

PREPARATION FOR TEACHING ALGEBRA: RESULTS FROM A NATIONAL SURVEY

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HAMTE 2013, PTA project

Preparing to Teach Algebra

Investigates the opportunities that pre-service secondary mathematics teachers have to learn about:

- Algebra
- Algebra teaching
- Issues in achieving equity in algebra learning
- Algebra, functions, and modeling standards and mathematical practices described in Common Core State Standards for Mathematics (CCSSM)

Research Questions for This Study

- What are the **demographic characteristics** of secondary mathematics teacher education programs?
- What is the **relative emphasis** in these programs on mathematics courses, mathematics courses primarily for teachers, and mathematics education courses ?
- **What courses are typically offered together** in secondary mathematics teacher education programs?
- To what extent do these programs provide **opportunities for pre-service teachers to learn** about algebra, algebra teaching, issues in achieving equity in algebra learning, and the CCSSM ?

PITA Survey Data

Survey Content: **13** MC items and **7** OE items

- general characteristics of the program
- opportunities to learn algebra, to teach algebra, and equity issues in algebra and CCSSM
- additional information

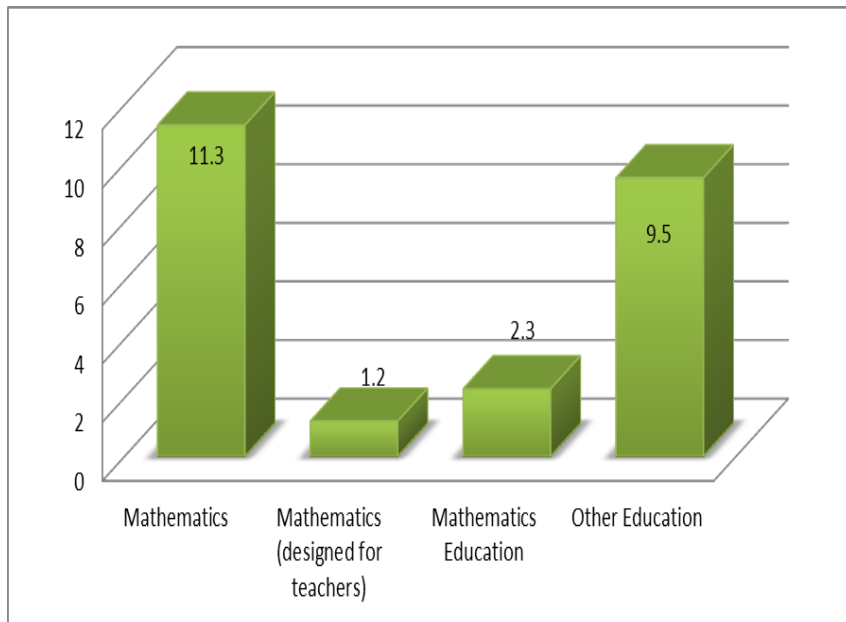
Type of institution	Total number in sample	Number of responses	Response rate
Baccalaureate	176	56 (52 valid)	29.5%
Master's	160	56 (48 valid)	30%
Doctorate	64	33 (31 valid)	51.5%
Total	400	145 (131 valid)	33 %

RQ1: Program Demographic Characteristics

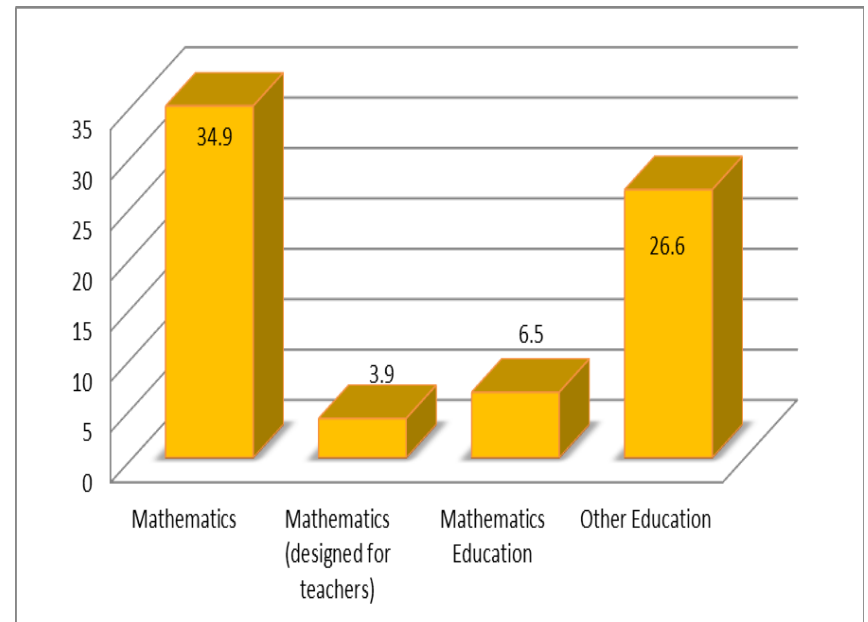
- 67% reported having only one type of program
 - **Combined Middle and High School program** is the most common
- Most programs award a **4-year bachelor's degree** upon the completion of the program.
- The size of the secondary mathematics programs varies considerably. (**Median = 5, Mean =9**)
- Programs offered by Bachelor's degree institutions tend to be smaller than other institution type.
- The median number of required hours of student teaching is **487 hours** with the range 310-600

RQ2: Program Course Emphasis

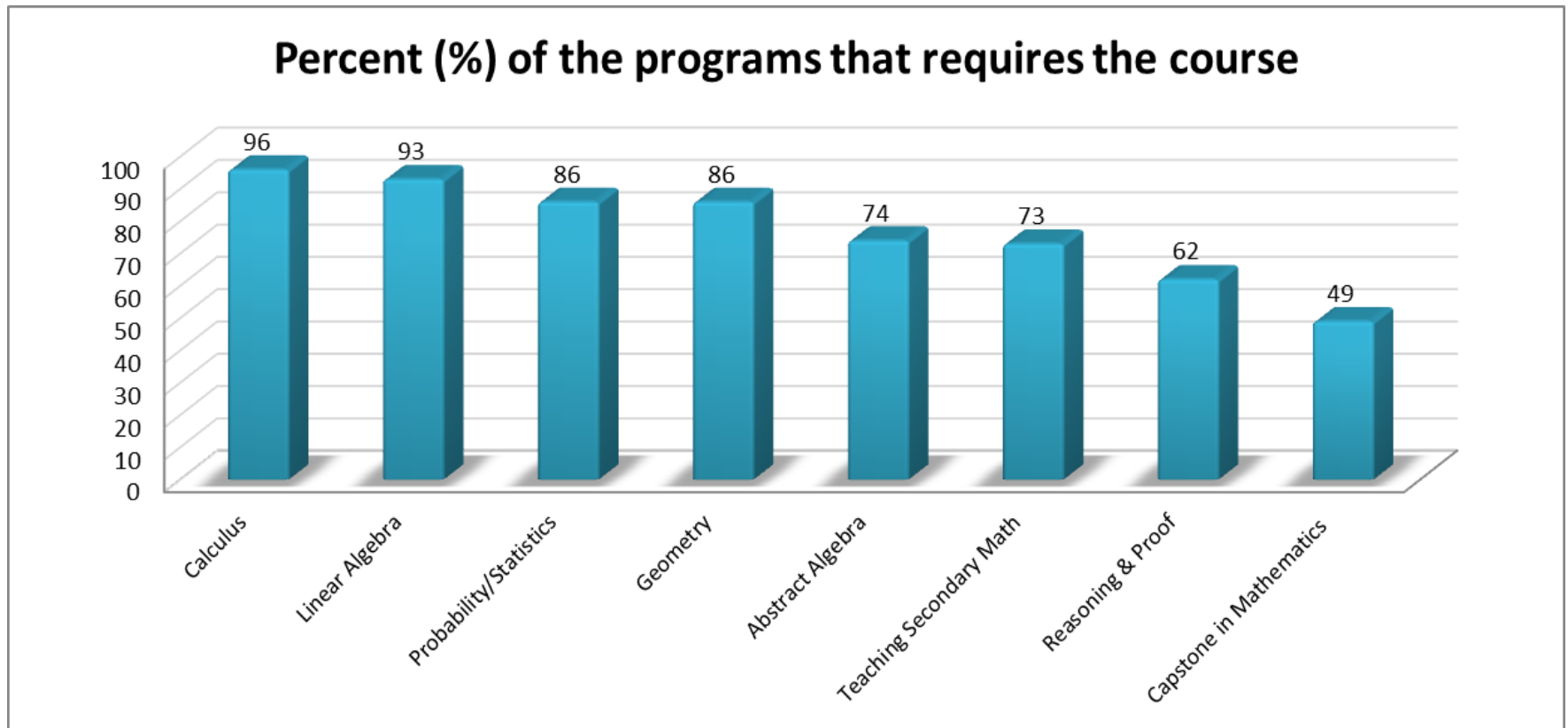
Means of Required COURSES



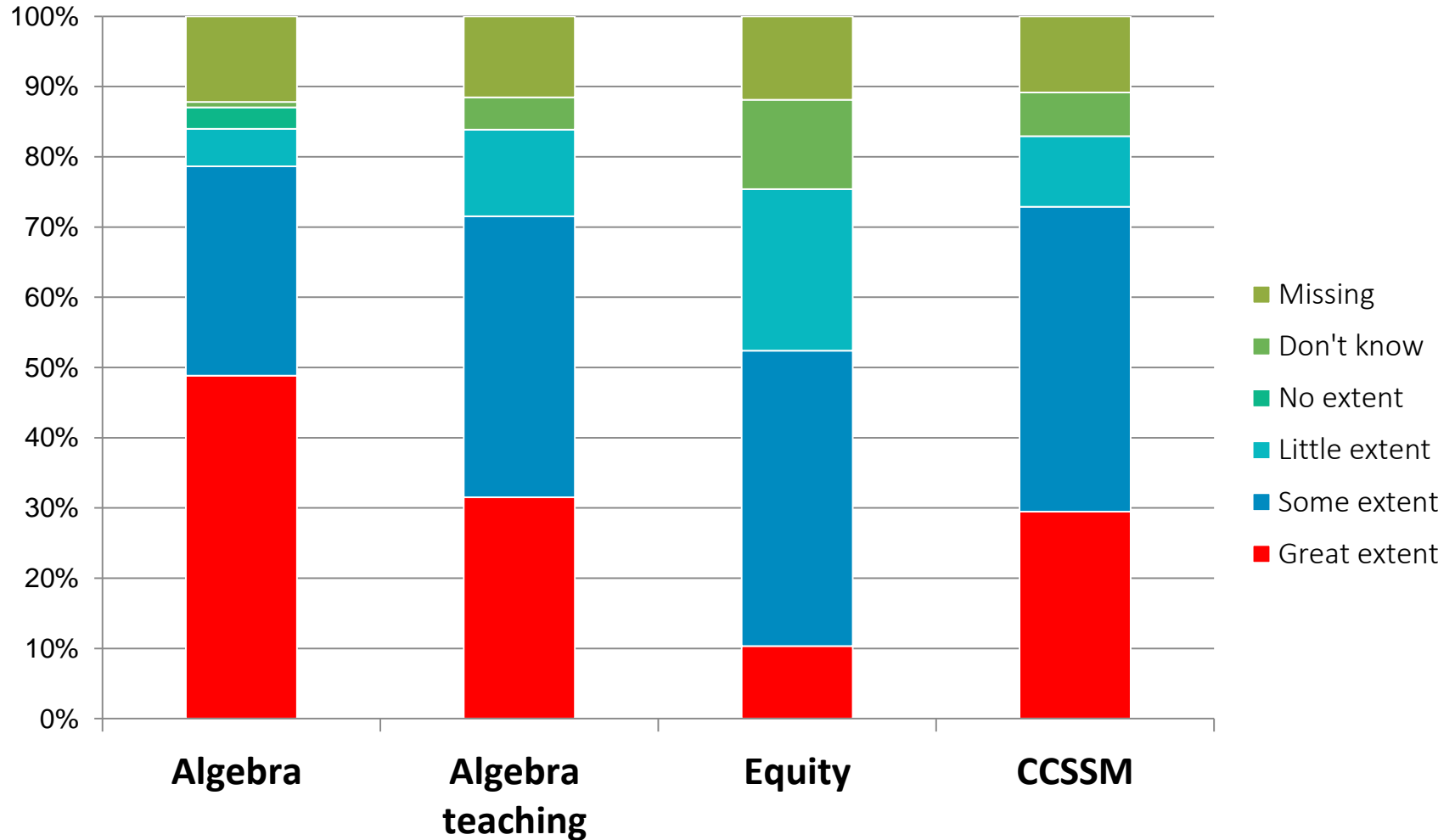
Means of Required CREDITS



RQ3: Courses Typically Offered Together



RQ4: OTL for Pre-service Teachers



Take-Home Message

- There are a variety of secondary teacher education programs that prepare pre-service teachers.
- Programs provide adequate opportunities to learn algebra, teaching algebra, and the algebra described in the Common Core.
- Programs do not typically address equity issues in learning algebra adequately.
- Mathematics teacher preparation programs are not offering many methods courses or courses in mathematics for teachers.

Additional Information

- **AERA presentation**

- **TOMORROW April 4th 4:05- 5:35pm**

- @Marriot, Fourth Level Franklin 3

- Common Core State Standards for Mathematics and Mathematics Teacher Education**

- **Publication**

- **Newton, J. et al. (2014).**

- How well are secondary mathematics teacher education programs aligned with the recommendations made in MET II? ***Notices of the American Mathematical Society***

Thank you!

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Required Number of Courses and Credits

		Mathematics	Mathematics (designed for teachers)	Mathematics Education	Other Education
Courses	Mean	11.3	1.2	2.3	9.5
	SD	5.4	1.6	3.7	6.6
	Median	11	1	1	8
	N	101	101	106	101
Credits	Mean	34.9	3.9	6.5	26.6
	SD	10.4	5.3	5.35	14.6
	Median	36	3	4.5	26
	N	97	95	102	96

RQ3: Courses Typically Offered Together

Course	Number of programs that require the course	Percent (%)	Valid Total (N)
Calculus	106	96	110
Linear Algebra	102	93	110
Probability/Statistics	95	86	110
Geometry	94	86	109
Abstract Algebra	80	74	108
Reasoning & Proof	64	62	103
Capstone in Mathematics	51	49	104
Teaching Secondary Mathematics	77	73	106