Statistical Consulting Experiences at Primarily Undergraduate Institutions

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University of Central Oklahoma

- Primarily Undergraduate Institution
- ~14,000 undergraduate (UG) and ~2,000 graduate students
- Located in Edmond, OK
- Joint Mathematics & Statistics Department
- 20 tenure-track faculty, 3 in statistics
- 5 majors: actuarial science, pure math, applied math, statistics, math ed.
 2 minors: math, statistics
- ~15 UG statistics majors or minors and ~150 UG students in the other four majors



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SCHOLAR

Statistical Consulting Help for Organization Leaders and Academic Researchers





- 4-11 undergraduate SCHOLARs per year
- Students are paid to work ~5 hours/week
- Prerequisite: Completion of any intro stat course (including AP Stat)
- One project per group per year
- Since 2009, 58 student SCHOLARs

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- NSF IUSE award no. 1611732 (July 2016-June 2019)
- Grant primarily funds student stipends of \$3000/year/student, faculty reassignment, and travel
- Track impact of SCHOLAR with respect to:
 - Number of majors and minors
 - Client satisfaction
 - Student presentations at meetings
 - Surveys of attitudes toward statistics, undergraduate research, and graduate study completed both pre and post, and compared to a control group



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Math/Stat Majors and Minors



* SCHOLAR pilot program began in 2009 + Year prior to NSF funding

Recruiting Video



https://www.youtube.com/watch?v=wg03aZkXlJQ

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More than 40 projects completed for a wide variety of clients





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More than 35 presentations given at local, regional, and national meetings





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ORD 2018

1000

NCUR 201

"Having interacted with students from other universities at the conference, and being able to share thoughts with them and get to learn about their research, has <u>definitely increased my interest in doing research</u>."

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Benefits of undergraduate research (*n*=14):

- All students reported at least a small gain in everything but
 - Ability to integrate theory and practice
 - Self-confidence
 - Clarification of career path

From the Survey of Undergraduate Research Experiences (SURE III) https://www.grinnell.edu/academics/areas/psychology/assessments /sure-iii-survey



Benefits of undergraduate research (*n*=14):

- The greatest gains were reported in
 - Tolerance for obstacles in the research process
 - Skill in interpretation of results



From the Survey of Undergraduate Research Experiences (SURE III) <u>https://www.grinnell.edu/academics/areas/psychology/assessments/sure-iii-survey</u>

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Post-graduate plans (*n*=14):

 Seven (50%) student's postgraduate plans increased, whereas only one (7%) student's plans decreased



"I actually completely changed my professional goals as a result of participating in SCHOLAR. <u>It is now my plan to</u> <u>pursue a master's degree</u> in biostatistics, and I wouldn't have reached this place without my involvement with SCHOLAR."

From the Survey of Undergraduate Research Experiences (SURE III) https://www.grinnell.edu/academics/areas/psychology/assessmen ts/sure-iii-survey

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Attitudes Toward Statistics (*n*=14):

• Mean scale scores

Scale	Pre	Change
Value of Statistics	6.4	-0.1
Difficulty of Statistics	3.7	-0.4
Interest in Statistics	6.6	-0.1

• There has been very little change in these scale scores



"I now have <u>a better understanding of statistics</u> <u>that no class could give me</u>."

From the Survey of Attitudes Toward Statistics (SATS-36) https://www.evaluationandstatistics.com/

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Thank you !

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