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## Assessing the Impact of Tutorial Services

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Henning, Cindy; Shaw, Kimberly; and Howard, Tim, "Assessing the Impact of Tutorial Services" (2012). *Interdisciplinary STEM Teaching & Learning Conference*. 20.  
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# Assessing the Impact of Tutorial Services

Georgia Scholarship of STEM Teaching &  
Learning Conference

March 9, 2012

Cindy Henning, Kimberly Shaw, and Tim Howard



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UNIVERSITY

# Purpose

**Goal:** Document the impact of tutoring on student success

## Challenges

- Documenting visits appropriately
- Intangible factors
- Selection biases
  - At risk of failure
  - Over achievers



# Background

## MSLC sign-in



Data students provide

- Name
- ID #
- Reason
- Informed consent

## Data pulled from Banner

Demographic data

Course grade information



# Reports Produced

## Usage report

- Produced any time
- Match schedule with demand
- Number of visits
- Reasons for visits
- Courses enrolled in that term
- Demographic data

## Summary report

- After term completion
- Total # visits logged
- Course grades earned
- GPA



# Our Model

## Concordance tables

- Convert SAT, ACT scores
- Range 0-30
- Developed at Fairmont University
- Research at CSU on correlation

## Segment into quartiles

- 0-17
- 18-20
- 21-23
- 24-30

*Quartiles are based on score distribution in the student body: ~25% of the students at CSU are in each quartile.*

<http://www.fairmontstate.edu/gearup/students/testprep/actosa>

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# Courses Counted in the Study

**Astronomy:** Descriptive

**Biology:** Contemporary Issues, Principles

**Chemistry:** Survey, Principles

**Environmental Studies**

**Geology:** Natural Disasters, Weather, Phys. Geol., Hist. Geol., Fossil Record

**Math:** Modeling, Coll. Alg., Pre-calc, Applied Calc, Calc, Lin. Alg., *and* remedial math courses

**Physics:** Intro., Principles, Color & Sound

**Statistics:** Intro.

**Not labs**



# Treatment of Course Grades

**Productive:** A, B, C, D

**Non-productive:** F, WF

**Excluded:** W





# Categorizing MSLC Visitors

**Visitor:** Tutoring, quiet place to study, computers, other

## **Courses served**

**Example:** Taking ENGL 1102, HIST 2111, MATH 1113, CHEM 1211, CHEM 1211L, PHYS 1111

- Tutored in MATH 1113
- Quiet place to study CHEM 1211



# Findings: Productivity by Visitor Status

Adj. Test Score	Non-Visitors	Visitors	Chi-Statistics
0-17	606	235	5.96
18-20	905	278	8.67
21-23	1229	267	9.53
24-30	1119	164	4.15
TOTAL	3895	944	14.72

Each chi-square statistic is significant at the  $p < 0.05$  level.



# Findings: Grade Dist, Courses Served

Grade	A	B	C	D	F, WF
Observed proportions	17%	20%	28%	19%	17%
Expected proportions	22%	26%	23%	12%	17%
Contrib. to statistic	6.13	5.76	4.10	18.15	0.02

Chi-square statistic: 34.16

Significant at the  $p < 0.001$  level



# The trend persists with black students

Grade	A	B	C	D	F, WF
Observed proportions	9%	18%	31%	18%	20%
Expected proportions	10%	21%	25%	15%	25%
Contrib. to statistic	0.30	1.63	2.97	2.41	1.83

Chi-square statistic: 9.14

Significant at the  $p < 0.01$  level



# Why we suspect linear based regression isn't appropriate

Non-uniform affects due to selection biases

- Over achievers – little gain from tutoring
- Those imperiled, who may include
  - Students with abnormally large gains because they start with a deficit
  - Students with insufficient backgrounds coming into their courses, who may gain a lot, but not enough to reflect in the course grade



# Comments and Suggestions?



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