

Chapter 9: Report of the Subcommittee on the National Survey of Algebra I Teachers

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Final Report on the National
Survey of Algebra Teachers
For the National Mathematics Advisory Panel Subcommittee

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CONTENTS

List of Tables	9-iv
List of Figures	9-vi
Acknowledgments	9-vii
Executive Summary	9-ix
I. Introduction	9-1
II. Analysis of Survey Variables	9-2
Teacher Background and Work Situation	9-2
Student Preparation	9-7
Curriculum and Instruction	9-11
Views on Changing Secondary School Math Education	9-21
III. Summary and Conclusions	9-28
APPENDIX A: Survey Methodology	9-31
APPENDIX B Tables of Means for Survey Variables, by School Classification Variables	9-39
APPENDIX C: Variables Used in the Regression Equations And Tables of Regression Estimates	9-47
APPENDIX D: Means and Confidence Intervals for Items in the National Survey of Algebra Teachers	9-61
APPENDIX E: NSAT Questionnaire	9-77

Tables

Table 1:	Demographic and Professional Characteristics of Algebra I Teachers: 2007	9-2
Table 2:	Characteristics of Schools With Algebra I Teachers: 2007	9-3
Table 3:	Percentages of Algebra I Teachers Reporting Various Characteristics of Their Classes and Schools: 2007	9-4
Table 4:	Average Time (in Minutes) Algebra I Teachers Spent on Various Activities: 2007	9-5
Table 5:	Teacher-reported Target Class Student Behavior Characteristics: 2007	9-6
Table 6:	Size of Target Class, by Extent to Which the Teacher Considers Large Class Sizes to Be a Problem in the School: 2007	9-6
Table 7:	Teachers' Survey Responses on Student Preparation for Algebra I: 2007	9-7
Table 8:	School Problems Reported by Algebra Teachers: 2007.....	9-14
Table 9:	Frequency of Using Computers in the Target Class, by Extent to Which Insufficient Access to Computers is a Problem in the School: 2007.....	9-17
Table 10:	Frequency of Graphing Calculator Use, by Grade Level of Target Class and Urbanicity: 2007	9-19
Table 11:	Frequency of Using Graphing Calculators, by Extent to Which Insufficient Access to Graphing Calculators Is a Problem in the School: 2007	9-20
Table 12:	Frequency of Physical Object Use, by Grade Level of Target Class: 2007	9-20
Table 13:	Teachers' Evaluation of Selected Professional Development Factors: 2007	9-21
Table 14:	Teachers' Ratings on Availability and Quality of Remedial Help for Algebra I Students: 2007.....	9-23
Table 15:	Percentage of Algebra I Teachers Reporting Students With Different Abilities And Skills Taking the Same Class is a Problem, by Whether School Offers Different Levels Based on Ability: 2007.....	9-24
Table 16:	Frequencies of Reported Challenges to Teaching Algebra I by Class Grade Level and Type of School: 2007	9-26
Table 17:	Reported Challenges to Teaching Algebra I by Years of Experience: 2007	9-27
Table A-1:	Numbers of Sampled Schools, Schools That Provided Rosters of Algebra I Teachers, and Algebra I Teachers, by Sample Stratum: 2007.....	9-34
Table A-2:	Questionnaire and Follow-Up Mailing Dates and Numbers of Algebra I Teachers, by Mail-Out Cohort: 2007.....	9-35
Table A-3:	Number of Algebra I Teachers Sampled, Ineligible, Refusing, and Completing the Questionnaire, and Survey Response Rate, by Sample Stratification Variables: 2007.....	9-36
Table A-4:	Number of Algebra I Teachers Sampled, Ineligible, Refusing, and Completing the Questionnaire, and Survey Response Rate, by Sample Stratum: 2007	9-37
Table B-1:	Means for Survey Variables by School Locale	9-39

Table B-2:	Means for Survey Variables by School Minority Concentration	9-41
Table B-3:	Means for Survey Variables by Percentage of Students in the School Eligible for Free and Reduced-Price Lunch	9-43
Table B-4:	Means for Survey Variables by Grade Level of the Target Class and School Grade Level	9-45
Table C-1:	Regressions of Teachers' Summary Ratings of Student Background Preparation for Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-49
Table C-2:	Regressions of Teachers' Summary Ratings of Importance-Weighted Preparation for Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-50
Table C-3:	Regressions of Teachers' Summary Ratings of Content Standards for Algebra I in Their State or Local District on School Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-51
Table C-4:	Regressions of Teachers' Summary Ratings of Assessment Standards for Algebra I in Their State or Local District on School Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-52
Table C-5:	Regressions of Teachers' Summary Ratings of Algebra I Textbooks on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-53
Table C-6:	Regressions of Teachers' Summary Ratings of Technology Use in Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-54
Table C-7a:	Regressions of Teachers' Summary Ratings on the Helpfulness of Pre-Service Teacher Training in Teaching Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-55
Table C-7b:	Regressions of Teachers' Summary Ratings on the Helpfulness of Professional Development for Teaching Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-56
Table C-8:	Regressions of Teachers' Summary Ratings of Remedial Help for Algebra I Students on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-57
Table C-9:	Regressions of Teachers' Summary Ratings of Extent to Which They See Different Levels of Students in the Same Algebra I Class as a Problem in Their School on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables	9-58
Table C-10:	Regressions of Teachers' Summary Ratings of Family Participation is a Problem in Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007	9-59

Figures

Figure 1:	Percentage Distribution of Composite Student Preparation Scale Score: 2007.....	9-8
Figure 2:	Teachers' Ratings of Student Preparation Problems in Various Areas of Mathematics: 2007.....	9-9
Figure 3:	Teachers' Ratings of Local District Expectations for Student Proficiency in Algebra I: 2007	9-12
Figure 4:	Teachers' Ratings of State or Local School District Mathematics Content Standards for Algebra I: 2007	9-13
Figure 5:	Teachers' Ratings of State or Local School District Mathematics Assessment Standards of Algebra I Outcomes: 2007	9-13
Figure 6:	Teachers' Ratings of Various Aspects of the Algebra I Textbook Used in Target Class: 2007.....	9-15
Figure 7:	Percentage Distribution of Teacher Composite Textbook Favorability Ratings Scale Score: 2007	9-15
Figure 8:	Teachers' Ratings on Helpfulness of Computer-Based Instructional Tools in Algebra I Target Class: 2007	9-16
Figure 9:	Frequency of Using Various Instructional Materials and Tools in Algebra I, by Grade Level of Target Class: 2007.....	9-18
Figure 10:	Distribution of Teachers' Ratings of How Well Their Preservice Education Program Prepared Them to Teach Algebra I: 2007.....	9-22
Figure 11:	Distribution of Teachers' Ratings of How Well Their Professional Development Opportunities Have Helped Them Teach Algebra I: 2007.....	9-22
Figure 12:	Extent to Which Students With Different Abilities and Interests Taking the Same Algebra I Class Is a Problem: 2007	9-24
Figure 13:	Extent to Which Too Little Parent or Family Support Is a Problem in School: 2007	9-25

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Executive Summary

This report presents findings from a study by the National Opinion Research Center (NORC) of a nationally representative sample of public school Algebra I teachers, the National Survey of Algebra Teachers (NSAT). A sample of 310 schools was selected from a comprehensive list of public schools that included the eighth grade or higher. Of the 310 schools selected, 258 agreed to provide rosters of their Algebra I teachers. A total of 1,026 teachers were identified on this basis, and 743 (72%) returned completed questionnaires by the July 1, 2007, close of data collection. The report begins with a demographic and professional profile of the public school Algebra I teachers, and then presents findings related to the research questions identified by the National Mathematics Advisory Panel (National Math Panel, NMP, Panel) to guide the study.

Teacher Background

The Algebra I teachers who completed the survey were predominately female (66%), white (91%), and had a median age of 41 years old. The median years of teaching experience was nine years, and these teachers had taught algebra for a median of six years.

In terms of education, all had at least a baccalaureate degree and 51% had an M.A. or M.S., or other advanced degree. About 44% majored in mathematics and another 24% minored in mathematics during college; 8% earned an advanced degree in mathematics.

About 28% of the Algebra I teachers were teaching at the middle or junior high school level, while almost all of the other 72% were teaching in high schools (less than 5% were in combined middle-high schools).

Student Preparation

Research Question #1: How do the teachers rate the preparation of students coming into their Algebra I classes? Are there widespread problems, or are problems confined to individual students?

The teachers generally rated their students' background preparation for Algebra I as weak. The three skill areas in which teachers reported their students have the poorest preparation are rational numbers, word problems, and study habits (Table 7).

The teachers' ratings of student preparation generally did not vary much by school demographic. The main point of difference was that teachers of classes that primarily enroll seventh- or eighth-graders rated their students' backgrounds more highly, by 0.87 standard deviations ($p < .001$). The grade level of the class is likely to be a proxy for the ability level of the class, with eighth grade being the advanced group, ninth grade the average group, and 10th and higher the lower groups.

Research Question #2: To the degree that the teachers believe students need to be better prepared, what are the major shortcomings?

The teachers were asked to rate the importance of a “solid foundation” in each the 15 skill and knowledge areas asked about with respect to their target class students’ background preparation. Since the same background skills and knowledge for which the teachers rated student background as inadequate were also rated as important, the following areas emerge as the major shortcomings: rational numbers, word problems, and study habits.

Research Question #3: Given their experience with incoming students, would teachers change the level of emphasis placed on mathematics topics at the elementary level? If so, how would they change it?

- Would they put more or less emphasis on basic understandings or arithmetic and whole number, fraction and decimals operations?
- Would they put more or less emphasis on helping students master basic concepts?

These questions are covered to some extent in the open-ended survey question #2 in section 3 (item 3.2), “Please provide a brief description of any changes you would like to see in the curriculum leading up to Algebra I in your district.” Of the 743 teachers who returned completed questionnaires, 578 provided verbatim responses to this item.

The most frequent type of suggestion among the 578 respondents was a greater focus in primary education placed on mastery of basic mathematical concepts and skills.

Curriculum and Instruction

Research Question #4: How do teachers rate their state and local district curricular expectations in algebra for PreK–12? How do they rate the state or local school district mathematics standards and math tests that they currently use?

- The modal response (67%) from teachers is that they feel that local expectations for student proficiency in Algebra I are “about right,” while about equal numbers rated them as “too high” (8%) or “too low” (11%) (see Figure 3).
- The teachers were also generally favorable about content standards for Algebra I in their state or local district. A majority (53%) of teachers feel that the content standards are good and 16% rate them as excellent. Only about 5% rated their content standards as poor (see Figure 4).
- Teachers were less positive about state and local assessment standards, but the modal response (43%) was still that they were “good.” About 9% rated them as excellent and 15% rated them as poor (see Figure 5).

Research Question #5: How do they rate their textbook (or textbooks in general) regarding algebra instruction?

The questionnaire included several items asking for the teacher's evaluation of the textbook they use in the target class (survey items 1.8a–i). For the most part, teachers were satisfied with their texts' topics (Figure 7). The teachers rated their textbook least positively on the degree to which it is well suited for the needs of a diverse population of students (Figure 6).

Research Question #6: How do the teachers rate online technology tools?

The questionnaire included questions asking how often the teachers used computer-based instructional tools (item 1.5f), the extent to which insufficient access to computers is a problem in their school (item 2.1a), and how much they agreed or disagreed with the proposition that "Computer-based instructional tools (software) are helping Algebra I students in my Target Class" (item 1.6).

The data indicated that the average response to how frequently these tools are used was about 1 (= less than once a week) on a scale that ranged from (0 = never) to (4 = everyday) (Table 9 and Appendix D). The generally low levels of computer use does not appear to be a reflection of insufficient access. About half (49%) of the teachers reported that insufficient access to computers was not a problem in their schools and another 28% reported insufficient access to be a minor problem (Table 9). The teachers' ratings of the helpfulness of computer-based instructional tools were mixed, with 29% agreeing somewhat or agreeing strongly with the proposition that computers were helpful and 38% disagreeing somewhat or disagreeing strongly (34% neither agreed nor disagreed) (Figure 8).

Research Question #7: What is the role of the calculator in the algebra course?

Questionnaire item 1.5d asked how often the teacher uses graphing calculators in her or his target class. Overall, 33% of the teachers reported never using graphing calculators and another 29% report using them less than once a week. About 31% used them everyday (18%) or almost everyday (13%) (Table 10). Teachers' reports of insufficient access to graphing calculators was correlated with reports of low usage (Table 11).

Research Question #8: To what extent do the Algebra I teachers use physical objects (manipulatives) as instructional tools?

The relevant questionnaire item for this question asked how often the teacher uses physical objects, commonly referred to as manipulatives, in her or his target class (item I.5e). Overall, use of manipulatives on an occasional basis was widespread, but very few (9%) teachers report using them more than once a week or everyday. About 12% of the teachers reported never using manipulatives, and about 60% reported using them less than once a week (Table 12).

Research Question #9: How do teachers rate their professional training?

Questionnaire items pertaining to professional training and development included questionnaire items 3.4a,b and possibly 4.19; items 2.1f and j are also relevant. These items were examined by the teachers' years of teaching experience, and school classification variables.

- Teachers were asked to report the extent to which they believe inadequate preparation to teach Algebra 1 and opportunities for professional development are problems in their respective schools. The responses showed that both of these were generally viewed as very minor problems in their schools (see Table 13). When asked to rate their own Algebra I-related preservice training and in-service professional development opportunities, the teachers on average rated these experiences as just "adequate" (see Table 13 and Figures 10 and 11), suggesting room for improvement in the preservice training programs and professional development opportunities experienced by some teachers.

Research Question #10: Is there sufficient and effective remedial help for students who are struggling in algebra? What sort of assistance-based interventions would struggling students benefit from the most?

Questionnaire items 2.8a–b asked the teachers to rate the availability and quality of tutoring or other remedial services for students struggling with Algebra I in their schools.

- On average, teachers were generally satisfied with the services available (Table 14).
- Controlling for other demographic variables, remedial services were rated somewhat higher by teachers in schools with high minority enrollments. Also controlling for other demographic variables, female and black teachers are less satisfied with their schools' remedial services. (See Appendix Table C-8.)

Research Question #11: Would students learn more if they were grouped by ability for instruction, or is this approach counterproductive?

Questionnaire item 2.2 asked whether the school offers different levels of Algebra I based on ability; and 46% of the teachers indicated their schools did differentiate. Questionnaire item 2.1h asked teachers to rate the extent to which they see different levels of students in the same class as a problem in their school. A substantial number of teachers considered mixed-ability groupings to be a "moderate" (28%) or "serious" (23%) problem (see Figure 12). Teachers in schools that did not offer different levels of Algebra I based on ability were more likely than their counterparts in schools that do use ability grouping to consider mixed-ability classrooms to be a moderate or serious problem (Table 15).

Research Question #12: Do teachers find more parents helpful in encouraging students in their mathematics studies, or do too many parents make excuses for their children's lack of accomplishment?

Questionnaire item 2.1i asked teachers to rate the extent to which they see "too little parent/family support" as a problem in their school. The responses indicate that about 28% of the algebra teachers felt family participation is a serious problem and another 32% believed lack of family participation is a moderate problem (Figure 13).

Research Question #13: What do they see as the single most challenging aspect of teaching Algebra I successfully?

This question (4.20) included 10 response options: explaining material to students, handling accelerated students, teaching procedures, explaining concepts, using diagrams or models effectively, interpreting student errors and difficulties, working with unmotivated students, working with advanced students, helping students whose home language is not English, making mathematics accessible and comprehensible, and an “other” option.

The overwhelmingly most frequent response to this question was “working with unmotivated students.” This was chosen by 58% of the middle school teachers and 65% of the high school teachers (Table 16). The next most frequent response was “making mathematics accessible and comprehensible to all my students,” selected by 14% of the middle school teachers and 9% of the high school teachers.

Conclusions

The Algebra I teachers generally reported that students were not adequately prepared for their courses. The teachers rated as especially problematic students’ preparation in rational numbers, solving word problems, and basic study skills. A lack of student motivation was by far the most commonly cited biggest challenge reported by the teachers. The problems the teachers identified with the pre-Algebra I mathematics curriculum and instruction and with the lack of parental support for mathematics were likely to be contributing factors to the lack of adequate student preparation and motivation.

In contrast, the teachers generally held favorable views with respect to their own professional preparation and the Algebra I curriculum and instructional services. Taken together with the generally negative ratings of students’ preparation and motivation suggests that careful attention to pre-algebra curriculum and instruction in the elementary grades is needed, both to remedy the specific skill deficiencies reported by the Algebra I teachers and to identify ways in which negative attitudes toward mathematics develop and might be changed.

I. Introduction

The National Survey of Algebra Teachers (NSAT) conducted by the National Opinion Research Center (NORC) surveyed a national sample of public school Algebra I teachers during the 2007 spring school semester. The survey was designed to collect detailed information about the teachers' views on student preparation, motivation, work habits, and skills—as well as teachers' insights on how math is now taught, how earlier math education could be improved to prepare more children to succeed at algebra, and what would help all math teachers do a better job. The survey was designed to shed light on the experiences of algebra teachers in different kinds of school systems—for example, low-income, mainly minority schools versus higher income, mainly white schools. Learning algebra is often a turning point in a student's math education—when the student either thrives and moves forward or struggles and perhaps gives up on math—and the algebra teachers have a unique perspective on math education that is well worth understanding in some detail.

The NSAT was designed to provide a nationally representative sample of Algebra I teachers in public schools. A sample of 310 schools was selected from a comprehensive list of public schools which included the eighth grade or higher. The list was stratified by the type of grade configuration in the school (middle or junior high school, high school only, combined middle and high school), the number of students from low-income households, the number of racial and ethnic minority students enrolled in the school, and school location (urban, suburban, rural). Within the strata defined by these variables, schools were selected with probabilities of selection proportional to the estimated numbers of Algebra I teachers. Of the 310 schools selected, 258 agreed to provide rosters of their Algebra I teachers. A total of 1,026 teachers were identified on this basis, and 743 (72.4%) returned completed questionnaires by the July 1 close of data collection.

This report presents the survey results and provides initial analyses to identify important sources of variability in the teacher reports. It begins with a demographic and professional profile of the public school Algebra I teachers, and then presents findings related to the research questions identified by the National Mathematics Advisory Panel to guide the study. The survey methodology and data collection results are described in Appendix A. A full set of tabulations of the main survey variables is included in Appendix B. Tables and figures are used throughout the report to improve readability, and the numbers upon which they are based are displayed in the Appendix B tables. Multiple regression models are estimated to provide compact summaries of the influences of several variables on the outcomes focused on in the report, and the regression tables are included in Appendix C along with a descriptions of the independent variables used in the models. Appendix D is the means and confidence intervals for items in the National Survey of Algebra Teachers. Appendix E is a copy of the questionnaire used to collect the data. The report concludes with a summary of the main findings and a discussion of their implications.

II. Analysis of Survey Variables

Teacher Background and Work Situation

A profile of the demographic and professional backgrounds of the academic year 2006–07 Algebra I teachers in U.S. public schools is shown in Table 1. These teachers were predominately female (66%), white (91%), and had a median age of 41 years old. The Algebra I teachers’ median years of teaching experience was nine years and had taught algebra for a median of six years. In terms of education, all had at least a baccalaureate degree and about half had an M.A. or M.S., or other advanced degree. About 44% majored in mathematics and another 24% minored in mathematics during college; about 15% of those who earned an advanced degree specialized in mathematics (Table 1).

Table 1: Demographic and Professional Characteristics of Algebra I Teachers: 2007

Characteristic	Values	Valid N	Weighted %
Teacher is female	0–1	733	65.5
Teacher racial/ethnic background			
Hispanic	0–1	727	5.7
American Indian or Alaska Native	0–1	715	2.1
Native Hawaiian or other Pacific Islander	0–1	715	0.2
Asian	0–1	715	2.5
Black or African-American	0–1	715	3.6
White	0–1	715	91.0
Teacher age (quartiles)			
1st: 22–30 yrs			27.4
2nd: 31–40 yrs			21.6
3rd: 41–50 yrs			25.1
4th: 51–65 yrs			26.0
All		729	100.0
Teacher’s total years teaching experience (quartiles)			
1st: 0–3 yrs			31.1
2nd: 4–9 yrs			30.6
3rd: 10–18 yrs			21.6
4th: 19–41 yrs			16.7
All		733	100.0
Teacher’s years teaching algebra (quartiles)			
1st: 0–2 yrs			24.4
2nd: 3–6 yrs			24.4
3rd: 7–14 yrs			26.4
4th: 15–40 yrs			24.8
All		733	100.0
Teacher’s highest degree			
Bachelor’s			51.4
Master’s			40.9
Other advanced degree			7.7
All		737	100.0
Baccalaureate math background			
Math major		738	43.6
Math minor		729	24.2
Graduate degree math background	Math specialty	400	15.2
Teacher has regular or standard state certification	0–1	733	82.4

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

The distribution of Algebra I teachers by grade level (8–12) and by the main school-level classification variables used throughout the report is shown in Table 2. The first three of these school-level variables largely reflect student enrollment patterns across the country:

- *Type of locale*: the standard three-level indicator of urban (27%), suburban (39%), and rural (34%) school location.
- *Percentage of students receiving free or reduced-price lunch*: the percentage variable was recoded into quartiles of the distribution of Algebra I teachers (median was 10% of the students are eligible).
- *Percentage of students who are black or Hispanic*: the percentage variable was recoded into quartiles of the distribution of Algebra I teachers (median is 27% of the students are black or Hispanic).

The grade level variable at the bottom of Table 2 indicates that 32% of the algebra teachers were teaching at the middle or junior high school level, while 50% were teaching in high schools and 18% were in combined middle-high schools.

Table 2: Characteristics of Schools With Algebra I Teachers: 2007

School Characteristics	Values	UnWtd. N	Wtd. N	Wtd. %
School urbanicity	Urban	252	23,088	26.9
	Suburban	381	33,796	39.4
	Rural	110	28,891	33.7
	Total	743	85,775	100
Percentage minority—quartiles	Low thru 10%	119	22,923	26.7
	11 thru 27%	184	20,100	23.4
	28 thru 48%	265	24,549	28.6
	49 thru 81%	175	18,202	21.2
	Total	743	85,775	100
Percentage free/reduced-price lunch status—quartiles	Low thru 3%	219	21,998	25.6
	4 thru 10%	227	24,537	28.6
	11 thru 40%	182	22,318	26
	41 thru 82%	103	16,358	19.1
	Total	731	85,210	99.3
School grade level	Middle, junior high, or K–8 school	128	27,508	32.1
	High school (9–12 or 10–12)	532	43,234	50.4
	Other schools	83	15,033	17.5
	All schools	743	85,775	100

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

The Algebra I teachers were asked to report several characteristics about a “target” Algebra I class they were currently teaching. The following table shows the portion of algebra teachers and their classes that fit various criteria. Most teachers reported that their class meets everyday (83%) and that they have enough time to teach algebra adequately (77%). About half of the teachers’ schools offer different levels of algebra based on student needs, and about one-third of teachers reported that their class is part of block scheduling in their school.

The teachers were asked which student grade levels they were currently teaching in their Algebra I classes. The ninth grade was reported most often, by 58% of all the algebra teachers. Tenth grade was next (43%), followed by eighth grade (38%) and 11th grade (28%). A significant portion taught seniors (17%), and only 7% reported teaching seventh-graders. A significant number of the teachers (15%) reported teaching special education students in their Algebra I class(es). (See Table 3.)

Table 3: Percentages of Algebra I Teachers Reporting Various Characteristics of Their Classes and Schools: 2007

<i>Classes and School</i>	Lower 95% CI	Mean	Higher 95% CI
Target class meets everyday	76.1%	82.8%	89.4%
Feel they have enough time to adequately teach	70.7%	76.3%	81.9%
School offers different levels of Algebra I based on ability	39.3%	46.6%	54.0%
Target class is part of block scheduling	26.4%	33.9%	41.4%
<i>Teachers Who Teach Algebra I to</i>			
7th-graders	3.7%	6.7%	9.7%
8th-graders	31.2%	38.4%	45.7%
9th-graders	50.6%	57.5%	64.5%
10th-graders	36.9%	43.2%	49.5%
11th-graders	22.3%	27.6%	32.8%
12th-graders	12.3%	16.8%	21.3%
Special education students	10.8%	15.1%	19.4%
<i>Teachers’ Estimates of How Many Students Will Fail Their Algebra I Course</i>			
None of the students in target class	15.6%	21.7%	27.9%
1–10% of the students in target class	33.9%	40.7%	47.4%
11–20% of the students in target class	12.4%	18.0%	23.6%
21–30% of the students in target class	5.3%	8.3%	11.4%
31–40% of the students in target class	3.5%	5.6%	7.6%
41–50% of the students in target class	2.2%	3.3%	4.4%
50% or more of the students in target class	1.4%	2.5%	3.7%

Note: CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

With regards to rates of failing Algebra I, 22% of the teachers believed that none of the students in their target class would fail, and another 41% expected 1–10% of their students would fail. A substantial proportion of the teachers (20%) expected to fail more than 20% of their students.

Time allocations. Teachers were asked to report the number of minutes spent on various activities. On average, a class period of algebra lasted about one hour. Teachers also averaged about 1 hour per day preparing for their classes during the school day. Teachers also spent time outside of school in preparation, which averaged 54 minutes per day. In comparison, teachers expected their students to spend about 25 minutes per day on their Algebra I homework.

Table 4: Average Time (in Minutes) Algebra I Teachers Spent on Various Activities: 2007

<i>Activity</i>	Lower 95% CI	Mean	Higher 95% CI
In class per period	59.28	62.14	65.00
In preparation during a school day	57.25	61.16	65.07
In preparation for algebra outside of school	50.14	54.38	58.62
Expected time needed for target class students to complete homework per day	23.28	24.81	26.33

Note: CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

As for the students in their target class, teachers were generally satisfied with their in-class behavior. On average, teachers felt that most of their students came to class on time and attended class regularly. Teachers also felt that more than half of their students generally came to class prepared, paid attention, participate, take notes, and care about the grades they receive. Disruptions do not appear to be a major problem, as teachers report that few of their students create behavior problems. Finally, teachers felt that few of their students have serious difficulties reading English.

Further analyses found that teachers in urban schools were more likely to report that their students presented behavior problems, while teachers in rural schools reported the best-behaved students.

Table 5: Teacher-Reported Algebra I Target Class Student Behavior Characteristics: 2007

<i>Student Behavior Characteristics</i>	Lower 95% CI	Mean	Higher 95% CI
Come to class on time	3.49	3.57	3.65
Attend class regularly	3.39	3.46	3.54
Come to class prepared with appropriate supplies and books	2.79	2.92	3.05
Create serious behavior problems	0.53	0.61	0.69
Regularly pay attention in class	2.70	2.82	2.93
Actively participate in class activities	2.57	2.69	2.80
Take notes	2.59	2.72	2.86
Have serious difficulties reading English	0.41	0.47	0.54
Care about what grade they receive	2.78	2.90	3.02

Note: Scale: 0 = None, 1 = Some, 2 = About Half, 3 = Most, 4 = Nearly All

CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Size of target class. Most teachers have classes between 15 and 30 students, with 21–25 students reported most often. However, NORC's analysis found a strong correlation ($r = 0.54$) between the size of a teacher's target class and whether or not he or she felt that class size is a problem (see Table 6). Of those that felt it was not a problem, 90% of those teachers had class sizes of 25 students or below. Of those that felt it was a serious problem, almost 75% of those teachers had a class size above 25 students. There is a clear connection between class size and teachers feeling that it is a problem; this correlation is across the board.

Table 6: Size of Target Class, by Extent to Which the Teacher Considers Large Class Sizes to Be a Problem in the School: 2007

Size of Target Class	<i>How much of a problem is class size?</i>				
	Not a Problem	Minor Problem	Moderate Problem	Serious Problem	All Teachers
Less than 15 students	19.19%	4.05%	2.00%	0.41%	9.90%
15–20 students	40.44%	21.93%	11.24%	4.24%	26.11%
21–25 students	29.56%	41.89%	24.07%	19.84%	30.82%
26–30 students	7.58%	28.13%	51.19%	38.46%	24.37%
31–35 students	1.99%	2.78%	10.05%	30.37%	6.90%
More than 36 students	1.24%	1.21%	1.45%	6.67%	1.90%
Total	100%	100%	100%	100%	100%

Note: Chi-square = 296.6 ($p < 0.000$), Correlation = 0.54 ($p < 0.00$)

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Student Preparation

Research Question #1: How do the teachers rate the preparation of students coming into their Algebra I classes? Are there widespread problems, or are problems confined to individual students?

As noted in the previous section, the teachers were asked to report several characteristics about a target Algebra I class they were currently teaching. The questionnaire items asking about students' preparation are in Section 1, question #4 (items 4a–4o). The topics are listed in Table 7 and ranked from the biggest problem (on the bottom) to the smallest (the top). These items range from 1 = excellent [preparation] to 4 = poor [preparation].

Table 7: Teachers' Survey Responses on Student Preparation for Algebra I: 2007

<i>Based on your experience with incoming Algebra I students in your Target Class, how would you rate students' background in each of the following areas of mathematics?</i>	Mean	95% CI	
		Low	High
Whole numbers and operations with whole numbers	1.86	1.80	1.92
Working cooperatively with other students	2.32	2.26	2.37
Plotting points, and graphing lines on the four-quadrant coordinate plane	2.44	2.37	2.51
The concept of variables	2.48	2.42	2.54
Computation skills	2.53	2.47	2.60
Positive & negative integers and operations with positive & negative integers	2.58	2.51	2.64
Working independently	2.58	2.52	2.64
Solving simple linear equations and inequalities	2.80	2.74	2.86
Measurement formulas of basic geometric shapes	2.81	2.75	2.87
Manipulation of variables	2.82	2.76	2.88
Ratios, percents, rates, and proportions	2.83	2.77	2.90
Ability to use math in context that are identified as real-world situations	2.94	2.89	3.00
Basic study skills and work habits necessary for success in math	3.00	2.94	3.06
Rational numbers and operations involving fractions and decimals	3.10	3.04	3.16
Solving word problems	3.26	3.20	3.32

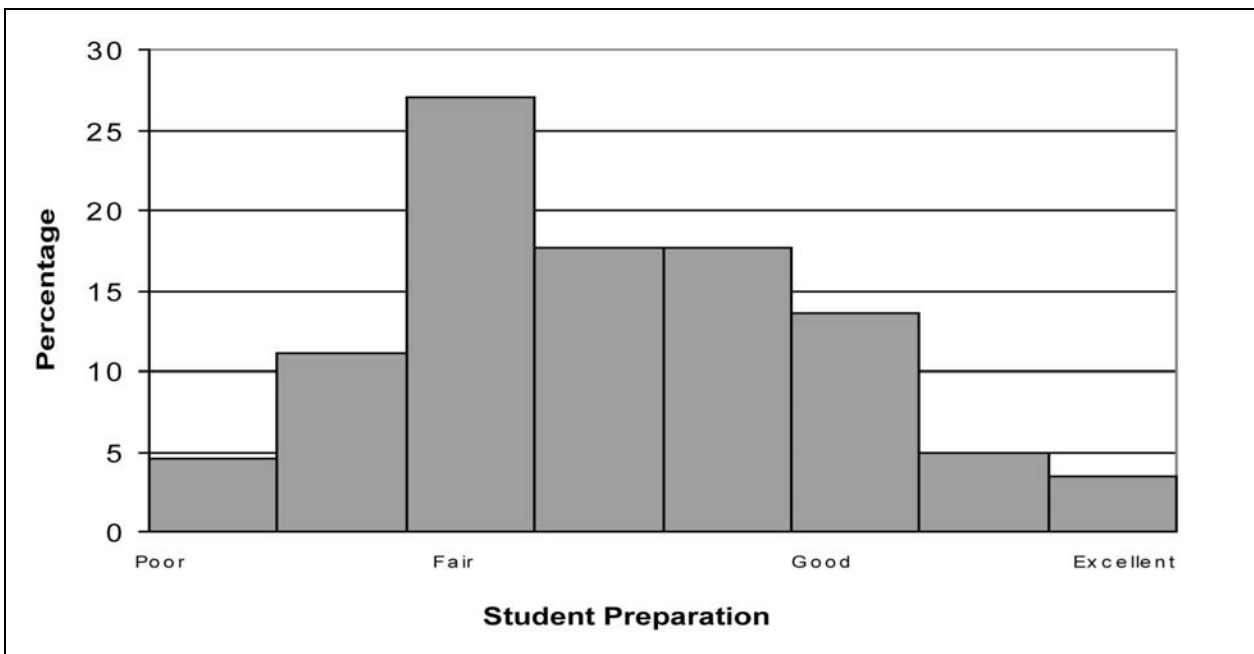
Note: CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

As Table 7 shows, the three skill areas in which teachers report their students have the poorest preparation are solving word problems, rational numbers and operations involving fractions and decimals, and basic study skills and work habits. Student preparation is relatively strong in whole numbers and operations with whole numbers, working cooperatively with other students, and plotting points and graphing lines on the four-quadrant coordinate plane.

The teachers’ responses to the various items in this battery are highly correlated with one another and can be combined into a single “student preparation” summary scale. As is evident in Figure 1, teachers generally feel their students are fair-to-poorly prepared for their algebra class ($\alpha = 0.94$).

Figure 1: Percentage Distribution of Composite Student Preparation Scale Score: 2007



Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Differences in the teachers’ scale scores associated with types of classes and schools were assessed using regression analysis. The estimated regression coefficients of the class-type and school-level covariates are reported in Appendix Table C-1.

- The most consistent finding from the analyses is that, holding other factors constant, teachers of classes of primarily seventh- or eighth-graders rated their students’ backgrounds more highly, by 0.88 standard deviations ($p < .001$). The grade level of the class is likely to be a proxy for the ability level of the class, with eighth grade being the advanced group, ninth grade the average group, and tenth and higher the lower groups.

The regression analysis also finds that some school-level covariates were associated with whether teachers feel their students are prepared. Teachers in schools with a high concentration of minority students (greater than 81%) felt that their incoming students were less prepared, but this difference was reduced and not statistically significant in the full regression equation. Interestingly, there was only a weak association of teacher ratings with the schools’ free and

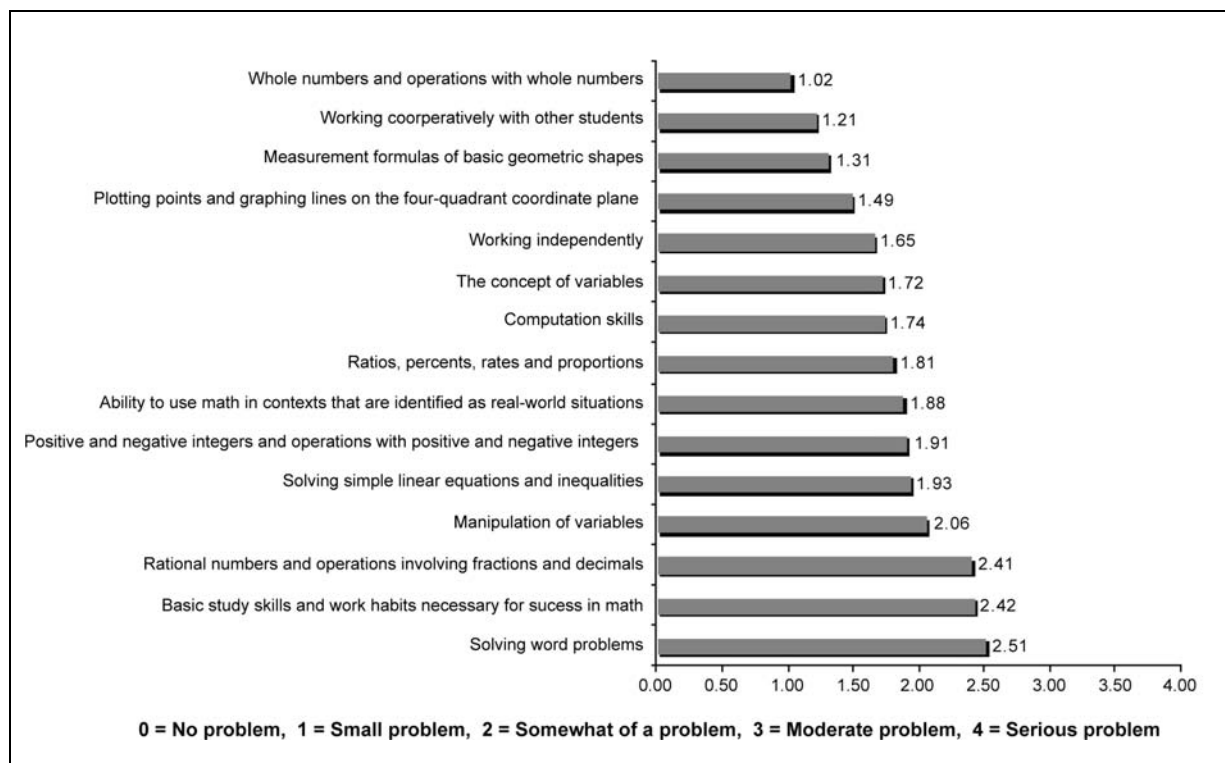
reduced-price lunch concentrations. Teachers' opinions of their students' preparations varied across urban-suburban-rural lines, with urban teachers having the lowest opinion and rural teachers having the highest, but these differences were not significant in the full regression.

Research Question #2: To the degree that the teachers believe students need to be better prepared, what are the major shortcomings?

The teachers were asked to rate the importance of a “solid foundation” in each the 15 skill and knowledge areas asked about with respect to their target class students' background preparation (see questionnaire items 3.1a–o). We addressed this research question by combining the teachers' responses to the 15 student preparation items (1.4a–o) with teacher responses to the questionnaire items asking how important each of the preparation items is for success in Algebra I (3.1a–o). Information from the two batteries was combined to weight the preparation rating by its importance. A “preparation problem” score for each item was calculated by multiplying the teacher's rating of his or her students' preparation by that teacher's rating of the importance of a solid foundation in that particular area to students' success in Algebra I.

- Referring to Figure 2, weighting each topic by the teachers' level of importance, yields a similar pattern to that shown in Table 7 for the teachers' ratings of student backgrounds, with only minor differences in the ordering of the items.

Figure 2: Teachers' Ratings of Student Preparation Problems in Various Areas of Mathematics: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

The set of preparation-problem items are highly intercorrelated and, like the background-preparation items, can be combined into a summary scale to facilitate analysis of factors related to differences among teachers in their ratings. For NORC's analysis, a summary "preparation problem" scale was constructed using the full set of weighted items and it was regressed based on the standard classroom and school classification variables.

- The regressions of this scale on the classroom, school, and teacher variables also confirm the patterns from the ratings of background preparation—students in the seventh- and eighth-grade Algebra I classes are better prepared than those taking Algebra I in Grade 9 and higher (see Appendix Table C-2).

The consistency of Table 7 and Figure 2 reflects the fact that virtually all of the "how important" items (3.1a–n) were rated as "very important" or "extremely important" by almost all respondents. Because these are largely invariant across the whole sample, the weighting method just outlined did not yield different results than the analysis of the preparation items discussed under research question #1.

Research Question #3: Given their experience with incoming students, would teachers change the level of emphasis placed on mathematics topics at the elementary level? If so, how would they change it?

- Would they put more or less emphasis on basic understandings of arithmetic and whole number, fraction, and decimals operations?
- Would they put more or less emphasis on helping students master basic concepts?

These questions are covered to some extent in the open-ended item 3.2, "Please provide a brief description of any changes you would like to see in the curriculum leading up to Algebra I in your district." Of the 743 teachers who returned completed questionnaires, 578 provided verbatim responses to this item.

A substantial number of the 578 would like to see a greater focus in primary education placed on mastery of basic mathematical concepts. For example:

"Students need to be better prepared in basic math skills and not be quite so calculator dependent. Also, more training in thinking skills."

"Make sure the 1st–8th grade teachers teach the foundations of math and that the students know their basic skills."

"More focus on basics - students should already know order of operations, positive vs. neg. numbers, fractions, and decimals."

"Stronger basic math facts, less rigor and rushing to higher math and more arithmetic."

"Please do not allow students to use calculators, especially fraction calculators."

As these examples suggest, responses to this item will also be the best source in the questionnaire for answers to the National Math Panel’s research question “What are the teachers’ views on students using calculators in the early grades?” Of those that wrote an answer for item 3.2, (N = 578), 13% (N = 75) specifically mentioned that they would like to see less use of calculators before students take their Algebra I class.

Additionally, 8% of the teachers (N = 46) also mentioned changing pre-algebra standards. These responses not only include teachers stating that students need to prove their pre-algebra competence before entering Algebra I, but also indicate that pre-algebra is not even offered to all students before entering Algebra I. For example:

*“Make pre-*alg* or Alg I a requirement for middle schools.”*

“I would like to see a pre-algebra class as a requirement prior to taking Algebra.”

“Most students in my class have a different curriculum in middle school, so they do not officially have pre-algebra. A better diagnostic and year end assessment is essential. Many students are dependent on calculators.”

“The curriculum issue is being address next year. We are adding general math and pre-algebra and we will hopefully insist on mastery before allowing students to take Algebra I.”

“Students should have at least 80% proficiency in pre-algebra skills. Class for high schools students not proficient in these skills. Alternative classes or students with behavior and/or attendance issues.”

*“Student mastery of pre-*alg* concepts before enrolling in Alg.”*

“Mandatory success in a pre-algebra course.”

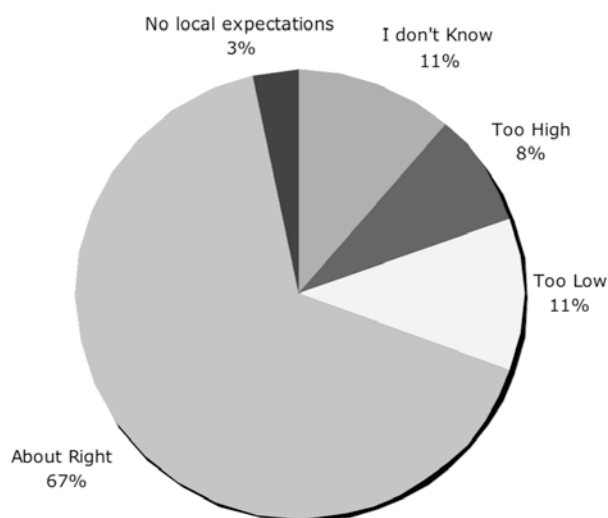
Curriculum and Instruction

Research Question #4: How do the Algebra I teachers rate their state and local district curricular expectations in algebra for PreK–12? How do they rate the state or local school district mathematics standards and math tests that they currently use? Are they setting the right expectations? Too low or unrealistically high? Clear and helpful, or confused and counterproductive? [This combines two separate research questions as requested by the National Mathematics Advisory Panel (NMP) subcommittee].

The questionnaire included one item asking the teachers to rate their local district’s expectations for student proficiency in Algebra I (3.3) and two items asking about state standards and assessment tools (3.7a,b). A fourth related question asked whether students are required to pass Algebra I in order to graduate high school (3.6). These responses were examined these responses by the school classification variables.

- The modal response (67%) from teachers is that they feel that local expectations for student proficiency in Algebra I are “about right,” while about equal numbers rated them as “too high” (8%) or “too low” (11%) (see Figure 3).

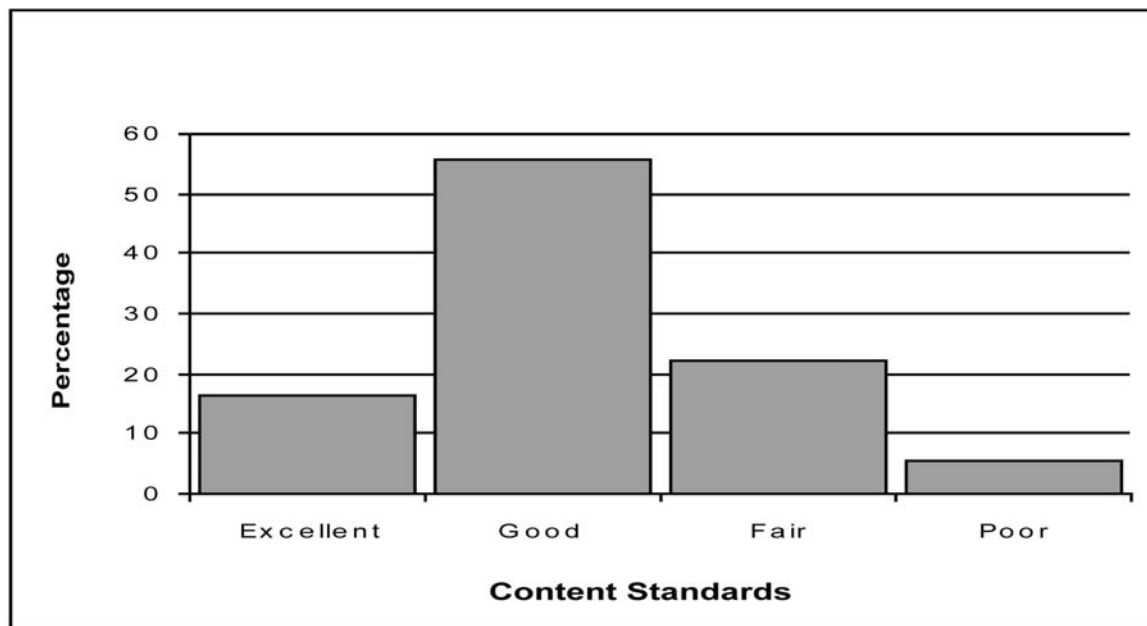
Figure 3: Teachers’ Ratings of Local District Expectations for Student Proficiency in Algebra I: 2007



Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

The teachers were also generally favorable about content standards for Algebra I in their state or local district. A majority (54%) of teachers felt that the content standards are good and 19% rate them as excellent. Only about 3% rated their content standards as poor (see Figure 4). However, the regression analysis shows that teachers who teach in schools in the second quartile of minority student population also feel that the standards are better (.37 SD), compared with the feelings of teachers with low levels of minority students (see Appendix Table C-3).

Figure 4: Teachers' Ratings of State or Local School District Mathematics Content Standards for Algebra I: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Teachers were less positive about state and local assessment standards, but the modal response was still that they were "good" (see Figure 5). The regression analysis did not find any differences based on teacher or school characteristics (see Appendix Table C-4).

Figure 5: Teachers' Ratings of State or Local School District Mathematics Assessment Standards of Algebra I Outcomes: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

School Problems. The NSAT questionnaire also included a battery of questions regarding possible problems with the teacher’s school, and the next table reports the means and 95% confidence intervals for these items. From poor computer access to inadequate administrative support, examination of the confidence intervals show that teachers have a problem with each aspect of their school to a similar degree. Teachers feel that each aspect is, on average, a minor problem.

Table 8: School Problems Reported by Algebra Teachers: 2007

School Problem	Lower 95% CI	Mean	Higher 95% CI
Insufficient access to computers	1.68	1.86	2.04
Inadequate access to graphing calculators	1.58	1.70	1.81
Poor quality or out-of-date textbooks	1.43	1.59	1.75
Too large class sizes	1.84	1.97	2.10
Too little coordination between classes in the mathematics	1.62	1.75	1.87
Lack of teacher planning time	1.63	1.74	1.85
Inadequate administrative support	1.52	1.64	1.75

Note: Scale: 1 = Not a problem, 2 = Minor, 3 = Moderate, 4 = Serious problem

CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

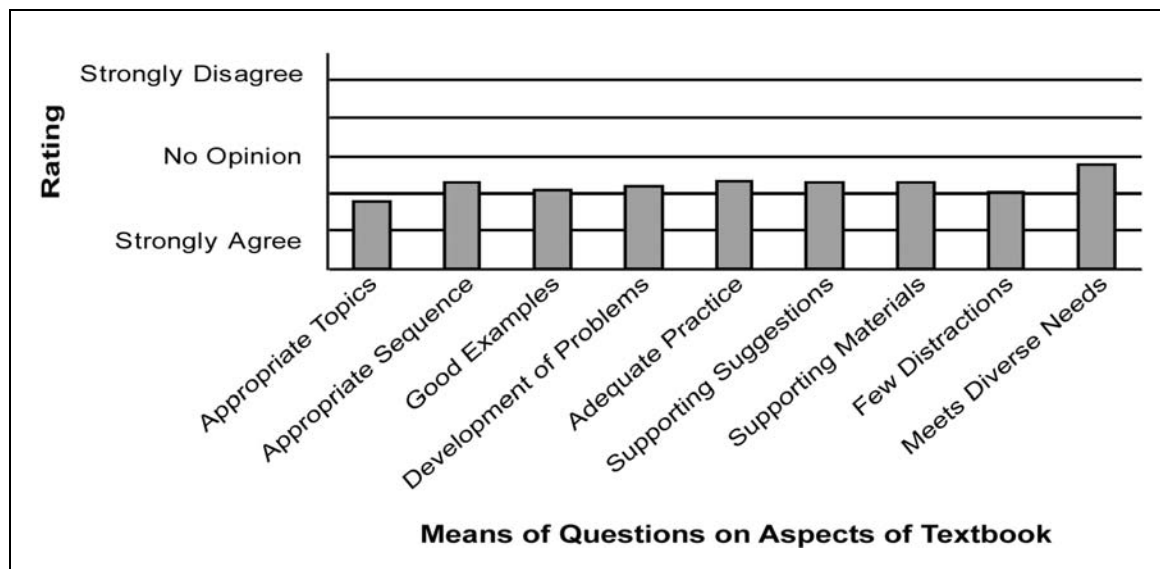
Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Research Question #5: How do they rate their textbook (or textbooks in general) regarding algebra instruction?

The questionnaire included several items asking for the teacher’s evaluation of the textbook they use in the target class (items 1.8a–i). In NORC’s review, these were first examined item-by-item and then assessed whether they form a scale. The items and scale are then broken down by school classification variables and grade level of the Algebra I class.

- Figure 6 shows, item by item, how strongly the teachers agreed that their textbooks were well suited for a specific task. This figure shows there is little variation across items. For the most part, teachers were satisfied with their texts’ list of topics. The only point of (possible) contention is that some teachers felt that their textbooks were not well suited for the needs of a diverse population of students.

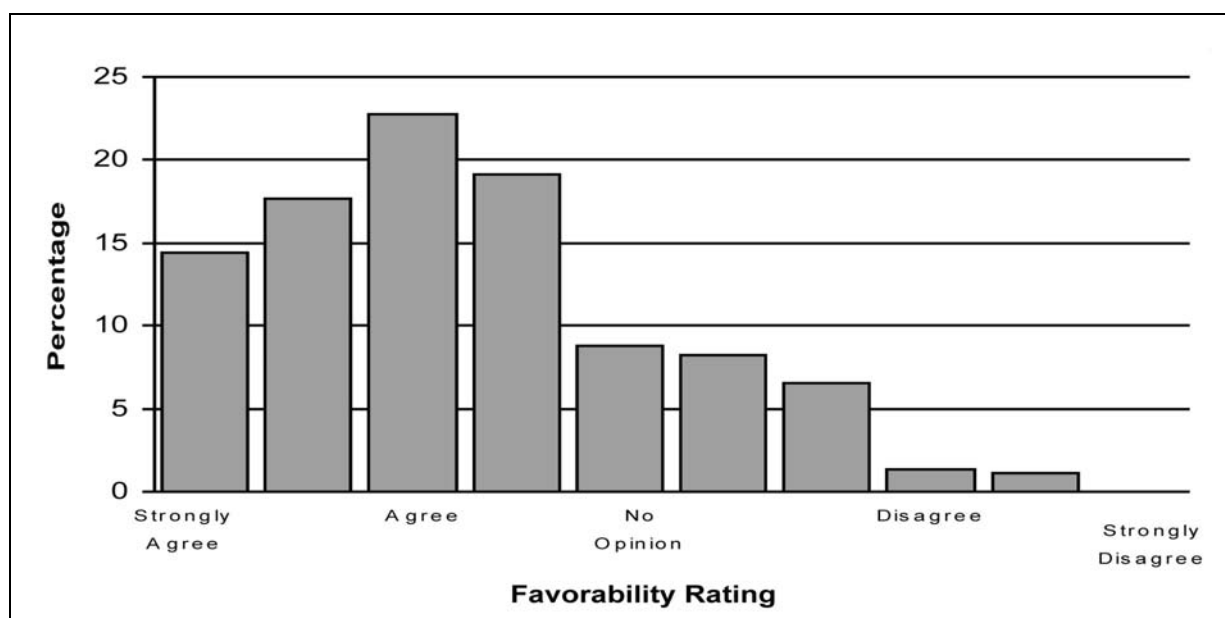
Figure 6: Teachers' Ratings of Various Aspects of the Algebra I Textbook Used in Target Class: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

The data indicate that the nine items form a strong scale, with reliability of $\alpha = .90$. Figure 7 shows the average composite scale score of the textbook rating questions across respondents. As is clear, the majority of the teachers have a positive view of their text.

Figure 7: Percentage Distribution of Teacher Composite Textbook Favorability Ratings Scale Score: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

- The regression results for this composite scale show that teachers of smaller classes had more favorable ratings of their textbooks (Appendix Table C-5). Teachers with small classes (15 or fewer) like their text more by 0.56 standard deviations. Likewise, teachers in rural schools also like their books more, in this case by 0.35 standard deviations. However, teachers in schools with a high concentration of minority students have a less favorable view of their texts. On average, they like their texts less by .52 standard deviations.

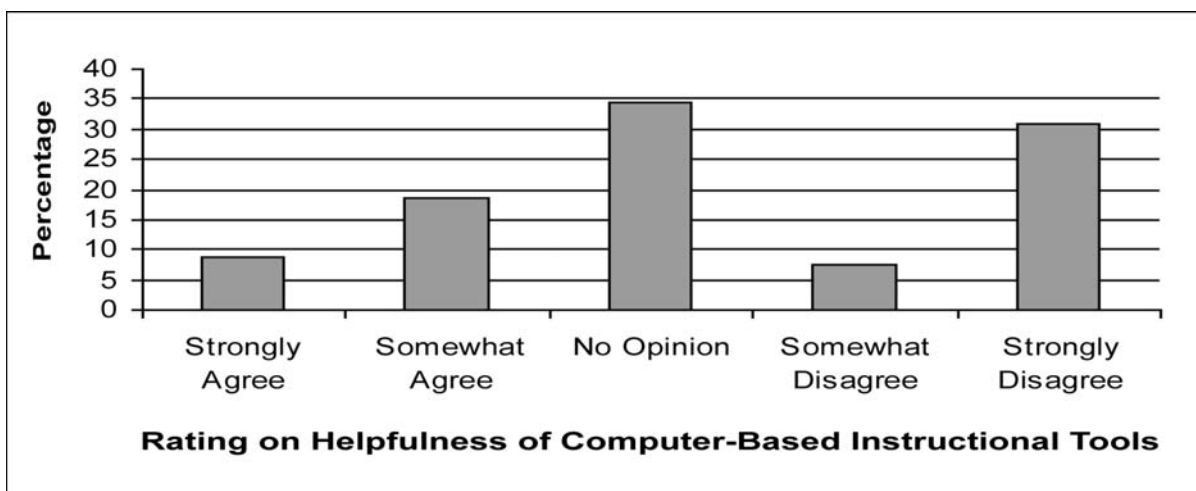
This generally positive evaluation was corroborated by the teachers' responses to an item asking them to rate the extent to which "poor quality or out-of-date textbooks" are a problem in their school. On a scale that ranged from 1 = not a problem to 4 = serious problem, the average rating was 1.59, indicating that poor textbooks are considered about midway between 1 = not a problem and 2 = a minor problem (Table 8).

Research Question #6: How do the teachers rate online technology tools?

The questionnaire included questions asking how often the teachers used computer-based instructional tools (item 1.5f), the extent to which insufficient access to computers is a problem in their school (item 2.1a), and how much they agreed or disagreed with the proposition that "Computer-based instructional tools (software) are helping Algebra I students in my Target Class" (item 1.6). These responses were examined by the grade level of the class and the standard school classification variables in the regression analysis (see Appendix Table C-6).

The data indicated that the average response to how frequently these tools are used was about 1 (= less than once a week) on a scale that ranged from 0 = never to 4 = everyday. The teachers' ratings of the helpfulness of computer-based instructional tools were mixed, with 29% agreeing somewhat or agreeing strongly with the proposition that computers were helpful and 38% disagreeing somewhat or disagreeing strongly (34% neither agreed nor disagreed).

Figure 8: Teachers' Ratings on Helpfulness of Computer-Based Instructional Tools in Algebra I Target Class: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Use of computers and access. The generally low levels of computer use does not appear to be a reflection of insufficient access. About half (49%) of the teachers reported that insufficient access to computers was not a problem in their schools and another 28% reported insufficient access to be a minor problem. Similar portions of those who do not feel access is a problem use computers less than once a week or never (74%) as do those who feel access is a serious problem (73%). This suggests that if those without access did get computers they would not use them much.

Table 9: Frequency of Using Computers in the Target Class, by Extent to Which Insufficient Access to Computers Is a Problem in the School: 2007

Use of Computers and Software	<i>How much of a problem is insufficient access to computers?</i>				
	Not a Problem	Minor Problem	Moderate Problem	Serious Problem	Use Total
Never	40.75%	46.80%	38.69%	51.72%	43.40%
Less than once a week	33.42%	33.17%	46.79%	20.58%	33.66%
About once a week	10.76%	9.49%	9.37%	9.02%	10.03%
Several times a week	6.62%	3.30%	1.14%	2.53%	4.52%
Everyday	8.47%	7.24%	4.00%	16.15%	8.39%
Total	100%	100%	100%	100%	100%

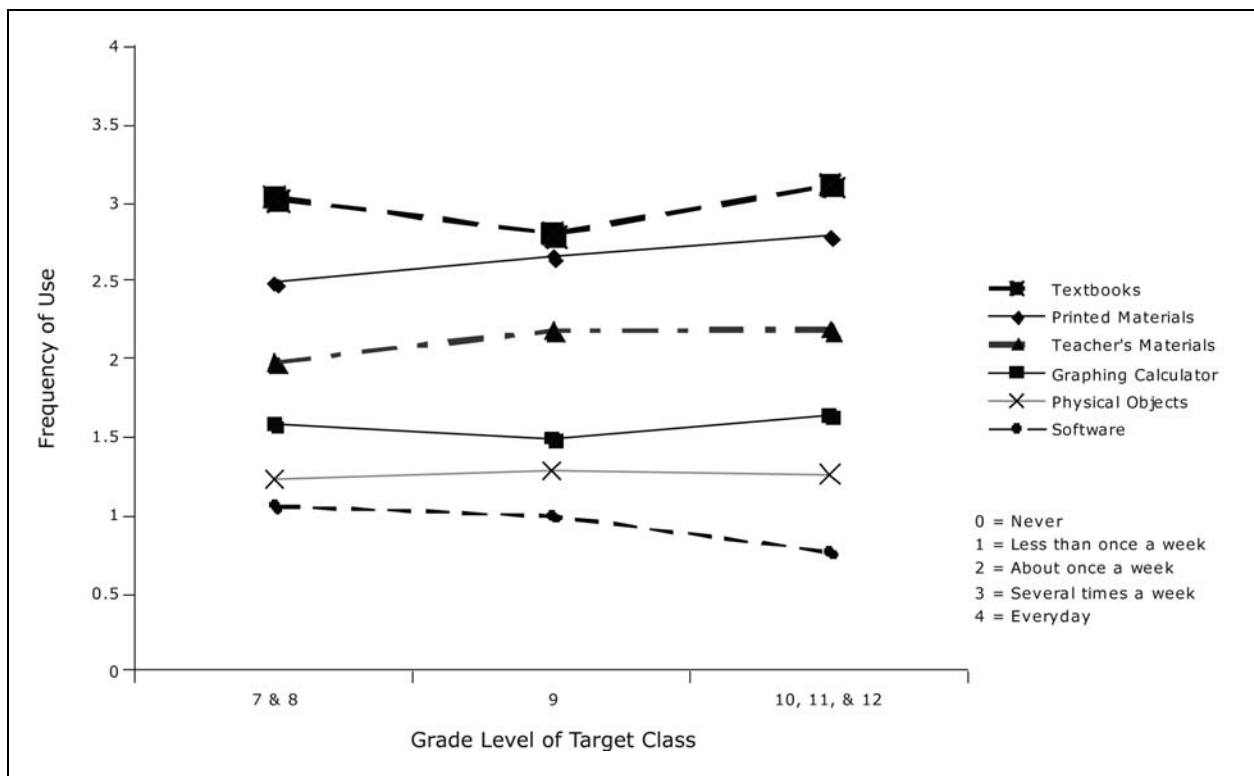
Note: Chi-square = 27.1 ($p = 0.46$), Correlation = 0.03 ($p = 0.73$)

CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Figure 9 shows the frequency of use of various materials across grades. As the chart shows, the level of use for texts and technology generally remains constant across grades. In other words, no matter what the age is of the students, the level of use for each material is about the same. Software is used least of all.

Figure 9: Frequency of Using Various Instructional Materials and Tools in Algebra I, by Grade Level of Target Class: 2007



Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Research Question #7: What is the role of the calculator in the algebra course?

Questionnaire item 1.5d asked how often the teacher uses graphing calculators in her or his target class. Overall, 33% of the teachers report never using graphing calculators and another 29% report using them less than once a week. About 31% use them everyday (18%) or almost everyday (13%). (See Table 10).

Table 10 shows rates of graphing calculator use by grade and urbanicity. Teachers in urban schools were less likely to use graphing calculators than their suburban and rural counterparts, and teachers of eighth-grade Algebra I were more likely than others to use them in all three types of locale.

Table 10: Frequency of Graphing Calculator Use, by Grade Level of Target Class and Urbanicity: 2007

Frequency of Use	Grade 7 & 8	Grade 9	Grade 10–12	Total
Never	22.8%	39.4%	38.7%	33.0%
Less than once a week	41.9%	22.6%	15.6%	29.4%
About once a week	7.1%	5.7%	8.5%	6.4%
Several times a week	10.1%	14.2%	17.5%	13.2%
Everyday	17.4%	18.1%	19.7%	18.0%
Total	100%	100%	100%	100%
Sample Size (Total)	128	518	73	719
	<i>Urban</i>			
Never	18.6%	39.4%	44.3%	31.8%
Less than once a week	44.4%	22.8%	17.8%	30.7%
About once a week	8.6%	6.4%	13.6%	7.4%
Several times a week	20.9%	19.9%	9.0%	20.0%
Everyday	7.5%	11.6%	15.3%	10.1%
Total	100%	100%	100%	100%
Sample Size (Urban)	37	202	10	249
	<i>Suburban</i>			
Never	30.3%	44.8%	36.5%	38.6%
Less than once a week	43.3%	18.8%	10.1%	26.7%
About once a week	9.5%	7.2%	11.6%	8.6%
Several times a week	7.6%	11.3%	22.1%	11.2%
Everyday	9.3%	17.9%	19.7%	15.0%
Total	100%	100%	100%	100%
Sample Size (Suburban)	66	247	55	368
	<i>Rural</i>			
Never	18.0%	32.9%	42.1%	27.2%
Less than once a week	38.4%	27.0%	27.5%	31.8%
About once a week	3.3%	3.2%	0.0%	3.0%
Several times a week	6.9%	12.2%	9.5%	9.9%
Everyday	33.4%	24.8%	20.9%	28.1%
Total	100%	100%	100%	100%
Sample Size (Rural)	25	69	8	102

Note: Cells are weighted percentages within each urbanicity.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Use of graphing calculators and access. While only about 30% of teachers use graphing calculators more than about once a week, many of those who use them with less frequency do report that access to this technology is a problem (Table 11). Of those that feel that access is not a problem, only 26% never use them. This contrasts with the over 50% that never use them among those who report insufficient access is a moderate or serious problem.

The correlation coefficient summarizing the linear relationship between the two items is moderately high ($r = 0.32$). This suggests that that if they had access, more—though by no means all—of the Algebra I teachers would use graphing calculators.

Table 11: Frequency of Using Graphing Calculators, by Extent to Which Insufficient Access to Graphing Calculators Is a Problem in the School: 2007

Use of Graphing Calculators	<i>How much of a problem is insufficient access to graphing calculators?</i>				
	Not a Problem	Minor Problem	Moderate Problem	Serious Problem	Use Total
Never	25.9%	32.1%	50.0%	58.1%	32.7%
Less than once a week	22.7%	42.7%	35.4%	23.2%	29.6%
About once a week	7.8%	2.7%	8.6%	4.7%	6.5%
Several times a week	14.6%	18.4%	2.3%	4.6%	13.3%
Everyday	29.0%	4.1%	3.7%	9.4%	18.0%
Total	100%	100%	100%	100%	100%

Chi-square = 121.6 ($p < .000$), Correlation = 0.32 ($p < 0.000$)

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Research Question #8: What about the use of manipulatives as instructional tools?

The relevant questionnaire item for this question asked how often the teacher uses physical objects (manipulatives) in her or his target class (item 1.5e). Overall, use of manipulatives on an occasional basis is widespread, but very few (9%) teachers report using them more than once a week. About 12% of the teachers reported never using manipulatives, and about 60% reported using them less than once a week (Table 12). As evident in Table 12, there does not seem to be a relationship between the class grade level and the frequency of use.

Table 12: Frequency of Physical Object Use, by Grade Level of Target Class: 2007

Frequency of Use	Grade 7 & 8	Grade 9	Grade 10–12	Total
Never	11.4%	12.9%	12.8%	12.3%
Less than once a week	62.1%	57.8%	53.7%	59.1%
About once a week	19.2%	18.5%	28.9%	19.5%
Several times a week	7.4%	10.1%	3.9%	8.6%
Everyday	0.0%	0.7%	0.7%	0.4%
Total	100%	100%	100%	100%
Sample Size	128	518	73	719

Note: Cells are weighted percentages.

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Views on Changing Secondary School Math Education

Research Question #9: How do teachers rate their professional training?

Questionnaire items pertaining to professional training and development include items 3.4a,b and possibly 4.19; items 2.1f and j are also relevant. These items were examined by the teachers' years of teaching experience, and school classification variables. With one exception, satisfaction with training did not vary by teacher characteristics; Hispanic teachers reported more satisfaction with preservice training by .64 standard deviations.

Looking at Table 13, teachers reported that inadequate preparation to teach Algebra I and inadequate professional development opportunities for Algebra I teachers are not problems for the teachers in their respective schools. When asked to report on their own preservice and professional development experiences as preparations for teaching Algebra I, Figures 10 and 11 show that most teachers evaluated the experiences as preparing themselves adequately or very well. However, substantial minorities of the teachers indicated that improvements can be made in preservice training programs and professional development opportunities.

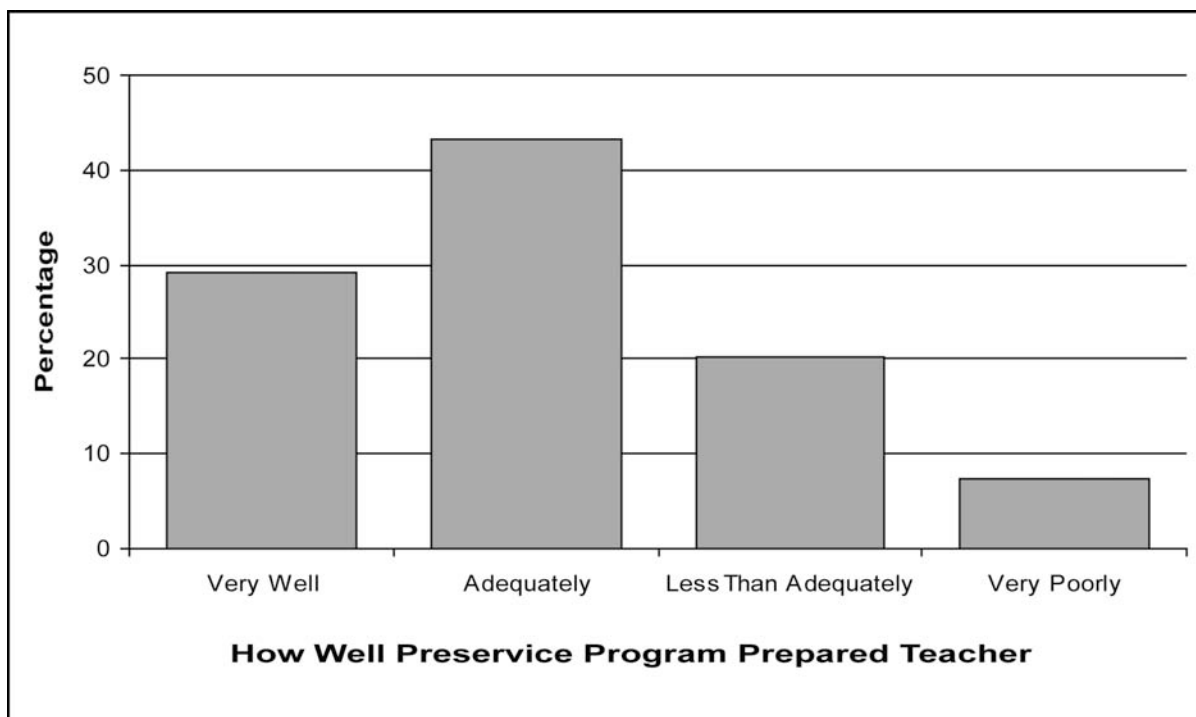
Table 13: Teachers' Evaluation of Selected Professional Development Factors: 2007

Professional Development Factor	Scale	Mean	95% CI	
			Low	High
Inadequately prepared teachers	1 = Not a Problem ... 4 = Serious Problem	1.49	1.43	1.55
Inadequate opportunities for professional development	1 = Not a Problem ... 4 = Serious Problem	1.65	1.59	1.71
Rating of own pre-service teacher education	1 = Prepared Teacher Very Well ... 4 = Very Poorly	1.96	1.89	2.02
Rating of own professional development opportunities	1 = Help Teach Very Well ... 4 = Very Poorly	1.98	1.91	2.04

Note: CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

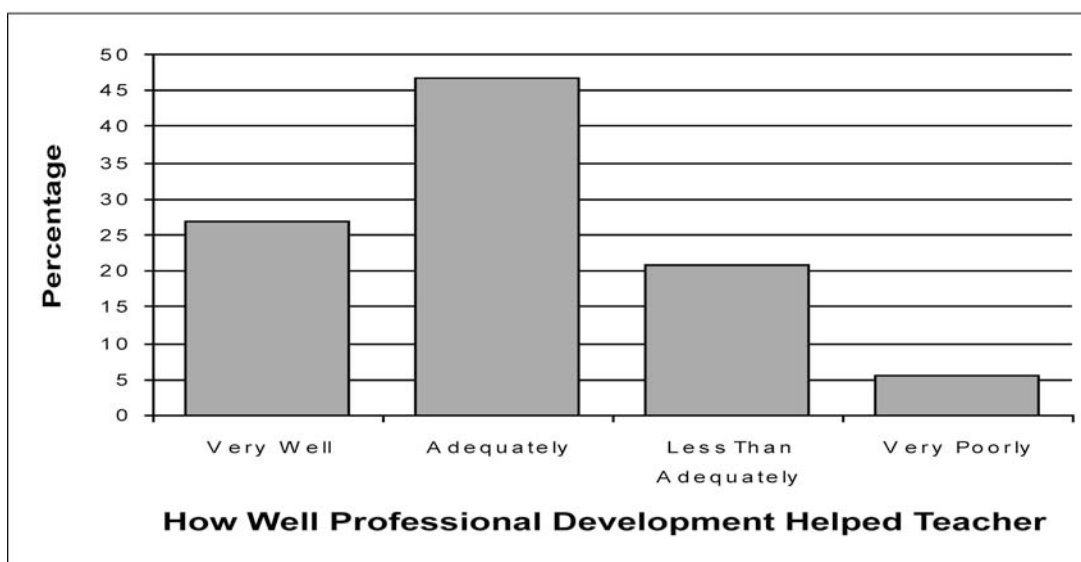
Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Figure 10: Distribution of Teachers' Ratings of How Well Their Preservice Education Program Prepared Them to Teach Algebra I: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Figure 11: Distribution of Teachers' Ratings of How Well Their Professional Development Opportunities Have Helped Them Teach Algebra I: 2007



Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Research Question #10: Is there sufficient and effective remedial help for students who are struggling in algebra? What sort of assistance-based interventions would struggling students benefit from the most?

Questionnaire items 2.8a–b asked the teachers to rate the availability and quality of tutoring or other remedial services for students struggling with Algebra I in their school. The average ratings by the school classification variables were examined.

- On average, looking at Table 14, teachers were generally satisfied with the services available, even if not extremely so.
- These services were rated more favorably by teachers in high minority schools.
- Female and black teachers were less satisfied with their schools' remedial services.

Table 14: Teachers' Ratings on Availability and Quality of Remedial Help for Algebra I Students: 2007

<i>Evaluation of Remedial Help</i>	Lower 95% CI	Mean	Higher 95% CI
Availability of remedial help	2.35	2.52	2.69
Quality of remedial help	2.26	2.42	2.58

Note: Scale: 1 = Excellent, 2 = Good, 3 = Fair, 4 = Poor

CI = confidence interval, calculated as +/- two standard errors from the mean. Standard errors adjusted for design effects.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Research Question #11: Do teachers believe that students would learn more if they were grouped by ability for instruction, or is this approach counterproductive?

Questionnaire item 2.2 asked whether the school offers different levels of Algebra I based on ability; 46% of the teachers indicated their schools did differentiate. Questionnaire item 2.1h asked teachers to rate the extent to which they see different levels of students in the same class as a problem in their school.

A substantial number of teachers considered mixed-ability groupings to be a "moderate" (28%) or "serious" (23%) problem (see Figure 12). Teachers in schools that did not offer different levels of Algebra I based on ability were more likely than their counterparts in schools that do use ability grouping to consider mixed-ability classrooms to be a moderate or serious problem (Table 15).

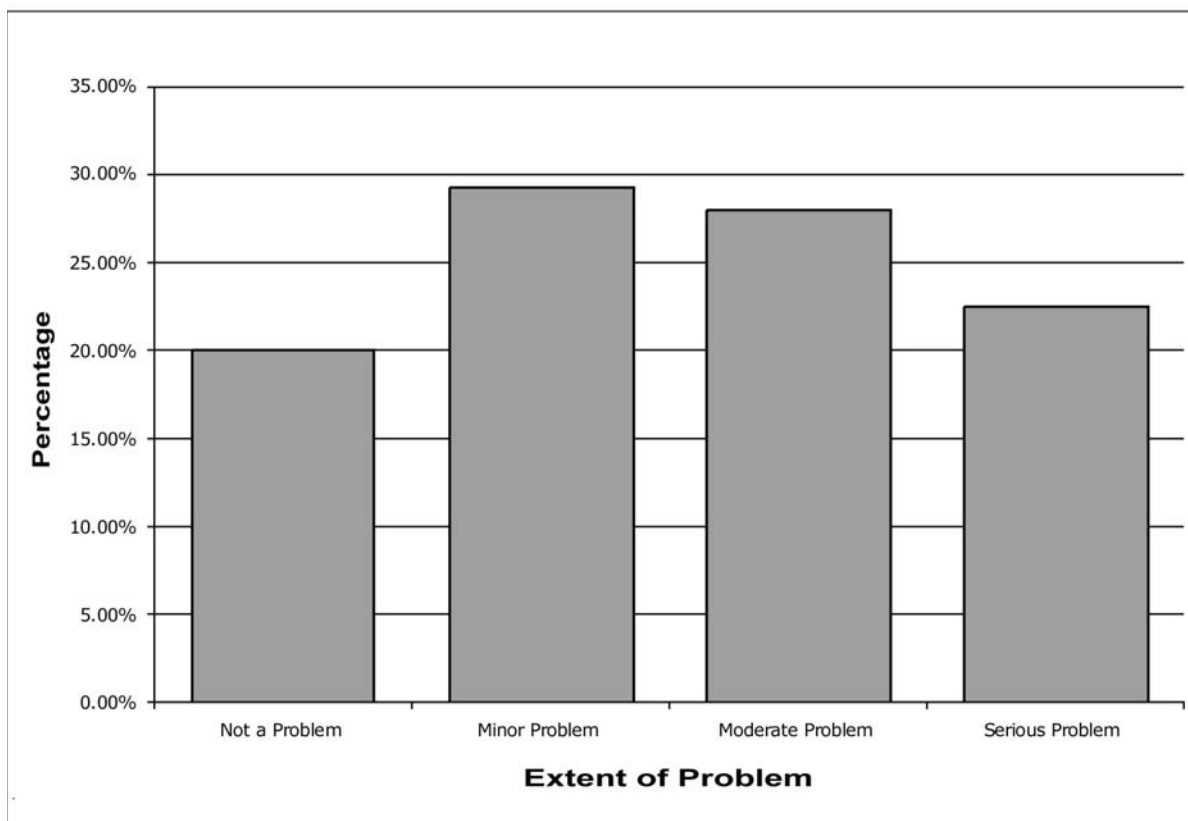
Table 15: Percentage of Algebra I Teachers Reporting Students With Different Abilities And Skills Taking the Same Class is a Problem, by Whether School Offers Different Levels Based on Ability: 2007

Level of Problem	Available at Teachers' School	Not Available at Teachers' School	All Teachers
Not a problem	21.3%	19.3%	20.2%
Minor problem	33.4%	25.9%	29.4%
Moderate problem	26.2%	29.5%	27.9%
Serious Problem	19.2%	25.4%	22.5%
Total	100%	100%	100%

Note: Twelve respondents did not know whether or not their school mixed ability levels.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Figure 12: Extent to Which Students With Different Abilities and Interests Taking the Same Algebra I Class Is a Problem: 2007



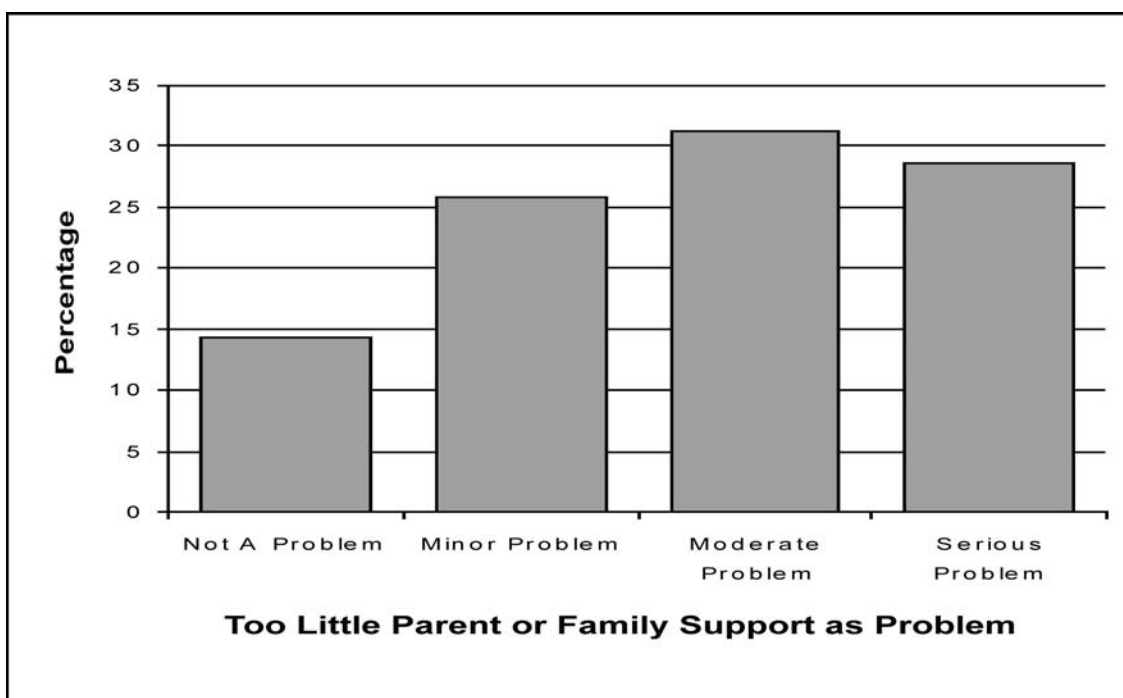
Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Looking at Appendix Table C-9, the data indicate that for larger classes, high school teachers do feel that mixed-ability classes are a problem. Also, data obtained indicate that black teachers were more favorable of the practice. In this case teachers were describing their feelings about the practice in general. Teachers with larger classes and later grades are less likely to feel that it is a good practice.

Research Question #12: Do teachers find more parents helpful in encouraging students in their mathematics studies, or do too many parents make excuses for their children’s lack of accomplishment?

Questionnaire item 2.1i asked teachers to rate the extent to which they see “too little parent/family support” as a problem in their school. The data in Figure 13 shows that more teachers feel that family participation is a moderate (32%) or serious (28%) problem than feel it is a minor problem (26%) or not a problem at all (14%).

Figure 13: Extent to Which Too Little Parent or Family Support Is a Problem in School: 2007



Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

To estimate relationships between the teachers’ family participation rating and the teacher and school background variables, regression analysis was used (see Appendix Table C-10). High school teachers were much more likely than middle school and other teachers to report lack of family participation as a problem (the effect size is 0.65 SD units). Also, teachers in schools with higher percentages of free and reduced-priced lunch students also felt that lack of family participation was more of a problem, the second quartile by .31 standard deviations, the third by .46 SD units, and the fourth quartile by .54 SD units. Female teachers, on the other hand, feel that lack of family participation is less of a problem by .22 standard deviations.

Research Question #13: What do teachers see as the single most challenging aspect of teaching Algebra I successfully?

This question (4.20) included 10 response options: explaining material to students, handling accelerated students, teaching procedures, explaining concepts, using diagrams or models effectively, interpreting student errors and difficulties, working with unmotivated students, working with advanced students, helping students whose home language is not English, making mathematics accessible and comprehensible, and an “other” option.

Table 16 shows the percentages of each response for the categories of high schools and middle/other schools. The overwhelmingly most frequent response to this question was “working with unmotivated students.” This was chosen by 65% of the high school teachers and 58% of the middle school teachers.

Table 16: Frequencies of Reported Challenges to Teaching Algebra I by Class Grade Level and Type of School: 2007

Reported Challenge	High School Teachers	Middle/Other School Teachers	High and Middle/Other School Teachers
Working with unmotivated students	65.4%	58.2%	61.8%
Making mathematics accessible and comprehensible	9.1%	13.6%	11.3%
Explaining concepts	5.5%	3.1%	4.4%
Explaining material to struggling students	2.1%	4.1%	3.1%
Interpreting students errors and difficulties	0.3%	2.7%	1.5%
Handling accelerated students	1.4%	1.4%	1.4%
Helping students whose home language is different than English	1.6%	0.6%	1.1%
Using diagrams or models effectively	0.5%	1.4%	0.9%
Working with advanced students	0.0%	1.2%	0.6%
Teaching procedures	0.0%	0.6%	0.3%
Other, verbatim responses	14.1%	13.2%	13.7%
Sample Size	100%	100%	100%
Column N	530	207	737

Note: Cells are weighted percentages.

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

The next most frequent response was “making mathematics accessible and comprehensible to all my students,” selected by 14% of the middle school teachers and 9% of the high school teachers.

Many teachers wrote in additional challenges in response to this question. The written-in verbatim responses most often mentioned included handling different skill levels in a single classroom, motivation issues, and student study skills. Some notable responses were:

Walking into a class of 30 students in which 1/3 of them don't have the prerequisite skills necessary to be in the class. Many of whom don't know their basic arithmetic facts and know they aren't going to be successful from day one no matter how hard they try.

Students come to me without a basic understanding of math. I am constantly reteaching concepts that should have been mastered in the earlier grades.

Parents not letting me do my job as I see fit. (Autonomy in the classroom.)

Getting students and parents to believe that education is important. Students don't do their homework ... you call the parents ... they say that the student will start doing the work (and coming to tutorials). The students still don't do the h.w.— and still don't come to tutorials.

Engaging students who have come to believe that they are stupid because they are struggling with my state's cognitively inappropriate standards.

NORC staff examined whether there is a relationship between the types of challenges identified and the experience of an algebra teacher. Table 17 displays the percentages selecting the three most frequently-selected responses separately by the teacher's years of teaching experience. The differences among age groups in the percentages selecting "working with unmotivated students" were slight and not statistically significant; this is evidently not a challenge related to teaching experience. In contrast, the least experienced teachers were more likely than others to identify "making mathematics accessible and comprehensible" as their greatest challenge (18%). The most experienced teachers were much less likely to view that as their greatest challenge (6%).

Table 17: Reported Challenges to Teaching Algebra I by Years of Experience: 2007

Reported Challenges	Years of Experience				All Teachers
	Up to 3	4 to 9	10 to 18	19 or more	
Working with unmotivated students	61.3%	60.0%	61.4%	65.6%	61.6%
Making mathematics accessible and comprehensible	17.5%	7.8%	11.9%	6.0%	11.3%
Other and Rest of Items	21.2%	32.3%	26.7%	28.3%	27.0%
Total	100%	100%	100%	100%	100%
Column N	209	229	167	122	727

Note: Cells are weighted percentages.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

III. Summary and Conclusions

The main findings of the survey can be summarized in terms of the guiding research questions for the project.

Student Preparation. The first question concerned the adequacy of student preparation coming into the Algebra I classes. In an important sense, any rating of the knowledge areas and skills asked about in the questionnaire of less than “good” represents an important problem that should be addressed in the math classes leading up to Algebra I. The topics that were rated as especially problematic were rational numbers, solving word problems, and basic study skills. But the only item that had an average rating better than “good” was “whole number operations.” Coupled with the teachers’ verbatim responses to the question asking for changes they would like to see in the curriculum leading up to Algebra I (item 3.2), the teachers indicate that students are often ill prepared to think about how to solve novel or more complex problems than familiar arithmetic operations. In sum, the teachers generally rate their students’ background as less than satisfactory, and this no doubt poses additional challenges to teaching Algebra I.

The teachers’ ratings of student preparation varied mainly according the grade level of the students, with preparation rated highest for the Grade 7 and 8 Algebra I classes and rated lowest for the Grade 10 and higher classes. This likely reflects the ability-grouping regime, whereby the higher achievers take the class earlier. The staggering of entry grades is intended to enable each group of students to reach a good level of preparation for success, and not simply open the way for the highest achievers to advance through the high school mathematics curriculum. In any case, these finding emphasize the importance of improving student performance among those entering Algebra I after the eighth grade.

Curriculum and Instruction. In contrast to their views on student preparation, the teachers are relatively favorable about the algebra curriculum and instructional materials at their disposal. Local expectations for student proficiency in algebra are viewed as reasonable, and local and state content and assessment standards for algebra are generally regarded favorably. The teachers gave their textbooks high average marks on all aspects identified in the questionnaire. The composite-scale ratings were somewhat less favorable among teachers in schools with higher minority student enrollments, and this likely reflects a more negative evaluation among those teachers on the specific point of how adequately “the textbook and accompanying materials provide useful suggestions for meeting the needs of diverse learners” (item 1.8.i. and see Appendix Table C-8).

The teachers generally reported favorable views of their own preservice training for teaching and of the helpfulness of the in-service professional development opportunities they have had. At the same time, it should be noted that about a quarter of the teachers evaluated their preservice as “less than adequate” or “very poor,” and about the same number rated their in-service professional development as such. Further analysis to try to identify systematic factors related to those negative evaluations is needed in order to suggest remedies.

Views on Changing Secondary School Math Education. When asked to identify the single most challenging aspect of teaching Algebra I successfully, the teachers overwhelmingly indicated “working with unmotivated students.” This was selected by 62% of the teachers; the next most frequent item was “making mathematics accessible and comprehensible to all my students” selected by a distant-second 11% of the teachers.

In light of the generally favorable views the teachers report with respect to curriculum and instruction, the issue of unmotivated students implicitly is something the teachers view as more of a “algebra-student problem” than an “algebra-teacher problem.” The generally negative views expressed by the teachers of parental support for mathematics reinforce that attribution. Taken together with the generally negative ratings of background preparation, the lack of student motivation suggests that careful attention to pre-algebra curriculum and instruction in the elementary grades is needed, both to remedy the specific skill deficiencies as well as to identify ways in which negative attitudes toward mathematics are developed.

APPENDIX A: Survey Methodology

In February 2007, NORC began work under direction of the National Mathematics Advisory Panel established within the U.S. Department of Education to conduct the National Survey of Algebra Teachers (NSAT). The main tasks on the project were to (a) develop the survey instrument, (b) design the sampling plan and draw the sample, (c) collect rosters of the Algebra I teachers in each school, (d) contact the teachers and collect the survey data, and (e) produce data files and perform statistical analysis. This section summarizes these activities.

Instrument Development

The questionnaire development was done in close consultation with the National Math Panel to ensure that key areas of analytic interest were covered. A first draft of the NSAT questionnaire was assembled by NORC and submitted to the Panel in early February. This draft included questions directly mapped to the key items identified by the Panel, as well as additional items which helped develop the key research questions or provide analytical leverage in addressing them. These items were drawn from a variety of sources including the Education Longitudinal Study of 2002 (Teacher questionnaire), the National Education Longitudinal Study of 1988, the National Education Association's Status of the American Public School Teacher 2000–01 survey, the Consortium for Chicago School Research 2005 teacher survey, and the Longitudinal Study of American Youth (LSAY, beginning in 1987) math teacher questionnaires.

NORC project staff then met with local Chicago-area teachers, other education researchers with experience on mathematics teacher surveys, and NORC questionnaire design experts to test the instrument and obtain feedback. In general, the teachers responded positively to the survey and had a few minor changes to the wording and ordering of the questions. Almost all of the teachers interviewed wanted additional items or questions added that focused on the pre-algebra skills. They provided a list of additional questions targeted towards students' pre-algebra skills. NORC's questionnaire design team had few issues with the content of the questions being asked, and they provided essential feedback on questionnaire wording and answer categories. Additionally, they suggested that a few items be dropped (see the comments in the questionnaire), either due to their repetitive nature or because they did not add much analytic value.

Comments from the Panel on the first draft of the survey were received by NORC mid-February. NORC incorporated comments provided by the Panel, the teachers, and NORC's questionnaire design team into the second draft of the questionnaire. The final version of the questionnaire was submitted for OMB approval on February 20, 2007.

Sampling

NORC utilized the U.S. Department of Education’s Common Core of Data (CCD) file for the 2004–05 school year (this was the most recent year available as of February 2007) to compile the sample frame of public schools. All schools listed in the CCD as located within the 50 states and District of Columbia with an eighth grade or higher, and which were not classified by CCD as special education, vocational education centers, or alternative schools were considered eligible for the sample.

To ensure the sample would represent public school Algebra I teachers in different types of schools and settings across the country, the frame was stratified by four variables, all defined from data included in the CCD file:

- 1) *Type of locale.* A standard three-level indicator of urban, suburban, or rural school location was used for this variable.
- 2) *Percentage of students eligible to receive free or reduced-price lunch.* This was simplified to a dichotomous indicator of “40 percent or lower” versus “more than 40 percent.”
- 3) *Percentage of students who are black, Hispanic, and American Indian.* This was also simplified to a dichotomous indicator of “40 percent or lower” versus “more than 40 percent.”
- 4) *Graded configuration of the school.* Since Algebra I instruction starts in earnest in the eighth grade and continues throughout high school, eligible school configurations include K–8 elementary schools, grade 6–8 middle schools, grade 7–9 junior high schools, grade 9–12 and 10–12 high schools, and K–12 combined elementary and secondary schools. The various configurations were trichotomized into “grade 9–12 and 10–12 high schools,” “K–8 elementary schools, grade 6–8 middle schools, and grade 7–9 junior high schools,” and “all other schools where Algebra I is taught.”

The cross-classification of the stratification variables created 36 sampling strata. Approximately 2,300 of the 36,353 eligible schools were missing information on the percentage of students eligible for free or reduced-price lunch, and a total of 440 of the New York City Public School District schools were listed as having zero students eligible. Since this is certainly incorrect for many if not most of these NYCPSD schools, NORC staff recoded the *Percentage of Students Eligible to Receive Free or Reduced-price Lunch* from 0 to missing for all of them. To mitigate the impact of the missing data on the sample design, the missing data was replaced with the same data from the 2003–04 school year CCD file if available. If the data were also missing in the 2003–04 CCD, the missing data was replaced with data from the 2002–03 CCD if available. After consultation with the NMP it was decided to define a special supplemental stratum consisting of schools with missing stratification data in the final sample file, and to sample schools from that stratum.

Target numbers of 300 schools and 1,000 Algebra I teachers were defined for the survey, based on project objectives and statistical power calculations. These targets were supplemented with a target of 10 schools and 40 teachers from the missing data stratum noted above. To select the sample, the target number of 310 schools was systematically sampled from the frame with the selection probability proportional to the estimated number of Algebra I teachers per school. The number of Algebra I teachers per school was estimated on the basis of grade-specific enrollment data from the CCD, coupled with data on the number of Algebra I teachers collected in February from a small sample of schools and average rates of Algebra I course-taking and class-size data obtained from recent national surveys. Because the schools were selected with probability proportional to the number of Algebra I teachers, schools with more Algebra I teachers are more likely to be selected into the sample. Therefore, a fixed number of sample schools will represent a greater number of teachers than under simple random sampling.

Roster and Data Collection

On March 21, 2007, NORC mailed letters to all district superintendents and principals of the selected school. This letter informed them that a school in their district (for superintendents) or their school (for principals) had been selected to participate in the study and alerted them that a NORC staff member would be calling the school in the next few weeks to obtain roster information on their Algebra I staff. The letter also included NORC's contact information should the district or school like to request more information on the study. NORC began roster collection on March 26. This process included collecting Algebra I teacher information (names, e-mails, number of Algebra I classes taught, other classes taught, last day of school) from either the school principal, the office secretary, or the head of the math department. At this point, it was determined if a school was ineligible or if a school refused to participate. Refused or ineligible schools were replaced with other schools with the same strata qualifications. Of the 300 schools in the original sample, 52 schools had to be replaced. Ineligible supplemental samples were not replaced. Rosters were collected from a total of 258 schools. All data collected were entered into a receipt control system which also helped to keep track of sent and returned mail to districts, principals, and teachers. This system was also utilized to track and prompt nonrespondents to the survey during data collection.

The following table breaks down the number of rosters collected by the possible 36 different strata, as well as three additional schools drawn from those lacking information on the number of students eligible for the federal free and reduced-price lunch program.

Table A-1: Numbers of Sampled Schools, Schools That Provided Rosters of Algebra I Teachers, and Algebra I Teachers, by Sample Stratum: 2007

Strata	Total # of Schools in Sample	Total # of Schools That Provided Roster Information	Total # of Teachers
<i>Missing FRPL Information</i>	3	2	12
1. Rrl HS < 40 % Mnr & < 40 % FRPL	25	22	70
2. Rrl HS < 40 % Mnr & > 40 % FRPL	6	6	17
3. Rrl HS > 40 % Mnr & < 40 % FRPL	2	2	5
4. Rrl HS > 40 % Mnr & > 40 % FRPL	5	4	10
5. Rrl M/JH < 40 % Mnr & < 40 % FRPL	7	7	17
6. Rrl M/JH < 40 % Mnr & > 40 % FRPL	4	3	4
7. Rrl M/JH > 40 % Mnr & < 40 % FRPL	1	0	0
8. Rrl M/JH > 40 % Mnr & > 40 % FRPL	2	2	4
9. Rrl OtherS < 40 % Mnr & < 40 % FRPL	8	8	18
10. Rrl OtherS < 40 % Mnr & > 40 % FRPL	4	4	7
11. Rrl OtherS > 40 % Mnr & < 40 % FRPL	1	1	2
12. Rrl OtherS > 40 % Mnr & > 40 % FRPL	2	2	3
13. Srb HS < 40 % Mnr & < 40 % FRPL	61	51	233
14. Srb HS < 40 % Mnr & > 40 % FRPL	5	5	18
15. Srb HS > 40 % Mnr & < 40 % FRPL	12	7	56
16. Srb HS > 40 % Mnr & > 40 % FRPL	16	11	63
17. Srb M/JH < 40 % Mnr & < 40 % FRPL	23	22	57
18. Srb M/JH < 40 % Mnr & > 40 % FRPL	7	6	15
19. Srb M/JH > 40 % Mnr & < 40 % FRPL	2	1	5
20. Srb M/JH > 40 % Mnr & > 40 % FRPL	10	9	17
21. Srb OtherS < 40 % Mnr & < 40 % FRPL	7	5	12
22. Srb OtherS < 40 % Mnr & > 40 % FRPL	1	0	0
23. Srb OtherS > 40 % Mnr & < 40 % FRPL	1	1	9
24. Srb OtherS > 40 % Mnr & > 40 % FRPL	3	3	20
25. Urb HS < 40 % Mnr & < 40 % FRPL	18	16	82
26. Urb HS < 40 % Mnr & > 40 % FRPL	3	2	14
27. Urb HS > 40 % Mnr & < 40 % FRPL	9	8	48
28. Urb HS > 40 % Mnr & > 40 % FRPL	28	18	136
29. Urb M/JH < 40 % Mnr & < 40 % FRPL	5	5	12
30. Urb M/JH < 40 % Mnr & > 40 % FRPL	4	3	10
31. Urb M/JH > 40 % Mnr & < 40 % FRPL	1	1	1
32. Urb M/JH > 40 % Mnr & > 40 % FRPL	14	12	25
33. Urb OtherS < 40 % Mnr & < 40 % FRPL	2	2	12
34. Urb OtherS < 40 % Mnr & > 40 % FRPL	1	1	6
35. Urb OtherS > 40 % Mnr & < 40 % FRPL	1	1	4
36. Urb OtherS > 40 % Mnr & > 40 % FRPL	6	5	16
<i>All Strata</i>	310	258	1,040

Note: FRPL: Free and Reduced-Price Lunch
Mnr: Minority
Rrl HS: Rural High School
Rrl M/JH: Rural Middle/Junior High
Srb HS: Suburban High School
Srb M/JH: Suburban Middle/Junior High
Urb HS: Urban High School
Urb M/JH: Urban Middle/Junior High

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Because roster collection was an ongoing process, NORC conducted the necessary mail outs in batches to collect the teacher information. Prior to mailing the questionnaires to the teachers, NORC sent out prenotice letters informing the teachers of the survey, and notifying them that their principals had consented for them to participate. A week later each teacher was sent (via FedEx) a questionnaire, along with a \$20 check, a business reply envelope, and a letter informing them of the survey and requesting their participation. A week after each initial questionnaire mailing NORC sent out a postcard to all teachers reminding them of the survey and requesting their participation. This was followed approximately two weeks later by a second questionnaire mailing to all nonrespondents. NORC staff began phone and e-mail prompting of all remaining nonrespondents at this time. Marian Banfield provided assistance in the prompting process by sending out e-mails from the Department of Education to teachers requesting their participation. A final, third questionnaire was sent one to two weeks after the second questionnaire depending on when the school was going to be closed for the summer. Appendix Table A-2 summarizes the exact mail-out dates for each mail-out cohort or batch.

Table A-2: Questionnaire and Follow-Up Mailing Dates and Numbers of Algebra I Teachers, by Mail-Out Cohort: 2007

Disposition	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5	Cohort 6	Cohort 7	Total
<i># of Teachers</i>	147	147	189	274	134	68	81	1040
<i>Prenotice</i>	4/9/2007	4/16/2007	4/23/2007	4/30/2007	5/7/2007	5/14/2007	5/21/2007	1040
<i>Quex 1 Mail Out</i>	4/17/2007	4/20/2007	4/25/2007	5/2/2007	5/10/2007	5/16/2007	5/23/2007	1040
<i>Post card</i>								
Mail-Out Date	4/27/2007	4/27/2007	5/4/2007	5/11/2007	5/17/2007	5/25/2007	6/1/2007	
# Mailed	136	147	183	262	134	68	68	998
<i>Quex 2 Mail Out</i>								
Mail-Out Date	5/9/2007	5/9/2007	5/16/2007	5/18/2007	5/23/2007	6/1/2007	6/8/2007	
# Mailed	64	76	120	178	94	56	64	652
<i>Quex 3 Mail Out</i>								
Mail-Out Date	5/23/2007	5/23/2007	5/30/2007	6/1/2007	6/8/2007	6/15/2007	6/22/2007	
# Mailed	39	49	77	98	55	35	38	391

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Response Rates

Of the 1,040 teachers NORC prompted to complete the survey, 743 completed questionnaires were received. An additional 14 teachers also notified us that they, in fact, were not Algebra I teachers and therefore were ineligible to participate in the survey, while two teachers explicitly refused to participate. Appendix Table A-3 provides a breakdown of how many teachers completed the survey by each of the four sample stratification variables, and Appendix Table A-4 shows the results for each of the 36 strata.

Table A-3: Number of Algebra I Teachers Sampled, Ineligible, Refusing, and Completing the Questionnaire, and Survey Response Rate, by Sample Stratification Variables: 2007

Sample Stratification Variable	Total # of Teachers	Total # of Teachers Who Are Ineligible	Total # of Teachers Who Refused to Complete Questionnaire	Total # of Teachers Who Completed Questionnaire	Response Rate (%)
<i>Urbanicity</i>					
Urban	505	6	2	370	74.1%
Suburban	366	7	0	251	69.9%
Rural	157	1	0	110	70.5%
<i>School Type</i>					
High School	752	12	1	521	70.4%
Middle School or Junior High	167	1	1	128	77.1%
Other Type of School	109	1	0	82	75.9%
<i>Percentage of Students Who Are Minority</i>					
Less than 40%	604	10	2	432	72.7%
More than 40%	424	4	0	299	71.2%
<i>Percentage of Students Who Are Eligible or Receive Free or Reduced-Price Lunch</i>					
Less than 40%	643	7	2	462	72.6%
More than 40%	385	7	0	269	71.2%

Note: Response rates were calculated on the basis of eligible teachers.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table A-4: Number of Algebra I Teachers Sampled, Ineligible, Refusing, and Completing the Questionnaire, and Survey Response Rate, by Sample Stratum: 2007

Sample Stratum	Total # of Teachers	Total # of Teachers Who Are Ineligible	Total # of Teachers Who Refused to Complete Questionnaire	Total # of Teachers Who Completed Questionnaire	Response Rate (%)
<i>Supplemental Stratum (Missing Data on FRPL)</i>	12	0	0	12	100
1. Rrl HS < 40 % Mnr & < 40 % FRPL	70	1	0	45	65.2
2. Rrl HS < 40 % Mnr & > 40 % FRPL	17	0	0	9	52.9
3. Rrl HS > 40 % Mnr & < 40 % FRPL	5	0	0	3	60.0
4. Rrl HS > 40 % Mnr & > 40 % FRPL	10	0	0	8	80.0
5. Rrl M/JH < 40 % Mnr & < 40 % FRPL	17	0	0	14	82.4
6. Rrl M/JH < 40 % Mnr & > 40 % FRPL	4	0	0	3	75.0
7. Rrl M/JH > 40 % Mnr & < 40 % FRPL	0	0	0	0	N/A
8. Rrl M/JH > 40 % Mnr & > 40 % FRPL	4	0	0	3	75.0
9. Rrl OtherS < 40 % Mnr & < 40 % FRPL	18	0	0	14	77.8
10. Rrl OtherS < 40 % Mnr & > 40 % FRPL	7	0	0	7	100
11. Rrl OtherS > 40 % Mnr & < 40 % FRPL	2	0	0	2	100
12. Rrl OtherS > 40 % Mnr & > 40 % FRPL	3	0	0	2	66.7
13. Srb HS < 40 % Mnr & < 40 % FRPL	233	4	1	167	72.9
14. Srb HS < 40 % Mnr & > 40 % FRPL	18	1	0	12	70.6
15. Srb HS > 40 % Mnr & < 40 % FRPL	56	0	0	40	71.4
16. Srb HS > 40 % Mnr & > 40 % FRPL	63	1	0	50	80.6
17. Srb M/JH < 40 % Mnr & < 40 % FRPL	57	0	1	43	75.4
18. Srb M/JH < 40 % Mnr & > 40 % FRPL	15	0	0	10	66.7
19. Srb M/JH > 40 % Mnr & < 40 % FRPL	5	0	0	3	60.0
20. Srb M/JH > 40 % Mnr & > 40 % FRPL	17	0	0	13	76.5
21. Srb OtherS < 40 % Mnr & < 40 % FRPL	12	0	0	8	66.7
22. Srb OtherS < 40 % Mnr & > 40 % FRPL	0	0	0	0	N/A
23. Srb OtherS > 40 % Mnr & < 40 % FRPL	9	0	0	7	77.8
24. Srb OtherS > 40 % Mnr & > 40 % FRPL	20	0	0	17	85.0
25. Urb HS < 40 % Mnr & < 40 % FRPL	82	1	0	59	72.8
26. Urb HS < 40 % Mnr & > 40 % FRPL	14	2	0	8	66.7
27. Urb HS > 40 % Mnr & < 40 % FRPL	48	1	0	31	66.0
28. Urb HS > 40 % Mnr & > 40 % FRPL	136	1	0	89	65.9
29. Urb M/JH < 40 % Mnr & < 40 % FRPL	12	0	0	9	75.0
30. Urb M/JH < 40 % Mnr & > 40 % FRPL	10	0	0	10	100
31. Urb M/JH > 40 % Mnr & < 40 % FRPL	1	0	0	1	100
32. Urb M/JH > 40 % Mnr & > 40 % FRPL	25	1	0	19	79.2
33. Urb OtherS < 40 % Mnr & < 40 % FRPL	12	0	0	12	100
34. Urb OtherS < 40 % Mnr & > 40 % FRPL	6	1	0	2	40.0
35. Urb OtherS > 40 % Mnr & < 40 % FRPL	4	0	0	4	100
36. Urb OtherS > 40 % Mnr & > 40 % FRPL	16	0	0	7	43.8
Total	1,040	14	2	743	72.4

Note: Response rates were calculated on the basis of eligible teachers.

FRPL: Free and Reduced-Price Lunch

Mnr: Minority

Rrl HS: Rural High School

Rrl M/JH: Rural Middle/Junior High

Srb HS: Suburban High School

Srb M/JH: Suburban Middle/Junior High

Urb HS: Urban High School

Urb M/JH: Urban Middle/Junior High

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

APPENDIX B: Table Means for Survey Variables, By School Classification Variables

Table B-1: Means for Survey Variables by School Locale

Variable Name	Variable Label	Overall Sample		Locale					
				Urban		Suburban		Rural	
		Wtd. Mean	Wtd. SD	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
TC_Student	Target Class - total number of students	2.98	1.16	3.26	0.07	3.29	0.07	2.39	0.07
TC_Student7	Target Class 7th-grade students	0.21	0.80	0.29	0.08	0.24	0.05	0.13	0.05
TC_Student8	Target Class 8th-grade students	1.65	1.93	1.67	0.16	1.56	0.12	1.75	0.13
TC_Student9	Target Class 9th-grade students	2.00	1.73	2.11	0.13	1.98	0.11	1.92	0.11
TC_Student10	Target Class 10th-grade students	0.68	0.91	0.60	0.05	0.81	0.07	0.59	0.06
TC_Student11	Target Class 11th-grade students	0.33	0.52	0.30	0.04	0.36	0.04	0.31	0.03
TC_Student12	Target Class 12th-grade students	0.17	0.39	0.23	0.04	0.17	0.03	0.15	0.03
TC_StudentSE	Target Class special ed students	0.61	0.69	0.63	0.06	0.61	0.05	0.59	0.04
TC_StudentBi	Target Class bilingual students	0.34	0.73	0.43	0.06	0.36	0.05	0.25	0.05
Come_Time	Come to class on time	3.57	0.61	3.26	0.05	3.59	0.04	3.80	0.03
Attend_Reg	Attend class regularly	3.47	0.63	3.28	0.05	3.42	0.04	3.66	0.04
Come_Prep	Come to class prepared	2.92	0.90	2.53	0.07	2.92	0.05	3.23	0.04
Creat_Prob	Create serious behavior problems	0.61	0.68	0.76	0.04	0.62	0.04	0.48	0.04
Pay_Attn	Regularly pay attention	2.82	0.83	2.63	0.06	2.80	0.05	2.98	0.05
Activ_Part	Actively participate	2.69	0.89	2.64	0.06	2.61	0.05	2.81	0.06
Take_Note	Take notes	2.72	1.01	2.68	0.07	2.60	0.06	2.90	0.06
Diff_ReadE	Serious difficulties reading English	0.47	0.64	0.69	0.05	0.46	0.04	0.31	0.04
Care_grade	Care about what grade received	2.90	0.88	2.69	0.08	2.92	0.05	3.04	0.04
Whole_Numb	Whole number-background	1.86	0.80	2.01	0.06	1.86	0.05	1.73	0.05
Pos_Neg	Positive and negative integers-background	2.58	0.91	2.82	0.06	2.59	0.06	2.37	0.06
Rat_Numb	Rational numbers-background	3.10	0.86	3.20	0.06	3.23	0.05	2.86	0.06
RatoPrRteP	Ratio_percent_rate_propor-background	2.83	0.84	3.04	0.06	2.92	0.05	2.56	0.05
Wd_Prob	Solving word problems-background	3.26	0.81	3.35	0.06	3.27	0.05	3.18	0.05
variables	Concept of variables-background	2.48	0.80	2.66	0.06	2.49	0.05	2.32	0.05
Mani_Var	Manipulation of variables-background	2.82	0.78	3.06	0.05	2.84	0.05	2.60	0.05
Simp_eq	Solve simple linear equations & inequalities-background	2.80	0.83	2.91	0.06	2.84	0.05	2.64	0.05
PlotGraph	Plotting and graphing-background	2.44	0.93	2.65	0.07	2.48	0.06	2.22	0.06
Geo_Shapes	Formulas for geometric shapes-background	2.81	0.82	2.93	0.06	2.78	0.05	2.76	0.05
StudyHabit	Study skills & work habits-background	3.00	0.87	3.18	0.06	2.99	0.05	2.87	0.05
ComputeSk	Computation skills-background	2.53	0.89	2.69	0.06	2.56	0.05	2.37	0.06
Use_real	Use math in real-world-background	2.94	0.77	2.97	0.06	3.01	0.05	2.84	0.05
Work_Indep	Work independently-background	2.58	0.85	2.78	0.06	2.60	0.06	2.38	0.05
Work_Coop	Working cooperatively-background	2.32	0.77	2.56	0.05	2.36	0.05	2.07	0.04
Textbooks	Textbooks	2.92	1.18	2.48	0.10	2.94	0.07	3.25	0.07
PrintMat	Printed instructional materials	2.60	0.93	2.73	0.07	2.62	0.06	2.46	0.06
TeacherMat	Teacher written materials	2.11	1.17	2.23	0.08	2.21	0.07	1.89	0.08
GrCalculat	Graphing calculators	1.53	1.50	1.45	0.10	1.37	0.09	1.80	0.11
PhyObj	Physical objects-manipulatives	1.26	0.80	1.45	0.07	1.15	0.04	1.22	0.05
Software	Computer-based instructional tools-software	1.00	1.21	1.20	0.10	0.85	0.06	1.02	0.09
Computer_help	Computer-based tools help	3.33	1.32	3.14	0.10	3.41	0.07	3.40	0.09
TextTopic	Appropriate textbook topics	1.77	0.83	1.85	0.06	1.86	0.05	1.59	0.05
TextSeqCon	Appropriate math concept sequences	2.23	1.03	2.46	0.08	2.41	0.06	1.84	0.05
TextExempl	Examples & lessons on concepts	2.09	0.98	2.28	0.08	2.22	0.06	1.77	0.06
TextProbSo	Development of problem-solving skills	2.16	0.98	2.47	0.08	2.21	0.06	1.87	0.05
TextPrac	Practice on topics	2.29	1.14	2.60	0.09	2.29	0.06	2.04	0.07
TextSugges	Textbook suggestions for homework	2.24	1.05	2.55	0.08	2.28	0.06	1.93	0.07
TextSupp	Adequate textbook support materials	2.27	1.10	2.53	0.08	2.35	0.07	1.97	0.07
TextTitle_A	Textbook title	2.01	0.89	2.27	0.07	2.07	0.05	1.74	0.05
TextDivers	Textbook suggestions for diverse learner	2.73	1.10	2.84	0.08	2.94	0.06	2.38	0.07
StudentFail	Number of Target Class student fail	2.55	1.44	3.11	0.12	2.57	0.09	2.08	0.06

Continued on p. 9-40

Table B-1, continued

Variable Name	Variable Label	Overall Sample		Locale					
				Urban		Suburban		Rural	
		Wtd. Mean	Wtd. SD	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
TimeAssign	Time on assignments	3.10	0.86	3.17	0.07	3.10	0.05	3.05	0.04
ComAssign	Frequency of completes	2.06	0.97	2.42	0.07	2.02	0.06	1.81	0.06
Min_Meet	Average minutes of class time	271.80	84.52	258.70	5.76	280.55	5.58	272.15	4.58
Class_Period	Minutes of class period	62.77	25.23	63.95	1.91	63.09	1.27	61.45	1.75
InsuffComA	Insufficient access to computers	1.86	1.01	1.73	0.07	2.00	0.06	1.79	0.07
InsuffGrCa	Insufficient access to graphing calculators	1.70	0.92	1.72	0.06	1.94	0.06	1.40	0.04
PoorTextBk	Poor quality or out-of-date textbooks	1.59	1.01	1.70	0.07	1.60	0.06	1.50	0.07
LargeClas	Class sizes are too large	1.97	1.04	2.08	0.08	2.22	0.07	1.60	0.05
Insuffcoor	Insufficient access to computers	1.75	0.92	1.96	0.07	1.81	0.06	1.50	0.05
InadTeach	Inadequately prepared teachers	1.41	0.75	1.64	0.06	1.39	0.04	1.25	0.04
LackPlan	Lack of teacher planning time	1.74	0.93	1.97	0.07	1.69	0.05	1.62	0.06
DiffStudnt	Diverse students take same class	2.53	1.05	2.81	0.08	2.47	0.06	2.38	0.06
LittleFamS	Too little parent/family support	2.74	1.03	2.98	0.07	2.73	0.07	2.57	0.06
InadProLng	Inadequate opportunities for professional learning	1.66	0.84	1.87	0.06	1.66	0.05	1.50	0.05
InadAdminS	Inadequate administrative support	1.64	0.91	1.88	0.07	1.63	0.05	1.45	0.05
Class_Wk	Class periods per week	18.71	9.83	18.88	0.67	19.27	0.57	17.93	0.65
Min_Prep	Average minutes for class preparation	63.06	40.88	62.65	2.94	65.07	2.68	61.05	2.27
UnschdPrep	Average Min for unscheduled class prep	61.66	81.22	69.47	4.98	68.50	6.28	47.54	3.26
AvailTutor	Availability of tutoring or other	2.52	1.10	2.31	0.08	2.47	0.07	2.74	0.07
QualTutor	Quality of tutoring or other	2.42	1.05	2.36	0.07	2.37	0.06	2.52	0.07
WhoINumIm	Whole number operations-importance	4.65	0.59	4.60	0.05	4.61	0.04	4.74	0.03
PosNegIm	Positive & negative integers-importance	4.77	0.46	4.75	0.03	4.80	0.03	4.76	0.03
RatNumblm	Rational numbers-importance	4.59	0.59	4.52	0.04	4.56	0.04	4.70	0.03
RatoPrRtePlm	Ratio_percent_rate_propor-importance	4.19	0.78	4.18	0.05	4.08	0.05	4.32	0.05
Wd_Problm	Solving word problems-importance	4.51	0.62	4.47	0.05	4.51	0.04	4.54	0.04
variablesIm	Concept of variables-importance	4.61	0.67	4.49	0.06	4.68	0.04	4.63	0.04
Mani_VarIm	Manipulation of variables-importance	4.55	0.75	4.39	0.06	4.60	0.05	4.61	0.04
Simp_eqIm	Solve simple linear equations & inequalities-importance	4.44	0.84	4.26	0.07	4.46	0.05	4.55	0.05
PlotGraphIm	Plotting and graphing-importance	4.35	0.80	4.23	0.06	4.35	0.05	4.44	0.05
Geo_ShapesIm	Formulas for geometric shapes-importance	3.45	0.97	3.47	0.07	3.37	0.06	3.52	0.06
StudyHabitIm	Study skills & work habits-importance	4.72	0.50	4.69	0.04	4.74	0.03	4.71	0.03
ComputeSk_A	Computation skills-importance	4.54	0.65	4.56	0.04	4.50	0.04	4.56	0.04
Use_reallm	Use math in real-world-importance	4.10	0.83	4.12	0.06	4.09	0.05	4.10	0.05
Work_Indeplm	Work independently-importance	4.34	0.71	4.25	0.05	4.35	0.04	4.39	0.04
Work_CoopIm	Working cooperatively-importance	4.02	0.86	4.03	0.06	4.04	0.05	3.98	0.06
AlgebraProf	Expected student algebra proficiency	2.30	0.93	2.39	0.07	2.23	0.05	2.32	0.06
Preservice	Preservice teacher education	2.06	0.89	2.02	0.06	2.09	0.06	2.05	0.06
ProfDev	Professional development	2.05	0.84	2.08	0.07	2.00	0.05	2.09	0.05
ContentStd	Algebra I content	2.29	0.94	2.26	0.06	2.20	0.06	2.43	0.06
AssessOut	Assessments of Algebra I outcomes	2.66	1.01	2.57	0.06	2.57	0.06	2.82	0.07
T_Age	Teacher's age	41.11	11.69	42.33	0.86	41.29	0.69	39.94	0.71
ElemYrs	Elementary years taught	2.07	4.86	1.57	0.41	3.35	0.51	1.06	0.24
SecYrs	Secondary years taught	12.15	9.99	11.83	0.74	11.78	0.59	12.81	0.64
TotalYrs	Total years taught	12.77	10.35	12.16	0.91	13.08	0.71	12.84	0.76
T_YrsSchool	Teacher's years in current school	8.00	8.09	6.86	0.48	8.29	0.48	8.59	0.56
T_YrsExp	Teacher's years of algebra experience	9.49	8.56	8.88	0.57	9.15	0.48	10.38	0.59
T_ColegeYr	Teacher's college graduation year	1993.70	10.97	1993.65	0.77	1993.39	0.68	1994.08	0.67
T_Skill	Teacher's skill	1.33	0.58	1.34	0.04	1.35	0.04	1.31	0.03

Note: SE's are not adjusted for design effect.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table B-2: Means for Survey Variables by School Minority Concentration

Variable Name	Variable Label	Percent Minority							
		1st Quartile (Low)		2nd Quartile		3rd Quartile		4th Quartile (high)	
		Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
TC_Student	Target Class - Total Number of Students	2.52	0.08	3.25	0.09	3.05	0.08	3.16	0.08
TC_Student7	Target Class 7th-grade students	0.19	0.06	0.26	0.06	0.20	0.07	0.22	0.08
TC_Student8	Target Class 8th-grade students	1.78	0.15	1.83	0.16	1.50	0.15	1.48	0.17
TC_Student9	Target Class 9th-grade students	1.87	0.13	1.88	0.14	2.13	0.12	2.10	0.14
TC_Student10	Target Class 10th-grade students	0.49	0.06	0.77	0.09	0.78	0.06	0.70	0.07
TC_Student11	Target Class 11th-grade students	0.29	0.04	0.32	0.04	0.33	0.04	0.40	0.06
TC_Student12	Target Class 12th-grade students	0.13	0.03	0.08	0.03	0.21	0.03	0.30	0.04
TC_StudentSE	Target Class Special ED Students	0.57	0.04	0.56	0.06	0.72	0.06	0.55	0.06
TC_StudentBi	Target Class bilingual Students	0.20	0.06	0.29	0.05	0.38	0.05	0.52	0.08
Come_Time	Come to class on time	3.83	0.03	3.72	0.04	3.51	0.04	3.17	0.06
Attend_Reg	Attend class regularly	3.62	0.04	3.63	0.04	3.42	0.04	3.15	0.05
Come_Prep	Come to class prepared	3.12	0.05	3.25	0.06	2.88	0.06	2.36	0.08
Creat_Prob	Create serious behavior problems	0.47	0.04	0.56	0.06	0.65	0.05	0.80	0.05
Pay_Attn	Regularly pay attention	2.97	0.05	2.95	0.07	2.77	0.06	2.53	0.07
Activ_Part	Actively participate	2.85	0.06	2.80	0.07	2.57	0.06	2.52	0.07
Take_Note	Take notes	2.85	0.07	2.75	0.08	2.68	0.06	2.58	0.09
Diff_ReadE	Serious difficulties reading English	0.38	0.04	0.32	0.05	0.49	0.04	0.75	0.06
Care_grade	Care about what grade received	3.02	0.05	3.10	0.06	2.92	0.06	2.51	0.08
Whole_Numb	Whole number-background	1.80	0.05	1.69	0.06	1.95	0.06	1.98	0.06
Pos_Neg	Positive and negative integers-background	2.39	0.05	2.45	0.07	2.59	0.07	2.91	0.07
Rat_Numb	Rational numbers-background	2.93	0.06	3.01	0.07	3.25	0.06	3.20	0.07
RatoPrRteP	Ratio_percent_rate_propor-background	2.66	0.06	2.63	0.07	2.91	0.06	3.17	0.05
Wd_Prob	Solving word problems-background	3.17	0.06	3.10	0.07	3.30	0.06	3.49	0.06
variables	Concept of variables-background	2.44	0.05	2.31	0.07	2.46	0.06	2.75	0.06
Mani_Var	Manipulation of variables-background	2.68	0.05	2.66	0.07	2.88	0.05	3.07	0.06
Simp_eq	Solve simple linear equations & inequalities-background	2.75	0.05	2.64	0.07	2.85	0.06	2.94	0.07
PlotGraph	Plotting and graphing-background	2.29	0.06	2.32	0.07	2.48	0.07	2.69	0.07
Geo_Shapes	Formulas for geometric shapes-background	2.79	0.05	2.51	0.07	2.89	0.06	3.06	0.06
StudyHabit	Study skills & work habits-background	2.80	0.05	2.81	0.08	3.13	0.06	3.27	0.06
ComputeSk	Computation skills-background	2.51	0.06	2.37	0.07	2.53	0.07	2.73	0.06
Use_real	Use math in real world-background	2.77	0.05	2.88	0.06	3.06	0.06	3.06	0.06
Work_Indep	Work independently-background	2.38	0.05	2.46	0.08	2.64	0.06	2.86	0.06
Work_Coop	Working cooperatively-background	2.14	0.04	2.25	0.07	2.34	0.06	2.57	0.05
Textbooks	Textbooks	3.16	0.07	3.16	0.08	2.85	0.09	2.43	0.10
PrintMat	Printed instructional materials	2.48	0.06	2.46	0.08	2.67	0.07	2.80	0.07
TeacherMat	Teacher written materials	1.91	0.08	2.10	0.09	2.15	0.09	2.30	0.08
GrCalculat	Graphing calculators	1.61	0.11	1.53	0.11	1.41	0.11	1.60	0.12
PhyObj	Physical objects-manipulatives	1.23	0.06	1.15	0.06	1.13	0.05	1.57	0.07
Software	Computer-based instructional tools-software	1.03	0.09	0.99	0.08	0.70	0.07	1.39	0.12
Computer_help	Computer-based tools help	3.53	0.10	3.33	0.10	3.44	0.09	2.94	0.11
TextTopic	Appropriate textbook topics	1.63	0.05	1.72	0.07	1.86	0.06	1.87	0.06
TextSeqCon	Appropriate math concept sequences	1.90	0.06	2.16	0.08	2.30	0.07	2.66	0.09
TextExempl	Examples & lessons on concepts	1.83	0.06	2.17	0.09	2.10	0.07	2.33	0.08
TextProbSo	Development of problem-solving skills	1.86	0.06	1.99	0.07	2.21	0.07	2.71	0.09
TextPrac	Practice on topics	2.14	0.08	2.34	0.09	2.22	0.08	2.52	0.09
TextSugges	Textbook suggestions for homework	2.05	0.08	2.26	0.08	2.12	0.07	2.62	0.09
TextSupp	Adequate textbook support materials	2.02	0.08	2.36	0.09	2.18	0.07	2.65	0.09
TextTitle_A	Textbook title	1.73	0.05	1.93	0.07	2.10	0.06	2.36	0.07
TextDivers	Textbook suggestions for diverse learner	2.57	0.09	2.88	0.09	2.59	0.07	2.98	0.09

Continued on p. 9-42

Table B-2, continued

Variable Name	Variable Label	Percent Minority							
		1st Quartile (Low)		2nd Quartile		3rd Quartile		4th Quartile (high)	
		Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
StudentFail	Number of Target Class student fail	2.10	0.07	2.10	0.09	2.81	0.11	3.26	0.13
TimeAssign	Time on assignments	3.08	0.05	3.11	0.06	3.16	0.06	3.04	0.08
ComAssign	Frequency of completes	1.79	0.06	1.74	0.07	2.17	0.06	2.59	0.09
Min_Meet	Average Minutes of class time	264.29	4.48	259.75	5.84	278.83	6.49	284.99	7.91
Class_Period	Minutes of class period	60.42	2.09	58.20	1.33	68.25	1.91	63.37	1.76
InsuffComA	Insufficient access to computers	1.93	0.08	1.72	0.07	1.85	0.07	1.92	0.08
InsuffGrCa	Insufficient access to graphing calculators	1.56	0.06	1.60	0.07	1.64	0.06	2.04	0.08
PoorTextBk	Poor quality or out-of-date textbooks	1.47	0.07	1.34	0.06	1.60	0.07	2.02	0.09
LargeClas	Class sizes are too large	1.68	0.06	1.91	0.08	2.12	0.08	2.21	0.09
Insuffcoor	Insufficient access to computers	1.52	0.06	1.53	0.05	1.82	0.07	2.17	0.08
InadTeach	Inadequately prepared teachers	1.22	0.04	1.26	0.05	1.49	0.05	1.69	0.08
LackPlan	Lack of teacher planning time	1.49	0.05	1.61	0.06	1.86	0.08	2.05	0.07
DiffStudnt	Diverse students take same class	2.42	0.07	2.23	0.08	2.61	0.07	2.90	0.08
LittleFamS	Too little parent/family support	2.60	0.07	2.31	0.08	2.82	0.07	3.30	0.07
InadProLng	Inadequate opportunities for professional learning	1.53	0.05	1.45	0.05	1.74	0.06	1.95	0.08
InadAdminS	Inadequate administrative support	1.40	0.05	1.42	0.06	1.74	0.07	2.04	0.09
Class_Wk	Class periods per week	18.00	0.73	19.75	0.73	19.04	0.65	18.01	0.81
Min_Prep	Average minutes for class preparation	63.31	2.56	60.90	2.90	63.64	2.82	64.35	4.10
UnschdPrep	Average Min for unscheduled class prep	49.69	3.66	59.32	6.81	57.45	6.40	85.31	6.91
AvailTutor	Availability of tutoring or other	2.85	0.08	2.40	0.08	2.55	0.08	2.19	0.08
QualTutor	Quality of tutoring or other	2.62	0.08	2.24	0.08	2.50	0.08	2.27	0.08
WholNumIm	Whole number operations-importance	4.64	0.04	4.66	0.05	4.71	0.04	4.57	0.05
PosNegIm	Positive & negative integers-importance	4.72	0.03	4.81	0.04	4.85	0.03	4.69	0.04
RatNumblm	Rational numbers-importance	4.65	0.04	4.60	0.05	4.62	0.04	4.48	0.05
RatoPrRtePlm	Ratio_percent_rate_propor-importance	4.26	0.06	3.97	0.07	4.29	0.05	4.21	0.06
Wd_Problm	Solving word problems-importance	4.50	0.04	4.50	0.05	4.57	0.04	4.46	0.05
variablesIm	Concept of variables-importance	4.55	0.05	4.69	0.05	4.67	0.05	4.50	0.06
Mani_VarIm	Manipulation of variables-importance	4.48	0.05	4.68	0.06	4.60	0.06	4.43	0.06
Simp_eqIm	Solve simple linear equations & inequalities-importance	4.41	0.06	4.55	0.06	4.47	0.06	4.29	0.07
PlotGraphIm	Plotting and graphing-importance	4.31	0.06	4.37	0.06	4.41	0.06	4.27	0.07
Geo_ShapesIm	Formulas for geometric shapes-importance	3.44	0.07	3.17	0.07	3.55	0.07	3.64	0.07
StudyHabitIm	Study skills & work habits-importance	4.71	0.04	4.69	0.04	4.78	0.03	4.67	0.04
ComputeSk_A	Computation skills-importance	4.52	0.05	4.50	0.05	4.60	0.05	4.50	0.05
Use_reallm	Use math in real world-importance	4.02	0.05	4.06	0.07	4.08	0.06	4.30	0.06
Work_Indeplm	Work independently-importance	4.33	0.05	4.44	0.05	4.29	0.05	4.28	0.06
Work_CoopIm	Working cooperatively-importance	3.95	0.06	4.03	0.07	3.96	0.07	4.17	0.06
AlgebraProf	Expected student algebra proficiency	2.31	0.06	2.20	0.06	2.31	0.06	2.39	0.08
Preservice	Preservice teacher education	2.19	0.06	2.08	0.08	1.94	0.06	2.02	0.06
ProfDev	Professional development	2.15	0.06	1.99	0.06	2.03	0.06	2.03	0.07
ContentStd	Algebra I content	2.41	0.06	2.24	0.08	2.21	0.06	2.30	0.08
AssessOut	Assessments of algebra I outcomes	2.82	0.07	2.61	0.08	2.65	0.07	2.51	0.07
T_Age	Teacher's age	40.62	0.83	41.22	0.90	40.50	0.75	42.43	1.03
ElemYrs	Elementary years taught	1.27	0.36	3.70	0.69	1.26	0.31	2.22	0.51
SecYrs	Secondary years taught	13.59	0.74	11.66	0.73	12.86	0.73	9.89	0.76
TotalYrs	Total years taught	13.51	0.94	13.71	0.89	12.57	0.78	10.90	1.03
T_YrsSchool	Teacher's years in current school	9.40	0.65	8.75	0.63	7.06	0.50	6.68	0.58
T_YrsExp	Teacher's years of algebra experience	10.96	0.68	8.82	0.56	9.86	0.58	7.88	0.66
T_ColegeYr	Teacher's college graduation year	1993.99	0.82	1994.21	0.84	1993.54	0.69	1992.99	0.94
T_Skill	Teacher's skill	1.38	0.04	1.26	0.04	1.29	0.04	1.43	0.05

Note: SE's are not adjusted for design effect.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table B-3: Means for Survey Variables by Percentage of Students in the School Eligible for Free and Reduced-Price Lunch

Variable Name	Variable Label	Percent Free/Reduced-Price Lunch							
		1st Quartile (Low)		2nd Quartile		3rd Quartile		4th Quartile (high)	
		Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
TC_Student	Target Class - total number of students	3.13	0.09	2.83	0.08	2.89	0.08	3.15	0.09
TC_Student7	Target Class 7th-grade students	0.23	0.06	0.30	0.08	0.17	0.06	0.12	0.06
TC_Student8	Target Class 8th-grade students	1.74	0.15	1.12	0.14	1.70	0.15	2.36	0.19
TC_Student9	Target Class 9th-grade students	1.96	0.14	2.31	0.12	1.86	0.13	1.73	0.15
TC_Student10	Target Class 10th-grade students	0.68	0.07	0.74	0.07	0.71	0.07	0.50	0.06
TC_Student11	Target Class 11th-grade students	0.31	0.04	0.37	0.04	0.36	0.04	0.22	0.05
TC_Student12	Target Class 12th-grade students	0.13	0.03	0.18	0.03	0.21	0.03	0.17	0.04
TC_StudentSE	Target Class Special ED students	0.55	0.05	0.66	0.05	0.68	0.06	0.46	0.06
TC_StudentBi	Target Class bilingual Students	0.30	0.06	0.36	0.07	0.29	0.04	0.41	0.08
Come_Time	Come to class on time	3.71	0.04	3.66	0.04	3.53	0.05	3.31	0.06
Attend_Reg	Attend class regularly	3.56	0.04	3.53	0.04	3.40	0.05	3.34	0.06
Come_Prep	Come to class prepared	3.08	0.06	2.96	0.06	2.79	0.07	2.85	0.08
Creat_Prob	Create serious behavior problems	0.59	0.05	0.60	0.04	0.62	0.05	0.63	0.06
Pay_Attn	Regularly pay attention	2.82	0.06	2.88	0.05	2.85	0.06	2.67	0.08
Activ_Part	Actively participate	2.68	0.06	2.77	0.07	2.59	0.07	2.71	0.07
Take_Note	Take notes	2.71	0.08	2.67	0.07	2.81	0.07	2.73	0.09
Diff_ReadE	Serious difficulties reading English	0.44	0.05	0.35	0.04	0.51	0.04	0.66	0.06
Care_grade	Care about what grade received	3.00	0.06	3.02	0.06	2.85	0.07	2.68	0.08
Whole_Numb	Whole number-background	1.76	0.06	1.86	0.06	1.96	0.07	1.84	0.06
Pos_Neg	Positive and negative integers-background	2.43	0.06	2.66	0.06	2.68	0.07	2.50	0.08
Rat_Numb	Rational numbers-background	3.06	0.06	3.11	0.06	3.26	0.06	2.91	0.08
RatoPrRteP	Ratio_percent_rate_propor-background	2.75	0.06	2.85	0.06	2.92	0.06	2.80	0.08
Wd_Prob	Solving word problems-background	3.24	0.06	3.27	0.06	3.35	0.05	3.12	0.08
variables	Concept of variables-background	2.37	0.06	2.42	0.06	2.62	0.06	2.55	0.06
Mani_Var	Manipulation of variables-background	2.66	0.06	2.85	0.05	2.95	0.06	2.82	0.07
Simp_eq	Solve simple linear equations & inequalities-background	2.69	0.06	2.76	0.06	2.90	0.06	2.84	0.07
PlotGraph	Plotting and graphing-background	2.41	0.07	2.50	0.06	2.47	0.07	2.33	0.08
Geo_Shapes	Formulas for geometric shapes-background	2.64	0.06	2.85	0.06	2.93	0.06	2.83	0.07
StudyHabit	Study skills & work habits-background	2.88	0.06	2.89	0.07	3.15	0.06	3.10	0.07
ComputeSk	Computation skills-background	2.58	0.06	2.41	0.07	2.66	0.07	2.48	0.06
Use_real	Use math in real world-background	2.92	0.06	2.93	0.05	3.07	0.05	2.80	0.07
Work_Indep	Work independently-background	2.56	0.06	2.45	0.07	2.70	0.06	2.63	0.07
Work_Coop	Working cooperatively-background	2.28	0.05	2.25	0.06	2.30	0.06	2.48	0.06
Textbooks	Textbooks	3.24	0.07	2.89	0.09	2.61	0.10	2.95	0.08
PrintMat	Printed instructional materials	2.45	0.07	2.45	0.07	2.83	0.06	2.72	0.07
TeacherMat	Teacher written materials	2.13	0.09	2.10	0.09	2.24	0.09	1.87	0.09
GrCalculat	Graphing calculators	1.42	0.10	1.27	0.10	1.52	0.11	2.02	0.14
PhyObj	Physical objects-manipulatives	1.07	0.05	1.21	0.05	1.21	0.06	1.65	0.08
Software	Computer-based instructional tools-software	0.96	0.08	0.87	0.07	0.77	0.07	1.56	0.14
Computer_help	Computer-based tools help	3.35	0.10	3.42	0.09	3.52	0.09	2.96	0.12
TextTopic	Appropriate textbook topics	1.84	0.07	1.69	0.06	1.90	0.06	1.62	0.06
TextSeqCon	Appropriate math concept sequences	2.23	0.08	2.08	0.07	2.38	0.07	2.29	0.09
TextExempl	Examples & lessons on concepts	2.14	0.08	1.99	0.07	2.24	0.08	1.99	0.07
TextProbSo	Development of problem-solving skills	2.04	0.07	1.97	0.06	2.35	0.08	2.37	0.09
TextPrac	Practice on topics	2.51	0.09	2.07	0.08	2.31	0.08	2.30	0.09
TextSugges	Textbook suggestions for homework	2.34	0.08	2.09	0.07	2.28	0.08	2.25	0.09
TextSupp	Adequate textbook support materials	2.36	0.09	2.12	0.08	2.28	0.07	2.36	0.10
TextTitle_A	Textbook title	1.99	0.07	1.94	0.07	2.15	0.06	1.99	0.07
TextDivers	Textbook suggestions for diverse learner	2.88	0.08	2.58	0.09	2.81	0.07	2.66	0.09

Continued on p. 9-44

Table B-3, continued

Variable Name	Variable Label	Percent Free/Reduced-Price Lunch							
		1st Quartile (Low)		2nd Quartile		3rd Quartile		4th Quartile (high)	
		Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
StudentFail	Number of Target Class student fail	2.22	0.09	2.36	0.10	2.75	0.11	2.98	0.13
TimeAssign	Time on assignments	3.18	0.06	3.20	0.05	2.95	0.07	3.08	0.08
ComAssign	Frequency of completes	1.83	0.06	1.97	0.07	2.24	0.08	2.23	0.08
Min_Meet	Average Minutes of class time	265.71	5.44	262.28	5.30	275.06	6.99	291.62	7.26
Class_Period	Minutes of class period	63.77	2.48	61.44	1.56	63.90	1.52	62.39	1.73
InsuffComA	Insufficient access to computers	1.75	0.07	1.73	0.06	1.65	0.07	2.48	0.10
InsuffGrCa	Insufficient access to graphing calculators	1.75	0.07	1.63	0.06	1.68	0.07	1.78	0.08
PoorTextBk	Poor quality or out-of-date textbooks	1.36	0.06	1.41	0.06	1.75	0.09	1.98	0.09
LargeClas	Class sizes are too large	2.04	0.07	1.86	0.07	1.94	0.08	2.12	0.08
Insuffcoor	Insufficient access to computers	1.59	0.06	1.72	0.07	1.71	0.07	2.04	0.08
InadTeach	Inadequately prepared teachers	1.35	0.05	1.35	0.05	1.43	0.05	1.54	0.08
LackPlan	Lack of teacher planning time	1.64	0.07	1.77	0.06	1.80	0.07	1.76	0.07
DiffStudnt	Diverse students take same class	2.36	0.08	2.49	0.07	2.59	0.08	2.76	0.08
LittleFamS	Too little parent/family support	2.35	0.07	2.69	0.07	2.88	0.07	3.18	0.08
InadProLng	Inadequate opportunities for professional learning	1.58	0.06	1.67	0.06	1.51	0.05	1.97	0.08
InadAdminS	Inadequate administrative support	1.54	0.06	1.59	0.06	1.67	0.07	1.81	0.08
Class_Wk	Class periods per week	19.97	0.68	18.63	0.68	18.94	0.68	16.71	0.91
Min_Prep	Average minutes for class preparation	65.01	2.96	62.16	2.99	68.41	3.05	54.67	3.13
UnschdPrep	Average Min for unscheduled class prep	61.46	6.35	63.76	4.22	63.81	8.33	56.94	3.93
AvailTutor	Availability of tutoring or other	2.54	0.08	2.48	0.07	2.33	0.08	2.84	0.09
QualTutor	Quality of tutoring or other	2.36	0.08	2.36	0.07	2.30	0.08	2.78	0.08
WholNumIm	Whole number operations-importance	4.58	0.05	4.73	0.03	4.73	0.04	4.54	0.06
PosNegIm	Positive & negative integers-importance	4.81	0.03	4.81	0.03	4.78	0.03	4.66	0.04
RatNumblm	Rational numbers-importance	4.60	0.05	4.61	0.04	4.62	0.04	4.55	0.05
RatoPrRtePlm	Ratio_percent_rate_propor-importance	4.16	0.07	4.11	0.06	4.32	0.05	4.18	0.05
Wd_Problm	Solving word problems-importance	4.49	0.05	4.53	0.04	4.55	0.05	4.47	0.05
variablesIm	Concept of variables-importance	4.66	0.05	4.60	0.05	4.59	0.05	4.58	0.05
Mani_VarIm	Manipulation of variables-importance	4.62	0.06	4.55	0.05	4.49	0.06	4.55	0.05
Simp_eqIm	Solve simple linear equations & inequalities-importance	4.44	0.06	4.48	0.06	4.36	0.06	4.46	0.07
PlotGraphIm	Plotting and graphing-importance	4.41	0.06	4.34	0.06	4.31	0.06	4.31	0.07
Geo_ShapesIm	Formulas for geometric shapes-importance	3.35	0.07	3.44	0.07	3.36	0.07	3.73	0.08
StudyHabitIm	Study skills & work habits-importance	4.68	0.04	4.77	0.03	4.73	0.04	4.69	0.04
ComputeSk_A	Computation skills-importance	4.50	0.05	4.58	0.05	4.49	0.05	4.59	0.05
Use_reallm	Use math in real world-importance	4.11	0.06	4.03	0.06	4.00	0.07	4.34	0.06
Work_Indeplm	Work independently-importance	4.37	0.05	4.41	0.05	4.25	0.06	4.29	0.06
Work_CoopIm	Working cooperatively-importance	3.97	0.07	4.01	0.06	3.89	0.07	4.27	0.05
AlgebraProf	Expected student algebra proficiency	2.20	0.06	2.25	0.06	2.46	0.08	2.32	0.07
Preservice	Preservice teacher education	2.10	0.07	2.05	0.07	2.00	0.06	2.08	0.07
ProfDev	Professional development	2.08	0.06	2.00	0.06	2.03	0.06	2.11	0.08
ContentStd	Algebra I content	2.23	0.07	2.41	0.07	2.37	0.07	2.12	0.07
AssessOut	Assessments of Algebra I outcomes	2.67	0.08	2.74	0.08	2.76	0.07	2.39	0.07
T_Age	Teacher's age	41.55	0.82	41.08	0.78	40.34	0.85	41.84	1.08
ElemYrs	Elementary years taught	3.92	0.73	1.04	0.26	1.72	0.35	2.05	0.63
SecYrs	Secondary years taught	12.25	0.75	12.95	0.70	12.17	0.74	10.91	0.85
TotalYrs	Total years taught	13.31	0.85	14.37	0.82	11.83	0.84	10.00	1.23
T_YrsSchool	Teacher's years in current school	8.81	0.56	8.37	0.58	7.08	0.58	7.72	0.69
T_YrsExp	Teacher's years of algebra experience	9.69	0.63	10.53	0.63	9.08	0.58	8.27	0.68
T_ColegeYr	Teacher's college graduation year	1994.34	0.84	1993.72	0.75	1993.72	0.75	1992.61	0.96
T_Skill	Teacher's skill	1.35	0.04	1.27	0.03	1.32	0.04	1.43	0.06

Note: SE's are not adjusted for design effect.

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table B-4: Means for Survey Variables by Grade Level of the Target Class and School Grade Level

Variable Name	Variable Label	Target Class Grade						School Grade (High School vs. Others)			
		7th & 8th Grade		9thGrade		10th, 11th, & 12th Grade		High School		Others	
		Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
TC_Student	Target Class - total number of students	3.35	0.07	2.78	0.06	2.55	0.12	--	--	--	--
TC_Student7	Target Class 7th-grade students	0.50	0.07	0.00	0.00	0.00	0.00	--	--	--	--
TC_Student8	Target Class 8th-grade students	3.61	0.06	0.01	0.01	0.11	0.05	--	--	--	--
TC_Student9	Target Class 9th-grade students	0.05	0.02	3.31	0.04	0.42	0.09	--	--	--	--
TC_Student10	Target Class 10th-grade students	0.00	0.00	0.82	0.03	2.83	0.13	--	--	--	--
TC_Student11	Target Class 11th-grade students	0.00	0.00	0.46	0.03	1.07	0.11	--	--	--	--
TC_Student12	Target Class 12th-grade students	0.00	0.00	0.27	0.03	0.48	0.09	--	--	--	--
TC_StudentSE	Target Class Special ED students	0.38	0.04	0.75	0.04	0.72	0.10	--	--	--	--
TC_StudentBi	Target Class bilingual students	0.29	0.05	0.36	0.04	0.47	0.15	--	--	--	--
Come_Time	Come to class on time	3.75	0.03	3.49	0.03	3.30	0.10	--	--	--	--
Attend_Reg	Attend class regularly	3.74	0.03	3.32	0.03	3.15	0.11	--	--	--	--
Come_Prep	Come to class prepared	3.32	0.04	2.71	0.05	2.49	0.12	--	--	--	--
Creat_Prob	Create serious behavior problems	0.46	0.04	0.70	0.03	0.74	0.09	--	--	--	--
Pay_Attn	Regularly pay attention	3.11	0.05	2.66	0.04	2.50	0.10	--	--	--	--
Activ_Part	Actively participate	2.92	0.05	2.60	0.04	2.17	0.11	--	--	--	--
Take_Note	Take notes	3.05	0.05	2.58	0.05	2.08	0.13	--	--	--	--
Diff_ReadE	Serious difficulties reading English	0.25	0.03	0.59	0.03	0.77	0.11	--	--	--	--
Care_grade	Care about what grade received	3.28	0.04	2.71	0.05	2.33	0.10	--	--	--	--
Whole_Numb	Whole number-background	1.49	0.04	2.07	0.04	2.19	0.10	--	--	--	--
Pos_Neg	Positive and negative integers-background	2.11	0.05	2.88	0.04	2.82	0.12	--	--	--	--
Rat_Numb	Rational numbers-background	2.64	0.05	3.37	0.04	3.46	0.10	--	--	--	--
RatoPrRteP	Ratio_percent_rate_propor-background	2.49	0.05	3.03	0.04	3.13	0.11	--	--	--	--
Wd_Prob	Solving word problems-background	2.75	0.05	3.57	0.03	3.55	0.09	--	--	--	--
variables	Concept of variables-background	2.17	0.05	2.68	0.04	2.65	0.11	--	--	--	--
Mani_Var	Manipulation of variables-background	2.52	0.04	3.03	0.04	2.85	0.10	--	--	--	--
Simp_eq	Solve simple linear equations & inequalities-background	2.60	0.05	2.92	0.04	2.91	0.12	--	--	--	--
PlotGraph	Plotting and graphing-background	2.03	0.05	2.67	0.04	2.86	0.12	--	--	--	--
Geo_Shapes	Formulas for geometric shapes-background	2.52	0.05	2.98	0.04	3.18	0.08	--	--	--	--
StudyHabit	Study skills & work habits-background	2.56	0.06	3.24	0.04	3.46	0.08	--	--	--	--
ComputeSk	Computation skills-background	2.11	0.05	2.76	0.04	3.05	0.10	--	--	--	--
Use_real	Use math in real world-background	2.46	0.04	3.21	0.03	3.45	0.08	--	--	--	--
Work_Indep	Work independently-background	2.22	0.05	2.75	0.04	3.12	0.10	--	--	--	--
Work_Coop	Working cooperatively-background	2.05	0.05	2.43	0.04	2.82	0.10	--	--	--	--
Textbooks	Textbooks	3.03	0.06	2.81	0.07	3.12	0.13	--	--	--	--
PrintMat	Printed instructional materials	2.49	0.05	2.66	0.05	2.79	0.11	--	--	--	--
TeacherMat	Teacher written materials	1.98	0.07	2.19	0.06	2.19	0.16	--	--	--	--
GrCalculat	Graphing calculators	1.58	0.08	1.49	0.08	1.64	0.22	--	--	--	--
PhyObj	Physical objects-manipulatives	1.23	0.05	1.28	0.04	1.26	0.11	--	--	--	--
Software	Computer-based instructional tools-software	1.06	0.07	1.00	0.06	0.77	0.15	--	--	--	--
Computer_help	Computer-based tools help	3.36	0.08	3.30	0.07	3.45	0.18	--	--	--	--
TextTopic	Appropriate textbook topics	1.67	0.05	1.83	0.05	1.83	0.12	--	--	--	--
TextSeqCon	Appropriate math concept sequences	2.07	0.06	2.36	0.06	2.22	0.14	--	--	--	--
TextExempl	Examples & lessons on concepts	2.02	0.06	2.14	0.05	2.09	0.15	--	--	--	--
TextProbSo	Development of problem-solving skills	1.99	0.05	2.30	0.06	2.11	0.12	--	--	--	--
TextPrac	Practice on topics	2.23	0.06	2.32	0.06	2.35	0.18	--	--	--	--
TextSugges	Textbook suggestions for homework	2.10	0.06	2.32	0.06	2.30	0.16	--	--	--	--
TextSupp	Adequate textbook support materials	2.15	0.06	2.34	0.06	2.43	0.17	--	--	--	--
TextTitle_A	Textbook title	1.89	0.05	2.09	0.05	2.12	0.13	--	--	--	--
TextDivers	Textbook suggestions for diverse learner	2.60	0.06	2.78	0.06	3.02	0.14	--	--	--	--

Continued on p. 9-46

Table B-4, continued

Variable Name	Variable Label	Target Class Grade						School Grade (High School vs. Others)			
		7th & 8th Grade		9th Grade		10th, 11th, & 12th Grade		High School		Others	
		Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE	Wtd. Mean	Wtd. SE
StudentFail	Number of Target Class student fail	1.81	0.06	2.92	0.08	3.69	0.22	--	--	--	--
TimeAssign	Time on assignments	3.34	0.04	2.97	0.05	2.87	0.13	--	--	--	--
ComAssign	Frequency of completes	1.63	0.04	2.28	0.05	2.65	0.13	--	--	--	--
Min_Meet	Average Minutes of class time	263.72	4.64	277.61	4.47	271.19	10.55	--	--	--	--
Class_Period	Minutes of class period	58.53	0.96	64.93	1.47	68.96	3.51	--	--	--	--
InsuffComA	Insufficient access to computers	--	--	--	--	--	--	1.83	0.05	1.89	0.05
InsuffGrCa	Insufficient access to graphing calculators	--	--	--	--	--	--	1.74	0.05	1.65	0.05
PoorTextBk	Poor quality or out-of-date textbooks	--	--	--	--	--	--	1.64	0.05	1.54	0.05
LargeClas	Class sizes are too large	--	--	--	--	--	--	2.07	0.05	1.87	0.06
Insuffcoor	Insufficient access to computers	--	--	--	--	--	--	1.82	0.05	1.67	0.05
InadTeach	Inadequately prepared teachers	--	--	--	--	--	--	1.44	0.04	1.38	0.04
LackPlan	Lack of teacher planning time	--	--	--	--	--	--	1.76	0.05	1.72	0.05
DiffStudnt	Diverse students take same class	--	--	--	--	--	--	2.68	0.05	2.38	0.06
LittleFamS	Too little parent/family support	--	--	--	--	--	--	3.08	0.05	2.40	0.05
InadProLng	Inadequate opportunities for professional learning	--	--	--	--	--	--	1.76	0.05	1.56	0.04
InadAdminS	Inadequate administrative support	--	--	--	--	--	--	1.74	0.05	1.53	0.05
Class_Wk	Class periods per week	--	--	--	--	--	--	19.46	0.49	17.94	0.53
Min_Prep	Average minutes for class preparation	--	--	--	--	--	--	70.60	2.42	55.42	1.76
UnschdPrep	Average Min for Unscheduled class prep	--	--	--	--	--	--	66.57	5.16	56.71	3.15
AvailTutor	Availability of tutoring or other	--	--	--	--	--	--	2.30	0.06	2.75	0.06
QualTutor	Quality of tutoring or other	--	--	--	--	--	--	2.27	0.05	2.58	0.06
WhoNumIm	Whole number operations-importance	--	--	--	--	--	--	4.61	0.03	4.69	0.03
PosNegIm	Positive & negative integers-importance	--	--	--	--	--	--	4.71	0.03	4.83	0.02
RatNumIm	Rational numbers-importance	--	--	--	--	--	--	4.48	0.03	4.71	0.03
RatoPrRtePlm	Ratio_percent_rate_propor-importance	--	--	--	--	--	--	4.14	0.04	4.24	0.04
Wd_Problm	Solving word problems-importance	--	--	--	--	--	--	4.43	0.04	4.59	0.03
variablesIm	Concept of variables-importance	--	--	--	--	--	--	4.55	0.04	4.67	0.03
Mani_VarIm	Manipulation of variables-importance	--	--	--	--	--	--	4.48	0.04	4.61	0.04
Simp_eqIm	Solve simple linear equations & inequalities-importance	--	--	--	--	--	--	4.44	0.05	4.44	0.04
PlotGraphIm	Plotting and graphing-importance	--	--	--	--	--	--	4.29	0.04	4.40	0.04
Geo_ShapesIm	Formulas for geometric shapes-importance	--	--	--	--	--	--	3.32	0.05	3.59	0.05
StudyHabitIm	Study skills & work habits-importance	--	--	--	--	--	--	4.69	0.03	4.75	0.03
ComputeSk_A	Computation skills-importance	--	--	--	--	--	--	4.45	0.04	4.63	0.03
Use_reallm	Use math in real world-importance	--	--	--	--	--	--	3.99	0.05	4.21	0.04
Work_Indeplm	Work independently-importance	--	--	--	--	--	--	4.25	0.04	4.42	0.04
Work_CoopIm	Working cooperatively-importance	--	--	--	--	--	--	3.96	0.05	4.08	0.05
AlgebraProf	Expected student algebra proficiency	--	--	--	--	--	--	2.21	0.05	2.39	0.05
Preservice	Preservice teacher education	--	--	--	--	--	--	1.97	0.04	2.15	0.05
ProfDev	Professional development	--	--	--	--	--	--	2.04	0.04	2.06	0.04
ContentStd	Algebra I content	--	--	--	--	--	--	2.13	0.04	2.45	0.06
AssessOut	Assessments of Algebra I outcomes	--	--	--	--	--	--	2.59	0.05	2.73	0.06
T_Age	Teacher's age	--	--	--	--	--	--	40.80	0.62	41.42	0.60
ElemYrs	Elementary years taught	--	--	--	--	--	--	1.14	0.24	2.89	0.40
SecYrs	Secondary years taught	--	--	--	--	--	--	11.58	0.53	12.71	0.53
TotalYrs	Total years taught	--	--	--	--	--	--	12.41	0.62	13.18	0.65
T_YrsSchool	Teacher's years in current school	--	--	--	--	--	--	7.26	0.39	8.76	0.45
T_YrsExp	Teacher's years of algebra experience	--	--	--	--	--	--	9.83	0.45	9.15	0.45
T_ColegeYr	Teacher's college graduation year	--	--	--	--	--	--	1994.44	0.56	1992.93	0.59
T_Skill	Teacher's skill	--	--	--	--	--	--	1.37	0.03	1.29	0.03

Note: SE's are not adjusted for design effect.

-- : No data available

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

APPENDIX C: Variables Used in the Regression Equations And Tables of Regression Estimates

This appendix contains results of ordinary least squares regression analysis for the main outcome variables described in the report. The dependent variables used in the regressions were all transformed to standardized z-scores, such that the estimated effects of the independent variables refer to standard deviation units of the dependent variable. Sample weights were used to weight the observations, and the standard errors of the estimates were adjusted for design effects.

The regressions referred to in the report use a common set of predictor or independent variables. These are defined as follows:

- *Type of locale*: the standard three-level indicator of urban, suburban, or rural school location. This was dichotomized into two variables, one indicating an urban school and another indicating a rural school; each references the difference between those schools and suburban schools.
- *Percentage of students receiving free or reduced-price lunch*: a dichotomous indicator of “40 percent or lower” versus “more than 40 percent” was used as a stratifying variable in the sample design. The analysis was structured to capture more linear effects by using quartile indicators. Dichotomous variables were created to indicate in which quartile (of the sample) of students receiving free or reduced-priced lunch a school was located. The sample was divided into the following quartiles based on the following cut points:

First Quartile (low)	0.102
Second Quartile	0.274
Third Quartile	0.478
Forth Quartile (high)	0.809

With dummy variables indicating membership in the second, third, or fourth quartile (referenced to the first quartile, low number of students receiving free or reduced-price lunch).

- *Percentage of students who are black or Hispanic*: a similar dichotomous indicator of “40 percent or lower” versus “more than 40 percent” was used as a sample stratification variable. For the regression analysis, the percentile range was recoded into quartiles and separate dummy variables for the second, third, and fourth quartiles were used (the first quartile was the reference group) based on the following cut points:

First Quartile (low)	0.028
Second Quartile	0.099
Third Quartile	0.401
Forth Quartile (high)	0.816

- *School size.* The percentile distribution of school enrollment size was recoded into quartiles, and dummy variables defined based on these cut points:

First Quartile (low)	213
Second Quartile	436
Third Quartile	725
Forth Quartile (high)	1681

Note, however, that these dummies reference the second quartile, not the first.

Classroom Variables

- *Graded configuration of the school:* a three-level indicator of “grade 9–12 and 10–12 high schools,” “grade 6–8 middle schools and grade 7–9 junior high schools,” and “all other schools where pre-algebra or algebra are taught.” These are used in the regressions of **non-target class dependent variables** only.

Results showed that there were differences among high schools, middle schools, and other types of schools teaching algebra. However, on further inspection, it was found that the effects were generated not by the types of schools, but by the grades of those schools. In other words, it is not the middle school that is different than the high school, but that it is 7th-grade that is different from 9th-grade classes. For this reason, two dummy variables were included in the models of target class dependent variables, one that indicates that the class is primarily 7th- and 8th-grade students, and another dummy variable indicating that the class is primarily either a 10th-, 11th-, or 12th-grade class. The effects of each reference the difference between those classes and the traditional ninth-grade class.

- NORC controlled for the size of the classroom with dummies that indicate smaller classes (15 or fewer, 16 to 20, 26 to 30, 31 to 35, and more than 36 students). These variables reference the typical size of 20 to 25. While these refer to the target class, dummies were also included in the regressions of the nontarget dependent variables on the assumption that they proxy student-teacher ratios in the school more generally.

Teacher Background Variables

- All of the regression tables included controls for teacher sex, age, and race/ethnicity (dummy variables for Hispanic and for non-Hispanic black; reference group is all other identifications). Teacher age is centered on age = 40 to improve interpretability of the regression intercept (constant) term.

Table C-1: Regressions of Teachers' Summary Ratings of Student Background Preparation for Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
Class is 7th or 8th grade (ref: 9th)	-0.879*** (0.17)	-0.978*** (0.14)				
Class is 10th, 11th, or 8th grade (ref: 9th)	0.288 (0.17)	0.209 (0.15)				
Class size LE 15 students (ref: 21–25)	0.0323 (0.28)		0.0515 (0.23)			
Class size 16–20 students (ref: 21–25)	-0.0462 (0.12)		-0.0620 (0.16)			
Class size 26–30 students (ref: 21–25)	-0.108 (0.12)		-0.256 (0.15)			
Class size 31–35 students (ref: 21–25)	0.263 (0.22)		0.0598 (0.25)			
Class size GE 36 students (ref: 21–25)	-0.285 (0.29)		-0.775* (0.31)			
School size: 1st quartile (ref: 2nd)	0.140 (0.20)		0.472* (0.21)			
School size: 3rd quartile (ref: 2nd)	0.239 (0.21)		0.287 (0.23)			
School size: 4th quartile (ref: 2nd)	0.212 (0.20)		0.799*** (0.19)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.277 (0.18)			-0.0426 (0.20)		-0.224 (0.20)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.137 (0.15)			0.305 (0.18)		0.124 (0.17)
Sch N of minority students: 4th quartile (ref: 1st)	0.0507 (0.19)			0.572** (0.18)		0.341 (0.19)
School N FRPL: 2nd quartile (ref: 1st)	0.0000157 (0.15)				0.0906 (0.16)	
School N FRPL: 3rd quartile (ref: 1st)	0.264 (0.19)				0.299 (0.16)	
School N FRPL: 4th quartile (ref: 1st)	0.0416 (0.22)				0.0836 (0.26)	
Urban school (ref: suburban)	0.150 (0.14)					0.0168 (0.15)
Rural school (ref: suburban)	-0.264 (0.15)					-0.345* (0.14)
Teacher is female (ref: male)	-0.0614 (0.11)					
Teacher's age (centered on age 40)	-0.000181 (0.0046)					
Teacher is black (ref: white, Asian)	-0.121 (0.22)					
Teacher is Hispanic (ref: Non-Hispanic)	0.0814 (0.11)					
Constant	-0.0475 (0.28)	0.0353 (0.063)	-0.722*** (0.19)	-0.524*** (0.14)	-0.445*** (0.11)	-0.273 (0.14)
Observations	660	720	723	725	713	725
R-squared	0.31	0.23	0.10	0.06	0.01	0.07

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = excellent [preparation] to 4 = poor [preparation]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients less favorable ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-2: Regressions of Teachers’ Summary Ratings of Importance-Weighted Preparation for Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
Class is 7th or 8th grade (ref: 9th)	-0.715*** (0.17)	-0.789*** (0.13)				
Class is 10th, 11th, or 8th grade (ref: 9th)	0.203 (0.13)	0.149 (0.13)				
Class size LE 15 students (ref: 21–25)	0.0551 (0.29)		0.132 (0.24)			
Class size 16–20 students (ref: 21–25)	-0.0974 (0.11)		-0.0932 (0.13)			
Class size 26–30 students (ref: 21–25)	-0.0952 (0.12)		-0.227 (0.12)			
Class size 31–35 students (ref: 21–25)	0.250 (0.22)		0.111 (0.23)			
Class size GE 36 students (ref: 21–25)	-0.367 (0.27)		-0.735* (0.29)			
School size: 1st quartile (ref: 2nd)	0.0123 (0.19)		0.283 (0.17)			
School size: 3rd quartile (ref: 2nd)	0.134 (0.18)		0.199 (0.19)			
School size: 4th quartile (ref: 2nd)	0.204 (0.19)		0.677*** (0.15)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.166 (0.16)			0.000194 (0.17)		-0.121 (0.17)
Sch N of minority students: 3rd quartile (ref: 1st)	0.0369 (0.16)			0.325* (0.15)		0.232 (0.15)
Sch N of minority students: 4th quartile (ref: 1st)	0.227 (0.19)			0.530** (0.16)		0.416* (0.17)
School N FRPL: 2nd quartile (ref: 1st)	-0.0319 (0.15)				0.0711 (0.15)	
School N FRPL: 3rd quartile (ref: 1st)	0.140 (0.18)				0.225 (0.15)	
School N FRPL: 4th quartile (ref: 1st)	-0.0307 (0.21)				0.0752 (0.20)	
Urban school (ref: suburban)	0.0879 (0.14)					-0.0697 (0.14)
Rural school (ref: suburban)	-0.113 (0.14)					-0.250 (0.13)
Teacher is female (ref: male)	0.130 (0.098)					
Teacher’s age (centered on age 40)	0.00270 (0.0044)					
Teacher is black (ref: white, Asian)	-0.128 (0.22)					
Teacher is Hispanic (ref: Non-Hispanic)	0.117 (0.14)					
Constant	-0.351 (0.25)	-0.00488 (0.056)	-0.594*** (0.15)	-0.500*** (0.11)	-0.387*** (0.10)	-0.320* (0.13)
Observations	640	697	700	702	690	702
R-squared	0.23	0.17	0.09	0.05	0.01	0.06

*** p < 0.001, ** p < 0.01, * p < 0.05. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 0 = not a problem [preparation] to 4 = serious problem [preparation]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients less favorable ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Table C-3: Regressions of Teachers' Summary Ratings of Content Standards for Algebra I in Their State or Local District on School Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
School is a middle or other school (ref: 9th to 12th grade high school)	0.187 (0.14)	0.212 (0.16)				
Class size LE 15 students (ref: 21–25)	0.432 (0.33)		0.495 (0.40)			
Class size 16–20 students (ref: 21–25)	-0.0409 (0.16)		-0.0104 (0.18)			
Class size 26–30 students (ref: 21–25)	-0.193 (0.13)		-0.139 (0.13)			
Class size 31–35 students (ref: 21–25)	-0.0323 (0.19)		-0.0191 (0.17)			
Class size GE 36 students (ref: 21–25)	0.0671 (0.19)		-0.0597 (0.19)			
School size: 1st quartile (ref: 2nd)	0.126 (0.28)		0.177 (0.26)			
School size: 3rd quartile (ref: 2nd)	-0.0607 (0.18)		0.0239 (0.18)			
School size: 4th quartile (ref: 2nd)	-0.162 (0.18)		-0.198 (0.12)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.365* (0.16)			-0.495* (0.22)		-0.402 (0.21)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.131 (0.26)			-0.197 (0.26)		-0.124 (0.31)
Sch N of minority students: 4th quartile (ref: 1st)	-0.142 (0.24)			-0.220 (0.24)		-0.140 (0.26)
School N FRPL: 2nd quartile (ref: 1st)	0.110 (0.18)				0.276 (0.22)	
School N FRPL: 3rd quartile (ref: 1st)	0.0563 (0.16)				0.279 (0.18)	
School N FRPL: 4th quartile (ref: 1st)	-0.374 (0.19)				-0.0607 (0.14)	
Urban school (ref: suburban)	0.179 (0.15)					0.0981 (0.15)
Rural school (ref: suburban)	0.0501 (0.17)					0.221 (0.22)
Teacher is female (ref: male)	-0.00636 (0.14)					
Teacher's age (centered on age 40)	0.00154 (0.0039)					
Teacher is black (ref: white, Asian)	0.158 (0.37)					
Teacher is Hispanic (ref: Non-Hispanic)	0.580 (0.38)					
Constant	0.0660 (0.40)	-0.0171 (0.053)	0.111 (0.15)	0.299 (0.21)	-0.0530 (0.076)	0.139 (0.20)
Observations	663	721	719	721	710	721
R-squared	0.12	0.01	0.06	0.03	0.02	0.04

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = excellent [standards] to 4 = poor [standards]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients less favorable ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-4: Regressions of Teachers' Summary Ratings of Assessment Standards for Algebra I in Their State or Local District on School Grade Level and Class Size of the Target Class, and School And Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
School is a middle or other school (ref: 9th to 12th grade high school)	0.00919 (0.14)	0.0642 (0.15)				
Class size LE 15 students (ref: 21–25)	0.326 (0.29)		0.393 (0.32)			
Class size 16–20 students (ref: 21–25)	0.153 (0.18)		0.217 (0.19)			
Class size 26–30 students (ref: 21–25)	-0.0656 (0.13)		-0.0100 (0.14)			
Class size 31–35 students (ref: 21–25)	-0.0754 (0.18)		-0.131 (0.18)			
Class size GE 36 students (ref: 21–25)	-0.150 (0.18)		-0.243 (0.18)			
School size: 1st quartile (ref: 2nd)	0.0933 (0.28)		0.118 (0.27)			
School size: 3rd quartile (ref: 2nd)	0.215 (0.22)		0.169 (0.22)			
School size: 4th quartile (ref: 2nd)	0.0594 (0.21)		-0.0318 (0.20)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.308 (0.19)			-0.373 (0.24)		-0.284 (0.22)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.0853 (0.23)			-0.0576 (0.24)		0.000997 (0.24)
Sch N of minority students: 4th quartile (ref: 1st)	-0.332 (0.24)			-0.281 (0.24)		-0.219 (0.25)
School N FRPL: 2nd quartile (ref: 1st)	0.00595 (0.20)				0.151 (0.20)	
School N FRPL: 3rd quartile (ref: 1st)	0.148 (0.23)				0.254 (0.17)	
School N FRPL: 4th quartile (ref: 1st)	-0.210 (0.24)				-0.109 (0.17)	
Urban school (ref: suburban)	0.225 (0.14)					0.125 (0.15)
Rural school (ref: suburban)	0.166 (0.18)					0.219 (0.18)
Teacher is female (ref: male)	0.0360 (0.14)					
Teacher's age (centered on age 40)	0.00110 (0.0045)					
Teacher is black (ref: white, Asian)	-0.0489 (0.33)					
Teacher is Hispanic (ref: Non-Hispanic)	0.446 (0.27)					
Constant	-0.166 (0.38)	-0.00235 (0.068)	-0.0979 (0.19)	0.190 (0.21)	-0.0576 (0.097)	0.0311 (0.19)
Observations	650	708	706	708	697	708
R-squared	0.07	0.00	0.03	0.02	0.02	0.03

Note: The items used to construct the dependent summary scale range from 1 = excellent [standards] to 4 = poor [standards]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients less favorable ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-5: Regressions of Teachers' Summary Ratings of Algebra I Textbooks on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
Class is 7th or 8th grade (ref: 9th)	-0.234 (0.12)	-0.251 (0.16)				
Class is 10th, 11th, or 8th grade (ref: 9th)	-0.0392 (0.19)	-0.00355 (0.21)				
Class size LE 15 students (ref: 21–25)	-0.561* (0.23)		-0.726* (0.32)			
Class size 16–20 students (ref: 21–25)	-0.105 (0.14)		-0.206 (0.18)			
Class size 26–30 students (ref: 21–25)	-0.0487 (0.15)		-0.155 (0.18)			
Class size 31–35 students (ref: 21–25)	-0.139 (0.16)		-0.145 (0.19)			
Class size GE 36 students (ref: 21–25)	-0.287 (0.16)		-0.367* (0.17)			
School size: 1st quartile (ref: 2nd)	0.151 (0.23)		0.355 (0.29)			
School size: 3rd quartile (ref: 2nd)	0.117 (0.18)		0.401* (0.18)			
School size: 4th quartile (ref: 2nd)	-0.00993 (0.18)		0.469** (0.17)			
Sch N of minority students: 2nd quartile (ref: 1st)	0.0229 (0.18)			0.298 (0.21)		0.0631 (0.19)
Sch N of minority students: 3rd quartile (ref: 1st)	0.0214 (0.16)			0.275 (0.17)		0.0283 (0.16)
Sch N of minority students: 4th quartile (ref: 1st)	0.517* (0.23)			0.705** (0.23)		0.387* (0.19)
School N FRPL: 2nd quartile (ref: 1st)	-0.204 (0.15)				-0.255 (0.19)	
School N FRPL: 3rd quartile (ref: 1st)	-0.0127 (0.18)				0.0508 (0.16)	
School N FRPL: 4th quartile (ref: 1st)	-0.362 (0.21)				-0.0705 (0.27)	
Urban school (ref: suburban)	0.0482 (0.14)					0.0683 (0.15)
Rural school (ref: suburban)	-0.347* (0.15)					-0.441*** (0.13)
Teacher is female (ref: male)	-0.172 (0.11)					
Teacher's age (centered on age 40)	0.00235 (0.0044)					
Teacher is black (ref: white, Asian)	-0.132 (0.27)					
Teacher is Hispanic (ref: Non-Hispanic)	-0.500* (0.24)					
Constant	0.193 (0.26)	-0.0116 (0.11)	-0.284 (0.17)	-0.404** (0.15)	-0.0353 (0.12)	-0.0844 (0.14)
Observations	636	693	696	698	686	698
R-squared	0.17	0.02	0.07	0.06	0.02	0.10

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = strongly agree [that the text has some quality] to 5 = strongly disagree [that the text has some quality]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients represent negative ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-6: Regressions of Teachers' Summary Ratings of Technology Use in Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
Class is 7th or 8th grade (ref: 9th)	-0.134 (0.16)	-0.00412 (0.17)				
Class is 10th, 11th, or 8th grade (ref: 9th)	0.142 (0.16)	0.181 (0.21)				
Class size LE 15 students (ref: 21–25)	0.292 (0.28)		0.385 (0.36)			
Class size 16–20 students (ref: 21–25)	0.545** (0.18)		0.604* (0.24)			
Class size 26–30 students (ref: 21–25)	0.254 (0.17)		0.255 (0.18)			
Class size 31–35 students (ref: 21–25)	0.374 (0.23)		0.413 (0.22)			
Class size GE 36 students (ref: 21–25)	0.276 (0.22)		0.350 (0.27)			
School size: 1st quartile (ref: 2nd)	-0.135 (0.30)		-0.115 (0.35)			
School size: 3rd quartile (ref: 2nd)	0.255 (0.22)		0.246 (0.19)			
School size: 4th quartile (ref: 2nd)	-0.0777 (0.25)		0.00865 (0.17)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.152 (0.16)			-0.0642 (0.19)		-0.116 (0.18)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.0132 (0.16)			0.124 (0.18)		0.142 (0.19)
Sch N of minority students: 4th quartile (ref: 1st)	-0.417 (0.28)			-0.443 (0.32)		-0.398 (0.26)
School N FRPL: 2nd quartile (ref: 1st)	0.0692 (0.18)				0.0791 (0.16)	
School N FRPL: 3rd quartile (ref: 1st)	0.275 (0.20)				0.173 (0.15)	
School N FRPL: 4th quartile (ref: 1st)	-0.295 (0.29)				-0.475 (0.29)	
Urban school (ref: suburban)	-0.0101 (0.15)					-0.225 (0.19)
Rural school (ref: suburban)	-0.176 (0.17)					-0.146 (0.15)
Teacher is female (ref: male)	0.241* (0.12)					
Teacher's age (centered on age 40)	-0.000164 (0.0072)					
Teacher is black (ref: white, Asian)	-0.250 (0.22)					
Teacher is Hispanic (ref: Non-Hispanic)	0.273 (0.30)					
Constant	-0.229 (0.40)	-0.0194 (0.13)	-0.326 (0.21)	0.0638 (0.15)	0.0171 (0.11)	0.170 (0.15)
Observations	650	709	712	714	702	714
R-squared	0.14	0.00	0.05	0.04	0.05	0.04

** p < 0.01, * p < 0.05. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = strongly agree [that the technology is helpful] to 5 = strongly disagree [that the technology is helpful]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients represent negative ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-7a: Regressions of Teachers' Summary Ratings on the Helpfulness of Pre-Service Teacher Training in Teaching Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
School is a middle or other school (ref: 9th to 12th grade high school)	0.114 (0.14)	0.209 (0.14)				
Class size LE 15 students (ref: 21–25)	0.192 (0.32)		0.187 (0.35)			
Class size 16–20 students (ref: 21–25)	0.0981 (0.17)		0.0940 (0.16)			
Class size 26–30 students (ref: 21–25)	0.350* (0.16)		0.389* (0.16)			
Class size 31–35 students (ref: 21–25)	0.377 (0.24)		0.452* (0.23)			
Class size GE 36 students (ref: 21–25)	0.737** (0.27)		0.733** (0.25)			
School size: 1st quartile (ref: 2nd)	0.110 (0.25)		0.0961 (0.24)			
School size: 3rd quartile (ref: 2nd)	-0.123 (0.23)		-0.0998 (0.18)			
School size: 4th quartile (ref: 2nd)	-0.290 (0.21)		-0.231 (0.14)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.123 (0.21)		-0.123 (0.22)			-0.200 (0.22)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.303 (0.22)		-0.287 (0.20)			-0.372 (0.21)
Sch N of minority students: 4th quartile (ref: 1st)	-0.179 (0.21)		-0.187 (0.18)			-0.296 (0.19)
School N FRPL: 2nd quartile (ref: 1st)	-0.000303 (0.18)				-0.0585 (0.21)	
School N FRPL: 3rd quartile (ref: 1st)	-0.0584 (0.18)				-0.117 (0.16)	
School N FRPL: 4th quartile (ref: 1st)	-0.0590 (0.19)				-0.0236 (0.18)	
Urban school (ref: suburban)	0.0632 (0.14)					0.00919 (0.13)
Rural school (ref: suburban)	-0.274 (0.18)					-0.159 (0.18)
Teacher is female (ref: male)	0.0959 (0.12)					
Teacher's age (centered on age 40)	0.000408 (0.0045)					
Teacher is black (ref: white, Asian)	0.0355 (0.34)					
Teacher is Hispanic (ref: Non-Hispanic)	-0.642*** (0.19)					
Constant	0.197 (0.35)	0.0143 (0.054)	0.0266 (0.16)	0.269 (0.17)	0.169 (0.12)	0.385* (0.18)
Observations	673	734	732	734	722	734
R-squared	0.08	0.01	0.04	0.01	0.00	0.02

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = Very Well to 4 = Very Poorly. Negative coefficients in this table thus represent more favorable ratings and positive coefficients less favorable ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-7b: Regressions of Teachers' Summary Ratings on the Helpfulness of Professional Development for Teaching Algebra I on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
School is a middle or other school (ref: 9th to 12th grade high school)	-0.123 (0.11)	0.0320 (0.11)				
Class size LE 15 students (ref: 21–25)	0.0342 (0.20)		0.0142 (0.19)			
Class size 16–20 students (ref: 21–25)	0.0811 (0.14)		0.0829 (0.13)			
Class size 26–30 students (ref: 21–25)	0.154 (0.15)		0.157 (0.15)			
Class size 31–35 students (ref: 21–25)	0.261 (0.23)		0.278 (0.22)			
Class size GE 36 students (ref: 21–25)	0.663** (0.21)		0.594** (0.23)			
School size: 1st quartile (ref: 2nd)	-0.0784 (0.23)		-0.0831 (0.21)			
School size: 3rd quartile (ref: 2nd)	0.120 (0.23)		0.0239 (0.21)			
School size: 4th quartile (ref: 2nd)	-0.263 (0.22)		-0.248 (0.17)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.245 (0.19)			-0.194 (0.16)		-0.194 (0.19)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.195 (0.18)			-0.144 (0.15)		-0.182 (0.18)
Sch N of minority students: 4th quartile (ref: 1st)	-0.281 (0.25)			-0.145 (0.16)		-0.207 (0.19)
School N FRPL: 2nd quartile (ref: 1st)	-0.170 (0.16)				-0.0963 (0.14)	
School N FRPL: 3rd quartile (ref: 1st)	-0.100 (0.17)				-0.0636 (0.15)	
School N FRPL: 4th quartile (ref: 1st)	-0.0769 (0.24)				0.0324 (0.18)	
Urban school (ref: suburban)	0.184 (0.15)					0.128 (0.14)
Rural school (ref: suburban)	0.0300 (0.18)					0.0263 (0.15)
Teacher is female (ref: Male)	-0.00290 (0.11)					
Teacher's age (centered on age 40)	-0.00502 (0.0043)					
Teacher is black (ref: white, Asian)	0.464 (0.28)					
Teacher is Hispanic (ref: Non-Hispanic)	0.313 (0.36)					
Constant	0.539 (0.33)	0.0741 (0.062)	0.111 (0.19)	0.207 (0.11)	0.128 (0.100)	0.188 (0.16)
Observations	675	736	734	736	724	736
R-squared	0.05	0.00	0.02	0.01	0.00	0.01

** p < 0.01. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = Very Well to 4 = Very Poorly. Negative coefficients in this table thus represent more favorable ratings and positive coefficients less favorable ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-8: Regressions of Teachers' Summary Ratings of Remedial Help for Algebra I Students on Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
School is a middle or other school (ref: 9th to 12th grade high school)	0.243 (0.16)	0.440* (0.17)				
Class size LE 15 students (ref: 21–25)	-0.0591 (0.21)		0.0301 (0.25)			
Class size 16–20 students (ref: 21–25)	-0.176 (0.17)		-0.00806 (0.20)			
Class size 26–30 students (ref: 21–25)	-0.237 (0.17)		0.0607 (0.20)			
Class size 31–35 students (ref: 21–25)	0.0786 (0.23)		0.408 (0.24)			
Class size GE 36 students (ref: 21–25)	-0.302 (0.34)		-0.173 (0.23)			
School size: 1st quartile (ref: 2nd)	-0.0702 (0.32)		-0.310 (0.37)			
School size: 3rd quartile (ref: 2nd)	-0.287 (0.28)		-0.486 (0.32)			
School size: 4th quartile (ref: 2nd)	-0.449 (0.28)		-0.767** (0.29)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.258 (0.22)			-0.463 (0.24)		-0.412 (0.26)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.0232 (0.27)			-0.188 (0.27)		-0.113 (0.32)
Sch N of minority students: 4th quartile (ref: 1st)	-0.814** (0.26)			-0.587* (0.23)		-0.485 (0.27)
School N FRPL: 2nd quartile (ref: 1st)	-0.137 (0.20)				-0.0589 (0.18)	
School N FRPL: 3rd quartile (ref: 1st)	-0.0906 (0.23)				-0.107 (0.24)	
School N FRPL: 4th quartile (ref: 1st)	0.576* (0.28)				0.351 (0.27)	
Urban school (ref: suburban)	-0.119 (0.16)					-0.0722 (0.18)
Rural school (ref: suburban)	-0.188 (0.22)					0.0913 (0.24)
Teacher is female (ref: male)	0.273* (0.12)					
Teacher's age (centered on age 40)	-0.0128** (0.0049)					
Teacher is black (ref: white, Asian)	0.520* (0.21)					
Teacher is Hispanic (ref: Non-Hispanic)	-0.473 (0.35)					
Constant	1.100** (0.41)	0.0259 (0.082)	0.682* (0.29)	0.531** (0.20)	0.225 (0.14)	0.464 (0.24)
Observations	660	717	715	717	705	717
R-squared	0.20	0.04	0.07	0.04	0.02	0.04

** $p < 0.01$, * $p < 0.05$. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = excellent [tutoring] to 5 = poor [tutoring]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients represent negative ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

Table C-9: Regressions of Teachers’ Summary Ratings of Extent to Which They See Different Levels of Students in the Same Algebra I Class as a Problem in Their School On Grade Level and Class Size of the Target Class, and School and Teacher Demographic Variables

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
School is a middle or other school (ref: 9th to 12th grade high school)	-0.314** (0.12)	-0.292* (0.13)				
Class size LE 15 students (ref: 21–25)	-0.152 (0.22)		-0.280 (0.24)			
Class size 16–20 students (ref: 21–25)	0.0738 (0.16)		-0.0492 (0.19)			
Class size 26–30 students (ref: 21–25)	0.252 (0.17)		0.155 (0.18)			
Class size 31–35 students (ref: 21–25)	0.620* (0.26)		0.514* (0.25)			
Class size GE 36 students (ref: 21–25)	-0.0995 (0.26)		-0.318 (0.31)			
School size: 1st quartile (ref: 2nd)	0.428 (0.25)		0.548* (0.26)			
School size: 3rd quartile (ref: 2nd)	0.0937 (0.23)		0.126 (0.23)			
School size: 4th quartile (ref: 2nd)	0.200 (0.22)		0.357 (0.20)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.253 (0.18)			-0.194 (0.17)		-0.258 (0.17)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.0220 (0.18)			0.183 (0.16)		0.0684 (0.17)
Sch N of minority students: 4th quartile (ref: 1st)	0.198 (0.25)			0.478* (0.19)		0.318 (0.18)
School N FRPL: 2nd quartile (ref: 1st)	0.107 (0.16)				0.130 (0.15)	
School N FRPL: 3rd quartile (ref: 1st)	0.152 (0.21)				0.229 (0.17)	
School N FRPL: 4th quartile (ref: 1st)	0.156 (0.30)				0.401 (0.23)	
Urban school (ref: suburban)	0.155 (0.14)					0.155 (0.16)
Rural school (ref: suburban)	-0.0467 (0.18)					-0.102 (0.14)
Teacher is female (ref: male)	0.116 (0.12)					
Teacher’s age (centered on age 40)	0.00645 (0.0050)					
Teacher is black (ref: white, Asian)	-0.432* (0.20)					
Teacher is Hispanic (ref: Non-Hispanic)	0.317 (0.24)					
Constant	-0.674 (0.38)	0.0620 (0.080)	-0.399 (0.21)	-0.192 (0.11)	-0.255* (0.12)	-0.117 (0.14)
Observations	675	735	733	735	723	735
R-squared	0.12	0.02	0.05	0.05	0.02	0.06

** p < 0.01, * p < 0.05. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = not an problem [mixed classes] to 5 = is a serious problem [mixed classes]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients represent negative ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center’s National Survey of Algebra Teachers, 2007.

Table C-10: Regressions of Teachers' Summary Ratings of Family Participation is a Problem in Algebra I on Grade Level and Class Size of the Target Class, and School And Teacher Demographic Variables, 2007

Independent Variable	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
School is a middle or other school (ref: 9th to 12th grade high school)	-0.650*** (0.12)	-0.681*** (0.12)				
Class size LE 15 students (ref: 21–25)	-0.0983 (0.21)		-0.284 (0.28)			
Class size 16–20 students (ref: 21–25)	0.0749 (0.14)		-0.132 (0.19)			
Class size 26–30 students (ref: 21–25)	0.0953 (0.17)		-0.0917 (0.16)			
Class size 31–35 students (ref: 21–25)	0.316 (0.22)		0.0871 (0.25)			
Class size GE 36 students (ref: 21–25)	-0.415* (0.19)		-0.945** (0.32)			
School size: 1st quartile (ref: 2nd)	0.0318 (0.22)		0.137 (0.27)			
School size: 3rd quartile (ref: 2nd)	0.00348 (0.21)		0.00244 (0.22)			
School size: 4th quartile (ref: 2nd)	-0.0545 (0.21)		0.184 (0.19)			
Sch N of minority students: 2nd quartile (ref: 1st)	-0.301 (0.20)			-0.292 (0.18)		-0.358 (0.19)
Sch N of minority students: 3rd quartile (ref: 1st)	-0.0448 (0.17)			0.214 (0.16)		0.170 (0.19)
Sch N of minority students: 4th quartile (ref: 1st)	0.369 (0.22)			0.701*** (0.17)		0.655** (0.20)
School N FRPL: 2nd quartile (ref: 1st)	0.314* (0.15)				0.346* (0.17)	
School N FRPL: 3rd quartile (ref: 1st)	0.458* (0.19)				0.531** (0.19)	
School N FRPL: 4th quartile (ref: 1st)	0.543* (0.23)				0.830*** (0.20)	
Urban school (ref: suburban)	-0.129 (0.15)					-0.0898 (0.14)
Rural school (ref: suburban)	-0.200 (0.18)					-0.157 (0.16)
Teacher is female (ref: male)	-0.223* (0.10)					
Teacher's age (centered on age 40)	-0.00146 (0.0043)					
Teacher is black (ref: white, Asian)	-0.426 (0.26)					
Teacher is Hispanic (ref: Non-Hispanic)	-0.0157 (0.17)					
Constant	0.179 (0.31)	0.206** (0.075)	-0.138 (0.21)	-0.270* (0.12)	-0.526*** (0.13)	-0.155 (0.17)
Observations	673	733	731	733	721	733
R-squared	0.25	0.11	0.03	0.11	0.08	0.11

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Standard errors in parentheses.

Note: The items used to construct the dependent summary scale range from 1 = not an problem [family help] to 5 = is a serious problem [family help]. Negative coefficients in this table thus represent more favorable ratings and positive coefficients represent negative ratings.

LE: Less than or equal to; GE: Greater than or equal to; FRPL: Free or reduced-price lunch

Source: Based on responses to the National Opinion Research Center's National Survey of Algebra Teachers, 2007.

APPENDIX D: Means and Confidence Intervals for Items in the National Survey of Algebra Teachers

Item	Low 95% CI	Mean	High 95% CI
Section 1: Your Algebra I Class			
1. How many students are in your Target Class?			
Number of students in Target Class less than 15	0.05	0.10	0.15
Number of students in Target Class 15–20	0.21	0.27	0.32
Number of students in Target Class 21–25	0.26	0.32	0.38
Number of students in Target Class 26–30	0.18	0.25	0.31
Number of students in Target Class 31–35	0.04	0.07	0.10
Scale = Proportion			
2. How many of the students in your Target Class:			
a. Are in the 7th grade	0.10	0.21	0.33
b. Are in the 8th grade	1.35	1.65	1.96
c. Are in the 9th grade	1.74	2.00	2.25
d. Are in the 10th grade	0.56	0.68	0.80
e. Are in the 11th grade	0.26	0.33	0.40
f. Are in the 12th grade	0.11	0.17	0.23
g. Are in special education (i.e., have an IEP)	0.53	0.61	0.69
h. Are currently enrolled in your school's bilingual program	0.23	0.34	0.44
Scale = Proportion			

Continued on p. 9-62

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
3. How many students in your Target Class:			
a. Come to class on time	3.49	3.57	3.65
b. Attend class regularly	3.39	3.46	3.54
c. Come to class prepared with appropriate supplies and books	2.79	2.92	3.05
d. Create serious behavior problems in your class	0.53	0.61	0.69
e. Regularly pay attention in class	2.70	2.82	2.93
f. Actively participate in class activities	2.57	2.69	2.80
g. Take notes	2.59	2.72	2.86
h. Have serious difficulties reading English	0.41	0.47	0.54
i. Care about what grade they receive	2.78	2.90	3.02
Scale: 0 = None 1 = Some 2 = About Half 3 = Most 4 = Nearly All			
4. Based on your experience with incoming Algebra I students in your Target Class, how would you rate students' background in each of the following areas of mathematics?			
a. Whole numbers and operations with whole numbers	1.77	1.86	1.95
b. Positive and negative integers and operations with positive and negative integers	2.46	2.58	2.69
c. Rational numbers and operations involving fractions and decimals	2.97	3.10	3.22
d. Ratios, percents, rates, and proportions	2.71	2.83	2.95
e. Solving word problems	3.14	3.26	3.38
f. The concept of variables	2.38	2.48	2.58

Continued on p. 9-63

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
g. Manipulation of variables	2.72	2.82	2.92
h. Solving simple linear equations and inequalities	2.70	2.80	2.89
i. Plotting points and graphing lines on the four-quadrant coordinate plane	2.32	2.44	2.56
j. Measurement formulas of basic geometric shapes	2.71	2.81	2.92
k. Basic study skills and work habits necessary for success in math	2.90	3.00	3.10
l. Computation skills	2.42	2.53	2.64
m. Ability to use math in contexts that are identified as real world situations	2.84	2.94	3.04
n. Working independently	2.48	2.58	2.68
o. Working cooperatively with other students	2.22	2.32	2.41
Scale: 1 = Excellent 2 = Good 3 = Fair 4 = Poor			
5. On average how often do you use the following instructional materials and tools in your Target Class?			
a. Textbooks	2.76	2.92	3.07
b. Printed instructional materials other than textbooks	2.49	2.60	2.71
c. Teacher/colleague written instructional materials	1.96	2.11	2.25
d. Graphing calculators (the school's or their own)	1.29	1.53	1.78
e. Physical objects (manipulatives)	1.13	1.26	1.38
f. Computer-based instructional tools (software)	0.81	1.00	1.20
Scale: 0 = Never 1 = Less than once a week 2 = About once a week 3 = Several times a week 4 = Everyday			

Continued on p. 9-64

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
<p>6. Please indicate your level of agreement or disagreement with the statement: “Computer-based instructional tools (software) are helping Algebra I students in my Target Class.”</p> <p>Scale: 1 = Strongly agree 2 = Somewhat agree 3 = Neither agree nor disagree 4 = Somewhat disagree 5 = Strongly disagree</p>	3.16	3.33	3.51
<p>8. Please indicate your level of agreement or disagreement with each of the following statements regarding the Algebra I textbook you use in your Target Class.</p> <p>a. The textbook includes the appropriate topics and content to teach the course.</p> <p>b. The textbook appropriately sequences math concepts.</p> <p>c. The textbook provides examples and lessons that are focused directly on the mathematics involved and that explain concepts clearly.</p> <p>d. The textbook provides opportunities for the development of problem-solving skills.</p> <p>e. The textbook provides adequate practice for each topic covered.</p> <p>f. The textbook and the supporting materials which come with it provide the right mix of useful suggestions and problems for homework assignments.</p> <p>g. The textbook provides adequate supplementary/support materials.</p> <p>h. The textbook is clearly focused on Algebra I and contains very few if any distractions to the instructional focus (e.g., off-task activities pictures with no sense of purpose, etc.).</p>	1.67	1.77	1.87
	2.09	2.23	2.38
	1.96	2.09	2.22
	2.02	2.16	2.31
	2.12	2.29	2.45
	2.08	2.24	2.39
	2.12	2.27	2.43
	1.90	2.01	2.13

Continued on p. 9-65

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
i. The textbook and the accompanying materials provide useful suggestions for meeting the needs of diverse learners.	2.57	2.73	2.89
Scale: 1 = Strongly agree 2 = Somewhat agree 3 = Neither agree nor disagree 4 = Somewhat disagree 5 = Strongly disagree			
9. About what percentage of your current Algebra I students in your Target Class do you anticipate will fail your course?			
None will fail	0.16	0.22	0.28
1–10% will fail	0.34	0.41	0.47
11–20% will fail	0.12	0.18	0.24
21–30% will fail	0.05	0.08	0.11
41–50% will fail	0.03	0.06	0.08
More than 50% will fail	0.02	0.03	0.04
Scale = Proportion			
10. On average, about how much time per day do you expect your Algebra I students in your Target Class to spend on assignments outside of class?			
None	0.01	0.04	0.07
1–15 minutes	0.10	0.14	0.17
16–30 minutes	0.46	0.53	0.60
31–45 min	0.18	0.24	0.30
46–60 minutes	0.02	0.04	0.06
More than 60 minutes	0.00	0.00	0.00
Scale = Proportion			

Continued on p. 9-66

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
<p>11. On average, about how many of your Algebra I students in your Target Class complete their outside-of-class assignments?</p> <p>Scale = 1 All or almost all 2 = About two-thirds 3 = About one-third 4 = None or almost none</p>	1.87	1.97	2.06
<p>12. On average how many minutes per week does your Algebra I Target Class meet?</p> <p>Scale = Minutes</p>	116.96	118.24	119.52
<p>13. Does your Algebra I Target Class meet everyday?</p> <p>Scale = Proportion</p>	0.76	0.83	0.89
<p>14. How long is each period during which you teach Algebra I?</p> <p>Scale = Minutes</p>	58.85	61.74	64.63
<p>15. Is this enough instructional time to adequately teach Algebra I to your Target Class?</p> <p>Scale = Proportion</p>	0.71	0.76	0.82
<p>Section 2: Your School and Algebra I</p>			
<p>1. Below is a list of factors that may cause problems in Algebra I instruction. For each factor please indicate whether it is not a problem, a minor problem, a moderate problem, or a serious problem in your school.</p>			
a. Insufficient access to computers	1.68	1.86	2.04
b. Inadequate access to graphing calculators	1.58	1.70	1.81

Continued on p. 9-67

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
c. Poor quality or out-of-date textbooks	1.43	1.59	1.75
d. Class sizes are too large	1.84	1.97	2.10
e. Too little coordination or articulation between classes in the mathematics curriculum	1.62	1.75	1.87
f. Some teachers are inadequately prepared to teach Algebra I	1.32	1.41	1.49
g. Lack of teacher planning time	1.63	1.74	1.85
h. Students with different abilities and interests taking the same math classes	2.40	2.53	2.66
i. Too little parent/family support	2.61	2.74	2.87
j. Inadequate opportunities for professional learning	1.55	1.66	1.77
k. Inadequate administrative support	1.52	1.64	1.75
Scale: 1 = Not a problem 2 = Minor problem 3 = Moderate problem 4 = Serious problem			
2. Does your school offer different levels of Algebra I to groups of students based on ability?	0.39	0.47	0.54
Scale = Proportion			
3. How many CLASS PERIODS do you teach a WEEK? (Exclude study halls and homeroom periods.)			
Scale = Number of Periods	17.58	18.86	20.15
4. Is your Algebra I class part of block scheduling at your school?	0.26	0.34	0.41
Scale = Proportion			
5. On average how many minutes are you scheduled during the school day to prepare for classes?	55.69	59.29	62.89
Scale = Minutes			

Continued on p. 9-68

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
<p>6. On average how much time do you spend outside of the regular school day preparing for your Algebra I classes?</p> <p>Scale = Minutes</p>	47.82	52.11	56.39
<p>7. To what grades are you currently teaching Algebra I? (Check all that apply)</p> <p>% 7th grade</p> <p>% 8th grade</p> <p>% 9th grade</p> <p>% 10th grade</p> <p>% 11th grade</p> <p>% 12th grade</p> <p>Scale = Proportion</p>	.04 0.31 0.51 0.37 0.22 0.12	.07 0.38 0.58 0.43 0.28 0.17	.10 0.46 0.65 0.50 0.33 0.21
<p>8. How do you rate the remedial help in your school for students who are struggling in Algebra I?</p> <p>a. Availability of tutoring or other remedial assistance</p> <p>b. Quality of tutoring or other remedial assistance</p> <p>Scale: 1 = Excellent 2 = Good 3 = Fair 4 = Poor</p>	2.35 2.26	2.52 2.42	2.69 2.58
Section 3: Your Views of Mathematics Education			
<p>1. How important is a solid foundation in each of the following areas to students' success in Algebra I?</p> <p>a. Whole numbers and operations with whole numbers</p> <p>b. Positive and negative integers and operations with positive and negative integers</p>	4.58 4.71	4.65 4.77	4.72 4.83

Continued on p. 9-69

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
c. Rational numbers and operations involving fractions and decimals	4.52	4.59	4.67
d. Ratios, percents, rates, and proportions	4.09	4.19	4.28
e. Solving problems involving whole numbers fractions and decimals	4.45	4.51	4.58
f. The concept of variables	4.53	4.61	4.69
g. Manipulation of variables	4.46	4.55	4.64
h. Solving simple linear equations and inequalities	4.34	4.44	4.53
i. Plotting points and graphing lines on the four-quadrant coordinate plane	4.25	4.35	4.44
j. Measurement formulas of basic geometric shapes	3.32	3.45	3.58
k. Basic study skills and work habits necessary for success in math	4.66	4.72	4.78
l. Computation skills	4.46	4.54	4.61
m. Ability to use math in contexts that are identified as real world situations	4.01	4.10	4.20
n. Working independently	4.26	4.34	4.42
o. Working cooperatively with other students	3.92	4.02	4.12
Scale: 1 = Not at all important 2 = Slightly important 3 = Moderately Important 4 = Very Important 5 = Extremely Important			
3. In your opinion are the local district expectations for student proficiency with Algebra I	1.92	1.97	2.02
Scale: 1 = Too low 2 = About right 3 = Too high			
4a. How well do you feel your preservice teacher education program prepared you to teach Algebra I?	1.94	2.06	2.17

Continued on p. 9-70

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
<p>4b. How well do you feel your professional development opportunities have helped you to teach Algebra I?</p> <p>Scale: 1 = Very well 2 = Adequately 3 = Less than adequately 4 = Very poorly</p>	1.96	2.05	2.14
<p>5. Does your district have teachers at the K–8 level who are mathematics specialists (even if they are called something else)?</p> <p>a. Do these teachers work with classes of students?</p> <p>b. Do these teachers provide support to other teachers?</p> <p>c. Are these teachers specifically qualified or trained to be mathematics specialists?</p> <p>Scale = Proportion</p>	0.36	0.45	0.55
<p>a. Do these teachers work with classes of students?</p>	0.51	0.63	0.74
<p>b. Do these teachers provide support to other teachers?</p>	0.76	0.84	0.93
<p>c. Are these teachers specifically qualified or trained to be mathematics specialists?</p>	0.51	0.70	0.88
<p>6. Are students required to pass Algebra I in order to graduate high school in your district?</p> <p>Scale = Proportion</p>	0.85	0.88	0.92
<p>7. How do you rate the state or local school district mathematics standards and math tests that they currently use for Algebra I?</p> <p>a. Content standards for Algebra I</p> <p>b. Assessments of Algebra I outcomes</p> <p>Scale: 1 = Excellent 2 = Good 3 = Fair 4 = Poor</p>	2.05	2.17	2.29
<p>a. Content standards for Algebra I</p>	2.05	2.17	2.29
<p>b. Assessments of Algebra I outcomes</p>	2.39	2.52	2.64
Section 4: Teacher Background			
<p>1. What is your sex?</p> <p>Scale = Proportion Female</p>	0.60	0.66	0.72

Continued on p. 9-71

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
2. Are you Hispanic or Latino?	0.04	0.06	0.08
Scale = Proportion			
3. Which of the following best describes your Hispanic origin or descent?			
Mexican/a or Chicano/a	0.50	0.50	0.50
Puerto Rican	0.05	0.05	0.05
Cuban	0.08	0.08	0.08
Other Hispanic	0.18	0.18	0.18
Scale = Proportion	0.83	0.83	0.83
4. What is your racial background?			
American Indian or Alaska Native	0.00	0.02	0.04
Native Hawaiian or other Pacific Islander	0.00	0.00	0.01
Asian	0.01	0.03	0.04
Black or African-American	0.01	0.04	0.06
White	0.88	0.91	0.94
Scale = Proportion			
5. What is your age?	39.46	41.11	42.75
Scale = Age			
6. What is your employment status in this school system?			
Regular full-time teacher	0.94	0.97	0.99
Regular part-time teacher	0.00	0.02	0.04

Continued on p. 9-72

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
Long-term substitute teacher	0.00	0.01	0.02
Other			
Scale = Proportion			
7. Counting this year how many years in total have you taught at either the elementary or secondary level? Please also note the number of years in total.			
a. Elementary (K–6)	1.06	2.07	3.08
b. Secondary (7–12)	10.99	12.15	13.31
c. Total (K–12)	11.51	12.77	14.02
Scale = Number of Years			
8. Counting this year how many years in total have you taught in this school?			
	6.93	8.00	9.08
Scale = Number of Years			
9. How many years of experience do you have teaching Algebra I?			
	8.55	9.49	10.44
Scale = Number of Years	1.07	1.15	1.23
10. In which subject area have you taught the most during this school year?			
Math	0.86	0.92	0.97
Science	-0.01	0.05	0.10
English	0.00	0.02	0.04

Continued on p. 9-73

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
Social Studies/History	0.00	0.00	0.00
Other	0.00	0.02	0.03
Scale = Proportion			
11. What type of teaching certification do you currently hold?			
Regular or standard state certificate	0.78	0.82	0.87
Probationary certificate	0.01	0.02	0.03
Provisional or temporary certificate	0.07	0.11	0.14
Waiver or emergency certificate	0.00	0.01	0.02
Other	0.02	0.04	0.06
Scale = Proportion			
12. Which of the following best describes your national certification status?			
I have achieved certification by the National Board for Professional Teaching Standards.	0.08	0.12	0.17
I am currently working on National Board certification but have not achieved it.	0.02	0.04	0.06
I am not working on National Board certification.	0.79	0.84	0.88
Scale = Proportion			
13. Under the <i>No Child Left Behind Law (NCLB)</i> are you considered to be a highly qualified teacher of:			
a. High school mathematics	0.77	0.83	0.89
b. Middle school mathematics	0.91	0.94	0.98

Continued on p. 9-74

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
14. What is the highest academic degree you hold?			
Bachelor's	0.45	0.51	0.57
Master's	0.35	0.41	0.46
Education specialist or professional diploma based on at least one year of work past Master's-degree level	0.04	0.06	0.09
Doctorate	0.00	0.01	0.01
Professional degree (e.g., M.D., L.L.B., J.D., D.D.S.)	0.00	0.01	0.01
Scale = Proportion			
15. In what YEAR did you receive your highest college degree?			
	1992.16	1993.70	1995.24
Scale = Year			
16. What was your major field of study for your bachelor's degree?			
Education	0.14	0.20	0.25
English	0.00	0.01	0.02
History	0.00	0.02	0.03
Mathematics	0.38	0.44	0.49
Natural/Physical science	0.02	0.07	0.12
Foreign language	0.00	0.00	0.01
Other	0.22	0.27	0.31
Scale = Proportion			

Continued on p. 9-75

Appendix D, continued

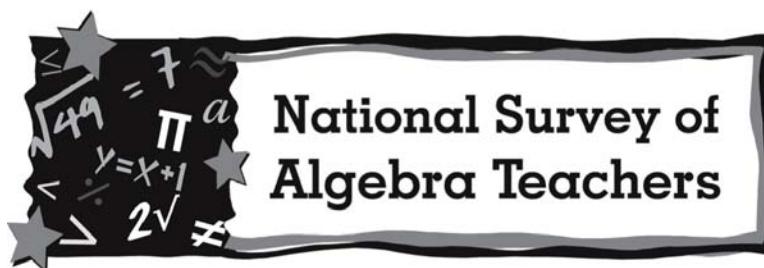
Item	Low 95% CI	Mean	High 95% CI
17. What was your minor field of study for your bachelor's degree?			
Education	0.10	0.15	0.20
English	0.00	0.01	0.01
History	0.02	0.06	0.10
Mathematics	0.25	0.33	0.41
Natural/Physical science	0.05	0.10	0.15
Foreign language	0.02	0.05	0.08
Other	0.24	0.30	0.37
Scale = Proportion			
18. If you have earned a graduate degree, what was your major field of study for your highest graduate degree?			
Education	0.43	0.50	0.58
Mathematics	0.09	0.15	0.21
Natural/Physical science	0.00	0.01	0.02
Other	0.26	0.33	0.41
Scale = Proportion			
19. How skillful would you say you are at helping students master Algebra I?			
	1.27	1.33	1.40
Scale: 1 = Very skillful 2 = Somewhat skillful 3 = Sometimes less skillful than I would like to be 4 = Much Less Skillful than I would like to be			

Continued on p. 9-76

Appendix D, continued

Item	Low 95% CI	Mean	High 95% CI
20. What do you find most challenging in teaching Algebra I successfully?			
Explaining material to struggling students	0.01	0.03	0.05
Handling accelerated students	0.00	0.01	0.03
Teaching procedures	0.00	0.00	0.01
Explaining concepts (e.g., why procedures work, what ideas mean)	0.00	0.04	0.09
Using diagrams or models effectively	0.00	0.01	0.02
Interpreting students' errors and difficulties	-0.01	0.01	0.04
Working with unmotivated students	0.55	0.62	0.68
Working with advanced students	0.00	0.01	0.02
Helping students whose home language is other than Standard English	0.01	0.01	0.02
Making mathematics accessible and comprehensible to all of my students	0.08	0.11	0.15
Other	0.10	0.14	0.17
Scale = Proportion			

APPENDIX E: NSAT Questionnaire



Sponsored by:

The U.S. Department of Education
National Mathematics Advisory Panel

Conducted by:

NORC
at the University of Chicago

The National Survey of Algebra Teachers seeks to obtain information from Algebra I teachers about their views on students' preparation, curriculum and instruction.

Participation of teachers is voluntary and no negative consequences will attend a decision not to participate. Responses to this data collection will be used only for statistical purposes. The reports prepared for this study will summarize findings across the sample and will not associate responses with a specific district, school, or individual. We will not provide information that identifies you or your district to anyone outside the study team, except as required by law.

You may use either pen or pencil.

Please clearly circle your answers.

If you need to change an answer, please make sure the old answer is either completely erased or clearly crossed out.

The time required to complete this form varies according to individual circumstances, but the average time is estimated to be 25 minutes. If you have any comments regarding this time estimate, please write to: U.S. Department of Education, The National Mathematics Advisory Panel, Washington, D.C. 20202-4651. If you have any specific questions or comments regarding this study, please contact Lekha Venkataraman of NORC at 1-866-696-4580.

Thank you for taking the time to complete this questionnaire.

OMB No: 1875-0243

Expiration Date: 09/30/2007

Section 1: Your Algebra I Class

In this section of the survey we would like for you to report on ONE specific class, which we will call your Target Class. When you see this referred to in a question, please report on this ONE class, even if it is not typical of the Algebra I classes you teach.

How to determine your Target Class

Your Target Class is the first Algebra I class you teach on Mondays. If you do not teach an Algebra I class on Monday, your Target Class is the first Algebra I class you teach on the following day.

Please answer the following questions regarding your Target Class.

1. How many students are in your Target Class?					
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
Less than 15 students	15–20 students	21–25 students	26–30 students	31–35 students	More than 35 students

2. How many of the students in your Target Class: <i>(Please circle one per line)</i>					
	None	Some	About half	Most	Nearly all
2a. Are in the 7th grade	0	1	2	3	4
2b. Are in the 8th grade	0	1	2	3	4
2c. Are in the 9th grade	0	1	2	3	4
2d. Are in the 10th grade	0	1	2	3	4
2e. Are in the 11th grade	0	1	2	3	4
2f. Are in the 12th grade	0	1	2	3	4
2g. Are in special education (i.e., have an IEP)	0	1	2	3	4
2h. Are currently enrolled in your school's bilingual program	0	1	2	3	4

3. How many students in your Target Class: <i>(Please circle one per line)</i>					
	None	Some	About half	Most	Nearly all
3a. Come to class on time	0	1	2	3	4
3b. Attend class regularly	0	1	2	3	4
3c. Come to class prepared with appropriate supplies and books	0	1	2	3	4
3d. Create serious behavior problems in your class	0	1	2	3	4
3e. Regularly pay attention in class	0	1	2	3	4
3f. Actively participate in class activities	0	1	2	3	4
3g. Take notes	0	1	2	3	4
3h. Have serious difficulties reading English	0	1	2	3	4
3i. Care about what grade they receive	0	1	2	3	4

4. Based on your experience with in-coming Algebra I students in your Target Class, how would you rate students' background in each of the following areas of mathematics? (Please circle one per line)

	Excellent	Good	Fair	Poor
4a. Whole numbers and operations with whole numbers	1	2	3	4
4b. Positive and negative integers and operations with positive and negative integers	1	2	3	4
4c. Rational numbers and operations involving fractions and decimals	1	2	3	4
4d. Ratios, percents, rates, and proportions	1	2	3	4
4e. Solving word problems	1	2	3	4
4f. The concept of variables	1	2	3	4
4g. Manipulation of variables	1	2	3	4
4h. Solving simple linear equations and inequalities	1	2	3	4
4i. Plotting points, and graphing lines on the four-quadrant coordinate plane	1	2	3	4
4j. Measurement formulas of basic geometric shapes	1	2	3	4
4k. Basic study skills and work habits necessary for success in math	1	2	3	4
4l. Computation skills	1	2	3	4
4m. Ability to use math in contexts that are identified as real world situations	1	2	3	4
4n. Working independently	1	2	3	4
4o. Working cooperatively with other students	1	2	3	4

5. On average, how often do you use the following instructional materials and tools in your Target Class? (Please circle one per line)

	Never	Less than once a week	About once a week	Several times a week	Everyday
5a. Textbooks	0	1	2	3	4
5b. Printed instructional materials other than textbooks	0	1	2	3	4
5c. Teacher/colleague written instructional materials	0	1	2	3	4
5d. Graphing calculators (the school's or their own)	0	1	2	3	4
5e. Physical objects ("manipulatives")	0	1	2	3	4
5f. Computer-based instructional tools (software)	0	1	2	3	4

6. Please indicate your level of agreement or disagreement with the statement “Computer-based instructional tools (software) are helping Algebra I students in my Target Class.” (check one)

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree

7. What is the name of the textbook you primarily use in your Algebra I Target Class? If you do not use a textbook please write N/A in the space provided.

7a. Title	
7b. Author	
7c. Publisher	
7d. Date of Publication	

8. Please indicate your level of agreement or disagreement with each of the following statements regarding the Algebra I textbook you use in your Target Class. (Please circle one per line)

	Strongly Agree	Agree	No Opinion	Disagree	Strongly disagree
8a. The textbook includes the appropriate topics and content to teach the course.	1	2	3	4	5
8b. The textbook appropriately sequences math concepts.	1	2	3	4	5
8c. The textbook provides examples and lessons that are focused directly on the mathematics involved and that explain concepts clearly.	1	2	3	4	5
8d. The textbook provides opportunities for the development of problem-solving skills.	1	2	3	4	5
8e. The textbook provides adequate practice for each topic covered.	1	2	3	4	5
8f. The textbook and the supporting materials which come with it, provide the right mix of useful suggestions and problems for homework assignments.	1	2	3	4	5
8g. The textbook provides adequate supplementary/support materials.	1	2	3	4	5
8h. The textbook is clearly focused on Algebra I and contains very few if any distractions to the instructional focus (e.g. off task activities, pictures with no sense of purpose, etc.).	1	2	3	4	5
8i. The textbook and the accompanying materials provide useful suggestions for meeting the needs of diverse learners.	1	2	3	4	5

9. **About what percentage of your current Algebra I students in your Target Class do you anticipate will fail your course? (check one)**

- 1 2 3 4 5 6 7 8
 None 1–10 % 11–20% 21–30% 31–40% 41–50% More than 50% No answer

10. **On average, about how much time per day do you expect your Algebra I students in your Target Class to spend on assignments outside of class? (check one)**

- 1 2 3 4 5 6 7
 None 1–15 mins 16–30 mins 31–45 mins 46–60 mins More than 60 mins No answer

11. **On average, about how many of your Algebra I students in your Target Class complete their outside-of-class assignments? (check one)**

- 1 2 3 4 5
 All or almost all About two-thirds About one-third None or almost none Not applicable/ no homework

12. **On average how many minutes per week does your Algebra I Target Class meet?**

(FILL IN MINUTES)

13. **Does your Algebra I Target Class meet everyday?**

- 1 Yes 2 No

14. **How long is each period during which you teach Algebra I?**

(FILL IN MINUTES)

15. **Is this enough instructional time to adequately teach Algebra I to your Target Class?**

- 1 Yes 2 No

Section 2: Your School and Algebra I

1. Below is a list of factors that may cause problems in Algebra I instruction. For each factor, please indicate whether it is not a problem, a minor problem, a moderate problem or a serious problem in your school. (Please circle one per line)

	Not a problem	Minor problem	Moderate problem	Serious problem
1a. Insufficient access to computers	1	2	3	4
1b. Inadequate access to graphing calculators	1	2	3	4
1c. Poor quality or out-of-date textbooks	1	2	3	4
1d. Class sizes are too large	1	2	3	4
1e. Too little coordination or articulation between classes in the mathematics curriculum	1	2	3	4
1f. Some teachers are inadequately prepared to teach Algebra I	1	2	3	4
1g. Lack of teacher planning time	1	2	3	4
1h. Students with different abilities and interests taking the same math classes	1	2	3	4
1i. Too little parent/family support	1	2	3	4
1j. Inadequate opportunities for professional learning	1	2	3	4
1k. Inadequate administrative support	1	2	3	4

2. Does your school offer different levels of Algebra I to groups of students based on ability?

- 1 Yes 2 No 3 Don't know

3. How many CLASS PERIODS do you teach a WEEK? (Exclude study halls and homeroom periods.)

(Please enter a number)

4. Is your Algebra I class part of block scheduling at your school?

- 1 Yes 2 No

Section 3: Your Views of Mathematics Education

1. How important is a solid foundation in each of the following areas to students' success in Algebra I? <i>(Please circle one per line)</i>	Not at all important	Slightly important	Moderately important	Very important	Extremely important
1a. Whole numbers and operations with whole numbers	1	2	3	4	5
1b. Positive and negative integers and operations with positive and negative integers	1	2	3	4	5
1c. Rational numbers and operations involving fractions and decimals	1	2	3	4	5
1d. Ratios, percents, rates, and proportions	1	2	3	4	5
1e. Solving problems involving whole numbers, fractions, and decimals	1	2	3	4	5
1f. The concept of variables	1	2	3	4	5
1g. Manipulation of variables	1	2	3	4	5
1h. Solving simple linear equations and inequalities	1	2	3	4	5
1i. Plotting points, and graphing lines on the four-quadrant coordinate plane	1	2	3	4	5
1j. Measurement formulas of basic geometric shapes	1	2	3	4	5
1k. Basic study skills and work habits necessary for success in math	1	2	3	4	5
1l. Computation skills	1	2	3	4	5
1m. Ability to use math in contexts that are identified as real world situations	1	2	3	4	5
1n. Working independently	1	2	3	4	5
1o. Working cooperatively with other students	1	2	3	4	5

2. Please provide a brief description of any changes you would like to see in the curriculum leading up to Algebra I in your district.

3. In your opinion, are the local district expectations for student proficiency with Algebra I: *(Please check one)*

1 Too low 2 About right 3 Too high 4 I do not know the expectations 5 There are no district expectations

- 4a. How well do you feel your preservice teacher education program prepared you to teach Algebra I?

1 Very well 2 Adequately 3 Less than adequately 4 Very poorly

- 4b. How well do you feel your professional development opportunities have helped you to teach Algebra I?

1 Very well 2 Adequately 3 Less than adequately 4 Very poorly

5. Does your district have teachers at the K–8 level who are “mathematics specialists” (even if they are called something else)?

1 Yes ↓ 2 No → skip to question 6 3 Not sure → skip to question 6

	Yes	No	Not Sure
5a. Do these teachers work with classes of students?	1	2	3
5b. Do these teachers provide support to other teachers?	1	2	3
5c. Are these teachers specifically qualified or trained to be mathematics specialists?	1	2	3

6. Are students required to pass Algebra I in order to graduate high school in your district?

1 Yes 2 No 3 Don't know

7. How do you rate the state or local school district mathematics standards and math tests that they currently use for Algebra I? (Please circle one per line)

	Excellent	Good	Fair	Poor	Not applicable—no standards defined
7a. Content standards for Algebra I	1	2	3	4	5
7b. Assessments of Algebra I outcomes	1	2	3	4	5

Section 4: Teacher Background

1. What is your sex?

1 Male 2 Female

2. Are you Hispanic or Latino?

1 Yes → If Yes, answer question 3

2 No → If No, skip to question 4

**3. Which of the following best describes your Hispanic origin or descent?
(Please check all that apply)**

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
Mexican/a or Chicano/a	Puerto Rican	Cuban	Other Hispanic, <i>Specify</i>

4. What is your racial background? (Please check all that apply)

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
American Indian or Alaska Native	Native Hawaiian or other Pacific Islander	Asian	Black or African American	White

5. What is your age?

(FILL IN AGE)

6. What is your employment status in this school system?

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
Regular full-time teacher	Regular part-time teacher	Long-term substitute teacher	Other, <i>Specify</i>

7. Counting this year how many years in total have you taught at either the elementary or secondary level? Please also note the number of years in total.

- 7a. Elementary (K–6) *Number of Years*
- 7b. Secondary (7–12) *Number of Years*
- 7c. Total (K–12) *Number of Years*

8. Counting this year, how many years in total have you taught in this school?

Number of Years

9. How many years of experience do you have teaching Algebra I?

Number of Years

10. In which subject area have you taught the most during this school year?

- 1 Math 2 Science 3 English 4 Social Studies/
History 5 Other, *please specify* _____

11. What type of teaching certification do you currently hold?

- 1 Regular or standard state certificate
- 2 Probationary certificate
- 3 Provisional or temporary certificate
- 4 Waiver or emergency certificate
- 5 Other, *please specify* _____

**12. Which of the following best describes your national certification status?
(Check one)**

- 1 I have achieved certification by the National Board for Professional Teaching Standards.
 2 I am currently working on National Board Certification but have not achieved it.
 3 I am not working on National Board Certification.

13. Under the No Child Left Behind Law (NCLB) are you considered to be a “highly qualified” teacher of:

	Yes	No	Not Applicable
13a. high school mathematics	1	2	3
13b. middle school mathematics	1	2	3

14. What is the highest academic degree you hold?

- 1 Less than a Bachelor’s degree
 2 Bachelor’s
 3 Master’s
 4 Education specialist or professional diploma based on at least one year of work past
 Master’s degree level
 5 Doctorate
 6 Professional degree (e.g., M.D. L.L.B., J.D., D.D.S.)

15. In what YEAR did you receive your highest college degree?

YYYY

16. What was your major field of study for your bachelor’s degree?

- 1 Education
 2 English
 3 History
 4 Mathematics
 5 Natural/Physical science
 6 Foreign language
 7 Other specify: _____

17. What was your minor field of study for your bachelor's degree?

- 1 Education
- 2 English
- 3 History
- 4 Mathematics
- 5 Natural/Physical science
- 6 Foreign language
- 7 *Other specify:* _____
- 8 Not applicable

18. If you have earned a graduate degree, what was your major field of study for your highest graduate degree?

- 1 Education
- 2 English
- 3 History
- 4 Mathematics
- 5 Natural/Physical science
- 6 Foreign language
- 7 *Other specify:* _____
- 8 Not applicable

19. How skillful would you say you are at helping students master Algebra I?

- 1 Very skillful
- 2 Somewhat skillful
- 3 Sometimes less skillful than I would like to be
- 4 Much less skillful than I would like to be

20. **What do you find most challenging in teaching Algebra I successfully?**
(Please check one)

- 1 Explaining material to struggling students
 - 2 Handling accelerated students
 - 3 Teaching procedures
 - 4 Explaining concepts (e.g., why procedures work, what ideas mean)
 - 5 Using diagrams or models effectively
 - 6 Interpreting students' errors and difficulties
 - 7 Working with unmotivated students
 - 8 Working with advanced students
 - 9 Helping students whose home language is other than Standard English
 - 10 Making mathematics accessible and comprehensible to all of my students
 - 11 Other, please specify: _____
-

Thank you!

