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Quantitative Courses for Graduation

*Survey Sponsored by
SIGMAA-QL and the MAA*

MILO SCHIELD

January 15, 2010
MAA JMM San Francisco

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Background

2007: Lynn Steen compiled a list of 31 four-year colleges that had QR programs or courses.

2008: Lynn transferred his list to SIGMAA-QL: Special Interest Group of the MAA for Quantitative Literacy.

2009: In January, Maura Mast, Chair of SIGMAA-QL, authorized a survey of the **Quantitative Graduation Requirements (QGR)** at all US colleges.

2009: In March, the MAA agreed to distribute the survey to their liaisons in the fall.

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Survey Design and Survey Response

Fall 2009: MAA distributed survey to the 1,512 MAA liaisons at US colleges.

Response rates (320 replies):

- 26% at US four-year colleges: 275 / 1,075.
- 10% at US two-year colleges: 45 / 437.

This presentation gives results from just the US four-year colleges. Max. margin of error: ± 6 pts.

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Types of Quantitative Graduation Requirements.

30%: Designated quantitative courses offered by mathematics and by other departments

24%: Traditional Math-science division requirement (e.g., 1 math and 1 science)

22%: Designated courses all in math/stat dept

19%: Other (Formal reasoning; other depts.)

5%: Not applicable

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2009 Survey Results from US Four-year Colleges

87% have college-wide quantitative requirement

68% have a quantitative support center

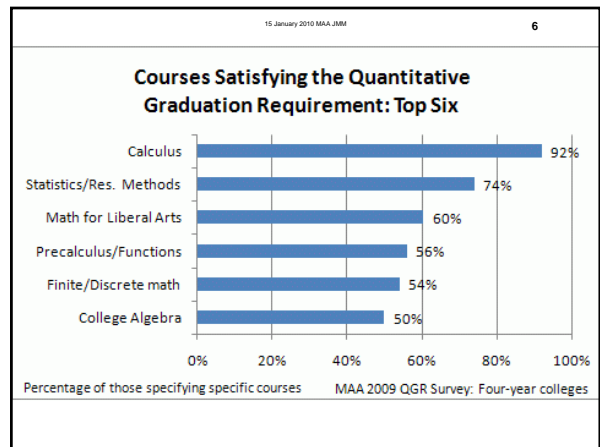
43% can satisfy QR requirement outside math

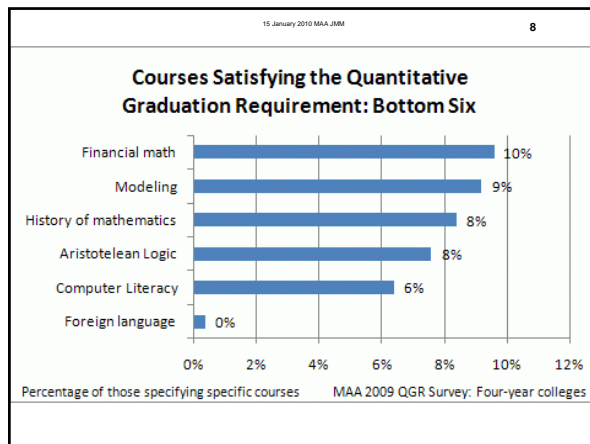
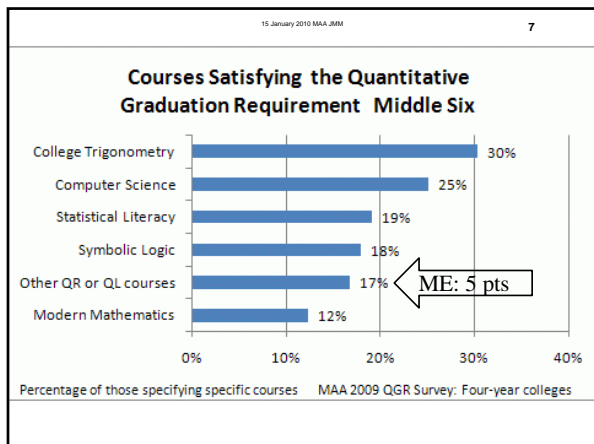
32% have a pre/entry QR assessment

20% have a post/exit QR assessment

7% have a two-Q (small, big) QR requirement

90% listed specific courses satisfying QGR.





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Conjecture: At least 20% of US 4-year colleges have a QR course

- 68% of Steen-list colleges did not respond
- Only 4 of the 10 colleges in both surveys indicated having a separate QR course

QR courses are offered under Math for Liberal Arts, Algebra and Finite/Discrete Math

Consider Madison's *Numbers in the News* QR course

- Separate QR course at Univ. Arkansas and Hollins
- Under *Math for Liberal Arts* at Central Washington

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Concerns: Possible Survey Bias/Error

- Possible response bias: 26% response rate
- Ambiguous words/phrases: What is a "college-wide requirement"?
- Undefined terms: Quantitative Reasoning, Quantitative Literacy and Support Center
- Ignorance factor: MAA Liaison may not know what is happening in general education.

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Next Steps and Recommendations

1. Submit QGR survey results to MAA Focus
2. Conduct detailed follow-up survey.
 - Poll colleges with QR-QL-Stat Lit courses
 - Post results on MAA/SIGMAAQL website
 - Submit to Numeracy and Amer. Statistician
3. Repeat national QGR survey next year.
 - Review terms; Add Math for Teachers, etc.
 - Survey QR in Algebra, Math for Liberal Arts

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Acknowledgements

The SIGMAA-QL for proposing this survey.

- Special thanks to Maura Mast, 2008 president of the SIGMAA-QL, who directed this survey.

The MAA for conducting the survey.

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- Kerry Sullivan, MAA Program Assistant

The MAA liaisons who completed the survey.

Lynn Steen for pioneering this project.