



RUTGERS

Education and Employment
Research Center

Career Readiness in Math Education

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Research Project Plan

Activities

- Quantitative Regional Analysis
- Survey to TPSE listserv and MAG members
- Interviews with 10-15 Math programs

Deliverables

- Handouts on the quantitative regional analysis
- PowerPoint on survey and interview findings
- Report

Survey Themes

- Respondents were asked to
 - Identify career readiness resources their department currently makes available to undergraduate mathematical science undergraduates
 - Describe the resource and how it is offered
 - Describe challenges in developing and implementing the resources
 - Describe most and least effective resources
 - Describe systematic alumni contact undertaken in their department
 - Share any best practices

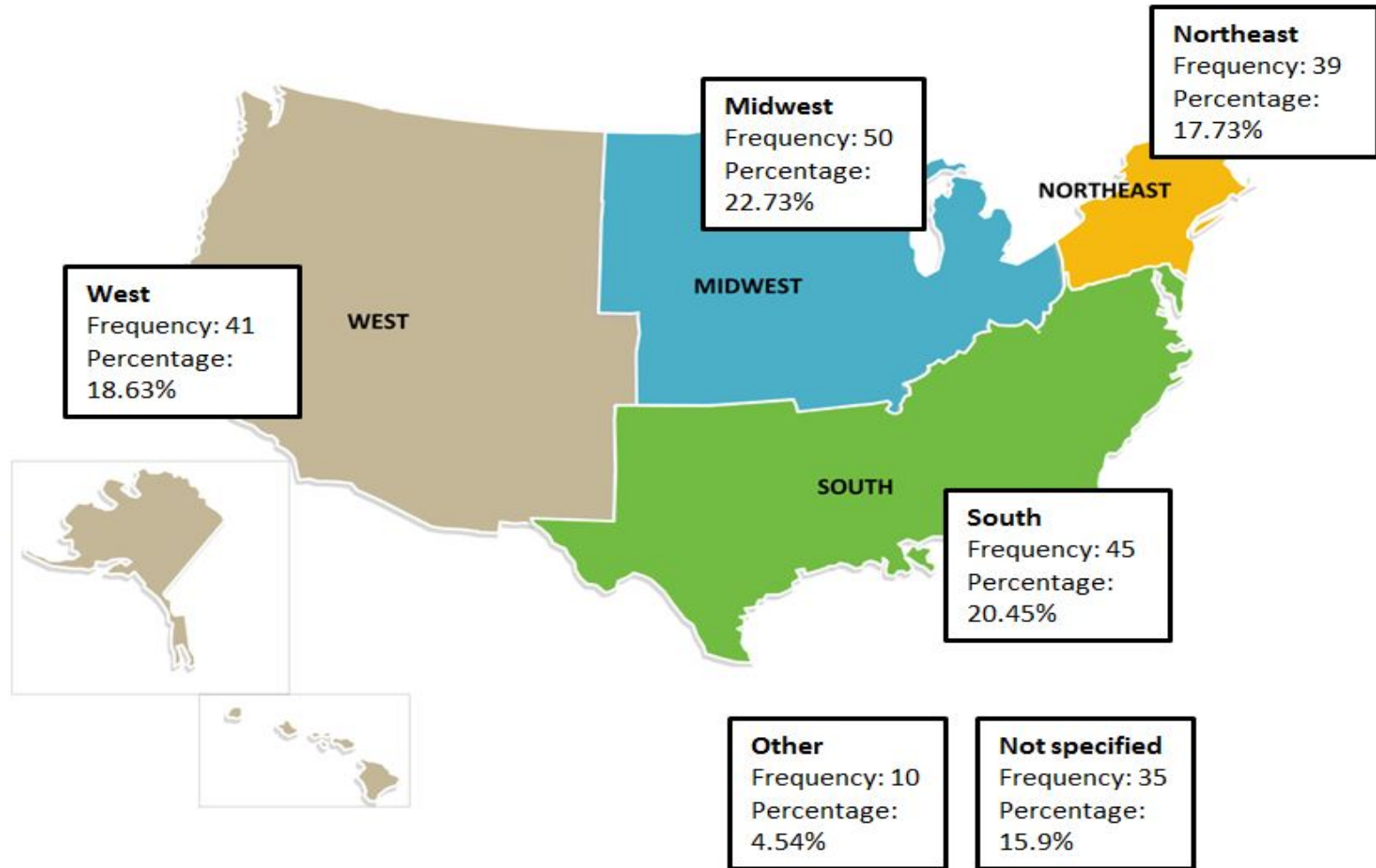
Survey Distribution

Distributed to two groups:

- MAG members: 39
- General TPSE List: 907

Response Rate: 23%

Location of Respondents



Initial Findings

Initial Findings

Types of Career Readiness Resources Currently Offered (N=220)							
Curriculum/ Coursework Contains Career Readiness	Faculty Advising	Internships/ Externships	Hands- on learning	Student Services	Inter-dept Partnerships	Online/ Hybrid Course Formats	External Partnerships
148	97	88	53	41	40	39	32
67%	44%	40%	24%	19%	18%	18%	15%

Initial Findings

- Career Readiness Curriculum/Coursework Offered
 - Integration of real world problems; Use of real data; Shifts to applied mathematics; Active learning, Interactive classrooms
 - Collaboration with other departments (research opp's for students, field trips together, faculty working on projects together, etc.)
 - Requiring multiple types of courses (Math, Engineering, Computer Science, etc.) for degree
 - Career skills and information built into courses or offered as an elective
- Faculty Advising Relative to Career Readiness
 - Increased involvement of faculty in internship process; Career advising; Exploration of research opportunities for students
 - Assignment of faculty advisor to students
- Internships/Externships
 - Involvement of department/faculty

Initial Findings

- Other Career Readiness Resources
 - Clubs and activities
 - Speakers and events
 - Mentorship opportunities
 - Research opportunities
- Challenges to Development
 - Time
 - Funding
 - Getting alumni to participate
 - Math faculty lack industry connections/industry experience
 - Students fail to take internships

Best Practices

- Internships/Real World Experience
 - Develop internships
 - Encourage students to take them
 - Bring internships into department
 - Involve students in research opportunities and real world problems
- Create and Build Industry Connections
 - Involve employers in curriculum design
 - Involve in research opp's and real world problems for students
- Redesign Curriculum
 - Incorporate research
 - Real world problems
 - Real data
 - Add career readiness skills and career information

Faculty Voices

Why do this work?

Students learn better and are more invested in learning when the work is connected to the real world. I think this is something we have to embrace rather than fight. At least to some extent.

Challenges

Other than paying for pizza, water, and sodas for the evening clubs, nothing.

Creating Change

Recognizing that as a liberal arts college we need to be more deliberate about articulating to students what they bring to potential employers.

Creating Change

If possible it is extremely important to have someone dedicated to working with employers and students on career placement. Mathematicians are not great at this (because most don't have significant industry experience) and many career centers at universities don't know the kinds of skills math majors can bring and don't advocate successfully for them.

Creating Change

Go all in with a full overhaul of the curriculum. It seems harder, but it works better and is easier to maintain in the long run.

Adjust the content to still be mathematically rigorous, but directed toward important real-world concepts, e.g., algorithms, optimization, approximation theory, modeling, etc.

Creating Change

*Encourage your faculty to build new expertise,
especially working with data and technology*

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