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U.S. DEPARTMENT OF EDUCATION

Public School Teacher Attrition and Mobility in the First Five Years:

Results From the First Through Fifth Waves of the 2007–08 Beginning Teacher Longitudinal Study

First Look

ies NATIONAL CENTER FOR EDUCATION STATISTICS
Institute of Education Sciences

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BEGINNING TEACHER LONGITUDINAL STUDY

ies NATIONAL CENTER FOR EDUCATION STATISTICS
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Introduction

This report provides nationally representative data on attrition and mobility of beginning teachers in public elementary and secondary schools. Considerable research exists on teacher attrition, retention, and mobility, but the findings are sometimes inconsistent or cover only 2 years of teachers' careers (Ingersoll and Strong 2011; Borman and Dowling 2008). To learn more about the careers of teachers from their first year of teaching through the next 4 years, the National Center for Education Statistics (NCES) of the Institute of Education Sciences within the U.S. Department of Education undertook the Beginning Teacher Longitudinal Study (BTLS).

BTLS is a longitudinal study of beginning public school teachers who began teaching in 2007 or 2008.[1] It provides data on characteristics (e.g., age and gender) and attitudes (e.g., job satisfaction) of teachers who stay in the pre-kindergarten through 12th-grade teaching profession and those who leave teaching. The survey also collects data on teachers' mobility across schools or districts. In addition, data on school characteristics (e.g., community type) are collected. The BTLS, therefore, provides researchers with the opportunity to examine the careers of beginning teachers as well as factors that may influence attrition and mobility. This report presents selected findings from the BTLS data.

The Census Bureau collected and processed the BTLS data for each school year 2007–08 through 2011–12, and NCES will release these data as the *First Through Fifth Waves of the 2007–08 Restricted-use Beginning Teacher Longitudinal Study Data File*. In this report, the base year (i.e., the year in which the BTLS sample was selected) is referred to as the first wave or wave 1. Data collection for the first wave of BTLS was part of the 2007–08 Schools and Staffing Survey (SASS), which began in August 2007 and ended in June 2008. The approximately 1,990 first-year public school teachers who completed the 2007–08 SASS compose the cohort being followed in the BTLS.[2] Data collection for the second wave was conducted together with the 2008–09 Teacher Follow-up Survey (TFS), which began in February 2009 and ended in August 2009. Data were collected for the third through fifth waves of BTLS during January through June in each of the subsequent 3 years. Although each collection contained a telephone follow-up, the information was collected primarily through a mailed paper questionnaire for the first wave and a web instrument for the second through fifth waves. A paper questionnaire that was used in follow-up efforts was also developed for the second wave.

Sample members who did not respond during the second wave were asked selected second-wave items during the third wave. Similarly, during the fourth and fifth waves, those who had not responded during the previous wave were asked selected items about the previous wave. These respondents are referred to as retrospective respondents.

Because BTLS is a longitudinal survey, there are several stages of response involved in calculating an overall response rate for each wave. The overall base-weighted response rate for SASS teachers with 1 to 3 years of experience[3] in 2007–08 was 73 percent. The individual base-weighted response rates for the BTLS cohort in the second, third, fourth, and fifth waves were 84 percent, 86 percent, 84 percent, and 78 percent, respectively. More information about the response rates for each wave and the bias analysis conducted for BTLS can be found in appendix B.

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[1] The term "beginning teachers" is used in this report to mean teachers who began teaching in calendar year 2007 or 2008 and taught at least one regularly scheduled class in a public school in the 2007–08 school year.

[2] Note that 1,990 is an unweighted rounded count of BTLS sample members. More information about the sample design can be found in appendix B.

[3] Response rates were calculated for the 2007–08 SASS public school teachers reported to have 1 to 3 years of experience, not just the beginning teachers included in BTLS. The first year of teaching was not available for nonrespondents, so it was not possible to compute a unit response rate for beginning teachers.

This First Look introduces new data and the selected findings chosen for this report demonstrate the range of information available on the *First Through Fifth Waves of the 2007–08 Restricted-use Beginning Teacher Longitudinal Study Data File*. The selected findings do not represent a complete review of all observed differences in the data and are not meant to emphasize any particular issue.

The tabulations in this report present results for each year of data separately. These types of results may be used to examine behavior at different stages of teachers' careers. For example, the percentage of beginning teachers who were still teaching after 1 year, after 2 years, and so on, may be examined. For each year, these tables present the retention rates of teachers by characteristics, the mobility (e.g., moving to a different school) for those who stayed in teaching, and the occupational status of those who left teaching.

The teacher status presented in the tables consists of current teachers (those teaching in the specified year of data collection) and former teachers (those not teaching in the specified year of data collection). Current teachers may be divided into the following groups:

- Stayers: teaching in the same school in the year of data collection as in the previous year;
- Movers: teaching at a different school in the year of data collection from the previous year; and
- Returners: teaching in the year of data collection but not teaching in the previous year.

The tables in this report contain weighted counts and percentages demonstrating bivariate relationships between variables. All of the results have been weighted to reflect the sample design and to account for nonresponse and other adjustments. Comparisons drawn in the selected findings have been tested for statistical significance at the .05 level using Student's *t* statistics to ensure that the differences are larger than those that might be expected due to sampling variation. No adjustments were made for multiple comparisons. Many of the variables examined are related to one another, and complex interactions and relationships have not been explored. Tables of standard errors are provided in appendix A. Detailed information about the survey methodology is provided in appendix B. Appendix C contains a description of the variables used in this report.

More information about BTLS can be found at http://nces.ed.gov/surveys/btls/.

Selected Findings

This section presents selected findings for the 5 years of 2007–08 through 2011–12 for teachers who began teaching in calendar year 2007 or 2008 and taught at least one regularly scheduled class in a public school in the 2007–08 school year.

- Among all beginning teachers in 2007–08, 10 percent did not teach in 2008–09, 12 percent did not teach in 2009–10, 15 percent did not teach in 2010–11, and 17 percent did not teach in 2011–12 (table 1).[4]
- The percentage of beginning teachers who continued to teach after the first year varied by first-year salary level. For example, 97 percent of beginning teachers whose first-year base salary was $40,000 or more were teaching in 2008–09, whereas 87 percent of those with a first-year salary less than $40,000 were teaching in 2008–09 (table 2). Also, 89 percent of beginning teachers whose first-year base salary was $40,000 or more were teaching in 2011–12, whereas 80 percent of those with a first-year salary less than $40,000 were teaching in 2011–12.
- No differences were detected between the percentages of current teachers who started teaching in 2007–08 with a bachelor's degree and those who started teaching in 2007–08 with a master's degree in each of the years 2008–09 (91 percent and 89 percent, respectively), 2009–10 (88 percent), 2010–11 (85 percent and 88 percent, respectively), and 2011–12 (83 percent and 86 percent, respectively) (table 2).
- In each follow-up year, the percentage of beginning teachers who were currently teaching was larger among those who were assigned a first-year mentor than among those not assigned a first-year mentor (92 percent and 84 percent, respectively in 2008–09; 91 percent and 77 percent, respectively in 2009–10; 88 percent and 73 percent, respectively in 2010–11; and 86 percent and 71 percent, respectively in 2011–12) (table 2).
- During their second year (in 2008–09), 74 percent of beginning teachers taught in the same school as the previous year (stayers), 16 percent taught in a different school (movers), and 10 percent were not teaching (table 3). During their fifth year (in 2011–12), 70 percent of beginning teachers taught in the same school as the previous year (stayers), 10 percent taught in a different school (movers), 3 percent[5] had returned to teaching after not teaching the previous year (returners), and 17 percent were not teaching.
- During their second year (in 2008-09), 3 percent of beginning teachers were working in the field of education but not as regular K–12 classroom teachers (table 3). During their fifth year (in 2011-12), 5 percent were working in the field of education but not as regular K–12 classroom teachers.
- Among the beginning teachers who taught in a different school during their second year (in 2008–09) than in the previous year (movers), 21 percent moved involuntarily or because their contracts were not renewed (table 4). Among the beginning teachers who taught in a different school during their fifth year (in 2011–12) than in the previous year, 40 percent moved involuntarily or because their contracts were not renewed.
- Among the beginning teachers who were not teaching during a given year but taught the previous year (leavers), the percentage that left teaching involuntarily or because their contracts were not renewed was 27 percent in 2008–09, 36 percent in 2009–10, 25 percent in 2010–11, and 20 percent in 2011–12 (table 4).

[4] Because beginning teachers may leave and later return to teaching, the percentage of beginning teachers who were not teaching in a given year does not necessarily include all of those who were not teaching in an earlier year.

[5] Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 percent and 50 percent.

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Estimate Tables

Table 1. Number and percentage distribution of 2007–08 beginning public school teachers, by teacher status: 2007–08 through 2011–12

	Number of teachers			Percentage distribution	
		Teacher status		Teacher status	
Year	Total	Current	Former	Current	Former
2007–08[1]	156,100	156,100	†	100.0	†
2008–09	156,100	140,600	15,500	90.0	10.0
2009–10	156,100	136,900	19,300	87.7	12.3
2010–11[2]	155,800	132,700	23,100	85.2	14.8
2011–12[2]	155,600	128,700	26,900	82.7	17.3

† Not applicable.

[1] BTLS teachers began teaching in either 2007 or 2008.

[2] The estimated total number of teachers for each year 2010–11 and 2011–12 is smaller than the estimates for the earlier years because a small number of sample members (less than 5) were found to be deceased during these years.

NOTE: Current teachers were teaching in the year of data collection and former teachers were not teaching in the year of data collection. Because beginning teachers may leave and later return to teaching, the number and percentage of former teachers in a given year does not necessarily include all of those who were former teachers in an earlier year. For each survey year 2008–09, 2009–10, and 2010–11, these estimates include those who provided data retrospectively during the next year's survey collection. Estimates are weighted using the following weights: 2007–08 data are weighted with the first wave analysis weight (W1TFNLWGT); 2008–09 data are weighted with the second wave retrospective analysis weight (W2RAFWT); 2009–10 data are weighted with the third wave retrospective analysis weight (W3RAFWT); 2010–11 data are weighted with the fourth wave retrospective analysis weight (W4RAFWT); and 2011–12 data are weighted with the fifth wave analysis weight (W5AFWT). Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Table 2. Percentage distribution of 2007–08 beginning public school teachers, by teacher status during each of the 4 years since starting teaching, and selected teacher and school characteristics during their first year of teaching: 2007–08 through 2011–12

Characteristic in first teaching year	2008–09 teacher status			2009–10 teacher status			2010–11 teacher status			2011–12 teacher status		
	Total	Current	Former	Total	Current	Former	Total	Current	Former	Total	Current	Former
All 2007–08 beginning teachers	100.0	90.0	10.0	100.0	87.7	12.3	100.0	85.2	14.8	100.0	82.7	17.3
Age												
Less than 30 years	100.0	91.2	8.8	100.0	89.8	10.2	100.0	87.5	12.5	100.0	84.5	15.5
30 or more years	100.0	87.0	13.0	100.0	82.2	17.8	100.0	79.0	21.0	100.0	78.1	21.9
Sex												
Male	100.0	87.8	12.2	100.0	86.3	13.7	100.0	82.8	17.2	100.0	78.1	21.9
Female	100.0	90.8	9.2	100.0	88.1	11.9	100.0	86.0	14.0	100.0	84.3	15.7
Race/ethnicity												
White, non-Hispanic	100.0	90.0	10.0	100.0	88.1	11.9	100.0	86.8	13.2	100.0	83.3	16.7
All other races/ethnicities[1]	100.0	90.3	9.7	100.0	86.1	13.9	100.0	79.6	20.4	100.0	80.7	19.3
Base salary												
Less than $40,000	100.0	87.5	12.5	100.0	87.0	13.0	100.0	83.4	16.6	100.0	80.4	19.6
$40,000 or more	100.0	96.6	3.4!	100.0	89.4	10.6!	100.0	89.5	10.5!	100.0	88.7	11.3
Teaching status												
Full time	100.0	91.2	8.8	100.0	88.5	11.5	100.0	85.9	14.1	100.0	82.9	17.1
Part time	100.0	75.3	24.7	100.0	77.2	22.8	100.0	76.0	24.0	100.0	80.3	19.7
Highest degree												
Less than a bachelor's degree	100.0	67.6	32.4	100.0	80.5	19.5!	100.0	82.1	17.9!	100.0	61.5	38.5!
Bachelor's degree	100.0	91.4	8.6	100.0	88.4	11.6	100.0	85.1	14.9	100.0	82.8	17.2
Master's degree	100.0	89.0	11.0	100.0	88.0	12.0	100.0	88.1	11.9	100.0	85.8	14.2
Higher than a master's degree[2]	100.0	52.1!	47.9!	100.0	49.5!	50.5!	100.0	57.4!	42.6!	100.0	57.2!	42.8!
Assigned a mentor[3]												
Yes	100.0	91.6	8.4	100.0	90.5	9.5	100.0	88.0	12.0	100.0	85.5	14.5
No	100.0	83.6	16.4	100.0	77.0	23.0	100.0	72.8	27.2	100.0	71.4	28.6

See notes at end of table.

Table 2. Percentage distribution of 2007–08 beginning public school teachers, by teacher status during each of the 4 years since starting teaching, and selected teacher and school characteristics during their first year of teaching: 2007–08 through 2011–12—Continued

Characteristic in first teaching year	2008–09 teacher status			2009–10 teacher status			2010–11 teacher status			2011–12 teacher status		
	Total	Current	Former	Total	Current	Former	Total	Current	Former	Total	Current	Former
Entered teaching through an alternative certification program[4]												
Yes	100.0	90.1	9.9	100.0	87.6	12.4	100.0	82.9	17.1	100.0	79.2	20.8
No	100.0	90.0	10.0	100.0	87.7	12.3	100.0	86.0	14.0	100.0	84.0	16.0
Certification type[5]												
Regular teaching certificate	100.0	90.9	9.1	100.0	88.0	12.0	100.0	86.8	13.2	100.0	85.4	14.6
Other certificate	100.0	89.0	11.0	100.0	89.8	10.2	100.0	83.7	16.3	100.0	79.3	20.7
No certificate	100.0	86.0	14.0	100.0	75.0	25.0	100.0	74.8	25.2	100.0	69.8	30.2
Class organization												
Departmentalized instruction	100.0	90.3	9.7	100.0	86.7	13.3	100.0	83.6	16.4	100.0	79.4	20.6
Elementary subject specialist	100.0	87.4	12.6!	100.0	84.7	15.3!	100.0	81.0	19.0!	100.0	85.0	15.0!
Self-contained class	100.0	89.7	10.3	100.0	89.1	10.9	100.0	86.3	13.7	100.0	86.5	13.5
Team teaching	100.0	92.6	‡	100.0	92.7	‡	100.0	96.4	‡	100.0	92.4	‡
”Pull-out” class or “push-in” instruction	100.0	90.3	9.7!	100.0	86.7	13.3!	100.0	86.7	‡	100.0	82.5	17.5!
School level												
Elementary	100.0	90.4	9.6	100.0	90.0	10.0	100.0	87.6	12.4	100.0	86.4	13.6
Secondary	100.0	89.8	10.2	100.0	85.0	15.0	100.0	82.1	17.9	100.0	78.2	21.8
Combined	100.0	88.3	11.7!	100.0	79.7	20.3	100.0	78.8	21.2	100.0	72.8	27.2!
Community type												
City/suburban	100.0	91.5	8.5	100.0	88.5	11.5	100.0	85.0	15.0	100.0	82.8	17.2
Town/rural	100.0	88.1	11.9	100.0	86.6	13.4	100.0	85.5	14.5	100.0	82.5	17.5

See notes at end of table.

Table 2. Percentage distribution of 2007–08 beginning public school teachers, by teacher status during each of the 4 years since starting teaching, and selected teacher and school characteristics during their first year of teaching: 2007–08 through 2011–12—Continued

Characteristic in first teaching year	2008–09 teacher status			2009–10 teacher status			2010–11 teacher status			2011–12 teacher status		
	Total	Current	Former	Total	Current	Former	Total	Current	Former	Total	Current	Former
Percent of K–12 students who were approved for free or reduced-price lunches												
Less than 50 percent	100.0	90.3	9.7	100.0	89.7	10.3	100.0	86.9	13.1	100.0	84.3	15.7
50 percent or more	100.0	90.2	9.8	100.0	85.8	14.2	100.0	83.6	16.4	100.0	81.4	18.6
School did not participate in free or reduced-price lunch program	100.0	78.1	21.9!	100.0	71.0	29.0!	100.0	74.0	26.0!	100.0	69.0	‡

! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 percent and 50 percent (i.e., the standard error is at least 30 percent and less than 50 percent of the estimate).

‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater (i.e., the standard error is 50 percent or more of the estimate).

[1] All other races/ethnicities include Hispanic or Latino, Black or African-American, Asian, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, and Two or more races.

[2] Higher than a master's degree includes educational specialist or professional diploma, certificate of advanced graduate studies, and doctorate or first professional degree.

[3] Data were collected in 2008–09 regarding a mentor during the first year of teaching and do not include 2008–09 nonrespondents.

[4] An alternative certification program is designed to expedite the transition of nonteachers to a teaching career; for example, a state, district, or university alternative certification program.

[5] Teachers were asked "Which of the following describes the teaching certificate you currently hold in THIS state?" Regular teaching certificate includes teachers reporting one of the following, regardless of any other certifications held: (1) regular or standard state certificate or advanced professional certificate; or (2) certificate issued after satisfying all requirements except the completion of a probationary period. Other certificate includes teachers reporting one of the following: (1) certificate that requires some additional coursework, student teaching, or passage of a test before regular certification can be obtained; or (2) certificate issued to persons who must complete a certification program in order to continue teaching. No certificate includes teachers reporting, "I do not hold any of the above certifications in THIS state."

NOTE: Current teachers were teaching in the year of data collection and former teachers were not teaching in the year of data collection. Because beginning teachers may leave and later return to teaching, the percentage of former teachers in a given year does not necessarily include all of those who were former teachers in an earlier year. For each survey year 2008–09, 2009–10, and 2010–11, these estimates include those who provided data retrospectively during the next year's survey collection. Estimates are weighted using the following weights: 2008–09 data are weighted with the second wave retrospective analysis weight (W2RAFWT); 2009–10 data are weighted with the third wave retrospective analysis weight (W3RAFWT); 2010–11 data are weighted with the fourth wave retrospective analysis weight (W4RAFWT); and 2011–12 data are weighted with the fifth wave analysis weight (W5AFWT). Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Table 3. Percentage distribution of 2007–08 beginning public school teachers, by teacher status, type of move, and occupational status during each of the 4 years since starting teaching: 2007–08 through 2011–12

Selected status	2008–09	2009–10	2010–11	2011–12
All 2007–08 beginning teachers	100.0	100.0	100.0	100.0
Current teachers	90.0	87.7	85.2	82.7
Stayers[1]	74.2	74.2	72.3	70.4
Movers[2]	15.8	10.5	10.5	9.6
Moved from one public school to another public school in the same school district	6.4	5.3	5.6	4.4
Moved from one public school district to another public school district	8.7	4.4	4.3	4.9!
Other move[3]	0.8!	‡	0.5!	‡
Returners[4]	†	2.6	2.2!	2.7!
Former teachers	10.0	12.3	14.8	17.3
Working in the field of education, but not as a regular K–12 classroom teacher[5]	2.8	4.9	4.3	5.1
Working outside the field of education	1.7	2.7	3.5	4.1
Other occupational status[6]	5.4	4.7	6.9	8.1

† Not applicable.

! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 percent and 50 percent (i.e., the standard error is at least 30 percent and less than 50 percent of the estimate).

‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater (i.e., the standard error is 50 percent or more of the estimate).

[1] Stayers were teaching in the same school in the year of data collection as in the previous year.

[2] Movers were teaching at a different school in the year of data collection than in the previous year.

[3] For 2008–09, other move includes moving from a public school to a private school or to a school outside the United States. For the remaining years, other move includes moving from a public school to a private school, from a private school to a public school, from one private school to another private school, or to a school outside the United States.

[4] Returners were teaching in the year of data collection but were not teaching in the previous year.

[5] Includes those who reported one of the following for main occupational status: (1) working for a school or school district in the field of K–12 education, but not as a K–12 classroom teacher; (2) working in the field of Pre-K or postsecondary education; or (3) working in the field of K–12 education but not in a school/district.

[6] Other occupational status includes those who were students at a college or university; those caring for family members, retired, disabled, unemployed, or other.

NOTE: Current teachers were teaching in the year of data collection and former teachers were not teaching in the year of data collection. Because beginning teachers may leave and later return to teaching, the percentage of former teachers in a given year does not necessarily include all of those who were former teachers in an earlier year. For each survey year 2008–09, 2009–10, and 2010–11, these estimates include those who provided data retrospectively during the next year's survey collection. Cases with missing data due to item nonresponse (2.9% in 2009–10 and 0.9% in 2010–11) are not included in this analysis. Estimates are weighted using the following weights: 2008–09 data are weighted with the second wave retrospective analysis weight (W2RAFWT); 2009–10 data are weighted with the third wave retrospective analysis weight (W3RAFWT); 2010–11 data are weighted with the fourth wave retrospective analysis weight (W4RAFWT); and 2011–12 data are weighted with the fifth wave analysis weight (W5AFWT). Detail may not sum to totals because of rounding or missing data due to item nonresponse.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Table 4. Percentage distribution of 2007–08 beginning public school teachers who moved across schools or left teaching since the previous year, during each of the 4 years since starting teaching, by contract renewal status: 2007–08 through 2011–12

Selected reasons	2008–09	2009–10	2010–11	2011–12
Movers[1]				
Contract not renewed or changed schools involuntarily	20.7	30.6	33.1	39.7
Moved voluntarily or for reasons other than contract not renewed	79.3	69.4	66.9	60.3
Leavers[2]				
Contract not renewed or left teaching position involuntarily	27.3	35.5	25.4	19.9
Left teaching voluntarily or for reasons other than contract not renewed	72.7	64.5	74.6	80.1

[1] Movers were teaching at a different school in the year of data collection than in the previous year. In 2008–09 and 2009–10, movers were asked, "Did you change schools because your contract was NOT renewed at last year's school?" In 2010–11 and 2011–12, movers were asked, "Did you change schools involuntarily (e.g., contract not renewed, laid off, school closed or merged)?"

[2] Leavers were not teaching in the year of data collection but were teaching in the previous year. In 2008–09 and 2009–10, leavers were asked, "Did you leave teaching because your contract was NOT renewed?" In 2010–11 and 2011–12, leavers were asked, "Did you leave your pre-K–12 teaching position involuntarily (e.g., contract not renewed, laid off, school closed or merged)?"

NOTE: These estimates are weighted using the analysis weights without retrospective respondents because retrospective respondents were not asked about the reason for moving. Estimates are weighted using the following weights: 2008–09 data are weighted with the second wave analysis weight (W2AFWT); 2009–10 data are weighted with the third wave analysis weight (W3AFWT); 2010–11 data are weighted with the fourth wave analysis weight (W4AFWT); and 2011–12 data are weighted with the fifth wave analysis weight (W5AFWT). Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Appendix A: Standard Error Tables

Table A-1. Standard errors for Table 1: Number and percentage distribution of 2007–08 beginning public school teachers, by teacher status: 2007–08 through 2011–12

	Number of teachers			Percentage distribution	
		Teacher status		Teacher status	
Year	Total	Current	Former	Current	Former
2007–08	9,330	9,330	†	†	†
2008–09	9,330	8,830	1,820	1.14	1.14
2009–10	9,330	9,080	2,360	1.59	1.59
2010–11	9,190	9,170	2,380	1.73	1.73
2011–12	9,140	9,130	2,840	2.05	2.05

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Table A-2. Standard errors for Table 2: Percentage distribution of 2007–08 beginning public school teachers, by teacher status during each of the 4 years since starting teaching, and selected teacher and school characteristics during their first year of teaching: 2007–08 through 2011–12

Characteristic in first teaching year	2008–09 teacher status			2009–10 teacher status			2010–11 teacher status			2011–12 teacher status		
	Total	Current	Former	Total	Current	Former	Total	Current	Former	Total	Current	Former
All 2007–08 beginning teachers	†	1.14	1.14	†	1.59	1.59	†	1.73	1.73	†	2.05	2.05
Age												
Less than 30 years	†	1.26	1.26	†	1.57	1.57	†	1.86	1.86	†	2.09	2.09
30 or more years	†	3.02	3.02	†	3.98	3.98	†	4.21	4.21	†	4.11	4.11
Sex												
Male	†	3.04	3.04	†	2.93	2.93	†	3.36	3.36	†	4.92	4.92
Female	†	1.24	1.24	†	1.87	1.87	†	2.08	2.08	†	2.06	2.06
Race/ethnicity												
White, non-Hispanic	†	1.31	1.31	†	1.55	1.55	†	1.65	1.65	†	2.34	2.34
All other races/ethnicities	†	2.87	2.87	†	4.13	4.13	†	5.06	5.06	†	4.34	4.34
Base salary												
Less than $40,000	†	1.52	1.52	†	1.79	1.79	†	1.89	1.89	†	2.64	2.64
$40,000 or more	†	1.15	1.15	†	3.46	3.46	†	3.41	3.41	†	3.03	3.03
Teaching status												
Full time	†	1.24	1.24	†	1.69	1.69	†	1.86	1.86	†	2.12	2.12
Part time	†	6.47	6.47	†	6.32	6.32	†	5.57	5.57	†	5.91	5.91
Highest degree												
Less than a bachelor's degree	†	9.40	9.40	†	7.45	7.45	†	7.95	7.95	†	15.83	15.83
Bachelor's degree	†	1.33	1.33	†	1.87	1.87	†	2.00	2.00	†	2.12	2.12
Master's degree	†	3.06	3.06	†	3.58	3.58	†	3.10	3.10	†	3.67	3.67
Higher than a master's degree	†	17.70	17.70	†	16.17	16.17	†	18.17	18.17	†	20.70	20.70
Assigned a mentor												
Yes	†	1.16	1.16	†	1.43	1.43	†	1.59	1.59	†	2.05	2.05
No	†	3.33	3.33	†	4.79	4.79	†	5.29	5.29	†	5.10	5.10

See notes at end of table.

Table A-2. Standard errors for Table 2: Percentage distribution of 2007–08 beginning public school teachers, by teacher status during each of the 4 years since starting teaching, and selected teacher and school characteristics during their first year of teaching: 2007–08 through 2011–12—Continued

Characteristic in first teaching year	2008–09 teacher status			2009–10 teacher status			2010–11 teacher status			2011–12 teacher status		
	Total	Current	Former	Total	Current	Former	Total	Current	Former	Total	Current	Former
Entered teaching through an alternative certification program												
Yes	†	2.80	2.80	†	2.65	2.65	†	3.26	3.26	†	4.11	4.11
No	†	1.36	1.36	†	1.80	1.80	†	1.92	1.92	†	2.08	2.08
Certification type												
Regular teaching certificate	†	1.51	1.51	†	1.99	1.99	†	2.08	2.08	†	2.33	2.33
Other certificate	†	2.56	2.56	†	2.76	2.76	†	3.79	3.79	†	4.12	4.12
No certificate	†	3.96	3.96	†	6.86	6.86	†	7.52	7.52	†	8.62	8.62
Class organization												
Departmentalized instruction	†	1.69	1.69	†	2.14	2.14	†	2.38	2.38	†	3.19	3.19
Elementary subject specialist	†	6.07	6.07	†	6.80	6.80	†	6.53	6.53	†	5.85	5.85
Self-contained class	†	2.30	2.30	†	3.08	3.08	†	3.29	3.29	†	3.32	3.32
Team teaching	†	5.26	†	†	5.51	†	†	2.35	†	†	4.31	†
”Pull-out” class or “push-in” instruction	†	3.91	3.91	†	4.57	4.57	†	6.81	†	†	7.44	7.44
School level												
Elementary	†	1.65	1.65	†	2.21	2.21	†	2.78	2.78	†	2.58	2.58
Secondary	†	2.12	2.12	†	2.37	2.37	†	2.21	2.21	†	2.69	2.69
Combined	†	3.60	3.60	†	4.71	4.71	†	5.20	5.20	†	9.36	9.36
Community type												
City/suburban	†	1.53	1.53	†	2.10	2.10	†	2.44	2.44	†	2.71	2.71
Town/rural	†	1.98	1.98	†	2.12	2.12	†	2.14	2.14	†	2.71	2.71

See notes at end of table.

Table A-2. Standard errors for Table 2: Percentage distribution of 2007–08 beginning public school teachers, by teacher status during each of the 4 years since starting teaching, and selected teacher and school characteristics during their first year of teaching: 2007–08 through 2011–12—Continued

Characteristic in first teaching year	2008–09 teacher status			2009–10 teacher status			2010–11 teacher status			2011–12 teacher status		
	Total	Current	Former	Total	Current	Former	Total	Current	Former	Total	Current	Former
Percent of K–12 students who were approved for free or reduced-price lunches												
Less than 50 percent	†	1.81	1.81	†	2.23	2.23	†	2.04	2.04	†	2.78	2.78
50 percent or more	†	1.82	1.82	†	2.35	2.35	†	2.57	2.57	†	2.65	2.65
School did not participate in free or reduced-price lunch program	†	8.82	8.82	†	9.92	9.92	†	10.23	10.23	†	16.76	†

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Table A-3. Standard errors for Table 3: Percentage distribution of 2007–08 beginning public school teachers, by teacher status, type of move, and occupational status during each of the 4 years since starting teaching: 2007–08 through 2011–12

Selected status	2008–09	2009–10	2010–11	2011–12
All 2007–08 beginning teachers	†	†	†	†
Current teachers	1.14	1.59	1.73	2.05
Stayers	2.51	1.87	2.09	2.65
Movers	2.25	1.38	1.36	1.74
Moved from one public school to another public school in the same school district	1.46	1.02	1.04	1.15
Moved from one public school district to another public school district	1.76	0.81	0.84	1.59
Other move	0.28	†	0.20	†
Returners	†	0.63	0.75	0.93
Former teachers	1.14	1.59	1.73	2.05
Working in the field of education, but not as a regular K–12 classroom teacher	0.63	1.24	1.23	1.23
Working outside the field of education	0.40	0.54	0.64	0.69
Other occupational status	1.00	0.96	1.16	1.53

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Table A-4. Standard errors for Table 4: Percentage distribution of 2007–08 beginning public school teachers who moved across schools or left teaching since the previous year, during each of the 4 years since starting teaching, by contract renewal status: 2007-08 through 2011–12

Selected reasons	2008–09	2009–10	2010–11	2011–12
Movers				
Contract not renewed or changed schools involuntarily	4.35	5.44	6.93	11.52
Moved voluntarily or for reasons other than contract not renewed	4.35	5.44	6.93	11.52
Leavers				
Contract not renewed or left teaching position involuntarily	6.60	9.30	7.40	5.39
Left teaching voluntarily or for reasons other than contract not renewed	6.60	9.30	7.40	5.39

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Wave Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Appendix B: Methodology and Technical Notes

Overview of the Beginning Teacher Longitudinal Study

The Beginning Teacher Longitudinal Study (BTLS) is sponsored by the National Center for Education Statistics (NCES) of the Institute of Education Sciences within the U.S. Department of Education and is conducted by the Census Bureau. BTLS is a national study of a cohort of beginning public school teachers who were initially interviewed as part of the 2007–08 Schools and Staffing Survey (SASS). SASS is the largest survey of public and private kindergarten–grade 12 school districts, schools, teachers, and administrators in the United States today. It provides extensive data on the characteristics and qualifications of teachers and principals, teacher hiring practices, professional development, class size, and other conditions in schools across the nation.

BTLS first began in the 2007–08 school year as part of SASS and this base year is referred to in this report as the first wave or wave 1. Follow-up waves were conducted in the 2008–09, 2009–10, 2010–11 and 2011–12 school years. Wave 2 was conducted together with the Teacher Follow-up Survey (TFS), and subsequent waves were conducted as stand-alone data collections. BTLS includes all beginning public school teachers who participated in the 2007–08 SASS, including teachers who subsequently left K–12 teaching, teachers who remained in the K–12 teaching profession, and teachers who left and subsequently returned to the profession. Beginning teachers who were sampled for SASS but did not respond to the survey could not be included in the data collection of subsequent BTLS waves. Beginning teachers were initially identified through a question on the SASS Teacher Questionnaire. Their beginning year of teaching was confirmed in subsequent waves.

The term "beginning teachers" is used in this report to mean all public school teachers who began teaching in 2007 or 2008 in a traditional public or public charter school that offered any of grades K–12 or comparable ungraded levels. These teachers include regular full- and part-time teachers, itinerant teachers, and long-term substitutes as well as any administrators, support staff, librarians, or other professional staff who taught at least one regularly scheduled class in the 2007–08 school year (excluding library skills classes).

For additional information on the 2007–08 SASS, see *Documentation for the 2007–08 Schools and Staffing Survey* (Tourkin et al. 2010). For additional information about the TFS, see *Documentation for the 2008–09 Teacher Follow-up Survey* (Graham et al. 2011). For additional information on BTLS, see *Documentation for the First Through Fifth Waves of the 2007–08 Beginning Teacher Longitudinal Study* (Graham et al. forthcoming). For electronic copies of the questionnaires, go to the BTLS home page http://nces.ed.gov/surveys/btls/.

Sampling Frames and Sample Selection

Teachers sampled for the BTLS are part of the SASS teacher sample, which is based on the SASS school sample. For details on SASS school and teacher samples, please see *Documentation for the 2007–08 Schools and Staffing Survey* (Tourkin et al. 2010).

All 2007–08 SASS traditional public or public charter school teachers who responded to the SASS Teacher Questionnaire and reported their first year of teaching as being 2007 or 2008 were included in the BTLS sample. About 2,100 teachers were initially included. During data collection for the follow-up surveys, the Census Bureau found that about 110 sample members did not meet the study definition of a beginning teacher, either because they did not start teaching in 2007 or 2008, or were not teaching regularly scheduled classes in the 2007–08 base year. Therefore, the total number of sampled, eligible BTLS teachers is about 1,990.

Data Collection Procedures

The 2007–08 SASS data for teachers who began teaching in 2007 or 2008 are the first wave of BTLS data. The first-wave collection utilized a mail-based methodology with telephone and field follow-up. At the beginning of data collection, the Census Bureau telephone centers attempted to establish a survey coordinator at each school.[1] Nonrespondents were contacted by telephone interviewers or field representatives. The 2007–08 SASS included several questionnaire components, which collected data from schools, school districts, principals, library media centers (public schools only), and teachers. The BTLS cases were identified during the teacher collection, and their SASS data constituted the BTLS first wave. SASS teacher data collection began in August 2007 and ended in June 2008. For complete details regarding SASS, refer to Tourkin et al. (2010).

The Census Bureau conducted the second wave of BTLS together with the TFS during the 2008–09 school year. However, BTLS teachers used the longitudinal versions (TFS-2L and TFS-3L) of the questionnaires, which contained more questions than the TFS questionnaires. The second wave included those who indicated that they began teaching in either 2007 or 2008 in a public school during the first wave. The second-wave data were primarily collected using an internet instrument. During data collection, the Census Bureau discovered that about 100 teachers misreported their first year of teaching in the 2007–08 SASS and had actually begun teaching prior to 2007. These cases were removed from the BTLS sample. Telephone follow-up efforts were conducted to resolve cases with this discrepancy or to collect the missing data, as well as to encourage participation or to collect data over the phone from nonrespondents. Throughout the telephone follow-up, paper questionnaires were mailed upon request. Paper questionnaires were mailed in June 2009 to all teachers who had not yet completed the survey. The TFS data collection began in February 2009 and ended in August 2009.

The Census Bureau conducted the third, fourth, and fifth waves of the BTLS during the 2009–10, 2010–11, and 2011–12 school years, respectively. Each of these waves of BTLS data was collected using a single internet instrument, so that all sample members responded to the same questionnaire, regardless of their teaching status during that year. For each of these waves, telephone follow-up efforts were conducted to encourage participation or to collect BTLS data over the phone from nonrespondents. During data collection for waves 3 and 4, the Census Bureau discovered that about 10 sample members were not first-year teachers in 2007 or 2008 and therefore were not eligible for BTLS. These cases were removed from the BTLS sample. No cases were removed from the sample during wave 5.

Approximately 1,990 eligible teachers are included in the final BTLS sample. All questionnaires used to collect data for the BTLS are available on the BTLS website: http://nces.ed.gov/surveys/btls/.

Data Processing and Imputation

The BTLS first-wave data were collected on the Teacher Questionnaire (Form SASS-4A) during the 2007–08 SASS. Once the BTLS first-wave data collection was completed, the Census Bureau captured the data from completed questionnaires.[2] All BTLS first-wave data processing was conducted within the

[1] The role of the survey coordinator was to be the main contact person at the school. A survey coordinator's duties included facilitating data collection by passing out questionnaires to the appropriate staff, reminding the staff to complete them, and collecting the questionnaires to return to the Census Bureau.

[2] The 2007–08 SASS consisted of nine questionnaires: School District Questionnaire, Principal Questionnaire, Private School Principal Questionnaire, School Questionnaire, Private School Questionnaire, Public School Questionnaire (With District Items), Teacher Questionnaire, Private School Teacher Questionnaire, and School Library Media Center Questionnaire. The BTLS includes only teachers who taught in a public school (traditional or charter) in the 2007–08 school year; therefore, the only SASS questionnaire type that will be discussed is the Teacher Questionnaire.

single SASS Teacher Questionnaire Data File.[3]

The Census Bureau applied a series of computer edits to identify and fix inconsistencies and missing responses that were not blank due to a questionnaire skip pattern. Once the data underwent all stages of computer edits, imputation,[4] and review, the BTLS First Wave Data File was created.

The second wave of the BTLS was conducted together with the 2008–09 TFS. Data were collected primarily using an internet instrument, but paper questionnaires were also used. Once the data collection was completed, the Census Bureau electronically captured the data from completed paper questionnaires and combined them with data from the internet instrument. Data processing was conducted separately within each questionnaire.[5] A series of computer edits were then run on the data to identify and correct inconsistencies, delete extraneous entries in situations where skip patterns were not followed correctly, or assign the "not answered" code to items that should have been answered but were not. A final interview status code was then assigned to each case. Once the Census Bureau analysts reviewed all data, they created the edited BTLS Second Wave Data File in preparation for the next stage of data processing—imputation.

The third, fourth, and fifth waves of BTLS were collected as their own entities during the 2009–10, 2010–11, and 2011–12 school years, respectively. Data were collected using internet instruments only. Data from completed internet instruments were processed separately within each survey respondent type.[6] A series of computer edits were then run on the data to identify and correct inconsistencies and delete extraneous entries in situations where skip patterns were not followed correctly or to assign the "not answered" code to items that should have been answered but were not. Once the Census Bureau reviewed all data for a wave, they created the edited BTLS data file for that wave in preparation for the next stage of data processing—imputation. Data collected retrospectively during the third wave were added into the second-wave data file. Similarly, data collected retrospectively during the fourth and fifth waves were added into the data file for the previous wave.

Once processing for the fifth wave was complete, data from the first through fifth waves of BTLS were used for imputation of item nonresponse. For each of the second through fifth waves of BTLS, only a select set of items were identified as key, or important for reporting or analysis, and imputed. All other items are subject to missing data. During the imputation stage of processing, two main approaches were used to fill "not answered" items with data. In one approach, called "cross-wave imputation," data were imputed from the same case from either the preceding or the subsequent BTLS wave whenever possible; cross-wave imputation was used for all waves of BTLS data. The imputed data for selected items were removed from the first wave and then reimputed on the basis of the case's responses to items from subsequent waves of the BTLS, whenever possible. In other words, the cross-wave imputation from later waves replaced the initial imputation developed in wave 1 when cross-wave imputation was possible. If data were not available from subsequent waves, then the existing wave 1 imputed value remained. The

[3] After all data processing of the SASS Teacher Questionnaire data was completed, the BTLS First Wave Data File was created. It includes only those public school teachers who began teaching in 2007 or 2008; all other SASS respondents were omitted from the BTLS First Wave Data File.
[4] SASS data files are fully imputed; therefore, the BTLS First Wave Data File began as a fully imputed data file since the data were collected on the 2007–08 SASS Teacher Questionnaire. The imputation that occurred for the BTLS first wave during SASS data processing was specific to that wave.
[5] Two questionnaires compose the BTLS second wave. Both questionnaires are for 2007–08 SASS public school teacher respondents who began teaching in 2007 or 2008. The Questionnaire for Current Teachers (form TFS-3L) collects information on sampled teachers who currently teach students in any of grades pre-K–12, and the Questionnaire for Former Teachers (form TFS-2L) collects information about sampled teachers who left the pre-K–12 teaching profession after the 2007–08 school year. Processing specifications used for BTLS data were slightly different from those used for TFS data.
[6] The BTLS third-wave internet instrument contained a single survey with a variety of questionnaire paths based on whether respondents were current or former teachers during the second and third waves of the BTLS, and whether they were respondents in the second wave of data collection. The BTLS fourth- and fifth-wave internet instruments were similar, with branches based on teaching and response status during the collection wave and the previous wave.

second method of imputation is known as "weighted sequential hot-deck imputation," during which data were imputed using items from other cases that had certain predetermined characteristics in common, while also keeping the means and distributions of the full set of data, including imputed values, consistent with those of the unimputed respondent data.

After the imputation of the key variables was completed, data from the five waves were then combined into one five-wave BTLS file for release by NCES as a restricted-use data file to licensed users. This file is called the *First Through Fifth Waves of the 2007–08 Restricted-use Beginning Teacher Longitudinal Study Data File* (NCES 2014-338).

Response Rates

During data processing for each wave, a final determination was made for each sample member as to whether sufficient data had been collected for the case to be classified as a respondent for that wave. A case was classified as a respondent if the following criteria were met.

- Former teacher:
  - was not classified as deceased or permanently incapacitated;
  - reported that he or she did not currently teach any regularly scheduled classes in any of grades pre-K–12 or reported that his or her job classification was as a short-term substitute, student teacher, or teacher aide; and
  - reported main occupational status and was not on leave.
- Current teacher:
  - was not classified as deceased or permanently incapacitated;
  - reported that he or she taught any regularly scheduled classes in any of grades pre-K–12;
  - reported that his or her job classification was not as a short-term substitute, student teacher, or teacher aide; and
  - indicated whether or not he or she was teaching in the same school as in the previous year.

Unit response rate. The unit response rate for a wave indicates the percentage of sampled cases that met the definition of a respondent for that wave (i.e., met the criteria above). The BTLS weighted unit response rate was produced by dividing the weighted number of respondents who completed questionnaires by the weighted number of eligible sampled cases, using the base weight.[7] The base weight for each sampled unit is the initial base weight multiplied by an adjustment factor that reflects the impact of the SASS teacher weighting procedure.[8] Table B-1 summarizes the weighted unit response rates by wave and retrospective status.

Overall response rate. The overall response rate represents the response rate to the survey, taking into consideration each stage of data collection. The overall response rate for the BTLS first wave is the product of response rates for two stages of collection: (1) SASS Teacher Listing Form response rate; and (2) survey response rate of SASS public school teachers with 1 to 3 years of experience. The first stage was collection of Teacher Listing Forms during the 2007–08 SASS, which provided a sampling frame for

[7] For the formula used to calculate the unit response rate, see *NCES Statistical Standards* (U.S. Department of Education 2003).

[8] This adjustment factor is used to adjust for the fact that the SASS teacher final weights based on preliminary data were used in selecting the BTLS sample, whereas the actual SASS teacher final weights are more reflective of the teacher population. The SASS teacher weighting was not completed in time to use the actual teacher final weights in the BTLS sample selection, necessitating the use of the preliminary version of the SASS teacher final weights.

teachers at that school. The second stage was collection of the SASS teacher survey from sampled teachers. Whether or not a teacher was a first-year teacher was not known prior to the collection of the SASS teacher data. It was only known whether each teacher was reported to have 1 to 3 years of experience, 4 to 19 years of experience, or 20 or more years of teaching experience. Therefore, the overall response rates are based on the 2007–08 SASS public school teachers reported to have 1 to 3 years of experience, not just the first-year teachers included in the BTLS. The overall response rate for each of the remaining waves (second through fifth) is the product of three factors: (1) SASS Teacher Listing Form response rate; (2) response rate of SASS public school teachers with 1 to 3 years of experience; and (3) BTLS unit response rate for that wave.

Table B-1. Weighted unit and overall response rates using base weight, by wave and retrospective status: 2007–08 through 2011–12

Wave and retrospective status	BTLS unit response rate	Overall response rate
First wave	†	72.7
Second wave without retrospective cases	84.5	61.4
Second wave with retrospective cases	91.9	66.8
Third wave without retrospective cases	86.1	62.5
Third wave with retrospective	91.4	66.4
Fourth wave without retrospective cases	83.7	60.8
Fourth wave with retrospective cases	84.6	61.4
Fifth wave	77.7	56.5

† Not applicable.

NOTE: Second-wave retrospective cases are sample members that were noninterviews during the second wave but provided replies to second-wave survey items during the third wave. Similarly, third-wave and fourth-wave retrospective cases did not respond during the collection wave but answered retrospectively during the subsequent wave. Base-weighted response rates use the inverse of the probability of selection and the sampling adjustment factor. Each overall response rate is the product of three factors: (BTLS wave response rate) x (SASS Teacher Listing Form response rate of 86.2) x (SASS public school teachers with 1 to 3 years of experience response rate of 84.3).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Waves Documentation Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Unit nonresponse bias analysis. NCES Statistical Standard 4-4 requires analysis of unit nonresponse bias for any survey stage with a base-weighted response rate of less than 85 percent. Even though the BTLS achieved close to an 85 percent base-weighted response rate in most stages, all waves of BTLS data files were evaluated for potential bias. Comparisons between the eligible respondents (respondents plus nonrespondents) and the respondents were made before and after the noninterview weighting adjustments were applied in order to evaluate the extent to which the adjustments reduced or eliminated nonresponse bias. The degree of nonresponse bias is a function of two factors: the nonresponse rate and how much the respondents and nonrespondents differ on survey variables of interest. A scale-invariant estimate of the bias, referred to as a relative bias, was used to compare biases across all variables included in the analysis.[9]

Relative bias was estimated for variables known for respondents and nonrespondents. For the first wave, first-year teachers were not identifiable from the sampling frame, although teachers in the first 3 years of their career were identified on the Teacher Listing Form. Therefore, a nonresponse bias analysis on 2007–08 SASS public school teachers with 1 to 3 years of experience was carried out as a proxy for the BTLS first wave. For this analysis, the following variables were available: teacher main subject, full-

[9] For the formulas to calculate nonresponse bias and relative bias, see *NCES Statistical Standards* (U.S. Department of Education 2003).

time/part-time status, charter status, school grade level, percent of K–12 students approved for free or reduced-price lunches, school enrollment, school urbanicity, school magnet status, percent Hispanic enrollment, percent Asian enrollment, percent Black enrollment, percent Native American enrollment, percent White enrollment, and school Title I eligibility status. For the second through fifth waves and the longitudinal datasets, there are extensive data available for all teachers from the 2007–08 SASS sampling frame and teacher data files, and 42 items were used in the unit nonresponse bias analysis for these waves.

Several steps were followed to compute the relative bias. First, the nonresponse bias was estimated and tested to determine if the bias was significant at the .05 level. Second, noninterview adjustments were computed, and the variables listed above were included in the nonresponse models. The noninterview adjustments, which are included in the weights, were designed to significantly reduce or eliminate unit nonresponse bias for variables included in the models. Third, after the weights were computed, any remaining bias was estimated for the variables listed above and statistical tests were performed to check the remaining significant nonresponse bias. For this comparison, nonresponse bias was calculated as the difference between the base-weighted sample mean and the nonresponse-adjusted respondent mean, which evaluates the effectiveness of each noninterview adjustment in mitigating nonresponse bias. Table B-2 contains summary statistics of the findings, which show that the percentage of variable categories significantly biased is smaller after nonresponse adjustment than before nonresponse adjustment for each wave and retrospective status group.

Item response rates. The item response rate indicates the percentage of respondents who answered a given survey question or item. The weighted BTLS item response rate is calculated by dividing the weighted number of respondents who provided an answer to an item by the weighted number of respondents who were eligible to answer that item. Table B-3 provides a brief summary of the weighted item response rates for BTLS public school teachers in the first through fifth waves. For waves 1–3, the nonresponse bias analysis conducted at the item level revealed no substantial evidence of item bias in the data files. For waves 4 and 5, none of the items used in this report have an item response rate less than 85 percent.

Weighting

The general purpose of weighting is to scale up the sample estimates to represent the target survey population. As discussed in the section on sampling frames and sample selection, of the original BTLS sample of 2,100 teachers, about 110 were found to be ineligible because they inadvertently reported 2007 or 2008 as their first year of teaching or were misidentified as teachers. These ineligibles were dropped from the sample, leaving about 1,990 sampled, eligible BTLS teachers. During the fourth and fifth waves, a small number of teachers (less than 5 in total) were found to be deceased.

For the BTLS first wave, weights are obtained directly from the 2007–08 SASS, since all interviewed beginning teachers in SASS were eligible for BTLS. On the BTLS data file, the final weight for the first wave is called W1TFNLWGT, which is called TFNLWGT on the SASS data file.

Table B-2. Summary of SASS new teacher and BTLS nonresponse bias statistics, by wave and retrospective status: 2007–08 through 2011–12

Nonresponse bias statistic	2007–08 SASS public school teachers with 1 to 3 years of experience	Second wave without retrospective cases[1]	Second wave with retrospective cases[1]	Third wave without retrospective cases[2]	Third wave with retrospective cases[2]	Fourth wave without retrospective cases[3]	Fourth wave with retrospective cases[3]	Fifth wave	Wave 1–5 longitudinal without retrospective cases[4]	Wave 1–5 longitudinal with retrospective cases[4]
Before nonresponse adjustment										
Mean estimated percent relative bias	-0.08	-2.02	-1.38	-1.92	-1.19	-1.80	-1.59	-0.88	-2.31	-2.39
Median estimated percent relative bias	0.21	-0.10	0.09	0.31	0.23	0.23	0.23	0.04	-0.46	-0.05
Percent of variable categories significantly biased	#	6.79	9.05	9.95	7.69	5.88	4.98	5.43	6.33	5.43
After nonresponse adjustment										
Mean estimated percent relative bias	#	-1.28	-1.09	-1.49	-0.64	-1.36	-0.08	-0.38	-1.07	-1.33
Median estimated percent relative bias	0.13	0.21	0.14	0.29	0.22	0.14	0.13	0.24	0.10	0.00
Percent of variable categories significantly biased	4.55	2.71	6.33	5.88	4.98	2.71	3.17	1.36	3.17	3.62

Rounds to zero.

[1] Second-wave retrospective cases are sample members that were nonrespondents during the second wave but provided replies to second-wave survey items during the third wave.

[2] Third-wave retrospective cases are sample members that were nonrespondents during the third wave but provided replies to third-wave survey items during the fourth wave.

[3] Fourth-wave retrospective cases are sample members that were nonrespondents during the fourth wave but provided replies to fourth-wave survey items during the fifth wave.

[4] Longitudinal cases are those that responded to all five waves. Longitudinal retrospective cases responded to the first and fifth waves at the time of data collection but provided replies to second-wave items during the third wave, to third-wave items during the fourth wave, or to fourth-wave items during the fifth wave.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Sample File," and "Public School Teacher Documentation File," 2007–08, and Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Waves Documentation Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Table B-3. Summary of weighted item response rates, by wave and retrospective status: 2007–08 through 2011–12

Wave and retrospective status	Percentage of items with a response rate of 85.0 percent or more	Percentage of items with a response rate of 70.0 percent to 84.9 percent	Percentage of items with a response rate of less than 70.0 percent
First wave	83.3	8.9	7.8
Second wave without retrospective cases	86.8	8.9	4.3
Second wave with retrospective cases	87.8	7.8	4.4
Third wave without retrospective cases	86.7	9.4	3.9
Third wave with retrospective cases	85.9	9.8	4.3
Fourth wave without retrospective cases	84.7	11.8	3.5
Fourth wave with retrospective cases[1]	84.5	12.2	3.4
Fifth wave[2]	86.5	9.6	3.9

[1] One item for which no respondents were eligible to answer was excluded from the response rate calculations.

[2] Three items for which no respondents were eligible to answer were excluded from the response rate calculations. In addition, in wave 5, two series of yes/no items pertaining to reasons that a former teacher left teaching or a current teacher moved to a different school were only asked if a respondent failed to answer an open-ended item asking for the reasons. This resulted in very small numbers of eligible respondents for these item series and zero respondents actually reporting data for these yes/no items. These 45 items were excluded from the item response rate calculations.

NOTE: Second-wave retrospective cases are sample members that were nonrespondents during the second wave but provided replies to second-wave survey items during the third wave. Similarly, third-wave and fourth-wave retrospective cases did not respond during the collection wave but answered retrospectively during the subsequent wave. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Waves Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

For the BTLS second, third, fourth, and fifth waves, an initial base weight (the inverse of the sampled teacher's probability of selection) is used as the starting point. Then, a weighting adjustment is applied that reflects the impact of the SASS teacher weighting procedure. Next, a nonresponse adjustment factor is calculated and applied using data that are known about the respondents and nonrespondents from the sampling frame. Finally, a ratio adjustment factor is calculated and applied, which adjusts the sample totals to frame totals in order to reduce sampling variability. The product of the factors listed above is the final cross-sectional weight for each of the second through fifth waves of BTLS.

For longitudinal analysis over multiple waves, longitudinal weights are provided for waves 1 through 3, waves 1 through 4, and waves 1 through 5. Longitudinal weights are used when change over time within a single population is being examined by using more than one wave of data. Only sample units with unit response in all waves are viewed as longitudinal respondents and are given positive longitudinal weights. Because all BTLS sample members responded to wave 1, the wave 2 analysis weights may be used when change between wave 1 and 2 is being examined using data from the two waves. The longitudinal weights are available on the data file, but were not used in this report.

For each wave where retrospective response was possible, a second version of both the analysis and longitudinal weights, incorporating retrospective responses, was calculated. The same procedures described above were followed. Both sets of weights are present on the BTLS file. Table B-4 shows the number of beginning teachers (unweighted and weighted) and the final analysis weight variables, by wave and retrospective status.

Table B-4. Unweighted number of respondents in the BTLS sample, final-weighted number of beginning teachers in the population, and final analysis weight variable, by wave and retrospective status: 2007–08 through 2011–12

Wave and retrospective status	Unweighted number	Weighted number[1]	Final weight variable
First wave analysis	1,990	156,100	W1TFNLWGT
Second wave analysis without retrospective cases	1,690	156,100	W2AFWT
Second wave analysis with retrospective cases	1,830	156,100	W2RAFWT
Third wave analysis without retrospective cases	1,720	156,100	W3AFWT
Third wave analysis with retrospective cases	1,820	156,100	W3RAFWT
Waves 1–3 longitudinal without retrospective cases	1,560	156,100	W3LWGT
Waves 1–3 longitudinal with retrospective cases	1,700	156,100	W3RLWGT
Fourth wave analysis without retrospective cases	1,660	155,800	W4AFWT
Fourth wave analysis with retrospective cases	1,690	155,800	W4RAFWT
Waves 1–4 longitudinal without retrospective cases	1,450	155,800	W4LWGT
Waves 1–4 longitudinal with retrospective cases	1,610	155,800	W4RLWGT
Fifth wave analysis	1,540	155,600	W5AFWT
Waves 1–5 longitudinal without retrospective cases	1,330	155,600	W5LWGT
Waves 1–5 longitudinal with retrospective cases	1,440	155,600	W5RLWGT

[1] The weighted estimates from BTLS are designed to be consistent with the weighted number of beginning teachers from the 2007–08 SASS (first wave), but are not precisely equal to the SASS estimates. Weighted estimates for the fourth and fifth waves are smaller than the estimates for the earlier waves because a small number of sample members (less than 5) were found to be deceased during each of the fourth and fifth waves.

NOTE: Unweighted and weighted numbers are rounded. Second-wave retrospective cases are sample members who did not respond during the second wave but provided replies to second-wave survey items during the third wave. Similarly, third-wave and fourth-wave retrospective cases did not respond during the collection wave but answered retrospectively during the subsequent wave.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Waves Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

The weights used in the estimate tables in this report may vary by table and within table. The estimate tables 1–3 present cross-sectional data and were calculated using the retrospective analysis weights for the second through fourth waves and analysis weights for the first and fifth waves (since there are no retrospective data for the first and fifth waves), as listed below.

- 2007–08: First wave analysis weight W1TFNLWGT
- 2008–09: Second wave retrospective analysis weight W2RAFWT
- 2009–10: Third wave retrospective analysis weight W3RAFWT
- 2010–11: Fourth wave retrospective analysis weight W4RAFWT
- 2011–12: Fifth wave analysis weight W5AFWT

Estimate table 4 presents cross-sectional data and was calculated using the analysis weights for each year, as listed below. These estimates do not include those who provided data retrospectively during the next year's survey collection because retrospective respondents were not asked about the reason for moving.

- 2008–09: Second wave analysis weight W2AFWT
- 2009–10: Third wave analysis weight W3AFWT
- 2010–11: Fourth wave analysis weight W4AFWT
- 2011–12: Fifth wave analysis weight W5AFWT

The corresponding replicate weights for each final weight were used to calculate the corresponding standard errors for each table. Statistical Analysis Software (SAS 9.3) was used to compute the statistics for this report.

Variance Estimation

In surveys with complex sample designs, such as SASS or BTLS, direct estimates of sampling errors that assume a simple random sample will typically underestimate the variability in the estimates. The SASS and BTLS sample design and estimation include procedures that deviate from the assumption of simple random sampling, such as stratifying the school sample, oversampling new teachers, and sampling with differential probabilities. Therefore, to accurately estimate variance, users must employ special calculations.

One method of calculating sampling errors to reflect these aspects of the complex sample design of SASS and BTLS is replication. Replication methods involve constructing a number of subsamples (i.e., replicates) from the full sample and computing the statistic of interest for each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variance of the statistic. The BTLS data file includes one set of 88 replicate weights designed to produce variance estimates for each cross-sectional and longitudinal weight discussed in the Weighting section above. The set(s) of weights used to produce the estimates and standard errors for the tables in this report are documented in the notes included on each table of estimates.

Tests of Statistical Significance

Comparisons of proportions were tested using Student's *t* statistic. Differences between estimates were tested against the probability of a Type I error[10] or significance level. The statistical significance of each comparison was determined by calculating the Student's *t* value for the difference between each pair of proportions and comparing the *t* value with published tables of significance levels for two-tailed hypothesis testing. Student's *t* values were computed to test differences between independent estimates using the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}}$$

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

[10] A Type I error occurs when one concludes that a difference observed in a sample reflects a true difference in the population from which the sample was drawn, when no such difference is present.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large *t* statistics may appear to merit special attention. This can be misleading because the magnitude of the *t* statistic is related not only to the observed differences in percentages but also to the number of respondents in the specific categories used for comparison. Hence, a small difference compared across a large number of respondents would produce a large (and thus possibly statistically significant) *t* statistic.

A second hazard in reporting statistical tests is the possibility that one can report a "false positive" or Type I error. Statistical tests are designed to limit the risk of this type of error using a value denoted by alpha. The alpha level of .05 was selected for findings in this First Look and ensures that a difference of a certain magnitude or larger would be produced when there was no actual difference between the quantities in the underlying population no more than 1 time out of 20.[11] When analysts test hypotheses that show alpha values at the .05 level or smaller, they reject the null hypothesis that there is no difference between the two quantities. Failing to reject a null hypothesis (i.e., detect a difference), however, does not imply that the values are the same or equivalent.

Reliability of Data

BTLS estimates are based on samples. The sample estimates may differ somewhat from the values that would be obtained from administering a complete census using the same questionnaires, instructions, and enumerators. The difference occurs because a sample survey estimate is subject to two types of error: nonsampling and sampling. Estimates of the magnitude of the BTLS sampling error, but not the nonsampling error, can be derived or calculated. Nonsampling errors are attributed to many sources, including definitional difficulties, the inability or unwillingness of respondents to provide correct information, differences in the interpretation of questions, inability to recall information, errors made in collection (e.g., in recording or coding the data), errors made in processing the data, and errors made in estimating values for missing data. Quality control and edit procedures were used to reduce errors made by respondents, coders, and interviewers.

[11] No adjustments were made for multiple comparisons.

Appendix C: Description of Variables

Description of Variables

Variables used in this report are listed in table C-1. They include those collected during the base year, which was the 2007–08 Schools and Staffing Survey (SASS), referred to as the Beginning Teacher Longitudinal Study (BTLS) wave 1, and each subsequent wave of BTLS (waves 2–5). The report also used "created variables" computed using survey variables, sampling frame variables, other created variables, or a combination of these. Some created variables are frequently used in National Center for Education Statistics (NCES) publications and have been added to the data files to facilitate data analysis. All variables in this appendix can be found on the BTLS *First Through Fifth Waves 2007–08 Restricted-use Beginning Teacher Longitudinal Study Data File*. The definitions for BTLS variables used in this report follow table C-1.

Table C-1. Variables used to create teacher and school characteristics in the First Look report, *Public School Teacher Attrition and Mobility in the First Five Years: Results From the First Through Fifth Waves of the 2007–08 Beginning Teacher Longitudinal Study:* 2007–08 through 2011–12

Age during first year of teaching	W1AGE_T
Assigned a mentor during first year of teaching	W2MNTYN
Base salary	W1T0343
Certification type during first year of teaching	W1T0160, W1T0186
Class organization	W1T0068
Community type	W1URBANS12
Contract not renewed for leavers	W2LCNYN, W3LCNYN, W4LCINV, W5LCINV
Contract not renewed for movers	W2MCNYN, W3MCNYN, W4MCINV, W5MCINV
Entered teaching through an alternative certification program	W1T0153
Former teachers' occupational status	W2OCCST, W3OCCST, W4OCCST, W5OCCST
Full-time/part-time teacher status	W1FTPT
Highest degree during first year of teaching	W1HIDEGR
Percent of K–12 students who were approved for free or reduced-price lunches	W1NSLAPP_S
Race/ethnicity	W1RACETH_T
School level	W1SCHLEVEL
Sex	W1T0352
Stayer/mover/leaver/returner status	W2STTUS, W3STTUS, W4STTUS, W5STTUS
Teacher status (Current, Former)	W2FCSTS, W3FCSTS, W4FCSTS, W5FCSTS
Type of move between schools	W2MVTYP, W3MVTYP, W4MVTYP W5MVTYP

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Teacher Longitudinal Study (BTLS), "First Through Fifth Waves Restricted-use Data File," 2007–08, 2008–09, 2009–10, 2010–11, 2011–12.

Age during first year of teaching (W1AGE_T): W1AGE_T is a continuous variable created by subtracting the teacher's reported year of birth (W1T0160) from the year of data collection (2007). Age was coded into categories for this report.

Assigned a mentor during first year of teaching (W2MNTYN): The data for this variable were collected on the second-wave questionnaire.

Base salary (W1T0343): The data for this variable was collected on the questionnaire for each wave of the survey. The distribution for this variable was examined in order to determine the categories reported in the tables.

Certification type during first year of teaching (W1T0160, W1T0186): This created variable is based on a teacher's reported certification type (W1T0160, W1T0186) during the 2007−08 school year. The categories for this variable were collapsed for this report.

Class organization (W1T0068): The data for this variable were collected on the questionnaires for all waves.

Community type (W1URBANS12): Taken from the SASS Public School Data File, W1URBANS12 is a created variable collapsed from the 12-category urban-centric school locale code (SCLOP_ 12) that was assigned using the 2000 Decennial Census data and recoded into four categories: city, suburban, town, and rural. The same process was used to create variables for waves 1–5. The categories for this variable were collapsed for this report.

Contract not renewed for leavers (W2LCNYN, W3LCNYN, W4LCINV, W5LCINV): Leavers were not teaching in the year of data collection but were teaching in the previous year. In waves 2 and 3, leavers were asked, "Did you leave teaching because your contract was NOT renewed?" In waves 4 and 5, leavers were asked, "Did you leave your pre-K–12 teaching position involuntarily (e.g., contract not renewed, laid off, school closed or merged)?"

Contract not renewed for movers (W2MCNYN, W3MCNYN, W4MCINV, W5MCINV): Movers are teachers who were teaching at a different school in the year of data collection than in the previous year. In waves 2 and 3, movers were asked, "Did you change schools because your contract was NOT renewed at last year's school?" In waves 4 and 5, movers were asked, "Did you change schools involuntarily (e.g., contract not renewed, laid off, school closed or merged)?"

Entered teaching through an alternative certification program (W1T0153): The data for this variable were collected on the first-wave questionnaire.

Former teachers' occupational status (W2OCCST, W3OCCST, W4OCCST, W5OCCST): Occupations for former teachers were coded into categories for this report.

Full-time/part-time teacher status (W1FTPT): This variable indicates whether the teacher was a full- or part-time teacher. W1FTPT is based on W1T0025 and W1T0028.

Highest degree during first year of teaching (W1HIDEGR): A created variable that indicates the highest degree a teacher had earned at the time of data collection during the 2007−08 school year. It is computed using the variables W1T0110, W1T0120, W1T0132, W1T0135, W1T0138, and W1T0141. The categories for this variable were collapsed for this report.

Percent of K–12 students who were approved for free or reduced-price lunches (W1NSLAPP_S): W1NSLAPP_S is a continuous variable created by dividing the number of students approved for free or reduced-price lunches (S0217) by the total number of K−12 grade students enrolled (S0047) in schools that participated in the National School Lunch Program (NSLP) (S0215 = 1). This was coded into categories for this report.

Race/ethnicity (W1RACETH_T): A created variable based on respondents' reported race and ethnicity (W1T0353−W1T0358). The first wave allowed respondents to mark more than one racial category. This variable was recoded into two categories for this report: White, non-Hispanic; all other races/ethnicities.

School level (W1SCHLEVEL). A created variable with codes for elementary, secondary, and combined based on grades reported by the school (S0025−S0038). Elementary schools are those with any of grades K–6 and none of grades 9–12. Secondary schools have any of grades 7–12 and none of grades K–6. Combined schools have grade levels in both elementary and secondary grade levels or have all students in ungraded classrooms.

Sex (W1T0352): The data for this variable were collected on the first-wave questionnaire.

Stayer/mover/leaver/returner status (W2STTUS, W3STTUS, W4STTUS, W5STTUS): These created variables compare the teacher's status in the data collection year to the previous year. Stayers are teaching in the same school in the data collection year as in the previous year. Movers are teaching at a different school in the data collection year compared to the previous year. Returners are teaching in the data collection year but were not teaching in the previous year. Leavers (also called former teachers) are not teaching during the year of data collection. The following variables were used to create these status variables: W2MOVYN, W2REGCL, W2POSSC, W3MOVYN, W3REGCL, W3POSSC, W3NRSAS, W3RESAS, W4MOVYN, W4REGCL, W4POSSC, W4NRSAS, W5REGCL, W5POSSC, and W5NRSAS.

Teacher status (W2FCSTS, W3FCSTS, W4FCSTS, W5FCSTS): These created variables indicate whether the sample member was teaching during the data collection year. They are based on questions asking whether the respondent was currently teaching any regularly scheduled class(es) in any of grades pre-K–12 (REGCL) and how his/her position at the current school was classified (POSSC) for each year.

Type of move between schools (**W2MVTYP, W3MVTYP, W4MVTYP W5MVTYP):** The data for these variables were collected during each survey wave. The categories for this variable were collapsed for this report.