

# Where Was the Math in That?

## Adventures of an Operations Researcher in a Math Department

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INFORMS Future Academicians Colloquium

October 10, 2009

# Why Would an Operations Researcher Join a Math Department?

- To teach undergraduates
  - Most undergraduate colleges don't have OR programs
  - Math majors make really great operations researchers!
  - More to come in next panel!
- To do very theoretical OR research
  - Probability, combinatorics, graph theory, ...

# Cultural Differences

“Where was the math in that?”

“I have this really weak math major.  
She’d make a great operations  
researcher...”

# Some Other Differences: Getting and Keeping the Job

- Mathematicians have lower opportunity costs
  - “Fresh” Ph.D.’s are at a disadvantage in the job pool
  - Salaries are lower
- Remember to ask for computing power in your startup!
- Less familiarity with the journals you publish in
- Funding expectations depend on type of institution
  - Even research institutions generally have lower expectations than engineering programs
  - Undergraduate colleges typically see grants as a “plus”
- See last slide for job-search resources

# Some Other Differences: Teaching

- If you want to *teach*, this is the way to do it (undergraduate colleges)
- Curriculum will be math-focused
  - Core math classes (calculus, linear algebra, prob/stat, ...)
  - Opportunity to start OR “track”
- Math majors make great operations researchers
  - Theorem/Proof-based courses
  - Opportunities for special research projects
  - Expectations to advise undergraduate research
- Teaching load depends on type of institution

# Some Other Differences: Research in Math Departments

- Research university
  - TA/RA structure similar to IE departments
  - Tenure expectations focus on research
  - Greater opportunities to mentor post-docs
- Teaching-focused institution
  - No graduate students → No research assistants or TA's
  - Research takes place during summers
  - Research often involves undergraduates
  - Tenure expectations focus on *teaching*, but research is generally still expected

# Some Other Differences: Miscellaneous

- Colleagues speak a different language
    - Limited colloquium offerings (at smaller schools)
    - Greater opportunities for mathematical growth and collaboration, especially if you're a theoretical person
  - More conferences in Europe???
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# How To Apply to Math Departments: Resources

- American Mathematical Society
  - [www.ams.org/employment](http://www.ams.org/employment)
- [MathJobs.org](http://MathJobs.org)
- Chronicle of Higher Education
  - [Chronicle.com/jobs](http://Chronicle.com/jobs)
- Keywords: operations research, mathematical finance, statistics