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# Analytic Approach to Determining Causes of Graduate Student Attrition

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# Analytic Approach to Determining Causes of Graduate Student Attrition

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## Abstract/Purpose

Student data is collected for a variety of uses from application to graduation. Data is most often collected and stored in a fashion that supports single student data retrieval or mass processing of data, for uses such as preparation for graduation. Retrieving data for use in analytic reports is often more difficult. Student services staff may have difficulty explaining to technology staff the nuances required to meet their data needs.

One data use example is identifying circumstances leading to graduate student attrition. Data can be helpful in differentiating between course performance and personal issues as the cause of student attrition. The purpose of this poster is to provide the viewer analytic approaches to evaluate potential causes of graduate student attrition.

This poster will walk the viewer through a step by step process for obtaining data needed to answer student attrition questions. Hypotheses explored with these analyses included the following a) specific courses taken during the first semester were too challenging, b) specific courses regardless of when taken are more rigorous and c) voluntary withdrawal versus course difficulty.

*All data are fabricated.*

## General Approach/Considerations

- 1) Propose Hypotheses
- 2) Identify data needed
- 3) Expect multi-step analysis
- 4) May need to add data later in analysis
- 5) Document what you do

## Hypotheses

- 1) Courses taken first semester
- 2) Specific difficult courses
- 3) Poor grades versus voluntary withdrawal (personal circumstances)

## First Steps

- 1) Establish permission to access data
- 2) Identify needed data
  - a) Student name/identifiers
  - b) Program actions
  - c) Action dates
  - d) Courses taken, semester, semester in program, grade
- 3) Query for all students in relevant program(s)
- 4) Identify unsuccessful students
  - a) Know meaning of codes for successful and unsuccessful

## Courses Taken First Semester

Obtain all needed data

| Name       | Program Action | Admit Year | Action Year | Elapsed Time |
|------------|----------------|------------|-------------|--------------|
| Smith, J   | WADM           | 2016       | 2017        | 1            |
| Melon, C   | WADM           | 2016       | 2016        | 1            |
| Detmer, S  | WADM           | 2018       | 2018        | 1            |
| Atkins, T  | WADM           | 2018       | 2018        | 0            |
| Jeffer, S  | DISM           | 2014       | 2016        | 2            |
| Gardens, M | WADM           | 2014       | 2015        | 1            |

Table above suggested table below

| Name      | Semester | Grade | Subject | Catalog | Admit     | Drop   |
|-----------|----------|-------|---------|---------|-----------|--------|
| Smith, J  | 1        | W     | NRSRG   | 600     | August 16 | May 17 |
| Melon, C  | 1        | W     | NRSRG   | 600     | August 16 | May 17 |
| Detmer, S | 1        | B-    | NRSRG   | 600     | August 17 | May 18 |
| Detmer, S | 1        | W     | NRSRG   | 601     | August 17 | May 18 |
| Atkins, T | 1        | C+    | NRSRG   | 600     | August 18 | Dec 18 |
| Atkins, T | 1        | A     | NRSRG   | 601     | August 18 | Dec 18 |

Tables above used to create table below

| Admit Year | # Admitted | Year 0       | Year 1       | Year 2      | Year 3      | Total | % Withdrawn |
|------------|------------|--------------|--------------|-------------|-------------|-------|-------------|
| 10         | 39         | 3            | 1            | 2           |             | 6     | 15.4%       |
| 11         | 32         | 3            | 1            | 2           |             | 6     | 18.8%       |
| 12         | 56         | 7            | 3            | 2           |             | 12    | 21.4%       |
| 13         | 45         | 1            |              |             |             | 1     | 2.2%        |
| 14         | 37         | 1            | 2            |             | 1           | 4     | 10.8%       |
| 15         | 56         | 3            | 1            | 1           | 1           | 6     | 10.7%       |
| 16         | 42         | 2            |              |             |             | 2     | 4/8%        |
| 17         | 37         | 2            | 2            |             |             | 4     | 10.8%       |
|            | 344        | 22<br>(6.4%) | 10<br>(2.9%) | 7<br>(2.0%) | 2<br>(0.6%) | 45    | 13.1%       |

Tables above used to create table below

| Course    | # Students Not First Sem | Not Passing | Not Passing % | # Students First Sem | Not Passing | Not Passing % |
|-----------|--------------------------|-------------|---------------|----------------------|-------------|---------------|
| NRSRG 600 | 220                      | 100         | 45%           | 80                   | 30          | 37%           |
| NRSRG 601 | 500                      |             |               |                      |             |               |
| NRSRG 602 | 580                      | 60          | 10.3%         | 60                   | 40          | 18.2%         |

## Specific Rigorous Courses

| Name        | Admit Term | Course    | Grade | Withdrawal Date |
|-------------|------------|-----------|-------|-----------------|
| Branch, M   | 2010       | NRSRG 600 | A     | 2011            |
| Branch, M   | 2010       | NRSRG 601 | W     | 2011            |
| Branch, M   | 2010       | NRSRG 602 | W     | 2011            |
| Copeland, J | 2014       | NRSRG 600 | A+    | 2015            |
| Copeland, J | 2014       | NRSRG 602 | A-    | 2015            |
| Elliot, M   | 2015       | NRSRG 605 | A+    | 2017            |
| Elliot, M   | 2015       | NRSRG 604 | W     | 2017            |
| Elliot, M   | 2015       | NRSRG 600 | A     | 2017            |
| Elliot, M   | 2015       | NRSRG 602 | A     | 2017            |
| Elliot, M   | 2015       | NRSRG 603 | W     | 2017            |
| Elliot, M   | 2015       | NRSRG 603 | B     | 2017            |

Compare data with difficult course to left

| Grade Given | Number of Students |
|-------------|--------------------|
| B-          | 20                 |
| C+          | 14                 |
| C           | 9                  |
| W           | 62                 |
| Total       | 105                |

Total Course Enrollments = 2325  
Non-passing grades = 4.5%

## Voluntary Withdrawal vs Poor Grades

Students who withdrew from program

| Semester | B- | C+ | C | I | W  | Total |
|----------|----|----|---|---|----|-------|
| 1        | 4  |    |   |   | 14 | 18    |
| 2        | 3  |    | 1 |   | 7  | 11    |
| 3        | 2  | 1  |   |   | 2  | 5     |
| 4        | 1  |    |   |   | 3  | 4     |
| 5        | 1  |    | 1 |   | 1  | 3     |
| 6        | 1  |    |   | 1 | 1  | 3     |
| 8        |    |    |   |   | 2  | 2     |

## Implications for Practice

- 1) Need to understand data
- 2) Use hypotheses to guide data analysis
- 3) It's an iterative process
- 4) In this fabricated analysis student course performance is not the probably cause of attrition and recommend advising and student support