Project SCHOLAR: Statistical Consulting Experiences for Undergraduates

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Joint Statistical Meetings
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Outline

1. What is SCHOLAR?
2. SCHOLAR Clients
3. Student SCHOLARs
4. Future of SCHOLAR
5. Student Perspective
What is SCHOLAR?

University of Central Oklahoma:

- Primarily Undergraduate Institution
- ~14,000 undergraduates and ~2,000 graduate students
- Located in Edmond, OK
- Joint Math & Stat Department
- 19 tenure-track faculty, 3 in statistics
What is SCHOLAR?

Statistical Consulting Help for Organizational Leaders and Academic Researchers
What is SCHOLAR?

SCHOLAR:

• 4 to 6 student SCHOLARs per semester
• Primarily undergraduates paid to work 5 hours/week
• Prerequisite: Completion of any intro stat course
• One project per group per semester
# Student SCHOLARs

<table>
<thead>
<tr>
<th>Years</th>
<th># of Students</th>
<th>Level</th>
<th>Majors</th>
<th>Graduate Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-16</td>
<td>43</td>
<td>33 undergrad.</td>
<td>13 applied math</td>
<td>MS in Cyber Security at NYU-Poly</td>
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<td></td>
<td></td>
<td>10 grad.</td>
<td>11 actuarial science</td>
<td>MS in Economics at OSU</td>
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<td></td>
<td></td>
<td></td>
<td>8 statistics</td>
<td>MS in Financial Math at UMKC</td>
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<td></td>
<td></td>
<td></td>
<td>5 biology</td>
<td>MS in Microbiology at OU</td>
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<td></td>
<td></td>
<td></td>
<td>1 economics</td>
<td>Master of Occ. Therapy at OUHSC</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1 education</td>
<td>MS in Statistics at OSU (2)</td>
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<td></td>
<td></td>
<td></td>
<td>1 finance</td>
<td>PhD in Math at Baylor University</td>
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<td></td>
<td></td>
<td></td>
<td>1 nursing</td>
<td>PhD in Math at OU</td>
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<td></td>
<td>1 nutrition</td>
<td>PhD in Survey, Research, &amp; Methodology at U. of Nebraska</td>
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<td>1 occ. and tech. ed.</td>
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And more than 25 presentations at local, regional, and national conferences
Future of SCHOLAR

• NSF IUSE grant award #1611732
• Double the number of student SCHOLARs
• Additional faculty mentor
• Require student SCHOLARs to major, double major, or minor in statistics
• One project per group per year
  – Fall: Data analysis and report to client
  – Spring: Posters, presentations, publications
• Study the impact of SCHOLAR on students, the university, and the community
Student Perspective

The Client:

- Dr. Mark Kinders, VP for Public Affairs at UCO
- Developed a survey concerning the acclimation of first time university Presidents
- Was especially interested in the Presidents replacement of senior staff
- Met with Dr. Kinders before starting analysis
- Gained professional experience
Student Perspective

The Analysis:

• Learned about survey design (good and not so good)
• \(t\)-tests and \(\chi^2\) tests
• Learned the importance of meeting with the researcher sooner rather than later
• Developed models for
  1. Institution type (dichotomous)
  2. Any senior staff replaced? (dichotomous)
  3. How many senior staff replaced? (count)
The Outcomes:

• Results used in client’s presentation at the American Association of State Colleges and Universities (AASCU) meeting
• Results used in client’s dissertation
• Results presented at
  – Oklahoma Research Day
  – NCUR
  – OK/AR Meeting of the MAA
Student Perspective

The Lessons:

• Gained experience in statistical consulting
• Reinforced ideas from intro statistics courses
• Coincided with topics learned in advanced statistics courses
• Influenced my decision to go to graduate school in biostatistics
Thank you!

Special thanks to:

• The National Science Foundation's Improving Undergraduate STEM Education (IUSE) program under Award No. 1611732
• The Office of Research and Sponsored Programs at UCO

SCHOLAR website:
http://www.math.uco.edu/resources/scholar/index.html

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