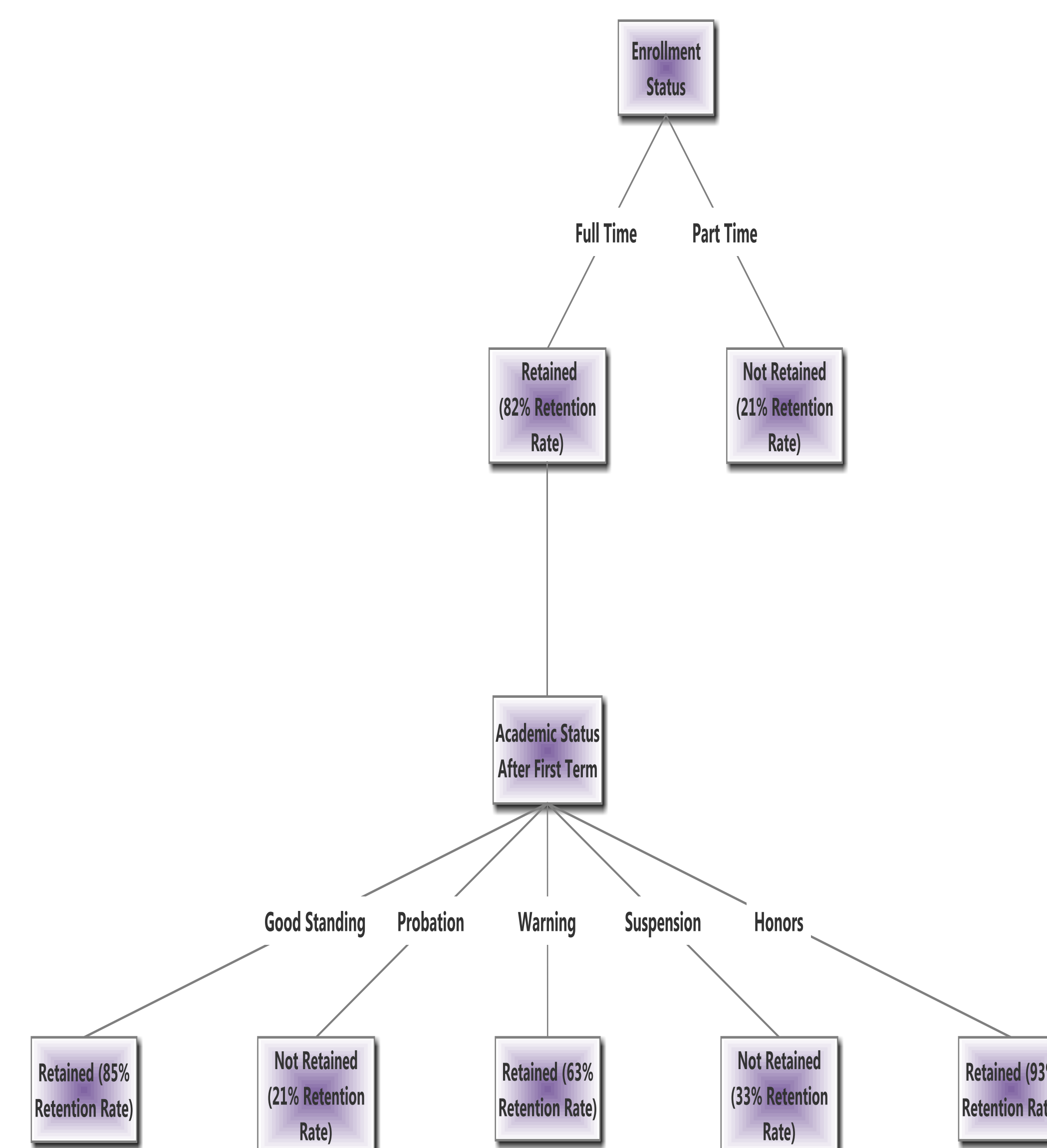
Western Illinois University:

- Public State Supported University
- Total Enrollment: 11,094
- Locations in Macomb (main campus) and Moline (branch campus)

WIU Quad Cities Campus:

- Urban, non-residential campus
- Total Enrollment: 1,531
- Top majors: Engineering, Management, Accountancy, Elementary Education
- 40% of undergraduates are part-time
- 19% minority enrollment
- 58% female enrollment

Results – Preliminary Decision Tree



Conclusions to Date

- Changed our original focus on “linkages” (dually enrolled) students due to small sample (n).
- Weka is a useful tool but not yet widely understood or trusted. Need to educate and improve communication.
- Our own use of the data warehouse includes a steep learning curve.
- The data warehouse is a work in progress, as are agreed-upon definitions terminology.
- Our preliminary decision tree produced results that confirmed assumptions.
- Cross-validation sheds light on additional important attributes.



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