Evaluating the Role of Nonmonetary Factors in Teachers' Employment Decisions

Jeffrey M. Gunther
Utah State University

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EVALUATING THE ROLE OF NONMONETARY FACTORS IN TEACHERS’ EMPLOYMENT DECISIONS

by

Jeffrey M. Gunther

A dissertation submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Education

Approved:

Ryan Knowles, Ph.D. Kathleen A. J. Mohr, Ed.D.
Major Professor Major Professor

J. Spencer Clark, Ph.D. Steven Laing, Ed.D.
Committee Member Committee Member

Ryan Bosworth, Ph.D. Laurens H. Smith, Ph.D.
Committee Member Interim Vice President for Research and Interim Dean of the School of Graduate Studies

UTAH STATE UNIVERSITY
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ABSTRACT

Evaluating the Role of Nonmonetary Factors in Teachers’ Employment Decisions

by

Jeffrey M. Gunther, Doctor of Philosophy

Utah State University, 2018

The importance of teacher recruitment and retention and factors influencing teacher recruitment and retention are oft-studied topics in the field of education finance and policy. Through decades of research, it has become increasingly clear that teachers respond to a set of monetary and nonmonetary factors when making decisions in the teacher labor market. What is less clear is the relative value placed by teachers on factors such as salary, student demographic factors, school conditions, and other working conditions such as class size, curricular autonomy, and administrative support, to name a few. This project introduced the use of a novel survey methodology to the field to aim to answer these questions. This mixed methods study utilized Adaptive Choice-Based Conjoint (ACBC) analysis to quantify the relative importance of various monetary and nonmonetary job factors to practicing teachers as they consider the desirability of various hypothetical schools; it also included a complementary embedded qualitative strand to allow for better understanding of teacher choices. This study resulted in an estimate of
the value placed on various working condition factors by secondary teachers in Utah, an analysis of how those valuations vary with personal and demographic factors, and an understanding of the correlation between choices made and teachers’ explanations of their choices. This study finds results that support the existing theoretical framework for similar research, provides practical recommendations for administrators and policymakers that aim to make schools more desirable for teachers, and provides methodological recommendations for other researchers in the field aiming to address similar questions.

(181 pages)
Evaluating the Role of Nonmonetary Factors in Teachers’ Employment Decisions

Jeffrey M. Gunther

Teacher recruitment and retention is a problem of perpetual concern among education policymakers. High rates of teacher attrition, particularly within the first few years of a teacher’s service have been of particular concern. It is believed that persistent teacher shortages contribute both to underperformance of students generally, as well as to achievement gaps between students of different races and socioeconomic backgrounds. The importance of this issue has led to a great deal of research in the field, which has found that there are a large number of factors that influence the desirability of schools to teachers. What is still unclear from this research is how much these different factors matter relative to one another and to salary.

This study aimed to address this gap in the literature by introducing a new survey methodology to the field that allows for quantification of the extent to which various working conditions factors matter to teachers. A survey was distributed to all secondary teachers in the state of Utah where respondents were asked to choose between hypothetical school choices that varied on salary and certain nonmonetary factors. Periodically, respondents were asked to answer open-ended questions explaining their responses. The results of this survey allow for an estimate for each individual of how much salary and each of the working conditions influenced the decisions that they made. These results were analyzed for trends with respect to teacher demographics and
contextual factors and were compared to the responses teachers gave to the open-ended questions.

This study resulted in a number of practical recommendations for school administrators, policymakers, and fellow researchers. For practitioners, there are results from this study that generate clear recommendations for using limited resources to make schools more desirable to teachers. The results of this study also provide estimates for how much additional salary is needed to entice teachers to work in schools that traditionally struggle to recruit and retain high quality teachers. For researchers, this study provides a model that can be replicated in additional contexts to answer these important practical questions. The study also opens up avenues of future research including new methodological questions worthy of further investigation. By introducing a new survey methodology to this well-developed field of research, this study aims to recommend a new tool for use by researchers in addressing the persistent challenge of teacher recruitment and retention.
ACKNOWLEDGMENTS

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CHAPTER I

PROBLEM STATEMENT

Teachers are regularly cited as the most important school-level factor influencing student achievement (Darling-Hammond, 2010; Ferguson, 1991; Hanushek, Kain, & Rivkin, 2004a; Rockoff, 2004; Sanders & Rivers, 1996; Sanders, Wright, & Horn, 1997). It is also well known that many teachers tend to have short careers, with five-year attrition rates cited as being as high as 50% (Ingersoll, 2001). Additionally, teacher quality and the rate of turnover of teachers is inequitably distributed, with poorer and more Black/Hispanic students typically being taught by less qualified teachers who are more likely to turnover (Auguste, Kihn, & Miller, 2010; Betts, Reuben, & Danenberg, 2000; Clotfelter, Ladd, & Vigdor, 2005; Darling-Hammond, 2004, 2010; Holzman, 2012; Lankford, Loeb, & Wyckoff, 2002). This inequitable distribution of teachers may contribute to the persistent achievement gaps among students of different racial and socioeconomic backgrounds (Darling-Hammond, 2010; Lankford et al., 2002). A conclusion of the existing research is that improving teacher recruitment and retention can act as a key lever for both improving overall educational attainment and reducing achievement gaps among students of different racial and socioeconomic backgrounds (Adamson & Darling-Hammond, 2012; Darling-Hammond, 2010; Ronfeldt, Loeb, & Wyckoff, 2013).

Given the effect teachers have on student achievement, the potential for teachers to reduce the achievement gap, and the high rate of teacher attrition, a great deal of research has been conducted on teacher recruitment and retention. Unfortunately, this
body of research, while substantial, falls short of answering key practical questions needed to transform research into policy. After an exhaustive review of the teacher recruitment and retention literature, it was found that the current literature does not adequately address how teachers value different job-related factors when evaluating potential employment opportunities. This is a result of two key weaknesses in the existing literature, which will be evidenced below: a limited focus on how teachers choose between competing school options and a lack of studies that aim to meaningfully quantify the relative value of different working conditions.

This study aims to address the weaknesses in the existing literature by allowing teachers to choose between hypothetical sets of schools using an Adaptive Choice-Based Conjoint Analysis (Johnson & Orme, 2007) survey. This method systematically varies conditions among the choices offered and estimates the value placed by individual teachers on individual job-related factors. This process allows for an answer to the question of: What value, if any, do teachers place on factors related to recruitment and retention? Additionally, through the collection of relevant demographic information, further investigation can determine whether valuations vary systematically across teacher contexts or backgrounds. Finally, by embedding a qualitative strand, this study provides additional insight into teachers’ thought processes behind choosing a certain hypothetical school as a preferred work environment. Through the use of a novel methodological approach, this research aims to add to the immense body of literature in this field in a way that generates actionable outcomes for administrators and policymakers and addresses key gaps in the existing literature.
Statement and Significance of the Problem

Teacher recruitment and retention is a persistent problem in the U.S., particularly in schools with high levels of low-income and/or minority students (Darling-Hammond, 2010; Hanushek & Rivkin, 2007; Ingersoll, 2001). Due to the relationship between teacher quality and student achievement, described below, this challenge has negative impacts on both overall educational achievement as well as the educational achievement gap. While there has been a great deal of research into teacher recruitment and retention, there is still a need for additional studies that provide outcomes of practical use for administrators and policymakers.

Recruitment and Retention Challenge

According to the National Center for Education Statistics (NCES, 2013a, 2013b), in the 2011-2012 school year, 2.6% of teachers (by Full Time Equivalent, or FTE) in the U.S. did not meet state licensing/certification requirements and 128,000 teachers (3.8%) had earned less than a Bachelor’s degree. These teachers fell below the minimum expectations of a quality teacher set by the No Child Left Behind law (U.S. Department of Education, 2004) in place at the time. Although this law has since been updated, it has served as the basis for setting minimum standards for teacher qualifications for most of the last two decades. Due to teacher shortages, states have often resorted to granting emergency teaching certificates to individuals not meeting basic qualifications (Aragon, 2016). States have also felt compelled to allow teachers to teach outside of their certification area (Aragon, 2016).
Beyond the challenges associated with finding teachers who meet basic requirements for the profession, there is also evidence that those who end up becoming teachers often rank lower on other measures of quality than their non-teaching peers. For example, only 23% of teachers come from the top third of their college classes, with nearly half coming from the bottom third (Auguste et al., 2010). There is also substantial evidence that teachers in the U.S. have lower standardized test scores than their nonteaching peers (Corcoran, Evans, & Schwab, 2004; Podgursky, Monroe, & Watson, 2004).

It is also known that teachers tend to leave the profession at startlingly high rates, particularly in their first 5 years. Ingersoll (2001) found attrition rates as high as 50% in the first five years in the classroom. Although this oft-cited statistic has since been disputed by other researchers, it is clear that teacher attrition is still high enough to be of concern, particularly in the early years (Aragon, 2016). Early career attrition is particularly concerning because these years are the ones in which the greatest increase in skill development and efficacy occurs (Clotfelter, Ladd, & Vigdor, 2007; Goldhaber, 2002; Rice, 2003). By losing teachers early in their careers, the benefit of their training is never realized. Additionally, Ronfeldt et al. (2013) find a negative impact of teacher turnover on student test scores beyond the impact of exchanging more qualified for less qualified teachers, particularly in schools serving disadvantaged students.

Unfortunately, teachers continue to leave the profession in remarkably high numbers, particularly in hard-to-staff schools with high levels of economically disadvantaged and/or minority students (Hanushek & Rivkin, 2007; Ingersoll, 2001). It is
known that teacher turnover tends to be substantially higher at schools serving low-income and minority students (Darling-Hammond, 2010). Furthermore, teachers tend to leave these challenging school environments for “easier” teaching assignments as they grow in skill and experience (Boyd, Lankford, Loeb, & Wyckoff, 2005). This phenomenon is especially common with high-performing teachers. For example, in their study of NYC schools, Boyd et al. found that 34% of high-achieving new teachers working in low-performing schools left after 1 year, while only 20% of low-achieving teachers left their low-performing schools. Thus, it is not just increased turnover that affects hard-to-staff schools, but turnover of the most skilled and experienced teachers.

Taken together, it is clear from the literature described above that teacher recruitment and retention is still an issue of serious policy concern. It is clear from this research that schools struggle to recruit high-quality candidates to fill all of their teaching positions; that teachers leave the career in large numbers, particularly early in their careers; and that students serving disadvantaged students tend to be disproportionately affected by challenges recruiting and retaining teachers.

**Relationship Between Teacher Quality and Student Performance**

Studies constantly show that teachers have a large influence on student academic achievement (Hanushek, Kain, & Rivkin, 1998; Rockoff, 2004; Sanders et al., 1997) that carries over year to year (Sanders & Rivers, 1996). In addition to studies demonstrating the importance of teachers in general, there is a considerable literature connecting student success to specific teacher characteristics, such as a teacher’s preparation coursework
(Clotfelter et al., 2007; Darling-Hammond, 2000, 2009; Goldhaber, 2002; Hightower et al., 2011; Rice, 2003), certification status (Clotfelter et al., 2007; Darling-Hammond, 2000), and academic achievement (Ballou & Podgursky, 1997; Clotfelter et al., 2007; Ehrenberg & Brewer, 1994; Ferguson, 1996; Ferguson & Brown, 2000; Goldhaber, 2007; Hanushek & Pace, 1995). Early years of experience is also regularly cited as an important factor influencing student achievement. For example, there is clear evidence that the number of years of teaching experience matters for the first few years (Clotfelter et al., 2007; Goldhaber, 2002) and that whether or not a teacher is a first-year teacher in particular has an impact on student outcomes (Hanushek, Kain, O’Brien, & Rivkin, 2005). Taken together, these works demonstrate that teacher quality directly influences student learning outcomes. These studies demonstrate that improving the recruitment and retention of high-quality teachers is likely to result in an increase in student achievement.

**Relationship Between Teacher Labor Markets and Educational Equity**

Despite the long history of claiming to aim for equity in U. S. education, there are still startling achievement gaps among students of different racial and economic backgrounds (Darling-Hammond, 2010; NCES, 2016a, 2016b). According to many (e.g., Boyd et al., 2005; Darling-Hammond, 2010; Lankford et al., 2002), the inequitable distribution of high-quality teachers explains at least some of this achievement gap. Research shows that students in wealthier schools and wealthier districts tend to have access to teachers who rate more highly on a number of the predictors of teacher quality described above. It has been repeatedly found that students attending schools serving
predominantly low-income and/or minority students are likely to be taught by teachers who are uncertified (Darling-Hammond, 2010; Lankford et al., 2002; Betts et al., 2000), inexperienced (Betts et al., 2000; Clotfelter et al., 2005; Holzman, 2012; Lankford et al., 2002), less likely to hold an advanced degree (Holzman, 2012), less academically gifted (Auguste et al., 2010; Lankford et al., 2002), teaching out of certification area (Darling-Hammond, 2004), and prepared through less rigorous teacher preparation programs (Darling-Hammond, 2004).

There is evidence in the existing literature that the inequitable distribution of teachers comes from a combination of two effects: the preference of teachers for working with wealthier and whiter students and the fact that hard-to-staff schools often have fewer resources available for teacher salaries. As will be shown in the literature review, student demographics is a major factor influencing teacher satisfaction and movements. There is a great deal of evidence that teachers prefer to work with higher SES and more white student populations (Clotfelter, Ladd, & Vigdor, 2011; Feng, 2010; Ingersoll & May, 2012; Opfer, 2011), and in populations with fewer special education and English-language learner students (Certo & Fox, 2002; Engel, Jacob, & Curran, 2014; Loeb, Darling-Hammond, & Luczak, 2005). Many studies have documented teacher movements to schools with perceived “easier” student populations (Boyd et al., 2005; Darling-Hammond, 2003; Hanushek & Rivkin, 2007; Stotko, Ingram, Beaty-O’Ferrall, 2007). This effect is likely exacerbated by funding inequities that result in schools serving large numbers of low-income and minority students receiving less funding than wealthier schools in many states (Arroyo, 2008; Darling-Hammond, 2010), resulting in
schools with both less desirable working conditions and less money to compensate teachers. Even states that provision low-income schools with the same funding as their high-income peers contribute to the inequitable distribution of qualified teachers. This is due to the increased costs of services for schools serving low-income and minority students (Arroyo, 2008) and the necessarily higher salaries needed to recruit a teacher to a school with “more challenging” students (Hanushek & Rivkin, 2007). Estimating the salary needed to compensate teachers for working in these less desirable schools is a goal of this study.

**Recruitment and Retention Literature and its Limitations**

Due to the documented importance of teacher quality both on educational achievement overall and on influencing achievement gaps, teacher recruitment and retention has been the subject of a great deal of research. With the work of Ingersoll (2001) highlighting the “revolving door” of the teaching career and the No Child Left Behind (NCLB) requirements for highly qualified teachers in every classroom, the focus on recruitment and retention has intensified in the past 15 to 20 years. This renewed interest in teacher recruitment and retention has given rise to an extensive body of literature that builds on earlier work by early educational economists. In the review of the literature conducted below, 225 studies of teacher recruitment and retention in the U.S. K-12 sector were identified.

One major finding of this body of work is that while salary and benefits are important to teachers, the amount of money needed to incentivize teaching in hard-to-
staff schools can be impractically large (Hanushek & Rivkin, 2007). Additionally, these hard-to-staff schools are also often systematically underfunded (Arroyo, 2008; Darling-Hammond, 2010; Holzman, 2012), despite decades of litigation aiming to ensure equitable educational funding (Heise, 1995; Hinojosa, 2015). In addition to addressing the influence of monetary factors on teacher recruitment and retention, the existing literature has identified a variety of other factors associated with teacher preferences and movements (Boyd et al., 2005; Scafidi, Sjoquist, & Stinebrickner, 2007; Schaefer, Long, & Clandinin, 2012; Stotko et al., 2007). These factors include school and student characteristics as well as a number of working conditions factors. Because of the funding shortages that hard-to-staff schools often face, combined with the large amount of funding necessary to incentivize movement to these schools, it is clear that practical solutions must focus, at least in part, on nonmonetary factors. Fortunately, the substantial amount of research in this field has generated a large list of nonmonetary factors influencing teacher job satisfaction and movements through the labor force.

The existing research, despite its remarkable size, has two key limitations: a focus on “stayers,” “movers,” and “leavers” (Ingersoll, 2001) and a lack of valuation. By focusing on labor market movements, rather than investigating preferences teachers rely on when making a decision to take a job at a particular school, much of the research is answering the question “what factors cause teachers to stay in or change positions”? This is a different question from “what factors influence the desirability of a school to a teacher?” The latter question is likely to generate results that administrators can use not only to attract and retain teachers, but to also increase job satisfaction. In addition, a
focus on “stayers,” “movers,” and “leavers” is likely confounded by circumstances unrelated to job factors that influence an individual’s mobility. Choices to leave the labor force unrelated to working conditions (due to retirement eligibility, for example) and circumstances that keep a teacher in an undesirable job (such as accrued benefits) can negatively influence the usefulness of analyses based on labor market movements.

The existing literature also fails to provide a clear answer to how much different nonmonetary factors matter in relation to one another. It is unclear from the existing research how teachers weigh different factors when choosing where to work. While extant research helps to explain the general trends seen in the teacher labor market and explains why hard-to-staff schools exist, it struggles to elucidate the specific trade-offs that teachers are making as they choose between schools. One source of this limitation is the common use of surveys that only ask teachers about the factors that they view as important, without assigning a measurable value to these factors. For example, knowing that teachers value small classes is useful, but without having teachers assign it a measurable value, this information is of limited practical use. Studies that do attempt to quantify the relative importance of different factors often do so using hard-to-interpret measures inferred from labor market decisions.

Without a clear understanding of how nonmonetary job factors influence the desirability of a school, it will be difficult for schools to address the challenges in the teacher labor market. Specifically, research investigating how much teachers value different nonmonetary job factors is a key gap in the existing literature. This gap negatively affects the ability of administrators and policymakers to address the challenges
posed by the current teacher labor market conditions described above.

**Study Purpose**

The purpose of this research is to provide insight into the value teachers place on different factors when evaluating the desirability of a school. This study aims to advance the existing teacher recruitment and retention literature by directly measuring how teachers utilize their preferences when they evaluate potential employment opportunities. The results of this study provide relevant and easy to understand measures of relative importance of the various factors studied, addressing another weakness of the existing literature. This study extends the existing research into teacher preferences in a way that can be effectively utilized by administrators and policymakers. Administrators and policymakers can use the outcomes of this research to inform changes in school desirability relative to other schools and to predict teachers’ responses to changes in policies. Additionally, administrators can use these results to develop efficient incentives for recruiting and retaining the best teachers for their schools. By understanding how teachers value incentives, schools serving disadvantaged student populations can optimize their work environments to compensate teachers for more challenging teaching assignments. Undertaking this effort can assist administrators in retaining highly skilled teachers and potentially increasing the achievement of their students. Moreover, this study aims to quantify the amount of money needed to properly compensate a teacher for working in what is perceived to be a more challenging environment. This outcome can guide policymakers to the determination of an appropriate compensation level for
teaching in these hard-to-staff schools. As a result, this research has the potential to make a meaningful impact on student achievement in hard-to-staff schools and reduce the component of the educational achievement gap attributable to staffing inequities.

In addition, this research demonstrates the use of a novel survey methodology that can be utilized in additional contexts. The use of this tool addresses a number of weaknesses in the existing literature, demonstrating its value to the study of teacher recruitment and retention. This study aims to act as an exemplar for how other researchers investigating teacher recruitment and retention can utilize the survey methodology used in this study.

**Research Questions**

In order to accomplish the goals set out above, this study addressed the following questions.

1. Do teachers place value on nonmonetary factors related to working conditions?

2. What value do teachers place on factors related to working conditions?
   2a. What is the relative importance of each of the factors studied?
   2b. What is the monetary value placed by teachers on the nonmonetary factors being investigated?

3. Does the value placed on different nonmonetary factors vary among teachers?
   3a. Which factors show the highest and lowest amounts of variance among individual teachers?
   3b. In what way do teacher preferences covary with personal factors and factors associated with a teacher’s experiences and qualifications?

4. Do typologies of teachers exist with different sets of preferences?
5. How do teachers describe their reasoning for choosing between competing schools?

5a. What reasons are given by respondents for choosing the school options that they do?

5b. Who is the primary beneficiary of the reason given by respondents for choosing the school options that they do?

5c. How do the reasons described by respondents for choosing the school that they do systematically vary by demographics or teacher type?

5d. How do the reasons described by respondents for choosing the school that they do relate to the importance placed on different factors by each respondent?

Assumptions

The assumption that teachers operate under a paradigm of “total rewards” (O’Neal, 1998) is key to this study. This phenomenon explains that non-financial benefits that have value to a participant in a negotiation are exchangeable for financial benefits of equal value. This assumes that teachers are willing to exchange nonmonetary factors that are of value for other factors and for money. It is further assumed that teachers will, consciously or not, choose the school that has the highest total value to themselves based on their own internal weightings of the values of each of the school’s conditions. This study is based on the assumption that, when given the choice, respondents will choose options that to them have the highest total value, accounting for the perceived value of the various nonmonetary factors described. If individuals do not consistently choose options that represent the highest total perceived value, their responses would not be valid. Finally, the research assumes that participants’ understanding of the conditions described in the survey are perceived in the same way as they are by the researcher. If the
conditions are misunderstood, effective interpretation of results would be adversely affected.

**Delimitations**

This study is limited to secondary teachers at public (including charter) schools in the state of Utah in the U.S. The sample was limited to secondary teachers due to the fact that the certification requirements, educational pathways, and day-to-day job duties of a typical secondary teacher differ from those of a typical elementary teacher. A single state in the U.S. was chosen as it represents a single market of teachers with the same certification requirements, same state policies and other requirements, similar pay, and low institutional barriers to movement between schools. An entire state was used in order to ensure an appropriate sample size. The particular state was chosen with regards to convenience for the researcher.

A further delimitation is the limited scope of the study. The survey tool used only considers the impact of salary and 13 nonmonetary factors on the desirability of schools. As will be described below, studies have indicated the importance of many other factors that are not considered in this survey. The factors considered in this study were chosen due to their prevalence in the existing literature and based on the results of a pilot study.

**Limitations**

The primary limitation of this study is the nature of the survey tool used for the study. Participants were surveyed about choices that they would prefer rather than
observing the behavior in practice. An assumption is made that choices participants claim they would make in the survey matches the choices that participants would make when faced with this situation in reality. This survey does not control for the fact that teachers may respond to this survey differently at different points in the school year, although the survey was distributed around the time that decisions similar to those asked in the survey are typically made. This study is also limited in its focus on practicing teachers, excluding preservice teachers entering the labor market, who merit attention with regard to professional decisions, but who constitute a different demographic. It is also possible that reading about these choices could result in a different response than a teacher who is experiencing the conditions described in a particular choice. Due to the rare occurrence of the behavior of interest and the need to generate large numbers of samples in order to collect adequate data for the analysis that follows, these limitations are accepted as reasonable and necessary. Another possible limitation is that the length and web-based nature of the survey may reduce the reliability of some of the responses; however, the survey targets factors relevant to most teachers, which should increase the veracity of their input. The topic and design of the survey possibly offset limiting factors, such as fatigue or boredom, but such influences are possible.

An additional limitation of this study is that it does not take into account the “stayer, mover, leaver” status of a teacher or how long the responding teachers have been in their current positions. Due to the extent to which the prior literature has focused on teacher movements as opposed to preferences, this study focuses just on teacher preferences. Focusing on preferences in the absence of actual labor market decisions
removes possible confounding factors influencing teacher movements that are unrelated to salary or working conditions. However, if responding teachers’ preferences vary based on their labor market intentions or employment history, this study does not capture those differences.

**Summary**

Teacher quality is a key factor influencing educational equity and the ability for all students to attain acceptable educational outcomes, making the field of teacher recruitment and retention one of utmost importance. The existing literature in this field has helped identify what makes for an ideal or an undesirable school for a teacher and has generated a list of potentially important factors for administrators to consider when attempting to recruit and retain teachers. However, the extant research does not help administrators prioritize their limited resources, nor does it show how teachers make trade-offs among a mix of favorable and unfavorable conditions. This research study aims to address these limitations by asking teachers to make a number of choices between hypothetical schools in order to better understand how teachers value different nonmonetary factors associated with working conditions. Understanding such valuations can inform the practice of school administrators, educational policy, and the field of teacher recruitment and retention.
CHAPTER II
REVIEW OF THE LITERATURE

Despite the great deal of literature in the field of teacher recruitment and retention, a comprehensive and quantitative literature review of the field has not been published. In order to justify and contextualize the study undertaken, all prior literature reviews conducted since 2001 in the field of teacher recruitment and retention were reviewed. While these prior reviews contribute meaningfully to the literature, none of them provides a comprehensive and systematic overview of the teacher recruitment and retention literature. As a result, a comprehensive systematic review (Grant & Booth, 2009) of the teacher recruitment and retention literature since 2001 was conducted in order to appropriately situate this study in the broader teacher recruitment and retention literature and to inform methodological decisions made throughout the course of this study. The comprehensive review that prefaced this study resulted in the following conclusions.

1. Teachers are important factors influencing student achievement and are leaving the career in high numbers, particularly early in their careers;
2. Monetary factors are important in the decision-making process of teachers;
3. A number of nonmonetary factors influence teacher preferences and movements into, out of, and across the field; and
4. Existing research lacks sufficient studies that accomplish two things:
   a. Investigate preferences for competing job options, rather than satisfaction with current jobs or reasons for switching schools or leaving the career; and
   b. Provide meaningful comparisons between monetary and nonmonetary factors in order to determine the relative value of these factors.
These conclusions indicate that, despite the large number of studies focusing on teacher recruitment and retention, there is a need for additional studies that focus on teacher preferences and, specifically, how teachers value different monetary and job and working conditions factors. In addition to providing justification for the research undertaken, the results from this literature review informed the study by identifying key nonmonetary factors regularly cited as influencing teacher recruitment and retention.

**Prior Reviews**

Prior to conducting the new literature review summarized above, prior reviews were examined with the aim of finding a comprehensive systematic review of the teacher recruitment and retention literature. Due to the great deal of research conducted on teacher recruitment and retention, it is not surprising that there have been prior efforts to synthesize the existing research. Seventeen prior reviews of the literature were found published since 2001; however, while each of these reviews contribute to the literature, 16 of these reviews were not comprehensive systematic reviews as defined by Grant and Booth (2009). Each of the prior reviews is narrow in either its population or its focus, is non-systematic in its selection of papers, or is primarily a qualitative review.

Half of the reviews found focus either on a specific factor or a specific teacher population, limiting their ability to inform the state of the broader field of teacher recruitment and retention. This limitation is seen in reviews by Billingsley (2004), Fore, Martin, and Bender (2002), Kelley and Finnegan (2004), Lynch (2012), Mathews, Rodgers, and Youngs (2017), Przygocki (2004), Strong (2005), and Waterman and He
Waterman and He (2011) and Strong (2005) specifically focused on the literature regarding mentoring and induction programs. Waterman and He investigate 14 articles published in a 5-year period since prior reviews. While the review is systematic in its article selection, it is narrow in scope and acknowledges that there is not a consensus view of the components of effective mentoring that can be drawn from these studies. Strong addresses the weaknesses in earlier reviews of the mentoring and induction literature that were limited in scope (such as Ingersoll & Kralik, 2004), discusses in a narrative form additional empirical studies, and concludes that further research is needed. Przygocki (2004) discusses retention and attrition as it applies to Catholic-school education. This review is a narrative review of key studies in field, but it focuses on characteristics unique to Catholic education, limiting its applicability to the public education system. Lynch (2012) and Kelley and Finnegan (2004) address the retention literature with a focus on compensation. These two studies, by focusing primarily on retention and specifically on compensation factors, are more limited in scope than needed to inform this study. Finally, Fore et al. (2002), Mathews et al. (2017), and Billingsley (2004) all deal only with the literature surrounding special educators. While these reviews focus only on special educators, they are significantly more systematic in their approach than most of the other reviews previously discussed. Rather than providing a summary of studies, these studies provide a qualitative systematic analysis, systematically gathering articles and analysing them for common themes, taking covariates such as study design and sample into account. Articles from these reviews are included in the literature review that follows.
Many of the reviews of the teacher recruitment and retention literature are descriptive summaries of studies, rather than systematic literature reviews. This is most clearly seen in Guarino, Santibanez, and Daley’s (2006) work, who reviewed the literature on teacher retention with the intent of identifying the consensus view of the best literature on recruitment and retention. In their review, Guarino et al. state that “The selections were made on the basis of the following four general criteria: (a) relevance, (b) scholarship (c), empirical nature, and (d) quality” (p. 177). Unfortunately, explanation of how these criteria were evaluated in the context of specific articles is missing. Although noble in its intentions, rather than being a systematic review of the teacher recruitment and retention literature, the review reads as a summary of the findings of the most highly cited papers in the field. This review provides a good starting point for identifying key articles in the field, but does not provide a comprehensive review of the teacher recruitment and retention literature on its own. Another set of similar reviews was those done by Achinstein, Ogawa, Sexton, and Freitas (2010), Berry (2004), Scheopner (2010), and Stotko et al. (2007), which serve as a good resource for papers in the field, but lack transparency in how articles were selected and tend to not systematically analyze the papers discussed. These reviews serve as an effective orientation to the field, but not a systematic review of the literature. Additional reviews limited in transparency and breadth include Dauksas and White (2010) and Newton and Witherspoon (2007).

Finally, all of the reviews previously described, as well as the review by Schaefer et al. (2012) discussed below, are almost entirely qualitative in nature, describing results of a variety of studies. Only the three special education reviews (Billingsley, 2004; Fore
et al., 2002; Mathews et al., 2017) attempt a quantitative analysis of the literature. While Schaefer et al. (2012) do an excellent job of clearly and systematically gathering and evaluating articles, the analysis is entirely narrative. This is another example of a well-constructed qualitative systematic literature review, but does not meet the same need as a comprehensive systematic review (Grant & Booth, 2009).

A final review that is worth noting is that of Borman and Dowling (2008). This review is a systematic quantitative review that did not limit itself to reviewing only certain factors or populations, but looked only at teacher attrition, rather than recruitment and retention more broadly. While this serves as an example of a comprehensive systematic review, due to its focus on only teacher attrition, their review only contained 34 studies. Given this limitation and the age of the review, it is worth repeating with a broader scope.

While each of these efforts have been valuable on their own, there remains a need for a more comprehensive effort at summarizing the extensive teacher recruitment and retention literature in order to justify and contextualize additional studies in this field. Such a review is presented in this work in order to justify the study that follows.

**Systematic Literature Review Methods**

Due to the limitations of the existing literature reviews, a comprehensive systematic review of the teacher recruitment and retention literature was conducted prior to the current study. A search was conducted in the ERIC database for any peer-reviewed research regarding teacher recruitment and retention published since 2001. This
delimiting factor was chosen to allow for a more comprehensive review of the literature published in the post-NCLB era. The year 2001 was chosen as the cut-off point both because of this key legislation and because it is the year of publication of the oft-cited Ingersoll (2001) paper. While a great deal of research was conducted in the years prior to 2001, it is unlikely that it systematically varies significantly from the research of the last 15-20 years. Limiting the search to this time period allows for a more comprehensive view of the current literature, as opposed to relying on random sampling of the literature of the past many decades. Other inclusionary criteria included:

- Articles must be of original, empirical research, of any type;
- Articles must address the preferences or movement of active, former, or preservice K-12 teachers in the U.S. International, higher education, and pre-K teachers are excluded from this review in order to focus its review on only the U.S.’ K-12 labor force; and
- Research on para-educators or teaching assistants is excluded because these professionals are not a part of the same labor force as K-12 teachers, having very different job descriptions and, often, qualifications.

A search was conducted in the ERIC database for articles using the following keywords appended to the term “teacher”: mobility, recruit, recruitment, retention, retain, preferences, “why leave,” and “why move.” This search generated approximately 3,000 results that were scanned for meeting the inclusion criterion described above. Of those results, 225 empirical articles were found that met the inclusion criteria. These articles were coded using the coding sheet found in the Appendix A. Many of these articles discuss numerous factors, often with regards to multiple potential outcomes. Together, 333 unique outcomes were identified, with a total of 2,156 factors mentioned, either as influencing or not influencing the teacher recruitment or retention outcome studied.
Evaluating Study Quality

All studies evaluated in this review were judged on their internal validity and trustworthiness using a 4-point scale. High scoring studies, such as Gilpin’s (2011), tended to have reasonable sample sizes, a strong, well-described model, and used standard p values in statistical analyses. They included all reasonable controls and covariates and provided a thorough analysis of the results of their data analysis that was grounded in the data. The next tier of studies included those such as Grissom’s (2011), which shared many of the characteristics of the highest scoring studies, but suffered from some validity concerns, such as using measures with questionable construct validity. In Grissom, for example, the “principal effectiveness” factor examined was a latent variable determined using responses to six questions on the Schools and Staffing Survey. These questions were not necessarily intended to inform this variable, leading to some concern that the measure may not be capturing the phenomenon that the author claims. Other reasons for giving studies a rating of moderate validity included low survey response rate.

The lower-rated studies typically consisted of those that had very low survey response rates, questionable data collection and/or interpretation in qualitative studies, or questionable conclusions drawn from quantitative studies. An example of a study with the second-lowest rating would be Fish and Stephens’ (2010), who conducted a survey with a convenience sample of 57. The small sample size and the way in which it was selected warranted caution when interpreting the results. Finally, examples of the lowest rated studies include Diamantes’ (2004), which does not provide any methods on data collection whatsoever, and Hutchison’s (2012), who performed a qualitative study with
many interviews and focus groups, but did not describe data collection and analysis procedures nor explain how reported themes were constructed.

Overall, the vast majority of studies were classified as being in the middle two categories. The top-tier quality was assigned to 19% of studies reviewed. The middle two tiers of study quality were assigned to 37% and 35% of the studies, respectively. Finally, approximately 9% of the studies (20 studies) were assigned the lowest category of study quality.

**Literature Review Results**

As may be expected due to the importance of this field, an abundance of literature exists that deals with teacher recruitment and retention. In this review, 225 articles measuring 333 distinct outcomes were found to meet the inclusion/exclusion criteria. A total of 2,156 factors were discussed, representing 429 unique factors. Examples of factors influencing teacher recruitment and retention include student race, salary, and feelings of efficacy. Of these 2,156 factors, 82% were found in their studies to be either statistically significant or otherwise meaningful by the researcher(s). This diversity of measured outcomes is testament to the breadth of the literature. However, due to the diversity of studies investigated as a part of this study, it is important to note three caveats that influence the interpretation of the results presented below.

**Important Considerations**

One caveat in summarizing the existing literature on teacher recruitment and retention, due to the diversity of the field, is that outcomes investigated in each study are
highly divergent. In the coding process, 42 unique outcome measures were identified among the 333 outcomes identified. Examples of these outcomes include: 5-year retention rates, probability of switching districts, job (dis)satisfaction, stated preferences, and odds of staying in the career until retirement. Even within these different outcomes, there was diversity in what was actually measured. For example, some studies that investigated the phenomenon of “leavers” removed involuntary leavers (those fired from a job); others also excluded those who left for maternity leave; some looked for re-entrants later in time, while others did not; and some included those who leave a specific school along with those who leave the career. Ingersoll (2001) introduced the typology of “stayers,” “movers,” and “leavers”; however, while these three terms are used in the literature extensively, the meaning attributed to each term varies greatly. Given the number of unique outcomes addressed in the 333 total outcomes found in the literature search, it is not reasonable to separate out the results by outcome measured. Instead, the review that follows counts significant or meaningful factors versus not significant or meaningful factors across all outcomes. In the results that follow, no attempt is made to distinguish between results based on the specific outcome measured in a particular study. Therefore, the results of this review can only state the extent to which the different factors discussed below address the broader issue of teacher recruitment and retention.

Because this review included studies regardless of methodological approach, care needs to be taken to interpret the findings of each study. Factors cited in a study were given a dichotomous value representing whether they were found to be significant/meaningful by the researcher(s). For quantitative studies, statistical significance was used
to determine this value, utilizing whatever alpha level was set by the researcher. For qualitative studies and mixed methods studies, in cases where statistical significance is not a reasonable criterion, a judgement was made regarding whether the researcher(s) claimed that the factor had a meaningful impact on the outcome measure of the study. Throughout the analyses that follow, factors are classified as being found to be either significant/meaningful or nonsignificant/meaningful in their respective studies; no distinction is made whether this value was determined through statistical significance or through another interpretation of meaningfulness. In the analyses that follow, these terms are used interchangeably to refer to all studies regardless of methodology.

A final caveat is that the results are interpreted, with a few exceptions, as categories of factors influencing the measured outcome. Similar to the outcome measure, there was a great deal of diversity in the factors discussed. During the coding, the results noted in studies were placed into 429 factors, attempting to maintain the sense of the result while addressing the fact that similar constructs may have slightly different names, such as “collegiality,” “collegial relationships,” and “relationships with colleagues.” These 429 factors were then collapsed into 15 sets of factors. These 15 categories and the most commonly studied factor labels in each category are shown in Table 1. Much of the analysis deals with outcomes both within and across these categories of codes. This review does not evaluate the extent to which the results of the quantitative analysis performed at the category level apply to individual factors within those categories.

Importance of Teachers

It is well-accepted that the teacher is the school factor with the greatest potential
Table 1

**Categories of Factors Associated with Teacher Preferences and Movement and Top Factors in Each Category**

<table>
<thead>
<tr>
<th>Student characteristics</th>
<th>School characteristics</th>
<th>School program characteristics</th>
<th>Personal characteristics</th>
<th>Personal qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student behavior ($n = 40$)</td>
<td>Resources ($n = 33$)</td>
<td>Autonomy ($n = 30$)</td>
<td>Teacher race ($n = 18$)</td>
<td>Level ($n = 11$)</td>
</tr>
<tr>
<td>Student SES ($n = 31$)</td>
<td>Facilities ($n = 15$)</td>
<td>Influence over policies ($n = 26$)</td>
<td>Experience ($n = 18$)</td>
<td>Subject area ($n = 9$)</td>
</tr>
<tr>
<td>% minority ($n = 24$)</td>
<td>Safety ($n = 15$)</td>
<td>Vision alignment ($n = 19$)</td>
<td>Age ($n = 14$)</td>
<td>Certification ($n = 7$)</td>
</tr>
<tr>
<td>Proximity to home ($n = 12$)</td>
<td>“fit” ($n = 9$)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal attitudes</th>
<th>Administration</th>
<th>Professional development</th>
<th>Collegial relationships</th>
<th>Career factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altruistic tendencies ($n = 11$)</td>
<td>Administrative support ($n = 49$)</td>
<td>Professional development ($n = 37$)</td>
<td>Collegial relationships ($n = 31$)</td>
<td>Professional advancement opportunities ($n = 14$)</td>
</tr>
<tr>
<td>Feelings of efficacy ($n = 9$)</td>
<td>Evaluation ($n = 10$)</td>
<td>Mentoring ($n = 14$)</td>
<td>Collaboration ($n = 17$)</td>
<td>Non-teaching opportunities ($n = 11$)</td>
</tr>
<tr>
<td>Feeling accomplishment ($n = 9$)</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Economic factors</th>
<th>Parent/ community factors</th>
<th>Job stressors</th>
<th>Job benefits</th>
<th>Job characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary ($n = 82$)</td>
<td>Parent support ($n = 13$)</td>
<td>Class size/case load ($n = 15$)</td>
<td>Job security ($n = 15$)</td>
<td>Working conditions ($n = 20$)</td>
</tr>
<tr>
<td>Salary and benefits ($n = 18$)</td>
<td>Community support ($n = 6$)</td>
<td>Workload ($n = 15$)</td>
<td>Respect of teachers ($n = 14$)</td>
<td>Teaching assignment ($n = 16$)</td>
</tr>
<tr>
<td>Benefits ($n = 10$)</td>
<td>Low parent involvement ($n = 6$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance pay ($n = 10$)</td>
<td></td>
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<td></td>
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</tbody>
</table>

*Note: $n$ = number of times a factor was cited in the reviewed literature.*

influence on student achievement. This contention has been a part of the cannon of educational research for so long that it is no longer challenged. Examples of prominent researchers describing this relationship include Hanushek et al. (1998), Darling-Hammond (2003), Kane and Staiger (2008), Sanders and Rivers (1996), Sanders et al. (1997), and Ferguson (1991).

In addition to studies showing links between student achievement and general
teacher effects, there are many studies showing the connection between specific teacher quality characteristics and student outcomes. When looking at teacher experience, there is clear evidence that the number of years of teaching experience matters for the first few years (Clotfelter et al., 2007; Goldhaber, 2002) and that whether or not a teacher is a first-year teacher particularly has an effect on student outcomes (Hanushek et al., 2005). Darling-Hammond (2000), in her analysis of how teaching policies and student characteristics influence student achievement, found that “certification status and degree in the field to be taught are very significantly and positively correlated with students’ outcomes” (p. 23). Clotfelter et al. (2007) find similar results. Wilson, Floden, and Ferrini-Mundy (2001), in their review of teacher preparation research, found that subject-area coursework influences student achievement and some evidence that courses in content methods are linked to student success. Additionally, they determined that the quality of preparation program matters, indicating that “[a]lternative route [programs] that . . . require substantial pedagogical training, mentoring, and evaluation” (p. iii) are the ones most likely to produce successful teachers, while Darling-Hammond (2009) argues that pedagogical coursework is a key factor in determining student outcomes regardless of route. In his overview of the literature, Goldhaber (2002) also notes that having a content-area degree is one of the best predictors of teacher performance in his overview of the literature. Pedagogy coursework was found to be an important factor influencing student achievement in literature reviews by Rice (2003) and Hightower et al. (2011). Research on the impact of advanced degrees is less conclusive, but evidence seems to indicate that they are associated with student achievement at the secondary level,
particularly in math and science fields (Hightower et. al., 2011). Finally, there are many studies linking teacher academic achievement to student achievement, including Hanushek and Pace (1995), Clotfelter et al. (2007), and Goldhaber (2007), and reviews by Ferguson and Brown (2000) and Ballou and Podgursky (1997). Ehrenberg and Brewer (1994) and Ferguson (1996) summarized evidence linking the selectivity of a teacher’s undergraduate institution to student performance and graduation rates.

Much of the debate today resides not with whether or not teachers are meaningful, but whether or not schools can compensate for out-of-school factors associated with student performance, such as income inequality issues (Berliner, 2013). Because schools often cannot directly influence their broader socio-cultural context in a transformative way, focusing on recruiting and retaining the highest-quality teaching candidates is of great importance to schools.

Factors Influencing Teacher Recruitment and Retention

With 429 unique factors cited as having an impact on teacher recruitment and retention for a total of 2,156 results in the 225 studies evaluated during this review, it is clear that a quantitative approach is needed to understand what the literature currently states about the factors most influencing teacher recruitment and retention. The results of this literature review show that while monetary factors are commonly found to influence teacher recruitment and retention, there are many other sets of factors that are commonly cited as influencing recruitment and retention as well. Table 2 replicates Table 1 but displays only results found to be significant/meaningful in their studies, showing the most
Table 2

**Categories of Factors Associated with Teacher Preferences and Movement and Top Factors in Each Category Found to Be Significant/meaningful**

<table>
<thead>
<tr>
<th>Student characteristics</th>
<th>School characteristics</th>
<th>School program characteristics</th>
<th>Personal characteristics</th>
<th>Personal qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student behavior (n = 40)</td>
<td>Resources (n = 34)</td>
<td>Autonomy (n = 30)</td>
<td>Experience (n = 20)</td>
<td>Level (n = 11)</td>
</tr>
<tr>
<td>Student SES (n = 33)</td>
<td>Facilities (n = 15)</td>
<td>Influence over policies (n = 26)</td>
<td>Teacher race (n = 19)</td>
<td>Subject area (n = 9)</td>
</tr>
<tr>
<td>% minority (n = 24)</td>
<td>Safety (n = 15)</td>
<td>Vision alignment (n = 19)</td>
<td>Age (n = 14)</td>
<td>Certification (n = 7)</td>
</tr>
<tr>
<td>Student achievement (n = 20)</td>
<td>Proximity to home (n = 12)</td>
<td>“fit” (n = 10)</td>
<td></td>
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</tr>
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<th>Career factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altruistic tendencies (n = 11)</td>
<td>Administrative support (n = 60)</td>
<td>Professional development (n = 30)</td>
<td>Collegial relationships (n = 31)</td>
<td>Professional advancement opportunities (n = 15)</td>
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<tr>
<td>Feelings of efficacy (n = 11)</td>
<td>Evaluation (n = 10)</td>
<td>Mentoring (n = 22)</td>
<td>Collaboration (n = 24)</td>
<td>Nonteaching opportunities (n = 11)</td>
</tr>
<tr>
<td>Feeling accomplishment (n = 8)</td>
<td></td>
<td>Induction (n = 10)</td>
<td>Peer support (n = 14)</td>
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<table>
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<th>Economic factors</th>
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<tr>
<td>Salary (n = 77)</td>
<td>Parent support (n = 14)</td>
<td>Workload (n = 16)</td>
<td>Job security (n = 15)</td>
<td>Working conditions (n = 21)</td>
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<td>Salary and benefits (n = 18)</td>
<td>Community support (n = 7)</td>
<td>Class size/case load (n = 15)</td>
<td>Respect of teachers (n = 14)</td>
<td>Teaching assignment (n = 16)</td>
</tr>
<tr>
<td>Performance pay (n = 12)</td>
<td>Low parent involvement (n = 6)</td>
<td>Work life balance (n = 11)</td>
<td>Intellectual challenge (n = 14)</td>
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<tr>
<td>Benefits (n = 10)</td>
<td>High parent involvement (n = 5)</td>
<td>Accountability system (n = 11)</td>
<td>Recognition (n = 12)</td>
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<tr>
<td></td>
<td></td>
<td>Legislation (n = 11)</td>
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<td></td>
</tr>
</tbody>
</table>

*Note. n = number of studies in which a factor was found to be significant/meaningful.*

commonly cited factors influencing teacher recruitment and retention in each of the 15 categories generated in this review.

**Monetary factors matter.** In addition to the prior reviews of literature discussed above that find that monetary benefits have an effect on teacher retention (Kelley & Finnegan, 2004; Lynch, 2012), the present literature review also finds substantial...
evidence of the importance of monetary factors. One of the 15 categories of factors found in the present review is economic factors. In fact, salary was the most often addressed factor in the literature, accounting for 4.3% of the factors found to have an effect in their studies. Salary was mentioned as a factor influencing teacher preferences and movements over 28% more often than the next most frequent factor. Including “salary and benefits” as a combined factor would raise these percentages. There were other monetary factors associated with teacher preferences and movements, including pension and other retirement benefits, although these were less commonly mentioned. Some factors, such as performance pay and signing and retention bonuses arise in the literature more rarely and, when they did, reported impacts are mixed. These factors had approximately equal numbers of articles claiming that they influenced the outcome measure of interest as those claiming that they did not. Taken together, the Economic Factors category represented 10.2% of the results as having an impact on teacher recruitment and/or retention, indicating that monetary factors play a substantial role in influencing teachers’ labor market decisions.

Many nonmonetary factors matter. In addition to economic factors, a large number of nonmonetary factors were found to be associated with teacher preferences and movements. Many of the categories of factors found in this study align well with those found by prior reviews such as that done by Guarino et al. (2006), who organized their review through the following factors: teaching versus other occupations, age and experience, gender, race/ethnicity, ability, field and qualifications, and psychological factors. A noteworthy result is that some factors are significant in opposite directions in
different studies. For example, both high and low parent involvement were found to contribute to teachers leaving/dissatisfaction. Similarly, teachers holding advanced degrees were found to be both more and less likely to leave in different studies.

Figure 1 shows the distribution of significant/meaningful and nonsignificant/meaningful outcomes by category. All categories of factors are more often cited as influencing teacher recruitment and retention than they are cited as having no influence, although the categories of job stressors, personal qualifications, and professional development contain factors that are cited as being nonsignificant/meaningful with some regularity. In each of these categories, at least 25% of the instances of factors in that category being cited in the literature were for nonsignificant/meaningful results. This indicates that factors in these categories have a more mixed record in the literature of being relevant for teacher recruitment and literature. For example, factors in the Job

![Figure 1](image-url)
Benefits category are significant/meaningful in 98% of aggregate occurrences in the literature, indicating the importance of factors in this category. In contrast, factors in the professional development category are only significant/meaningful 63% of the times they are cited, indicating mixed support for their impact on teacher recruitment and retention.

**Influence of Study Characteristics on the Importance of Factors**

In order to better understand the broader trends in the teacher recruitment and retention literature, the extent to which results in the prior literature differ by study or participant characteristic was investigated. The prevalence of significant/meaningful and nonsignificant/meaningful factors in each category was examined with regards to: study quality, study methodology, and the number of participants in a study. In addition, participant characteristics and context factors were analyzed for the same trends. For each study characteristic, descriptive results are described below, as are the results of chi-squared tests (alpha = 0.05) that determined if, for each category of factors, the distribution of significant and nonsignificant results varies based on study characteristic. A review of study methodologies finds that study quality, size, and methodology influence the types of factors found to be significant/meaningful as opposed to nonsignificant/meaningful. Unfortunately, not enough studies cite key study characteristics to draw many conclusions about the impact of participant or context factors on the types of factors found to influence teacher recruitment and retention.

**Quality of studies.** As can be seen in Table 3, there are some categories of factors that show substantial differences in the ratio of significant to nonsignificant results based
on the quality of the study. Two of the three categories described above that had greater than 25% of their results found to be nonsignificant, job stressors and professional development, show the trend of having a disproportionate number of their nonsignificant findings come from the studies of the highest-quality rating. This raises further doubt about the importance of those factors to teacher recruitment and retention. Such a trend is not seen in the other category with a high number of nonsignificant findings, that of personal qualifications, where nonsignificant findings are evenly distributed across studies of different levels of quality. Administration and student characteristics factors have a significant skew towards having a disproportionately high number of their
nonsignificant factors come from high-quality studies, although, overall, the vast majority of studies find factors in these studies to be significant/meaningful.

**Study methodology.** Not surprisingly, qualitative studies generate many fewer nonsignificant results than qualitative studies (Table 4). In fact, while 29% of all data points in this analysis come from qualitative and mixed methods studies, only 3% of the nonsignificant results come from studies using these methodologies. The vast majority of results reported in qualitative and mixed methods studies are factors found to influence teacher recruitment and retention.

**Study size.** Table 5 shows the results of the literature review by study size. It is clear from this table that different categories of factors are disproportionally investigated

Table 4

<table>
<thead>
<tr>
<th>Factor category</th>
<th>Qualitative</th>
<th></th>
<th>Quantitative</th>
<th></th>
<th>Mixed methods</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Sig</td>
<td>Sig</td>
<td>Not Sig</td>
<td>Sig</td>
<td>Not Sig</td>
<td>Sig</td>
</tr>
<tr>
<td>Student characteristics</td>
<td>0</td>
<td>22</td>
<td>38</td>
<td>133</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>School characteristics</td>
<td>1</td>
<td>17</td>
<td>36</td>
<td>103</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>School program</td>
<td>1</td>
<td>29</td>
<td>23</td>
<td>96</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Personal characteristics</td>
<td>0</td>
<td>8</td>
<td>32</td>
<td>97</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Personal qualifications</td>
<td>0</td>
<td>7</td>
<td>46</td>
<td>57</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Personal attitudes</td>
<td>0</td>
<td>76</td>
<td>8</td>
<td>79</td>
<td>1</td>
<td>38</td>
</tr>
<tr>
<td>Administration</td>
<td>0</td>
<td>47</td>
<td>20</td>
<td>73</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Professional development</td>
<td>1</td>
<td>25</td>
<td>79</td>
<td>89</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Collegial relationships</td>
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<td>28</td>
<td>14</td>
<td>46</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Career factors</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>65</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Economic factors</td>
<td>1</td>
<td>21</td>
<td>17</td>
<td>125</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Parent/community factors</td>
<td>0</td>
<td>13</td>
<td>6</td>
<td>18</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Job stressors</td>
<td>2</td>
<td>41</td>
<td>53</td>
<td>71</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Job benefits</td>
<td>1</td>
<td>21</td>
<td>1</td>
<td>59</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Job characteristics</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>40</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

*Note.* Not Sig = Nonsignificant/meaningful results; Sig = Significant/meaningful results.
Table 5

*Significant and Nonsignificant Factors by Category by Sample Size*

<table>
<thead>
<tr>
<th>Factor category</th>
<th>&lt; 100 participants</th>
<th>100-999 participants</th>
<th>1,000+ participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Sig</td>
<td>Sig</td>
<td>Not Sig</td>
</tr>
<tr>
<td>Student characteristics</td>
<td>0</td>
<td>42</td>
<td>7</td>
</tr>
<tr>
<td>School characteristics</td>
<td>3</td>
<td>39</td>
<td>9</td>
</tr>
<tr>
<td>School program</td>
<td>5</td>
<td>62</td>
<td>7</td>
</tr>
<tr>
<td>Personal characteristics</td>
<td>0</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Personal qualifications</td>
<td>0</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Personal attitudes</td>
<td>2</td>
<td>123</td>
<td>2</td>
</tr>
<tr>
<td>Administration</td>
<td>0</td>
<td>64</td>
<td>3</td>
</tr>
<tr>
<td>Professional development</td>
<td>2</td>
<td>46</td>
<td>10</td>
</tr>
<tr>
<td>Collegial relationships</td>
<td>1</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Career factors</td>
<td>1</td>
<td>34</td>
<td>0</td>
</tr>
<tr>
<td>Economic factors</td>
<td>1</td>
<td>44</td>
<td>6</td>
</tr>
<tr>
<td>Parent/community factors</td>
<td>3</td>
<td>23</td>
<td>3</td>
</tr>
<tr>
<td>Job stressors</td>
<td>2</td>
<td>67</td>
<td>7</td>
</tr>
<tr>
<td>Job benefits</td>
<td>1</td>
<td>29</td>
<td>1</td>
</tr>
<tr>
<td>Job characteristics</td>
<td>0</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>

Note. Not Sig = Nonsignificant/meaningful results; Sig = Significant/meaningful results.

in studies of a certain size. Nearly half of the studies investigating factors associated with student characteristics and (teacher) personal characteristics were studies involving over 1,000 participants, as were over 60% of studies examining the impact of personal qualifications factors on teacher recruitment and retention. Meanwhile, more than half of the results involving parent/community factors and personal attitudes of the teachers came from studies of under 100 participants. This is true despite having similar numbers of results from studies of all sizes (36% of results were from studies with samples of less than 100, 32% were from studies of greater than 1,000, and 32% were from studies of an
intermediate size). The categories of factors with high numbers of nonsignificant results, Job Stressors, Personal Qualifications, and Professional Development, all have their nonsignificant findings among results from larger studies. Additionally, Economic Factors, and those related to School and Student Characteristics were disproportionately found to be nonsignificant in very large studies, while they were likely to be found to be meaningful or significant in small and, often, medium-sized studies. Different outcomes by study size is an unexpected result worthy of further investigation.

**Participant characteristics.** Unlike when reviewing the impact of study characteristics on the factors found to influence teacher recruitment and retention, it is much harder to investigate how participant characteristics influence the factors cited in the prior literature. Of the 2,156 results analyzed in this review, less than a quarter came from studies that reported, or provided enough information to calculate, the average experience of its participants. Only 35% of results came from studies that noted even a range of teacher experience levels of the participants. The one participant characteristic that was often identifiable was the job market status of the participants; for example, whether the participants were stayers, movers, leavers, or preservice teachers, or if they were simply surveyed about future intentions, rather than as a result of an acted upon choice.

Table 6 shows the results of the analysis broken down by teacher type. It is notable that the vast majority of studies focus on the actual decisions made by stayers, movers, and leavers (70.0% of results), as opposed to looking at the preferences of job seekers or preservice teachers (8.6% of results). Studies of preservice teachers
### Table 6

**Significant and Nonsignificant Factors by Category by Teacher Type**

<table>
<thead>
<tr>
<th>Factor category</th>
<th>Leavers</th>
<th>Movers</th>
<th>Stayers</th>
<th>Preservice</th>
<th>Blend of all three</th>
<th>Intentions only</th>
<th>Movers and leavers</th>
<th>Searching for jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not sig</td>
<td>Sig</td>
<td>Not sig</td>
<td>Sig</td>
<td>Not sig</td>
<td>Sig</td>
<td>Not sig</td>
<td>Sig</td>
</tr>
<tr>
<td>Student characteristics</td>
<td>7</td>
<td>19</td>
<td>8</td>
<td>16</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>School characteristics</td>
<td>4</td>
<td>16</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>12</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>School program</td>
<td>2</td>
<td>19</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Personal characteristics</td>
<td>4</td>
<td>26</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Personal qualifications</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Personal attitudes</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>29</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Administration</td>
<td>1</td>
<td>20</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Professional development</td>
<td>9</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Collegial relationships</td>
<td>1</td>
<td>11</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Career factors</td>
<td>1</td>
<td>29</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Economic factors</td>
<td>0</td>
<td>22</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Parent/community factors</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Job stressors</td>
<td>13</td>
<td>26</td>
<td>26</td>
<td>4</td>
<td>0</td>
<td>11</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Job benefits</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Job characteristics</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note. Not Sig = Nonsignificant/meaningful results; Sig = Significant/meaningful results.*
disproportionately find Personal Attitudes and Economic Factors to be important. Studies of movers, surprisingly, are less likely to find School Characteristics to be important, but with only a small number of observations. Studies of movers do, however, disproportionately find an impact of School Program factors. Studies of both movers and leavers, however, find Job Stressors and Professional Development factors to be relatively unimportant. Job Stressors are found to be nonsignificant in the vast majority of studies including only movers, but they are much more likely to be significant in studies involving only leavers. Those searching for jobs often were influenced by School and Student Characteristics factors. These were also found to be important to those considering whether or not they would stay, along with Personal Attitudes and Economic Factors. These results indicate that the importance of different types of factors vary based on where a teacher is in the labor market. In order to adequately understand the relative importance of different factors to teachers, it is important to study a broad range of teachers including stayers, movers, leavers, job-seekers, preservice teachers. Researchers and practitioners should also consider that factors important to some sets of teachers may not impact others. As a result, changing conditions to reduce attrition may not also necessarily have a positive impact on recruitment, for example.

**Study context.** Similar to the issue described above with teacher experience, surprisingly few studies describe the context of the teachers studied. The most often cited contextual factor the level of the school (i.e., Elementary, Middle, Secondary, or a combination), but even that was only noted in 65% of the studies. A simple statement indicating whether the sample includes teachers teaching in a public or private context, or...
a combination of both, was missing in nearly two thirds of studies. Only half of the studies noted whether the teachers surveyed were in an urban, suburban, rural, or mixed settings. Finally, only 42% of studies provided any explicit information on the demographics of the student populations served by the teachers surveyed in the study. The low levels of reporting of these factors prevents a meaningful analysis of how study context is related to the factors found to be most meaningful to teachers. It is possible that, like above, teachers in different contexts respond differently to various types of incentives, but the lack of studies noting these conditions makes it impossible to systematically identify these relationships, if they exist.

**Relative Impact of Factors**

While there is a great deal of literature available to identify factors influencing teacher recruitment and retention, it is much more challenging from the current literature to evaluate the relative importance of those factors. The current literature most lends itself to vote counting, rather than a more robust analysis of the relative importance of factors. Less than two thirds of results identified in this review come from studies that attempt to rank the importance of the factors. Those studies that do generate ranks typically use one of a few methods, but these tend to not be readily interpretable nor easily comparable because of the lack of a standard method.

One method of ranking the importance of these different factors is the use of mean Likert scores. This method poses challenges both in interpretation and in attempts to gain a comprehensive view of the literature. An example is the results of Gilman, Peake, and Parr (2012). The authors polled Georgia Agricultural Educators, asking them
to rate factors related to job satisfaction on a 1-6 scale. The results are hard to interpret because many of the factors are clumped near one another. For example, as seen in Table 7, men rate Achievement, Advancement, and Responsibility as an average score of 4.78, 4.83, and 4.89, respectively. The practical implications of such a result are challenging to decipher.

A second method of ranking factors is the reporting of the percentage of participants that mention a factor as being important (or most important). This, unfortunately, does not get at the nuanced decisions that these teachers are making. Knowing only the percentage of individuals citing a factor as important may limit practical applications of the research because, as is shown by the diversity of results in this review, teachers utilize many factors when making decisions in the labor market. Results of this type do not provide insight into how individuals weigh these many factors when making choices. Additionally, the different ways of asking the question, the different sets of options offered to participants to choose from, and the number of selections allowed all make comparisons among studies challenging.

Table 7

*Means of Factors Influencing Job Satisfaction and Dissatisfaction from Gilman et al. (2012)*

<table>
<thead>
<tr>
<th>Job satisfiers</th>
<th>Mean</th>
<th>Job dissatisfier</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The work itself</td>
<td>5.07</td>
<td>Interpersonal relationships</td>
<td>5.03</td>
</tr>
<tr>
<td>Responsibility</td>
<td>4.86</td>
<td>Supervision/technical</td>
<td>4.86</td>
</tr>
<tr>
<td>Achievement</td>
<td>4.78</td>
<td>Working conditions</td>
<td>4.79</td>
</tr>
<tr>
<td>Advancement</td>
<td>4.76</td>
<td>Salary</td>
<td>4.65</td>
</tr>
<tr>
<td>Recognition</td>
<td>4.50</td>
<td>Policy and administration</td>
<td>4.35</td>
</tr>
</tbody>
</table>

*Note.* Based on scale: 1 = very dissatisfied; 2 = somewhat dissatisfied; 3 = slightly dissatisfied; 4 = slightly satisfied; 5 = somewhat satisfied; 6 = very satisfied.
Finally, some studies use odds ratios or relative risk ratios to weigh the importance of different factors. While these are easier to interpret and allow for easier aggregation of study results, related studies tend to be limited in their focus on the correlation between conditions and movements, as opposed to directly measuring teacher preferences. For example, many studies utilizing the School and Staffing Survey and Teacher Follow-up Survey (such as Jackson, 2012) look for how answers on a survey are differ between teachers who indicate staying in their teaching role as opposed to changing schools or exiting the profession. These studies can capture the impact of factors unrelated to teacher preferences, such as movements due to retirement and family relocations and choices to remain in an undesirable school for reasons unrelated to school quality. In the study above, it is impossible to know how conditions described on the survey contributed or not to the decisions teachers made about staying at their schools, moving between schools/district, or leaving the career.

There are a few studies in the literature that have attempted to quantify trade-offs that teachers are making when choosing among employment options. One is Hanushek et al. (2005), which uses statistics from the Texas Schools Project to attempt to estimate the amount of “Combat Pay” needed to overcome differences between schools based on nonmonetary differences. The primary limitation of this approach is that it typically involves predicting movements based on regression outcomes of variables such as school demographics and average salaries, rather than observing individual teacher behavior. However, the attempt is promising because it allows for comparison of factors in a well-understood metric, that of salary dollars.
Two more promising studies are those done by Horng (2009) and Robinson (2012). Each of these studies used Adaptive Conjoint Analysis to attempt to find the relative importance of different factors when teachers made trade-offs between hypothetical schools. These studies each resulted in importance values of each factor analyzed, allowing for the direct comparison of the impact of each factor in the teacher’s (hypothetical) labor market decision. Unfortunately, each of these studies is limited in its sample. Robinson only evaluated the preferences of preservice music teachers, while Horng looked only at elementary school teachers within a single district. Additionally, while Horng noted some differences in importance scores based on demographic characteristics, there was not a robust analysis of these differences. Despite their limitations, these two studies provide useful guides for future research into the question of how much teachers value nonmonetary factors.

Limitations of the Existing Research

Despite the great deal of literature produced since 2001 on teacher recruitment and retention, this review finds some limitations within the existing literature. These limitations create challenges for administrators and policymakers aiming to act upon this extensive body of research. These limitations include an emphasis on retention over recruitment, a lack of valuation of the impact of different factors, a lack of reporting of participant and context characteristics, and different results from different methodologies.

Emphasis is on Retention

The results of this literature review emphasize the skew towards retention over
recruitment, despite the terms often being used in conjunction in common parlance. Specifically, when looking at choices teachers make in the labor market, researchers place a great deal of emphasis on stayers, movers, and leavers and the intentions of currently employed teachers, as opposed to analysing how preservice or other moving teachers are evaluating their available options. As can be seen in Table 6, most of the research has been conducted with stayers, leavers, and movers, with little research done on those looking for jobs or preservice teachers. Unfortunately, this type of analysis includes the complicating factor of inertia and other barriers to labor market movement, as opposed to getting at teachers’ true preferences. In the review for this study, less than 9% of results were gathered from studies that surveyed preservice or job-hunting teachers. Another 21% were from studies looking at teachers’ intentions. However, the vast majority of studies (70%) investigate teachers who actually stay in, move, or leave schools or the career. While this is valuable, administrators and policymakers would benefit from additional research on how teachers choose among competing opportunities by focusing studies on job seekers and preservice teachers.

**Research into the Relative Importance of Factors is Lacking**

A weakness of the existing literature is the lack of a consistent and easy-to-interpret means of understanding the relative importance of the factors cited. In order to understand how to recruit and retain teachers, particularly to high-needs schools, an understanding of which factors most influence teachers’ decisions, and approximately how valuable they are, is critical. As was described above, many studies make no effort
to quantify the relative importance of different factors and studies that do utilize metrics that are challenging to operationalize. Without asking teachers to make trade-offs between factors, we find that teachers would like to work in beautiful schools, make excellent salaries, and have no discipline problems. This is not helpful, however, in addressing teacher recruitment and retention problems in the real world. It is critical that additional research go into addressing the question of which factors most influence teachers’ labor-market decisions and how much they matter.

**Literature Review Conclusion**

It has been well-established that teachers are a key factor influencing student achievement and that the inequitable distribution of teachers influences student achievement gaps (Darling-Hammond, 2003, 2010; Ferguson, 1991; Hanushek et al., 1998; Lankford et al., 2002; Sanders et al., 1997; Sanders & Rivers, 1996) and that teachers in “hard-to-staff schools” tend to be of poorer quality and are more likely to leave their schools (Auguste et al., 2010; Betts et al., 2000; Clotfelter et al., 2005; Darling-Hammond, 2004, 2010; Holzman, 2012; Lankford et al., 2002). As this review of the literature demonstrates, there have been many attempts to better understand the problem of teacher recruitment and retention. There are two primary takeaways from this body of research: monetary factors matter, but so do many other nonmonetary factors. From this body of literature, it is possible to generate lists of factors influencing teacher job satisfaction and teacher movements, as is shown in Table 2. This review also demonstrates that some categories of nonmonetary factors are found to be nonsignificant/
meaningful at substantially higher rates than others, such as factors related to
Professional Development, Job Stressors, and Personal Qualifications. These
nonsignificant findings disproportionately come from larger and, in the case of
Professional Development and Job Stressors, higher-quality studies, indicating that the
evidence for claims that these factors are meaningful is more mixed. This review also
demonstrates that the likelihood a factor is found to be significant/meaningful depends on
study methodology and whether the study subjects are stayers, movers, or leavers.

As noted above, this review identifies two key weaknesses in the existing
research: a focus on teacher’s decisions to stay, leave, or move between positions and a
lack of meaningful ranking of importance or valuation of the factors influencing teacher
recruitment and retention. These shortcomings justify the need for additional studies that
focus on how teachers evaluate the desirability of schools and studies that result in easy-
to-understand and actionable measures of factor importance and valuation.
CHAPTER III
METHODOLOGY

This mixed methods study makes use of an Adaptive Choice-Based Conjoint analysis. This method is an adaptive survey tool used to determine the value that individual teachers place on different school characteristics. The use of this tool, as well as a complementary qualitative strand, potentially adds a unique contribution to the important and well-established field of teacher recruitment and retention. Specifically, this study allows for a better understanding of how teachers choose between competing school options and how they value different working conditions. This unique tool and the intuitive results it produces can advance the field of teacher recruitment and retention by delivering meaningful and actionable results to researchers, policymakers, and administrators.

Research Questions

This study was designed to provide additional support of findings from the existing literature as well as extend the literature by addressing key weaknesses using a novel survey methodology. This study first aimed to confirm that, as would be expected from the existing research, teachers place value on nonmonetary factors associated with schools. Additionally, this study aimed to better understand the relative importance of many often-cited factors, as well as an absolute value teachers place on different levels of those factors. The extent to which these valuations covary with one another and with demographic and contextual factors was also investigated. Finally, a better understanding
of how teachers describe their choices was sought through the introduction of an embedded qualitative strand. Specifically, this study aimed to answer the following questions.

1. Do teachers place value on nonmonetary factors related to working conditions?

2. What value do teachers place on factors related to working conditions?
   2a. What is the relative importance of each of the factors studied?
   2b. What is the monetary value placed by teachers on the nonmonetary factors being investigated?

3. Does the value placed on different nonmonetary factors vary among teachers?
   3a. Which factors show the highest and lowest amounts of variance among individual teachers?
   3b. In what way do teacher preferences covary with personal factors and factors associated with a teacher’s experiences and qualifications?

4. Do typologies of teachers exist with different sets of preferences?

5. How do teachers describe their reasoning for choosing between competing schools?
   5a. What reasons are given by respondents for choosing the school options that they do?
   5b. Who is the primary beneficiary of the reason given by respondents for choosing the school options that they do?
   5c. How do the reasons described by respondents for choosing the school that they do systematically vary by demographics or teacher type?
   5d. How do the reasons described by respondents for choosing the school that they do relate to the importance placed on different factors by each respondent?

The first question seeks to confirm what was found in the literature review: that there are nonmonetary factors associated with working conditions that have value to teachers.
The second question most directly addresses the primary weakness in the literature, which is a lack of meaningful valuation of these different factors. The valuation of benefits is considered both in relation to other nonmonetary benefits and in relation to salary. Once a value for each factor is determined, it is useful to administrators and policymakers to understand how consistent the value placed on these conditions is among teachers and whether demographic and professional factors are correlated with these valuations. This research seeks to further support the practical work of administrators and policymakers by investigating the presence of typologies of teachers who have certain characteristics and prefer certain sets of working conditions. Finally, this research used a qualitative strand to better understand the job selection process as explained by teachers. In addition to better understanding valuations teachers reveal through their choices, this final question aimed to better understand how teachers explain the process of choosing among competing school options.

**Study Design**

In order to address these research questions, this study used an Embedded Mixed Method design (Creswell & Plano Clark, 2011) utilizing Adaptive Choice-Based Conjoint Analysis (ACBC). This is similar to the procedure used by Horng (2009) and Robinson (2012), described in Chapter II. One key difference between the ACBC methodology used in this study and the Adaptive Conjoint Analysis (ACA) methodology used in the prior studies is the introduction of a forced choice between competing options, rather than a ranking of a single option (Johnson, Huber, & Bacon, 2003). A
second major change to the procedures used by Horng (2009) and Robinson (2012) is the addition of a qualitative component that seeks elaboration. The dominant quantitative strand, the ACBC, is supplemented with a less-dominant, concurrent qualitative strand in order to provide a more complete understanding of the quantitative results. The reason for mixing is complementarity (Greene, Caracelli, & Graham, 1989). The qualitative data are analyzed for themes that help to elaborate why individuals are making the choices that they are, assisting in the interpretation of the quantitative results. Examples from the qualitative data are also used to support findings from the quantitative results.

**Survey Instrument**

The survey instrument utilized consists of three key components: an initial demographic survey, the ACBC, and an embedded qualitative component.

**Demographic survey.** The initial demographic survey collected personal characteristics that may be important covariates with the preference data collected in the ACBC survey. This section was also used to screen out respondents who were not a part of the target population and to evaluate the similarity of the survey sample to the broader population of interest. The demographic questions address the most commonly cited personal and qualification/contextual factors that were found to be associated with teacher preferences or movements in the literature review. Figure 2 displays the demographic covariates surveyed in this study.

**ACBC survey.** The second component of the survey instrument is the ACBC (Johnson & Orme, 2007). This consists of an adaptive survey with four stages. Screenshots from each of these stages can be found in Appendix B and they are described
Figure 2. Demographic data collected in the initial demographic survey.

below. The survey aims to evaluate the relative importance of different factors to each respondent by determining the utility placed on different levels of those factors.

The factors to be investigated were inspired by the results of the literature review and a pilot study conducted in 2016. The factors chosen for the pilot study were the most often discussed factors in the categories of School Program, Administration, Collegial Relationships, Professional Development, Career Factors, Job Stressors, Job Benefits, and Job Characteristics from the literature review. These categories were chosen because they are the ones that administrators have the most control over. This study includes factors from the Professional Development and Job Stressors categories despite mixed findings in the literature review regarding their importance in large, high-quality studies in order to shed more light on their importance. Factors from other categories, such as Student and School characteristics were also included because they are often found to be meaningful in the literature and may act as a drag on salary, as is hypothesized in the research on compensating differentials (see, for example, Boyd, Lankford, Loeb, & Wyckoff, 2003). Additionally, the survey includes salary to serve as a reference to compare to the other factors The literature review supports the view that teachers respond to both monetary and nonmonetary factors, warranting inclusion of both types of factors.
in the survey. Additionally, including salary with the nonmonetary factors allows for the evaluation of the monetary value placed by teachers on these nonmonetary benefits as is sought in research question 2b. The specific factors investigated in this study are those that have strong theoretical support, strong support in the literature, and/or strong support from the pilot study. Figure 3 provides a list of these factors.

**Build your own.** In the first stage of the ACBC survey, respondents build their ideal school and working conditions by selecting the preferred level of each factor. For example, the survey asks a respondent to choose his/her preferred level of the factor of Job Security from the following options: “Tenure is available and likely”; “Tenure is available, but unlikely”; and “Tenure is unavailable.” A complete list of factors and the level of each factor available to respondents can be found in Appendix C. The only factor where participants do not select a preferred level is the salary factor. The factors that are obviously ordinal, including class size, student SES, student race, and school achievement, are displayed in order from lowest numeric value to highest numeric value or, in the case of School Achievement, from A to F. Levels of the other factors were fixed for all participants, but randomized when generating the survey. This decision regarding ordinality of a factor was also reflected in the settings of the survey to improve its estimates of utility (Sawtooth Software, 2018).

<table>
<thead>
<tr>
<th>Salary</th>
<th>Planning Time</th>
<th>Opportunities for Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Security</td>
<td>Class Size</td>
<td>Professional Development and Mentoring</td>
</tr>
<tr>
<td>School Grade</td>
<td>Curricular Autonomy</td>
<td>Mission and Vision Alignment</td>
</tr>
<tr>
<td>Student SES</td>
<td>Administrative Support</td>
<td>(“Organizational Fit”)</td>
</tr>
<tr>
<td>Student Race</td>
<td>Influence over Policies</td>
<td>Teaching Assignment</td>
</tr>
</tbody>
</table>

*Figure 3. Factors included in the ACBC survey.*
**Screening.** Next, the survey develops a series of hypothetical schools and displays them five at a time. For each, respondents are asked whether they would consider choosing to work in one of these schools. This task is repeated a total of 10 times, so that, in aggregate, a respondent has considered 50 potential schools. Throughout, in order to refine the options presented, the respondent is permitted to select a level of a factor as a “must have” or “unacceptable”; for ordinal and continuous factors (salary), greater than and less than logic is employed. For example, a respondent may have the opportunity to say that a class size greater than 30 students is unacceptable. The survey tool uses the responses to which schools are potentially viable to generate the set of hypothetical schools to consider for this particular individual.

**Choice tasks.** Using the responses from the screening task described above, the survey adaptively generates sets of three hypothetical schools with combinations of desirable and undesirable factors. For each set, the survey asks the respondent to choose the most desirable of the three. Each choice task varies a subset of the factors, making any two choices in the task more similar than not. By displaying the “constants,” the task forces an individual to consider the totality of the school environments that they are considering while directing attention to the key differences. Forcing a choice mimics the reality teachers face with finite opportunities. This task is repeated up to 12 times. It is common for the same hypothetical school to be introduced to multiple-choice tasks, allowing respondents to choose from a narrow set of the schools that they saw in the earlier screening stage.

**Calibration stage.** The final stage of the ACBC survey is a calibration stage that
presents respondents with a single hypothetical school and asks how likely they would be to take a position at that hypothetical school. Respondents respond using a Likert scale with the following options: “Definitely Would”; “Probably Would”; “Might or Might Not”; “Probably Would Not”; “Definitely Would Not.” This task is repeated up to six times per survey. The survey uses this stage to refine and calibrate the utility values calculated through the prior portions of the survey.

**Embedded qualitative strand.** Throughout the screening and choice tasks process, open-ended response prompts are intermittently included that ask respondents to reflect on the reason for their decisions. These open-ended questions encourage a one to two sentence elaboration on the choices being made and are placed following a subset of choice events. Participants are asked four times throughout the survey to reflect on the choice they have made and respond to the two following prompts.

- Briefly explain what really mattered in making the choice that you made? Why?
- What reasons would you tell your friends or family you chose the school you did?

**Population**

The population surveyed included secondary teachers in public schools within the state of Utah who were active during the 2016-17 school year. The focus is exclusively on secondary teachers due to research that shows that secondary school teachers exhibit higher degrees of attrition than elementary school teachers (Keigher, 2010), as well as the belief that secondary and elementary school teachers make up two distinct labor markets. With different preparation programs and alternative career opportunities, it is reasonable
to predict that these sets of teachers would have different sets of values. In particular, the subject area expertise of secondary teachers generates different alternative career opportunities for secondary teachers that may influence responses. Additionally, the context of a middle school and high school is different from that of an elementary school and the job expectations for the teachers are often different.

Utah teachers are targeted in part because it is a convenience sample, as it is the state where the researcher is located. Utah is an under-studied state, as compared to states such as Texas and North Carolina, for example. This is likely due to its lack of large data sets available. Increasing the geographic diversity of studies investigating teacher recruitment and retention is of value to the field. Finally, because of the researcher’s familiarity with the state, interpretation of the qualitative portion of the study is likely improved.

The population includes teachers in certified areas, including special education, but excludes paraprofessionals, teachers’ aides, media specialists, and similar positions. This population, as of the 2015-2016 school year, consisted of 14,941 individuals. Due to the use of Bayesian analysis (described below), a power analysis is not appropriate for the primary means of analysis. However, Sawtooth Software, the makers of the adaptive survey software, recommend using samples on the order of approximately 1,000 respondents at a minimum for studies of this type, with all subgroups at a minimum level of 200 individuals (Orme, 2010).

**Participant Recruitment**

Participants were recruited using publicly available email addresses from school
websites of secondary schools in the state of Utah. An attempt was made to only collect email addresses of those in the target population, excluding non-instructional staff and teachers of elementary classes. All email addresses were collected during the 2016-17 school year. In total, 14,425 email addresses were collected. There were a minority of schools that did not have emails publicly available or did not have complete and active websites, causing them to be excluded from the set of possible participants. Participants were invited to participate in the survey over the course of a 5-week period beginning in late April 2017. Of 14,425 emails collected, 629 were returned as invalid, leaving 13,769 possible respondents. Reminder emails were sent approximately every week, with participants having the option of unsubscribing from reminder emails. In total, participants were contacted up to four times over the course of the 5-week period. Participants were invited to participate in a drawing for one of three $50 e-gift cards.

**Analyses**

The dominant quantitative strand and the less-dominant qualitative strand were analyzed primarily using separate methods, although the data were mixed to allow for mixed methods analysis during the analysis stage. In addition, samples from the qualitative strand of the study were used to elaborate and support the analysis of select quantitative results. Each research question was answered using the data and analysis methods described in Table 8.

**Quantitative Analysis**

The ACBC tool generates individual parameter estimates of utility values for each
Table 8

Data Collection and Analysis Plan for Each of the Five Research Questions

<table>
<thead>
<tr>
<th>Research question(s)</th>
<th>Data source</th>
<th>Analysis method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do teachers place value on nonmonetary factors related to working conditions?</td>
<td>Utility values generated by the survey software through hierarchical Bayesian modeling</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>2. What value do teachers place on factors related to working conditions?</td>
<td>Importance is calculated by the survey software using a summary of the utility values generated as above. Monetary value is calculated by comparing the utility of salary to the utility of nonmonetary factors</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>2a. What is the relative importance of each of the factors studied?</td>
<td></td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>2b. What is the monetary value placed by teachers on the nonmonetary factors being investigated?</td>
<td></td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>3. Does the value placed on different factors vary between teachers?</td>
<td>Summary statistics of the utility values generated by the survey software will be used to answer 3a. Individual-level utility values and responses to the demographic survey will be used to answer 3b</td>
<td>Variance will be analyzed through descriptive statistics. Covariance of preferences with other factors will be analyzed through simple and multiple regression</td>
</tr>
<tr>
<td>3a. Which factors show the highest and lowest amounts of variance between individual teachers?</td>
<td></td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>3b. In what way do teacher preferences covary with personal factors and factors associated with a teacher’s experiences and qualifications?</td>
<td></td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>4. Do typologies of teachers exist with different sets of preferences?</td>
<td>Individual teacher utility values for levels of select factors</td>
<td>Latent Class Analysis using depmixS4 package for R (Visser &amp; Speekenbrink, 2010)</td>
</tr>
<tr>
<td>5. How do teachers describe their reasoning for choosing between competing schools?</td>
<td>Answers to open-ended questions in the ACBC survey</td>
<td>Coding of themes using constant comparative method in NVivo 11</td>
</tr>
<tr>
<td>5a. What sort of reason is given by respondents for choosing the school options that they do?</td>
<td></td>
<td>Questions 5c and 5d will involve quantitizing data from the coding process and analyzing through simple and multivariate regression</td>
</tr>
<tr>
<td>5b. Who is the primary beneficiary of the reason given by respondents for choosing the school options that they do?</td>
<td></td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>5c. How do the reasons described by respondents for choosing the school that they do systematically vary by demographics or teacher type?</td>
<td></td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>5d. How do the reasons described by respondents for choosing the school that they do relate to the importance placed on different factors by each respondent?</td>
<td></td>
<td>Descriptive statistics</td>
</tr>
</tbody>
</table>
level of each factor for every individual who completes the survey. This utility value is a unit-less measure, where positive utility values indicate added value and where the range between the best and the worst-rated level of a given factor indicates the relative importance of that factor. Assuming that value is fungible, a dollar value for each “utility point” can be calculated based on the utility estimates of different levels of salary. This makes the assumption that the utility value of money is constant across salary ranges, an assumption that is addressed below. Making this assumption allows for the calculation of the monetary value placed by every respondent on each of the different levels of the different factors (Research Question 2b).

The software utilizes Hierarchical Bayesian (HB) analysis to estimate the mean utility value of each level of a factor both for individuals and across the entire sample (Sawtooth Software, 2016, 2018). The use of Bayes is novel in this field, which is much more likely to rely on frequentist statistics. The use of HB provides a conclusion that has significantly more value to a policymaker or an administrator than the conclusions derived using frequentist statistics by making parameter estimates. Additionally, the HB analysis has the practical benefit of “borrowing” information from other individuals to improve individual utility estimates (Orme, 2000). The HB analysis allows for parameter estimates of relative value (Research Questions 1 and 3a), relative importance (Research Question 2a), and, using the calculation described above, dollar value (Research Question 2b). Simple and multiple regression were used to determine relationships among individual utility values and covariates from the demographic survey (Research Question 3b).
Two final forms of quantitative analysis that were undertaken were latent class analysis (LCA) and exploratory factor analysis (EFA). LCA was utilized to attempt to generate classes of teachers with similar sets of preferences (Research Question 4). The DepmixS4 package for R (Visser & Speekenbrink, 2010) was used for the LCA analysis with individual teacher importance values used as the measures of interest. Three different sets of input measures were used: the individual importance value of all fourteen factors; the importance of the five most important factors; and the average importance of four composite sets of factors. For each LCA analysis, multiple models were run until the one that had the minimum Bayesian Information Criterion (BIC) was identified. After reaching inconclusive results with the Latent Class Analysis, Exploratory Factor Analysis (EFA) was conducted. The factanal function in the R stats package (R Core Team, 2016) was used for the analysis. In order to determine the number of factors, the nFactors R package (Raiche, 2010) was utilized. When different indicators prescribed a different number of potential factors, all options were explored. All EFA analyses utilized varimax rotation, assuming that the factors are not correlated with one another.

**Qualitative Analysis**

Results from the open-ended questions were exported into QSR International’s NVivo 11 (2015). NVivo was used to aid in the efficiency of the coding of the qualitative results. Individual responses were tagged both with respondent ID number and a code indicating where in the survey the question was answered. These responses were analyzed for themes using a constant comparison method, allowing codes to be added, dropped, changed, clarified, split, and combined, as necessary (Glesne, 2011). Data were
coded for topics and themes that answer the question of why particular choices are made or why certain factors are valued by teachers. Responses that simply restated which factors were the most important, without elaborating on why, were not coded. The final code book used to code all qualitative data can be found in Appendix D. The coding process resulted in a clarification of the research question 5, particularly questions 5a and 5b, which were developed in their final form as a result of coding. Once coded, these responses were quantified and counts of the final codes were used to answer Research Questions 5a and 5b. In addition to the coding of data to determine major themes, qualitative responses were coded for one-off codes related to trends seen in the quantitative data, such as how many participants noted an explicit trade-off between monetary and nonmonetary factors.

**Mixed Methods Analysis**

Quantitized results from the qualitative analysis were mixed with quantitative data in order to address Research Questions 5c and 5d. Codes resulting from the qualitative analysis were converted to categorical data and analyzed using regression analyses, similar to the treatment of the demographic characteristics. For these analyses, the unit of analysis was the individual who stated a certain response, rather than the response itself. Because respondents had eight opportunities to respond to open-ended questions, and some responses could be coded to multiple themes, each individual was assigned a vector of dichotomous variables indicating having made a comment coded to each particular theme. How many times a respondent made a comment that was coded to a particular theme is not considered in the mixed methods analysis.
This portion of the analysis considers whether the results of the qualitative analysis systematically vary based on covariates identified through the demographic survey (Research Question 5c). This analysis also considers the extent to which there is an association between the themes identified in an individuals’ responses to open-ended questions and the importance values placed on various factors (Research Question 5d). For this latter analysis, some themes were condensed in order to generate subgroups of no fewer than 200 individuals in order to meet the minimum sample size recommended by Sawtooth Software for analysis of importance data.
CHAPTER IV
RESULTS

The results from the 2,212 respondents provide evidence of trade-offs being made between monetary and nonmonetary factors as well as an estimate of the monetary value of switching between different levels of nonmonetary factors shown in Appendix C. Evidence of this trade-off occurring is further supported by statements made by some participants in response to open-ended questions. There is evidence of teacher demographic and contextual factors influencing the values teachers place on salary and nonmonetary factors, although it is not clear from these results that typologies of teachers with similar preferences exist. Finally, qualitative responses provide insight into the reasons that teachers give for making the choices that they do, some of which covary with personal characteristics as well as with responses to the quantitative portion of the survey.

Survey Respondents

The survey was successfully distributed to 13,769 possible participants and received 2,228 complete responses for a response rate of 16.1%; those that did not complete the survey were dropped from the sample. The median response time was approximately 37 minutes, indicating that the respondents took the survey seriously. Of the 2,228 respondents, 16 were identified as being not a part of the target audience and were excluded. For example, some individuals who indicated their subject area as “elementary” or “guidance counselor” were removed from the study results before conducting any analyses. This results in a final sample of 2,212 individuals, which makes
up approximately 14.8% of the target population. Complete demographic information was received from 2,167 individuals, allowing for an analysis of key demographic differences in the importance of different factors. Finally, the results from the open-ended questions resulted in 1986 codable segments of text from 967 participants. These participants were substantially more likely to be female, although were otherwise similar to the remainder of the study population.

In order to understand how the study sample compares with the target population, a summary of the demographic information of the 2,212 participants is shown in Table 9. While the state of Utah does not publish teacher demographics, salary and teaching context (charter vs. district) are available. Approximately 11.7% of secondary teachers in the state of Utah teach in charter schools, indicating that this sample over-weighted with charter school teachers at 16.2%. The average salary among all teachers in Utah in the 2016-17 school year was approximately $47,000 (Utah State Office of Education, 2017a). If the respondents are averaged according to the center of $5,000 salary range they chose as their current salary, the average salary in this sample was $48,184, approximately 2.5% higher than the average salary in the state.

**Valuation of Nonmonetary Job Factors**

The first two questions posed by this research involved the extent to which teachers value nonmonetary job factors when considering hypothetical school options. As has been seen in other literature in this field, nonmonetary factors were found to be of value to teachers. Moreover, there is both quantitative and qualitative evidence of
Table 9

Demographic Breakdown of Study Sample

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Median</th>
<th>In sample (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td><strong>Type of school</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District</td>
<td>83.2</td>
<td></td>
</tr>
<tr>
<td>Charter</td>
<td>16.2</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle school</td>
<td>47.6</td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>52.4</td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>97.6</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Not Hispanic or Latino</td>
<td>97.6</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>42</td>
<td></td>
</tr>
<tr>
<td><strong>Years’ experience</strong></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Highest education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associates</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>45.7</td>
<td></td>
</tr>
<tr>
<td>Masters</td>
<td>49.5</td>
<td></td>
</tr>
<tr>
<td>PhD/EdD</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Other graduate</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td><strong>Salary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 30,000</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>30,000-34,999</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>35,000-39,999</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>40,000-44,999</td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>45,000-49,999</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>50,000-54,999</td>
<td>12.6</td>
<td></td>
</tr>
<tr>
<td>55,000-59,999</td>
<td>10.5</td>
<td></td>
</tr>
<tr>
<td>60,000-64,999</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
teachers making trade-offs between monetary and nonmonetary factors. Due to the nature of the ACBC survey, it is possible to quantify the value teachers in this study

**Teachers Place Value on Nonmonetary Job Factors**

Both quantitative and qualitative results indicate that teachers are willing to exchange monetary benefits for improved working conditions or other nonmonetary factors. Quantitatively, respondents placed a non-zero average importance on each factor investigated, as will be described below, which indicates that while salary matters, other factors matter as well. Figure 4 shows the utility value placed on each level of
nonmonetary factors investigated in this study. Because all factors have levels with differential utility, it is clear that these nonmonetary factors are influencing the choices made by respondents. It is clear from Figure 4 that salary has a large impact on respondents’ choices due to the high utility difference between the two different options displayed. The factor with the next most extreme difference in utility between its least and most desirable factor is teaching assignment, although the utility value difference is less than half that that is seen with salary.

There is also anecdotal evidence from the qualitative data that demonstrates that respondents were placing value on nonmonetary factors. Although not a part of the major themes described later, these select responses provide additional support for the conclusion drawn from the quantitative data that teachers place value on nonmonetary factors similar to that placed on salary. The structure of these responses were typically of the nature “while I’d rather X, the increased salary makes up for it.” Or, “I would be willing to take less money in order to have X.” Examples include: “$1000 is not a great enough addition to my salary to have 10 more students/class”; “I was willing to take $10,000 less for smaller class sizes”; and “45min more planning time a day for $2,000 less is worth it.” Throughout the open-ended responses, 89 instances of this explicit trade-off between monetary and nonmonetary factors were noted. These responses provide evidence to support a key assumption of this study, that both monetary and nonmonetary factors have value and are exchangeable for one another.
Figure 4. Average utility value for each level of each factor of the 2,212 respondents.
Relative Importance of Monetary and Nonmonetary Job Factors

A measure of importance was calculated for each individual participant for each factor. This importance value is a measure of the difference in utility value between the most and least desirable level of a particular factor. The importance value is positive and linear; a factor with an importance level of 4.0 is interpreted as being twice as important as a factor with an importance level of 2.0. Table 10 shows the average importance value across the full sample of 2,212 respondents of each factor investigated. Those factors with a different Importance Rank had average importances that were statistically significantly different from the prior most highly ranked factor (one-tailed t test; alpha = 0.05). These results indicate that while salary is the most important factor, by a large degree, there is value placed on the nonmonetary factors as well, with job assignment and

Table 10

Average Importance of Each of the 14 Factors Studied

<table>
<thead>
<tr>
<th>Importance rank</th>
<th>Factor</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salary</td>
<td>19.53</td>
</tr>
<tr>
<td>2</td>
<td>Assignment</td>
<td>9.56</td>
</tr>
<tr>
<td>3</td>
<td>Class Size</td>
<td>8.83</td>
</tr>
<tr>
<td>4</td>
<td>Curricular Autonomy</td>
<td>7.86</td>
</tr>
<tr>
<td>4</td>
<td>School Achievement</td>
<td>7.83</td>
</tr>
<tr>
<td>6</td>
<td>Administrative Support</td>
<td>7.41</td>
</tr>
<tr>
<td>7</td>
<td>Organizational Fit</td>
<td>6.59</td>
</tr>
<tr>
<td>8</td>
<td>Professional Development and Mentoring</td>
<td>5.69</td>
</tr>
<tr>
<td>8</td>
<td>Planning Time</td>
<td>5.62</td>
</tr>
<tr>
<td>10</td>
<td>Opportunities for Collaboration</td>
<td>4.93</td>
</tr>
<tr>
<td>11</td>
<td>Influence over Policies</td>
<td>4.48</td>
</tr>
<tr>
<td>11</td>
<td>Job Security</td>
<td>4.39</td>
</tr>
<tr>
<td>13</td>
<td>Student SES</td>
<td>3.89</td>
</tr>
<tr>
<td>14</td>
<td>Student Race</td>
<td>3.40</td>
</tr>
</tbody>
</table>
class size being most important. The most important nonmonetary factor, assignment, was approximately three times as important as the least important factor and all nonmonetary factors were less than half the importance of salary. The least important factors were those related to student demographics, with student race and SES being identified as the two least important factors. School achievement, on the other hand, is tied (with curricular autonomy) for the third most-important nonmonetary factor, despite the fact that it is often perceived to be related to student demographic factors.

Another way of understanding importance in this study is how many individuals had a given factor as the factor with the greatest importance. Table 11 displays the number of individuals for whom each factor was the most important. Nearly 60% of respondents had salary as the factor with the highest level of performance, with each of

Table 11

<table>
<thead>
<tr>
<th>Factor</th>
<th>Respondents for whom it is the most important factor</th>
<th>Percentage of sample for whom it is the most important factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>1,288</td>
<td>58.2</td>
</tr>
<tr>
<td>Assignment</td>
<td>286</td>
<td>12.9</td>
</tr>
<tr>
<td>Class Size</td>
<td>207</td>
<td>9.4</td>
</tr>
<tr>
<td>Curricular Autonomy</td>
<td>138</td>
<td>6.2</td>
</tr>
<tr>
<td>School Achievement</td>
<td>114</td>
<td>5.2</td>
</tr>
<tr>
<td>Administrative Support</td>
<td>89</td>
<td>4.0</td>
</tr>
<tr>
<td>Organizational Fit</td>
<td>44</td>
<td>2.0</td>
</tr>
<tr>
<td>Planning Time</td>
<td>18</td>
<td>0.8</td>
</tr>
<tr>
<td>Job Security</td>
<td>14</td>
<td>0.6</td>
</tr>
<tr>
<td>Opportunities for Collaboration</td>
<td>6</td>
<td>0.3</td>
</tr>
<tr>
<td>Professional Development</td>
<td>4</td>
<td>0.2</td>
</tr>
<tr>
<td>Influence over Policies</td>
<td>4</td>
<td>0.2</td>
</tr>
<tr>
<td>Student SES</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Student Race</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
the other factors determined to be the most important by less than 13% of the study participants. Half of the factors were found to be the most important to less than 1% of study participants. Despite these factors rarely, if ever, being found to be the most important factor, they do have non-zero importance values, indicating that teachers in this study are using these factors to make decisions. This result indicates that studies that focus on only the most important factors for teachers are likely to miss many relevant factors that are still weighed by teachers.

**Monetary Value Placed on Nonmonetary Factors**

In addition to generating the relative importance of each factor, utility values can be used to estimate a monetary value placed on the change between any two levels of a factor. These values represent an estimate of the amount of money it would take to compensate a teacher for moving from a more desirable to a less desirable level of a factor, or vice versa. Estimates of these values were derived for each individual by comparing the utility value difference between levels of a single factor with the utility value assigned to differences in salary. The values were then shifted so that the most commonly preferred level of each factor was associated with a monetary value of $0 for each individual and then a median value for the sample was found. Table 12 provides select results of this analysis.

In Table 12, the preferred level is the level with the highest average utility value among all respondents. For example, serving in a school that had 20-40% of its students in poverty is preferable to serving in a school where less than 20% of the students are in
Table 12

*Median Monetary Value Estimated for A Change in Level of Select Factors*

<table>
<thead>
<tr>
<th>Level</th>
<th>Preferred level of same factor</th>
<th>Difference in value from preferred level to given level of a factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenure is unavailable</td>
<td>Tenure is available and likely</td>
<td>$3,919</td>
</tr>
<tr>
<td>Tenure is available, but unlikely</td>
<td></td>
<td>$3,177</td>
</tr>
<tr>
<td>Teaching outside content area</td>
<td>Teaching in content area</td>
<td>$12,608</td>
</tr>
<tr>
<td>Teaching in closely-related content area</td>
<td></td>
<td>$5,902</td>
</tr>
<tr>
<td>15 students per class</td>
<td>25 students per class</td>
<td>$561</td>
</tr>
<tr>
<td>20 students per class</td>
<td></td>
<td>$250</td>
</tr>
<tr>
<td>30 students per class</td>
<td></td>
<td>$2,281</td>
</tr>
<tr>
<td>35 students per class</td>
<td></td>
<td>$5,717</td>
</tr>
<tr>
<td>&gt;35 students per class</td>
<td></td>
<td>$9,896</td>
</tr>
<tr>
<td>45 minutes of daily planning time</td>
<td>90 minutes of daily planning time</td>
<td>$1,630</td>
</tr>
<tr>
<td>45 minutes of planning time every other day</td>
<td></td>
<td>$6,227</td>
</tr>
<tr>
<td>No department or grade-level meetings dedicated to collaboration</td>
<td>Regular opportunities to collaborate with peers in grade-level and department meetings</td>
<td>$5,551</td>
</tr>
<tr>
<td>Teachers all teach a common scripted curriculum purchased by the district</td>
<td>Teachers plan a common curriculum in grade-level teams</td>
<td>$8,082</td>
</tr>
<tr>
<td>School does not have an obvious or meaningful mission statement</td>
<td>Strong agreement with school’s mission statement</td>
<td>$4,551</td>
</tr>
<tr>
<td>Disagreement with school’s mission statement</td>
<td></td>
<td>$8,448</td>
</tr>
<tr>
<td>80-100% students in poverty</td>
<td>20-40% students in poverty</td>
<td>$3,822</td>
</tr>
<tr>
<td>“B” School Rating</td>
<td>“A” School Rating</td>
<td>$259</td>
</tr>
<tr>
<td>“C” School Rating</td>
<td></td>
<td>$2,505</td>
</tr>
<tr>
<td>“D” School Rating</td>
<td></td>
<td>$6,291</td>
</tr>
<tr>
<td>“F” School Rating</td>
<td></td>
<td>$9,307</td>
</tr>
</tbody>
</table>

poverty. Also, classes of 25 students were preferable to classes of 15 or 20 students. The salary drag represents the salary amount equivalent to the decrease in utility of moving from the preferred level of a factor to the level under consideration. Alternatively, it can be thought of as the equivalent salary premium for changing from a given level to the
preferred level. Within a given factor, the difference between the salary drag for two different levels of a factor is equal to the salary drag or premium of moving between those two factors. For example, decreasing from 20 students per class to 15 is equivalent to a salary drag of $311 ($561-$250). These values represent the amount of salary needed to make a median teacher indifferent as to a change from one condition to another.

As would be expected from the result that assignment was the most important nonmonetary factor, the difference between teaching in content area and teaching out of content area is equivalent to a change in salary of $12,608, the highest value in the table. Similarly, the high importance of curricular autonomy is reflected in the high salary drag associated with teaching a scripted curriculum; compared to the preferred condition of developing curriculum in grade-level teams, being forced to teach a scripted curriculum is equivalent to a loss of $8,082 in salary. These salary drags can also be thought of as a salary premium for shifting to a preferred level of a factor. For example, providing regular opportunities for collaboration is equivalent to increasing salaries by $5,551, and having a mission statement teachers agree with is worth $4,551 over having no mission statement. However, adding a mission statement that teachers disagree with is equivalent to a salary drag of $3,889; this is calculated as the difference between the drag associated with no mission statement and with a mission statement the respondent disagrees with.

Looking at multiple levels within the same factor is revealing. Class size is a particularly interesting example. While 25 students is the preferred level, the salary drag associated with increasing class sizes gets increasingly severe as the class size is increased beyond 30 students. Moving from 25 to 30 students is equivalent to a salary
drag of $2,281 but adding 5 more to move from 30 to 35 is equivalent to a salary drag of $3,436 and any increases beyond that are equivalent to a salary drag of $4,179. Similarly, while going from an “A”-rated school to a “B”-rated school only represents a salary drag of $259, going from an “A”- to a “D”- or “F”-rated school represent a salary drag of $6,291 and $9,307, respectively. Two other examples of cases where shifts between different levels of a factor are particularly informative are for the job security and planning time factors. Having tenure be available and likely is worth $3,919 over having it be unavailable; however, having it available, but unlikely to be received is only worth $742 over not having it at all. With planning time, doubling planning time from 45 minutes per day to 90 minutes per day is only equivalent to a salary premium of $1,630, but decreasing it to 45 minutes every other day from 45 minutes every day is equivalent to a drag of $4,593. The fact that the importance of a factor depends on what possible levels of that factor are under consideration is an important finding and demonstrates the importance of investigating the details of the conditions teachers cite as influencing their labor market decisions.

The values Table 12 compare favorably to the limited existing literature, lending support to the validity of these results. Hanushek et al. (2004) found a salary incentive of 9-43% needed to incentivize moving from a suburban school to a high-minority, low-performing urban school. Boyd et al. (2003) found average incentives of $10,000 to $16,000 needed to equalize the desirability of suburban and urban schools in New York metropolitan areas. Holding student race constant, moving from an A-rated school with 20-40% low-income students to an F-rated school with 80-100% low-income students
would be equivalent to a salary loss of $13,129 or 28% of an average teacher’s salary according to the results of this study. This indicates that the results described above are in line with those found in prior studies and lends support to the valuations of other factors that are estimated for the first time in this study.

**Variation in Values**

As would be expected, there is substantial variation in the importance individual teachers place on each of the factors investigated. Table 13 displays the mean importance and the standard deviation of the importances for the set of teachers surveyed. As can be seen in this table, the values of greatest average importance also saw the largest variation in importance values. For example, salary was both the most important factor and the

<table>
<thead>
<tr>
<th>Importance rank</th>
<th>Factor</th>
<th>Mean Importance</th>
<th>SD of importance values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salary</td>
<td>19.53</td>
<td>11.78</td>
</tr>
<tr>
<td>2</td>
<td>Assignment</td>
<td>9.56</td>
<td>5.28</td>
</tr>
<tr>
<td>3</td>
<td>Class Size</td>
<td>8.83</td>
<td>5.02</td>
</tr>
<tr>
<td>4</td>
<td>Curricular autonomy</td>
<td>7.86</td>
<td>4.31</td>
</tr>
<tr>
<td>4</td>
<td>School achievement</td>
<td>7.83</td>
<td>4.38</td>
</tr>
<tr>
<td>6</td>
<td>Administrative support</td>
<td>7.41</td>
<td>3.69</td>
</tr>
<tr>
<td>7</td>
<td>Organizational fit</td>
<td>6.59</td>
<td>3.25</td>
</tr>
<tr>
<td>8</td>
<td>Professional development and mentoring</td>
<td>5.69</td>
<td>2.39</td>
</tr>
<tr>
<td>8</td>
<td>Planning time</td>
<td>5.62</td>
<td>3.09</td>
</tr>
<tr>
<td>10</td>
<td>Opportunities for collaboration</td>
<td>4.93</td>
<td>2.52</td>
</tr>
<tr>
<td>11</td>
<td>Influence over policies</td>
<td>4.48</td>
<td>2.40</td>
</tr>
<tr>
<td>11</td>
<td>Job security</td>
<td>4.39</td>
<td>3.23</td>
</tr>
<tr>
<td>13</td>
<td>Student SES</td>
<td>3.89</td>
<td>1.79</td>
</tr>
<tr>
<td>14</td>
<td>Student race</td>
<td>3.40</td>
<td>1.56</td>
</tr>
</tbody>
</table>
factor with the greatest variation in importance values. The results in Table 13 also show that some factors have particularly high or low variation relative to their average importance. While there is a definite trend between average importance and variation, the variation in importance of the factor of job security is very high relative to its average importance, while the variation within professional development and mentoring and, to a lesser extent, administrative support, is relatively low. In addition to variation in the sample as a whole, this study set out to find if this variation was associated with teacher demographics as well as whether there exist typologies of teachers who have consistent sets of preferences, which will be discussed below.

In addition to investigating variance across the sample, examining the correlations between individual importance values is revealing. Table 14 shows a correlation table between importance values for the 2,212 participants. From the table, it is striking the extent to which a high importance on Salary has a negative association with all other factors, particularly those related to school supports such as collaboration, professional development, and administrative support. It is also notable that importances for student race and SES and school achievement are highly correlated. There also seems to be a cluster of moderately correlated factors including organization fit, influence over policies, administrative support, professional development, and opportunities for collaboration. This is explored more below. Finally, it is notable that job security, planning time, class size, and assignment all have weak correlations with all other factors, except for a moderate negative association between salary and curricular autonomy.
Table 14

*Correlation Between Importance Values of Each Factor*

<table>
<thead>
<tr>
<th>Salary</th>
<th>Job security</th>
<th>Assignment</th>
<th>Class size</th>
<th>Planning time</th>
<th>Collaboration</th>
<th>Professional development</th>
<th>Administration</th>
<th>Autonomy</th>
<th>Organizational fit</th>
<th>Influence over policy</th>
<th>Student race</th>
<th>Student SES</th>
<th>School achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job security</td>
<td>-0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignment</td>
<td>-0.30</td>
<td>-0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class size</td>
<td>-0.22</td>
<td>-0.06</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning time</td>
<td>-0.09</td>
<td>-0.04</td>
<td>0.05</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>-0.47</td>
<td>-0.08</td>
<td>0.03</td>
<td>-0.05</td>
<td>-0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional development</td>
<td>-0.53</td>
<td>0.01</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.14</td>
<td>0.47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>-0.45</td>
<td>0.04</td>
<td>0.06</td>
<td>0.00</td>
<td>-0.13</td>
<td>0.37</td>
<td>0.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>-0.30</td>
<td>-0.10</td>
<td>0.09</td>
<td>-0.12</td>
<td>-0.03</td>
<td>0.09</td>
<td>0.10</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational fit</td>
<td>-0.46</td>
<td>-0.16</td>
<td>0.04</td>
<td>-0.06</td>
<td>0.33</td>
<td>0.38</td>
<td>0.27</td>
<td>0.07</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influence over policy</td>
<td>-0.38</td>
<td>-0.01</td>
<td>-0.09</td>
<td>-0.09</td>
<td>-0.07</td>
<td>0.36</td>
<td>0.41</td>
<td>0.29</td>
<td>0.12</td>
<td>0.22</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student race</td>
<td>-0.05</td>
<td>0.01</td>
<td>-0.08</td>
<td>-0.15</td>
<td>-0.10</td>
<td>-0.18</td>
<td>-0.16</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.11</td>
<td>-0.14</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Student SES</td>
<td>-0.08</td>
<td>-0.04</td>
<td>-0.07</td>
<td>-0.11</td>
<td>-0.07</td>
<td>-0.15</td>
<td>-0.15</td>
<td>-0.18</td>
<td>-0.14</td>
<td>-0.13</td>
<td>-0.13</td>
<td>0.64</td>
<td>1.00</td>
</tr>
<tr>
<td>School achievement</td>
<td>-0.13</td>
<td>-0.01</td>
<td>-0.18</td>
<td>-0.16</td>
<td>-0.13</td>
<td>-0.16</td>
<td>-0.08</td>
<td>-0.12</td>
<td>-0.17</td>
<td>-0.05</td>
<td>-0.12</td>
<td>0.44</td>
<td>0.48</td>
</tr>
</tbody>
</table>
Demographic Correlations

For all demographic analyses, a few modifications were made to the data set for ease of analysis and to obey recommendations regarding sample sizes. In order to meet the minimum subset size of 200 recommended by Sawtooth (Orme, 2010), no analyses by race or ethnicity were possible. Additionally, some categories needed to be condensed, such as turning different levels of educational achievement into a dichotomous graduate school vs. no graduate school variable. Additionally, there was a reduction in the number of subject areas analyzed, with less frequently cited categories condensed to an “other” representing non-core, non-special education teachers. Those teachers citing many subjects that crossed into multiple of the reduced categories were excluded as there were not enough “multiple subject areas” respondents to constitute a new category.

The current salary demographic question was also modified to ease the interpretation of results. The salary categories were reduced by condensing less than $30,000 and $30,000-$34,999 to less than $35,000 and upper levels of salary into a greater than $65,000 bin. Separately, the salary measure was converted to a continuous measure. This modification allows for more intuitive interpretation of results seen when treating salary as a categorical as it was collected. The conversion from categorical to continuous variable was accomplished by assigning each member of a salary range bin an approximate salary at the center of the bin (ex. All respondents who reported a salary of $40,000-$44,999 were assigned a salary of $42,500). On the extremes, all less than $30,000 respondents were assigned a salary of $27,500 and those over $85,000 were assigned a salary of $87,500. Finally, preparation pathway, such as whether a teacher
received a Bachelor’s degree in education or was in an alternative route to licensure program, was not analyzed due to confusion over the options provided that was communicated by a number of respondents in their open-ended responses or in emails to the researcher.

Demographic analyses were only conducted on those with complete demographic responses. This reduced the sample to 2,166 individuals. This more-limited sample is only utilized for the results in this particular section.

Table 15 displays the results of running simple regressions (alpha = 0.05) of the demographic characteristics on the utility value of each factor. It should be noted that some of the demographic factors were highly correlated. In particular, age and experience ($r = 0.74$), age and current salary ($r = 0.55$), and experience and current salary ($r = 0.70$).

Unsurprisingly, age and experience are also correlated with educational attainment, with those with graduate degrees being on average 7 years older with 6.4 more years’ experience, making on average nearly $12,000 more per year.

Key findings from this portion of the study include: more-experienced, higher-paid teachers care substantially more about salary and substantially less about nearly all nonmonetary factors than less-experienced and lower-paid teachers; teacher preferences are context-dependent, with large differences among teachers who teach in different types of schools and teaching different subject areas showing different preferences; and gender and marital status intersect to reveal large differences in preferences.

**Salary and experience.** As noted above, experience and current salary are correlated, so it is not surprising to see similar relationships between each of these
### Table 15

Statistically Significant (p < 0.05) Relationships Between Teacher Demographics and Factor Importance Values as Determined by Simple Regression

<table>
<thead>
<tr>
<th>Demographic factor</th>
<th>Salary</th>
<th>Tenure</th>
<th>Assignment</th>
<th>Class size</th>
<th>Planning time</th>
<th>Collaboration</th>
<th>Professional development</th>
<th>Administration</th>
<th>Autonomy</th>
<th>Organizational fit</th>
<th>Influence over policy</th>
<th>Student race</th>
<th>Student SES</th>
<th>School achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subject (math reference group)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>-1.80***</td>
<td>-1.08**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Science</td>
<td>2.59**</td>
<td>-1.51***</td>
<td>-1.88***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.44*</td>
<td>-1.67***</td>
<td>-0.79***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Ed</td>
<td>0.64*</td>
<td>-2.37***</td>
<td>2.37***</td>
<td>-0.64*</td>
<td>0.44*</td>
<td>-0.78*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS (vs HS)</td>
<td>-1.44**</td>
<td>-0.52*</td>
<td>0.63**</td>
<td>-0.73***</td>
<td>0.38***</td>
<td>0.47**</td>
<td></td>
<td></td>
<td>0.31*</td>
<td></td>
<td></td>
<td>0.23*</td>
<td>0.26*</td>
<td></td>
</tr>
<tr>
<td><strong>District (vs Charter)</strong></td>
<td>2.14**</td>
<td>1.49***</td>
<td>-2.58***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Location (Suburban reference group)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>0.49*</td>
<td>-1.00***</td>
<td>1.64***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.31*</td>
<td>0.53*</td>
<td>-0.58*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>0.54*</td>
<td>1.02***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Years’ experience</strong></td>
<td>0.26***</td>
<td>0.04***</td>
<td>-0.04***</td>
<td>-0.08***</td>
<td>-0.02*</td>
<td>-0.04***</td>
<td>-0.03***</td>
<td>-0.03*</td>
<td></td>
<td>-0.04***</td>
<td>-0.06***</td>
<td>-0.28**</td>
<td>-0.46***</td>
<td>-1.17***</td>
</tr>
<tr>
<td><strong>Graduate Degree (vs. Non)</strong></td>
<td>5.55***</td>
<td>0.31*</td>
<td>-0.52*</td>
<td>-1.07***</td>
<td>-0.35***</td>
<td>-0.59***</td>
<td>-0.55***</td>
<td>-0.61***</td>
<td></td>
<td>-0.42*</td>
<td>-0.83***</td>
<td>-0.26*</td>
<td>-0.47*</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>0.15***</td>
<td>0.03***</td>
<td>-0.05***</td>
<td>-0.02*</td>
<td>-0.02***</td>
<td>-0.02***</td>
<td>-0.01*</td>
<td>-0.03***</td>
<td></td>
<td>-0.03***</td>
<td>-0.03***</td>
<td>0.01*</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Male (vs. Female)</strong></td>
<td>6.44***</td>
<td>-0.91***</td>
<td>-0.67**</td>
<td>-0.83***</td>
<td>-0.70***</td>
<td>-1.13***</td>
<td>-0.70***</td>
<td>-1.03***</td>
<td></td>
<td>-0.54***</td>
<td>0.20**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Married (vs. unmarried)</strong></td>
<td>1.24*</td>
<td>0.32*</td>
<td></td>
<td>-0.74***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.24**</td>
<td>0.54*</td>
<td></td>
</tr>
<tr>
<td><strong>Current Salary (1000s of dollars)</strong></td>
<td>0.28***</td>
<td>0.03***</td>
<td>-0.04***</td>
<td>-0.07***</td>
<td>-0.01*</td>
<td>-0.03***</td>
<td>-0.03***</td>
<td>-0.03***</td>
<td></td>
<td>-0.03***</td>
<td>-0.05***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < 0.05
** p < 0.01
*** p < 0.001
demographic factors and the importance of each monetary and nonmonetary job factor. Increases in salary and experience are associated with an increase in the importance of salary and job security, and a decrease in the importance of every nonmonetary factor except for influence over policies, school achievement, student race, and student SES. Thus, once teachers reach a certain level of experience or salary, additional salary and job security are substantially more important than other factors. This is possibly an artifact of the range of salary utilized in this study, which varied from 70% to 130% of the state average salary; for teachers whose current salaries are at or above that upper bound, it is possible that these results overstate their salary sensitivity. There are two additional possible explanations that may explain this phenomena, which are explored below.

First, it could be hypothesized from these results that teachers are more willing to exchange salary for nonmonetary benefits only to the extent that the final salary does not represent a decrease from their current salary. In other words, teachers may be exhibiting loss aversion with regards to salary; they may be unwilling to give up a salary level that has already been attained. Secondly, it is also possible that inexperienced teachers feel as though their success depends on additional supports such as professional development and administrative support or easier conditions such as smaller classes or teaching in content area. While these are likely both contributing factors, anecdotally, there were instances of individuals describing a resistance to losing salary in the open-ended questions. Examples from three respondents follow: “If the salary is lower than my present salary, I rejected that possibility. I did not become a teacher to grow rich, this is merely a starting point.”; “A lot of it has to do with money. I can’t afford to go back and
only get paid 40,000. A lot of my answers would be different if I was just starting out.”;
“Money is a driving force because of my age. I really don’t want to go backwards in my
earning potential.” While this was not a theme analyzed in the primary qualitative
analysis, there is nevertheless some evidence supporting the claim that respondents are
exhibiting loss aversion.

In order to better understand the impact of salary and experience individually, the
two variables were turned into three approximately equally-sized groups and once again
run in a simple regression against each factor. The results are shown in Table 16. It is
clear that lower paid and inexperienced teachers place a much lower value on salary and
job security and much higher importance on assignment, class size, opportunities for
collaboration, professional development, administrative support, organizational fit, and to
a lesser extent school achievement and student SES in comparison to higher paid
teachers. The highest paid teachers continue to care even more about job security, and
less about organizational fit and class size than even the moderately paid teachers. Both
the highest and lowest paid groups of teachers place a higher importance on influence
over policies than the middle group. Similar trends are seen with experience, where the
least experienced teachers placed relatively higher importance on class size, professional
development, administrative support, and organizational fit, while the most experienced
care the most about salary and job security, less so about assignment, organizational fit,
opportunities for collaboration, or curricular autonomy. Both the most and least
experienced care more about school achievement than mid-career teachers. In all groups,
salary continues to be more important, on average, than all nonmonetary factors, despite
Table 16

Relationship Between Importance Values for All Investigated Factors and Salary and Experience When Salary and Experience Are Converted to Categorical Variables

<table>
<thead>
<tr>
<th>IV levels</th>
<th>Salary (as compared to 40-55 k salary)</th>
<th>Experience (as compared to those with 6-14 years' experience)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40k</td>
<td>-8.10*** -0.32* 0.98*** 1.41***</td>
<td>-5.21 1.33*** 0.60*** 0.69*** 0.71*** 0.52*** 0.27* 0.49*</td>
</tr>
<tr>
<td>&gt;55k</td>
<td>0.68*** -1.09***</td>
<td>2.05*** 0.55** -0.56* -0.41* -0.66* -0.82** 0.46*</td>
</tr>
</tbody>
</table>

Note. Blank columns represent factors with no statistically significant differences between categories of the demographic variables.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$. 

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the large differences in the importance of salary between groups.

In order to determine the relative impact of these related characteristics, multiple regressions were conducted with experience and the linear salary measure predicting the importance of Salary and select nonmonetary factors. Due to the high correlation between these two characteristics, the variance inflation factor (VIF) was measured. The VIF is equal to only 2.0, indicating that there is not a major collinearity concern (Cohen, Cohen, West, & Aiken, 2003, pp 423-424). In the model with the importance of salary as the dependent variable, current salary was predictive of the importance of salary \( (p < 0.001) \), while experience was not, indicating that the trend towards preferring salary over nonmonetary factors at high levels of experience and salary is likely more driven by a loss aversion to salary than by the experience level. A similar result is found with a sample nonmonetary factor such as professional development. The importance of professional development is negatively correlated with increases in experience and current salary individually, but when both experience and current salary are used as predictors, current salary remains predictive of the importance of professional development \( (p < 0.001) \), but experience does not. The same trend held for all nonmonetary factors tested, including administrative support, opportunities for collaboration, and organizational fit.

**Context factors.** A teacher’s current context had a large influence on his/her preferences in some cases. Middle school and high school teachers had substantially different preferences in some cases, as did rural, urban, and suburban teachers, charter versus district teachers, and teachers of different subject areas.
Middle-school teachers showed a substantially lower sensitivity to salary than high-school teachers, as well as less concern about teaching assignment or planning time. However, middle school teachers were more concerned with class size, school achievement, and administrative support than high-school teachers, and somewhat more concerned about collaboration time, organizational fit, and professional development.

The location of the school in which a teacher is currently employed also influenced preferences. As seen in Table 15, compared to teachers in suburban schools, teachers in both urban and rural schools placed a higher importance on job security and a substantially higher importance on class size. Unsurprisingly, teachers in urban schools were less concerned with student demographics or school achievement and those in rural schools placed a substantially lower importance on teaching assignment, possibly because rural school teachers may sometimes be expected teach multiple areas in small schools.

District and charter school teachers demonstrated many substantially different preferences. District teachers were substantially more concerned with salary and tenure and substantially less with class size and organizational fit than charter school teachers. Additionally, district teachers placed a somewhat higher importance on student demographic factors than charter school teachers, although there was no significant difference in the importance placed on overall school achievement.

Teachers of different subject areas were found to have different preferences, particularly with regards to teaching assignment, class size, and curricular autonomy. Math teachers were significantly more concerned with their teaching assignment than all
other core subject area teachers. Class size mattered the most to special education teachers, then math teachers, with all other subject areas placing a significantly lower importance on class size than those two groups. Social studies teachers placed the lowest importance on class size of all subject areas. Curricular autonomy was valued less by special education teachers and more by all other teachers compared to math teachers. English teachers in particular placed an especially high importance on curricular autonomy. Social studies teachers placed a substantially higher importance on salary than math teachers, with no other subject areas showing a significant difference.

Gender and marital status. While each gender and marital status provided some interesting trends, there was a particularly strong impact found when looking at the intersection of these two demographic factors. For example, married men placed a substantially higher level of importance on salary than others, and married women placed a significantly lower value on salary than others, with unmarried men and women in the middle and not statistically different from one another. This relationship held even after controlling for current salary, which is associated both with gender/marital status and the importance of salary. The average married male had an importance value of salary that was 8.7 points higher than an average married female. This difference is greater than the average importance value of almost all of the nonmonetary factors, indicating a very large and meaningful effect. Married men also tended to place substantially lower levels of importance on nonmonetary factors such as teaching assignment, planning time, and professional development than all other groups. Married women placed a statistically significantly higher importance on student SES and school achievement than other
participants. Despite the large differences in the importance placed on salary, there were no gender or marital status relationships with the importance placed on job security.

**Typologies of Teachers**

This study aimed to identify any typologies of teachers that may exist based on sets of correlated preferences. The aim was to find sets of factors that tended to have consistently high and low importances for particular sets of teachers. Latent Class Analysis was utilized for this analysis, with three different analyses completed. In each case, the optimal model was chosen by seeking a minimal Bayesian Inference Criterion (BIC) within each analysis. The first analysis completed looked for latent classes utilizing the importance values of all 14 factors analyzed in this study. The optimal model in this case had 12 classes. A second analysis was done utilizing only the five factors with the highest average importance and highest standard deviation of importance. This analysis also had 12 classes in the optimal model. A third analysis was attempted that grouped the 14 factors studied into four sets of factors, averaging the component factor importances for each individual to generate a composite factor importance. The four sets of factors are shown in Table 17. This third analyses had >25 classes. Taken together, these results indicate that there are not clear typologies of teachers in this sample.

Because of the lack of success with LCA in determining classes of teachers, exploratory factor analysis was conducted to explore the underlying structure of the factor importance data. The optimal number of factors ranges from 2 to 5 depending on criterion used, with Optimal Coordinates indicating 2 factors, Acceleration Factor indicating 3, and Parallel Analysis indicating 5. The results of the three different factor
Table 17

Sets of Factors Utilized for Latent Class Analysis

<table>
<thead>
<tr>
<th>Factor Set 1: Salary</th>
<th>Factor Set 2: Job conditions</th>
<th>Factor Set 3: Support factors</th>
<th>Factor Set 4: Student/ school factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>Job security</td>
<td>Collaboration</td>
<td>Student race</td>
</tr>
<tr>
<td></td>
<td>Assignment</td>
<td>Professional development</td>
<td>Student SES</td>
</tr>
<tr>
<td></td>
<td>Class size</td>
<td>Administrative support</td>
<td>School achievement</td>
</tr>
<tr>
<td></td>
<td>Curricular autonomy</td>
<td>Planning time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Influence over policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organizational fit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

analyses are shown in Table 18. In each analysis, varimax rotation is used and loadings less than 0.2 are suppressed in the table.

It is clear from the results in Table 18 that there is an underlying factor with heavy weights on student race, SES, and school achievement and a less negative weight on salary than other factors. There is also a definite trade-off between salary and support factors such as collaboration, professional development, and administrative support and the organizational fit and influence factors. In each of the three analyses, the factor with the most negative weight on salary also has a relatively high weight on these sets of factors.

Qualitative Results

Each of the 2,212 respondents were provided two opportunities at each of four points in the survey to answer a question related to why they made the choice they did. Approximately 93% of these cells were filled with text. Some of these responses were nonsense responses, while many others did not provide an answer to why a choice was
Table 18

Factor Loadings from 2-, 3-, and 5- Factor Exploratory Factor Analysis Results

<table>
<thead>
<tr>
<th>Importance value</th>
<th>2-Factor</th>
<th>3-Factor</th>
<th>5-Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>-0.94</td>
<td>-0.25</td>
<td>-0.76</td>
</tr>
<tr>
<td>Tenure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignment</td>
<td>0.28</td>
<td></td>
<td>0.51</td>
</tr>
<tr>
<td>Class size</td>
<td>0.21</td>
<td></td>
<td>0.33</td>
</tr>
<tr>
<td>Planning time</td>
<td>0.55</td>
<td>0.64</td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>0.60</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>PD</td>
<td>0.50</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>0.32</td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>Autonomy</td>
<td>0.51</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>Organizational fit</td>
<td>0.44</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>Influence over policy</td>
<td>0.75</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>Student race</td>
<td>0.80</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>Student SES</td>
<td>0.61</td>
<td>0.63</td>
<td></td>
</tr>
</tbody>
</table>

made, but instead cited a factor of importance. Additionally, in many cases, there was repetition of responses across the eight responses for a single individual. Segments were only coded if they provided insight into why a choice was made, rather than simply which factors influenced the choice. Substantially similar responses within a single individual were only coded once. The result was 1,986 codable segments across 967 individuals.

**Major Themes**

The 1,986 segments were coded for the reasons given for making a particular choice. Using the methods described above, 33 distinct codes were identified, some of which contained subcodes. These codes differed in the type of benefit that was described
as being received for making the choice as well as the primary beneficiary of the benefit described. As a result, codes were organized into a two-dimensional matrix that identifies the primary form of the benefit cited on one axis and the primary beneficiary of the benefit on the other axis. The first axis answers the question “what form does the benefit that is being described by the respondent take?” This axis was broken down to monetary and nonmonetary benefits, with nonmonetary further broken down into tangible or observable benefits versus intangible or unobservable benefits (for example personal effectiveness versus feelings of satisfaction, respectively). The beneficiary axis answers the question “who is the primary beneficiary of the reason cited by the participant?” The codes revealed beneficiaries including the respondent themselves, the respondent’s family, the students in the school, the school as a whole, teachers in the abstract, or the respondent’s content area. The 10 most common responses are displayed in Table 19. Table 20 displays the codes in each section of the coding matrix as well as the number of segments assigned that particular code. Italicized text represents sub-codes. Table 21 shows a cross table of the results by each axis of the coding matrix, indicating the relative prevalence of codes in each area of the matrix both overall and within a single axis.

Despite the second most commonly cited benefit being that the chosen school would create a better environment for students, the results of Tables 19 and 21 make it clear that the majority of reasons were self-oriented. Responses that primarily referred to benefits to the respondent represented 61.2% of codable responses and the most common code identified in the data was that the school chosen would enable the respondent to be more effective. Additionally, there were a substantial number of responses that were
Table 19

*The 10 Most Frequently Cited Reasons Respondents Gave for Making the Choices That They Did*

<table>
<thead>
<tr>
<th>Reason for choosing the selected option</th>
<th>Number of times the reason was coded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases the respondent’s own effectiveness</td>
<td>240</td>
</tr>
<tr>
<td>Creates a better environment for students (without referring to actual impacts on student outcomes)</td>
<td>200</td>
</tr>
<tr>
<td>The respondent wants more money (without any specific reason cited)</td>
<td>187</td>
</tr>
<tr>
<td>Difficulty of the job (including 79 who specifically cited a challenging student population and 22 who cited the challenge as a positive factor)</td>
<td>164</td>
</tr>
<tr>
<td>Increases the respondent’s satisfaction with his/her job</td>
<td>152</td>
</tr>
<tr>
<td>Increases the overall effectiveness of the school as an organization</td>
<td>147</td>
</tr>
<tr>
<td>Money needed to support his/her family</td>
<td>116</td>
</tr>
<tr>
<td>“Make a difference” (without referencing anything concrete such as achievement; including 50 who specifically cited making a difference for students in need)</td>
<td>105</td>
</tr>
<tr>
<td>Money needed for basic survival (“make a living”)</td>
<td>103</td>
</tr>
<tr>
<td>The respondent feels as though a high salary is deserved</td>
<td>92</td>
</tr>
</tbody>
</table>

related to self-oriented monetary reasons for making a choice, representing 20% of the overall codable responses. The need for money to support a family was also a common theme, which is aligned to the quantitative result regarding the importance of salary interacting with gender and marital status. In terms of nonmonetary and intangible impacts, feelings of job satisfaction and factors related to making the job more or less difficult together made up a substantial number of the overall responses. A significant subset (48%) of those discussing the difficulty of the job cited the fact that the student population being more or less difficult was a reason for choosing the school they did.
# Table 20

**Frequency of Codes in Qualitative Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Self</th>
<th>Family</th>
<th>Students</th>
<th>School at large</th>
<th>Teachers at large</th>
<th>Content area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monetary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Want more money 
  \(n = 187\) | Support family 
  \(n = 116\) | Make a difference – achievement 
  \(n = 19\) | Growth/change in student achievement 
  \(n = 19\) | Teachers deserve pay 
  \(n = 49\) | Can develop a strong program 
  \(n = 7\) |                       |
| Make a living 
  \(n = 102\) |                                | Make a difference – achievement 
  \(n = 19\) | Growing and change in school achievement 
  \(n = 3\) | Teacher’s needs are met 
  \(n = 3\) | Students learn what is important 
  \(n = 2\) |                       |
| Future financial planning 
  \(n = 12\) |                                |                               |                              |                 |                   |                       |
| I deserve pay 
  \(n = 92\) |                                |                               |                              |                 |                   |                       |
| **Non-Monetary**               |                               |                               |                              |                 |                   |                       |
| Personal protection/security 
  \(n = 14\) | Better for my children 
  \(n = 1\) | Better for students 
  \(n = 200\) | Growth/change in school achievement 
  \(n = 3\) | Protection/security from external sources 
  \(n = 4\) |                       |                       |
| Personal effectiveness 
  \(n = 240\) | Security for family 
  \(n = 4\) | Make a difference – achievement 
  \(n = 19\) | Organizational effectiveness 
  \(n = 147\) | Teacher’s needs are met 
  \(n = 3\) | Students learn what is important 
  \(n = 2\) |                       |
| Amount of time the job takes 
  \(n = 56\) | Family work/life balance 
  \(n = 13\) |                               |                              |                 |                   |                       |
| Work/life balance 
  \(n = 19\) |                                |                               |                              |                 |                   |                       |
| **Intangible/Unobservable**    |                               |                               |                              |                 |                   |                       |
| Satisfaction 
  \(n = 126\) | Feel needed 
  \(n = 4\) | Make a difference – not achievement 
  \(n = 55\) | Change in school culture/mission 
  \(n = 26\) | Respect/professionalism 
  \(n = 38\) |                       |                       |
| Feel needed 
  \(n = 4\) | Feel a part of change 
  \(n = 22\) | Emphasis on those in need 
  \(n = 3\) |                              | Less teacher burnout 
  \(n = 2\) |                       |                       |
| Feel valued 
  \(n = 18\) |                                |                              |                              |                 |                   |                       |
| Feel respected/treated as a professional 
  \(n = 55\) |                                |                              |                              |                 |                   |                       |
| Climate makes him/her happy to go to work 
  \(n = 61\) |                                |                              |                              |                 |                   |                       |
| Burnout/retention 
  \(n = 14\) |                                |                              |                              |                 |                   |                       |
| Stress 
  \(n = 30\) |                                |                              |                              |                 |                   |                       |
| Difficulty of the job 
  \(n = 63\) | Easier/More challenging students 
  \(n = 79\) |                               |                              |                 |                   |                       |
| Embrace challenge 
  \(n = 22\) |                               |                              |                              |                 |                   |                       |

*Note.* Codes in italics are subcodes of those immediately preceding. Frequencies are not inclusive of subcodes, if any.
### Table 21

**Cross Table of the Two Axes of the Coding Matrix Used to Code Responses Indicating Why a Respondent Made a Particular Choice**

<table>
<thead>
<tr>
<th>Type of benefit</th>
<th>Self</th>
<th>Family</th>
<th>Students</th>
<th>School at large</th>
<th>Teachers at large</th>
<th>Content area</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monetary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>393</td>
<td>116</td>
<td>49</td>
<td>498</td>
<td>558</td>
<td></td>
<td>558</td>
</tr>
<tr>
<td>% of sample</td>
<td>19.8</td>
<td>5.8</td>
<td>2.5</td>
<td>28.1</td>
<td>30.8</td>
<td></td>
<td>28.1</td>
</tr>
<tr>
<td>% of monetary results</td>
<td>70.4</td>
<td>20.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of self-results</td>
<td>32.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nonmonetary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangible/observable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>329</td>
<td>18</td>
<td>223</td>
<td>253</td>
<td>763</td>
<td></td>
<td>763</td>
</tr>
<tr>
<td>% of sample</td>
<td>16.6</td>
<td>0.9</td>
<td>11.2</td>
<td>8.9</td>
<td>38.4</td>
<td></td>
<td>38.4</td>
</tr>
<tr>
<td>% of tangible nonmonetary results</td>
<td>43.1</td>
<td>2.4</td>
<td>29.2</td>
<td>23.2</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of self-results</td>
<td>27.1</td>
<td></td>
<td>13.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intangible/unobservable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>494</td>
<td>105</td>
<td>26</td>
<td>40</td>
<td>665</td>
<td></td>
<td>665</td>
</tr>
<tr>
<td>% of sample</td>
<td>24.9</td>
<td>5.3</td>
<td>1.3</td>
<td>2.0</td>
<td>33.5</td>
<td></td>
<td>33.5</td>
</tr>
<tr>
<td>% of intangible nonmonetary results</td>
<td>74.2</td>
<td>15.8</td>
<td>3.0</td>
<td>6.0</td>
<td>66.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of self-results</td>
<td>40.6</td>
<td></td>
<td>32.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,216</td>
<td>328</td>
<td>203</td>
<td>96</td>
<td>1,986</td>
<td></td>
<td>1,986</td>
</tr>
<tr>
<td>% of sample</td>
<td>61.2</td>
<td>16.5</td>
<td>10.2</td>
<td>4.8</td>
<td>100.0</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>
There were 79 responses (4.0% of all responses) that mentioned student composition influencing the ease or difficulty of the job as a reason for their choice.

In addition to looking at the number of times certain themes were cited, it is meaningful to analyze how individuals responded. Of the 967 individuals with a coded response, 193 (20%) cited only monetary reasons for making a particular, 531 (55%) cited only nonmonetary reasons, and 243 (25%) cited a mix of monetary and nonmonetary reasons. Nearly half of the respondents (447; 46%) cited only reasons that benefitted themselves personally, 46 (5%) cited only benefits to their family, and 29 (3%) cited reasons that benefit themselves and their families. Another 178 (18%) cited factors that benefit the students, the school, teachers, and/or the content area and not self or family. The remaining 267 (28%) cited reasons that benefit both either their selves and/or their families as well as one of the other categories of beneficiaries.

**Demographic Breakdowns of Themes**

The qualitative results described were correlated with respondent demographic factors. Unsurprisingly, current salary has a statistically significant impact on the likelihood that an individual would cite only monetary reasons for making his/her choice, with high salary respondents more likely to cite monetary reasons for making his/her choices as opposed to citing only nonmonetary factors. More experienced and male teachers were also more likely to give only monetary reasons rather than nonmonetary reasons or a mix of monetary and nonmonetary reasons. Of that small set of respondents (n=9) who indicated reasons where the primary benefit was for the content area as a whole, two-thirds were fine arts teachers.
Mixed Methods Results

It is possible to see how the reasons given to explain choices throughout the survey are related to the importance values generated for the individuals. Unfortunately, many of the specific reasons were too rarely stated to find correlations between those responses and importance values, however there were enough respondents who cited a reason coded as increasing personal effectiveness to look at how they differ from other respondents. Additionally, importance values can be compared among individuals who cited only nonmonetary reasons versus those who also (or exclusively) cited monetary reasons. Comparisons can also be made among individuals who only cited reasons benefitting themselves or their families in comparison to those who also (or exclusively) cited reasons benefitting students, teachers at large, the school, or their content area. The results from these analyses are seen in Table 22.

These results are somewhat intuitive, indicating that there seems to be alignment between what the respondents gave for their reasons and the utility values the survey software generated. The individuals who gave a reason related to increasing their own effectiveness valued factors related to increasing teacher effectiveness, such as class size, professional development, planning time, and administrative support more so than individuals that gave any other reasons for their choices. These individuals also valued salary less respondents who cited any other reason for their choices.

It is also clear from Table 22 that the teachers who cited only nonmonetary reasons for their choices place a substantially lower importance on salary and higher importance on nonmonetary factors. This demonstrates that while salary is an important
Table 22

Statistically Significant \( (p < 0.05) \) Differences in Factor Importance Between Individuals Who Did and Who Did Not Provide Specific Sets of Reasons for Making Their Choices

<table>
<thead>
<tr>
<th>Cited reason</th>
<th>Salary</th>
<th>Tenure</th>
<th>Assignment</th>
<th>Class size</th>
<th>Planning time</th>
<th>Collaboration</th>
<th>Professional development</th>
<th>Administration</th>
<th>Autonomy</th>
<th>Organizational fit</th>
<th>Influence over policy</th>
<th>Student race</th>
<th>Student SES</th>
<th>School achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cites personal effectiveness</td>
<td>-3.75***</td>
<td></td>
<td></td>
<td>0.79*</td>
<td>0.87*</td>
<td>0.49*</td>
<td>0.73*</td>
<td></td>
<td>0.92***</td>
<td>0.49*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonmonetary Reasons Only</td>
<td>-9.57***</td>
<td>0.90**</td>
<td></td>
<td></td>
<td></td>
<td>1.29***</td>
<td>1.25***</td>
<td>1.51***</td>
<td>0.86**</td>
<td>1.35***</td>
<td>0.97***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only self or family benefit</td>
<td>4.90***</td>
<td>-0.43*</td>
<td>-0.71*</td>
<td></td>
<td>-0.98***</td>
<td>-0.91***</td>
<td>-0.67**</td>
<td></td>
<td></td>
<td>-0.56***</td>
<td>0.38***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Sample reduced only to those who gave a codable response at some point during the survey. Blank columns represent factors with no statistically significant relationship with any of the cited reasons displayed in the table.

* \( p < 0.05 \).
** \( p < 0.01 \).
*** \( p < 0.001 \).
factor overall, there is a set of individuals for whom nonmonetary factors are more important and salary substantially less important than teachers at large. Salary is still the most important factor for this group that only cited nonmonetary reasons for choosing between schools, but the gap between the importance level of salary and other factors is substantially narrowed for this group.

Those who cited reasons benefiting primarily themselves or their families show the opposite trend. These individuals placed a significantly higher average importance of salary and placed relatively lower value on factors such as organizational fit, class size, collaboration, and professional development. This group surprisingly also had a somewhat lower average value on tenure.

Overall, the limited mixed methods analysis indicates that there is alignment between the choices made in the ACBC survey and the reasons teachers give for making those choices. These results also indicate that, while there were no typologies found in the earlier analysis, there are sets of teachers who through stated preference, as well as their choices, demonstrate a strong preference for monetary benefits over nonmonetary benefits and a separate group that places a relatively higher value on nonmonetary benefits.

**Summary of Results**

The results from this study support and expand upon prior research in the teacher recruitment and retention field. This study supports the conclusion from prior research that monetary factors have a large impact on teacher choices, but that many other factors
matter as well. In particular, this study finds that, given the range of options available, salary is on average the most important factor, but that there is a great deal of variation in individual teachers’ preferences. Over 40% of respondents had a nonmonetary factor as their most important factor. While no identifiable typologies of teachers were found, a great deal of demographic trends were identified. In particular, older, more experienced, and higher-paid teachers placed a higher importance on salary than others. Other teachers placed a relatively higher value on nonmonetary factors, especially those related to teacher effectiveness. Teachers in district schools and married men also placed a particularly high value on salary. Despite these differences in the importance placed on salary, all subgroups studied had salary as the factor with the highest average importance.

The results from the qualitative portion of the study support the quantitative results. A mix of monetary and nonmonetary benefits were cited by respondents to explain the choices that they made. There was a correlation between the qualitative responses and importance values, with those citing nonmonetary reasons, especially those citing personal effectiveness, placing a high importance on support factors such as professional development and administrative support, and a relatively low importance on salary.

Although student demographic factors had the lowest average importance, school achievement was an important factor, on average, and was highly correlated with these demographic factors. The importance of school achievement did not vary in many subgroups but had a large overall impact on school desirability across the study sample. Moving from a highly-rated to poorly rated school was equivalent to a salary difference
Similarly, large salary drags were associated with teaching out of content area ($12,608) and teaching classes over 35 students ($9,896 worse than teaching a class of 25). Teaching a scripted curriculum was over $8,000 worse than teaching a curriculum developed in grade-level teams. More moderate salary drags were associated with removing tenure availability ($3,919), cutting planning time in half from 45 minutes a day to 45 minutes every other day ($4,597), removing opportunities to collaborate in department or grade-level teams ($5,551), and moving from strong agreement with a mission statement to no mission statement ($4,551). Many of these factors showed non-linear relationships between desirability and different levels of the factor. School achievement, amount of planning time, and class size all have relatively small differences in value between some levels and rather large differences between others, indicating that the levels under consideration greatly impact the importance of these factors.
CHAPTER V
DISCUSSION

The results of this study advance the field of teacher recruitment and retention by utilizing a novel methodology to better understand how teachers choose among competing school options when selecting an employment opportunity. This study provides additional support for concepts established in the recruitment and retention literature that provide the theoretical basis for related research, in particular that both monetary and nonmonetary factors influence teachers’ labor market decisions. This study also provides results of practical use to administrators and policymakers aiming to address teacher shortages or the inequitable distribution of highly qualified teachers, particularly those interested in the population studied in this research: secondary teachers in the state of Utah. Especially salient findings include: an estimate of the salary needed to compensate a teacher for teaching in an “F”-rated school ($9,300); evidence of loss aversion among highly-paid teachers; the high variation in the relative importance of salary; and specific recommendations for low-cost changes administrators can make to their schools to make them desirable to teachers. Finally, the research also demonstrates opportunities for this research methodology to advance research in the field of teacher recruitment and retention and reveals potential lines of future research.

Theoretical Implications

This research is based on two key assumptions from the literature: first, that both monetary and nonmonetary job factors influence teachers’ labor market decisions and,
second, that teachers appear willing to exchange money for nonmonetary working conditions. This research adds to the substantial body of research that has identified a number of nonmonetary job factors influencing teacher recruitment and retention (e.g., Boyd et al., 2005; Scafidi et al., 2007; Schaefer et al., 2012; Stotko et al., 2007) by providing more support for the fact that teachers are utilizing these factors to choose among competing job options. Although results of this study clearly indicate that salary has a substantial impact on decisions made by teachers, there are also a variety of other factors that play a role. The finding of non-zero importances on each of the 13 nonmonetary factors as well as the finding that over 40% of respondents had a factor other than salary as their most important factor both indicate that teachers are weighing nonmonetary factors into their choices. Additionally, there are 89 examples of open-ended responses, described above, that provide evidence that teachers are explicit about the trade-offs that they are making between monetary and nonmonetary factors, as is theorized in the compensating differentials literature (Boyd et al., 2003; Brunner & Imazeki, 2010; Hanushek et al., 2004). Taken together, the results of this study support the conclusion from the literature review above that while money matters, other factors matter as well.

The results do indicate substantially lower preferences for many nonmonetary factors as teachers’ salaries increase, which may indicate a limitation on the extent to which monetary and nonmonetary factors can be exchanged. The quantitative results indicate that as teachers increase in salary, the importance that they place on salary increases and the average importance they place on nonmonetary factors decreases.
Although an alternative hypothesis may consider that experience and lack of need for professional supports is the driver of this phenomenon, results of multiple regression analyses indicate that current salary is the stronger predictor of changes in the importance of salary and nonmonetary factors. The qualitative results also show that teachers with higher current salaries were more likely to cite only monetary reasons for their choices. Additionally, the qualitative results provide a number of examples of individuals citing, in essence, that they have a salary floor or that they cannot make less money than they currently do, regardless of working conditions.

Due to the high correlation between experience and salary, additional research is needed to further investigate which factor is the primary driver of the lack of responsiveness to nonmonetary factors among late-career, high-salary teachers, and whether this represents a hard salary floor or just an increased importance of salary. It is possible that the assumption made by this study that monetary and nonmonetary factors can be freely exchanged has a limitation in the form of a hard salary floor that each teacher will not cross. The number of respondents citing needing money in order to “make a living” \( n = 102 \) or support their families \( n = 116 \) provides some additional support for this hypothesis, but additional research is required to better understand the relationship between current salary, experience, and the importance of salary to a teacher. Despite this possible limitation, this study provides evidence that the assumptions made at the outset regarding the importance of nonmonetary job factors and the willingness of individuals to exchange monetary and nonmonetary factors broadly hold true.
Implications for Practitioners

This study is motivated by the challenge that schools, particularly hard-to-staff schools, face in recruiting and retaining high-quality teachers. This challenge not only affects student achievement overall (Darling-Hammond, 2010; Ferguson, 1991; Hanushek, Kain, & Rivkin, 2004a; Sanders & Rivers, 1996; Sanders et al., 1997), but also likely contributes to achievement gaps between different student populations (Darling-Hammond, 2010; Lankford et al., 2002). Therefore, a key aim of this study was to generate actionable outcomes for policymakers and school administrators. Many of the factors studied are ones that are either actionable by school or district administrators or are ones that can be easily identified for use in public policy. The specific results of this study are likely limited in application to secondary teachers and may be limited geographically due to the single state population used; however, it is likely that many of the general trends hold for teachers in other areas as well. The results of this study provide insight into the critical policy issue of compensating differentials, prescribe different approaches to recruiting different types of teachers, and provide recommendations for developing efficient and/or low-cost school structures that maximize a school’s desirability. Additionally, by describing the way in which demographic and contextual factors are related to the importance teachers place on various factors, this study allows for the development of targeted strategies aimed at increasing the recruitment and retention of teachers in particular stages of their careers, in specific content areas, or in different school contexts.
Need for “Combat Pay”

The concept of “combat pay,” or compensating differentials, has been around for some time in the literature (e.g., Barrett, 2016; Boyd et al., 2003; Hanushek, et al., 2004; Hanushek & Rivkin 2007), but has been difficult to quantify. The idea that one must compensate teachers’ additional amounts of money to work in “harder” schools with more low-income or minority students is one of the key arguments for ensuring that these schools have additional funding relative to their whiter and more affluent peers (as contended in Arroyo, 2008). Although this study found that student race and SES were the least important factors, it did find that school achievement was very important. It is possible that this result demonstrates a social desirability bias in the data. The results of all exploratory factor analyses conducted indicate that these factors cluster to provide a heavy weight to an underlying factor that likely represents the perceived difficulty of the school. Relatedly, 79 qualitative responses (4% of the coded qualitative data) cited the ease or difficulty of the student population as a reason for making a particular choice. The exact nature of this factor is worthy of future investigation.

Regardless of whether student or school factors are driving the need for additional salary to compensate teachers for conditions perceived as “more challenging,” it is clear from this study that there is a need for this additional compensation to staff such schools. While the salary difference between an “A”- and a “B”-rated school are minimal (approximately $250), the salary drag becomes substantial by the time a school is “D”-rated. The median salary drag associated with exchanging an “A”-rated school with an otherwise identical “F”-rated school was approximately $9,300. The results of this study
indicate that the lowest performing schools need funds to be able to compensate their teachers with an additional $5,000-10,000 each in order to remain competitive with higher-performing schools. Changes in student demographic factors associated with a change in school performance would add to the compensating salary needed, as there were more minor, but still negative, impacts on school desirability based on student demographics independent of the impact of school achievement.

**Money Versus Support Factors**

One key conclusion from this research is that while teachers broadly exchange monetary and nonmonetary benefits, the extent to which they are willing to do so shows high variability among individuals. It is notable that while salary had the highest average importance, it also has by far the highest standard deviation of importance values in this study sample. Importance of salary was moderately negatively correlated with the importance of opportunities for collaboration, professional development, and administrative support. These findings indicate that there may be sets of individuals who are more or less likely to be open to exchanging salary for additional supports. This conclusion has implications for administrators in resource-scarce environments who are likely to need to recruit staff who place a high value on these support elements. It should be noted, however, that while these correlations were seen, attempts to identify classes of teachers based on the importance placed on different factors were unsuccessful in this particular study.
Recruiting and Retaining Experienced Versus Inexperienced Teachers

The dichotomy described above is clearly seen in a dichotomy between inexperienced, lower-paid teachers and their more experienced, higher-paid peers. While inexperienced and lower-paid teachers still place a high value on salary, they also place a substantially higher value on factors that increase teacher capacity and the ease of the job such as class size, opportunities for collaboration, professional development, and administrative support. Schools typically aim to increase the overall experience of their teaching staffs, but, in the face of teacher shortages and limited resources, it is important to understand that the ability to compensate teachers for less competitive salaries with improved working conditions may be most effective with lower paid and inexperienced teachers. Recruiting and retaining the most experienced teachers is likely to require increases in salary and is less likely to be made up for by improving working conditions or other nonmonetary job factors. One exception to this is that the most experienced teachers do place a relatively higher importance on job security than mid-or early-career teachers. For administrators in resource-scarce environments, it may be necessary to emphasize nonmonetary benefits with early-career, lower-income teachers and reserve limited monetary resources for incentives for later-career, higher-paid teachers. Additionally, the evidence of loss aversion regarding salary for higher-paid teachers is important for administrators to consider as they aim to recruit and retain highly-paid teachers.
Efficient Teacher Recruitment and Retention

As shown above, the results of this study can inform school leaders on strategic decisions regarding school administration in an effort to ensure that their staffing efficiently utilizes limited resources. The monetary values placed on various levels of many of the factors have implications for administrators seeking to develop a high-quality staff with limited resources.

When considering the structure of the teachers’ work day, the value placed on planning time and on opportunities for collaboration are particularly informative. It is clear from these results that providing additional time for teachers to prepare beyond 45 minutes a day is likely not an economical use of a school’s resources because doubling the amount of time is worth a median value of $1,630, likely less than the cost of the additional staffing that increasing prep time would require. However, halving the prep time to 45 minutes every other day is also likely not a good use of the school’s resources, as it is equivalent to a salary drag of approximately $4,600. Administrators can be intentional with that 45 minutes per day by providing opportunities for collaboration at the grade and department level in order to have a positive impact on recruitment and retention.

Similarly, there are limits to the extent to which schools should increase class size in order to maximize teacher recruitment and retention. Based on these results, it is unlikely that a school will be severely penalized for increasing class sizes to 30 students. It is also possible that even the increase from 30-35 students is economical for a school due to the reduction in labor force required. It is possible that savings from this reduction

in labor force are larger than increases in the average salary needed to compensate teachers for the larger class sizes. However, due to the exponential increase in salary needed to compensate for increased class sizes beyond 25 students, there are limits to how large a school can make its classes without negatively affecting recruitment and retention. It is also notable that average class sizes of 15 were less desirable than average class sizes of 25. This counterintuitive result may be unique to Utah due to its high average class sizes but is worthy of further investigation in other contexts.

Other salient results found in this study suggest that hiring outside of an individual’s content area is unlikely to result in stable employment for those with alternative opportunities, even if that content area is closely related. Moreover, the findings indicate that while there is a penalty for not offering tenure, it is less than 9% of the average salary in the state. Interestingly, offering tenure but making it less available is only slightly better to teachers, on average, than not having it available at all, indicating that schools desiring to take advantage of the recruitment and retention benefit of tenure need to make it widely available.

Finally, there are some opportunities to prioritize certain school factors in recruitment of new staff for benefits at very little cost. The results point to the benefit of having a strong mission statement and utilizing it as a key teacher recruitment tool; teachers are likely to self-select out if they do not support the mission statement and it is a low-cost way of providing something of value to teachers. Schools that provide for some curricular autonomy are likely to be more attractive to prospective teachers if this is clearly marketed. Finally, the high value placed on academic achievement indicates that
marketing school achievement should be a key recruitment strategy for administrators of successful schools.

It should be noted that this study cannot account for the extent to which these changes affect other conditions. It is possible, for example, that increasing class sizes or offering curricular autonomy results in impacts on school achievement that mitigate or exacerbate the impact of those factors on school desirability. It is also possible that some decisions such as hiring for mission-alignment increases student achievement, increasing the impact of this intervention over that seen in this study.

**Importance of Context**

The demographic trends reveal important implications for administrators and policymakers attempting to improve recruitment and retention among certain sets of teachers or in certain types of schools. For example, the high importance that English teachers place on curricular autonomy relative to other subject areas is likely to be important in recruiting and retaining teachers in that subject area. Similarly, knowing that class size is of a different importance to teachers in different subject areas and in middle school versus high school should change the way in which administrators recruit and retain those teachers and/or staff their schools.

One of the key takeaways for administrators and policymakers is the differences seen between charter and district employees. Mission/vision alignment and average class sizes are substantially more important to charter school teachers, while district school teachers place a substantially higher value on salary and tenure. This means that district school administrators should be more willing than charter school administrators to utilize
instructional staffing dollars to increase average salaries rather than reduce class sizes. Additionally, charter school administrators are more likely to be successful selling a compelling school mission in the absence of competitive salaries than a district school.

**Recommendations for Staffing Low-Performing Schools**

Taken together, the results of this study provide practical implications for helping low-performing schools with limited resources to overcome the barriers they typically face in recruiting and retaining high quality teachers (Boyd et al., 2005; Clotfelter et al., 2011; Darling-Hammond, 2003; Feng, 2010; Hanushek & Rivkin, 2007; Ingersoll & May, 2012; Opfer, 2011; Stotko et al., 2007). The first, and possibly most important, factor is to provide additional funding on the order of at least $5,000 to $10,000 per teacher to low-performing schools in order to increase teacher salaries to compensate for the lower school performance and any student demographic characteristics that are less preferred by the average teacher.

It is also important to be aware of factors that mitigate or exacerbate the salary drag associated with working in high-needs schools. For example, having a strong mission statement that teachers agree with as opposed to a non-existent mission statement is worth a salary premium equal to approximately half of the drag of moving from an “A”- to an “F”-rated school. Similarly, strong leadership, professional development, and meaningful collaboration may be able to mitigate some of the impact of low school performance in the absence of additional funding. One factor that requires some caution is the salary drag associated with teaching a scripted curriculum. Compared to the
preferred level of the factor presented, requiring a scripted curriculum had a salary drag nearly as large as that of exchanging an “A” school for an “F” school. Given the extent to which failing urban schools tend to utilize scripted curricula (Milner, 2013), they are likely exacerbating their teacher recruitment and retention challenges.

There are many things that administrators of these hard-to-staff schools can do to make the most effective use of their limited resources when recruiting and retaining teachers. Providing 45 minutes of preparation time every day and using that time for grade-level and departmental collaboration, having locally developed curricular materials, and ensuring that teachers are only teaching within their certification areas are likely to make the schools more desirable, while effectively using limited resources. Additionally, having a strong mission statement that is made clear to teachers in the hiring process may limit the pool of possible candidates, but will act as a strong incentive to those hired, particularly in charter schools. Offering tenure and increasing salaries by increasing class sizes up to 30 or 35 students could make a school more desirable, particularly in district contexts. Finally, these nonmonetary factors should be strategically used as a key selling point to early-career, lower-salaried teachers, with salary incentives targeted to more experienced teachers and those unresponsive to the benefits of nonmonetary support factors.

Methodological Implications

This study demonstrates the viability of ACBC as a survey methodology capable of advancing research in the field of teacher recruitment and retention. The results of this
study show that this methodology is well-suited to answering key questions of interest to researchers, policymakers, and administrators. What follows describes the potential value of ACBC surveys in the teacher recruitment and retention field, warns of potential limitations of the methodology, and suggests extensions of this survey methodology to novel questions in the field.

**Advantages of ACBC Surveys**

As can be seen from the results of this study, surveys using ACBC generate a number of informative results for researchers, policymakers, and school administrators. Studies using this methodology are able to address key weaknesses in the current literature, giving researchers a new tool for advancing the field. This methodology allows for a clear and relatively easy to interpret understanding of the relative importance of different monetary and nonmonetary factors to teachers. It also allows for the quantification and even monetization of the value of different levels of different factors. This is a more direct means of measuring the amount of “combat pay” needed to work in different conditions or with different student populations, for example. While the vast majority of the research in this field up until this point has focused on identifying factors that matter, using ACBC surveys allow researchers to better understand how much these factors matter and how teachers weigh the factors in situations where they are forced to make trade-offs similar to those made in the job market.

Importantly, the results of ACBC surveys not only allow for ranking of the importance of various factors, but also for insights into how different levels of factors influence decisions. As can be seen in the results of this study, class size is relatively
unimportant if the range considered is 15-25 students per class, but if the range includes greater than 35 students per class, it becomes a very important factor. The impact of the range of possible conditions on the importance placed on various factors may help to explain some of the discrepant results found in the literature review, where certain categories of factors were found to have a mix of null and significant findings. It is possible that asking about the importance of factors in the abstract (e.g., Cannata, 2010) leaves too much to interpretation of the respondent, while ACBC uses concrete scenarios to infer teacher preferences.

While the nature of the survey has some limitations, as is discussed below, it also has unique characteristics of benefit to researchers. One such benefit is the ability to disentangle the effect of factors that are highly correlated in actual schools. An example is the ability to separate the effect of school grade, student SES, and student race in this particular study. Another benefit of this tool is that it asks participants to make decisions that mimic the phenomenon of interest, which is how teachers choose among competing job offers, rather than trying to infer how teachers would make this choice from other data sources or more abstract surveys (e.g., Hanushek, Kain, & Rivkin, 2004b). Asking the questions directly reduces the risk of influence from unexpected and uncontrollable conditions such as school closures, layoffs, family relocations, and other factors that influence actual labor market movements, but are unrelated to teacher preferences.

For administrators and policymakers, there are many potential benefits to replications of research of this kind, as is shown in the practical implications section, above. A better understanding the impact of factors beyond a school’s control, such as
student demographics, may be beneficial for policymakers attempting to better understand how to equitably fund schools with different student populations. For an administrator, understanding the drag or benefits created by factors beyond the school’s control may be interesting, but even more important is the ability to identify high leverage and efficient job benefits in order to better compete for a limited set of teachers. Additionally, by incorporating a demographic component, all stakeholders can gather information on what benefits are most valued by teachers with certain qualifications or in certain contexts. Understanding this can improve the practice of administrators attempting to recruit and retain specific subsets of teachers or to recruit and retain teachers in specific contexts, such as in charter versus traditional district schools.

**Limitations of ACBC Surveys**

Despite the promise of this tool in addressing key limitations within the teacher recruitment and retention literature, there are intrinsic and practical limitations associated with this tool.

**Intrinsic limitations.** As is described in the study’s assumptions and limitations, the first, and most obvious, limitation is that this methodology mimics a situation of interest rather than directly measuring the choices that individuals make in the labor market. It is certainly possible that teachers could respond differently when faced with a rare and high-stakes decision than a survey where a similar type of decision is made many times in quick succession. However, this possible source of error is well accepted in other fields that use choice tasks to predict natural behavior and will need to be accepted in this study (e.g., Madden et al., 2004 in the delay discounting field). Because
of the infrequent nature of the phenomenon being studied, this limitation is generally acceptable.

As is described above, a related weakness is that there may be additional factors that matter that cannot be captured in this study. It is possible that additional factors matter that are not being captured in the study or that the factors measures are not meaningfully understood by the participant. To some extent, this is a natural limitation of survey research, but pilot studies and additional published studies utilizing this methodology should mitigate some of that concern.

Another challenge is that importance values depend on the levels of a factor offered, as they are derived from the difference in utility of the extremes of a factor. For example, the relative importance of salary will depend on how wide of a salary range is presented to the respondents. This is less a limitation than a caution to be heeded when reporting results. Avoiding misunderstanding due to this feature requires careful explanation of the study methodology and careful interpretation of the results.

The final intrinsic limitation is with the monetization calculation. The calculation done in this study assumes a constant marginal utility value of money across the salary range. This is an assumption worthy of future investigation. Future researchers should use ACBC surveys to test this assumption and provide for more refined estimates of the monetary value placed by teachers on nonmonetary job conditions.

**Practical limitations.** Despite the numerous opportunities this survey methodology allows for, it must be acknowledged that there are some practical limitations with using a survey of this sort. The first is that it is of course more
challenging to deploy a novel survey instrument than relying on administrative data or already collected survey data. This is especially true because ACBC surveys require large samples; a minimum sample size of 1,000 total respondents and 200 respondents in each analyzed subgroup is recommended (Orme, 2010). In addition, the survey can take a long time to complete if it is a large survey. In this study, where 13 nonmonetary factors with three to six levels each were considered, along with a demographic and an embedded qualitative component, the median response time was approximately 37 minutes. Removing the effect of the qualitative component reduces the median survey length to approximately 25 minutes for this particular survey. This is still a long survey to ask individuals to take, although it results in a very rich set of data. Despite these limitations, and despite not seeking organizational buy-in from the schools where surveyed teachers work, this particular study succeeded in receiving responses from a reasonably large subset of the population of secondary teachers in an entire state, showing that these practical concerns are not insurmountable. Future researchers are likely to be able to increase response rates through a more intentional attempt at cultivating the relationships needed to successfully deploy a survey of this magnitude.

**Implications for Future Research**

The results of this study demonstrate that it is possible to utilize Adaptive Choice-Based Conjoint analysis to answer key questions that have posed challenges to earlier research in the field of teacher recruitment and retention; namely, how do teachers weigh the relative importance of different job and working conditions factors and what monetary value is placed on certain nonmonetary job and working conditions factors.
This study’s sample was restricted to secondary teachers in the state of Utah. The researcher would hypothesize that elementary teachers would respond differently due to the different nature of their work and preparation. Additionally, Utah is a unique state with low per-pupil funding (U.S. Census Bureau, 2014), median class sizes of 27-30 in secondary courses statewide (Utah State Office of Education, 2017b), and only three school districts, out of 41, with minority rates over 50% (Utah State Office of Education, 2017c). It is certainly possible that teachers in New York City or Washington DC or any number of different cities and states would respond differently. It would be valuable to replicate this study in such different contexts.

There are also opportunities for addressing some of the underlying concerns raised about this methodology. For example, it would be beneficial to better understand the (non)linearity of the value placed by teachers on salary. It would also be valuable to investigate the extent to which the utility values and individual importance attributed to individual teachers aligns with choices actually made in the labor market. For example, evaluating the extent to which new teacher’s espoused preferences align with the actual choices made would be beneficial for evaluating the validity of this methodology and for further refining it to better capture important factors.

Finally, there are opportunities to extend this research further into new lines of inquiry. Results from studies of this sort may continue to reveal interesting demographic or context trends that allow for a better understanding of teacher subtypes or benefits that are well-matched to particular contexts. Similarly, it would be of use to investigate the distribution of values placed on different levels of a single factor within a population. For
example, it would be useful to learn more about those who place high value on working with high-poverty populations. Additionally, investigation into moderating factors would be a logical extension of this research. For example, it is possible that the importance of a factor like administrative support depends on school achievement or that student demographic factors moderate the importance placed on class size.

Although this research did not find coherent classes of teachers or clear results from an exploratory factor analysis, it is possible that certain factors tend to form classes of benefits that are preferred in tandem, such as is found in the research in the human resources field into human resource management bundles (Subramony, 2009). Additional research on underlying factors and on typologies of teachers with similar sets of preferences could continue to advance this area of research.

Another interesting line of research that is opened by this sort of study is research into stated preferences, actual working conditions, and retention. The extent to which stated preferences influence actual choices is of great import to policymakers (Cannata, 2010) and can be investigated using mixed methods studies such as this one. Similarly, the feedback between working conditions and stated preferences may be of interest. For example, in this study, demographic correlations to importance values often made intuitive sense, such as urban teachers placing a lower importance on student race and rural teachers placing a lower value on teaching assignment; it would be interesting to investigate the extent to which this match represents self-sorting into contexts that are appropriate for an individual versus teachers adapting their preferences to their existing contexts. Finally, it would be useful to investigate how preferences and job fit are related
to decisions to move within or exit the labor market. This would connect research similar to the current study back to the broader teacher recruitment and retention research that often focuses on movements within and out of the teaching career. It would be interesting to investigate the extent to which teacher burnout and early career attrition are connected to the match between the preferences espoused in this sort of survey and the actual conditions at the schools at which responding teachers work.

**Conclusion**

The field of teacher recruitment and retention is of great importance to policymakers and practitioners, and so, as a result, has been heavily researched over the past decades. While this significant body of research has resulted in many very important findings, there are some questions that have remained challenging to answer, particularly regarding identifying the relative importance of nonmonetary job factors and the monetary value placed on these factors. This study, by utilizing ACBC, has demonstrated that these questions can be answered if a new methodology is embraced. While this study is limited in scope to a subset of teachers within a single state, the results of this study provide practical recommendations that administrators and policymakers can apply within this limited context and that, with caution, may be extended to additional teacher populations. Additionally, the results provide additional support for conclusions in the existing literature regarding the importance of nonmonetary job and working conditions factors. The results also support the assumption drawn from existing literature that monetary and nonmonetary factors can be exchanged when considering the relative
desirability of a school. Finally, these results demonstrate the promise this methodology has for applications to additional contexts and lines of inquiry. The introduction of a novel methodology may allow for pursuit of questions that will better guide policymakers and practitioners attempting to understand and influence the complex trade-offs teachers are making in the labor market. The results from this study and future replications and extensions may allow policymakers and school administrators to more effectively recruit and retain high quality teachers, especially in low-performing, hard-to-staff schools, improving overall student achievement and reducing achievement gaps.
REFERENCES


APPENDICES
Appendix A

Literature Review Coding Sheet
Literature Review Coding Sheet

Title: __________________________________________

Author(s): ______________________________________

___ Study ID
___ Year

School Characteristics:
___ Type of School (1 - Public, 2 - Private, 3 - Charter, 4 - Public and Charter, 0 - Not Stated)
___ Level (1 - Elementary, 2 - Middle, 3 - High School, 4 - Secondary, 5 - Elementary and Middle, 6 Elementary and High, 7 - All, 0 - Not Stated)
___ SES of Students (1 - High, 2 - Middle, 3 - Low, 4 - Mix, 0 - Not Stated)
___ Percent Minority (1 - 0-20%, 2 - 21-40%, 3 - 41-60%, 4 - 61-80%, 5 - 81-100%, 6 - Mixed, 0 - Not Stated)
___ Setting (1 - Urban, 2 - Suburban, 3 - Rural, 4 - Mixed, 0 - Not Stated)
___ Size of School (0 - not stated)
___ Subset of teachers? (2 - Program-specific, 1 - Subject-specific, 0 - No)

Sample:
___ Years Over Which Data was Collected (ex. 2010-2012)
___ Number of Districts
___ Number of Schools
___ Number of Teachers
___ Type of Teachers in Sample (1 - Leavers, 2 - Movers, 3 - Stayers, 4 - Preservice, 5 - Mixed, 6 - Only Intentions Measured, 7 - Job Seekers, 0 - Not Stated)
___ Average Years’ Experience of teachers in the sample
___ Range of Years of Experience of teachers in the sample

Dependent Variable:
___ Type of Data Collected (1 - Interview, 2 - Focus Groups, 3 - Observations, 4 - Document Analysis, 5 - Survey, 6 - Indirect)
___ Description of Data Collected:

___ Was the study open or closed with regards to benefits (i.e. testing one or two predetermined things, or polling for teacher perspective)? (1 - Open, 2 - Closed)
___ Were the Benefits Ranked? (1 - Yes, 0 - No)
___ Measure Used to Rank Benefits (1 - Mean Likert, 2 - Percent Mentioned, 3 - Odds of Moving/Leaving, 4 - Adaptive Conjoint Analysis, 5 - Correlation with staying or leaving, 6 - Other, 0 - Not Ranked)
___ Other: __________________________
___ Quantitative value analyzed (1 - Yes, 0 - No)
Threats to Validity:

Overall score of threats to validity (0 - none, 1 - minor, 2 - moderate, 3 - major)

Description of any threats to validity:

Results:

Any non-significant findings? (1 - Yes, 0 - No)

Finding(s):

Ranked Benefits

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>8</td>
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<td>7</td>
<td>14</td>
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</table>
Appendix B

Screenshots from ACBC Survey
<table>
<thead>
<tr>
<th>Build Your Own</th>
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</thead>
<tbody>
<tr>
<td><strong>Curricular Autonomy</strong></td>
</tr>
<tr>
<td>- Teachers all teach a common scripted curriculum purchased by the district.</td>
</tr>
<tr>
<td>- Teachers all teach a common curriculum developed by the district.</td>
</tr>
<tr>
<td>- Teachers plan a common curriculum in grade-level teams.</td>
</tr>
<tr>
<td>- Teachers develop their own curriculum.</td>
</tr>
<tr>
<td><strong>Influence over Policies</strong></td>
</tr>
<tr>
<td>- Teachers have little to no involvement in the development of school/district policies and practices.</td>
</tr>
<tr>
<td>- Teachers are expected to sit on committees and leadership teams to develop school/district policies and practices.</td>
</tr>
<tr>
<td>- Teachers have the opportunity to sit on committees and leadership teams to develop school/district policies and practices.</td>
</tr>
<tr>
<td><strong>Organizational Fit</strong></td>
</tr>
<tr>
<td>- Strong agreement with school’s mission statement</td>
</tr>
<tr>
<td>- Neutral feelings towards school’s mission statement</td>
</tr>
<tr>
<td>- School does not have an obvious or meaningful mission statement</td>
</tr>
<tr>
<td>- Disagreement with school’s mission statement</td>
</tr>
<tr>
<td><strong>Facilities and Resources</strong></td>
</tr>
<tr>
<td>- New building in a low-crime neighborhood with adequate teacher resources/materials</td>
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<tr>
<td>- Older building in a low-crime neighborhood with adequate teacher resources/materials</td>
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<td>- Older building in a low-crime neighborhood with inadequate teacher resources/materials</td>
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<tr>
<td>- New building in a high-crime neighborhood with adequate teacher resources/materials</td>
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<tr>
<td>- Older building in a high-crime neighborhood with adequate teacher resources/materials</td>
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<tr>
<td>- Older building in a high-crime neighborhood with inadequate teacher resources/materials</td>
</tr>
<tr>
<td><strong>Proximity to Home</strong></td>
</tr>
<tr>
<td>- Less than 10 minute commute</td>
</tr>
<tr>
<td>- 10-20 minute commute</td>
</tr>
<tr>
<td>- 20-30 minute commute</td>
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<tr>
<td>- 30-45 minute commute</td>
</tr>
<tr>
<td>- 45-60 minute commute</td>
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### Screener Task

<table>
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<tr>
<th>Influence over Policies</th>
<th>Teachers are expected to sit on committees and leadership teams to develop school/district policies and practices.</th>
<th>Teachers are expected to sit on committees and leadership teams to develop school/district policies and practices.</th>
<th>Teachers are expected to sit on committees and leadership teams to develop school/district policies and practices.</th>
<th>Teachers are expected to sit on committees and leadership teams to develop school/district policies and practices.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Fit</td>
<td>School does not have an obvious or meaningful mission statement</td>
<td>School does not have an obvious or meaningful mission statement</td>
<td>School does not have an obvious or meaningful mission statement</td>
<td>Disagreement with school’s mission statement</td>
</tr>
<tr>
<td>Facilities and Resources</td>
<td>New building in a low-crime neighborhood with adequate teacher resources/materials</td>
<td>Older building in a high-crime neighborhood with inadequate teacher resources/materials</td>
<td>New building in a low-crime neighborhood with adequate teacher resources/materials</td>
<td>New building in a low-crime neighborhood with adequate teacher resources/materials</td>
</tr>
<tr>
<td>Proximity to Home</td>
<td>30-45 minute commute</td>
<td>30-45 minute commute</td>
<td>30-45 minute commute</td>
<td>30-45 minute commute</td>
</tr>
<tr>
<td>Student Race</td>
<td>40-60% minority students</td>
<td>80-100% minority students</td>
<td>80-100% minority students</td>
<td>80-100% minority students</td>
</tr>
<tr>
<td>Student SES</td>
<td>40-60% students in poverty</td>
<td>40-60% students in poverty</td>
<td>40-60% students in poverty</td>
<td>40-60% students in poverty</td>
</tr>
<tr>
<td>School Achievement</td>
<td>&quot;C&quot; School Rating</td>
<td>&quot;F&quot; School Rating</td>
<td>&quot;C&quot; School Rating</td>
<td>&quot;C&quot; School Rating</td>
</tr>
<tr>
<td>Specialized Services</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
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</table>

- A possibility
- Won't work for me
## Choice Tournament

<table>
<thead>
<tr>
<th>Curricular Autonomy</th>
<th>Influence over Policies</th>
<th>Organizational Fit</th>
<th>Facilities and Resources</th>
<th>Proximity to Home</th>
<th>Student Race</th>
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<tbody>
<tr>
<td>Teachers plan a common curriculum in grade-level teams.</td>
<td>Teachers are expected to sit on committees and leadership teams to develop school/district policies and practices.</td>
<td>School does not have an obvious or meaningful mission statement</td>
<td>New building in a low-crime neighborhood with adequate teacher resources/materials</td>
<td>30-45 minute commute</td>
<td>80-100% minority students</td>
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<tr>
<td></td>
<td>Teachers plan a common curriculum in grade-level teams.</td>
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<td>New building in a low-crime neighborhood with adequate teacher resources/materials</td>
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<td>30-45 minute commute</td>
<td>80-100% minority students</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student SES</th>
<th>School Achievement</th>
<th>Specialized Services</th>
</tr>
</thead>
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<tr>
<td>0-20% students in poverty</td>
<td>&quot;C&quot; School Rating</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
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<td>40-60% students in poverty</td>
<td>&quot;C&quot; School Rating</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
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<tr>
<td>40-60% students in poverty</td>
<td>&quot;C&quot; School Rating</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
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## Calibration Stage

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<th>Teacher Input</th>
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<th>Influence over Policies</th>
<th>Organizational Fit</th>
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<th>Student Race</th>
<th>Student SES</th>
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<td>Teachers plan a common curriculum in grade-level teams.</td>
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<td>&quot;C&quot; School Rating</td>
<td>20-35% students receiving specialized services (such as IEP, ELL, etc.)</td>
</tr>
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- [ ] Definitely Would
- [ ] Probably Would
- [ ] Might or Might Not
- [ ] Probably Would Not
- [ ] Definitely Would Not
Appendix C

Factors and Levels in ACBC Survey
Factors and Levels in ACBC Survey

Salary:
- Continuous from $32,900 to $61,100
- Represents a range of 70% to 130% of the state average salary of $46,500 in the year the survey was given

Job Security
- Tenure is available, but not necessarily likely
- Tenure is available and likely
- Tenure is not available

Teaching Assignment
- Teaching in content area
- Teaching in closely related content area
- Teaching in an unrelated content area

Class Size
- 15 students per class
- 20 students per class
- 25 students per class
- 30 students per class
- 35 students per class
- More than 35 students per class

Planning Time
- 45 minutes every other day
- 90 minutes every other day
- 45 minutes per day
- 90 minutes per day

Collaboration
- No department or grade-level meetings dedicated to collaboration
- Common planning time with a planning partner
- Regular opportunities to collaborate with peers in grade-level and department meetings
- Regular grade-level and department meetings for collaboration, plus common planning time with a planning partner
Professional Development

- Limited to no opportunities for professional development exist
- Regular professional development opportunities that are selected by the administration without input from teachers and that are not differentiated
- Regular professional development opportunities that are selected by the administration without input from teachers and that are differentiated
- Regular professional development opportunities that are selected with input from the teachers and are not differentiated
- Regular professional development opportunities that are selected with input from the teachers and are differentiated
- Teachers have the ability to choose from multiple professional development opportunities

Administration

- Principal is not particularly supportive or visible. Principal provides adequate feedback and resources for teachers.
- Principal is supportive, encouraging, although not highly visible. Principal provides adequate feedback and resources for teachers while working behind the scenes.
- Principal is not particularly supportive or visible. Principal is largely absent from efforts to ensure adequate feedback and resources for teachers.
- Principal is supportive, encouraging, and visible. Principal provides adequate feedback and resources for teachers.

Curricular Autonomy

- Teachers all teach a common curriculum developed by the district.
- Teachers all teach a common scripted curriculum purchased by the district.
- Teachers develop their own curriculum.
- Teachers plan a common curriculum in grade-level teams.

Organizational Fit

- Disagreement with school’s mission statement
- Strong agreement with school’s mission statement
- Neutral feelings towards school’s mission statement
- School does not have an obvious or meaningful mission statement

Influence over Policy

- Teachers have little to no involvement in the development of school/district
policies and practices.

- Teachers are expected to sit on committees and leadership teams to develop school/district policies and practices.
- Teachers have the opportunity to sit on committees and leadership teams to develop school/district policies and practices.

Student Race

- 0-20% minority students
- 20-40% minority students
- 40-60% minority students
- 60-80% minority students
- 80-100% minority students

Student Socioeconomic Status

- 0-20% students in poverty
- 20-40% students in poverty
- 40-60% students in poverty
- 60-80% students in poverty
- 80-100% students in poverty

School Achievement

- “A” School Rating
- “B” School Rating
- “C” School Rating
- “D” School Rating
- “F” School Rating
Appendix D

Coding Sheet for Qualitative Results
Coding Sheet for Qualitative Results

Want More Money

- Items referencing wanting more money without referencing family (Support Family), need (Make a Living), entitlement (I Deserve Pay), or future planning/retirement (Future Financial Planning)

Make a Living

- Items related to needing a certain amount of money. Includes items referring to a base level of salary necessary.

Future Financial Planning

- Items discussing need for financial incentives due to future considerations, such as retirement

I Deserve Pay

- Entitlement to a certain salary level. Similar to “Teachers Deserve Pay” but in the 1st person.

Personal Protection/Security

- Similar to Protection/Security from External Forces except that the focus is on the individual being insulated from the forces. Usually mentions job security.

Satisfaction

- Respondent mentions something causing them personal joy or satisfaction. A sense of purpose or self-worth would also be included in this node. Has sub-nodes, but if none of them apply this is a codable node.

Feel needed

- Items related explicitly or implicitly to feelings of satisfaction that specifically note feeling needed by any entity.

Feel a part of change

- Feelings of satisfaction (implicitly or explicitly) related to watching or being a part of change in the school or increased school or student achievement. This is similar to Growth/Change in School Achievement, Growth/Change in Student Achievement, and Change in School Culture/Mission but is focused on the internal intrinsic value derived from being a part of these changes

Feel Valued

- Items related to feelings of personal worth or value derived from salary and/or working conditions. Typically includes the words “value,” “worth,” “important,” or similar. Similar to Satisfaction->Feel needed, except that this code is for statements that indicate feelings others have towards the respondent, while Satisfaction->Feel needed refers to feelings the respondent holds about
themselves based on his/her impact on others.

Feel Respected/Treated as a Professional
- Items related to respect and/or professionalism of teachers. Includes comparisons to the conditions of workers in other professional fields as well as professional freedom. 1st person only. Excludes items related to pay/compensation (coded as I Deserve Pay)

Positive Climate
- Items related to respondent feelings as a result of the work environment. Items coded here are ones that describe conditions that make work a positive environment, a place where the respondent is happy to go every day

Burnout/Retention
- Items related to feelings of being overwhelmed or burned out, particularly those that call into question the longevity of the respondent in the career. Stress is a similar code, but this code specifically deals with feelings that would implicitly or explicitly be connected to a decrease in time spent teaching.

Stress
- Items describing factors impacting the respondent’s level of stress or working conditions that are described as stressful. Does not include those that are explicitly or implicitly connected to a decrease in longevity in the field (Burnout_Retention), but instead factors that would decrease the quality of life/quality of the working environment by increasing teacher stress. This is specifically for items that discuss the respondent’s feelings, not items that could merely contribute to stress.

Personal Effectiveness
- Items that discuss the effectiveness of the respondent in his/her role as a teacher. The subject of the item must be the individual, rather than teachers generally (Organizational Effectiveness). The focus of the item must be on the teacher rather than an explicit impact on students (Best for Students)

Difficulty of the Job
- Codable if no sub-codes apply. Items refer to factors making the job of teaching easier or harder. Does not include items that increase or decrease the amount of time it takes to do a task (Amount of Time), but instead the difficulty of the task itself.

Embrace challenge
- A subnode for Difficulty of the Job for use when the respondent indicates that items that make the job more difficult are desirable. The concept of “healthy challenge” would be coded here. Can be co-coded with other subcodes within Difficulty of the Job
Easier/more challenging students

- A sub-node of Difficulty of the Job that specifically refers to the challenge posed by the student population

Amount of Time

- Items that discuss the way in which factors increase or decrease the amount of time it takes to do the job. Excludes those that reference trade-offs (Work/Life Balance), but instead includes those that only focus on the time it takes to do the work of a teacher. Requires explicit reference to time.

Work/Life Balance

- Items specifically referencing balance between work and other responsibilities or work and leisure activities. Includes references to taking work home. Excludes those that make explicit reference to family (Family Work/Life Balance) and those that just talk about the amount of time something at work takes (Amount of Time). Example: “More prep time means I don’t need to take as much work home” Non-Examples: “Smaller classes means fewer papers to grade”; “Fewer papers to grade allows me to have more time with my kids at night”

Support Family

- Items that reference the importance of monetary factors for the benefit of a respondent’s family or due to the respondent’s family circumstances.

Family Work/Life Balance

- Items that discuss time requirements and/or work/life balance with a specific reference to the impact of that on the respondent’s family.

Make a Difference - Achievement

- Uses the phrase “Make a Difference” or something substantially similar. Specifically notes an impact on student performance or achievement.

Emphasis on those in need - Achievement

- Sub-node of Make a Difference - Achievement that also notes an impact on a particular set of students who are in particular need, whether specific or general about the students and/or their reason for their need

Growth/Change in Student Achievement

- Item discusses a positive change specifically in student achievement with an emphasis on students, rather than on the school at large (Growth/Change in School Achievement)

Better for Students

- Notes a positive impact on students that is not explicitly related to an increase in achievement (Growth/Change in Student Achievement). Does not use the language of “Making a Difference.”
Make a Difference – Non-Achievement

- Uses the phrase “Make a Difference” or something substantially similar. Does not make an explicit reference to an impact on student performance or achievement (Make a Difference - Achievement).

Emphasis on those in need – Non-Achievement

- Sub-node of Make a Difference – Non-Achievement that also notes an impact on a particular set of students who are in particular need, whether specific or general about the students and/or their reason for their need

Growth/Change in School Achievement

- Items related to improving the performance of the school. Not changes in school conditions or mission statement (Change in School Culture/Mission) or feelings of satisfaction from this change (Satisfaction->Feel a part of change). Focus is on the school, rather than on the students (Growth/Change in Student Achievement)

Change in School Culture/Mission

- Items related to a change in the conditions, culture, direction, or mission of the school that are not directly related to student achievement (Growth/Change in School Achievement). Excludes items discussing feelings of satisfaction from making such a change (Satisfaction->Feel a part of change), but instead is for items focusing on the change itself and/or its benefits to the school as a whole.

Organizational Effectiveness

- Items that describe factors impacting the effectiveness of a school. The focus of these statements are on things that impact either the school itself or all teachers within it, rather than an individual teacher (Personal Effectiveness). Example: “All of the teachers can be on the same page if the mission statement is clear”; “Good professional development will make teachers more effective.” Non-example: “This professional development will help me grow and better help my students”

Teachers Deserve Pay

- In the abstract, teachers deserve salaries or other monetary compensation at either a particular level or relative to a stated or unstated benchmark (i.e. “more” or “higher”). A sense of entitlement must be present. 3rd person only.

Protection Security from External Forces

- Teachers at large must be protected or in some way made secure from an external force, such as politics. May also reference job security. 3rd person only.

Respect/Professionalism

- Items related to respect and/or professionalism of teachers. Comparisons to the conditions of workers in other professional fields or discussion of teachers being
valued/treated as professionals and/or having large degrees of autonomy. 3rd person only. Excludes items related to pay/compensation (coded as Teachers Deserve Pay)

Teachers’ Needs Met

- Items related to resources going to teachers in the third person. Primary beneficiary is the teachers rather than on the school or students.

Students Learn what is Important

- Emphasis is on students learning the key parts of a particular content area for the sake of it. No benefit to the students, school, teacher, etc. are noted, but rather the benefit is to the subject area.

Can Develop Strong Program

- The benefit is for a specific content-area program, such as a band or choir program, with specific mention of the benefit being for the program itself. No mention of benefit for the individual (Satisfaction), the students (Better for Students), or the school at large (Organizational Effectiveness).

Less Teacher Burnout

- Similar to Burnout/Retention but in the third person rather than in the first person. Reference to retention or burnout for teachers at large.

Better for my Children

- Tangible nonmonetary benefits that improve outcomes for the respondent’s children.

Security for Family

- Similar to Protection/Security from External Forces except that the focus is on the individual being insulated from the forces, with the primary beneficiary being the family. Usually mentions job security. Must explicitly mention family impact.
Appendix E

Bibliography of Papers Included in Literature Review
Bibliography of Papers Included in Literature Review


http://doi.org/10.1080/09645292.2010.545521


Ng, J. C., & Peter, L. (2010). Should I stay or should I go? Examining the career choices of alternatively licensed teachers in urban schools. *The Urban Review*, 42(2), 123-142.


CURRICULUM VITAE

JEFFREY GUNThER

ADDRESS

116 W 500 N Logan, UT 84321
jeffrey.m.gunther@gmail.com
435-258-7163

EDUCATION

DEGREE
Utah State University, College of Education and Human Services, Logan, UT
PhD in Education, Fall 2018
Dissertation: Evaluating the Role of Non-Monetary Factors in Teachers’ Employment Decisions

University of Delaware, College of Education and Human Development, Newark, DE
Masters of Arts in Teaching, May 2011

Cornell University, College of Agriculture and Life Sciences, Ithaca, NY
Bachelor of Science in Neurobiology and Behavior, May 2008
Bachelor of Science in Environmental Engineering Technology, May 2008
Minor in Education

CERTIFICATION
Utah Level 2 License. Secondary Certification with Biology, Integrated, and Physical Science endorsements

AWARDS/SCHOLARSHIPS/RECOGNITIONS

May 2011
Robert W Stegner Award - University of Delaware Top Prospective Science Teacher Award

June 2010-May 2011
University of Delaware STEM Resident

Fall 2007-Spring 2008
Cornell Tradition Fellow

Summer 2006
Cornell University Hughes Scholar

ACADEMIC EXPERIENCE

RESEARCH/PROJECT TEAMS

August 2013-June 2018
PhD Candidate
Utah State University, College of Education and Human Services, Logan, UT
• Experience with mixed methods research methodologies
• Expertise with Bayesian and frequentist statistics
• Completed additional research projects on:
  o Human Resource Management conditions correlated with an equitable distribution of experienced teachers between schools within districts
  o The impact of curricular autonomy on teacher recruitment and retention
September 2010- May 2011

**STEM Resident**
Howard High School of Technology, New Castle County VoTech District, Wilmington, DE
- Participated in a full-year field placement at Howard High School of Technology (HHST) as a part of the Race to the Top-funded STEM Residency Program.
- Participated in a semester of classroom observation and a semester of full teaching.
- Participated in school-wide restructuring planning as a member of the Small Learning Communities sub-group.

**GRANTS AWARDED**

July 2015-June 2017  Sawtooth Software
Sawtooth Software
Awarded a grant for approximately $5000 worth of software for use in my dissertation research.

January 2006 - October 2007  Solar Decathlon
United States Department of Energy
$100,000 two-year grant to design and build an 800-square foot solar powered house to be displayed on the National Mall in Washington, DC.

September 2006 - September 2007  People, Prosperity, Planet
United States Environmental Protection Agency
$10,000 to test the efficiency of different solar thermal collector setups with the ultimate goal of exploring the possibilities of solar thermal electricity with a later grant.

**PRESENTATIONS**

April 2018  American Educational Research Association
New York, NY
Teacher Valuation of Working Conditions When Considering Competing Employment Opportunities

March 2018  Association for Education Finance and Policy
Portland, OR
Measuring Teacher Valuations of Non-Monetary Job Factors Through Adaptive Choice-Based Conjoint Analysis

March 2016  Association for Education Finance and Policy
Denver, CO
A Systematic Review of the Teacher Recruitment and Retention Literature

February 2015  Association for Education Finance and Policy
Washington, DC
Curricular Control as a Recruitment and Retention Strategy
PROFESSIONAL EXPERIENCE

WORK EXPERIENCE
March 2016-Sept 2018  Director of Governance and Analytics
Athlos Academies, Boise, ID
- Responsible for school operations oversight, including budgeting and resource management
- Participate in school hiring and retention decisions
- Project manage new school launches
- Primary contact for board/client relations
- Development of data dashboards product for managed and partner schools
- Regular delivery of oral and written reports to a variety of stakeholders
- Primary point of contact for state partners and charter authorizers
- Provide trainings on effective school board governance

June 2012-June 2016  Science Department Head
Venture Academy, Marriott-Slaterville, UT
- Department head and instructional coach for a department of three science teachers
- Founding Science teacher for High School expansion
- Member of School Improvement Plan Team
- Recruited and interviewed candidates to support school growth
- Performed observations
- Developed curriculum in collaboration with other science teachers and other departments

August 2011-June 2012  Physical Science Teacher
Delaware Academy of Public Safety and Security, Newark, DE
- Founding science teacher for a first-year charter school
- Took on many administrative roles related to student data systems and organizational planning
- Led trainings on the student data management system and technology resources for teachers
- Responsible for textbook review and materials procurement

PROFESSIONAL DEVELOPMENT
Member of the Association for Education Finance and Policy (AEFP)
Member of the American Education Research Association (AERA)
Participated in review of the Obama Administration’s Project RESPECT initiative
Participated in the review of Delaware’s request for an NCLB waiver

TECHNICAL SKILLS
COMPUTER SKILLS
Proficient with both PC and Mac technology. Experience with business intelligence products such as Tableau, PowerBI, and Periscope.
Proficiency with statistical packages such as R and SPSS, as well as qualitative analysis tools such as nVivo.
Experience with SQL in Oracle databases.
Proficient in multiple student data management systems.
Basic website development experience.
Some experience with Python, Django, JAVA, Visual Basic, C, and Basic programming.