

**ATTRITION OF BEGINNING TEACHERS:  
DOES TEACHER PREPARATION MATTER?<sup>1</sup>**

**Erling E. Boe, Ph.D.**  
Professor of Education  
Graduate School of Education  
University of Pennsylvania

**Lynne H. Cook, Ph.D.**  
Dean, College of Education  
California State University, Dominguez Hills

and

**Robert J. Sunderland, M.S.**  
Research Associate  
University of Pennsylvania

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Center for Research and Evaluation in Social Policy  
Graduate School of Education  
University of Pennsylvania  
Philadelphia, PA 19104

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ABSTRACT

This research examined whether the attrition of beginning public school teachers from teaching employment is related to the amount of teacher preparation completed in pedagogy and practice teaching. Using national data from the most recent Teacher Follow-Up Survey (following the 1999-2000 school year) for teachers in their first five years of teaching employment, we found that attrition from teaching employment was substantially greater among beginning teachers with only some or no teacher preparation (13.7%) than among those with extensive preparation (8.6%), even after controlling for confounding variables. Contrary to current USDE policy that de-emphasizes the importance of teacher preparation in pedagogy and practice teaching, our results show that extensive teacher preparation contributes to a more stable and qualified teaching force and to a reduction in the demand for a fresh supply of novice teachers to replace those who would otherwise have left teaching employment.

## INTRODUCTION

A report by the Secretary of Education asserted that teacher preparation involving traditional components (such as extensive courses in teaching methods and teaching practicums) has not been effective in producing highly qualified teachers [U.S. Department of Education (USDE), 2002]. This conclusion was based on controversial interpretations of research findings about two central policy concerns about teachers. Specifically, the relationship of teacher preparation to student achievement, and the retention of teachers in the employed teaching force.

With respect to student achievement, the Secretary concluded that neither attendance at traditional schools of education nor teacher certification improved student achievement (USDE, 2002). This conclusion was challenged by Darling-Hammond and Youngs (2002) based on their review of relevant research literature, and by subsequent empirical findings (Darling-Hammond, Holtzman, Gatlin, & Heilig, 2005) demonstrating that extensive teacher preparation produces higher student achievement scores. Nonetheless, the impact of teacher preparation and certification on student achievement remains a contentious issue (e.g., Gordon, Kane, & Staiger, 2006).

With respect to teacher retention, the Secretary stated, “initial evidence suggests that retention rates for teachers certified through alternative routes are higher than for teachers who enter the classroom through traditional routes” (2002, p. 16). Darling-Hammond and Youngs (2002) subsequently identified and analyzed the evidence from California cited by the Secretary, along with other evidence from several states and school districts, and concluded that the evidence does not support the Secretary’s conclusion that retention percentages are higher for teachers entering the profession through alternative routes (AR). Instead, they found highly variable rates of attrition (10% to 45%) by the end of the *first year* of teaching among AR recruits. Lower rates of attrition were associated with AR programs that provided *extensive* supervision and support, while higher rates were associated with AR programs that provided only a few weeks of preservice training.

The research findings cited by Darling-Hammond and Youngs (2002) on the preparation and attrition of teachers entering through AR programs were based on state and district data. One national study found that recently graduated teachers who completed a student teaching credit (a component of traditional teacher preparation) had a much lower attrition percentage than those who did not have student teaching (15.3% vs. 29.3%, respectively, during the first three years of teaching in either public or private schools). This finding was based on data from the 1992 Baccalaureate and Beyond Survey (B&B) by the National Center for Education Statistics (NCES) (Henke, Chen, Geis, & Knepper, 2000).

These local, state, and national research findings suggest that the retention of early career teachers is, in fact, enhanced if they are more extensively prepared to teach. Yet these studies have limitations. The local and state studies did not include comparisons of attrition percentages for teachers with traditional versus AR preparation, or versus those without any preparation. Furthermore, the associations with attrition were not adjusted for potential confounding variables. Similarly, the national B&B study also did not adjust for confounding variables, and was based on a restricted sample of graduates from 1992 (only bachelor's graduates in 1992 who entered teaching employment during the following year, thereby excluding delayed entrants and master's degree graduates). In light of this limited research base, Darling-Hammond, Berry, and Thoreson (2001) and Wayne and Youngs (2003) recognized the need for further investigation of the relationship between teacher preparation and retention.

Due to the high cost of teacher attrition in terms of discontinuity in instructional programs and the financial burden of preparing, recruiting, and inducting replacement teachers (Johnson, Berg, & Donaldson, 2005; Alliance for Excellent Education, 2005), the identification of effective strategies to maximize the retention of qualified teachers represents a major policy issue. One possible strategy is the control exerted by policy makers over the amount of teacher preparation required for certification through both traditional and alternative means [National Association of State Directors of Teacher Education & Certification (NASDTEC), 2003; Feistritzer, 2006]. Fortunately, it is possible to investigate the effectiveness of this strategy using national data.

Accordingly, on the basis of available research reviewed above, it is hypothesized the percentage of beginning teachers retained is a direct function of the amount of teacher preparation. The purpose of this research is to test this hypothesis, using recent high-quality national survey data (the Teacher Follow-Up Survey of 2000-01), while controlling for confounding variables.

## METHOD

*Data Sources*

Data sources for this research were teachers' self reports to the most recently available versions (1999-00) of the Public School Teacher Questionnaire and the Public Charter School Teacher Questionnaire —both components of the Schools and Staffing Survey (SASS), conducted by the National Center for Education Statistics (NCES), USDE. These teacher questionnaires provided information directly relevant to this research about the amount of preparation in pedagogy and supervised teaching (extensive, some, or none), teacher characteristics (e.g., gender), and qualifications (e.g., certification status).

Another data source was the longitudinal component of SASS, the 2000-01 Teacher Follow-Up Survey (TFS) administered one year following the 1999-00 SASS. The TFS provided information about which teachers continued teaching employment from the 1999-00 to the 2000-01 school years (i.e., continuers), and which left teaching employment following the 1999-00 school year (i.e., leavers).

*Teachers Studied*

*Teacher Definition.* In keeping with the SASS definition, a teacher was any individual who reported being employed either full-time or part-time in a public school with a main assignment teaching in any grade(s) K-12, including itinerant teachers and long-term substitutes. Excluded from this definition were individuals who identified their main assignment as pre-kindergarten teacher, short-term substitute, student teacher, teacher aide, or a non-teaching specialist of any kind.

*SASS Teacher Sample.* The SASS teacher questionnaires provide nationally representative estimates of the numbers of public school teachers (including public charter school teachers). Specifically, teacher questionnaire data were obtained from a large national probability sample of public teachers (N = 53,105) in the 1999-00 school year with a weighted questionnaire response rate of 83%. This yielded a sample of 44,896 K-12 teachers who completed the questionnaires. Of these, a subsample of 11,049 teachers in their *first five years* of teaching employment (termed beginning teachers) was selected for follow-up in the 2000-01 school year. Of this subsample, 97 teachers were excluded due to lack of information about their teacher preparation, leaving 10,952 beginning teachers for follow-up in this research. More detailed information about the 1999-2000 SASS is provided by Tourkin et al. (2004).

*TFS Teacher Sample.* Of the sample of 10,952 beginning public teachers in SASS, TFS collected questionnaire data from the 1,973 teachers used in this research. This included subsamples of 1,506 beginning public school teachers who *continued teaching* during the 2000-01 school year and 467 beginning teachers who *left teaching* employment at the end of the 1999-00 school year. The weighted response rates for TFS questionnaires were 90%. There are no missing data for completed teacher questionnaires because NCES imputed values for item nonresponse. More detailed information about the 2000-01 TFS is provided by Luekens, Lyter, Fox, and Chandler (2004, Appendix B).

### *Design*

The research was designed to analyze, from a national perspective, the relationship between the amount of teacher preparation (extensive, some, or none) completed by *beginning* public school teachers (i.e., those with 1 to 5 years of teaching experience), and *exit attrition* (leaving versus continuing as employed teachers from the 1999-00 to the 2000-01 school years). In addition to the primary focus on the amount of teacher preparation (the independent variable), we examined relationships between teacher attrition (the dependent variable) and several potential confounding variables. In contrast with constructing a prediction model of teacher attrition, we used the confounding variables identified to statistically adjust the estimated association between the amount of teacher preparation and attrition, thereby obtaining an unbiased estimate of the relationship between these two variables (Hosmer & Lemeshow, 1989).

A description of the exit attrition, teacher preparation, and potential confounding variables follows. The status of teachers in these respects was quantified for the SASS year (1999-00), at the end of which some teachers left teaching while others continued teaching in the following TFS year (2000-01).

### *Exit Attrition*

Leaving teaching employment at the K through 13 grade levels, in either public or private schools, is called *exit attrition*, and is distinguished from other forms of attrition such as school attrition (i.e., leaving teaching in a particular school) and teaching-area attrition (e.g., leaving a teaching assignment in elementary education for some other teaching assignment).

### *Amount of Teacher Preparation*

Teachers differ widely in the amount of preparation in pedagogy and supervised teaching they complete. The SASS teacher questionnaires provide information for each beginning teacher

that can be used to define three ordered categories of the amount of teacher preparation completed (extensive, some, or none). One item of information available is the length of the practice teaching experience: 10 weeks or more, 5 to 9 weeks, 1 to 4 weeks, or no practice teaching. Other items of information available are completion of each of *four common components* of teacher preparation: (a) coursework in selecting and adapting instructional materials, (b) coursework in educational psychology, (c) observation of other classroom teaching, and (d) received feedback on their teaching. Completion of extensive practice teaching and these common components are ordinarily required by states for teachers to become certified. According to data from 50 states and the D.C. produced by NASDTEC, 8 weeks of practice teaching is the minimum number required for an initial teaching certificate (NASDTEC, 2003, Table B-8). Information from the American Association of Colleges of Teacher Preparation also indicates that 8 weeks of practice teaching is about the minimum that member colleges require in their traditional teacher preparation programs (D. Imig, Director, personal communication, April 7, 2003). In addition, almost all states require coursework in the psychological foundations of teaching, teaching methods, and field experience prior to student teaching (NASDTEC, 2003, Tables B-5, B-6, and B-7). Given this background and using particular combinations of (a) length of the practice teaching experience available from the SASS teacher questionnaires, and (b) number of four common components of teacher preparation completed, the following operational definitions of the amounts of teacher preparation in pedagogy and supervised teaching as of the 1999-00 school year (at the end of which teachers either continued in teaching, or left teaching) were used in this research.

*Extensive teacher preparation:* Extensive teacher preparation was defined as completing either (a) 10 or more weeks of practice teaching along with *all* four of the common components of traditional teacher preparation listed above, or (b) 10 or more weeks of practice teaching and three of the four common components of traditional teacher preparation, or (c) 5-9 weeks of practice teaching along with *all* four common components of teacher preparation. The percentages of all beginning public teachers in these three categories of extensive preparation are 77%, 10%, and 13%, respectively.

*Some teacher preparation:* Some teacher preparation was defined as completing either (a) 10 or more weeks of practice teaching and less than three of the four common components of traditional teacher preparation listed above, or (b) 5-9 weeks of practice teaching and less than

four common components of traditional teacher preparation, or (c) 1-4 weeks of practice teaching and all or some of the four common components of teacher preparation, or (d) no practice teaching but all four common components of teacher preparation. The percentages of beginning teachers so classified are 18%, 24%, 22%, and 36%, respectively. Only 27% of teachers classified here completed *less* than three of the four common components of teacher preparation.

*Little or no teacher preparation:* All other teachers without practice teaching were defined as having little or no teacher preparation. Of such beginning teachers, 26% did not complete any of the four common components of teacher preparation listed above, while 74% completed from one to three of these four components.

#### *Potential Confounding Variables*

These variables were defined with SASS data for the 1999-00 school year (at the end of which teachers either continued in teaching, or left teaching).

*Teacher Gender.* A dichotomous variable: male versus female.

*Teacher Minority.* A dichotomous variable: White versus minority.

*Teacher Age.* A three-level variable: age less than 30 years, 30 to 40 years, and greater than 40 years.

*Certification in Main Teaching Assignment.* The teacher questionnaires asked teachers to identify the type of certificate held in their main teaching assignment field (i.e., the field in which a teacher instructs the most classes). Teachers were classified as “fully certified” if they held an advanced professional certificate, regular or standard state certificate, or a probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period) in their main teaching assignment field. Unless thus fully certified, teachers were classified as “partly certified.” The latter group included either teachers who were fully certified in a teaching field other than their main teaching assignment; or who held a provisional, temporary, emergency, or other certificate; or who had a waiver of certification; or who were not certified in any form.

*In- and Out-of-Field Teaching Assignment.* The teacher questionnaires asked teachers to identify (a) their “main teaching assignment field” from a list of 64 fields, and (b) their major fields of study for each bachelor’s or postgraduate degree earned. If a teacher’s major field of study (e.g., mathematics) at the bachelor’s or postgraduate degree levels corresponded with his/her main teaching assignment field (e.g., mathematics), the teacher was classified as “teach-

ing in-field.” If there was no such correspondence, the teacher was classified as “teaching out-of-field.” In order to classify teachers as having an in-field or out-of-field teaching assignment, we adopted the list of correspondences between main teaching assignment and degree major used by the NCES (Seastrom, Gruber, Henke, McGrath, & Cohen, 2002). In order to classify teachers in all 64 main teaching assignments, we expanded the list by Seastrom et al. to include all such assignments in special education, vocational education, and other general education (i.e., several general education fields not included in the Seastrom list).

*Induction Program.* A dichotomous (yes/no) variable describing whether a teacher participated in teacher induction program during the first year of teaching.

*Teacher Education Major.* A dichotomous (yes/no) variable describing whether a teacher completed a teacher education major (i.e., at least one degree with a major in a field of teacher education versus no such major at any degree level).

*Teaching Level.* Teaching level was defined as secondary versus elementary, according to Tourkin, et al. (2004, Appendix I, TEALEV2).

*School Minority Level.* Teachers were classified in accordance with three levels of the percentage of minority students enrolled in the schools to which the teachers were assigned: the first quartile of schools with the lowest percentage of minority students, the second and third quartiles of such schools, and the fourth quartile of schools with the highest percentage of minority students.

*School Poverty Level.* Teachers were classified in accordance with three levels of the percentage of students eligible for free or reduced price lunch enrolled in the schools to which the teachers were assigned. Low poverty was defined as the first quartile of schools with the lowest percentage of such students, middle poverty was defined as the second and third quartiles, and high poverty was defined as the fourth quartile.

*School Local.* Teachers were classified according to three categories of the local of the school to which they were assigned: rural, suburban, or urban (Tourkin, et al., 2004; Appendix I, URBANIC). Urban included large and mid-sized central city; suburban included the urban fringe of large and mid-sized cities; rural included small town and rural.

#### *Analysis Procedures*

Based on the samples of teachers completing the SASS and TFS questionnaires, national estimates of the weighted numbers of teachers of each type included in the design (along with

percentages and standard errors) were computed by special procedures developed by NCES for complex sample survey data (Tourkin, et al., 2004). Because SASS data are subject to design effects due to stratification and clustering of the sample, we computed standard errors for the national estimates and tests of statistical significance via balanced repeated replications using WesVar Version 4.2 (Westat, 2002).

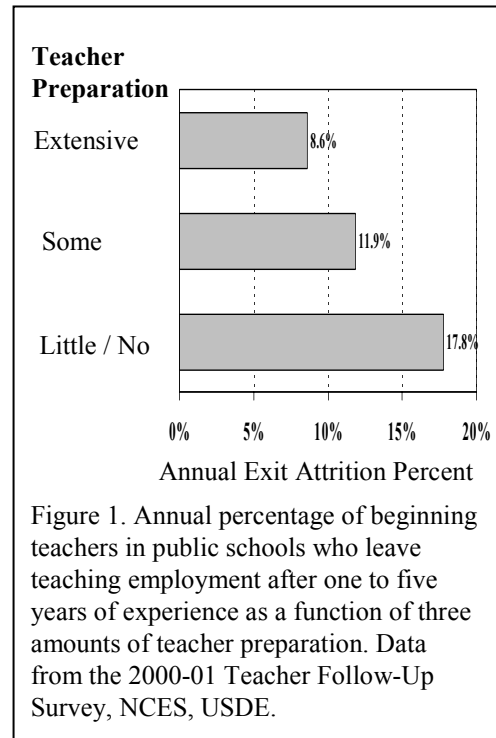
Chi squared test was performed to determine the statistical significance of the association between amount of teacher preparation (extensive, some, or no preparation) and teacher attrition (leaving vs. continuing). In addition, since the definition of a confounder is a variable that is associated with both the predictor variable under study and the outcome variable, we performed chi-square tests of the relationships between each potential confounding variable and (a) amount of teacher preparation and (b) teacher attrition. These tests were performed using the nationally estimated numbers of teachers, with probability levels based on the sample sizes available for these tests.

After confounding variables were identified by these analyses, the amount of teacher preparation variable, along with the confounding variables, were used in bivariate and multivariate logistic regression analyses of the teacher attrition variable. Measures of the magnitude of association (i.e., effect size) produced by logistic regression analysis are represented by odds ratios (OR).

## RESULTS

As shown in Figure 1, the annual exit attrition of beginning teachers following the 1999-00 school year increased substantially as the amount of teacher preparation decreased [a statistically significant difference;  $\chi^2(2, N = 1,973) = 6.14, p < .05$ ]. The attrition percentage for beginning teachers with little or no preparation (17.8%) was twice as high as for teachers with extensive preparation (8.6%). As seen in Table 1, the odds ratio (OR, an effect size statistic) for this difference is 2.29. Thus, the chances of leaving teaching (instead of continuing) by beginning teachers with little or no preparation was well over two times as great as the chances of leaving teaching (instead of continuing) by those with extensive preparation.

It is possible, however, that the observed bivariate relationship between the amount of teacher preparation and attrition percentage shown in Figure 1 was due to one or more confounding variables (i.e., a third variable significantly correlated with both the teacher preparation and attrition variables). To investigate this possibility, we analyzed a number of potential confound



ing variables (teacher gender, minority status, age, certification status, whether the teaching assignment was in- or out-of-field, teacher education major, induction program, teaching level, school minority level, school poverty level, and school locale).

Of all these variables, only teacher gender, minority status, and certification status were associated with both amount of teacher preparation (the predictor variable under study) and with attrition percentage (the dependent variable) at a statistically significant level. By virtue of being related to both amount of preparation and attrition, each of the variables in this subset is considered to be a true confounder and was used in a multivariate logistic regression analysis to statistically adjust the association between amount of teacher preparation and attrition.

To increase the power of the analysis of the teacher preparation variable in the multivariate logistic regression, the modest sample sizes of teachers with “none” and “some” amounts of preparation ( $n = 77$  and  $69$ , respectively, as seen in Table 1) were combined. This binary variable (extensive vs. some/no preparation) was substantially and significantly associated with teacher attrition (continuing vs. leaving) ( $OR = 1.68, p < .02$ ) in the bivariate analysis. When it was included in a multivariate logistic regression analysis along with all four confounding variables,

Table 1. *Exit Attrition of Beginning Teachers in Public Schools Following the 1999-2000 School Year as a Function of Amount of Teacher Preparation*

Statistic <sup>a</sup>	Amount of Teacher Preparation			Total
	Extensive	Some	None	
Total Beginning Teachers				
Nationally Estimates (1000 s)	578	67	30	675
Sample size (n)	1,576	231	166	1,973
Leavers: Beginning Teachers				
Nationally Estimates (1000 s)	49	8	5	63
Sample Size (n)	321	69	77	467
Annual Exit Attrition Percent	8.6 %	11.9 %	17.8 %	9.4 %
Standard Error %	0.9 %	2.7 %	4.9 %	0.9 %
Odds Ratio (OR)	(Ref) <sup>b</sup>	1.43	2.29 *	—

*Note.* Data from the 1999-2000 Schools and Staffing Survey and the 2000-2001 Teacher Follow-Up Survey, National Center for Education Statistics, USDE, for beginning teachers with one through five years of teaching experience.

<sup>a</sup>Nationally estimated numbers of teachers are rounded to the nearest 1,000. Odds ratio (OR) represents the ratio of the odds of leaving teaching employment versus the odds of continuing teaching employment. The SAS formula for converting an OR to its Beta Weight is LOG(OR).

<sup>b</sup>Ref. = reference level of the three-level teacher preparation variable used in a bivariate logistic regression model predicting leaving teaching versus staying.

$p=.025$

the OR for the teacher preparation variable remained unchanged (OR = 1.68)<sup>2</sup>. Since the OR for the teacher preparation variable remained stable in the bivariate and the multivariate analyses, it is clear that the relationship of higher attrition with less teacher preparation is not an artifact of confounding variables.

## DISCUSSION

From a national perspective, the results support the research hypothesis that teacher retention is directly associated with the amount of teacher preparation. This research shows this relationship is stable under statistically controlled conditions. The size of this effect is far from trivial, in that beginning teachers with extensive preparation were twice as likely to remain in teaching as compared to teachers with little or no preparation. Another way to interpret this finding is that approximately 49,000 beginning public school teachers with extensive preparation, out of 578,000 such beginning teachers, left teaching employment at the end of the 1999-00 school year (8.6% attrition rate). However, if attrition of these 578,000 beginning teachers had occurred at the 17.8% rate observed for teachers with little or no preparation, then 103,000 would have left instead of the 49,000 that actually left (an increase of 54,000 leavers).

Therefore, from the perspective of teacher retention and attrition alone, policies requiring extensive teacher preparation are constructive in that they contribute to the continuity of instructional programs and avoid high financial costs incurred by districts to replace teachers who leave. Based on cost data reported by the Alliance for Excellent Education (2005) for 1999-00, the retention of 54,000 beginning teachers, who might have left had they not been extensively prepared, represents an annual national saving to school districts of an estimated \$677 million.

The large number of beginning public teachers nationally without extensive preparation is also noteworthy. Approximately 97,000 (14%) of 675,000 beginning teachers were not extensively prepared. They did not have the basic qualifications in terms of educational coursework and practice teaching normally required for certification according to state standards published by NASDTEC (2003). This is one index of the shortage of well-prepared beginning teachers for staffing the nation's public schools.

In defining extensive preparation, we used information provided by the SASS teacher questionnaires about the length of practice teaching (an unpaid supervised experience provided by

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<sup>2</sup> The OR for teacher preparation did not decrease from the bivariate to the multivariate analysis, as might be expected, because the race functioned as a suppressor variable in the multivariate analysis (Tabachnick & Fidell, 2001).

traditional programs, but not by AR programs). In contrast, AR programs typically provide participants with full-time employment as teachers (a paid and usually supervised experience). Based on further analyses of SASS data, it appears that some AR participants regarded their full-time paid employment as equivalent to practice teaching when they answered the practice teaching question. Accordingly, our category of extensive teacher preparation includes both traditional graduates and AR completers. Unfortunately, the 1999-00 SASS data do not permit the classification of all beginning public teachers by type of preparation (i.e., traditional vs. AR). Therefore, a prime topic for further research is to compare the retention percentages of traditionally prepared teachers versus AR completers versus teachers with little or no preparation.

## REFERENCES

- Alliance for Excellent Education (2005). *Teacher attrition: A costly loss to the nation and to the states* (Issue Brief). Washington, DC: Author.
- Darling-Hammond, L., Berry, B., & Thoreson, A. (2001). Does teacher certification matter? Evaluating the evidence. *Educational Evaluation and Policy Analysis*, 23(1), 57-77.
- Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Heilig, V. (2005). *Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness*. Retrieved July 13, 2005, from <http://www.teachingquality.org/resources/topicalindex.htm>.
- Darling-Hammond, L., & Youngs, P. (2002). Defining “highly qualified teachers”: What does “scientifically-based research” actually tell us? *Educational Researcher*, 31(9), 13-25.
- Feistritzer, C. E. (2006) *Alternative Teacher Certification: A State-by-State Analysis 2005*. Washington, D.C.: National Center for Education Information.
- Gordon, R., Kane, T. J., & Staiger, D. O. (2006). *Identifying effective teachers using performance on the job* (Hamilton Project White Paper 2006-01). Washington, DC: The Brookings Institution.
- Henke, R.R., Chen, X., Geis, S., & Knepper, P. (2000). *Progress through the teacher pipeline: 1992-93 college graduates and elementary/secondary school teaching as of 1997* (NCES 2000-152). Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- Hosmer, D. W., & Lemeshow, S. (1989). Applied logistic regression. New York: Wiley.
- NASDTEC (National Association of State Directors of Teacher Education & Certification). (2003). *The NASDTEC Manual on the Preparation and Certification of Educational Personnel 2003* (8<sup>th</sup> ed.). Sacramento, CA: School Services of California, Inc.
- Seastrom, M. M., Gruber, K. J., Hanke, R., McGrath, D. J., & Cohen, B. A. (2002). *Qualifications of the public school teacher workforce: Prevalence of out-of-field teaching 1987-88 to 1999-2000* (NCES 2002-603). Washington, DC: National Center for Education Statistics, U.S. Department of Education.
- Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate statistics* (4th ed.). Boston, MA: Allyn & Bacon.

Tourkin, S. C., Pugh, K. W., Fondelier, S. E., Parmer, R. J., Cole, C., Jackson, B., Warner, T., Weant, G., & Walter, E. (2004). *1999–2000 Schools and Staffing Survey (SASS) Data File User's Manual* (NCES 2004–303). Washington, DC: U.S. Department of Education.

USDOE. (2002). *Meeting the Highly Qualified Teachers Challenge: The Secretary's Annual Report on Teacher Quality*. Washington, DC: Author.

Wayne, A. J., & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, 73 (1), 89-122.

Westat, Inc. (2002). WesVar (Version 4.2) [Computer software]. Rockville, MD: Author.