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**WHO TEACHES WHERE? EVIDENCE FROM A MIXED METHOD STUDY
OF TEACHER CANDIDATES' PREFERENCE FOR AN URBAN SCHOOL
SETTING**

by

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ABSTRACT OF THE DISSERTATION

Who Teaches Where? Evidence From A Mixed Method Study Of Teacher Candidates'
Preference For An Urban School Setting

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Researchers have demonstrated that schools with low-income and predominantly minority students, especially those in urban districts, have the most difficulty recruiting and retaining teachers. In this study, surveys were collected to describe 697 New Jersey teacher candidates' perceptions, processes, experiences, and characteristics, and to assess which factors influence teacher candidates' preferences for teaching in urban districts. A case study of the Newark Public Schools further explored the processes and challenges districts face in their new teacher recruitment and hiring effort.

Findings indicate teacher candidates' perceptions of school working conditions strongly influence where they most prefer to teach. Specifically, results indicated that teacher candidates with less preference for schools with poor, low achieving, and many racially and ethnically diverse students were not likely to prefer teaching in urban districts. These teacher candidates' desires for resources and convenient conditions were also predictive of their preference for non-urban settings. Instead, these candidates were more likely to want to teach in school settings that were similar to them racially, socioeconomically, and similar to their own K-12 school setting. They were also more likely to be influenced by family and friends. These findings are corroborated by

stakeholders in the NPS case study, where convenient and safe working conditions, along with family influence, were the most cited reasons for deterring new teacher recruitment.

Conversely, teacher candidates with experiences in various urban settings are likely to prefer teaching in urban schools, particularly candidates with field experiences in urban districts. Additionally, teacher candidates between the age of 25 and 29 are also more likely to prefer teaching in an urban district. Principals in the NPS study explained how influential a teacher candidate's experience in various urban settings is on their district's search for an urban educator with the 3 C's: content knowledge, commitment, and cultural understanding.

These findings have implications for policies at the teacher preparation level, city level, and state level: there is a need to emphasize urban field experiences; it is critical to improve conditions in and around schools, and the data suggests a Grow-Your-Own program will benefit urban districts in addressing their staffing challenges.

Dedication

For my father, Mohammed Saleh, may he rest in peace.

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Table of Contents

List of Tables	xii
List of Figures	xiv
CHAPTER ONE. INTRODUCTION.....	1
Overview	1
Background of the Problem.....	4
The Teacher Staffing Challenge	4
Problem Statement	7
Purpose Statement	8
Research Questions	9
Educating for Economics.....	10
Educating All.....	10
No Child Left Behind	10
Achievement Gap	11
Revolving Door	11
This Study's Significance.....	12
Organization of the Study	13
CHAPTER TWO. LITERATURE REVIEW AND CONCEPTUAL FRAMWORK	15
Introduction	15
Human Capital Theory: Teachers' Professional Characteristics.....	16
Social Capital Theory: Teachers' Job Searches and Homophily	20
Social Learning Theory: Teachers' Personal Characteristics, Experiences, & Perceptions of Environment.....	22
Perceptions of Environment: Kalleberg's Theory of Working Conditions.....	28
Conceptual Framework	32
Summary	34
CHAPTER THREE. METHODOLOGY	35
Problem Statement	35
Research Design.....	37
Methodological Overview	37

Sites of the Study	38
Quantitative Component	39
Materials and Instruments	39
Timeline.....	41
Data Collection	42
Sampling Methodology	43
Variables in the Study.....	48
Data Analysis.....	48
Limitations of the Quantitative Analysis	54
Mixed Method Study Component	55
Sampling of District and School Administrators.....	56
Data Collection	57
Data Sources and Instruments	58
Analytical Techniques	59
Case Study Limitations.....	62
Definitions.....	62
Summary	64
CHAPTER FOUR. QUANTITATIVE RESULTS	66
Factors Influencing Teacher Candidates' Career Paths	66
Part 1: Descriptive Statistics	67
Teacher Candidates' Personal and Professional Characteristics	67
Personal Characteristics and Perceptions of Career Plans.....	74
Professional Characteristics and Perceptions of Career Plans.....	87
Job Search Method and Perceptions of Career Plans	81
Social Learning Experiences and Perceptions of Career Plans	82
STEM Candidates' Personal Characteristics and Perceptions of Career Plans.....	84
STEM Candidates' Professional Characteristics and Perceptions of Career Plans...	87
STEM Candidates' Job Search Method and Perceptions of Career Plans	89
STEM Candidates' Social Learning Experiences and Perceptions of Career Plans	90
Part 2: Discussion of Factor Analyses and Other Predictors	92

Principal Component Analysis of K-12 School Working Conditions.....	92
Definition of Criterion and Predictor Variables.....	97
Working Conditions Predictor Variables	97
Job Search Method Predictor Variables	98
Social Learning Experiences Predictor Variables	99
Professional Characteristics Predictor Variables.....	99
Personal Characteristics Predictor Variables.....	100
Criterion Variable	101
Part 3: Predictor Models for Teacher Candidates’ Preferences for Urban Districts ..	101
Data Analysis.....	101
Model 1: The Impact of Perceptions of Working Conditions on Preferring an Urban Districts.....	104
Model 2: The Impact of Job Search Methods on Preferring an Urban District.....	105
Model 3: The Impact of Social Learning Experiences on Preferring an Urban District	106
Model 4: The Impact of Professional Teaching Characteristics on Preferring an Urban District	107
Model 5: The Impact of Personal Characteristics on Preferring an Urban District	109
What Predictors Influenced STEM Teacher Candidates’ Preferences to Teach in Urban Districts?.....	115
Summary	125
CHAPTER FIVE. MIXED METHODS STUDY OF NEWARK PUBLIC SCHOOLS	127
Part I: Newark Teacher Staffing Challenge as a Result of Perceptions of Working Conditions: Reports from School Administrators and Teacher Candidates	128
Lack of Convenient Conditions as a Supply-Side Recruitment Challenge	128
Perception of Safety as a Supply-Side Recruitment Challenge.....	131
Finding an Urban Educator for High Needs Schools, a Demand-Side Recruitment Challenge	135
Part 2: Social Learning Experiences in Urban Areas as a Demand-Side Recruitment Challenge.....	142
School Administrators’ Perspectives.....	142

The Teacher Candidates' Perspectives	144
Gaining Social Learning Experiences through Field Placement	145
Part 3: The Intertwining of NPS's Staffing Challenges and Teacher Candidates'	
Job Searches	147
The Importance of Field Placement for the Recruitment Challenge	147
The Importance of Other Informal Recruitment and Job Search Methods	152
Staffing Practice Challenges: Difficulties that Arise from Formal Recruitment Efforts	155
The Staffing Challenge as a Result of Tension Between Centralized Formal Efforts And Decentralized Informal Efforts	158
Part 4: The Importance Of Teacher Candidates' Professional Teaching Characteristics To The Recruitment Challenge	162
The Challenge of Recruiting STEM Teachers	162
Part 5: The Importance of Teacher Candidates' Personal Characteristics to the Recruitment Challenge	166
Summary	170
CHAPTER SIX. RESULT SUMMARIES AND DISCUSSION, CONCLUSION, AND RECOMMENDATIONS	173
Summary of Findings and Discussion	176
The Impact of Working Conditions on the Preference for Teaching in Urban Districts	176
The Impact of Job Search Methods on the Preference for Teaching in Urban Districts	185
The Impact of Social Learning Experiences on the Preference for Teaching in Urban Districts	188
The Impact of Professional Teacher Characteristics on the Preference for Teaching in Urban Districts	191
The Impact of Personal Characteristics on the Preference for Teaching in Urban Districts	197
Summary	200
Recommendations for Practice	201

At the Teacher Preparation Program Level--Need to Highlight Urban Education .	202
At the District Level--Need to Address Identified Issues.....	203
At the City Level--Involve City Government and Local Initiatives.....	205
At the State Level--Involve Government Officials	206
Recommendations for Further Study	207
Conclusion.....	212
REFERENCES	215
APPENDIX A. INTRODUCTORY LETTER	240
APPENDIX B. SAMPLE EMAIL TO TPP	241
APPENDIX C. SAMPLE EMAIL TO ADMINISTRATORS	242
APPENDIX D. SURVEY OF PROSPECTIVE TEACHERS.....	243
APPENDIX E. ADMINISTRATOR INTERVIEW	270
APPENDIX F. SECOND MAJOR AND MINORS.....	273
APPENDIX G. MORE ANALYSIS	274
APPENDIX H. COMPARING STEM MODELS.....	275
CURRICULUM VITA.	276

List of Tables

Table 3.1 Respondents' Demographics Compared with All National New Hires & New Jersey Alternate Route Teachers	47
Table 3.2. Variable Groups Linked to Survey Item Measures	49
Table 3.3. School Characteristics of School Administrators	57
Table 4.1 Sample Distribution of Teacher Candidates' Preference for Teaching Location	74
Table 4.2. Sample Distribution of Urban and Non-Urban Teacher Candidates' Personal Characteristics.....	75
Table 4.3. Sample Distribution of Urban and Non-Urban Teacher Candidates' Professional Characteristics.....	77
Table 4.4. Sample Distribution of Urban and Non-Urban Teacher Candidates' Job Search Methods.....	82
Table 4.5 Sample Distribution of Urban and Non-Urban Teacher Candidates' Social Learning	83
Table 4.6. Distribution of Urban and Non-Urban STEM Teacher Candidates' Personal Characteristics.....	85
Table 4.7. Distribution of Urban and Non-Urban STEM Teacher Candidates' Professional Characteristics	87
Table 4.8. Distribution of Urban and Non-Urban STEM Teacher Candidates' Job Search Methods.....	89
Table 4.9. Distribution of Urban and Non-Urban STEM Teacher Candidates' Social Learning Experiences.....	91
Table 4.10. Principal Component Analysis: Factor Loadings of School Characteristics /Working Conditions.....	94
Table 4.10b. Principal Component Analysis of 25-Item Working Condition Construct..	97
Table 4.11 Predictors of Teacher Candidates' Preference To Work in Urban Schools	114

Table 4.12. STEM Personal and Professional Characteristics’ Influence on Preferring Urban Districts	118
Table 4.13. STEM Job Search’s Influence on Preferring Urban Districts.....	119
Table 4.14. STEM Social Learning Experiences’ Influence on Preferring Urban Districts	122
Table 4.15. Model 4 STEM Perceptions of Working Conditions.....	123
Table 5.1. Logistic Regression of Applying to Teach in NPS.....	141
Table 5.2. Prior Social Experience in Newark’ Relationship to Applying to NPS	144
Table 5.3. Prior Work Experience with NPS	149
Table 5.4. Prior Experience in other Urban Districts.....	150
Table 5.5. Teaching Experience on Reference for Teaching in a Specific NPS School	151
Table 5.6. NPS Application Plans and General Sources of Information on Teaching Positions	155

List of Figures

Figure 2.1. Conceptual model of predictors for teacher candidates' career plans.....	33
Figure 2.2 Diagnosing an Organization.	56
Figure 4.1. Teacher candidates' previous full time jobs.....	69
Figure 4.2. Teacher candidates moonlighting jobs.	70
Figure 4.3. Events or people that influenced candidates' pursuit of teaching.	71
Figure 4.4. Teacher candidates' attrition risk reasons.	72
Figure 4.5. Teacher candidates' subject area certification.....	73
Figure 4.6. Teacher candidates' first major.	74
Figure 4.7. Principal component analysis scree plot for working conditions.....	95
Figure 5.1. Features Respondents found attractive about Newark Public Schools.	141
Figure 5.2. Comparison of teacher candidates' time in urban areas and Newark.	145
Figure 5.3. Comparison of teacher candidates' urban district experience to NPS experience.	150

CHAPTER ONE. INTRODUCTION

Overview

Researchers have demonstrated that schools with low-income and predominantly minority students, especially those in urban districts, have the most difficulty recruiting and retaining teachers (Darling-Hammond, Berry, & Thoreson, 2001; Rivkin, Hanushek, & Kain, 2005; Rowan, Correnti, & Miller, 2002; Sanders & Rivers, 1996; Wright, Horn, & Sanders, 1997). To better understand the challenges urban schools and districts face in recruiting and hiring teachers, it is beneficial to understand the situation from the perspectives of both those entering a district (prospective teachers) and those within a district (hiring administrators). In this study's mixed method design, surveys were collected to identify and describe 697 New Jersey teacher candidates' perceptions, processes, experiences, and characteristics, and to answer the questions, Where do teacher candidates, from myriad certification pathways, most prefer to teach?, and What factors influence their plans of where to teach? A case study of one urban district (the Newark Public Schools-NPS) further explored the processes and challenges districts face in their new teacher recruitment and hiring effort, with perspectives offered from interviews with NPS administrators and NPS teacher candidate applicant surveys.

This research utilized various theories from sociology, economics, and psychology to develop a framework that examines how factors collectively predicted teacher candidates' decision making. It identified five areas that contributed to teacher candidates' plans, including their perceptions of working conditions, job search methods, social learning experiences, professional and personal characteristics. The intent of this framework was to further address and explain the challenges of recruiting and hiring

teacher candidates in urban schools, specifically in hard-to-staff subject areas such as mathematics and science.

Findings indicated that teacher candidates' perceptions of preferred school working conditions very strongly influenced where they most preferred to teach. Specifically, it identified that teacher candidates with less preference for schools with poor, low achieving, and many racially and ethnically diverse students were not likely to most prefer teaching in urban districts. These teacher candidates' desire for resources and convenient conditions were also predictive of their preference for non-urban settings. Instead, these teacher candidates were more likely to want to teach in school settings that were similar to them racially, socioeconomically, and similar to their own K-12 school setting. They were also more likely to be influenced by family and friends. These findings were corroborated by stakeholders in the NPS case study, who noted that convenient and safe working conditions, along with family and friend influence, were the most cited reasons for deterring new teacher candidate recruitment.

Conversely, teacher candidates with experiences and exposures in various urban settings were highly likely to prefer teaching in urban schools. In particular, the odds that a teacher candidate with urban field placements preferring an urban district is more than five times the odds for a teacher candidate without urban field experiences. For STEM teacher candidates with urban field experiences, the odds are at least 11 times the odds of teacher candidates without urban field experiences. Additionally, first career late starters, i.e. teacher candidates between the age of 25 and 29, were also significantly more likely to prefer teaching in an urban district.

Principals in the NPS case study explained how influential a teacher candidate's experience in various urban settings was on in their district's search for an urban educator, and specified how essential it was for them to find an urban educator with the 3 C's: content knowledge, commitment, and cultural understanding. Unfortunately, teacher commitment and turnover is another challenge urban districts face, and as this study reveals, teacher candidates who preferred urban districts were also likely to be planning to teach up to only five years. This study also found formal job search processes were negatively associated with teaching in urban settings, while informal job search processes had no significance with teacher candidates' preference for teaching setting. This provides evidence that explains the current status quo of a formal, centralized system versus the informal, decentralized system that mires the hiring procedures in urban districts with ambiguity.

These findings suggest the need for better practices for teacher preparation programs, especially with respect to designing practices and experiences that emphasize the necessity of urban field experiences for all teacher candidates. Moreover, this study reiterates prior researchers' call for policymakers to improve working conditions in high-needs schools, particularly school neighbourhood safety, as safety has been shown to influence both the attraction and attrition of new teachers. Additionally, urban school districts need clearer hiring processes, as the current lack of information causes unnecessary frustration, and results in fewer numbers of teacher candidates' preferring to teach in urban districts. Finally, a call to have support at the state level for a Grow Your Own (GYO) initiative will greatly benefit urban districts' staffing challenge, as it will also improve the job prospects of many city residents, thereby addressing one of the

many structural inequalities evidenced in cities today (Skinner, Garretton, & Schultz, 2011).

Background of the Problem

The Teacher Staffing Challenge

Most politicians, practitioners, and policymakers can agree that one of the most important in-school factors that may impact students' achievement is teacher quality (Darling-Hammond et al., 2001; Rivkin, Hanushek, & Kain, 2005; Rowan, Correnti, & Miller, 2002; Sanders & Rivers, 1996; Wright, Horn, & Sanders, 1997), because "after parents, the biggest impact on a child's success comes from the man or woman at the front of the classroom" (Obama, 2011, State of the Union address).

Teacher quality is an issue school districts face because of the continuous cycle of teacher recruitment and retention (i.e. the teacher staffing challenge). This constant change in a school's staff causes difficulties in providing stability and cohesion that is essential to teacher quality at the organizational level (Ingersoll, 2001; Liu, Rosenstein, Swan, & Khalil, 2009). Experts in the field have studied numerous reasons for the staffing challenge; some suggest it is a low supply of teachers, and attribute this to low salaries (Murnane & Olsen, 1990; Odden & Kelley, 1997), especially among teachers in highly specialized fields that demand higher salaries in industry, such as math and science teachers (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2007; Hancock & Scherff, 2010; Ingersoll, 2003; Liu, Rosenstein, Swan, & Khalil, 2008). Others note the poor organizational management of districts' hiring practices (Liu et al., 2008; Roellke & Rice, 2008a) that are often late, and either impede a teacher's avenue into teaching, or

prods them into situations they are poorly informed about and lack preparation for (Liu, 2004).

Still others believe it is a demand issue. The demand for teachers is not new. Due to the higher demand for a high school education a century ago, more teachers were needed (Lortie, 1975; Tyack, 1974). This demand has continued as this nation's student population grows (Ingersoll & May, 2011). According to a recent publication of the National Center for Education Statistics (2010), since 1995, the pre K-12 public school enrollment has increased 26% from 39.4 million to 49.8 million, and it is projected to grow to 57 million by 2013(Liu , 2007).

However, the demand has further increased over the last decade, where nearly a quarter of a million new teachers are hired annually (Hussar, 1999; Wehling, 2007) This consistent demand for teachers is a result of high turnover among non-retiring teachers, which has created one of the worst teacher shortages among the developed nations in recent times (Ingersoll, 2003). According to data from the National Center for Education Statistics for the 1999-2000 school year, it was estimated that almost *a third* of America's teachers would leave the field during their first three years, and a little less than *half* would leave after five years (Darling-Hammond, 2003; Ingersoll, 2001).

Organizational characteristics of schools, henceforth referred to as working conditions, are responsible for this high demand and turnover (Ingersoll, 2001). These conditions include but are not limited to school climate, student discipline issues, unsupportive and non-collaborative leadership, dilapidated facilities, large class sizes, poor resource materials, and a lack of professional development and career advancement opportunities (Ingersoll, 2001; Johnson & Birkeland, 2003; Roellke & Rice, 2008a;

Stockard & Lehman, 2004; Useem & Neild, 2005; Weiss, 1999). These organizational characteristics have exacerbated the supply and demand balance for teachers, and with over a million teachers about to retire (the current baby boomers) the staffing challenge is a continuous cycle of recruitment and retention issues all school districts are facing (Ingersoll, 2001).

The Urban Teacher Staffing Challenge

Nowhere is the teacher staffing challenge more prevalent than in the nation's urban districts, where there are high concentrations of low-income minority students (Hanushek, Kain, & Rivkin, 2004; Ingersoll, 2001; Lankford, Loeb, & Wyckoff, 2002; Loeb, Darling-Hammond, & Luczak, 2005). Current explanations for the urban teacher staffing challenge includes pull and push effects. For example, most traditionally prepared teachers desire to teach in suburban environments (Haberman, 1988), a preference that tends to spatially match where they grew up (Boyd, Lankford, Loeb, & Wyckoff, 2005), while working conditions in urban districts deter many teachers from staying (Ingersoll et al., 2011). Murphy, DeArmond, and Guin (2003), in their study on the *School and Staffing Survey* (1999-2000), found that the number of 'late-fill' teachers for urban districts was more than 50% higher than suburban districts, and twice as high as rural districts. They also found that schools where more than two-fifths of their students are minorities had double the 'late-fills' compared to schools with less than two-fifths of their students who are minorities.

Thus even within urban districts, there is an inequitable distribution of teachers, with teachers transferring out of schools with higher percentages of poor minority students into schools with students who are less poor and better performing (Hanushek et al.,

2004; Liu et al., 2008). Liu (2007) explained that urban schools experience a higher rate of teacher turnover because a large proportion of low income students is often associated to a variety of social and psychological problems that manifest in schools and leads to teacher stress and burnout. Accordingly, many researchers view student demographics, when they are predominantly low-income and minority students, as a measure of working conditions that lead to turnover (Baker & Smith, 1997; Grissmer & Kirby, 1997, Macdonald, 1999; Weiss, 1999).

Problem Statement

Some research has reviewed the teacher staffing challenge from the administrative perspectives at the district, state, and national level (Liu et al., 2008a; Roellke & Rice, 2008a), while others have studied new teachers experiences in recruitment, hiring, and retention (Johnson et al., 2004; Roellke & Rice, 2008a). However, most research on teacher recruitment and retention has been retrospective, in that it is from the point of view of teachers and not teacher candidates entering the profession (Guarino, Santibanez, & Daley, 2006). Olsen et al. (2007) noted that while pre-service teachers construct images of a teacher's role, there has been little research into what these images or expectations are.

To date, few studies were found that either examine new teacher expectations about teaching in urban settings, or examine the factors that influence teacher candidates' preferences to teach in urban schools. Moreover, there is not a consensus in the literature around the factors that predict teachers' decisions to teach or leave, what factors are more or less important to those decisions, and how those factors interrelate by teacher attributes

or school characteristics (Ingersoll, 2001; Johnson & Birkeland, 2003; Roellke & Rice, 2008a; Stockard & Lehman, 2004; Useem & Neild, 2005; Weiss, 1999).

Understanding these factors is important, as teachers' initial job choices has been shown to impact the current inequitable distribution of teachers between urban and suburban areas, and even within urban districts (Boyd et al., 2002). Thus, while this study focused on teacher candidates' pathways into a teaching setting, this study looked beyond the characteristics of what influenced teacher supply to urban areas, and looked at the factors that may impact their retention, as it is turnover and not solely a lack of supply that is the main cause for the teacher shortage. Thus, the goal is to have educational policies that target better retention as well as recruitment, since thus far teacher labour market studies have "focused too narrowly on recruitment and not enough on retention" (Liu, Johnson, & Peske, 2004, p. 234).

Purpose Statement

Teacher shortages in the U.S. have challenged school districts throughout the country. In urban school districts in particular, recruitment and retention of highly qualified teachers, especially in mathematics and the sciences, is an ongoing challenge (Boyd et al., 2007; Hanushek et al., 2004; Ingersoll, 2000; Lankford et al., 2002; Liu et al., 2008; Loeb et al., 2005). Though there is a substantial body of literature that has sought to better understand these recruitment and retention challenges by studying current and former teachers in these settings, there has been little consideration of how the expectations of teacher candidates might influence recruitment and retention efforts. By better understanding the factors that relate to teachers entering the profession, it may be

possible to refine recruitment and retention efforts to provide better support and more attractive alternatives within urban school settings.

Accordingly, to understand the challenge urban schools and districts face in recruiting, hiring, and ultimately retaining teachers, it was beneficial to understand the problem from both those planning to come into schools (prospective teachers) and those within schools (administrators) (Yin, 1994). In this study's mixed method design, teacher candidates from New Jersey (n=697) were studied to learn more about their preferences and expectations for the profession, including: where do teacher candidates, from myriad teaching certification pathways, most prefer to teach? What factors impact their decision of where to teach? How does the study of one urban district, Newark Public Schools, illustrate teacher candidates' preferences and processes into teaching in an urban district? This research utilized various theories from sociology, economics, and psychology in a conceptual model to examine whether factors were predictive in any way of teacher candidate's decision making. By utilizing a model to categorize the factors that predict the locale of teacher candidate's job placement and their anticipated attrition, school administrators and policy makers facing teacher shortages can have more specific knowledge about what they may do to recruit and retain teachers more effectively, specifically in high-needs urban districts.

Research Questions

The goal of this study was to answer the following questions:

(R1) Do teacher candidate's personal and professional characteristics, their social experiences and job search methods, and their perception of working conditions relate to their career plans of where to teach? If so, what predictors are most significant?

(R2) Do these factors (personal characteristics, professional characteristics, social experiences, job search methods, and perceptions of working conditions) influence

STEM teacher candidate's career plans of where to teach? How are the significant predictors of all teacher candidates' career plans similar or different than STEM teacher candidates' career plans?

(R3) How do teacher candidates' perceptions of working conditions, social learning experiences, job search methods, and personal and professional characteristics affect Newark Public School's (NPS) recruitment and hiring challenge, according to both NPS's school administrators' and incoming teacher candidates' perspectives?

Significance of the Problem

Educating for Economics

One of the purposes of establishing public education at the turn of the 20th century was to develop a skilled workforce that can fuel economic opportunity, while preparing citizens to participate in a democratic society (Dewey, 1932; Tyack, 1974). This sentiment has continued as numerous reports repeatedly circulate the idea that the United State's future economic development, and its sustainability as a leader in today's global political market, is contingent upon educating all its children, where the "future belongs to the nation that best educates it citizens" (Obama, 2011).

Educating All

Never has the stakes been as high as it is today to educate *all* of the country's students. To continue to fuel the nation's economic development, all students need to be better equipped to compete in careers that have no geographic boundaries, but have become part of transnational corporations based on technologically advanced systems of information (Anyon, 2005; Sassen, 2001).

No Child Left Behind

The demand for a better-educated student population has led to a standards-based education movement with high-stakes tests holding K-12 education accountable to measures that are tied to student achievement (Title 2, Public Law 107-110, NCLB

2002). Accordingly, one of the purposes for the reauthorization of the Elementary and Secondary Education Act in 2001, better known as the No Child Left Behind (NCLB) mandate, is to have a policy where every student in America is taught by a Highly Qualified Teacher (HQT). The goal is that every American student should have access to highly skilled teacher, since teachers are one of the best in-school factors that impact students' achievement.

Achievement Gap

Nowhere is the problem of a lack of highly qualified teachers more prevalent than in urban and high poverty districts, where attrition and turnover poses a major challenge to sustaining education reforms, by diminishing urban students' access to comprehensive education (Sadovnik, 2008). As the minority student population grows (it grew from 24% in 1972 to 45% in 2012) with approximately 65% of them in central cities (NCES, 2007), the challenge of staffing urban schools and the lack of teachers is reflected in the education achievement gap that already exists between poor urban students and their more affluent counterparts (Boyd et al., 2002; Darling-Hammond, 2001; Lankford et al., 2002; Liu et al., 2008; Loeb et al., 2005; Peske & Haycock, 2006).

Revolving Door

In a study on New York City's school staff, Lankford et al. (2002) found that teachers left high poverty, high minority schools as soon as they could, and other research projects across the nation (Texas, California, Missouri, Virginia) have corroborated this study (Hanushek et al., 2004; Loeb et al., 2005; Macdonald, 1999; Podgursky, Monroe, & Watson, 2004). These scholars have found that schools with the high percentage of poverty and high numbers of minorities usually have the most difficult working

conditions including but not limited to safety concerns, lack of leadership personnel, few instructional resources, inadequate facilities, and high student mobility. With such working conditions, a “revolving door” phenomenon occurs and schools have difficulty retaining any teachers, regardless of quality (Darling-Hammond, 2000; Ingersoll, 2001; Loeb et al., 2005). Moreover, in a recent study Ingersoll and May (2011) posited that despite an increase in the pipeline of teachers for hard-to-staff schools—schools that have high number of minority and low-income population—the triumph of an increased pipeline is mitigated by an increase in non-retirement teacher turnover, especially among minority teachers and teachers of subject areas such as mathematics and science. For example, in the 2004-2005 school year, Ingersoll and May (2011) found that “47,600 minority teachers entered teaching; however, by the following year, 20% more—about 56,000—had left teaching” (p. 64). While the student demographics—low-income and minorities--may have drawn minority teachers to teach in their schools, the school’s working conditions are pushing them to leave.

This Study’s Significance

Thus, this study’s focus on the relationship between teacher candidate’s perception of where they prefer to teach, and the factors that influence it, should add to the efforts to improve teacher recruitment and retention policies. This study conceptualized a framework that integrated theories from labor economics, sociology, and psychology, to deepen the understandings of factors influencing teacher candidates’ career plans. This approach integrated former investigated factors of the teacher shortage with new factors, such as learning experiences, to understand the teacher shortage challenge from entering teachers as opposed to current or former teachers.

Ultimately, improving teacher recruitment and retention will reduce the costs associated with the constant turnover, which is estimated by some to be approximately \$40,000 per teacher (Wong & Asquith, 2002), which is an estimated annual cost of seven billion dollars (NCTAF, 2008). In order to address the constant cycle of recruitment and retention, this amount can go into local recruitment initiatives such as better funded local teacher preparation programs, improving working conditions in urban schools, including stronger leaderships training programs, and ongoing professional development programs aimed at supporting and retaining teachers.

Organization of the Study

This chapter provided an overview of the study, including relevant background on the challenges of teacher recruitment and retention, particularly in urban school districts. The statement of the problem and the purpose of the study were outlined, and the research questions, as well as the significance of the problem were presented.

Chapter Two describes a framework for the study by reviewing the application of theories from the fields of economics, sociology, and psychology on teacher recruitment and retention. This framework had five dimensions that created the focus and boundaries of the study; the first dimension focused on working condition perceptions, the second was the job search processes of learning about and finding a teaching position, the third was the social learning experiences that teacher candidates had, the fourth focused on teacher candidates' professional characteristics, and the last dimension was teacher candidates' personal characteristics.

Chapter Three explains the methodology for the study, and included the research design, method used for data collection, and data analysis procedures. The data came

from a mixed method study of 697 teacher candidates who responded to a survey, as well as interviews with 15 school and district level administrators in one urban district.

Chapter Four first describes the sample, the variables to be used in the models, and then described the findings from two groups of models: the first group of models examined the factors that influenced all teacher candidates' career plans of where they would most prefer to teach. The second examined the factors that influenced mathematics and science teacher candidates' career plans of their most preferred teaching location.

Chapter Five is a mixed method study of one urban district's experiences with recruiting and hiring teacher candidates, from the perspective of incoming teacher candidates as well as school and district level administrators.

Chapter Six summarizes and synthesizes the main findings from the models and mixed method study, and situates the importance of understanding the factors that influence teacher candidates' recruitment and hiring. This chapter also outlines recommendations for practitioners, recommendations for further study, and concludes with this study's findings.

CHAPTER TWO. LITERATURE REVIEW AND CONCEPTUAL FRAMWORK

Introduction

While there is extensive literature and several systematic reviews on empirical studies pertaining to teacher recruitment and retention, the analyses are steeped in one theoretical framework: the economic labour market theory of supply and demand (Borman & Dowling, 2008; Guarino et al., 2006; Macdonald, 1999). The following literature review provides an overview of theories from the disciplines of economics, sociology, and psychology that have been used to explain the teacher labour market, and the factors associated with the teacher shortage and turnover.

This study drew upon theories of human capital, social capital, and social learning to conceptualize the factors that influence teacher shortage, and the influence of those factors on teacher candidates' intentions to distribute to different school districts. Specifically, by identifying factors that influenced teacher candidates' career plans for where they would "most like to teach,"¹ these theories provided a conceptual framework that guided the understanding of how teacher candidates' perceptions, processes, experiences, and background influenced their preferences for an urban vs. non-urban teaching setting.

The chapter begins with an explanation of how teachers' professional characteristics, in light of it being a measure of human capital, can impact teacher candidates' recruitment, hiring, and retention. Next, the processes of teacher candidates' job searches are reviewed via the sociological lens of social capital theory. Finally, social learning theory provides a mechanism to review how teacher candidates' personal

¹ This is how the question was worded to teacher candidates: Where would you MOST like to teach?

characteristics, experiences, and perceptions of the environment relate to their career plans.

Human Capital Theory: Teachers' Professional Characteristics

Human capital theory, based on economic perspective, reviews the costs and benefits for an individual entering or leaving a profession. The idea behind the theory is that the more one invests into his or her skills, knowledge, and education, the greater the return in one's career (Becker, 1962, 1993). The implication is a net positive career return, where the cost is less than the benefits, should lead to more job satisfaction, and result in a smaller chance of turnover (Becker, 1993). When applying this theory to teachers' decisions to enter, stay, or leave teaching, Kirby and Grissmer (1993) coined the term "human capital theory of occupational choice" (as cited in Shen, 1997).

Traditionally, part of a teacher's compensation in addition to a salary from a seniority-based single salary schedule, is his or her pension, health benefits, and job security. Since there is usually no extra compensation for teachers regardless of their certification field, merit, or working conditions, teachers who believe they can find a teaching position in a better environment or a better paying career may have little incentive to remain in their current position (Murnane & Olsen, 1989; Podgursky, Monroe, & Watson, 2004).

In the language of human capital theory, *utilities* are the factors teachers weigh in when making their career decisions (Becker, 1993). These utilities can be monetary benefits or non-monetary benefits (Macdonald, 1999). Non-monetary utilities are discussed below as working conditions. The monetary benefit is salary. Part of the difficulty in recruiting and retaining teachers is that many of them can command a higher

salary in another career; Darling-Hammond (2003) reported that all teachers on average earn approximately 20% less than other professionals with similar education and training. This lost opportunity cost is most prevalent among STEM majors--individuals with science, technology, engineering, or mathematics degrees. Outside of education, STEM majors can get a better return for their investment into their STEM education by pursuing a career that will value their credentials, rather than equate them to all others credentials. The equalizing of credentials is usually the case with teachers' single salary schedules and lack of merit pay (Hassel, 2002; Ingersoll, 1999; Liu et al., 2008; Price, 2004; Weiss, 1999).

Similarly, the difficulty in recruiting and retaining urban teachers is that there are no extra benefits for the extra cost teachers incur working in poor conditions often associated with urban schools such as dilapidated facilities, lack of leadership, few resources, and students with more needs as a result of their low income status (Haberman, 2005). As a result, STEM teachers are often referred to in the literature as hard-to-staff subjects areas, while urban schools with high concentrations of low income and high minority of students are often referred to as hard-to-staff schools (Berry & Hirsch, 2005; Prince, 2002).

Alternate route certification evolved in early part of the 1980s as a response to the projected teacher shortage. Alternatively certified teachers tend to be career changers who receive a few weeks of training prior to starting work as a teacher (Darling-Hammond, 1999; Murnane, Singer, & Willet, 1989). Accordingly, their opportunity cost is a lot less than traditionally prepared teachers who incur costs by spending over a year preparing in university teacher education programs or colleges, in addition to paying

tuition. This lower cost pathway into teaching helped create a new pipeline of teachers into urban areas since its inception in many states, and now represents the largest pathway for those becoming urban teachers (Liu et al., 2008).

Part of the lure of nationally recognized alternative certification programs like Teach For America (TFA) or The New Teacher Project (TNTP) is the low opportunity cost, in that teacher candidates spend a few weeks in training, whilst receiving stipends, and then they get paid teaching positions as well as a paid masters in education degrees. Moreover, most TFA candidates are contracted to work only two years; thus, the benefits are seen to outweigh the costs, especially with regard to other teacher credentialing programs. It is perhaps this reason why over 10 times as many people apply to TFA as there are spots, making it one of the most competitive teacher preparation programs in the country. As a result, prestige has become an additional benefit that can outweigh the cost of working in less than ideal conditions (Brewer, 1996; Kirby & Grissmer, 1993; Maier, 2012).

While the implementation of alternative certification programs with added incentives may have lessened the cost of teacher licensure and increased the supply of teachers in hard-to-staff subjects and areas, NCLB (2001) had the opposite effect (Liu et al., 2008). NCLB mandated all teachers needed to be Highly Qualified Teachers (HQT), where “to be deemed highly qualified, teachers must have a bachelor’s degree,” as well as meet state definition of subject area certification. Prior to NCLB, many teachers were teaching outside of their discipline, but with the new mandate, teacher candidates would need to have a major in the subject area as opposed to a few courses that may have qualified him or her earlier under an emergency certification.

With NCLB's HQT mandate comes greater costs for credentialing, especially for career changes. Unfortunately, the new Elementary and Secondary Education Act re-enactment did not offset the greater cost associated with teacher credentialing with any new benefits, leading Darling-Hammond and Sykes (2003) to suggest that "the nation will have to overcome serious labor market obstacles" (p. 5) before NCLB can be fully implemented. Indeed, Liu et al. (2008), in an empirical study on the challenges of recruitment and retention of mathematics teachers in urban districts, argued NCLB's HQT mandate did in fact significantly tighten the supply of teacher, leaving urban districts floundering to find any "warm body" to educate their students.

As a result of the difficulty recruiting teachers from hard-to-staff subject areas, and into hard-to-staff schools, many states and districts offered financial incentives to offset perceived costs associated with these conditions. Financial incentives included school loan forgiveness for every year a teacher teaches in an urban school, or housing subsidies, or signing bonuses when teachers began working in hard-to-staff subject areas or schools (Hirsch, Koppich, & Knapp, 2001). Some research has shown that while financial incentives help with teacher recruitment and increasing the pipeline of teachers into urban areas, it does not help in the long run to retain them (Ballou & Podgursky, 1997; Liu, Johnson, & Peske, 2004).

According to human capital theory, the key to recruiting and retaining teachers is creating rewards to balance the opportunity cost of becoming a teacher, and compensating those in more difficult working conditions with benefits above the single salary schedule. While human capital theory offers some insight into how teacher

candidates make the decision of where to teach, people's decisions are not usually the sole result of a rational weighing of costs and benefits.

Social Capital Theory: Teachers' Job Searches and Homophily

Social capital, like human capital, is knowledge an individual has; unlike human capital, where the value is in building one's skill set, the value of social capital is in building one's structural access to opportunities, resources, and support via connections to information networks and interpersonal relationships (Bourdieu, 1986; Coleman, 1988; Granovetter, 1974; 2005). The influence of an individual's access to social capital with one's career decisions has been documented in several studies (Granovetter, 1974/1995; Hodkinson & Sparkes, 1997).

The aspect of social capital pertaining to an individual's personal social ties and networks is called social networking; an idea referred to as market segmentation in the economic literature (Martin, 2000, as cited in Boyd et al., 2005), and informal structural power in psychological literature (Laschinger, Finegan, Shamian, & Wilk, 2001). In his seminal study documented in *Getting a Job*, Granovetter (1974/1995) discussed how professionals' social networks help them with career mobility. One of the most important findings he had was the idea that individuals' social networks consisted of weak ties (i.e. relationships with casual acquaintances) and strong ties, (i.e. the relationship one has with family and friends). Granovetter (1974/1995) found that the higher the number of weak ties an individual has, the more likely he or she will have more extensive information about job opportunities. The reasoning behind the finding, he posited, is that while one's strong ties are more likely to help one find a job if possible, those with strong ties are generally a more homogenous group and they usually have access to the same

information. On the other hand, an individual's weak ties may prove to be a more diverse group, thereby having access to more extensive sources of information.

Teachers' social networks, or lack thereof, have been shown to influence teacher recruitment, hiring, and retention (Smith & Ingersoll, 2004). Liu and Johnson (2006) found that many new teachers made their career decisions with a lack of information, which may attribute to job dissatisfaction and turnover. On the other hand, Cannata (2011) found that teachers who researched schools they were interested in and had some type of connection to the schools through either a person, a process or through relationships they nurtured, had better chances of getting hired at their desired location. This suggests that a teacher's social capital does have an impact on their recruitment, job search, and hiring.

The strength of a teacher's social capital and networking is also important to teacher retention. In a study on teachers who graduated from an urban teacher education program, Thomas (2007) found that teachers with weak ties and networks outside of their school had the higher turnover rates, while teachers with stronger ties and relationships within their schools were more likely to remain in those schools. This corroborates Ingersoll's (2001) finding that teachers perceived collegial support as a reason for staying in teaching, while other researchers documented the influence of collaboration in professional learning communities and new teacher's support systems as reasons to stay (Johnson et al., 2004; Lieberman, 1995; Spillane & Louis, 2002).

Coleman (1988) posited that one of the benefits of social capital and strong ties is that individuals receive their information from people they trust and share mutual values. Building on this idea of trust in a community of people is the social network principle of

homophily, where people tend to seek association with people who are similar to them (McPherson, Smith-Lovin, & Cook, 2001). Boyd et al. (2005) documented an example of homophily with teachers who prefer to teach close to where they grew up, or to work in communities similar to where they grew up. Since most teachers grow up in suburbs, many still prefer to teach there (Kirby et al., 1999; Liu et al., 2009). While some may start teaching in urban districts, it was “the draw of home,” and the familiar that had teachers leave urban districts to teach in the suburbs (Boyd et al., 2005, p. 113). Similarly, Hanushek et al. (1999, 2002) found that teachers tended to leave schools that were not similar to them racially. A more nuanced review of the literature on the impact of teacher demographics on teacher recruitment and retention is discussed below.

Thus, social capital theory offers another lens with which one may understand the process of teacher recruitment, hiring, and retention. Social capital theory can explain the structural relationships of a social process—that of building a career, and offers a perspective often overlooked with most economic dissemination of the teacher shortage literature. Yet, a teacher’s decision making regarding teaching requires a look beyond the calculations of the costs and benefits of the career, and the knowledge of the processes of career building, and needs to include the impact one’s prior learning experiences may have on their career decisions.

Social Learning Theory: Teachers’ Personal Characteristics, Experiences, and Perceptions of Environment

Social learning theory takes a psychological perspective of how an individual’s characteristics and life’s social interactions and experiences influence the way he or she behaves and interacts in an environment. Krumboltz (1979) suggested that social learning theory can help one to understand the behaviour of career decision-making, and

posited several factors can interact with it including demographic factors, learning experiences, environmental conditions, and cognitive and emotional responses. Chapman (1983) applied Krumboltz's theory of career decisions as a theoretical framework to review the literature on teacher attrition, and conceptualized a framework where the aforementioned factors influence teachers' career satisfaction, and by extension, teachers' decisions to remain or leave teaching.

Some of the factors Chapman (1984) later empirically tested as influential on teacher career satisfaction and retention included teacher personal characteristics (e.g. gender, age, socioeconomic status, race), the nature of teacher training (including initial commitment to teaching, time spent in field, GPA), teachers' professional and social integration (e.g. marital status, friends within school), and external environmental influences (e.g. school climate).

Many studies have tested parts of the social learning theory of career decisions, without necessarily explicitly using the framework. The two most common teacher characteristics often studied with regards to recruitment and retention are teacher demographics and teacher qualifications (Billingsley, 2004). Some factors of teacher qualification were discussed above in the section on human capital, below is a discussion of some demographic characteristics' influence on recruitment and retention.

Results of the research on age as a factor in teacher's decision to leave teaching show a U-shaped pattern, with young teachers and older teachers leaving more often than mid-career teachers (Boe et al., 1997; Darling-Hammond, 2003; Grissmer & Kirby, 1997; Ingersoll, 2001; Reichardt et al., 2002). Specifically, Borman and Dowling (2008), in

their meta-analysis on teacher career trajectories, reviewed four studies that compared teacher attrition with different age groups as predictors.

Teachers who were 30 years or younger at entry into the profession to teachers who were 31 years or older...[or] contrasted teachers who were older than or younger than a particular age (e.g., 35, 39, 50)...[or] contrasted those whose age fell within particular ranges (i.e., 20 to 24 vs. 25 to 29, and 30 or older vs. 25 to 29). (p. 378)

The literature generally suggested that while younger teachers leave because of environmental factors/working conditions, and older teachers leave to retire, mid-career teachers have better salaries and have adapted to working conditions, and thus have lower attrition (Borman & Dowling, 2008; Darling-Hammond, 2003; Grissmer & Kirby, 1997).

With regard to the function of race as a factor of turnover, it has been suggested that White teachers leave teaching more often than Black teachers just by virtue of being the racial majority of the teacher population (Ingersoll, 2001; Kirby et al., 1999; Murnane et al., 1991). Hanushek et al. (1999, 2002) found that teachers tended to leave schools that were not similar to them racially. White teachers tended to leave schools that had a majority Black or Hispanic student population, and Black and Hispanic teachers tended to leave schools where the majority of students were White (Hanushek et al., 2002; Johnson, Berg, & Donaldson, 2005).

In an experimental design, Young et al. (1997) suggested that teachers found job positions more attractive if it was introduced to them by someone of the same gender or race, this led them to an application of the similarity-attraction hypothesis. Indeed, in a study by Ingersoll and May (2011), it was demonstrated that there are higher numbers of minority teachers entering teaching in minority majority schools (as a result of targeted efforts to increase the minority pipeline) but unfortunately, they too are experiencing high

attrition rates. While many minority teachers are initially attracted to working in majority minority schools (schools with the majority of their student population from ethnic or racial minority backgrounds), as aforementioned, those schools tend to have the most difficult working conditions, leading to high turnover rates (Ingersoll & May, 2011).

Teachers' gender has also been found to be associated with turnover, with females more likely to leave than males (Gritz & Theobald, 1996; Stinebrickner, 2001; Weiss, 1999). Winter (1996) found that male teachers weighed extrinsic factors like salary more than females when evaluating jobs, thus the difficulty is recruiting male teachers, but once men entered the profession they were less likely to leave. The effect of gender on turnover could also be a result of marital status and/or starting and raising a family (Chapman, 1983; Smith & Ingersoll, 2004; Lubbers, Loughlin, & Zweig, 2005; Stinebrickner, 2002; Wayne & Young, 2003). Boyd et al. (2005) observed that many females move out of inner-cities and urban areas when they want to start a family, which results in a high turnover in cities. However, Useem and Neild (2005) found that married teachers were more likely to remain teaching in urban settings when compared to unmarried teachers. The seeming contradictions in empirical findings suggest an interaction variable, such as race or socioeconomic status.

In his review of the literature on teacher characteristics that impact retention, Chapman (1983) included studies that suggest teachers' socioeconomic status as a predictor. The studies suggested that the lower the socioeconomic status of the teacher or the teacher's family, the less likely the teacher will leave teaching. The logic behind that is for many low income families, teaching is regarded as a prestigious profession, while

for higher income families, it is seen as a step down from their professions (Chapman, 1983).

Chapman (1994) had similar findings with his review of teachers internationally. More recent systematic literature reviews have not included studies that include teachers' socioeconomic status (Borman & Dowling, 2008; Guarino et al., 2006), and it was suggested in both systematic reviews that those studies did not meet the empirical parameters of studies their review was synthesizing. This could be due to the use of a parents' or guardians' education level, or the location one lives in, is now more commonly used as a representation of students' socioeconomic status (Zha, 2009). Alternatively, similar to the earlier discussion of gender, perhaps socioeconomic status has a interaction variable, such as race (Poplin & Weeres, 1994), or is discussed in the context of social and human capital.

Besides the *nature* factors in Krumboltz's social learning theory of career choice (race, age, gender), Krumboltz (1979) suggested nurture factors also have an impact on career decisions, specifically environmental factors such as learning experiences, the influence of other people, and the institutions and events in a person's particular environment as they grow up. These environmental factors can influence people to develop beliefs about the nature of their careers and their role in life. For example, earlier in this review it was suggested that similarity breeds attraction, thus it is 'natural' for a White teacher to want to teach White students, and Black teachers to feel more comfortable teaching Black students. Researchers and urban teacher educators, in recognition of this natural inclination of White pre-service teachers tendency towards "white flight" to suburban schools" (Grande et al., 2009, p.189), have designed courses

to 'nurture' understanding in pre-service teachers of their racially diverse student populations (Milner, 2010). This is in addition to the implementation of urban field experiences that are designed as social learning experiences necessary for cultural competency (Ladson-Billings, 2000) and culturally relevant teaching (Hammerness et al., 2005, p. 387).

Due to the teacher shortage in urban districts, Swartz (2003) predicted that many of her White pre-service teachers would teach in urban areas "where they know no one and where they have never been" (p. 256). To address their misperceptions of urban communities, much of which is "media based and exogenous" in that it has deficit model undertones, Swartz (2003) introduced an urban school field placement requirement in her teacher preparation course, in hopes of nurturing in the teacher candidates a different disposition, knowledge, and belief about urban communities. It has been noted, though, that while urban field experiences are not necessarily sufficient learning experiences to influence all White teachers to teach in urban districts (Grande et al., 2009), it has been shown to influence a greater willingness to teach in urban settings (Burns, Grande, & Marable, 2008).

Thus the importance of the impact of learning experiences on a teacher's career decisions is an area that needs to be further studied. In addition to studies on the impact of learning experiences on attrition, studies on the impact of emotional responses on attrition also need to be further reviewed. Krumboltz's (1979) theory suggested emotional responses, in tandem with learning experiences and environmental conditions, also have an impact on career decisions. For example, one study provides a "link between teacher

attrition and perceptions of violence” for teachers who left urban schools (Smith & Smith, 2006, p. 34).

More recently, Khalil, Hamdi, and Zha (2012) provided further analysis on how teacher candidate’s perception of violence and safety deterred them from entering teaching in Newark Public Schools (NPS), despite NPS having one of the highest starting salary schedules in the state², and despite the tough economic times, many New Jersey districts were facing as they implemented drastic Reductions In Workforce (RIWF) staffing cuts. Thus, teacher candidates’ perception of safety illustrated Krumboltz’s social learning theory of how teacher candidates’ perception of environmental conditions, their emotional response to these conditions, and their social experiences within Newark, all influenced their career plans of avoiding Newark Public Schools (Khalil, Hamdi, & Zha, 2012).

Perceptions of Environment: Kalleberg’s Theory of Working Conditions

The environmental conditions Krumboltz (1979) suggested as an influence on career decisions are not limited to learning experiences. Other environmental conditions are what scholars of the teacher labour market have coined *working conditions* (Ingersoll, 2001). The literature on the impact of working conditions on teacher turnover is extensive. Rosenholtz and Simpson (1990) utilized sociological literature (such as Bernstein’s (1986) *Pedagogic Discourse* and Durkheim’s (1965) “Moral Boundaries” in *The Elementary Forms of Religious Life*) and psychological literature on job design to discuss how workplace conditions simultaneously influence the “rise and fall of teacher commitment” (p. 241). They explained that “without solving the boundary problems ofbasic tasks....and the behavioral management of students....teachers can hardly

² <http://php.app.com/edstaff/search.php>

progress to the core task: instruction” (p. 242). However, as it relates to teacher candidates’ decisions in the job search, their perceptions of working conditions can be potentially as influential on recruitment as experiencing said working conditions is on retention.

Young (1995) suggested workplace perception is important because realistic job expectations can lower turnover. Hancock and Scherff (2010), using self-reported data from the *Schools and Staffing Survey* of 2003-2004, found English teacher’s attrition risk can be predicted by several teacher characteristics and working conditions. Thus attrition risk, also referred to as teacher commitment or turnover intention, may very well be influenced by the determinants of turnover, thereby situating attrition risk as predictor of attrition as well (Price, 2004).

There have been several major factors identified in influencing turnover decisions among teachers, and they are related to what scholars label as *working conditions*. One framework for understanding the numerous types of working conditions is to use Kalleberg’s (1977) theory of job satisfaction. This theory categorizes several dimensions of working conditions that individuals seek value within in order to attain satisfaction. These dimensions of work are (a) intrinsic (b) convenience (c) financial (d) relations with co-workers, (e) career opportunities, and (f) resource adequacy. Earlier in this literature the financial dimensions of work (e.g. salary) were discussed under human capital theory, and the relations with co-workers dimension was explored under the heading of social capital.

The intrinsic dimension of working conditions refers to whether a teacher finds the act of teaching stimulating, interesting, and challenging to one’s skills (Kalleberg,

1977). Intrinsic factors have an underlying motivator; in teaching the intrinsic motivator is often a desire to make a difference with children (Farkas, Johnson, & Foleno, 2000; Hirsch et al., 2001). Using this lens, teachers are interested in their career because they can grow in learning, while facilitating the learning of others.

The convenience dimension of working conditions refers to how convenient the teaching job is to the teacher, including commuting time, working hours, teaching load, “freedom from conflicting demands,” (Kalleberg, 1977, p. 128), and the teaching work space. All of these factors have been shown to impact teacher turnover (Hanushek et al., 1999; Johnson & Birkland, 2003; Kirby et al., 1999, Loeb et al., 2005; Mont & Rees, 1996; Murnane & Olsen, 1989). Yet many of these convenience dimensions are not accessible to teachers who work in low-income and urban schools (Johnson et al., 2004; Haberman, 2005). For example, Boyd et al. (2005) found it is often a commute for many teachers to go to the inner cities, which is one reason why they eventually leave.

Other researchers cited the extra workload of educating disadvantaged urban students to be an inconvenience that causes turnover (Johnson & Birkland, 2003). Urban districts require teachers to accommodate a higher number of English Language Learners and special-needs children, all within a setting that is affected by poverty (Falch & Strom, 2005; Hanushek et al., 1999; Johnson & Birkland, 2003; Lankford et al., 2002). Moreover, school facilities in urban areas are often dilapidated, creating spaces that are physically uncomfortable for teaching and learning (Loeb et al., 2005). Thus the lack of convenient working conditions in urban districts is one reason why such districts face challenges with recruiting, hiring, and later retaining teachers.

The resource adequacy dimension of working conditions refers to collegial, parental, and leadership competency and support, classroom supplies, and proper management of the financial, instructional, and social school operations. In an exploratory factor analysis of organizational working conditions on teacher turnover, Ingersoll (2001) found that it was primarily a lack of resource adequacy conditions that lead to teacher leaving. Specifically, it was inadequate leadership and support from school administrators, and student disciplinary issues that influenced teachers to leave. Other scholars found that teachers often cite they want more autonomy, and more opportunities for collaborative decision-making, in order for them to feel a commitment to remain in teaching (Farkas et al., 2000; Ingersoll & Rossi, 1995; Weiss, 1999; Young, Rinehart, & Place, 1989). While a lack of teaching of teaching supplies can theoretically impact retention, this was not found to be significant in quantitative studies (Ingersoll, 2001; Stockard & Lehman, 2004).

The career opportunities dimension of working conditions refers to teachers' desires for growth and opportunities for leadership and advancement. Hirsch, Koppic, and Knapp's (1998) research early on found career recognition as motivator for teacher's satisfaction, while others posit that career-advancement opportunities can influence teachers' desires to stay in teaching (Johnson et al., 2004; Shen, 1997; Weiss, 1999). This dimension of working condition has led some districts to devise career ladders by creating positions for master teachers and coaches; a strategy districts believe helps them retain their teachers while improving district capacity (Liu et al., 2009). As the researchers have demonstrated, a school's environment i.e. working conditions, have considerable effect on teacher turnover and retention. Below is a conceptual framework

the theorizes the perception of working conditions as influential on teacher candidates' career plans, i.e. teacher candidate recruitment.

Conceptual Framework

The majority of the empirical research on the teacher labour market utilizes a human capital perspective to explain how teacher candidates may rationalize career decisions via an economic perspective of evaluating monetary and non-monetary benefits (i.e. working condition factors). However, economic theory is limited in that it does not take into account the societal structure the transaction of career decision making is taking place in, nor does it take into account the endogenous aspects of individual thoughts and experiences.

Social learning theory offers insight on how a teacher's demographic background, experiences, and emotions can also have an effect on their perceptions of what they want in a career; this psychological perspective allows one to take the individual's thoughts as a whole into consideration. Social capital theory illuminates how career decisions are conducted within a social structure with other individuals, and how relationships and information shared between individuals can impact career decisions. Taken together, these interdisciplinary theories can shed light on how teacher candidates make career plans and decisions about entering or exiting teaching.

Five major clusters of factors were identified as important in the teacher labor market. These factors can affect teachers' career decisions concerning recruitment and retention. While the literature emphasized factors' influence on retention, this study argued that many of the same factors impact recruitment. The five major clusters identified as factors influencing whether teacher candidates' prefer to teach in urban or

non-urban schools are: teacher candidate's personal characteristics (e.g. race, age, socioeconomic status, childhood and high school location); professional characteristics (e.g. teacher producing institution, subject area certification, field experience location, attrition risk.); social learning experiences (e.g. time in urban areas seeking work, services, or entertainment, experience with low income children, family and friend influence); perception of working conditions (e.g. convenience conditions and adequate resources), and job search method (formal versus informal social methods). The relationships of these five constructs, and their relationship with the sampling variables and dependant variable, are depicted below. Figure 2.1 demonstrates these relationships in a conceptual framework model.

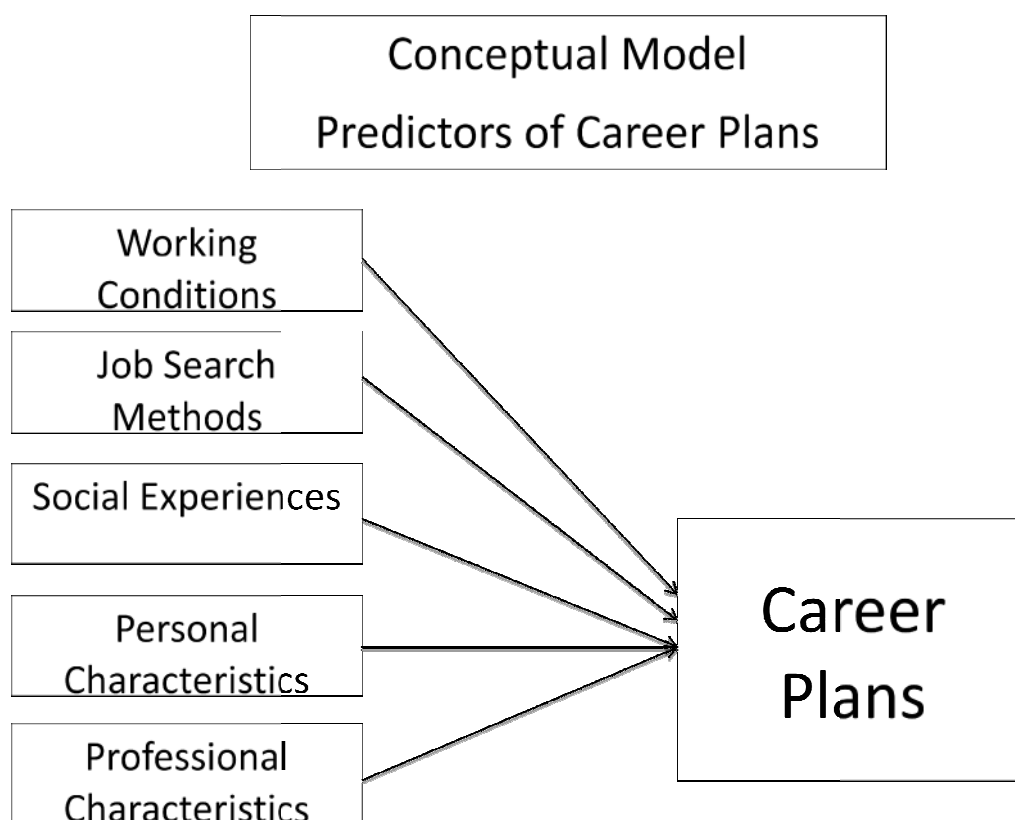


Figure 2.1. Conceptual model of predictors for teacher candidates' career plans.

The left side of Figure 2.1 depicts the characteristics, experiences, perceptions, and networks of a teacher candidate. The right side of Figure 2.1 depicts the career plans of a teacher candidate: to teach in an urban district or not.

Summary

This chapter conceptualized a framework that integrated theories from labor market economics, sociology, and psychology, which was then utilized to deepen the understandings of the variables influencing teacher candidates' career plans. This approach integrated formerly investigated predictors of the staffing challenge, such as working conditions and teachers' personal and professional characteristics, with new factors, such as learning experiences and job search methods, to understand the teacher shortage challenge from entering teachers as opposed to current or former teachers.

CHAPTER THREE. METHODOLOGY

The intent of this study was to understand and ultimately aid in addressing the challenges of recruiting and hiring teacher candidates in urban schools, specifically in hard-to-staff subject areas such as mathematics and science. One purpose of this convergent parallel mixed method study was to conceptualize a model of explanatory factors from five theoretical constructs (working conditions, job search methods, social learning experiences, personal and professional characteristics) that may predict the locale of teacher candidate's job placement, while exploring how these constructs were interpreted by school administrators during their recruitment and hiring efforts.

In addition, the researcher sought to explore the predictors of a subgroup of teacher candidates from STEM subject-area certifications, and to compare this subgroup's predictors to the predictors of the overall group. This chapter presents the research design in detail, including the problem statement and research questions, site of study, data sources, data collection, data collection, timeline, sampling methodology, power analysis, data analysis plan, construct of key variables and key terms, and the study's limitations.

Problem Statement

Teacher shortages in the U.S. have challenged school districts throughout the country. In urban school districts in particular, recruitment and retention of highly qualified teachers is an ongoing challenge (Hanushek, Kain, & Rivkin, 2004; Ingersoll, 2001; Lankford et al., 2002; Loeb et al., 2005). Though there is a substantial body of literature that has sought to better understand these recruitment and retention challenges by studying current and former teachers in these settings, there has been little

consideration of how the expectations of teacher candidates might influence recruitment and retention efforts. By better understanding the expectations of teachers entering school districts, and administrators hiring within the districts, this study sought to refine recruitment and retention efforts within urban school settings.

To understand the challenge urban schools and districts face in recruiting and hiring teachers, it is beneficial to understand the problem from both those planning to come into teaching (prospective teachers) and those hiring teachers (school and district administrators) (Yin, 1994). In this study's convergent parallel mixed method design, quantitative survey data and qualitative interview data were collected in parallel; teacher candidates (n=697) and school district administrators (n=15) were studied to learn more about their preferences and expectations. The research questions that framed this study included:

(R1) Do teacher candidate's personal and professional characteristics, their social experiences and job search methods, and their perception of working conditions relate to their career plans of where to teach? If so, which factors are most significant?

(R2) Do these factors (personal characteristics, professional characteristics, social experiences, job search methods, and perceptions of working conditions) influence STEM teacher candidate's career plans of where to teach? How are the significant predictors of all teacher candidates' career plans similar or different than STEM teacher candidates' career plans?

(R3) How do teacher candidates' perceptions of working conditions, social learning experiences, job search methods, and personal and professional characteristics impact Newark Public School's (NPS) recruitment and hiring challenge, from both NPS's school administrators' and incoming teacher candidates' perspectives?

This study was conducted in two parts: a survey component and a mixed-method case study of NPS. Research Questions 1 and 2 were addressed through the survey, and Research Question 3 was addressed through the NPS case study.

Research Design

Methodological Overview

The first two research questions were answered through a descriptive, correlational quantitative research design that explored the expectations of 697 teacher candidates from New Jersey to better predict their preferences and expectations of the profession, including: Where do teacher candidates, from myriad teaching pathways, most prefer to teach? What factors impact their plans about where to teach? The first two research questions were addressed through quantitative correlational research that focused on a single dependent variable – Teacher Candidates' Career Plans, and 18 variable components. Creswell (2009) described quantitative research as rooted in a post-positivist worldview, which is deterministic, reductionist, and confirmatory. Quantitative correlational research focuses on testing relationships among variables by utilizing appropriate instruments to express qualitative information into numerical form. By expressing variables into numeric form, this method of inquiry allows researchers to employ statistical techniques to analyze large data sets.

The third question was answered through a case study design (Yin, 1994) that analyzed text from 15 qualitative semi-structured interviews with Newark Public School's district and school administrators, augmented by NPS survey data (n=566). The purpose of this phase of the research was to attain a more comprehensive understanding of recruitment and hiring by comparing multiple levels (teacher candidates, school administrators, district administrators) within a recruiting and hiring system.

According to Creswell (1998), a case study explores a bounded system using various sources of data that are rich in context. Since the policies, decisions, and actions

regarding the recruitment and hiring of teachers are determined and “bounded” at the district level, the unit of analysis for this case study is the urban school district, which includes various “process” subunits (e.g. administrators, teachers, teacher candidates, etc.) embedded within, that are needed for measurement (Creswell, 1998; O’Hara et al., 1991; Yin, 1994). Huberman and Miles (1984), in their reflection on the complex nature of working with school systems, pointed out that school districts have these various groups (subunits) of individuals, including superintendents, central office and school administrators, school board members, union representatives, teachers, and parents.

Thus, the analysis of NPS’s challenge with recruitment and hiring took into account that the responses from various subunits (i.e. school level administrators, district level administrators, and prospective teacher candidates) provide a holistic picture of an urban district’s experience with recruiting and hiring teachers. By triangulating the various subunits’ perspectives on the staffing challenge, the Newark case study provided an opportunity to make sense of the process of teacher candidates’ career planning, and the district’s recruitment effort, within the five theorized constructs introduced in the conceptual framework.

Sites of the Study

This study was conducted in northern New Jersey, with the case study conducted in Newark. The city and state were chosen for three reasons. First, the city of Newark was chosen because stakeholders in NPS desired to learn more about their teacher staffing challenge, which resulted in collaboration between NPS and the Rutgers University to develop a study on the issues of recruitment and hiring in Newark as these compare to the surrounding areas (Baker et al., forthcoming). The second reason is that

the staffing challenge in New Jersey's urban districts, including Newark, are unique in that the funding in these poorest urban districts are on par with the wealthiest districts in the state as a result of the *Abbott v. Burke* cases (Tractenberg, Liss, Moscovich, & Sadovnik, 2006). Thus, the issues of funding inequity between urban districts and suburban districts is not as much an issue as it is in other Northeastern states, in that teacher salaries, especially beginning teacher salaries, over the last few years, match if not exceed the surrounding wealthier districts' salaries (Baker et al, forthcoming). Yet the challenges with regards to teacher recruitment and retention remain similar to other urban districts (Liu et al., 2008). The final reason is to identify and address the challenges that all urban districts face with New Jersey representing a key urban state (Gale, 2006) to identify policy implications that may be applicable to all urban areas in the Northeast.

Quantitative Component

Materials and Instruments

A survey of 697 prospective teachers was conducted to identify patterns among teacher candidates' decisions and perceptions. The surveys were distributed as a paper and pencil survey to the University Teacher Education Program (TEP) candidates and the New Jersey Alternate Route (NJALT) candidates. TNTP and TFA candidates conducted the survey on-line via SurveyMonkey. A copy of the survey can be found in ix D. Most of the items on the survey were based on the National Center for Education Statistics *School and Staffing Survey* (NCES-SASS), the *Teacher Follow-up Survey* (TFS), the Teacher Pathways Project surveys, the *Baccalaureate and Beyond Survey*, and influenced by the researchers' prior experience on a longitudinal qualitative study on the recruitment

and retention of teachers in the Northeast. Due to unforeseen circumstances of a budget reduction in the state of New Jersey, new questions were added to the survey to decide if the fiscal crises impacted teacher candidates' receptivity to teaching in an urban district (Similar to Christ, 2007, as indicated in Creswell & Plano, 2011, p.162).

Pilot study. The survey was piloted in a focus group in one university teacher preparation program. After the survey was conducted, a question and answer session ensued, and respondents gave feedback on unclear items, length of survey, and the amount of time it took (nearly 45 minutes). The survey was then shortened by reducing the number of questions on specific teacher preparation program courses. The revised survey instrument contains a total of 188 items that ask teacher candidates about:

- Their plans for their immediate teaching job, future career, and additional income
- Their PREFERRED teaching location, the location(s) they are WILLING to apply to
- Their job search methods (formal and informal)
- Their intention to apply to urban districts
- Their preferred working conditions and school characteristics
- Their exposure to urban areas whilst working, socializing, or seeking professional services
- Their plans with respect to applying, job searching, and prior experience in urban schools
- Their experience with low income urban children
- Their experience in urban districts
- Their plans with respect to applying, job searching, and prior experience in Newark Public Schools (used in the NPS mixed method study)
- Their exposure to Newark through work, socializing, or seeking professional services (used in NPS study).
- Their teacher qualifications and professional characteristics
- Their demographic characteristics
- Their perception of their teacher education program, specifically their mathematics and science preparation
- Their perception of the teacher labour market with respect to the locations of possible job openings as a result of the 2009 fiscal crises
- The effects of budget reduction on teaching location choice, i.e. given the unexpected Reduction in Force (RIFs), whether teacher candidates would now

be more or less willing to consider teaching in urban schools in general, and Newark Public Schools in particular.

Most questions had an “other” option, where teacher candidates may add thoughts or elaborate on their answers. These questions, along with other open-ended questions, were critical in gaining further insights into teacher candidates’ beliefs, assumptions, perceptions, perspectives, preferences and plans and added richness to the data.

Timeline

While teacher hiring is a year-round process, the majority of teachers are hired between April and September (Liu et al., 2008). Districts that are prepared to hire do so as soon as the school budget passes in April. Larger urban districts tend to have delayed hiring due to delayed retirements, teacher transfers, and promotions, and often continue to hire until late August (Liu et al., 2008). This later hiring coincides with the timing of when alternate teacher certification programs launch their teacher candidates, which partially accounts for the larger number of alternately prepared teachers in urban areas.

Accordingly, the teacher candidate survey was deployed during the April to August 2010 time frame. Teacher candidates were surveyed toward the end of their preparation programs. Accordingly, the traditional route teacher candidates were surveyed earlier, as their semester ended in May. Alternative route teacher candidates were surveyed in the summer during their intensive institute. The surveys in the UTEP took place in March and April of 2010 through the teacher candidates’ capstone education courses, which was either the student teaching seminar or the semester after student teaching. The surveys in the New Jersey Alternate Route Institutions took place in May, June, and July 2010 through the alternate route candidates’ classes. The surveys for the NTP and TFA candidates took place in August, 2010.

Data Collection

Prospective participants were recruited for the study by directly visiting classes at the TEP and NJALT locations in Northern New Jersey. A total of 35 visits to the various universities' capstone classes resulted in 697 respondents. Each teacher candidate in the capstone or alternate route classes received an introductory letter accompanying the survey questionnaire (Appendix A). The letter guaranteed confidentiality. As an incentive to participate, all respondents and attendees who were present during administration of the survey received a gift (retail value \$20), whether they participated or not. All teacher candidates with the exception of five participated in filling out the survey. Two did not finish and mailed their surveys in. The collection and handling of data was conducted in accordance with the proposal submitted to Rutgers, The State University of New Jersey Institutional Review Board (approved 11/30/2009).

Teacher Education Programs (TEPs). In order to receive support from the TEP, an introduction to this study was first presented at a monthly meeting of the New Jersey Association of Colleges for Teacher Education, the New Jersey affiliate to the American Association of Colleges for Teacher Education. After the presentation, the representatives from the different teacher education colleges and programs were asked to sign up to participate in the study. Follow up emails were sent out to the Northern New Jersey Teacher Education Colleges and Programs that indicated willingness to participate; each email included an introductory letter (see Appendix A and B for an introductory letter and sample email). Non-responding universities received additional weekly emails and phone calls over the course of one month. The recruitment effort resulted in seven universities, one with two campuses, agreeing to participate in this

study. Two required their university IRB applications to be filed, and three more required meetings with the Deans that housed the Colleges of Education. The data was collected in a total of 18 visits.

New Jersey Alternate Route Certification Institutions (NJALT). The New Jersey Department of Education authorizes Regional Training Centers and Agencies, whose curricula have been approved, to certify alternate route teachers. Several of these Centers and Agencies are affiliated with the universities that house the Programs and Colleges of Teacher Education. An email was sent out to the directors of the agencies located in Northern New Jersey to invite their teacher candidates to participate in this study (see Appendix A and B for an introductory letter and sample email). Five New Jersey Alternate Route agencies, one with five locations across the northern state, were identified as offering full alternate certification to secondary teacher candidates. Four out of the five directors provided permission for the study to be conducted. Surveys were collected across eight centers and campuses in a total of 13 visits.

National nonprofits: Teach for America and the New Teacher Project. Emails were also sent out to the regional directors of Teach for America (TFA) and The New Teacher Project (TNTP), to survey the teacher candidates that were to be placed in Northern New Jersey. Both agreed to participate, after completing IRB-type applications. Directors had core members complete the surveys on-line on SurveyMonkey.

Sampling Methodology

The sample strategy consisted of identifying the teacher producing institutions that tended to supply K-12 public schools in New Jersey. New Jersey school districts hire teachers from two different pathways: teachers from traditional teacher education

programs and colleges, and teachers from state and national alternative certification programs.

University Teacher Education Programs (TEPs). The University Teacher Education Programs were chosen after a considerable amount of research. The goal was to investigate the teacher education colleges and programs that produced the largest number of teachers in the state. A nonproportional quota sampling method was used in the study to sample the TEP candidates; Trochim (2006) explained this sampling method:

In purposive “quota sampling, you select people nonrandomly according to some quota. There are two types of quota sampling: *proportional* and *non proportional*. Nonproportional quota sampling is a bit less restrictive. In this method, you specify the minimum number of sampled units you want in each category. Here, you're not concerned with having numbers that match the proportions in the population. Instead, you simply want to have enough to assure that you will be able to talk about even small groups in the population. This method is the nonprobabilistic analogue of stratified random sampling in that it is typically used to assure that smaller groups are adequately represented in your sample.”³

Thus the goal was to have a sample that could represent sub-groups in the population, specifically secondary teachers, STEM teachers, and teachers from both traditional and alternative pathways.

A sample was taken across seven of the 13 largest New Jersey Universities that produce teachers in the northern half of the state. A longitudinal analysis of the *School and Staffing Survey* [1987-88 to 2007-2008] (Baker et al., forthcoming) revealed most of New Jersey public school teachers, like most teachers in other states, mainly “receive[d] their bachelors’ degrees from Comprehensive Colleges, or the former Normal Schools. In New Jersey, the dominant producers in this mix are Rowan University and Montclair State” (Baker et al., forthcoming). While the majority of the teachers do come from

³ <http://www.socialresearchmethods.net/kb/samprnon.php>

comprehensive colleges, “a relatively stable share of teachers coming from major research universities (primarily Rutgers and Penn State) and from relatively non-selective small liberal arts colleges” (Baker et al., forthcoming, p.29). This distribution of institutional type was based on the 1994 Carnegie Classification of institutions granting bachelor degrees to teachers (Glassick, Huber, & Maeroff, 1997 as cited Baker et al., forthcoming).

After reviewing the NCES SASS data, it became apparent that with the exception of Rowan University, which is the largest producing university of teachers, the majority of the universities were located in Northern Jersey, which, as part of the New York City’s metropolitan area, includes New Jersey’s largest five cities (Newark, Jersey City, Elizabeth, Paterson, and Trenton). Accordingly, Northern New Jersey was set as a geographical bound, and Rowan University was not included in the population of schools sampled. The largest seven of the 13 Northern New Jersey Universities that produces teachers were targeted and data was collected proportionally so that a quota sample was obtained.

New Jersey Alternate Route Certification Institutions (NJALT). The New Jersey Department of Education authorizes Regional Training Centers and Agencies, whose curricula have been approved, to certify alternate route teachers in the state of New Jersey. Four out of five directors of New Jersey Alternate Route institutions in Northern New Jersey agreed to be sampled. Surveys were collected across eight centers and campuses in 13 visits.

National nonprofits: Teach for America (TFA) and the New Teacher Project (TNTP). Two national nonprofit alternate route agencies were producing teacher

candidates for Northern New Jersey at the time of the study: Teach for America (TFA) and The New Teacher Project (TNTP). Each had one cohort, and the entire population present was sampled.

Secondary and STEM teacher candidates. Both secondary and STEM (science, technology, engineering, and mathematics) teachers were also a quota sample. The teacher candidates sampled were looking to teach in the 2010-2011 school year in secondary schools. The focus on secondary teachers is because the teacher labour market in the Northeast is one where the demand is highest in secondary education, while the supply for elementary education exceeds the demand (Ingersoll, 2001).

Due to the mix of both elementary and secondary teachers in the capstone courses, there is a representative sample of elementary teacher candidates (approximately a third). Moreover, when instructors of capstone courses in teacher education programs and colleges were contacted to schedule site visits with their teacher candidates, there was a conscious attempt to identify and schedule site visits with secondary education capstone courses that included mathematics and science secondary education teacher candidates. In both the literature and by the Department of Education, STEM teachers have been identified as part of the Teacher Shortage Area (TSA). Quoted sampling was once more utilized to ensure enough STEM teacher candidates were surveyed (approximately a third of the sample).

While the sample of teacher candidates was not a random sample, a comparison in Table 3.1 of New Jersey teacher candidates' gender and race to the newly hired teachers nationally may provide evidence of how biased or representative the sample is. It is evident this study's sample has more minority and male teachers than the national

average. However, when comparing this study's New Jersey Alternate Route teacher candidates with all of New Jersey Alternate Route teachers, it can be observed "Alternate Routes programs in New Jersey are clearly bringing more men and more teachers of color into the profession than do traditional programs" (Barclay et al., 2005, p. 25).

The age for newly hired teachers also differs in this study than the data on newly hired teachers nationally. In this study, the percentage of teacher candidates in their 20s exceeded the national average; more newly hired teachers nationally were in their 30s and above 40 years of age. Perhaps the higher proportion of newly hired teachers above the age of 30 nationally, when compared to this study's sample, is due to the financial crisis of 1993-1994, when this NCES *School And Staffing Survey* was conducted. Similar to the current situation, this national data was taken during an economic downturn that lead many professionals in business and other trades to lose their jobs, homes, and savings. One teacher preparation program, funded by a federal grant, targeted such a group and labeled themselves Traders to Teachers (The New York Times, 2009), in emulation of the Troops to Teachers motto.

Table 3.1 *Respondents' Demographics Compared with All New Hired Teachers & New Jersey Alternate Route Teachers*

Characteristic	This Study	National	This Study NJALT (2010)	Another Study NJALT (2005)
Gender				
Male	32%	27% [^]	35.2%	38% ^{^^^}
Female	68%	73% [^]	64.8%	62% ^{^^^}
Race				
White	69.9%	84% [^]	66.4%	63% ^{^^^}
Non-white	30.1%	16.0 [^]	33.6%	37%
Age				
20s	67.8%	32.5% ^{^^}	39.0%	43% ^{^^^}
30+	29.6%	23.2% ^{^^}	23.4%	25% ^{^^^}
40+	17.2%	44.3% ^{^^}	37.6%	30% ^{^^^}

Note: [^] Broughman and Rollefson(2000) ^{^^}USDOE (2010) ^{^^^} Barclay et al (2005)

Variables in the Study

Five domains of variables (Personal Characteristics, Professional Characteristics, Working Conditions Perceptions, Social Experiences, and Job Search Methods) were used as predictors in the research questions. Teacher candidate's career decision of where to teach (Urban, Non-Urban) is the DV for R1 and R2. All variable groups, their definitions, and item measure summaries from the survey are displayed in Table 3.2.

Data Analysis

The analysis procedure was conducted using the Statistical Package for the Social Sciences (SPSS) software program, Student Version 19.0. Demographic data was presented first to construct a profile of the sample population tested via descriptive frequencies. Cross tabulations were used to examine relationships between variables. Principal component (factor) analysis was used to identify working condition constructs from a 25-item question on school level characteristics. The mean score was imputed for missing data. All scaled factors were standardized, and Cronbach alpha was computed to assess index internal consistency. Twenty open-ended questions were transcribed and entered into SurveyMonkey, where they were coded into categorical variables for descriptives and for testing within the model. In order to establish in-rater reliability, two researchers were used to independently examine themes that were agreed upon.

Table 3.2. *Variable Groups Linked to Survey Item Measures*

Factors	Definition	List of Items
Personal Characteristics	Demographic information	race, age, gender, income, marital status, number of depend dependency, parent's education level,
	Immigrant traits	generational status, primary English Language speakers,
	Childhood Neighbourhood	area they grew up in, area graduated high school (urban vs. non-urban)
Professional Characteristics	Teaching Pathway	traditional, state alternate route, TFA, TNTP
	Subject Area Certification	STEM majors versus others major/minor degrees
	Specific to undergraduate degree and/or teaching license	highest level of high school math, highest level of undergraduate English, proportion of BA degree from a junior college,
	Professional experiences	student teaching location, work experiences in different school settings
Social Experiences (in low income and urban areas)	Professional services	visiting the hospitals, YMCA, airport, lawyers, etc
	Work Experiences Entertainment	working with low income children Shopping, dining, attending galleries, museums, games, visiting friends
	Influencers to Enter Education	Family & Friends, Previous Educators & Coaches
Views of Working Conditions	Intrinsic dimension	vision/mission similar to their own
	Convenience dimension	close proximity to home, good facility, choice of grad level, curriculum I like to teach ,
	Resource dimension	teaching below achieving students, many poor students, many ELL, many races/ethnicities, high achieving students, salary/benefits, good reputation for teaching practices, supportive school leadership, school safety, availability of instructional resources and materials, effective school discipline, support for new teachers, strong parental support, collegial school culture
Job Search Methods	Formal methods of job searching	Job fair, newspaper, district website, direct inquiry, career office
	Informal methods of job searching	family/friend referral, college professor, student teaching, principal recommendation

For this study, one variable was deemed most useful as a dependent variable – teacher candidates’ career plan preference refers to teacher candidates’ responses to the following question: “Where would you MOST like to teach?—large urban district, small urban district, high-income suburban district, moderate income suburban district, low income district, rural district.” A “1” indicator is used for respondents who most preferred to teach in urban, and a “0” indicator is for those who did not most prefer urban, but preferred a non-urban location i.e. suburban or rural locations. For the purpose of this study, a teacher candidate is a prospective teacher who has completed or is completing their field placement (student teaching or alternate route teaching) and is searching for their first placement as a certified teacher of record.

The remaining categorical and interval variables were dummy coded for the model. For the categorical variable race, a dummy coded variable was created where “1 = non-Asian Minority” and “0 = Asian and white.” Two dummy coded job search methods variables were created. Formal Job Search was dummy coded “1=for respondents who participated in formal job searches” and a “0=for those who did not participate in formal job searches.” Formal job search method included learning about district openings by attending a job fair, a direct inquiry to a district or school, making use of the college career office or applying to job openings in response to a newspaper ad, district website, or other websites. Informal Job Search was dummy coded “1=for respondents who participated in informal job searches” and a “0=for those who did not participate in informal job searches.” Informal job search method included learning about district openings from friend/family referrals, college professor, principal recommendation, or student teaching.

Dummy coded variables were created for two social learning experiences. Family and Friend's Influence was dummy coded "1 = for respondents whose family and friends influenced them to pursue teaching" and a "0 = no indicator of family and friend influence," and Experience with Low Income Children was dummy coded "1 = for respondents who had experience working with low income children prior to enrollment in teacher preparation program" and a "0=no indicator experience working with low income children prior to enrollment in teacher preparation program." Field Experience Location was dummy coded "1 = for respondents who had urban student teaching or alternate route field experiences" and a "0 = for respondents who had a non-urban student teaching or alternate route field experience."

Teacher Preparation Program Locations was dummy coded "1 = for respondents who had their teacher preparation programs in DFG A and B" and a "0 = for respondents who had teacher preparation programs located in DFG CD – IJ." Teach For America and The New Teacher Project: Since most if not all TFA and TNTP teacher candidates will enter teaching in an urban district, this variable is used as a control where "1= respondents who attended TFA or TNTP" and "0 = respondents who did not attend TFA or TNTP." Attrition Risk is dummy coded "1= for respondents who plan on teaching five years or less" and a "0 = for respondents who plan on teaching six years or more." STEM Certification is dummy coded for "1 = for respondents who have certification in STEM" and "0 = for respondents who have certification in disciplines outside of STEM."

Finally, sequential logistic regression tests were conducted. SPSS protects against multicollinearity as it will not conduct the analysis if multicollinearity is an issue. If cases were missing data in any of the categorical variables (e.g. race, age), those cases

were not included in the analysis. To detect outliers, case scores were converted into z-scores and compared to the critical value of ± 3.29 , $p < .001$ (Tabachnick & Fidell, 2007). No cases were removed.

Sequential logistic regression assessed the impact of personal characteristics, professional characteristics, perceptions of working conditions, social and professional experiences, and job search methods on teacher candidate's career plan of where to teach (urban, non-urban). The model contained 18 predictor variables, 14 of which were measured at the nominal level and a single nominally scaled dependent variable. Logistic regression was appropriate when the DV is nominally scaled (Tabachnick & Fidell, 2007). The 18 predictors were divided into the five groups mentioned above (i.e. perceptions of working conditions, job search methods, social and professional experiences, teacher characteristics, and demographics). The variables in each group were entered simultaneously in one block. This sequential logistic regression had five blocks. The first block was working conditions, the second block was job search methods, the third block was social learning experiences, the fourth block was teacher characteristics, and the last block was demographics. Entrances of blocks were based on the order of how one considers job factors when making career decisions.

In sequential logistic regression any variance that is shared between variables entered in later blocks and variables entered earlier were attributed to the earlier variables. The overall model was evaluated using the chi-square statistic, and the Hosmer Lemeshow static was reported as well. The odds ratio was used to evaluate each predictor's unique relationship with the dependent variable while controlling for all other predictors. Since the number of STEM respondents was $n = 206$, sequential logistic

regression with the five dimensions resulted in large standard errors, i.e. an indication that the model was not a good fit for that many variables.

Instead, four logistic regressions were used to assess STEM teacher candidates' perception of working condition factors, social learning experience, job search methods, and personal and professional characteristics' influence on career plans of where to teach (urban, non-urban). The first logistic regression assessed the impact of personal characteristics and professional characteristics on STEM candidates' career plans. The model contained nine predictor variables, all of which were measured at the nominal level and a single nominally scaled dependent variable.

The second logistic regression assessed the impact of perceptions of working conditions, while controlling personal characteristics and professional characteristics on STEM candidates career plans of where to teach (urban, non-urban). This model contained 13 predictor variables, four of which are re-standardized factors from the PCA, and the nine previous dummy variables.

The third logistic regression assessed the impact of social learning experiences, while controlling personal characteristics and professional characteristics, on STEM candidates' career plans. This model contained 11 predictor variables all of which were measured at the nominal level and a single nominally scaled dependent variable.

The final logistic regression assessed the impact of job search methods, while controlling personal characteristics and professional characteristics, on STEM candidates' career plans. This model also contained 11 predictor variables all of which were measured at the nominal level and a single nominally scaled dependent variable. The overall model was evaluated using the chi-square statistic, and the Hosmer-

Lemeshow static was reported as well. The odds ratio was used to evaluate each predictor's unique relationship with the dependent variable while controlling for all other predictors.

Limitations of the Quantitative Analysis

A sample of New Jersey teachers was collected using a nonproportional quota sampling method. Due to the fact that collection of responses was limited to only those students available and willing to participate, a representative sample can only be assumed. In addition, because the survey was fundamentally a self-report instrument, it was subject to threats of validity, which is often the case of all self-report tools. These include both the inability of teacher candidates to provide accurate information in response to a question or their unwillingness to provide what they know to be a truthful response (Aaker, Kumar, & Day, 1998). Moreover, as this study is a snapshot of one moment in time, it may not suggest findings that are generalizable longitudinally, but it does offer insight into a phenomenon for that time period.

However, the instrument met the five research-based conditions under which self-reports are likely to be valid: the information requested is known to the respondents, the questions are phrased clearly and unambiguously, the questions refer to recent activities, the respondents think the questions merits a serious and thoughtful response, and "answering the questions does not threaten, embarrass, or violate the privacy of the respondent or encourage the respondent to respond in socially desirable ways" (Aaker et al., 1998, p. 4).

Mixed Method Study Component

This study of an urban district's staffing challenge was through an embedded case study design using a mixed-methods approach. The case study design is one of the most appropriate research designs for "appreciating the complexity of organizational phenomena" i.e. an urban district's recruitment and hiring of teachers, in that it "allows an investigation to retain the holistic and meaningful characteristics of real-life events" (Yin, 1994, p. xv, 3), contexts that are pertinent to a district's effort in addressing the staffing challenge, and the subsequent achievement of its students.

The rationale for conducting this case study was for its "revelatory" nature on the one hand, in that it provided an opportunity to observe, analyze, and describe various embedded subunits of an urban district to form a holistic picture of its experience in recruiting and hiring teachers, and it was "confirmatory" on the other hand, as it allowed one to examine the data findings and compare them to the five dimensions of the conceptual framework that was used to model the survey data. Case study methods "involve systematically gathering enough information about a particular [subject] to permit the researcher to effectively understand how the subject operates or functions" by enabling a researcher "to capture various nuances, patterns, and more latent elements other research approaches might overlook" (Berg, 2004, p. 251). These characteristics of case study designs and methods make it a "useful technique for researching relationships, behaviours, attitudes, motivations, and stressors in organizational settings" (Berg, 2004, p. 260).

The design for the case study on Newark Public Schools included two sources of information for understanding the district's experience with the staffing challenge.

Figure 2 below outlines how information about an organization (the district) can come from an individual or from the organization itself (Yin, 1994).

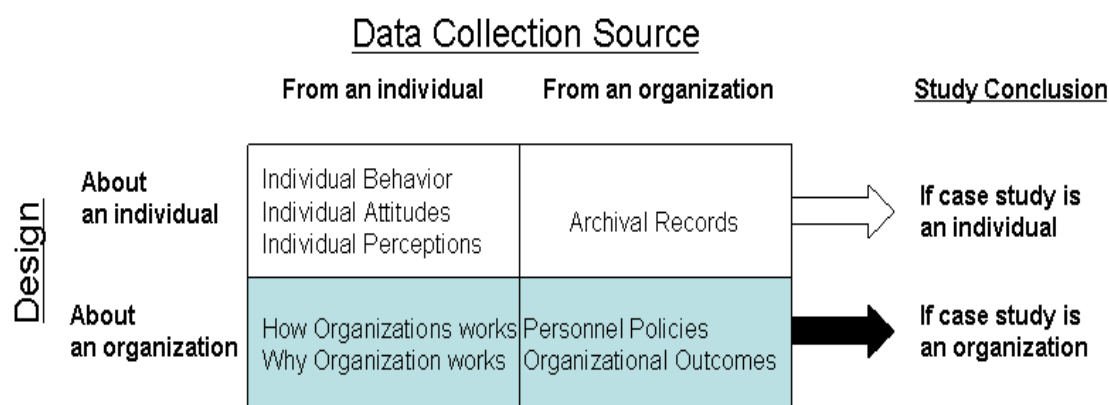


Figure 2. Diagnosing an Organization.
SOURCE: COSMOS Corporation (Yin, 1994, p. 72)

Sampling of District and School Administrators

In this study, 15 Newark Public School (NPS) administrators were interviewed between April, 2011 through May, 2011. 13 of the interviews were in NPS and two from Newark's charter schools. Emails were sent to participants including: NPS's director of human resource, NPS's union head, the managing director of one charter school organization, the director of human assets in another charter school organization, as well as thirteen NPS secondary school principals (See Appendix C for email). The sample was limited to secondary schools as the staffing challenge is more pronounced at that level, accordingly only directors of charter school organizations with secondary schools were contacted, and 11 out of 13 NPS secondary school principals agreed to participate.

The sample included charter schools, magnet schools, and the local comprehensive high schools. The student population in these schools range between approximately 200 students to 1800 students. In all schools students of color comprise

the majority of students and at least 65 percent of the students receive free or reduced-price lunch. See Table 3.3.

Table 3.3. *School Characteristics of School Administrators*

		B	C	D	E	F	G	H	I	J	K	L
Student Population		1575	862	1443	942	909	902	1050	474	521	759	1276
D E M O G R A P H I C S	% White	1	0	32	0	< 1	0	0	7	< 2	<1	-
	% Black	34	92	15	92	83	94	96	35	83	97	97
	% Hispanic	65	7	51	8	16	6	4	56	14	<2	2
	% Asian/ other	<1	<1	<2	0	< 1	0	0	2	< 1	0	1
% Free-reduced lunch		74	79	75	65	79	68	80	92	78	87	69
School Type												
Comprehensive C		C	C	C	C	CH	M	CH	M	M	C	C
Charter CH												
Magnet M												

(Source: CCD Public school data 2009-2010 school year)

*There was no data on two new schools (established September 2010)

Data Collection

A letter of invitation was sent to the superintendent of Newark, the directors of the teacher preparation programs, and follow-up calls were made to ascertain the willingness of the district and the directors to participate in the study and to identify

liaisons to the study. To address confidentiality, all participants in the study were assured that all information in the interviews will be kept confidential, and in any reports, their responses will not be linked to their organization. All sensitive identifiers were removed from archival data and all data will be saved under pseudonyms to ensure confidentiality. To ensure validity, the interviews were recorded (McMillan & Schumacher, 2006).

Data Sources and Instruments

Interviews. Creswell (1998) stated that qualitative research is intended to understand a particular social situation, event, or interaction. Since the researcher was interested in the rich details that may explain the staffing challenge, the qualitative phase of this study utilized qualitative interviews of human resource director(s), union leader, and 13 high school administrators (principals and vice principals) to find out the extent of their problems in recruiting and hiring new teachers, the approaches they have taken (or plan to take) to these problems, and what has resulted from the implementation of these approaches (if any). Gall, Gall, and Borg (2003) stated that “the major advantage of interviews is their adaptability...skilled interviewers can follow up on a respondent’s answers to obtain more information to clarify vague statements” (p. 222).

The semi-structured interview protocol (Appendix E) was derived from a previous study (Liu et al., 2008). The interview protocol was adapted to reflect the current labor market, in that there was a recent Reduction In Force (RIF). The researcher inquired about concepts related to the challenge of recruiting teachers, and specifically science and math teachers, the challenges associated with the hiring process, the access and equity of the distribution of new teachers, and the challenges of retention.

Survey of NPS teacher candidates. The intent in the quantitative phase of this study was to learn more about the experiences and perceptions of the teacher applicant pool with regards to their plans in applying for teaching jobs in urban districts in general, and in Newark specifically. Gall, Gall, and Borg (2003) recognized two advantages that surveys have over interviews; specifically, the lower cost of sampling a wider number of people, and the smaller amount of time required to collect the data. Thus, this

“quantitative data can help with ...the study during *design* by finding a representative sample and locating deviant cases” (Miles & Huberman, 1994, p. 41). Thus, this will aid in pinpointing the teacher candidates who plan to apply to NPS by providing biographical descriptive data, but it will also provide other data such as their goals and aspirations in their search for a teaching job, the location of their student teaching experience, and characteristics of their teacher education program, all of which may help “estimate the effects of each of these variables on teachers’ career paths and on the educational outcomes of their students” (Ball & Forzani, 2007, p. 536).

Analytical Techniques

The interviews were audio-recorded, with respondents’ permission, and the researcher, or research assistant, also took handwritten notes. When respondent asked for the recorder to be turned off, it was, and the research assistant stopped taking notes. Each interview took approximately 35-45 minutes. Recordings were transcribed and checked by two research assistants. Interviews were semi-structured, but more follow-up questions were asked in later interviews to clarify details learned in prior interviews.

As Miles and Huberman (1994) so aptly noted,

A feature of qualitative data is their richness and holism, with strong potential for revealing complexity; such data provide ‘thick descriptions’ that are vivid, nested in a real context, and have a ring of truth that has a strong impact on the reader.
(p. 10)

Thus context analysis is key in qualitative research. Marshall and Rossman (1999) defined contextual content analysis as “a method for describing and interpreting the artifacts of a society or social group” (p. 117). Accordingly, the qualitative data analysis involved both contextual analysis of interview transcripts, as well as cross-school analysis across the different secondary school administrators. The goal was to reveal any

patterns and themes across the approaches NPS utilizes in recruiting, hiring, supporting, and retaining new teachers.

A full review of the data was done prior serious coding. After exposure to the data over a period of 12 months, the constant review of the research questions enabled the researcher to generate a list of codes to look for in the data. While the family of codes was established early on, the initial list of codes was constantly added to as the researcher coded and answered the research questions. The researcher first coded inductively by the various emerging patterns and themes that was displayed in the conceptual framework, and then deductively as the researcher cycled through the data set and created tables and analytic matrices to compare the approaches, challenges, strategies, and structures that effect the recruitment and hiring of teachers in an urban district. In looking for patterns and corroborating the earlier established conceptual concepts, the researcher used an iterative testing process, moving back and forth between the concepts and the analyses to the details in the interview data.

To make the process more coherent, interviews were also coded using Atlas.ti, which is a software program for data management and memo building. Codes were developed to represent the overarching challenges of recruitment and retention, with additional focus on the five theoretical constructs. After the beginning of the coding process, and reflecting on the data, new codes were also generated along the way when interesting information arose. These emergent codes included “perception of safety,” and “urban educator.” These new codes were applied to interviews that were already coded, using strategies such as text searches for key words. Following Creswell’s (1998) guidance, codes were grouped into categories based on patterns of responding, as well as

by research question. In order to establish in-rater reliability, each document was coded by a research assistant, and then by the researcher, and then checked by another research assistant.

Coding and memo writing in Atlas.ti occurred simultaneously, linking coded output to memo-headings that corresponded to each theoretical construct that would be addressed. Codes and data relevant to each heading that were not linked in Atlas.ti were queried and stored under the headings. The resulting memos were read, with important information being highlighted. This highlighted information was then written into a summary of each section representing as many points of view that were identified, using many direct quotes as well as paraphrasing of comments.

Without a doubt, “a case study’s unique strength is its ability to deal with a full variety of evidence—documents, artifacts, interviews, and observations” that can be triangulated for analysis purposes (Yin, 1994, p. 8). Thus, the data from the interviews of district and school administrators were triangulated with the teacher candidate survey, to develop a better understanding of the “occurrence of concordance and discordance” (Creswell & Plano Clark, 2011, p. 235) between teacher candidates’ and administrators’ assessments and perceptions of the recruitment and hiring challenge in NPS. This data triangulation of data sources is complemented by the triangulation of methods (quantitative, qualitative, and archival; Patton, 1987 as cited in Yin, 1994). As Berg (2004) posited, “the important feature of triangulation is not the simple combination of different kinds of data [or methods] but the attempt to relate them so as to counteract the threats to validity identified in each” (p. 5). Survey data of teacher candidates’ perceptions of NPS’s recruitment and hiring procedures, were triangulated with the

findings from the interviews. Open-ended questions were transcribed and entered into SurveyMonkey, where they were coded into categorical variables for descriptive statistics. Open-ended questions were also imported into Atlas.ti and coded along with interview data.

Case Study Limitations

The case study's limitations are that (a) it is dependent on perceptions of a district's administrators, (b) given the limited sample, findings are not generalizable, (c) the constructs from the conceptual framework guided analysis but did not reflect precisely what the interview protocol sought, and (d) the study relied on the capacity and willingness of district and school administrators to accurately recall and describe events.

Definitions

Alternate route. Non-traditional teacher preparation program offered by state, national, private, and public agencies that are usually affiliated with accredited colleges or universities (Barclay et al., 2005).

Attrition risk. Teachers who believe they will leave in five years or less (Ingersoll, 2003).

District Factor Group (DFG). The District Factor Group (DFG) is an indicator of the socioeconomic status of citizens in each district in New Jersey. Districts were then ranked according to their score on this measure and divided into eight DFGs: they range from A (lowest socioeconomic districts) to J (highest socioeconomic districts) and are labeled as follows: A, B, CD, DE, FG, GH, I, J. The majority of the urban districts in NJ are either DFG A or B⁴.

⁴ www.state.nj.us

Field experiences or field placements. School- and community-based placements for preservice teachers including teaching internships of alternate route programs or student-teaching in teacher education programs.

First career. A newly graduated respondent whose first career is teaching.

Highly qualified teachers (HQT). Under the No Child Left Behind Act (NCLB), The Highly Qualified Teacher mandate requires all public school teachers to teach only the subjects for which they have been certified in, as determined by their state department of education (Title 2, Public Law 107-110, NCLB, 2002).

High-need. Under the No Child Left Behind Act (NCLB), districts or schools that serve a high proportion of students from low-income families, or have a high proportion of teachers who are not fully certified in their subject or grade level are referred to as high-need. In the literature, high-needs is often defined as low-income and low performing.

Low-income school district. For the purpose of this study, a low income school district is one with at least 40% of students ages 5-7 eligible for free or reduced-price lunches.

Prospective teacher or teacher candidate. These terms are used interchangeably herein, and refer to preservice teachers in their capstone classes preparing for their first teaching job in the coming school year (the next semester).

Second career. A teacher who has had a prior career outside of education.

Staffing challenge. The inability of schools to adequately staff classrooms with qualified teachers (Ingersoll, 2006).

STEM. science, technology, engineering, and mathematics .

STEM staffing challenge. In the context of this study, this refers to the perceived obstacles of implementing STEM teacher recruitment and retention reforms in a school district.

Teacher education program. Accredited College or University based teacher preparation program⁵.

Teacher turnover. Teacher turnover includes both those teachers who leave the teaching profession as well as those who switch schools (Ingersoll, 2006).

Teach for America (TFA). TFA is a national non-profit organization that recruits and certifies recent college graduates to become teachers for two years in under-resourced urban and rural public schools⁶.

The New Teacher Project (TNTF). TNTF is a national non-profit organization that works primarily with urban districts to recruit new teachers and to improve district policies and practices⁷.

Urban school district. For the purpose of this study, an urban district is one located in the central cities of metropolitan statistical areas as defined by the U.S. Census Bureau (U.S. Department of Education, 1996).

Summary

This chapter provided a detailed discussion of the methodology that was undertaken to investigate the relationship between teacher candidates' personal and professional characteristics, their social experiences and job search methods, their perception of working conditions, and their career plan of where to teach: an urban vs. nonurban public school district.

⁵ www.nj.gov

⁶ www.teachforamerica.org

⁷ www.tntp.org

Morse and Niehaus (2009) utilized the symbols below to denote the convergent parallel design, where the primary data source was quantitative (upper case QUAN), and the interview data was secondary (lower case qual): QUAN + qual = explained results. Thus the research design was one where the teacher candidate survey data provided the bulk of the findings, and the interviews explored emerging themes.

The chapter began with a statement of the problem, a presentation of the research questions, followed by the unit of analyses, sampling methodology, data collection, analytical techniques, variables and definitions of study, instrumentation, brief overview of the pilot study, data analyses, and the limitations of the design. The aforementioned was first presented for the quantitative component, followed by the NPS mixed method component.

CHAPTER FOUR. QUANTITATIVE RESULTS

Factors Influencing Teacher Candidates' Career Paths

What factors influence where teacher candidates' plan to teach? Do their personal and professional characteristics, social experiences, job search methods, and their perception of working conditions relate to their preferred teaching setting? If so, which factors are most significant? How are the significant predictors of all teacher candidates' career plans similar or different than science, technology, engineering, and mathematics (STEM) teacher candidates' career plans?

In the spring and summer of 2010, 697 New Jersey teacher candidates participated in an lengthy 18 page survey. The purpose of this chapter is to examine the factors that predict where these teacher candidates' planned to teach. The teaching locations included either urban or non-urban districts. The conceptual model of this study outlined five constructs that possibly have effects on teacher candidates' career plans: teacher candidates' perception of working conditions, job search methods, social learning experiences, professional teacher characteristics, and personal characteristics. An examination of these factors can inform policies attempting to attract and recruit highly qualified teachers into hard-to-staff urban districts.

In addition, this study aims to discern the effects of these five constructs on a sub-sample of 206 STEM certified teacher candidates. STEM teachers are a population that is in tight supply and high demand in comparison to other disciplines. An examination of this population can inform district administrators seeking out teacher candidates from these traditionally hard-to-staff disciplines.

The analyses in this chapter begin with Part 1: descriptive statistics of the overall teacher candidate sample and the STEM sub-sample. Then, the analysis focuses on an exploratory principal component analysis of working condition factors and a reiteration of other predictor variables introduced in chapter 3 in Part 2. Next, in Part 3 is a binary sequential logistic regression to examine the unique contribution of each variable within the five constructs towards predicting teacher candidates' preferences of teaching location. Lastly, a separate binary sequential logistic regression on the sub-sample of STEM teacher candidates will be reported.

Part 1: Descriptive Statistics

Teacher Candidates' Personal and Professional Characteristics

This section begins with the demographic background of the sample of New Jersey teacher candidates who were finishing their capstone classes in the spring and summer of 2010 and planning to begin their teaching careers in the school year (SY) 2010-2011. The study surveyed students from 14 institutions in 20 separate locations scattered across Northern and Central New Jersey.

The sample was comprised predominantly of white teacher candidates (69.9%), followed by Hispanic (12.3%), black (9.4%), and Asian (6.6%) candidates, and less than two percent identified as other. Nearly two-thirds of the sample were female (68%) and approximately one third were male (32%). Nearly half of respondents were white females (46.4%). Therefore, this study is heavily represented by white female teacher candidates. However, these general categories mask considerable ethnic diversity; 25.7% of respondents were children of immigrants. Large proportions of Hispanic (57.3%) and Asian (43.2%) candidates were children of immigrants. Additionally, a number of white

(18.8%) and black (17.5%) respondents were also children of immigrants. Some of the teacher candidates themselves are immigrants; this is reflected in the sizable percentage of non-native English speakers (17.6%).

As would be expected, the majority of teacher candidates were in their twenties (67.8%) -- with nearly half of the sample in their early twenties (43.6%). The remaining third (32.2%) of the teacher candidates ranged in age from 30 to 60 years of age.

Given that more than half of the candidates were over their mid-twenties, it is not surprising that many have held jobs prior to entering teaching. Figure 4.1 describes the type of jobs the second career teacher candidates (n=363) had prior to entering teaching. Jobs were answered in an open-ended question, and were then classified according to the *Bureau of Labor Statistics* Occupational Employment categories. Most teacher candidates came from a Sales or Business and Financial Operations background. Also frequently cited are prior jobs in the Arts, Design, Entertainment, Sports, and Media Occupations. Others had Life, Physical, and Social Science Occupations. Those with prior Office and Administrative Support Occupations or Personal Care and Service Occupations made up a smaller percent, followed by a few Legal Occupations, Community and Social Services Occupations, Architecture and Engineering Occupations or Computer and Mathematical Occupations. Note that the smallest percentage of teacher candidates had a prior Education, Training, and Library Occupations.

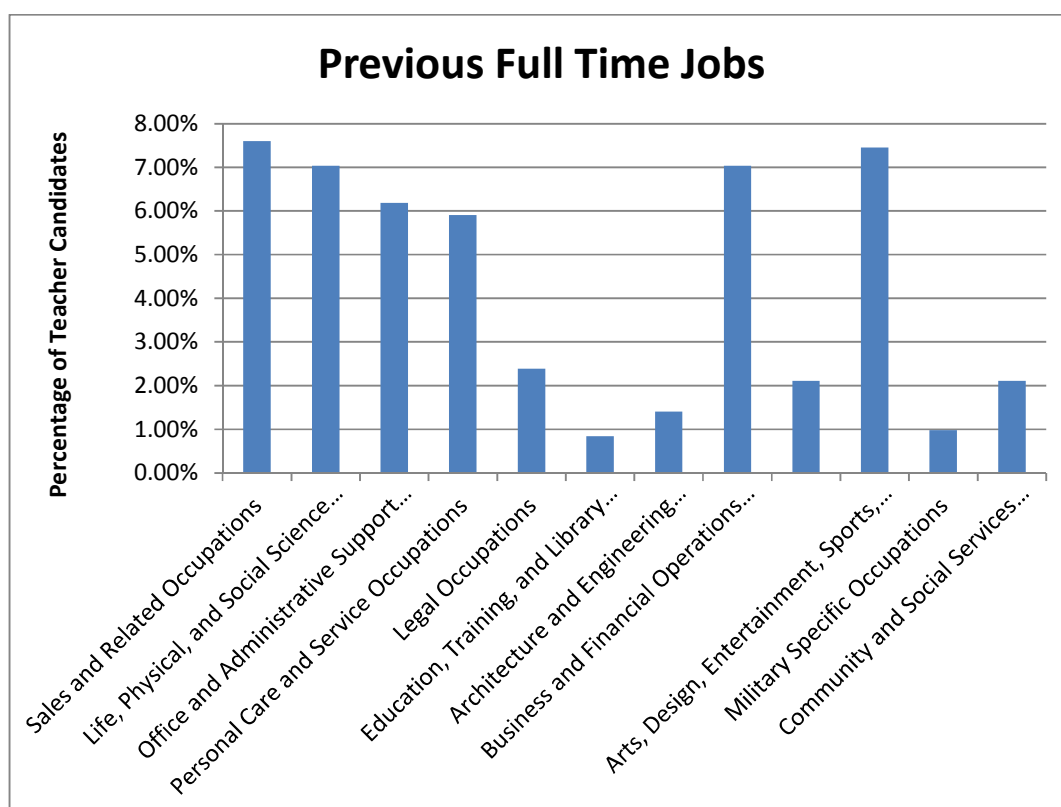


Figure 4.1. Teacher candidates' previous full time jobs.

Most teacher candidates were unmarried (57.7%) and had no children (78.2%). Approximately a fifth of the teacher candidates reported a combined family income⁸ below \$50,000 (20.1%), almost two-thirds reported their income as between \$50,000 to \$100,000 (36.65%), and 27.6% reported combined family income of over \$100,000 (15.7% preferred not to answer). Therefore, the majority of the teacher candidates surveyed were middle class (Gilbert, 1998). Nearly half of the teacher candidates (n=333) planned to earn additional income from a second job in addition to their teaching

⁸ Combined family annual income: Choose the definition of family that best fits your situation: (1) just yourself if you are not financially dependent on your parents and are not married or in similarly committed relationship; (2) you, your parents and any other dependents of your parents if you are financially dependent on your parents; or (3) you and your spouse or domestic partner and any dependents of your spouse or partner.

career; this is consistent with prior research (Ballou, 1995; Pearson, Carroll, & Hall, 1994). Figure 4.2 below summarizes the categories of their ‘moonlighting’ jobs that candidates believe they will do in conjunction with their teaching responsibilities.

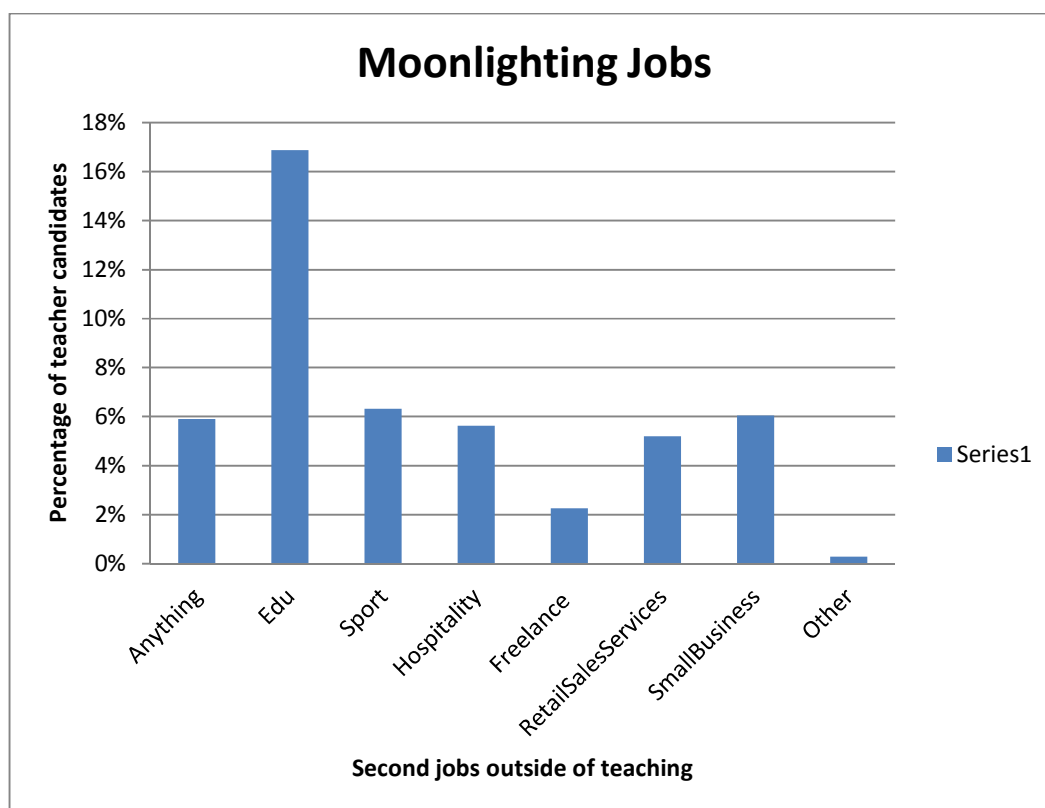


Figure 4.2. Teacher candidates moonlighting jobs.

While the backgrounds of the teacher candidates were quite varied, the bulk of teacher candidates had middle-class suburban backgrounds. Half of the respondents (52.9%) reported growing up in a moderate income, suburban community. Another 12.7% were raised in a high income, suburban town. A quarter (25.3%) grew up in an urban setting—two thirds of these in a large urban setting. In an open-ended question, “Has an event/person influenced you to pursue teaching,” 458 teacher candidates said yes, and most of them (n= 153) described family and close friends as the primary

influence for their pursuit of a teaching career. Others mentioned the importance of previous educators and coaches, or prior work and volunteer experiences. Figure 4.3 depicts these influencing people and events.

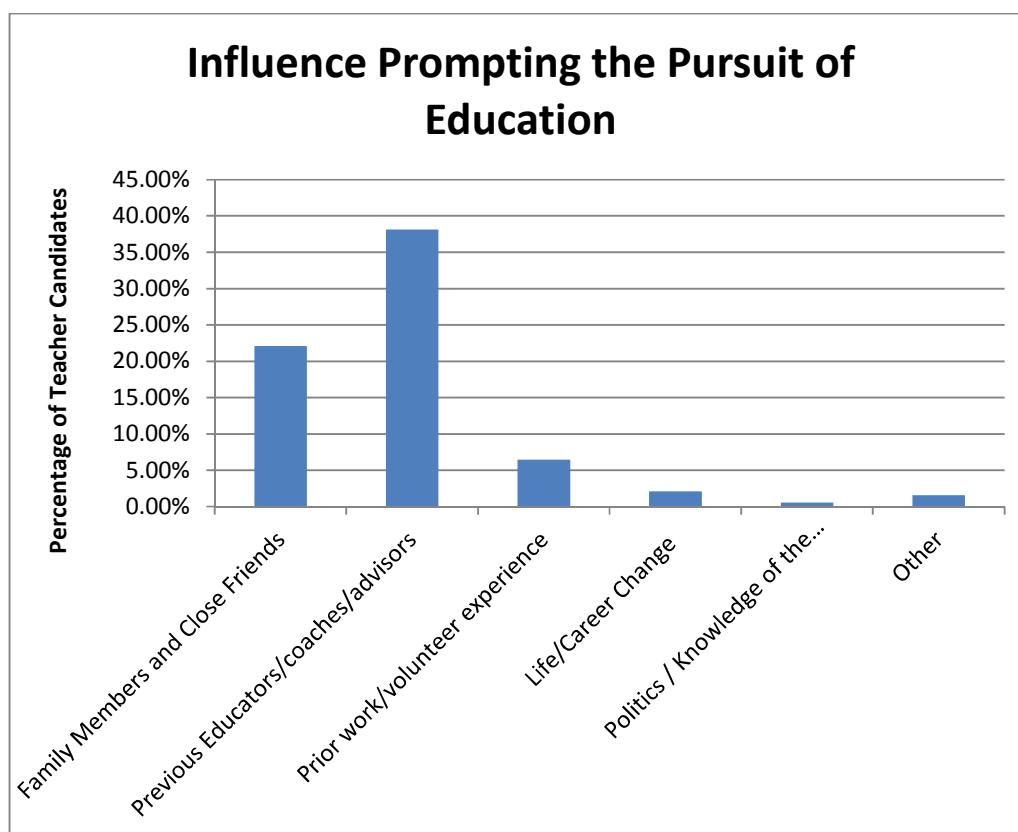


Figure 4.3. Events or people that influenced candidates' pursuit of teaching.

Three quarters of the teacher candidates expressed a desire to teach for at least ten years, and in open-ended responses where teacher candidates explain their reasons behind their commitment perceptions, many stated they viewed teaching as a career. On the other hand, 13.2% reported they would like to teach for at least six years, and many of these teacher candidates viewed teaching as a ladder to an administrative education career. Fewer than 15% of teacher candidates reported attrition risk, in that they planned to only teach for less than five years. When asked why they planned to teach for that

duration in the open-ended question, several cited the need to see if teaching ‘fits’ their personality, while others merely viewed teaching as a job (versus a career). Figure 4.4 depicts four categories created from the open-ended responses where teacher candidates explain their reasons behind their commitment perceptions.

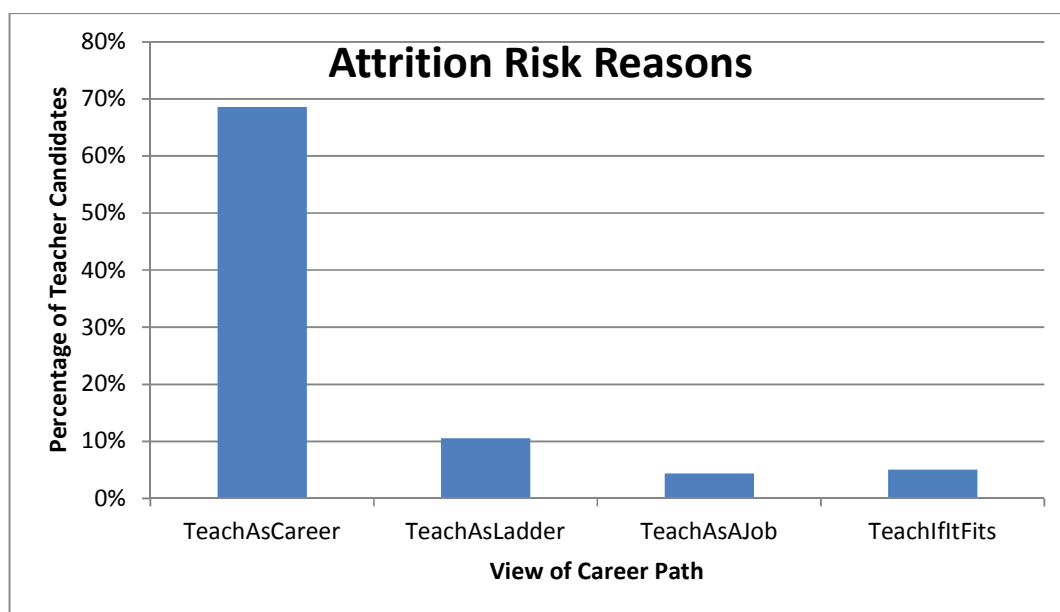


Figure 4.4. Teacher candidates’ attrition risk reasons.

The survey includes teacher candidates from various teaching paths- traditional and alternative route. Traditionally trained teacher candidates included 380 (54.6%) from teacher education colleges and programs, while 229 (33%) teacher candidates came from New Jersey’s alternate route institutions, and 87 (12.5%) from Teach for America and The New Teacher Project.

Out of all the respondents, the most popular teaching certification was elementary education. However approximately three-fifths of the teacher candidates were planning to teach at the secondary level in different departmentalized subject-areas. The most common areas for secondary certification were STEM (32.4%), English (18.2%), and

Social Studies (15.4%). Figure 4.5 displays the certifications teacher candidates are pursuing. With the exception of elementary and early childhood education certifications, the certifications displayed below are considered shortages according to the Teacher Shortage Areas (TSA) list published by the Department of Education (2010).

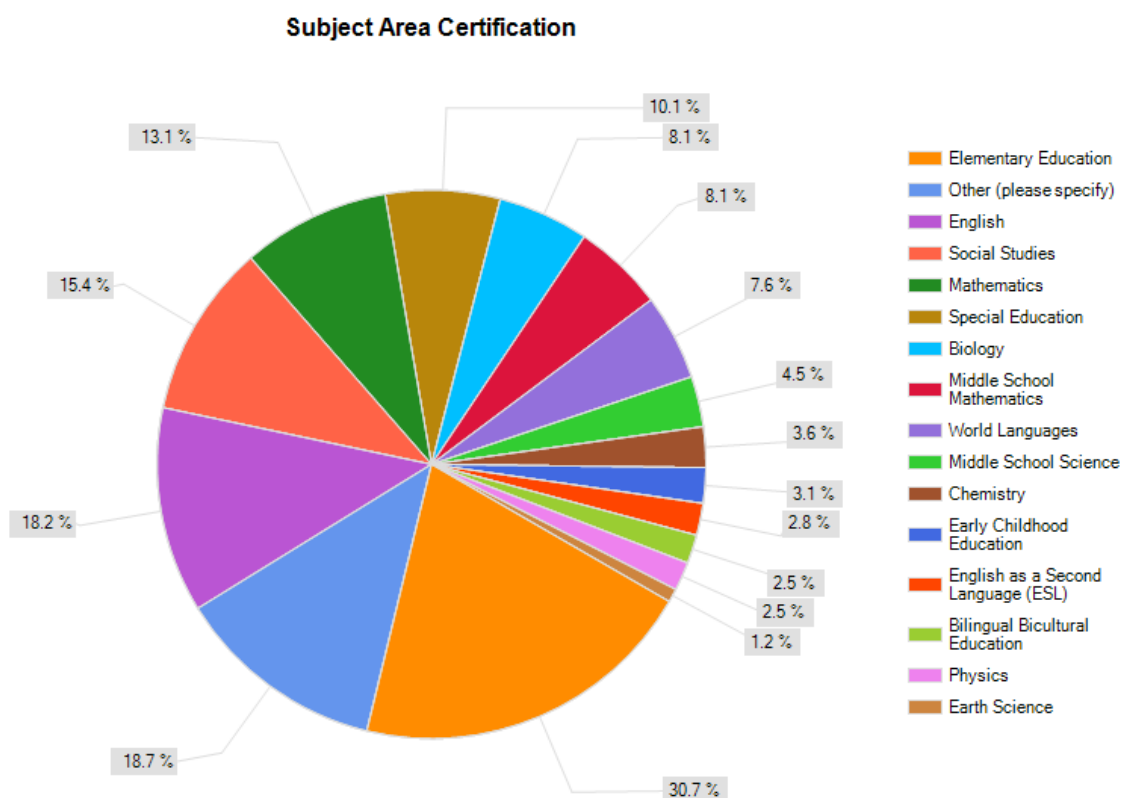


Figure 4.5. Teacher candidates' subject area certification.

English (15.2%), mathematics (11.4%), and psychology (9.9%) were the top three majors that were reported by teacher candidates. Figure 4.6 depicts the frequencies of teacher candidates' first majors (See Appendix F for figures of Second Majors and Minors). For the most part, the frequencies for the majors parallel that of the teaching certifications above.

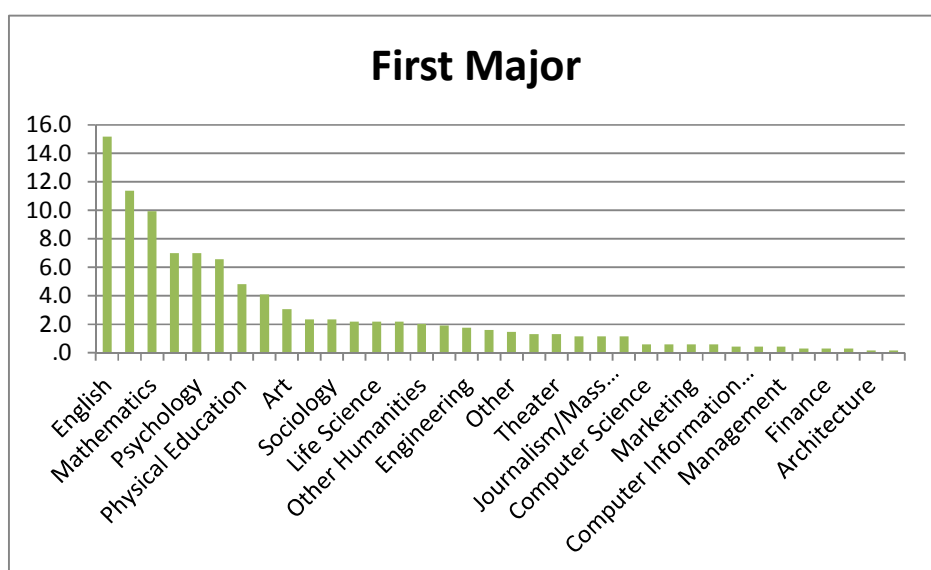


Figure 4.6. Teacher candidates' first major.

Personal Characteristics and Perceptions of Career Plans

The overarching question driving this study is to identify what predictors influenced where teacher candidates want to teach. 669 of the teacher candidates responded to the question “Where would you MOST like to teach?” Table 4.1 depicts teacher candidates' answers.

Table 4.1 *Sample Distribution of Teacher Candidates' Preference for Teaching Location*

<i>Where do you most want to teach? (n=669)</i>	<i>Percentage</i>
Large Urban District	20.9%
Small Urban District	16.6%
High Income Suburban District	10.2%
Mid Income Suburban District	46.8%
Low Income Suburban District	2.4%
Rural District	3.1%

Overall, 59.3% of teacher candidates in this sample (n=669) reported they would most like to teach in a suburban district; this is followed by 37.5% of the teacher candidates who reported they would most prefer to teach in a large or small urban district. Few teacher candidates indicated a preference for teaching in a rural district (3.1%).

For the purpose of the descriptive statistics, the remainder of the analysis will compare teacher candidates' preference for teaching in urban districts versus non-urban districts (meaning suburban and rural districts).

Table 4.2 summarizes personal characteristics by teacher candidates' career location preference (i.e. preferring urban versus non-urban).

Table 4.2. *Sample Distribution of Urban and Non-Urban Teacher Candidates' Personal Characteristics*

<i>Variables</i>	<i>N</i>	<i>All</i>	<i>Urban</i>	<i>Non-Urban</i>
Overall Preferred Teaching Location	697	95.98%	37.52%	62.48%
Gender	663			
Female		68.48%	38.55%	61.45%
Male		31.52%	35.41%	64.59%
Race	644			
Black		9.16%	81.36%	18.64%
White		70.03%	25.72%	74.28%
Hispanic		12.27%	67.09%	32.91%
Asian		6.68%	39.53%	60.47%
Other		1.86%	50.00%	50.00%
Age	648			
First Career (21 - 24 years)		45.37%	29.93%	70.07%
First Career Late Starters (25-29 yrs)		25.31%	45.12%	54.88%
Second Career (30 years and over)		29.32%	41.05%	58.95%
Socioeconomic Status				
Parent/Guardian's Education Level	657	26.64%	44.00%	56.00%
High School/GED or Less				
Parent/Guardian's Education Level		19.18%	41.27%	58.73%
Some College				
Parent/Guardian's Education Level		28.46%	32.09%	67.91%
Bachelor's Degree				
Parent/Guardian's Education Level		25.72%	33.73%	66.27%
Advanced Degree				
Grew Up in an Urban Location	669	26.16%	73.14%	26.86%
Grew Up in a Non-Urban Location		73.84%	24.90%	75.10%
Attended High School in an Urban	669	21.38%	74.13%	25.87%
Location				
Attended High School in a Non-		78.62%	27.57%	72.43%
Urban Location				

The majority of both male and female teacher candidates preferred non-urban district, 61.4% of females and 64.6% of males.

Though non-whites were just three-tenths of the sample, the majority of black and Hispanic teacher candidates prefer urban districts; nearly four-fifths of black teacher candidates prefer urban districts (81.36%), followed by nearly two-thirds of Hispanic teacher candidates (67.09%). Less than half of Asian and white teacher candidates preferred urban districts, (approximately two-fifths of Asian teacher candidates and only about a quarter of white teacher candidates) said they most preferred an urban district as a teaching location.

Less than half of new teacher candidates were in their early twenties. This age group (21 to 24 year olds) was the least likely to prefer an urban district (29.93%); teacher candidates in their later twenties (25 to 29 years old) are more likely to prefer urban districts (45.12%), as did those over 30 years of age (41.05%).

Teacher candidates whose parents or guardians' highest education level was some college, or high school or less, were approximately ten percent more likely to prefer urban districts than teacher candidates whose parents' or guardians' highest education level was a bachelor's degree or higher. However, the largest difference in the proportion of teacher candidates who prefer an urban district versus a non-urban district is according to where teacher candidates grew up or went to high school. Approximately a quarter of the teacher candidates grew up in an urban area or attended high school in an urban area; of those, nearly three-quarters preferred to teach in an urban area. In contrast, three quarters of the teacher candidates grew up or attended high school in a suburban or rural area, and only about a quarter of these candidates most preferred teaching in urban

district. Aside from race, teacher candidates who grew up in an urban area had the highest proportion of preferring an urban setting.

Professional Characteristics and Perceptions of Career Plans

Table 4.3 summarizes teacher candidates' professional characteristics by their career location preference (i.e. preferring urban vs. non-urban).

Table 4.3. *Sample Distribution of Urban and Non-Urban Teacher Candidates' Professional Characteristics*

<i>Variables</i>	<i>N</i>	<i>All</i>	<i>Urban</i>	<i>Non-Urban</i>
Overall Preferred Teaching Location	697	95.98%	37.52%	62.48%
Subject Area Certification	640			
Elementary		30.94%	49.49%	50.51%
English		18.91%	33.88%	66.12%
Mathematics		21.09%	38.52%	61.48%
Science		19.22%	36.59%	63.41%
Social Studies		15.16%	38.14%	61.86%
Special Education		10.31%	57.58%	42.42%
World Languages		7.81%	34.00%	66.00%
Other		5.00%	18.52%	81.48%
Certification Pathway	669			
Teacher Education Program Standard		54.56%	28.77%	71.23%
State Alternate Route		33.03%	33.03%	66.97%
TFA_TNTP		12.41%	87.95%	12.05%
Teacher Preparation Program		40.51%	58.67%	41.33%
Location (DFG A - B Low SES)				
Teacher Preparation Program Location (DFG CD - IJ Higher SES)		59.49%	23.12%	76.88%
Urban Field Experience Location	669	41.11%	69.09%	30.91%
Non-Urban Field Experience		58.89%	15.48%	84.52%
Attrition Risk				
Years Planning to Teach (< 5 years)	655	12.37%	55.56%	44.44%
Years Planning to Teach (6 - 10 years)		11.91%	42.31%	57.69%
Years Planning to Teach (> 11 years)		75.73%	33.87%	66.13%

As discussed in the methods chapter, the focus of this survey's sampling was to include as many of the Teacher Shortage Area certifications as possible. Accordingly, certification in secondary mathematics (middle school and high school) accounted for 21.09% of the sample, followed closely by certification in secondary science (middle school science, biology, chemistry, physics, earth science) at 19.22%. Not surprisingly, the sample contained large number of English (18.91%) and social studies (15.16%) certifications, as these are areas that normally have large supplies of teachers (Ingersoll, 2001). Overall, as Table 4.3 shows, teacher candidates' preferences in all the listed majors mimic the overall sample, where approximately a third preferred an urban district, and two thirds did not, with the exception of teacher candidates with elementary education certification (49.49%) and a special education (57.58%; the majority of the special education certification candidates were also certified at the elementary level). One possible reason for the higher proportion of elementary teacher candidates (in relation to other certification) preferring an urban setting is that elementary teaching positions are few, and demand exceeds supply, which may make elementary candidates more open to working in urban districts. Another possible reason is that the fear that may drive teacher candidates away from urban youth is not present in elementary settings where teacher candidates are working with younger children.

The majority of the teacher candidates were pursuing their certification from a traditional university-based teacher education program or school of education. Of these candidates, less than 29% preferred an urban district as a first option for a career location. Teacher candidates from state alternate route providers made up nearly a third of teacher candidates, and surprisingly, they were marginally more likely to prefer an urban district

than teacher candidates from teacher education programs—only 33% preferred an urban district. This is contrary to the reason alternate route candidacy was established in New Jersey, which was to establish a pipeline to increase the number of teachers into urban districts (Liu, 2002; Barclay et al., 2005). Not surprisingly, nearly 88% of TFA and TNTP candidates said they most prefer an urban district, as this is the mission of their program.

Teacher candidates' field experiences are defined in this study as student teaching for traditional students or summer residency and/or teaching with a provincial license for alternate route teachers. Nearly two-fifths of teacher candidates had their field placement in an urban district, and of them 69.09% reported they prefer an urban district as a place of employment. In contrast, out of the 58.89% of teacher candidates who had their field experience in a suburban or rural location, only 15.48% would most prefer an urban district. Thus, just as teacher candidates who grew up in an urban area tended to prefer urban districts in higher proportions, teacher candidates with urban field experience tended to prefer urban districts as well.

Teacher candidates from different certification pathways (traditional or alternate route) did not seem to have a preference for a career location. However, another additional factor was deemed more useful for exploration--the location of the teacher preparation program. Teacher preparation programs located in urban areas that were former Abbott districts, as measured by New Jersey's District Factor Group (DFG) A or B, were more likely to produce teacher candidates with a preference of teaching in urban areas; approximately 59% of these teacher candidates said they would most like to teach in an urban district. In contrast, 60% of teacher candidates who graduated from teacher

preparation programs located in District Factor Groups CD - IJ, areas considered to have moderate to high socioeconomic status (Tractenberg et al., 2006). Of them less than a quarter of the teacher candidates said they would most prefer to teach in an urban district.

To summarize, when comparing to teacher candidates with field experiences in urban districts, a much lower proportion of teacher candidates who completed their field experiences in suburban or rural areas reported that they would prefer to teach in an urban district. Similarly, half as many teacher candidates who attended teacher preparation programs in DFG CD – IJ preferred an urban district when compared to the teacher candidates attending preparation programs located in DFG A or B.

Teacher candidates' reported the number of years they planned to teach, turnover intention is thought of as a professional characteristic as it may predict real turnover (Price, 2004). Turnover among new teachers is a primary concern in education and researchers are attempting to address it in the teacher staffing challenge (Ingersoll, 2001). Three quarters of the teacher candidates planned on teaching for more than 11 years. For the remaining quarter of the population, the higher the attrition risk, i.e. those who plan to teach fewer years, the higher the proportion of teacher candidate who will prefer to teach in an urban district. Specifically, about 55.6% teacher candidates who planned on teaching five years or less preferred to teach in urban districts; 42.3% of teacher candidates who planned on teaching six to 10 years preferred urban districts, in contrast to 33.9% of teacher candidates who planned on teaching 11 years or more who preferred urban districts. These proportions of teacher candidates is reduced if one were to exclude the Teach For America and The New Teacher Project teacher candidates (since it may be assumed that they will report preferring an urban district). Excluding TFA and TNTP

teacher candidates, about 27% of teacher candidates who plan on teaching five years or less prefer to teach in urban districts, 34.8% of teacher candidates who plan on teaching six to 10 years prefer urban districts, in contrast to 29.9% of teacher candidates who planned on teaching 11 years or more who preferred urban districts. Thus, TFA and TNTP teacher candidates' preferences for urban districts, and attrition risks, are far higher than those teacher candidates in traditional programs, which corroborates the idea that they are committed to teaching in high-needs areas for two years.

Job Search Method and Perceptions of Career Plans

Approximately 89% of the teacher candidates utilized a formal job search method, such as attending a job fair, a direct inquiry to a district or school, making use of the college career office or applying to job openings in response to a newspaper ad, district website, or other websites. Of these candidates, 36% said they would most want to teach in an urban district, reflecting the overall response rate for all candidates. Two-thirds of the sample population indicated they were networking for job openings via informal job searches, such as a family, friend, or college professor referral, or following up on a field experience placement or recommendation by a principal. Of these, once more only 34% said they would most like to teach in urban district. Table 4.4 summarizes teacher candidates' job search methods, and the number of job search methods, by teacher candidates' preference of teaching location: urban or non-urban.

The data in Table 4.4 also show total job search methods by preferred teaching location. One may note that for the majority of teacher candidates, the higher the frequency of job search methods, the smaller the proportion of teacher candidates who preferred an urban district.

Table 4.4. *Sample Distribution of Urban and Non-Urban Teacher Candidates' Job Search Methods*

Variables	N	All	Urban	Non-Urban
Overall Preferred Teaching Location	697	96.0%	37.5%	62.5%
Job Search Methods				
Formal Job Search	669	88.6%	35.9%	64.1%
Informal Job Search	662	66.1%	34.2%	65.8%
Total Job Search Mechanisms By Preferred Teaching Location	669			
No Job Search Method		3.9%	53.9%	46.2%
One Job Search Method		10.8%	47.2%	52.8%
Two Job Search Methods		18.5%	46.8%	53.2%
Three Job Search Methods		18.1%	28.9%	71.1%
Four Job Search Methods		17.3%	39.7%	60.3%
Five Job Search Methods		12.7%	30.6%	69.4%
Six Job Search Methods		8.1%	24.1%	75.9%
Seven Job Search Methods		4.9%	27.3%	72.7%
Eight Job Search Methods		2.4%	31.3%	68.8%
Nine Job Search Methods		1.9%	53.9%	46.2%
10-12 Job Search Methods		1.3%	44.4%	55.6%

Social Learning Experiences and Perceptions of Career Plans

By definition, social learning theory is a hybrid of a teacher candidates' personal background and their experiences (Chapman, 1984). As noted above, where a candidate grew up, attended high school, or experienced his or her field placement correlated to a higher proportion of candidates preferring that location type to teach in. If these experiences can be labeled social learning experiences, it can be hypothesized that teacher candidates with experiences in urban districts are more likely to prefer teaching in urban districts. In a similar vein, one can hypothesize that other social experiences may lend themselves to teacher candidates' preferences to teach urban students.

Table 4.5 Summarizes teacher candidates' social learning experiences and their career location preference.

Table 4.5 *Sample Distribution of Urban and Non-Urban Teacher Candidates' Social Learning Experiences*

<i>Variables</i>	<i>N</i>	<i>All</i>	<i>Urban</i>	<i>Non-Urban</i>
Overall Preferred Teaching Location	697	96.0%	37.5%	62.5%
Social Learning Experiences	669			
Experience with Low Income Children prior to entering Teacher Preparation Program		49.6%	52.4%	47.6%
Family & Friends' Influence To Pursue Teaching		68.0%	34.1%	65.9%
Coach or Education Mentors' Influence to Pursue Teaching		57.1%	34.2%	65.8%
Exposure to Urban Areas via Work/School		65.3%	44.2%	55.8%
Exposure to Urban Areas via Entertainment		84.9%	38.6%	61.4%
Exposure to Urban Areas via Services		70.4%	38.2%	61.8%

More than half of teacher candidates who had experience working with low income children prior to enrolling in their teacher preparation program reported a preference for teaching in an urban districts. Of the candidates who had worked or attended university in an urban area, 44% expressed interest in primarily teaching in an urban district. However, only a little over a third of teacher candidates who were influenced by family and friends, or alternatively coaches and educational mentors, to pursue teaching preferred to teach in an urban district. Similarly, approximately 38% of teacher candidates who had exposure to urban areas through entertainment venues (ex. attending galleries, museums, games, visiting friends, or the YMCA) or services (ex. hospitals, airports, lawyers, etc) seemed to prefer teaching in an urban district.

Urban experiences, through either school or work, were associated with to a higher proportion of teacher candidates preferring to teach in an urban district. However,

brief exposure to urban areas for entertainment or service purposes did not greatly increase the proportion of teacher candidates preferring to teach in urban districts.

The question of how much of a predictor social learning experiences, job search methods, and teacher and demographic characteristics can influence a person's career plan will be discussed in the binary logistic regression sections below.

STEM Teacher Candidates' Personal Characteristics and Perceptions of Career Plans

Overall, 38.8% of the STEM teacher candidates in the sample said they would most prefer to teach in a large or small urban district. Thus compared to the overall sample, a slightly larger proportion of STEM teacher candidates preferred to teach in urban districts.

Table 4.6 summarizes STEM teacher candidates' personal characteristics by their career location preference (i.e. preferring urban or non-urban). The majority of the STEM teacher candidates are female (nearly two-thirds); 40.63% of females and 35.90% of males STEM teachers reported preferring an urban district.

The majority of black STEM teacher candidates prefer urban districts: nearly 93% of black teacher candidates prefer urban districts, followed by over half of Hispanic (52.94%) and Asian teacher candidates (47.06%). Of white teacher candidates, 30.46% said they most prefer an urban district as a teaching location. In this sub-sample, the proportion of Hispanic STEM teacher candidates to prefer an urban district was less than the overall sample of Hispanic teachers, while the proportion of black STEM teachers was higher than the overall sample.

Table 4.6. *Distribution of Urban and Non-Urban STEM Teacher Candidates' Personal Characteristics*

<i>Variables</i>	<i>N</i>	<i>All</i>	<i>Urban</i>	<i>Non-Urban</i>
Overall Preferred Teaching Location	206	100%	38.8%	61.2%
Gender	206			
Female		62.14%	40.63%	59.38%
Male		37.86%	35.90%	64.10%
Race	201			
Black		6.97%	92.86%	7.14%
White		75.12%	30.46%	69.54%
Hispanic		8.46%	52.94%	47.06%
Asian		8.46%	47.06%	52.94%
Other		1.00%	50.00%	50.00%
Age	204			
First Career (21 - 24 years)		41.18%	29.76%	70.24%
First Career Late Starters (25 - 29 years)		24.02%	59.18%	408.16%
Second Career (30 years and over)		34.80%	36.62%	63.38%
Socioeconomic Status				
Parent/Guardian's Education Level High School/GED or Less	202	23.27%	38.30%	61.70%
Parent/Guardian's Education Level Some College		16.34%	42.42%	57.58%
Parent/Guardian's Education Level Bachelor's Degree		30.69%	32.26%	67.74%
Parent/Guardian's Education Level Advanced Degree		29.70%	45.00%	55.00%
Grew Up in an Urban Location	206	24.27%	66.00%	34.00%
Grew Up in a Non-Urban Location		75.73%	30.13%	69.87%
Attended High School in an Urban Location		18.93%	66.67%	33.33%
Attended High School in a Non-Urban Location		81.07%	32.34%	67.66%

Less than half of the STEM teacher candidates are now in their early twenties, between the ages of (21 - 24 year olds). This age group is the least likely to prefer an urban district (29.76%), while teacher candidates over 30 years of age are somewhat more likely (36.62%). However, teacher candidates who education is their first career,

and they are in their mid to late twenties (25 to 29 years old) are considerably more likely to prefer urban districts (59.18%). This may suggest that more experienced teacher candidates have a higher chance of learning about urban areas as opposed to young new college graduates under 24 years of age, yet they may not yet have the family obligations of participants in their thirties who may be lured to the suburbs to raise a family.

The STEM teacher candidates with highly educated parents or guardians were the highest proportion of STEM candidates to most prefer teaching in an urban district (45%), this was followed by parent or guardians' highest education level of some college (42.42%), then high school or less (38.30%), with only a third of teacher candidates with their parents' or guardians' highest education level a bachelor's degree preferring an urban district. Thus, the empirical evidence suggests that the STEM teacher candidates who prefer urban districts hail from a higher educated family than the overall sample. This may be due to the efforts of improving the STEM pipeline into teaching, which provides STEM majors with incentives to enter education and contractually obliges them to teach in high-needs areas for a period of time.

Approximately a quarter of the STEM teacher candidates grew up in urban areas, and less than a fifth had attended a high school in an urban area; of those, approximately two-thirds preferred to teach in an urban district. In contrast, of the three quarters of the teacher candidates who had grown up in a suburban or rural area --only a third of those candidates would most prefer to teach in urban district. Aside from black STEM teachers, STEM teacher candidate who had grown up or attended high school in an urban area had the highest proportion of teacher candidate preferring to teach in an urban district.

STEM Teacher Candidates' Professional Characteristics and Perceptions of Career Plans

Table 4.7 summarizes STEM teacher candidates' professional characteristics by their career location preference.

Table 4.7. *Distribution of Urban and Non-Urban STEM Teacher Candidates' Professional Characteristics*

<i>Variables</i>	<i>N</i>	<i>All</i>	<i>Urban</i>	<i>Non-Urban</i>
Certification Pathway	206			
Teacher Education Program Standard		46.60%	29.17%	70.83%
State Alternate Route		38.35%	30.38%	69.62%
TFA_TNTP		15.05%	90.32%	9.68%
Teacher Preparation Program Location (DFG A – B/ Low SES)		41.75%	59.30%	40.70%
Teacher Preparation Program Location (DFG CD – II/ Higher SES)		58.25%	24.17%	75.83%
Field Experience				
Urban Field Experience Location		38.83%	73.75%	26.25%
Non-Urban Field Experience Location		61.17%	16.67%	83.33%
Attrition Risk				
Years Planning to Teach (< 5 years)	201	12.94%	69.23%	30.77%
Years Planning to Teach (6 - 10 years)		13.93%	35.71%	64.29%
Years Planning to Teach (> 11 years)		73.13%	34.01%	65.99%

Nearly 47% of the sampled STEM teacher candidates were pursuing their certification from a traditional university-based teacher education program or school of education. Of them, 29% preferred an urban district as a first option for a career location. Teacher candidates from state alternate route providers made up 38% of STEM teacher candidates, and surprisingly, they were marginally more likely to prefer an urban district than teacher candidates from teacher education programs—only 30% preferred an urban district. This is contrary to the reason alternate route candidacy was established in New Jersey, which was as a pipeline to increase the number of teachers into urban districts (Liu, 2002). TFA and TNTP teacher candidates made up 15% of the population; not

surprisingly, 90% of TFA and TNTP candidates said they most prefer an urban district, as it is the mission of their program to serve in high needs areas.

Concerning STEM teacher candidates' field experiences, whether student teaching for traditional students, or summer residency or teaching with a provincial license for alternate route teachers, 39% of teacher candidates had their field placement in an urban district, and of them nearly three-quarters preferred an urban district as a place of employment. In juxtaposition, of the STEM teacher candidates who had their field experience in a suburban or rural location, only 17% reported to prefer an urban district.

Similarly, just as the childhood location of a candidate is associated with a preference to teach in urban districts, it seems that the location of candidates' field experiences is the professional characteristic most likely to be associated with a teacher candidates' career location destination.

Similar to the overall sample, teacher preparation programs located in urban areas designated as former Abbott districts, as measured by New Jersey's District Factor Group DFG A or B, had a higher proportion of STEM teacher candidates with a preference to teach in urban areas; approximately 59% of their teacher candidates said they would most like to teach in an urban district. In contrast, of the 60% of STEM teacher candidates who graduated from teacher preparation programs located in District Factor Groups CD - IJ, fewer than a quarter of them reported they would most prefer to teach in an urban district.

Thus, about 17% of STEM teacher candidates with field experiences in suburbs or rural areas preferred an urban district as opposed to 74% of teacher candidates with field experience in urban districts. Similarly, less than a quarter of STEM teacher candidates

attending teacher preparation programs in DFG CD – IJ preferred an urban district as opposed to nearly 60% of teacher candidates attending preparation programs located in DFG A or B.

Teacher candidates' attrition risk or planned years of teaching can be thought of as a professional characteristic for the purpose of this analysis. Turnover is a primary concern among teachers, especially in shortage subject areas like mathematics (Liu et al., 2008a). Nearly three quarters of the STEM teacher candidates plan to teach 11 or more years. However, for the remaining quarter of the STEM teacher candidates, the higher the attrition risk, i.e. those who plan to teach fewer years, the larger the proportion of candidate who preferred to teach in an urban district. Specifically, about 69.23% of STEM teacher candidates who plan on teaching five years or less preferred to teach in urban districts. Of teacher candidates who reported to plan on teaching six or more years, approximately a third reported to prefer urban districts.

STEM Teacher Candidates' Job Search Method and Perceptions of Career Plans

Table 4.8 summarizes STEM teacher candidates' job search methods, and their frequency, by their career location preference.

Table 4.8. *Distribution of Urban and Non-Urban STEM Teacher Candidates' Job Search Methods*

<i>Variables</i>	<i>N</i>	<i>All</i>	<i>Urban</i>	<i>Non-Urban</i>
Job Search Methods				
Formal Job Search	206	86.41%	36.52%	63.48%
Informal Job Search	206	62.14%	33.59%	66.41%
Total Job Search Mechanisms By Preferred Teaching Location	206			
No Job Search Method		5.34%	54.55%	45.45%
One Job Search Method		9.71%	50.00%	50.00%
Two Job Search Methods		18.45%	57.89%	42.11%
Three Job Search Methods		21.84%	33.33%	66.67%

Four Job Search Methods	17.96%	35.14%	64.86%
Five Job Search Methods	7.77%	31.25%	68.75%
Six Job Search Methods	11.17%	17.39%	82.61%
Seven Job Search Methods	4.85%	30.00%	70.00%
Eight Job Search Methods	1.46%	0.00%	100.00%
Nine Job Search Methods	1.46%	66.67%	33.33%

Approximately 86% of the STEM teacher candidates utilized a formal job search method, such as attending a job fair, a direct inquiry to a district or school, making use of the college career office or applying to job openings in response to a newspaper ad, district website, or other websites. Of them, approximately 37% said they would most want to teach in an urban district. Less than two-thirds of the sample population indicated they were networking for job openings via informal job search methods, such as a family, friend, or college professor referral, or following up on a field experience placement or recommendation by a principal. Of those, only 34% said they would most like to teach in urban district.

Table 4.8 also demonstrates the frequency of job search mechanisms and the STEM teacher candidates' preferences of teaching location. Similar to the overall sample, it is noticeable that for the majority of teacher candidates, the higher the frequency of job search methods, the smaller the proportion that reported to prefer an urban district. Perhaps this is due to the comparison of working conditions these teacher candidates can make if their numerous job search methods yield more job options.

STEM Teacher Candidates' Social Learning Experiences and Perceptions of Career Plans

Table 4.9 summarizes STEM teacher candidates' social learning experiences by their career location preference (i.e. preferring urban vs. non-urban).

Table 4.9. *Distribution of Urban and Non-Urban STEM Teacher Candidates' Social Learning Experiences*

<i>Variables</i>	<i>N</i>	<i>All</i>	<i>Urban</i>	<i>Non-Urban</i>
Social Learning Experiences	206	100%		
Experience with Low Income Children		44.66%	53.26%	46.74%
Family & Friend Influence To Pursue Teaching		24.76%	39.22%	60.78%
Coach & Educational Mentor Influence to Pursue Teaching		36.89%	26.32%	73.68%
Exposure to Urban Areas via Work or School		63.59%	41.98%	58.02%
Exposure to Urban Areas via Entertainment Venues		82.04%	39.64%	60.36%
Exposure to Urban Areas via Services		70.87%	38.36%	61.64%

As noted above in teacher candidates' personal characteristics, where a candidate grew up, or attended high school, or experienced his or her field placement, seems to associate with a high proportion of STEM candidates preferring those locations to teach in. These experiences can be labeled social learning experiences, and it can be hypothesized that teacher candidates with experiences in urban districts are more likely to prefer teaching in urban districts. Similarly, one can hypothesize other social experiences may lend themselves to teacher candidates' preferences to teach urban students.

Accordingly, more than half of teacher candidates who had experience working with low income children prior to enrolling in their teacher preparation program reported to prefer urban districts. About two-fifths of STEM teacher candidates who had exposure to urban areas either through work, university, or through entertainment (ex. attending galleries, museums, games, visiting friends, or the YMCA) or services (ex. Hospitals, airports, lawyers, etc) reported preferring an urban district. Similarly, 40% of STEM teacher candidates who were influenced by family and friends, or alternatively a quarter of STEM teacher candidates influenced by coaches and educational mentors, to enter teaching preferred to teach in an urban district.

It seems that social experiences in urban areas did not increase the proportion of STEM teacher candidates' preference to teach in an urban district. The question of how much of an influence social learning experiences, along with job search methods, and professional and personal characteristics have on a STEM teacher candidates plan to teach in urban districts will be further disseminated in the binary logistic regressions on STEM teachers.

Part 2: Discussion of Factor Analyses and Other Predictors

Principal Component Analysis of K-12 School Working Conditions

In this section, the researcher examines teacher candidates' answers to this question: "In considering where you would prefer to teach, how do you view each of the following school characteristics?" To analyze teacher candidates' perceptions, an exploratory factor analysis was done to look for patterns in how teacher candidates viewed school characteristics. Specifically, Principal Component Analysis (PCA) was completed in this study to reveal the internal structure of 669 teacher candidates' preferences for 25-items of school characteristics, each measured on a five-point Likert scale, with 1 indicating "would prefer NOT to have this" and 5 indicating "would strongly prefer this."

PCA transforms the data into components in such a way that the first principal component has the largest possible variance (that is, accounts for as much of the variability in the data as possible), and each succeeding component in turn has the highest variance possible under the constraint that it be orthogonal to (i.e., uncorrelated with) the preceding components (Tabachnick & Fidell, 2007). The aim of PCA is to use only

relevant principal components (where eigenvalues are greater than 1) so that the dimensionality of the transformed data is reduced to a parsimonious structure.

Using PCA with VARIMAX rotation to better define and reduce the dimensionality of preference for working condition/school characteristics matrix (25-items), six principal components were identified with eigenvalues greater than 1. Each of the items and their factor loadings are listed in Table 4.10.

Table 4.10. *Principal Component Analysis: Factor Loadings of School Characteristics/Working Conditions*

Rotated Component Matrix^a						
	Component					
	1	2	3	4	5	6
Principal Component 1						
Prefer: Support for new teachers	.800	.061	.087	.048	.086	.021
Prefer: Effective school discipline policy	.779	.015	.068	.088	.104	.034
Prefer: Availability of instructional resources	.753	-.001	.063	.167	.123	.091
Prefer: School Safety	.688	-.055	.082	.263	.001	-.005
Prefer: Supportive school leadership	.659	.122	-.039	.054	.191	.278
Prefer: Good reputation for teaching practice	.549	.005	.057	.293	-.089	.388
Prefer: Mission/vision of the school compatible with my own	.440	.138	.153	-.048	.394	.185
Principal Component 2						
Prefer: Many students of poverty	-.025	.859	.002	-.006	-.069	-.081
Prefer: Low achieving students	-.059	.757	-.062	.032	-.074	-.157
Prefer: Many racial/ethnic minority students	.126	.726	-.061	-.146	.207	.144
Prefer: Many English language learners	-.024	.663	.118	.138	-.100	.058
Prefer: Racial/ethnic diversity of staff	.222	.621	-.082	-.137	.175	.303
Principal Component 3						
Prefer: Student from the same racial/ethnic background	.065	.081	.816	.013	-.006	-.054
Prefer: Students from the same socio-economic background as me	.043	-.040	.785	.014	.025	.186
Prefer: School that is similar to the one I attended	.084	-.128	.618	.191	.174	.103
Prefer: Friends teaching in the school	.176	.081	.375	.267	.270	.171
Principal Component 4						
Prefer: Close proximity to home	.120	-.101	.024	.610	.218	-.055
Prefer: Salary/benefits	.348	-.060	.013	.581	.117	.021
Prefer: School in which I have had field experiences	.078	.168	.237	.513	.174	.069
Prefer: Good facility conditions	.466	-.078	.088	.491	.022	.279
Principal Component 5						
Prefer: Curriculum that I like to teach	.194	-.066	.053	.205	.755	.117
Prefer: Choice of grade level	.064	.005	.142	.263	.738	-.028
Principal Component 6						
Prefer: High achieving students	.151	-.121	.277	-.058	.148	.637
Prefer: Small school size	.068	.096	.077	.436	-.120	.621
Prefer: Collegial school culture	.357	.260	.037	-.073	.274	.533

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 8 iterations.

While the PCA revealed the presence of six components, after examining the screeplot in Figure 4.7, there was a clear break after the fifth component.

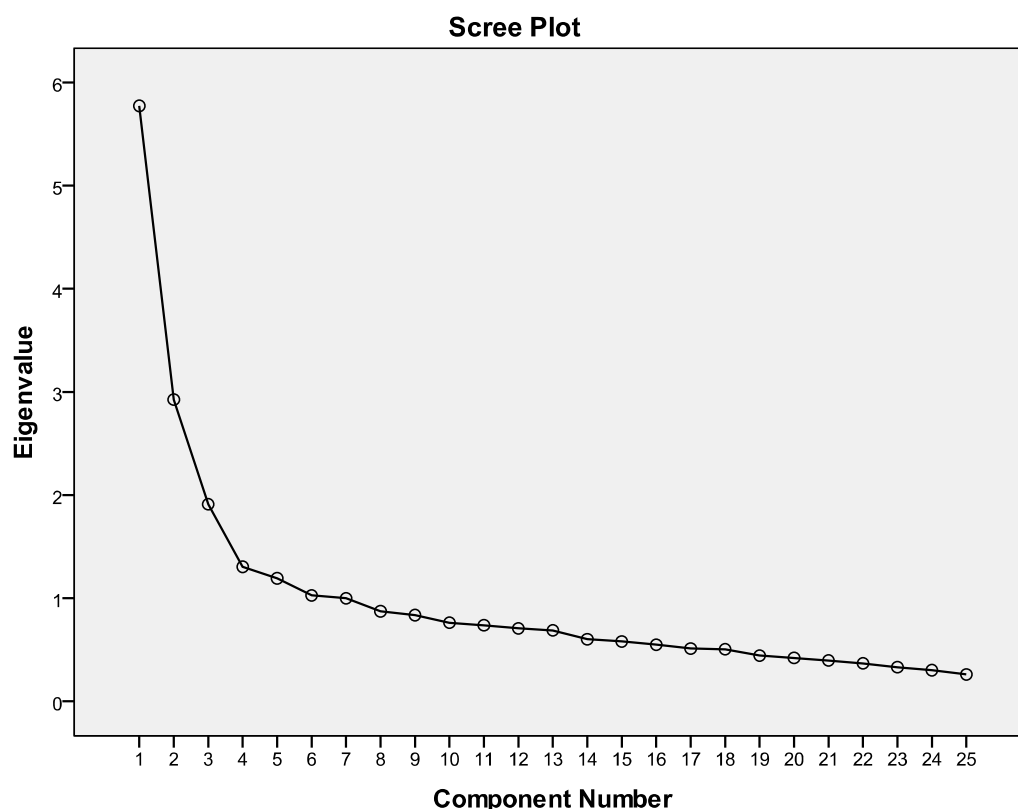


Figure 4.7. Principal component analysis scree plot for working conditions.

Together, the five factors explained 48.82 of the variance. Ultimately, four made theoretical and empirical sense and were retained in the model. Principal factor 1 consisting of seven items explained 15.5% of the variance with a rotated eigenvalue of 4.034 and reliability coefficient of (Cronbach's α) $\alpha = .835$. Cronbach's alpha reliability analysis procedure calculates a reliability coefficient that ranges between 0 and 1, where scale reliability is assumed if the coefficient is $\geq .70$ (Tabachnick & Fidell,

2007), though it has been suggested that a value as low as 0.60 could be deemed acceptable for an exploratory study (Ven & Ferry, 1980). Cronbach alpha reliability analysis permits one to study the properties of measurement scales and the items that compose the scales; where the reliability coefficient is based on the average inter-item correlation (Tabachnick & Fidell, 2007). The principal component (PC) was defined as Adequate Resources, one of the “dimensions of work” Kalleberg’s (1977) used to explain his theory of job satisfaction. For example, in education, the resource adequacy dimension of working conditions may refers to collegial, parental, and leadership competency and support, classroom supplies, and proper management of the financial, instructional, and social school operations.

Principal factor 2, consisting of five items, explained 10.9% of the variance with a rotated eigenvalues of 2.829 and reliability coefficient of $\alpha = .786$. The second principal component was defined as High-Needs Schools, where high needs schools, according to NCLB, are low-income and low performing. These schools also tend to be in majority minority neighbourhood.

Principal factor 3, consisting of four items, relating to respondents’ background and explained 7.7% of the variance with a rotated eigenvalues of 1.990 and reliability coefficient of $\alpha = .642$. The principal component was labeled Similarity/Homophily.

Principal factor 4, consisting of four items, relating to items like proximity to respondents home, salary and benefits explained 7.655% of the variance with a rotated eigenvalues of 1.941. The principal component was not used since reliability of the construct was not sufficiently robust $\alpha = .396$.

Principal factor 5, consisting of two items, relating to respondents choice of curriculum and grade level and explained 7.304% of the variance with a rotated eigenvalues of 1.899 and reliability coefficient of $\alpha = .662$. The component was labeled the Convenience Factor.

Principal factor 6, as noted earlier, was not to be considered according to the screeplot (also the reliability coefficient of $\alpha = .486$ i.e. a low reliability). Overall, the four retained factors explained a cumulative variance of 41.36%.

Table 4.10b. *Principal Component Analysis of 25-Item Working Condition Construct*

Principal Component	Number of Items	Rotation Sums of Squared Loadings			Cronbach's alpha (α)
		Final Eigenvalues	% of Variance	Cumulative Variance %	
1-Adequate Resources	7	4.034	15.515	15.515	0.835
2-High-Need School	5	2.829	10.882	26.396	0.786
3-Similarity/Homophily	4	1.990	7.655	34.051	0.642
4-Not Used	4	1.941	7.466	41.517	0.396
5-Convienence	2	1.899	7.304	48.822	0.662
6-Not Used	3	1.740	6.691	55.512	0.486

Note: Extraction method-Principal Component Analysis 25-Item preference for working condition, $N = 669$

Definition of Criterion and Predictor Variables

The following section defines these factors, as well as the remaining predictor variables to be used in the upcoming logistic regression analyses.

Working Conditions Predictor Variables

The four variable composites formed by the PCA “dimension reduction” in SPSS were saved as standardized variables (mean is zero), and are the first four predictor variables to be used in the regressions in the following sections.

1. Adequate Resources Conditions (Cronbach's α reliability=0.835)
measures teacher candidates' preferences for having resources at their schools
(ex. support for new teachers, effective discipline policy, availability of instructional resources, school safety, supportive school leadership, good reputation for teaching practice)
2. High-Needs Schools Conditions (Cronbach's α reliability=0.786)
measures teacher candidates' preferences for teaching in schools with a racial/ethnic diverse population (student and teacher) and high needs students (many students of poverty, English Language Learners, low achieving students)
3. Similarity-Homophily Conditions (Cronbach's α reliability=0.642)
measures teacher candidates' preferences for teaching in schools with a population similar to themselves and the schools they went to (students from the same racial/ethnic and socioeconomic background as me, school that is similar to the one I attended, schools with friends teaching there)
4. Convenience Conditions (Cronbach's α reliability=0.662) measures teacher candidates' preferences for teaching in schools where they have the convenience of choosing their curriculum and grade level (curriculum I like to teach and choice of grade level)

Job Search Method Predictor Variables

5. Formal Job Search is dummy coded "1=for respondents who participated in formal job searches" and a "0=for those who did not participate in formal job searches." Formal job search method included learning about district

openings by attending a job fair, a direct inquiry to a district or school, making use of the college career office or applying to job openings in response to a newspaper ad, district website, or other websites.

6. Informal Job Search is dummy coded “1=for respondents who participated in informal job searches” and a “0=for those who did not participate in informal job searches.” Informal job search method included learning about district openings from friend/family referrals, college professor, principal recommendation, or student teaching

Social Learning Experiences Predictor Variables

7. Family and Friend’s Influence is dummy coded “1=for respondents whose family and friends influenced them to pursue teaching” and a “0=no indicator of family and friend influence”
8. Experience with Low Income Children dummy coded “1=for respondents who had experience working with low income children prior to enrollment in teacher preparation program” and a “0=no indicator experience working with low income children prior to enrollment in teacher preparation program”

Professional Characteristics Predictor Variables

9. Field Experience Location is dummy coded “1= for respondents who had urban student teaching or alternate route field experiences” and a “0= for respondents who had a non-urban student teaching or alternate route field experience”

10. Teacher Preparation Program Locations is dummy coded “1= for respondents who had their teacher preparation programs in DFG A and B” and a “0= for respondents who had teacher preparation programs located in DFG CD – IJ”
11. Teach For America and The New Teacher Project: Since most if not all TFA and TNTP teacher candidates will enter teaching in an urban district, this variable is used as a control where “1= respondents who attended TFA or TNTP” and “0=respondents who did not attend TFA or TNTP”
12. Attrition Risk is dummy coded “1= for respondents who plan on teaching five years or less” and a “0= for respondents who plan on teaching six years or more”
13. STEM Certification is dummy coded for “1 = for respondents who have certification for STEM” and “0 = for respondents who have certification in disciplines outside of STEM i.e. Science, Technology, Engineering, or Math”

Personal Characteristics Predictor Variables

14. Childhood and High School location is dummy coded “1= for respondents who had grown up or attended high school in urban areas” and a “0= for respondents who had grown up or attended high school in non-urban areas”
15. Parent’s Education Level is dummy coded for “1= for respondents whose parents’ or guardians’ highest education level was high school or less” and “0= for respondents whose parents’ or guardians’ highest education level was some college, a bachelor degree, or an advanced degree).

16. Non-Asian Minority is dummy coded “1= for respondents who are Non-Asian Minority i.e. predominantly Hispanic and black” and “0=for respondents who are Asian or White”
17. First Career Late Starters is dummy coded “1 = respondents who are 25 to 29 years of age” and “0 = for respondents whose age < 25 years old or age >=30 years old”
18. Second Careers is dummy coded “1 = respondents whose age > = 30 years old” and “0 = for respondents whose age < 30 years old”

Criterion Variable

For this study, one variable was deemed most useful as a dependent variable—teacher candidates’ career plan preference refers to teacher candidates’ responses to the following question: “Where would you MOST like to teach?—large urban district, small urban district, high-income suburban district, moderate income suburban district, low income district, rural district.” A “1” indicator is used for respondents who most preferred to teach in urban, and a “0” indicator is for those who preferred a non-urban location i.e. suburban or rural locations. For the purpose of this study a teacher candidate is a prospective teacher who has completed or is completing their field placement (student teaching or alternate route teaching) and is searching for their first placement as a certified teacher of record.

Part 3: Predictor Models for Teacher Candidates’ Preferences for Urban Districts

Data Analysis

SPSS for Windows 19.0 was used to perform binary sequential logistic regression analyses. Given that the criterion variable involved a non-continuous outcome measure,

logistic regression is an appropriate procedure to examine the relationship between the predictor variables and the dichotomous criterion measure.

What factors predict teacher candidates' preference to teach in an urban district? Binary sequential logistic regression was performed to assess the impact of (a) perception of working conditions, (b) job search methods, (c) social learning experiences, (d) professional characteristics, and (e) personal demographic characteristics on the likelihood that a teacher candidate would report career plans to teach in an urban school. The sequential model contained five models (or blocks). The first model is the baseline model that includes teacher candidates' perception of working conditions, and the factors from the PCA were to depict teacher candidates' perception of these working conditions. Working conditions are usually one of the first considerations individuals consider when making career decisions. Accordingly, they have the most implications for policymakers, and that is why they are used as the baseline.

Model 2 includes those same working conditions and adds two job search method predictors for six predictors (4+2). These were added as a second block because after individuals consider the type of working conditions they prefer, they begin to search for such working conditions in their aspired jobs. Moreover, job searches can offer implementable policy implications for schools with specific working conditions.

Model 3 includes the working conditions, job search methods, and adds two additional predictors related to social learning experiences for a total of eight predictors. In the third model one may begin to observe the predictors that are unique to individuals, i.e. their social experiences and exposures, but as variables that may influence career plans, they are also malleable to policy implications.

Model 4 includes the working conditions, job search methods, social learning experiences, and adds five additional predictors related to teacher preparation characteristics for a total of 13 predictors. Like social learning experiences, teacher preparation is also susceptible to policy implications, but after one controls for the working conditions that these prospective teachers may prefer, their job search methods, and their social learning experiences prior to entering their teacher preparation program.

Model 5 includes the working conditions, job search methods, social learning experiences, teacher candidates' professional characteristics, and added an additional five predictors related to personal demographic characteristics for a total of 18 predictors. Demographic characteristics were added in the end as they are the least malleable predictors for policy decisions, though they do offer insights to possible targeted recruitment populations.

The full model containing all 18 predictors was statistically significant [$\chi^2(18, N = 614) = 440.595, p < .001$, Hosmer-Lemeshow $\chi^2(8, N = 614) = 6.968, p = 0.540$] indicating that the model was able to distinguish between respondents reporting career teaching preference of an urban or non-urban location. The Hosmer-Lemeshow test is a statistical test for the Goodness of Fit of the entire model. The test assesses whether or not the observed event rates match expected event rates (Hosmer & Lemeshow, 2000), where the probability values (p) greater than 0.05 suggest a good model fit. Overall effect size ranged from Cox & Snell R -Square = .512 to Nagelkerke R -Square = 0.699 meaning that approximately 51% to 70% of the variance in career plan preference was explained by the 18 predictors. Prior to entry of predictors into the model, SPSS

correctly classified 63% of the respondents into their correct group while after entry of all predictors, classification improved to 86%.

Model 1: The Impact of Perceptions of Working Conditions on Preferring Urban Districts

Model 1 in Table 4.11 represented the results from predicting the likelihood a teacher candidate will prefer to teach in an urban district as a function of their preferences for Working Conditions, before controlling for other variables. After entry of Model 1 predictors (Adequate Resources, High Needs Schools Factors, Similarity-Homophily Factor, Convenience Factors), classification improved from 63% to 74%. Model 1 containing these four predictors was statistically significant; [$\chi^2(4, N = 614) = 174.523, p < .001$, Hosmer-Lemeshow $\chi^2(8, N = 614) = 9.592, p = 0.295$], indicating that the model was able to distinguish between respondents reporting career plan preference (urban versus non-urban); Effect size ranged from Cox & Snell R -Square = 0.247 to Nagelkerke R -Square = 0.338.

In this model, teacher candidates' preference for Adequate Resources in their teacher placement was not significantly associated with teacher candidates' preference to teach in urban districts (Exp (B) odds ratio = 0.8566, $p = 0.1189$). However, the High-Needs Schools Factor was significant at $p < 0.001$, marking it as the strongest predictor in this model (Exp (B) odds ratio=3.863, $p < 0.001$). Specifically for a teacher candidate who scored one standard deviation above the mean in their preference for High-Needs Schools, i.e. schools with high-needs students (low-income, low achieving, and many ELLs) and that have diverse racial and ethnic student and teacher populations, their odds of preferring to teach in an urban school were about 3.9 times higher than the odds of

teacher candidates who expressed their preference for the High Needs Schools factor at the mean, all other factors being equal.

The Similarity-Homophily factor was negatively associated with teacher candidates' preferences to teach in urban districts (Exp (B) odds ratio=0.7436, $p=0.0071$). Teacher candidates who prefer to teach in schools that are similar to the ones they attended or that have a similar population to them are less likely to prefer to teach in urban districts. In fact, for every one-unit increase in the Similarity-Homophily factor standard deviation metric, the odds of teacher candidates preferring to teach in urban schools would decrease by about 25%, all other factors being equal. To make this predictor more easily understood, inverting the odds ratio for the Similarity-Homophily factor reveals for one standard deviation increase in the Similarity-Homophily factor, there is a about a 33% increase of the odds that the teacher candidate will prefer teaching in a non-urban district. Similarly, teacher candidates' preferences for Convenient Conditions (ex. choosing their own curriculum and grade level) were negatively associated with preferring to teach in urban districts. A one unit increase in preferring Convenient Conditions in schools decreased the odds of teacher candidates preferring urban schools by about 28% (Exp (B) odds ratio= 0.7241, $p=0.0015$).

Model 2: The Impact of Job Search Methods on Preferring an Urban District

Model 2 described in Table 4.11 included both teachers' preferences for Working Conditions (Model 1) and their Job Search Methods. After entry of Model 2 predictors (Adequate Resources, High Needs Schools Factors, Similarity-Homophily Factor, Convenience Factors, Formal Job Search, Informal Job Search), classification improved from 74% to 75%. Model 2 containing these six predictors was statistically significant;

$\chi^2(6, N = 614) = 185.845, p < .001$ indicating that the model was able to distinguish between respondents reporting career plan preference (urban versus non-urban).

However, the Hosmer-Lemeshow test ($\chi^2(8, N = 614) = 23.315, p = 0.003$), which is a more conservative metric indicated a poor fitting model. The lack of congruence between the two chi-square metrics suggests model efficacy should be interpreted with caution.

Effect size ranged from Cox & Snell *R*-Square = 0.261 to Nagelkerke *R*-Square = 0.357.

The Formal Job Search factor was negatively associated with teacher candidates' preference to teach in urban districts. If a teacher candidate utilized formal job search methods, the odds that he or she would prefer an urban district would decrease by 61% in comparison to a teacher candidate who did not utilize a formal job search methods (Exp (B) odds ratio = 0.3855, $p = 0.0029$). Informal Job Search factor is not significant.

Model 3: The Impact of Social Learning Experiences on Preferring an Urban District

Model 3, as displayed in Table 4.11 illustrated the relationship between teacher candidates' preference to teach in urban districts and impact of their Social Learning Experiences while holding teacher candidates' perception of Working Condition and Job Search Method constant. After entry of Model 3 predictors (Adequate Resources, High Needs Schools Factors, Similarity-Homophily Factor, Convenience Factors, Formal Job Search, Informal Job Search, Family and Friend's Influence, Experience with Low Income Children), classification improved from 75% to 76%. Model 3 containing all eight predictors was statistically significant; [$\chi^2(8, N = 614) = 206.560, p < .001$, Hosmer-Lemeshow $\chi^2(8, N = 614) = 9.667, p = 0.289$], indicating that the model was able to distinguish between respondents reporting career plan preference (urban versus non-

urban). Effect size ranged from Cox & Snell R -Square = 0.286 to Nagelkerke R -Square = 0.390.

The Social Learning Experiences in this model were whether Family and Friend's Influence to enter a career of teaching, or Experience with Low Income Children prior to teacher preparation program, do influence on a teacher candidates' plans to teach in an urban district or not. In this model, teacher candidates' Family and Friends Influence does not seem to have a relationship with teacher candidates' plans to teach in urban districts (Exp (B) odds ratio= 0.9624, p =0.8698). On the other hand, the predictor of Experience with Low Income Children on preferring to teach in an urban district is positive and highly significant (Exp (B) odds ratio= 2.5349, p <0.001), where the odds of a teacher candidate preferring to teach in an urban district is 2.5 times higher than a teacher candidate who does not have experience with low income children.

Model 4: The Impact of Professional Teaching Characteristics on Preferring an Urban District

Model 4 depicted teacher candidate' Professional Characteristics, specifically their Teacher Preparation Program Locations, Field Experience Locations, Attrition Risk Factor, and included Teach For America and The New Teacher Project TFA_TNTP as well as STEM certification respondents as control variables. After entry of Model 4 predictors (Adequate Resources, High Needs Schools Factors, Similarity-Homophily Factor, Convenience Factors, Formal Job Search, Informal Job Search, Family and Friend's Influence, Experience with Low Income Children, Teacher Preparation Program Location, Field Experience Location, Attrition Risk Factor, TFA_TNTP, STEM certification), classification improved from 76% to 83%. Model 4 containing these 13 predictors was statistically significant; [$\chi^2(13, N = 614) = 383.154, p < .001$, Hosmer-

Lemeshow $\chi^2(8, N = 614) = 14.710, p = 0.065$], indicating that the model was able to distinguish between respondents reporting career plan preference (urban versus non-urban). Effect size ranged from Cox & Snell R -Square = 0.464 to Nagelkerke R -Square = 0.634.

The predictor of Urban Field Experience influenced teacher candidates' preferences to teach in urban districts in Model 4 the most ($\text{Exp (B)} = 10.0121$), where the odds of teacher candidates preferring urban districts is 10 times higher than teacher candidates with no urban field experience ($p < 0.001$), making the location for teacher candidates' field experiences the strongest predictor in the model, holding all other factors constant. The Teacher Preparation Program's Location is also positively associated with the teaching preference for urban districts, with the odds more than doubling (2.6 times higher) that a teacher candidate will prefer an urban district if they attended a Teacher Preparation Programs in District Factor Groups A or B compared to a teacher candidate who attended Teacher Preparation Programs in other DFG CD to II, all other factors being equal ($\text{Exp (B)} \text{ odds ratio} = 2.5998, p = 0.0004$).

Teacher candidates who attended TFA or TNTP were highly likely to express preference to teach in urban areas, almost 3 times the odds as traditional and state alternate route candidates ($\text{Exp (B)} \text{ odds ratio} = 3.0371, p = 0.0237$). This is not surprising, as it is the mission of their programs to prepare their teacher candidates for teaching in urban areas, however, the TFA_TNTP factor was included as a control variable to understand the impact of the Teacher Preparation Program Location as well as Field Experience Location.

Unfortunately, the odds of teacher candidates leaving within five years or less (Attrition Risk predictor) preferring urban districts were more than two and a half times higher than the odds teacher candidates whose Attrition Risk was to teach 6 years or more (Exp (B) odds ratio=2.6280, $p=0.0195$), all other factors being equal (including TFA and TNTP whose commitment to teach is usually two years). STEM certification as a predictor was not significant in this Model.

Model 5: The Impact of Personal Characteristics on Preferring an Urban District

The introduction of Personal Characteristics into Model 5 served as a predictor alongside Teacher Characteristics, Social Learning Experiences, Job Search Methods, and Perceptions of Working Conditions. After entry of Model 5 predictors (Adequate Resources, High Needs Schools Factors, Similarity-Homophily Factor, Convenience Factors, Formal Job Search, Informal Job Search, Family and Friend's Influence, Experience with Low Income Children, Teacher Preparation Program Location, Field Experience Location, Attrition Risk Factor, TFA_TNTP, STEM Certification, Non-Asian Minority, Grew Up and /or Attended High School in urban areas, Parents'/Guardians' Highest Education Level, First Career Late Starters, Second Career Candidates), classification improved from 83% 86%. Model 5, as the full model, was statistically significant by the omnibus and Hosmer-Lemeshow Chi-Square tests stated at the beginning of the analyses.

Not surprisingly, the odds of Non-Asian Minority teacher candidates, the majority of whom are Black and Hispanic, preferring to teach in urban district was nearly 2.5 times higher than Asians and White teacher candidates (Exp (B) odds ratio=2.6143, $p=0.0049$), all other factors being equal. Similarly, the odds that teacher candidates who

Grew Up and/or Attended High School in urban areas were nearly 6.3 times greater to prefer teaching in urban districts than the odds of teacher candidates who Grew Up and/or Attended High Schools in non-urban areas, making this predictor the strongest in the model (Exp (B) odds ratio=6.2750, $p < 0.001$), all other factors being equal. Teacher candidates whose Parents' or Guardians' Highest Education Level included some college or more are more likely to prefer to teach in urban districts than teacher candidates whose Parents' or Guardians' Highest Education Level is high school or less (Exp (B) odds ratio = 2.0635, $p = 0.0256$).

Though not statistically significant, First Career Late Starters, i.e. teacher candidates in their late 20's, as a predictor is noteworthy; where their odds of choosing to teach in an urban setting are approximately 88% higher than First Careerers i.e. teacher candidates in their early 20's (Exp (B) odds ratio = 1.8777, $p = 0.0718$). In contrast, Second Career Candidates (age ≥ 30) are not significantly more or less likely to prefer urban districts (Exp (B) odds ratio = 1.2085, $p = 0.5984$).

It is interesting to note that after accounting for the variance in Model 5, two previously non-significant predictors became significant and are negatively associated with teacher candidates' preferences to teach in urban districts: Family and Friend's Influence ($p = 0.0067$) and Adequate Resources ($p = 0.0014$). Once controlling for demographics, teacher candidates influenced to enter teaching by Family and Friends had a decreased odds ratio of preferring an urban district by approximately 63% when compared to teacher candidates not influenced by Family and Friends to enter teaching (Exp (B) odds ratio = 0.4012, $p = 0.0067$).

Furthermore, the Adequate Resource factor became statistically significant once variances associated with teacher candidates' professional characteristics were held constant and increased in effect and statistical significance once variances associated with demographics were controlled. The odds ratio 0.6317 demonstrated that the odds of a teacher candidate preferring to teach in urban districts was reduced by 37% for every one standard deviation increase above the mean score of the perception of Adequate Resources (Exp (B) odds ratio = 0.6317, $p = 0.0014$), where Adequate Resources referred to human resources like administrative/leadership support and professional learning experiences, or physical resources like safe schools and school supplies.

The effects of holding other predictors constant in Model 5 on earlier predictors are also worthy of note:

- The factor of Working with Low Income Children loses statistical significance as its variance is shared with demographic predictors, though it is still noteworthy as its significance is $p < 0.1$ (Exp (B) odds ratio = 1.6623, $p = 0.0753$)
- STEM Certification, oddly enough, was positively associated with a preference to teach in urban districts, if one considers widening the significance band ($\sim p < 0.1$). Teacher candidates who had STEM certification have an odds increase of approximately 67% that they would prefer urban districts (Exp (B) odds ratio = 1.6734, $p = 0.0875$). Below is a binary logistic regression for STEM certification as STEM teachers are a high commodity in the teacher labour market, and the factors that may predict their career plans

of where to teach may differ from the overall sample of teacher candidates from all disciplines.

- While Urban Field Experience (for teacher candidates who had their student teaching or alternate route teaching experiences in urban districts) was the most significant predictor in Model 4 with the highest effect (Exp (B) odds ratio=5.2633, $p < 0.001$), it is plausible it shared some of its variance with the predictor of Growing Up and/or Attending High School in an urban area, which is now the most significant predictor with the highest effects in Model 5 (Exp (B) odds ratio = 6.2750, $p < 0.001$).
- The odds ratio of the Similarity-Homophily factor for a one standard deviation increase in teacher candidates' perceptions of this working conditions decreases the odds of teacher candidates preferring an urban district by an additional 15% (from a decreased odds of 32% to a decreased odds of 47%), and this predictor is now highly significant (change from $p < 0.01$ to $p < 0.001$). The Similarity-Homophily factor's higher statistical significance may have a relationship with the current significance of the Family and Friends' Influence factor. Teacher candidates who prefer schools with student and teacher populations similar to themselves may very well be the teacher candidates who are influenced into a career of teaching by family and friends, and their desire to be with people that are familiar may be to recreate that family and friend-like atmosphere/culture. The impact of a Social Learning Experience on teacher's perception of working conditions is important, as it hypothesizes that teacher candidates' prior experiences to their teacher

preparation have a large impact on their plans post teach preparation, thereby impacting the inequitable distribution of teachers throughout school districts.

- The lower level of statistical significance for the Convenient Conditions (change from $p < 0.001$ to $p < 0.05$) suggests that convenient conditions are not as important when controlling for demographics (Non-Asian minorities, teacher candidates who grew up in an urban district, or whose parents' highest education level was some college or more).

Table 4.11 *Predictors of Teacher Candidates' Preference To Work in Urban Schools*
(N = 614)

	MODEL 1		MODEL 2		MODEL 3		MODEL 4		MODEL 5	
<i>Independent variables</i>	<i>Sig.</i>	<i>Exp(B)</i>	<i>Sig.</i>	<i>Exp(B)</i>	<i>Sig.</i>	<i>Exp(B)</i>	<i>Sig.</i>	<i>Exp(B)</i>	<i>Sig.</i>	<i>Exp(B)</i>
Constant (referent group)	.000	.527	.211	1.503	.832	.928	.000	.165	.000	0.037
Adequate Resources	.119	0.857	.096	0.846	.170	0.868	.021	0.741*	.001	0.632**
High-Needs Schools	.000	3.863***	.000	3.936***	.000	3.553***	.000	3.419***	.000	3.492***
Similarity-Homophily	.007	0.744**	.004	0.724**	.001	0.687**	.008	0.684**	.000	0.535***
Convenience	.002	0.724**	.001	0.718**	.001	0.712**	.001	0.638**	.022	0.725*
Formal Job Search			.003	0.385**	.003	0.373**	.002	0.297**	.013	0.326*
Informal Job Search			.150	0.741	.198	0.761	.810	1.067	.326	1.342
Family & Friend Influence					.870	0.962	.147	0.653	.007	0.401**
Experience w/ Low Income Children					.000	2.535***	.017	1.854*	.075	1.662~
Urban Field Experience							.000	10.012***	.000	5.263***
TPP In DFG A or B							.000	2.600***	.001	2.654**
TFA_TNTP							.024	3.037**	.004	4.193**
Attrition Risk							.019	2.628*	.045	2.467*
STEM Certification							.120	1.530	.087	1.673~
Grew up Or Attended HS in Urban									.000	6.28***
Non-Asian Minority									.000	2.61***
Parent's Education level (> HS)									.030	2.06*
First Career Late Starters									.070	1.88~
Second Careers									.600	1.21

Note: ~ p<0.1; *p<0.05; **p<0.01;

*** p<0.001

What Predictors Influenced STEM Teacher Candidates' Preferences to Teach in Urban Districts?

Since STEM teacher candidates were only 206 respondents, standard errors were high when a binary sequential logistic regression was performed to assess the impact of five constructs, and 17 predictors (sans the STEM certification predictor in the model for all teacher candidates discussed earlier), on where they most prefer to teach. Instead, four independent models were created to assess the impact of (a) professional characteristics and personal demographic characteristics, (b) job search methods, (c) social learning experiences, and (d) perception of working conditions, on the likelihood that STEM teacher candidates would report career plans to teach in an urban school. Model 1 in 4.12 assessed STEM teacher candidates' personal and professional characteristics for a total of 9 predictors; Model 2 in 4.13 included job search methods and had two additional predictors while holding constant the personal and professional characteristics for a total of 11 predictors (9+2); Model 3 in 4.14 assessed two predictors related to social learning experiences while holding constant the personal and professional characteristics for a total of 11 predictors (9+2); and Model 4 added an additional for predictors related to teacher candidates' perception of working conditions for a total of 13 predictors.

The full STEM model in Model 1 in Table 4.12 containing all 9 predictors was statistically significant; $\chi^2(9, N = 194) = 131.306, p < .001$ indicating that the model was able to distinguish between STEM teacher candidates reporting career location preference of an urban versus non-urban district; and the Hosmer-Lemeshow $\chi^2(8, N = 194) = 15.224, p = 0.055$ indicated a fair model fit. Overall effect size ranged from Cox

& Snell R - Square = .492 to Nagelkerke R -Square= 0.668 meaning that approximately 49% to 67% of the variance in career plan preferences were explained by the 9 predictors.

Prior to the entry of predictors into the model, SPSS was able to correctly classify 61.3% of the respondents into their correct group. After entry of all 9 predictors (Teacher Preparation Program Location, Field Experience Location, Attrition Risk Factor, TFA_TNTP, Non-Asian Minority, Grew Up and /or Attended High School in urban areas, Parents'/Guardians' Highest Education Level, First Career Late Starters, Second Career Candidates), classification improved from 61.3% to 89.2%

In Model 1 of Table 4.12, STEM teacher candidates' personal and professional characteristics' influence on their teacher placement was statistically significant. The factor of Urban Field Experience had the strongest impact on STEM teacher candidates' intentions to most prefer to teach in urban districts ($\text{Exp (B)} = 11.7717$). The odds of a teacher candidate answering *yes* they most prefer to teach in an urban district is 11.77 times higher for a teacher candidate with urban field experience than for teacher candidates with non-urban field experience, all other factors being equal ($p < 0.001$).

The factor of attending a Teacher Preparation Program in DFG A or B is also a strong predictor of STEM teacher candidates' intentions to most prefer to teach in urban districts ($\text{Exp (B)} = 3.9208$). The odds of a teacher candidate answering *yes* they most prefer to teach in an urban district is 3.92 times higher for a teacher candidate attending a Teacher Preparation Program located in DFG A or B than for teacher candidates attending a Teacher Preparation Program located in DFG CD to IJ, all other factors being equal ($p < 0.001$).

The predictor first career late starters, i.e. teacher candidates between the ages of 25 and 29, had the second strongest influence on STEM teacher candidates' preference for teaching in an urban district. First Career Late Starters was highly significant where their odds of choosing to teach in an urban setting are approximately 8.72 times higher than First Careers who are teacher candidates in their early 20's, all other factors being equal ($p < 0.001$).

The odds of STEM teacher candidates who Grew Up and/or Attended High School in urban areas to prefer teaching in urban districts were nearly 6.57 times higher than the odds of STEM teacher candidates who Grew Up and/or Attended High Schools in non-urban areas, making this predictor the third strongest in the model; all other factors being equal ($p = 0.0031$).

The odds of STEM teacher candidates who were an Attrition Risk to prefer to teach in urban districts were 4.84 times higher than STEM teacher candidates who did not plan on leaving in five years or less, all other factors being equal ($p = 0.0370$), including controlling for TFA and TNTP. In fact, if TFA_TNTP are filtered out, attrition risk is more significant (see Appendix G for such a model). While, teacher candidates who attended Teach For American (TFA) or The New Teacher Project (TNTP) were more likely to prefer to teach in urban areas than traditional and state alternate route candidates, the TFA_TNTP predictor was included as a control variable (Exp (B) odds ratio=14.1406, $p = 0.02601$).

In contrast, the variable Second Career Candidates (age>30) was not significant (Exp (B) odds ratio=1.3653, $p = 0.6345$), neither was STEM teacher candidates' Parents'

or Guardians' Education Level (Exp (B) odds ratio=2.8486, $p=.1222$), nor was the race predictor, Non-Asian Minority, significant (Exp (B) odds ratio=2.7091, $p=.0979$).

Table 4.12. *STEM Personal and Professional Characteristics' Influence on Preferring Urban Districts (n=194)*

<i>Independent Variable</i>	<i>Sig.</i>	<i>Exp(B)</i>
Teacher Preparation Program in DFG A or B	0.01	3.92*
Urban Field Experience	0.00	11.77***
Attrition Risk	0.04	4.85*
TFA_TNTP	0.02	7.06*
First Career Late Starters	0.00	8.72***
Second Careerers	0.64	1.37
Grew Up or Attended H.S. in Urban Area	0.00	6.57***
Non Asian Minority	0.10	2.71
Parent's Education Level (> H.S)	0.12	2.85
Constant	0.00	0.01

Note: ~ $p<0.1$; * $p<0.05$; ** $p<0.01$;

*** $p<0.001$

The full STEM model in Model 2 in Table 4.13 containing all 11 predictors was statistically significant; $\chi^2(11, N = 194) = 135.282, p < .001$ indicating that the model was able to distinguish between STEM teacher candidates reporting career location preference of an urban versus non-urban district; and the Hosmer-Lemeshow $\chi^2(8, N = 194) = 12.999, p = 0.112$ indicated a good model fit. Overall effect size ranged from Cox & Snell R -Square = .502 to Nagelkerke R -Square = 0.682 meaning that approximately 50% to 68% of the variance in career plan preferences were explained by the 11 predictors.

Prior to the entry of predictors into the model, SPSS was able to correctly classify 61.3% of the respondents into their correct group. After entry of all 11 predictors (Formal Job Search, Informal Job Search, Teacher Preparation Program Location, Field Experience Location, Attrition Risk Factor, TFA_TNTP, Non-Asian Minority, Grew Up and /or Attended High School in urban areas, Parents'/Guardians' Highest Education Level, First Career Late Starters, Second Career Candidates), classification improved from 61.3% to 88.1%.

Table 4.13. *STEM Job Search's Influence on Preferring Urban Districts* (n=194).

<i>Independent Variable</i>	<i>Sig.</i>	<i>Exp(B)</i>
Formal Job Search	0.07	0.26~
Informal Job Search	0.26	1.87
Teacher Preparation Program in DFG A or B	0.04	3.11*
Urban Field Experience	0.00	12.03***
Attrition Risk	0.04	5.17*
TFA_TNTP	0.01	11.92*
First Career Late Starters	0.00	10.34***
Second Careerers	0.60	1.42
Grew Up or Attended H.S. in Urban	0.00	7.37***
Non Asian Minority	0.12	2.64
Parent's Education Level (> H.S)	0.09	3.20~
Constant	0.001	0.014

Note: ~ p<0.1; *p<0.05; **p<0.01;

*** p<0.001

While not statistically significant, the predictor of formal job search methods is noteworthy. The odds of STEM teacher candidates who searched for teaching jobs through formal methods preferring to teach in urban districts were nearly 73% lower than

the odds of STEM teacher candidates who used non formal methods for job searching, all other factors being equal ($p = 0.0656$). Informal job searches were not significant as a predictor of STEM teacher candidates' preference for teaching in an urban district. Moreover, it is interesting to note that the estimated odds ratios of personal and professional characteristics increased in this model, with the exception of a slight decrease in the increased odds for the location of the Teacher Preparation Program (TPP) (see Appendix H for a Table that helps with comparisons).

The full STEM model in Model 3 in Table 4.14 containing all 11 predictors was statistically significant; $\chi^2(11, N = 194) = 135.317, p < .001$ indicating that the model was able to distinguish between STEM teacher candidates reporting career location preference of an urban versus non-urban district. However, the Hosmer-Lemeshow test $\chi^2(8, N = 194) = 27.127, p = 0.001$, which is a more conservative metric indicated a poor fitting model. The lack of congruence between the two chi-square metrics suggests model efficacy should be interpreted with caution. Overall effect size ranged from Cox & Snell R -Square = .502 to Nagelkerke R -Square= 0.682 meaning that approximately 50% to 68% of the variance in career plan preferences were explained by the 11 predictors.

Prior to the entry of predictors into the model, SPSS was able to correctly classify 61.3% of the respondents into their correct group. After entry of all 11 predictors (Family and Friend's Influence, Experience with Low Income Children, Teacher Preparation Program Location, Field Experience Location, Attrition Risk Factor, TFA_TNTP, Non-Asian Minority, Grew Up and /or Attended High School in urban areas, Parents'/Guardians' Highest Education Level, First Career Late Starters, Second Career Candidates), classification improved from 61.3% to 89.2%

The Social Learning Experiences in this model were whether Family and Friend's Influence to enter a career of teaching, or Experience with Low Income Children prior to entering the teacher preparation program had little or no impact on STEM teacher candidates' plans to teach in an urban district. In this model, the Family and Friend's influence to enter a career of teaching was noteworthy as $p < 0.1$. For STEM teacher candidates whose Family and Friend's Influenced them to enter teaching, the odds ratio for them preferring an urban district decreased by approximately 67% (Exp (B) odds ratio = 0.3330, $p = 0.0651$) in comparison to STEM teacher candidates who did not have Family and Friends Influence them into teaching. Oddly enough, there was no impact of the predictor of Experience with Low Income Children on STEM teacher candidate preferring to teach in an urban district (Exp (B) odds ratio = 1.3408, $p = 0.5482$). Similar to the observation above, the estimated odds ratios of personal and professional characteristics increased in this model, with the exception of a slight decrease in the increased odds for attrition risk (see Appendix H for a Table that helps with comparisons).

The full STEM model in Model 4 in Table 4.15 containing all 13 predictors was statistically significant; $\chi^2(13, N = 194) = 173.952, p < .001$ indicating that the model was able to distinguish between STEM teacher candidates reporting career location preference of an urban versus non-urban district; and the Hosmer-Lemeshow $\chi^2(8, N = 194) = 4.385, p = 0.821$ indicated it was a good model fit. Overall effect size ranged from Cox & Snell R - Square = .592 to Nagelkerke R -Square= 0.804 meaning that approximately 59% to 80% of the variance in career plan preferences were explained by the 13 predictors.

Table 4.14. *STEM Social Learning Experiences' Influence on Preferring Urban Districts* (n=194)

<i>Independent Variable</i>	<i>Sig.</i>	<i>Exp(B)</i>
Family & Friend Influence To Enter Teaching	0.07	0.33~
Experience w/ Low Income Children Prior to Teacher Preparation Program	0.55	1.34
Teacher Preparation Program in DFG A or B	0.01	3.84*
Urban Field Experience	0.00	13.20***
Attrition Risk	0.07	4.07~
TFA_TNTP	0.02	7.82*
First Career Late Starters	0.00	10.08***
Second Careerers	0.77	1.22
Grew Up or Attended H.S. in Urban Area	0.00	8.25***
Non Asian Minority	0.09	2.90~
Parent's Education Level (> H.S)	0.15	2.64
Constant	0.00	0.01

Note: ~ p<0.1; *p<0.05; **p<0.01;

*** p<0.001

Prior to the entry of predictors into the model, SPSS was able to correctly classify 61.3% of the respondents into their correct group. After entry of all 13 predictors (Z¹_Adequate Resources, Z_High Needs Schools Factors, Z_Similarity-Homophily Factor, Z_Convenience Factors, Teacher Preparation Program Location, Field Experience Location, Attrition Risk Factor, TFA_TNTP, Non-Asian Minority, Grew Up and /or Attended High School in urban areas, Parents'/Guardians' Highest Education Level, First

¹ Z- Indicates factors were re-standardized for this model

Career Late Starters, Second Career Candidates), classification improved from 61.3% to 89.7%

In Model 4 of Table 4.15, STEM teacher candidates' preferences for the High-Needs Schools Factor was highly significant at $p < 0.001$; for a STEM teacher candidate who scored one standard deviation above the mean in their preference for High-Needs schools, i.e. schools with high-needs students (low-income, low achieving, and many ELLs) and that have diverse racial and ethnic student and teacher populations, their odds of preferring to teach in an urban school were about 9.8 times greater than STEM teacher candidates who expressed their preference for the High Needs Schools factor at the mean (Exp (B) odds ratio=9.7893, $p < 0.001$).

Table 4.15. *Model 4 STEM Perceptions of Working Conditions*

<i>Independent Variable</i>	<i>Sig.</i>	<i>Exp(B)</i>
Similarity-Homophily Factor	0.69	0.86
Convenience Factor	0.45	0.79
Adequate Resource Factor	0.16	0.64
High-Needs Schools Factor	0.00	9.79***
Teacher Preparation Program in DFG A or B	0.01	6.16*
Urban Field Experience	0.00	11.66***
Attrition Risk	0.05	6.99~
TFA_TNTP	0.26	3.36
First Career Late Starters	0.00	12.56***
Second Careerers	0.95	1.06
Grew Up or Attended H.S. in Urban Area	0.00	20.23***
Non Asian Minority	0.95	0.95
Parent's Education Level (> H.S)	0.10	3.72
Constant	0.00	0.00

Note: ~ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$;

*** $p < 0.001$

Another way to interpret the estimated odds-ratio of 9.8 for High Needs Schools is, for two teachers who wanted to teach in schools that differed by one standard deviation in the proportion of students who are poor, English Language Learners, of racial/ethnic minority groups and/or low achieving, the odds of the STEM teacher candidate preferring an urban school were 9.8 times higher than the odds for the STEM teacher candidate preferring a non-urban school.

In Model 5 of Table 4.12, STEM teacher candidates' preference for Adequate Resources (Exp (B) odds ratio=0.6359, $p = 0.1568$), Similarity-Homophily factor, (Exp (B) odds ratio=0.8613, $p = 0.6904$), and Convenience factor (Exp (B) odds ratio=0.7918, $p = 0.4473$), in their teacher placement was not significant, all other factors being equal. Perhaps one can surmise that working conditions were not important to STEM teacher candidates' career plans, as they may believe they have the option to choose the best working conditions in schools as they are in high demand, and tight supply (Liu et al., 2008a).

In this model, the estimated odds ratios of personal and professional characteristics fluctuated. For example, the estimated odds ratio for attending a teacher preparation program in DFG AB, and the attrition risk, as well as the demographic characteristics of first career late starters and urban childhood and high school location, all increased in this model. There was a very small decrease in the estimated odds ratio for urban field experience, and a great decrease in the estimated odds ratio of TFA_TNTP (see Appendix H for a Table that helps with comparisons).

Summary

This chapter provided detailed quantitative results of teacher candidates' personal and professional characteristics, their social experiences and job search methods, their perception of working conditions, and their career plan of where to teach: an urban vs. nonurban public school district. It began with the overall description of the 697 teacher candidates surveyed in this study. Next, descriptive statistics depicted teacher candidates' (n=644) preference for teaching in urban districts versus non-urban districts (meaning suburban and rural districts) by personal and professional characteristics, and their social experiences and job search methods.

A principal component analysis was then conducted to reduce 25 working condition perceptions, and to extract the factors suggested by the scree plot, confirmed by cronbach alpha, and that made sense theoretically. Part 2 also introduced the predictor variables and the criterion variable to be used in the models in the following section.

Binary logistic regression was then performed on all teacher candidates (n=614) to determine which predictors within the five constructs of the conceptual framework had a relationship with teacher candidates' teaching location preference (urban or non-urban). Logistic regression analyses were conducted on STEM teacher candidates (n=194) to assess if the same predictors influenced this sub sample.

In sum, in both the overall population of and the STEM population, the strongest predictors of teacher candidates' preference for teaching in urban districts are their urban field experiences, if they grew up or attended high school in an urban area, and their preference for high needs schools conditions. What differed between the two groups is that overall STEM teacher candidates' perceptions of working conditions were not

significant predictors, perhaps suggesting STEM teacher candidates were confident that they may choose the schools with the most optimal conditions given their high marketability.

CHAPTER FIVE. A MIXED METHODS STUDY OF NEWARK PUBLIC SCHOOLS

The factors that impact teacher candidates' preference to teach in urban districts have been compiled from the analyses of the teacher candidate survey data of 697 teacher candidates. This chapter highlights a snapshot of the challenges that schools in Newark, New Jersey experience in teacher recruitment and hiring. The research question this chapter seeks to answer is:

(RQ 3) How do teacher candidates' perceptions of working conditions, social learning experiences, job search methods, and personal and professional characteristics impact Newark Public School's (NPS) recruitment and hiring challenge, according to both NPS's school administrators and incoming teacher candidates?

By triangulating the perspectives of teacher candidates entering the urban district with the perspectives of school administrators within a representative district looking to recruit and hire new teachers, this chapter explores how administrators in this urban district recruit and retain teachers. These perspectives were gathered through a series of semi-structured interviews that were coded and analyzed. From those codes, specific themes emerged, and these will be used to guide the framework of these results.

The challenges of recruiting and hiring teacher candidates in Newark Public Schools will be discussed using the same constructs that have informed this study: (a) Part 1: The challenges that result from teacher candidates' perceptions of working conditions in Newark; (b) Part 2: The significance of social learning experiences and prior exposure to urban areas to teacher candidates coming into Newark and to principals hiring in Newark; (c) Part 3: How teacher candidates' job searches intertwine with the challenge of district bureaucratic hiring practices; (d) Part 4: The importance of teacher

candidates' professional characteristics; and (e) Part 5: The importance of teacher candidates' personal characteristics to an urban districts' recruitment and hiring efforts.

Part I: Newark Teacher Staffing Challenge as a Result of Perceptions of Working Conditions: Reports from School Administrators and Teacher Candidates

Teacher candidates' perceptions surrounding the working conditions in Newark, and the reality of those conditions, are one of Newark Public School's principal challenges to recruiting new teachers. The previous chapter found four dimensions of working conditions to be predictors of teacher candidates' likeliness of teaching in urban districts: (a) convenient conditions, (b) resource adequacy conditions, (c) high-needs schools conditions, and (d) similarity-homophily conditions. The first three will be discussed with respect to Newark's case study. The fourth condition will not be discussed due to the lack of qualitative evidence.

Lack of Convenient Conditions as a Supply-Side Recruitment Challenge

The convenience dimension of working conditions refers to how convenient the teaching job is to the prospective teacher. In Newark Public Schools, it was the lack of convenient conditions such as extended work days, the conditions of transportation, public and non-public, that influenced teacher candidates' lack of desire to teach in NPS. Additionally, when applying to work in Newark, there is no guarantee where in Newark a candidate will be placed. This causes an additional obstacle for teachers and increases the district's level of inconvenience for teachers living outside of the city.

Several NPS administrators explained that working in Newark is inconvenient for many prospective teachers. For example, a number of principals describe the difficulties in navigating around Newark. Specifically, the problems are to due to the lack of

adequate public transportation and the challenge of driving into Newark, which many teacher candidates do not find desirable. One principal explains:

Newark probably, until this year, was never really seen as the place to go teach. Not a lot of people have been excited to come here. When they can go there and teach in New York and live in New York not having to have a car and take the subway. And in some cases they pay more, you know, and then we say 'you'll need a car.' It's like you know it doesn't have the same culture that New York does. Its challenging... you know [you] talk to people from New York [and they] don't have the same sort of challenges, talk to people from New Orleans, DC, Philadelphia same thing. But like people of Camden they do have the same sort of challenges because it's like working or living in Philadelphia.

The issue of transportation, commuting, and parking in Newark is stated by administrators numerous times as an inconvenient factor for working in Newark. One administrator describes how it can be difficult when teachers are transferred from one school location to another in Newark:

I had person who used to work here and said "Oh could you get me back, they put me on the other side of the city, and it takes me extra 35 minutes from where I live." If that's what you had to do every day, and that really upset your whole day, you know it means maybe you can't get your kids on the bus, or you have to hire somebody, something like that, that can be a bad fit. Just with like teaching the whole child, well we're working with whole adults too, if working at [a specific school] is good because its 20 minutes closer to your house, or it just solves a lot of problems for you, well that's ok.

Another principal even joked that many teacher candidates may prefer their school because they have a parking lot:

It's nice here, we have a parking lot. Hey don't laugh ... don't laugh... It is a real truth. You know [School A] doesn't have a parking lot, [School B] doesn't have a parking lot, [School C] doesn't have a parking lot. People come here and they're like, "WOW, PARKING LOT!"

Parking is not only a matter of convenience for prospective teachers; it is also a question of safety. One other principal describes how his school has better prospects at recruiting new teachers because it is not “like [School X] or one of the South Region schools where they—[teachers]--don’t even want to park their cars there.” Parking in a less safe neighborhood could result in one’s car being stolen or damaged.

Another relatively new challenge is the extended day many schools in NPS are implementing as a result of receiving a School Improvement Grant (SIG). According to the Department of Education, the SIG “authorized under section 1003(g) of Title I of the Elementary and Secondary Education Act of 1965 (Title I or ESEA), are grants to State educational agencies (SEAs) that SEAs use to make competitive subgrants to local educational agencies (LEAs) that demonstrate the greatest need for the funds and the strongest commitment to use the funds to provide adequate resources in order to raise substantially the achievement of students in their lowest-performing schools.”

One school administrator explains how the extended day may pose as an obstacle for recruiting new teacher candidates:

Some of our new schools, new SIG-grant schools, are going to have extended hours, like [School X] High School has extended hours. That may not work for everybody. Some people, especially in today's economy, may not be able to hire that babysitter for extra two hours. Especially if your husband lost a job. So you know, maybe you're just struggling on one salary now, so I think the district needs to be aware of that too. There has to be the gives for the gets. I give as a teacher--I got to get something back. I have to get something that's going to help me survive. Just like I said, we're dealing with the whole person, you're always dealing with the whole person.

Another principal describes the challenge of the extra time for teacher candidates, where “people see high school and see the traditional times. Of course people have families,

they have lives, and that time frame does impede for some” since the school runs all the way until 5:00 p.m., which requires teacher candidates to “work more extensively with parents because you’re really taking on that role as the bridge in the family academically and socially.” So while extended day is seen by SEAs and LEAs as a necessary program to improve student achievement, teacher candidates’ and school administrators’ see it as a barrier from recruiting high quality teachers.

Perception of Safety as a Supply-Side Recruitment Challenge

The resource adequacy dimension of working conditions refers to the resources in and around schools (ex. safety, support from school leadership). According to NPS administrators, safety is the number one working condition that serves as a deterrent for recruiting new teachers. One principal describes how teachers perceive Newark as an undesirable working location because of the “danger” associated with the neighborhood and the surrounding area. He further explained:

Well, you know, in urban setting you got gang violence and fighting and all this kind of stuff like that. Teacher just got beat up in [next town over]...you know that kind of stuff..., people don’t want to---. That affects people wanting to come in and be a teacher, nobody want to be involved in that. And then they won’t pay you either.

Another principal elaborates on how the perception of safety and violence is projected through the media:

You know, it’s very tricky because we have a lot of people, once you say the word Newark they are going to run in the other direction whether it’s to reside or to work in the city.

Interviewer: But why?

Because unfortunately of the images that they get If am sitting, let’s say, in Ocean County watching the news and I don’t often get anything that comes

across my screen that's positive, and there is murders and schools are failing in the same state but different worlds in a sense, why would I say to my child you know, you want to teach, yeah, teach in Newark. In a sum, it's a lot of work to sort of tell people there are better things than what you see that exist in a community.

While the media portrays the entire city of Newark negatively, Newark is divided into five main wards that have a history of distinct ethnic populations and therefore different neighborhood identities and different socio-demographic characteristics. In the 19th century, the North, Central, West, South, and East wards were comprised of Italian, German, Jewish, Irish, and Portuguese immigrants.

Currently, the North Ward is predominantly Latino, the Central and West Wards are predominantly Black of various heritages (African, Caribbean, and African American), the South Ward is a mix of African American and Latino, and the East Ward is predominantly Portuguese and Brazilian. The wards vary from quiet ethnic neighborhoods to busy downtown areas, to historical enclaves or industrial commercial areas. All the school administrators distinguish between the different wards of the city, and how some wards experienced different levels of safety problems than others. One administrator explained:

Well, think of the violence [in other areas]. I mean, obviously we have violence too, but you know, [when] you're about to drive by and [you hear] the shooting and so forth, where do they end up [occurring]? Usually somewhere in the center or south ward somebody gets murdered. I grew up in this neighborhood and we've never witnessed a murder but the last couple of years we had one or two murders which is unheard of in this neighborhood. So the type of crime is very different in the south ward and the west ward then it is here. The type of crimes obviously that has to do a lot with your safety. [When] you're walking around... you know where most of the carjacking happen or the robberies [or the] murders.

Another principal stated:

Different wards in Newark have their own characteristics both in terms of income and in terms of ethnicity, so again that's really very difficult... I have a very high poverty district that is the most violent district or ward in the [school] district just generally not school level but that's just what it is. I have a very predominantly African American school and I have one that is very much-- we have gang issues, we have community issues, we have an environment that was at one point in time was a little bit different, the riots changed a lot and it may have not recovered from it. You know projects, that type of thing, that's what it is....parents who may have generational issues as well...because you have some environmental issues.... Look, it's like this in an urban area: safety to a teacher is critical. If you can't guarantee their safety, to whatever measures, then they're going to leave, ok. You have issues, I mean I could tell you, you got a lot of these schools where people--they get shot all around.

The distinction between different neighbourhoods' safety has a direct impact on teacher recruitment, where one principal noted, "teachers are more often hired in the South, North and East wards before they are hired in the West ward" because "some candidates have perceptions about the demographics of the wards, and the different [crime] statistics that goes along with that." One central office administrator went to the heart of how this impacts teacher recruitment and ultimately student achievement when he said:

There are some wards that are higher crime wards. A lot more schools are in trouble in those particular places. Where schools are in safer areas we see more high performing schools... And that's systemic of, you know of the problems that delineated.

School safety is such a commodity and desirable working condition in Newark Public Schools that the principal of one school used his school's safety record in advertising his high school, where he says:

One thing that even ended in the video that we put to Obama you know is the safety issue and we provide safety and education and AP courses. So, well, in [School A] obviously I'm going to address safety, I said "kids are ok to come,

kids feel safe to come to school” because this was one of the major issues that we have to deal with when I became principal was dealing with the safety matter, there was a safety issue here yes. This neighborhood has a lot to do with when you walk out there,...Once you walk through this neighborhood you will see that it’s very it has different feel to it. There are a lot of restaurants, there are a lot of stores, people walking around. There are a lot of families so it has that community sense of community. Safety is a major issue and it’s been very safe area so in terms of the community it has a big community spirit in this section of this area that is fortunate for us because when people come to this area they like to come back. So people are ok to come and work in this area they are not afraid.....I wish all of Newark was like this very like where you have all these vibrant sections you have all of these home owners and people you know.

Charter Schools also advertise school safety, and are often chosen by teacher candidates over traditional public schools for that very reason. This administrator explains:

The difference between when I interview parents and I ask the parents “why do you make a choice to send the child to a Charter school,” it's never about “my kid gets a better teacher or a better education.” It's about, the first thing out of their mouth, is that they “feel my child would be safer.”

Interviewer: And why is that? Why would they be safer in a Charter school?

Well #1 the majority of Charter schools that I see, and I'm in Newark every day, and when I visit them, they certainly do get a lot of police protection at the expense of public schools. And we have Charter schools that actually have patrol cars there walking the kids to the building. If [public schools] had that kind of service maybe [they'd be] better too. There are a lot of unfair practices that go on within the district. But you know as long as there are schools that are in neighborhoods that have high degrees of crime that you can find through police department CompStat figures, [we will have this problem]. So if you look at it, it closely reflects our test scores where schools go. Whether they're traditional or Charter. You can go to some Charter schools and see that their, even their streets are blocked off, you can't drive down you know some of the Charter schools streets when the kids, you know, are going in and out.

Thus, not only do a lack of convenient conditions and the lack of safety serve as deterrents to recruiting new teachers, it is the case that safety is an issue within many wards. These unsafe wards also serve as deterrents for parents sending their children to their home-zoned schools, which may also cause schools to receive low-test scores, due to “creaming,” where charter and magnet schools cream the most involved families from their home schools. Due to the demographic hyper-segregation in some wards, the concepts of race, safety, and low student achievement are linked together.

Finding an Urban Educator for High Needs Schools, a Demand-Side Recruitment Challenge

The high-needs dimension of working conditions refers to teacher candidates’ reluctance to teach in schools with specific student characteristics that are typical in high-needs urban schools. As stated in a previous chapter, high-needs schools (i.e. schools with many low-achieving and low-income students) are considered organizations with difficult working conditions. Principals in NPS find their search for an urban educator who can work in their schools an additional challenge they face in their recruitment effort. In trying to find teachers that “are interested in working with the population of students in NPS,” principals search for urban educators who can “fit” with their school:

You can’t get bent out of shape because students seem disrespectful...So what you have to do is understand that my kids, before you can teach them they have to trust you, they have to think that you’re real and that you care about them. And so I’ll be looking and asking questions in terms of how they [teacher candidates] would respond to certain situations.

Another principal elaborates:

I also think that the type of students we have really can scare off some teachers. We have a lot of at-risk students. We have a lot of students who have problems social, economical problems. Not saying that kids in the suburbs don’t have

their problems because they do, but our kids face a lot of different kinds of realities. Not that it's a problem, it's just a reality.

More than 50% of the principals interviewed believe that teacher candidates should have exposure to urban school systems during teacher education programs to establish realistic expectations for teaching in urban schools. Most principals use role playing and teacher demonstrations to determine if a candidate is a good fit for their school. Several principals voiced concerns that teacher education programs are not preparing teachers for urban classrooms but for ideal situations:

Teachers come in not ready or prepared for the student that's going to stand on the desk, for the student that's going to get in your face at the beginning, or talk back to you and they think just an engaging, creative lesson plan is going to solve the problem and it doesn't by itself.

One principal explained what is needed in an urban educator:

You have to really care about the students individually regardless of what they present. That a lot of things that they have encountered in their home life have made them appear certain ways sometimes. They may be very aggressive, they may be in many ways considered disrespectful, etc. However it's our job to continue to nurture and care for them and to teach them a different way, to teach them that there are other options in life....you can't treat them as if it is a juvenile detention center because I've had a lot of kids with ankle bracelets. Ok, so as a result you know I am extremely hard about how they [prospective teachers and staff] respond. I mean I do it with guards, I do it with staff; you know if you go around and you say 'these kids are just animals' or whatever that's not acceptable, it won't work. If you tell me well 'they're like they are because their parents are this or their parents are that' and you know 'how could we possibly accomplish anything because their parents are this or that', that's a problem.

This demonstrates the importance of matching a teacher candidate to the school. Several principals said that they much prefer to have a vacancy, even in hard-to-staff subject

areas like math and science, until they find the right “fit” for their school: “The bottom line,” one principal said, is

You don’t want to settle for somebody. I’d rather not have anybody; I’d rather start the year with a good substitute teacher if I’m not satisfied with the pool of candidates. I’d rather wait until we get the person that we feel will be most effective.

Thus, a teacher candidate who fits the culture of the school and understands urban students is extremely important for most NPS principals.

All the principals were unanimous about searching for what is coined in this study as “The 3 C’s” in teachers: content knowledge, commitment, and cultural understanding. What they hoped teacher preparation programs would do more of is emphasizing how important it is for teachers to be committed and to have a cultural understanding of students. One administrator posits:

I look for commitment I look at their core values, knowledge of the content area, ability to have relationship with the population of kids we serve and somebody who has endurance and skill. We don’t need the teachers that they have in other places.... Our kids don’t do well with change. Their lives at home are full of change. That’s one of the reasons why they have all the problems that they do. They need stability; schools are supposed to be safe places, and they’re supposed to be soundly structured places. Kids want to know “I left the school in June, I’m coming back in September and I know the faces of the leaders and the teachers because those are the people I trust and depend on. You know kids need that, and hiring in schools, is I believe truly that is different than hiring in business. You know you can, a sales man can sell you a car, and if he’s not there next week, will you go the service manager, go to the general manager, somebody else will take care of you. But in schools it’s about developing relationships with students. Because you really are educating the whole child.

Two principals corroborate and explain how few teacher candidates meet the requirements of all 3 C’s:

[Principal 1] You have to really groom them and find people who are really dedicated and committed to the profession. And there's not a lot of people that are like that, especially given the instability of the profession, and the dangers associated with it. All the work and the hardship that's associated with it.

[Principal 2] You do have to like kids, and you do have to understand that even some of the worst, what we call the worst kids ok, or the kids that are known in gangs, that they come from some circumstances that just don't allow them to be anything else than who they are. And you know it's really pitiful sometimes because that's their only chance. Being who they are is their only chance. So you really have to understand that. And most of the time I find even some of the guys who are known in gangs and stuff, if you speak to them a certain way, and respect them, you don't have a problem.

Principals also point out that urban educators are teacher candidates who are able to handle the reality of urban education, such as a lack of resources, difficult student behavior, or lack of parent involvement. These principals confirm that:

[Principal 1] What are resources, what does that mean? Does that mean you're going to call me for everything? No, that means what do you need, what do you have, what would you like to have and then make sure that informally those conversations happen initially. Some people come in at different points whether it be because they've taught or not taught, so you need to adjust to them specifically.

[Principal 2] Right and resources. But to me like to really prove your craft, get in here and help where you're needed at, like where you could do the most good. You go over there [suburbs] and coast and you know you teach and you have a good conversation then you come here, you really have to...this is where the rubber meets the road. You know if you know how to teach you'll learn immediately if you know what you're doing, if you cut out for this, this is for you or not, this is where it's at.

[Principal 3] We look for people who are self starters, who have indications of desiring continuous learning, who appear to be innovative and enthusiastic, full of energy. Certainly for here we look for people who know what they're getting into in an urban environment, or at least they're cognizant that this is not Livingston, it's Newark.

[Principal 4] You know they're still not immune to some of the social ills, some of the behavioral issues that other schools have as well. So we need someone who not only wants to work here, but also wants to make a difference in the way our students conduct themselves and kind of articulates our expectations to our parents and our community.

[Principal 5] Being an Urban Educator means wanting to come to an urban center and transform it...Many teacher candidates prefer Boston or Brooklyn when they think of the idea of teaching in urban. They have to be “passionate about being in Newark, because they love Newark, they love trying to transform urban education.”

[Principal 6] I mean I crack up because I have teachers in here, I have men that are 6 foot 6 and probably weigh around 325 pounds, and will say to me "Ms. could you please come my room, because I have a kid in here, I've told them 3 times to take of his hat, and he won't take off his hat". And I stick my hand in the door and say, "Hey you, come here. Give me the hat, come on give it up, see me in my office after school", and that's it, that's all I have to say. But you have to establish yourself as a person. And teachers have to do that too. They have to establish themselves as a person of authority; that they are not going to put up with that kind of behavior. And we have a lot of teachers in this school, who if the governor's new proposal for the 4 levels, where only the 2 top levels will get tenure, and the only two bottoms will not get tenure, if that, you know if I were still here next year, and were in effect, they're teachers here I know, would probably get that ineffective, and should be gone.

Teacher Candidates' Perspectives on Working Conditions

Teacher candidates corroborated school administrators' perspectives about the perceptions of working conditions as deterrents to recruitment. In an open-ended question about what teacher candidates would like addressed to make Newark Public Schools a more attractive place to teach, 31% (156 responses) mentioned safety concerns, and said they would consider NPS if it was more secure and had a lower violence and crime rate; 28% (142 responses) cited community factors, and said they would consider NPS if it had better “reputation,” “disciplinary measures,” and had stronger parental

involvement and community culture; 17% (88 responses) were concerned more about in-school characteristics, such as adequate resources, facilities, salaries and benefits; 16% (82 responses) pointed to the importance of strong school leadership and support, including new teacher support and ongoing professional development, and finally, 12% (63 responses) indicated that their only problem with NPS was the distance from their home and the resulting commuting difficulty.

When teacher candidates were asked “why they would not apply to Newark or hesitate in applying,” nearly 500 teacher candidates ($n = 495$) replied that their reasons were: (a) safety concerns, which includes their perception of city reputation and location, (b) student characteristics, such as dealing with student discipline issues and challenging students; and (c) community characteristics, which includes community culture and lack of parental involvement. In a binary logistic regression where the dependent variable is teacher candidates who have “applied [or are] planning on applying to teach in the Newark Public Schools” versus “no [they are not] applying to teach in the Newark Public Schools,” the results demonstrate that perceptions of safety, school characteristics, and community characteristics were significantly associated with teacher candidates’ plans to teach in NPS.

Table 5.1 depicts the logistic regression coefficients. The analysis revealed the following: (a) as teacher candidates’ safety concerns increased, the odds the candidate will apply or has applied to NPS is 7.9 times less than the odds of a candidate with no safety concerns, (b) teacher candidates with better perceptions of student characteristics were more likely to choose teaching in Newark, and (c) teacher candidates’ who were

less concerned about community characteristics were about 95% as likely to choose teaching in Newark.

Table 5.1. *Logistic Regression of Applying to Teach in NPS*

Variable	P	Odds Ratio
Perceptions of Safety	.000	7.89
Perception of Student Characteristics	.021	2.12
Perceptions of community	.019	1.95

Note. *p<0.05; ***p<0.001

Figure 5.1 demonstrates that not all teacher candidates viewed working conditions similarly. In fact, some candidates defined high-needs students, as indicated by their attraction to NPS because of student demographics/achievement gap, as a desirable working condition.

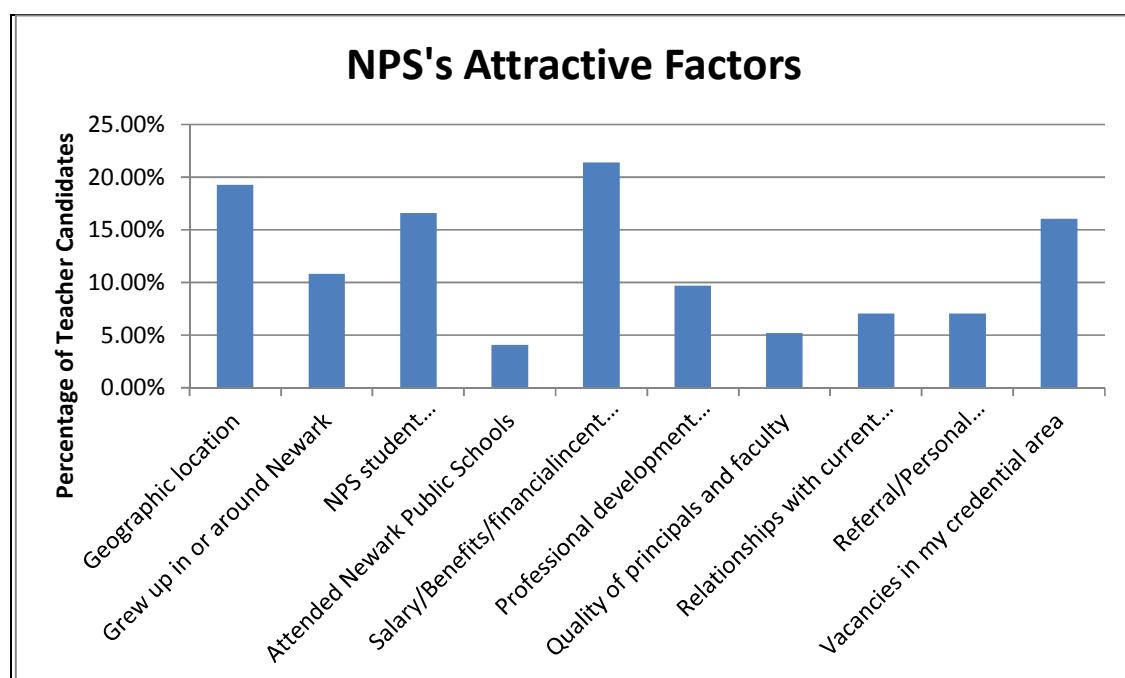


Figure 5.1. Features Respondents found attractive about Newark Public Schools.

Part 2: Social Learning Experiences in Urban Areas as a Demand-Side Recruitment Challenge

School Administrators' Perspectives

The search for an urban educator by NPS administrators is a search for a teacher candidate with prior exposure and experience to urban areas before teaching in an urban district like Newark. One school administrator describes how her perception of safety in Newark changed through exposure and experience. She said:

The safety issue....Even *I*, when I was first told that I was [to be] taken out of the classroom, when I was told that I was going to be working in different schools [in the city], I was even afraid. I was like, 'Oh my God!' Now I drive around the city like it's nothing, just get in the car and go and it doesn't faze me in the least. But if you are not, you know, familiar with Newark, or if you really don't know how to handle yourself in a large city, it can be a scary kind of proposition to come and work here. And I also think that the type of students we have really can scare off some teachers.

Changing teacher candidates' perceptions is an on-going battle that often improves with teacher candidates' exposure and experience in schools. One principal said:

[School A] is a school that many people have heard negative results, but I know so many people that when they get here, and when they work here they say "Oh God, everybody says these things about this school, but it's not bad, they're great kids here, there's a lot going on here" and I say "Oh yeah!" And it's about changing our image, and that's what I'm here [for], that's why I like being here, because it's a challenge.

Another principal referred to social experiences in a city setting as a positive trait. He explained that teachers need to be "city smart" if they were to consider teaching in an urban district. He elaborates:

I think you have to have the teacher who's a little city smart.

[Interviewer] What does that mean?

Yeah I'm going to elaborate on that, you know like I said they can't be afraid of the kids. You have to know their language a little bit, you have to, you know, I'm probably one of the toughest VP's in the school and I think nothing of yanking a

hat off a kid. And there are teachers in this school, who are not city smart. Don't know what they shouldn't and should do, and will take a hat off a kid, and that's a real problem with that kid. I can do that and I don't have problems with the kids you know.

[Interviewer] Why is that?

It's knowing. It's knowing where the line is. It's knowing how to talk to the kids, it's knowing when you should raise your voice a little, and when you shouldn't. It's knowing when you got to be, for me a little bit of a mother at times, and a bit of a disciplinarian. You know, teaching is an art, combined with the science, and part of that comes with knowing the community, knowing, that's part of being city smart. And knowing teaching, and getting experience, and not being afraid to reach out to people in the system who know it, and don't know it.

To be a “city smart” educator also requires one to recognize situations for what they are.

One principal provides the example of dealing with parents who are possible gang members:

If you tell me, “well they’re like they are because their parents are this or their parents are that and you know how could we possibly accomplish anything because their parents are this or that” that’s a problem. ... There’s questions that might be, what would be, if you had a parent that comes in and is very upset and they’ve got tattooed tear drops on their face you know they’re a killer cause that’s what it mean. How would you respond to them? Does that make them any different or are they still treated as a concerned parent? That’s a very situational question.

Finally, one administrator summarized that the “safest route is one where you have exposure to what you’ll be up against when you come into the classroom for the first time as a Newark teacher or an urban teacher.” Thus, along with the supply-side challenges of dealing with teacher candidates’ perceptions of working conditions, there is the demand-side challenge from administrators in search for teacher candidates with social learning experiences in urban areas.

The Teacher Candidates' Perspectives

Teacher candidates who had prior experiences in Newark through work, undergraduate education, recreational entertainment, or services, were much more likely to apply to NPS than teacher candidates with no experience in NPS. Candidates with prior Newark work experience were twice as likely to apply to NPS as those with no such experience, and those with Newark friends were 79% more likely to apply to NPS than those without. Prior recreation, such as attending galleries, museums, or games, or even shopping experience had lesser effects, but was still highly significant. Similarly, prior exposure to Newark via services such job fairs, hospitals, and other professional services were statistically significant, though exposure to the YMCA was less so.

Not surprisingly, the one exposure to Newark that was not significant was the use of the airport. The positive effect of Newark experience on the likelihood of applying to NPS occurred among all ethnic groups. Table 5.2 shows the proportion of teacher candidates with work, school, or recreation experience in Newark who are applying to NPS is higher than the proportion of teacher candidates with experiences who are not applying to NPS.

Table 5.2. *Prior Social Experience in Newark' Relationship to Applying to NPS*

	Yes NPS		No NPS	
	N	%	N	%
Worked in Newark	84	65.1	45	34.9
University/College in Newark	95	67.9	45	32.1
Friends in Newark	134	60.4	88	39.6
Recreation/Shopping in Newark	183	54.1	155	45.9
Airport	186	47.1	209	54.8

Figure 5.2 displays the percentage of teacher candidates who pursued work, entertainment, or services in an urban area compared to Newark. Patterns of social learning experiences in both areas are similar, indicating that teacher candidates' perception of Newark, at least with regards to it being a place for socializing, working, or services, is similar to how they perceive all urban districts within this regard.

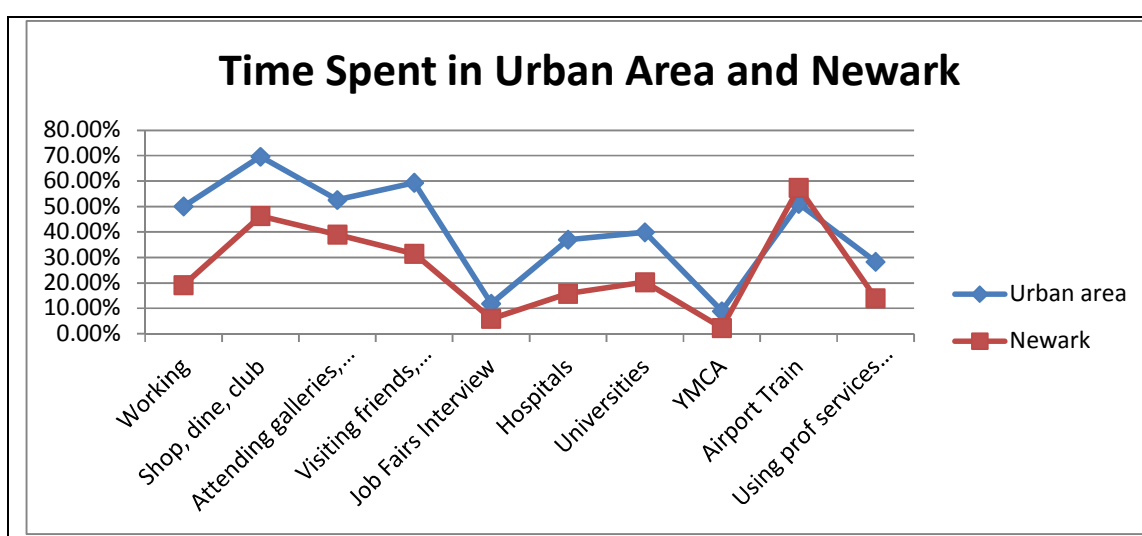


Figure 5.2. Comparison of teacher candidates' time in urban areas and Newark.

Gaining Social Learning Experiences through Field Placement

School administrators' perspective. One method often mentioned by district and school administrators as a means of affording teacher candidates social learning experiences is through teacher preparation field placements. Field placements in urban areas have the possibility of decreasing teacher candidates' fears and increasing their cultural understanding of an urban school and its students. A positive urban placement can challenge a teacher candidate's negative views of an urban area; while, a negative placement can support his/her fears or anxieties, i.e. a cooperating teacher who lacks

classroom management. Therefore, urban teaching placements need to be well organized and the recruitment of cooperating teachers needs to be well vetted. One principal elaborates on this:

I think [teacher preparation programs] are giving teachers a lot of exposure to what it's like to teach in an urban setting, which is a good thing. And I think the teachers that are coming to us from [University A] and [University B]; I think they're better prepared now than they have been in the past.

Field placements also offer potential teacher candidates valuable exposure that prepares them for the on-the-ground reality of the urban teaching culture. This principal explains:

Principal: Yeah, we've had ones who've done student teaching, and you know we've hired from there. I think it's a great way to do it, you really get to know the person, you get to see how they're teaching, they kind of get to understand what the culture is about, and they slide right into the position, so it makes it, it's a win for both people.

Another principal elaborates:

I think it's the exposure. If you're planning on applying for a position in the Newark Public Schools it's incumbent upon the college or the university and the student to prepare themselves for that by coming into the district observing classes, coming into the district and possibly working with the teacher and not only through student teaching but maybe even prior to student teaching, coming in and saying hey, could I teach your class today. And there's nothing more valuable than experience. And maybe by doing so they would decide hey maybe Newark isn't for me. It's the exposure that they need prior to coming here. You just can't come into the classroom. And maybe if you came through the Newark Public Schools or the East Orange schools or the Irvington schools maybe you saw what the teachers were up against and you have that experience as opposed to growing up in a suburban environment and thinking that you can come into the Newark Public schools and just be an effective teacher. Maybe you can, ok. But again the safest route is one where you have the exposure to what you'll be up against when you come into the classroom for the first time as a Newark teacher or an urban teacher, wherever it may be.

Get these future teachers to be for a year for 6 months and then we develop the relationship so I develop the relationship. So know as this example as the student's candidates as soon as the position opens up I have an excellent candidate ready to be hired"

While the majority of the school administrators felt positively about hosting student teachers, one school administrator felt that student teachers were not an asset to his organization. He states, "This is an area where again people might disagree with us, [but] we've had very few student teachers, because we've been unwilling to sacrifice the learning of students, for a teacher in training." This supports the argument that the partnership between the teaching University and urban field placement must be organized and philosophically aligned to each other if we are going to produce, hire, and retain, highly qualified urban teachers.

Part 3: The Intertwining of NPS's Staffing Challenges and Teacher Candidates' Job Searches

The Importance of Field Placement for the Recruitment Challenge

School administrators' perspective. Teacher candidates' field placements not only served as a means to afford potential NPS applicants exposure to Newark, but it also served as an informal mechanism for student teachers and principals to network with one another for vacancy placement. The partnership between principals and teacher preparation programs, aside from the partnership with TFA, was an informal one established by directors of teacher preparation programs and principals. Several principals found these partnerships invaluable, as this principal explains:

Here's how I find people...it's very simple. Develop partnerships. And I have 3 partnerships that are key to me finding individuals to hire and that which we talked about....So we find them through University [A], through [University B], and through [C] University. Those are key things and I also have a couple of other

universities that I actually have student teachers. Our minds are open to have student teachers do their fieldwork here or student teaching, what happens is that we get to see the viable candidates [become] great teachers, or potentially great teachers in action, that is something I think that speaks volumes. What happens is that in an interview process in Newark is you go for an interview [and] .. do a lesson for 30 minutes. It's all fine but you don't get to the core to see if this person if this is going to work out. So with student teaching, it gives you a couple of months. With Residency, they are here with us all year, everyday.

The majority of principals felt that building partnerships with universities to develop their teacher candidates in Newark Public Schools is a 'win-win' for both partners; in that the school administration has 'first dibs' on teacher candidates for potential vacancies, and schools of education have a convenient organization to place their teacher candidates while learning and possibly permanently upon graduation. One principal indicates:

Principal: And having relationships with the universities, that's probably the best thing to do, to have relationships with the universities because they will always contact you when you contact them about people you know.

Interviewer: How do you keep up the relationships with the universities?

Principal: Just got to call them, quid pro quo, let them do teacher programs in your school and that's basically how we do.

Interviewer: Do you have some student teachers here currently from these universities?

Principal: Yes, always.

Interviewer: Do you ever hire your student teachers?

Principal: Yes. This year we hired two student teachers.

Teacher candidate's perspective. Table 5.3 suggests that prior experience within Newark Public Schools increases the likelihood of applying to NPS. Nearly all teacher

candidates with NPS student teaching experience planned on applying for positions in the district. Similarly, all 18 teacher candidates who had taught summer school at NPS had already applied to NPS or were planning on applying. And, the few with substitute teaching experience in NPS were also likely to apply.

Table 5.3 Prior Work Experience with NPS

	NPS Applicants		Non-NPS applicants	
	N	%	N	%
Student teacher	50	89.3	203	39.6
Substitute teacher	10	71.4	243	43.9
Teacher assistant	4	50.0	249	44.5
Summer school teacher	18	100.0	235	42.7
Teacher	5	71.4	248	44.2
Other	30	61.2	223	43.0

Since the number of respondents who had work experience in NPS was low, one may consider how prior work experience in other urban districts may relate to teacher candidates' desire to teach in NPS. Figure 5.3 displays how teacher candidates' responses about prior NPS experience mimic the general responses for prior urban district experience.

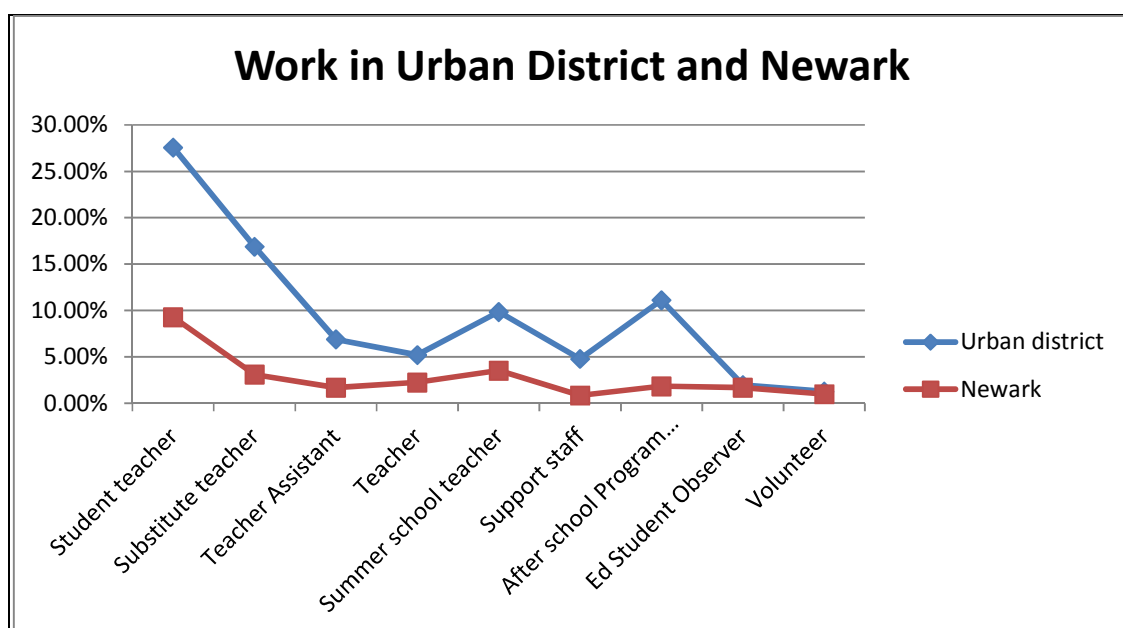


Figure 5.3. Comparison of teacher candidates' urban district experience to NPS experience.

Table 5.4 demonstrates how teaching experience (student teaching, substitute teaching, summer school teaching) in urban districts in general was associated with an increased proportion of respondents applying to NPS.

Table 5.4. *Prior Experience in other Urban Districts*

Experiences in an urban school district	NPS Applicants		Non-NPS applicants	
	N	%	N	%
Student teacher	96	29.4	69	21.1
Substitute teacher	62	18.9	37	11.3
After-school program teacher	39	11.9	27	8.3
Other	33	10.1	34	10.4
Summer school teacher	32	9.8	16	4.9
Teacher assistant	21	6.4	18	5.5
Clerical staff	7	2.1	2	0.6
Alternate Route Teacher	5	1.5	2	1.3
Teacher	5	1.5	6	1.8

In fact, almost two-fifths of the teacher candidates who had student teaching experiences in NPS actually had a specific school or principal in mind that they targeted for their job search in NPS. Table 5.5 displays respondents who had prior student teaching experience in NPS were in fact 3.6 times as likely as those without experience to name a specific school or principal. However, most of respondents (75.6%) reported no specific school or principal.

Table 5.5. Teaching Experience on Reference for Teaching in a Specific NPS School

Prior experience in Newark Schools	Specific School or teacher in mind	
	Yes (%)	No (%)
Student teacher	44.8	12.6
Substitute teacher	13.8	1.1
Summer school teacher	13.8	5.0
Temporary teacher	6.9	1.1

To summarize, Newark Public School administrators perceived teacher candidate field placements in their schools as a pipeline mechanism to fill their potential vacancies, as principals had the opportunity to observe teacher candidates during their placements. They also believe field placements in their urban schools are a valuable mechanism for teacher candidates to (a) gain the necessary exposure and experience of an urban setting, (b) build a deeper cultural understanding of urban youth, and (c) produce an educator with a clearer commitment to urban schools. Evidence from teacher candidate responses suggests that teacher candidates' prior urban district experience does impact their likelihood to apply to teach in urban districts.

The Importance of Other Informal Recruitment and Job Search Methods/Efforts

School administrators' perspective. In addition to recruiting new teachers through university partnerships, nearly half of NPS principals also reported relying on referrals for finding potential teachers. Two fifths of the administrators interviewed said that 30 to 40% of their recruits are referred to their schools. Some principals informally “start asking around, ‘do you have anybody that wants to come to this school to do [x job],’” while others rely solely on referrals of colleagues and staff. One administrator describes his organization’s formalization of new teacher referrals:

I would say probably 40% came from staff referrals, people that they knew, that they thought could be, you know, really good or effective....So we send out emails for our staff, 3 times a year, just reminding people to refer them for our new staff.... We [also ask our new staff] ‘who would you like to come work with you?’

This particular school’s classes were co-taught in teams of two; this led them to be open to having their newest teachers recommend someone they know who they may like teaching with. The administrator expressed tremendous satisfaction from this source of recruits. Other principals network outside of the district, as this new principal did:

How about this, let me give you this example. I needed a department chair, couldn’t get one in the district for whatever reason. I went outside and asked the person, “You wanna come with me?” They said, “Yes!” Then I found out about all the budget cuts and I said, “If you come,” and this is like way into the year like January, February, “your job might get cut, you might not have a job.” They said, “Ima take the risk on coming” and they came anyway... I have filled positions from outside and that happens to be people I knew, that I knew were capable of doing what I needed to get done and were willing to come where I was to do so. I could find teachers that want to come here, I mean I really can. You know but I have a different situation maybe, I’ve done a lot of different things in different positions so I have a lot of different people who know me that are willing to come where I come, they’re willing to come. You know one of the people that came with me literally came from a job in another district and when

I said hey I might go to [comprehensive high school 1] they're like, "I wanna come with you!"

This principal points out that her 'situation is different' in that she has had many opportunities to form social networks over the years, which has helped her staff her school.

Teacher candidates' perspective. Teacher candidates corroborate that informal referrals are a source of how they are learning about job openings in districts. Figure 5.4 demonstrates the low response rate for the mechanisms that teacher candidates are utilizing for NPS openings. The low response rate of this question, in fact the lowest in the 67-question survey, may be an indication of teacher candidates' lack of clarity or understanding in how to respond, as there is an incongruence of information on how one is to seek a job in NPS (the informal versus the formal, more on this below). However, as Figure 5.4 displays, how teacher candidates are learning about NPS openings mimics how teacher candidates are learning about district openings in general.

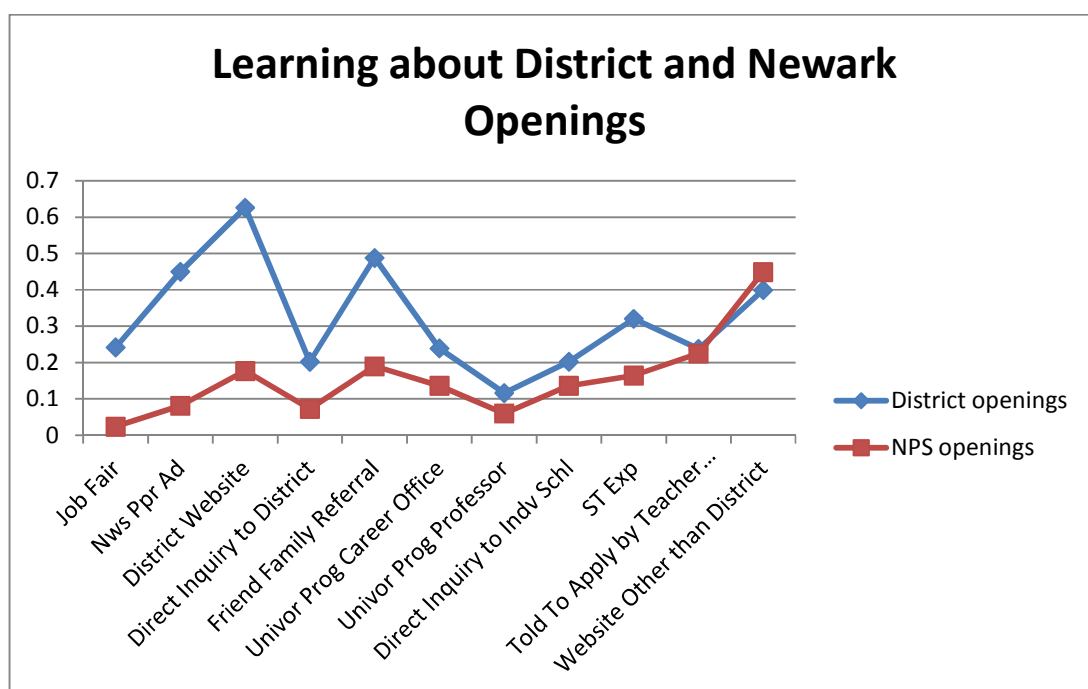


Figure 5.4. Comparison of teacher candidates' urban district job searches to NPS job searches.

Thus, Table 5.6 shows sources of information about general district job openings by NPS application status. In general, NPS applicants' frequencies/percentages appear to be slightly higher than the rest of the sample population, perhaps indicating that candidates who apply to NPS are an ambitious lot who utilize more job search mechanisms—a tenacity that will serve them well in order to be awarded a job in NPS. Aside from utilizing websites (NPS's and others), the principal sources of information was through family and friends followed by student teaching. Moreover, NPS applicants were also 66% more likely than non-NPS applicants to report professors as a source of information about jobs, and were 39% more likely than non-applicants to report direct inquiries to schools concerning jobs.

Table 5.6. *NPS Application Plans and General Sources of Information on Teaching Positions*

	Apply NPS		Will not apply	
	N	%	N	%
District website	169	70.4	222	71.2
Family or friend	131	54.6	167	53.5
Newspaper ad	127	52.9	152	48.7
Website other than district website	107	44.6	142	45.5
Student teaching experience	98	40.8	111	35.6
Job fair	77	32.1	79	25.3
Recommended to apply by teacher or principal	64	26.7	76	24.4
Direct inquiry to school	63	26.2	59	18.9
Direct inquiry to district	51	21.2	65	20.8
Professor	41	17.1	32	10.3
Career office	35	14.6	36	11.5

Family and friend referrals, a professor's recommendation, or inquiring directly with the school are not the formal way NPS advertises for teacher candidates to apply to teach in Newark Public Schools. These informal mechanisms call into question the effectiveness of the centralized formal mechanism of NPS' application process.

Staffing Practice Challenges: Difficulties that Arise from Formal Recruitment Efforts

While principals utilize social networks via partnerships with teacher education programs or word-of-mouth referrals, Newark Public School's Human Resource Service (HRS) department depends on more formal avenues. HRS department advertises extensively to the public through hiring ads placed in the Star Ledger, and online on sites such as Idealist.org and Indeed.com. HRS is officially the sole responsible agent for recruiting and hiring teacher candidates for NPS. The district implemented a centralized system in which all candidates must apply through the HRS department with the intention

that such a policy would improve the recruitment and hiring process, and creates equal access to candidates for all NPS schools.

A few years ago, applying to HRS was an onerous experience for applicants as well as HRS personnel, because “resumes would just pour in and they wouldn’t be acknowledged or anything...[a] walk around the recruiting area... [revealed] stacks of resumes....some of them [central office personnel] were even simply throwing away paper applications that came in” because of the tremendous amounts of papers and applications that were coming in.

As a result, the HRS department researched some best practices other districts were using to help streamline the paperwork, and decided that accepting on-line system resumes would really help. HRS then created an on-line database that allowed principals to search through the profiles and resumes that applicants fill on-line. Once a principal decides on a candidate after the interview process, they recommend the teacher candidate for hiring to HRS, and HRS creates the contract.

Unfortunately, centralization complicated communication efforts between the central office and the individual schools. Despite the on-line capability of reviewing applicants, principals still expressed frustration because of the lack of communication between their school personnel and HRS personnel with regards to hiring. Principals who tried to be proactive about finding resumes and interviewing candidates often hit a roadblock with the HRS department when they finally found a candidate they wanted to recommend for hiring.

One principal explained, “All I can do is keep reaching out and sending e-mails and hoping that they [HRS] can move forward but it’s like things just come to a screeching

halt.” When reviewing with NPS stakeholders why such bottlenecks occur, a few administrators theorized that open positions were not always clearly communicated because they are dependent upon school budgets; as one principal explained:

[It] is a mass of chaos....a lot of different systems not interrelating. For example HRS operates here in this system, budget operates in this [other] system...[and] the two shall not meet... you know what I mean so you’ve got your database, I’ve got my database and we, in order for us to make a move that move’s got to occur and we have to be in sync with the system...so we’ve got to have the money, I have got to have the position to offer the contract... but it seems to me... all those database [are] not in one specific system... I know there has been attempts to bring in [a] much more ... new[er] system [than] we have and I think it has been more streamlined but it still needs to be work, there is a lot of things in the system that are not up-to-date but they are working on it.

To complicate budget matters further, Newark has been under state operation since 1995, ultimately meaning there is another layer of people involved in making decisions in tandem with the NPS Budget and HRS departments. Further, “the people in Trenton [the location of the New Jersey Department of Education] have a whole different idea of what Newark is, or what Newark is about. And it's very difficult”

Involving numerous parties also created confusion as to what responsibilities each department holds within the school system. One principal expressed his confusion about who exactly is responsible for following up with the hiring of candidates: “Sometimes you think: who is supposed to be telling them [--the candidates]? I don’t know if it’s the [content area] department? HRS? What is their role in it? Very, very frustrating.” Even when responsibilities are clearly delineated, they do not always get done right; as one principal posits: “When they send someone – I’m going to tell you how bad it gets. They send me four resumes for [a] teacher [of a content area, and] not one of them was certified as a teacher [in that content area].”

The Staffing Challenge as a Result of Tension Between Centralized Formal Efforts And Decentralized Informal Efforts

As the previous sections revealed, there appears to be is a lack of synchronization between the formal hiring mechanisms in the central office and the informal hiring mechanisms schools administrators utilize. One principal explains how the centralized HRS system delays hiring:

Through all of the bureaucracy that you have to go through; you have to interview, then they have to be sent over to that region and the region has to go down to HRS downtown and all that craziness, and it prolongs the process. You know it makes something that could happen in a week happen in 2 months.

Another principal explains his concern for the lack of human contact, as he describes how he found “an outstanding art teacher” on her way out of HRS:

The teacher I found this year, who was a former student at [NPS High] was a student teacher in the Newark Teacher Program when Dr. Marion Bolden was the superintendent. She went off to [University R], got her degree, and the first place she came back to was Newark. They [HRS] weren’t even going to take her resume, they told her she had to do it online, that she couldn’t submit it in person. Luckily I was at the board and I heard about it, and I asked for the name and I found her and I got her number from her resume that she was trying to leave, we called her and had her hired within a month and a half later.

Thus, the lack of coherency in formal hiring mechanisms in the central office feeds the need for informal mechanisms. Unfortunately, the apparent lack of transparency with the recruitment and hiring process in Newark Public Schools, and the tug of war between formal and informal mechanisms, has led to confusion and a general lack of clarity for teacher candidates, and a perception by administrators of an inequitable distribution of new teachers.

Confusion and a lack of clarity for teacher candidates desiring to teach in NPS. As a result of the push-pull of a formal centralized system but an informal unstated

decentralized system of hiring, many NPS teacher candidates were confused and wanted more transparency about the hiring process in Newark. In an open-ended question about what teacher candidates would like addressed to make Newark Public Schools a more attractive place to teach, over 70 responses referred to the hiring bottleneck in NPS and described a desire to be hired earlier, a need for more transparency and organization in the hiring process, for more information about the district, and for the hiring process and timeline to be what?. Some phrases teacher candidates wrote include: “Not such a red-tape laden, messed up hiring process,” “more organization earlier in the hiring process (since they still are not sure of vacancies now, in mid-August),” “less bureaucratic hiring process,” “A call back! Less nepotism!,” “updates to the District website that might make it more clear,” “more help finding these job openings,” “give us more info about the district,” and finally “if they answered the phone or called you back when you're interested in a job.”

School administrators’ perception of an inequitable distribution of new teachers. Since recruitment efforts are based on a principal’s capacity for developing social networks and a school’s capacity to attract candidates, many school administrators complained that the very system they sought to annihilate, continues to occur: there is an inequitable distribution of access to teacher candidates. The school’s capacity to attract candidates informally depends on whether it is a magnet or comprehensive school. Magnet schools are schools that students need to pass a test to enter, and standardized test scores of these schools usually exceed comprehensive neighborhood high schools. One principal voices his concern about this:

Principal: You do have a problem hiring them cause they are not available but... for example, if [Magnet High 1] or [Magnet High 2] had some vacancies the district would be quicker to act on those vacancies than they would at the comprehensive high school.

Interviewer: Because...?

Principal: Because they're the magnet schools, you know you got the magnet schools with the magnet kids and the magnet parents who gonna say something. Cause the expectations are different. You know, I think we're moving towards a tiered school system anyway all over the nation. And teachers when they come they want to go to those [magnet] schools too. I mean they want to go to [Magnet High 1] and [Magnet High 2] or [Magnet High 3] cause there's some certain prestige about it.

Another principal corroborates this inequity:

Principal: Because [Comprehensive High 1] has a reputation of always getting dumped on.

Interviewer: I got that sense, but why?

Principal: I don't know. It's just how it's been for a long time. You know everybody thinks that [Comprehensive High 1] has so many problems, Once they get here, like I said before, they don't think it's half as bad as they said. But for some reason, we feel that we get dumped on.... We get less than ideal candidates. There is a difference between the teachers they put in the Magnet schools, and the teachers they put in the Comprehensive high schools.

Principal capacity is also a factor that impacts the inequitable access to new candidates.

Approximately 50% of the high school principals had less than two years of experience as principals in NPS. While experienced principals have the know-how of the system, and have had the time and opportunity to build relationships with other communities such as TEPs and their student teachers, or with specific learning or technical communities, newer principals are often still learning the ropes and trying to operate the building. One principal explained:

One of the good things for me while working at school, [people at the school] sa[y] it all the time, we're lucky because you know people downtown, and you

know who to call, you know side steps, make things happen sometimes. Whereas if you were a new principal, especially if you came from out of district... Newark has a very complicated system, it's not easy, and it's takes a long time to learn it, and to learn the people, and there is no manual. There is no flow chart for hiring people, there's no flow chart for a lot of things. And I think that really is something the district should use. Even e-mails, you know, you send them, you know who to e-mail, because we have a list of people who work in HR, but you know, you have to realize we probably have about 90 schools by now. And if 90 schools were e-mailing two or three people downtown, that person got like 200 e-mails just in one day. And if you repeat the process, I know myself, we get a tremendous amount of e-mails, and that could really slow the whole process down. I mean sometimes I find it's really better to just pick up the phone. I mean let's do the old fashion way, but sometimes you really get through it a lot quicker, I just call her 4 times today until I get her. And that way, you get one-on-one, and it works a lot better than the e-mails sometimes. I find e-mails that are a week old, and I say, "Oh this is not immediate, I can go back to that". And I'm sure some days, if they're hiring a teacher, or if they're hiring an assistant superintendent, well guess who's going to get the attention. Not to say that's what happens.

Another veteran principal explains how she utilizes her leadership capacity to find teachers. She says:

Well I'm the kind of person if I go some place, I might ask you what do you do and if you could fit something here I might try to steal you. I make no bones about it. I will steal anybody from any place. I have to look out for my school. I'll even steal from another school. Which is not nice but I've been to recruiting at a session where I actually tried to take someone who was going to interview for one principal and grabbed them before they went over there. To me it's almost like every man is out for themselves. And I am a district minded person but you first have to sweep in front of your own house. And then after my house is clean I'll go and help you. If I find a good candidate and I don't need that person I will forward that resume onto someone else or say are you looking for this kind of person. So I will do that because it's hard to find good people especially in the hard to fill areas. If you're trying to get a physics or math teacher very often they can get a job offer in a wealthier district, make more money and not have the issues we have, they're going. We're second choice. There are some people who then become committed; I have some excellent teachers here....And to me one of the problems that the district has in their recruiting is that they'll say "well you don't have the position yet so we're not going to recruit". But let's anticipate. You can even have a contract that says:

pending availability of funds. So you can try to start getting people ahead of time. Half the time we don't even know our vacancies until the summer when we're not here, which really annoys me because they set when our vacation is. I have the month of July off. Well if I don't come in, in July, I'm up the creek without the paddle as far as staffing goes. Because if I don't come in early I can't fight to try to find or get some staff in.

The school administrator also explained why changing leadership in a school is detrimental to the students:

So we had a principal here for, I think she was here for 4 years, then we had another principal here for 2 years, then they demoted that person. Then you had a person here for a month, that person left. Then you had a principal here for a year, and who knows what's going to happen next year. But you cannot keep taking the school, and taking the upper level administration, and changing them and changing them, and changing them. Our kids don't do well with change.

Principal turnover leads to difficulty in standardizing procedures such as the hiring of a building's teacher talent, one of the most important in-school predictors of student achievement.

Part 4: The Importance Of Teacher Candidates' Professional Teaching Characteristics To The Recruitment Challenge

The Challenge of Recruiting STEM Teachers

In congruence with the U.S. Department of Education Nationwide Teacher Shortage Area List, and the litany of literature on specific subject-area shortages, many NPS principals recognize that there is even more of a challenge with recruiting mathematics and science teachers. The majority of principals posit there are a short supply of STEM (Science, technology, engineering, mathematics) majors, and "an even smaller percent of those [who] want to teach." Many people with the qualifications in math and science, they continue, have opportunities in the private sector where they can

start at a higher paying salary. One administrator, addressing this tight supply in the context of the current economic market, refers to the opportunity costs STEM majors incur when they enter teaching:

The one answer I can say is that when you look at Math and Science and the price, we have to look at the private sector, the private sector jobs for these areas pay well. If you're a financial advisor or if you're even an accountant with just basic knowledge without a certification, you'll get paid more and the ceiling is not as low. They talk about teacher pay, a teacher who makes 78 to 82 K at their 13th, 14th, 15th year, it is good money, but when you compare that where in 13 or 15 years as an accountant...for example [an accountant] starts out above a teacher and then her ceiling keeps going. She gets a 4% to 6% raise, she gets bonuses, none of that is something a person in that field is going to give up, they'll take the instability of not knowing if their company might downsize but they'll take that risk because the upside is there is growth, they'll pay for them to go to additional schooling, they may pay for them to get certified and take their exams and be a certified accountant. There's a lot of little perks. I think for us in the education field we always have to look at the private sector and the business field and say how do we compete? How do we sell education?If someone in the Math and Science field does not want to come to a field even though it's supposed to be stable, it's no longer stable....If you're not going to have that, you better have other perks that match the private sector or you better have quality pay, higher pay or merit pay. You have to have some kind of system in place that's going to match what someone could have gotten by going to the private sector and done for double the money. So you work 2 years as a teacher, you get that in 1 year in the private sector, and sometimes there are other bonuses to it.so the difficulty in getting Math, Science and shortage area teachers like Special Needs to go into education [is because] there's such a negative outlook, the comparison in pay is not the same, and they're not going to have that stability.

Thus, this principal pointed out that people in math and science fields previously traded higher salaries in industry for job stability in education. However, with budget cuts and the subsequent lack of funding for public education, there is no longer stability in teaching careers, along with less pay and benefits such as a continuing education.

Since the HQT mandate of NCLB, teachers are required to have certification for every subject area they teach. This makes staffing mathematics and science teacher vacancies even more challenging for most public schools, but “especially [for] special needs because [the teacher would] need a dual certification... and most people don’t have that...[the teacher would] need [to be a] special needs teacher ...and... [have] a content area certification to be able to teach in a high school.” The complication increases even further when STEM teachers with special education certification then need to have bilingual/ESL certification. This type of HQT certification has been coined the “triple threat” by NPS administrators, as NPS has a fairly high level of students with special needs, and Newark is, as it has always been, an immigrant city with many English as a Second Language (ESL) and/or bilingual learners.

In contrast, several NPS principals, especially those in the highly specialized magnet schools, have found alternate-route candidates helpful to fill shortage areas, especially in the specific technical subject matters. As one principal puts it:

In my technical areas I have to find people who have the skills of that technical program. For example, when I came here... we had a partnership with [Smith] Construction, so I said to the woman there ‘do you know an architect who wants to maybe teach?’ And she said, ‘yes, I think I have somebody for you.’ We recruited her and now she’s teaching here and she’s doing a wonderful job.as an architect she has her business on the side. Most of my tech people do thatI [also] have a young man who graduated from Penn State, he is physics major, and his cousin was one of my department chairs so he kind of convinced him to come over. We took him, got him alternate route [from the state], and so he’s here but he could have easily been picked up elsewhere. Very few [STEM teachers] come with teaching degrees.

However, despite the increased pipeline of STEM teachers from the alternate routes, the recruitment of STEM teachers still remains a challenge because of the tight supply. In

tandem with the purpose of most established alternate-route programs, i.e. the supply of hard-to-staff areas, TFA and NTP-TeacherNex filled the gaps that traditional TEP candidates have not been able to. The director of HRS explained:

We do know where we get our best candidates. And we also know who can help us in a pinch. The alt-routes are very helpful in a pinch. Many kudos to Teach For America. If we have some teacher who ups and leaves in October, and they're a Math teacher, the first thing I'll do is just get on the phone with them and say, 'do you have any Math people?' Because we know that in that program they start the bar really high, so there's likelihood--there's no guarantee that everyone that comes out of their program is going to be a great teacher--but we know the bar is high at the beginning, so it's a trusted resource for us.

Since 1993, Newark Public Schools' HRS department has had a contract with TFA, a nationally recognized alternate-route teacher preparation program, to place dozens of teachers in their schools every year. The New Teacher Project TNTP, another nationally recognized alternate-route teacher preparation program, briefly partnered with NPS as well, having launched TeacherNex for two years as a response to the staffing challenge in Newark prior to the RIF. Several of NPS principals expressed similar sentiments of appreciation for the constant pipeline supply alternate-route programs provide. One school principal praised the pro-activeness of TNTP, expressing disappointment at having lost their support:

Last year and the year before there was a group called TeacherNex, I believe it was, and they were excellent. And I worked with them in the very very early part of the summer and I worked in particular with one of their persons who referred some good people to us.....They not only brought quality people but they arranged for interviews to happen, they worked very closely with me and if I wasn't happy with a candidate they had no problem with it, they just would send someone else. ...They would contact me and say, 'what type or what areas do you need? what type of teachers do you need?' And I would tell them 'I need a science teacher, I need a social studies, I need 2 math teachers,' and they

would just start setting up interviews. I worked early with them and we got some real good teachers.... I just found them to be very, very helpful. I'm very disappointed that they're no longer with the district.

The New Jersey Department of Education also provides alternate route certification (NJ-ALT) through several regional training centers. While TFA and TNTP candidates enroll in these regional training centers for state licensure, most people enrolled in NJ-ALT are not young or in their first career. In fact, NJDOE incorporated an alternate-route program to a) make it easier for career changers to enter teaching, and b) to meet the demand for teachers in many low income and urban districts (Barclay et al., 2005). For example, Liu et al. (2008a) found that approximately 50 to 60% of candidates hired in the urban districts they studied were from alternative route programs; this corroborated similar findings in prior studies.

Part 5: The Importance of Teacher Candidates' Personal Characteristics to the Recruitment Challenge

Of the 180 teacher candidates who grew up in an urban area, 80 of them grew up in or around Newark (42.8%) and 29 of those candidates attended NPS. These teacher candidates indicated that it is the fact that they grew up in or around Newark, or that they attended high school in NPS, that they attractive factor about teaching in Newark Public Schools. All but one indicated that they had applied or were planning to apply to NPS.

Yet the number of home-grown candidates has never been enough to supply NPS with their yearly demand of new teachers, hence the necessity of the districts' collaboration with TFA and TNTP. However, while these two pathways certainly create a pipeline of teacher candidates, especially in the hard-to-staff subject areas, many principals expressed frustration at their lack of commitment to the district. One principal

suggests creating their own brand of local teachers from Newark residents and NPS students who can possibly stay committed to the district. He explains:

Principal: We need to have a serious program that's recruiting and retaining teachers especially in specialized fields, like Physics, Chemistry, AP Calculus. You know these math positions that we need.

Interviewer: There needs to be a serious program?

Principal: A serious program.

Interviewer: So these programs are not doing the job that they need to do?

Principal: No. Or we would have them. When I say that-- they have to go into these schools--when I say that we need a serious program, not just 'I have a college math teachers and all of you just graduated and we gonna funnel you into Newark Public Schools'... You need to be going into these schools while these kids are in high school, developing teachers from the high school level, saying you're gonna be a math teacher, all of you 50 kids you gonna be a math teacher, ya'll need to be urban math teachers, we gonna prepare you know to be an urban math teacher, there's a program you go to in your senior year.

Interviewer: Just like Future Business Leaders of America, you say we need to have Future Teacher of America?

Principal: Yes funnel you right into the college you could take college courses, summer program, get you ready, put you in a school, get you psychologically prepared from high school up and that's just a pool of people that we constantly creating when we know we already have a deficit in good math and science teachers, first of all we don't have the number that we need and we definitely don't have quality.

Interviewer: So if you have a good math class, a bunch of students in a math class would you like to take them and funnel them into teaching, is that something that you think would do, would serve their purposes and your purposes?

Principal: Yes, I think we should. And begin to push these kids like get them right into a program of intense training to become a teacher right away. I believe

in a planned economy anyways. So if we need 50 math teachers we should produce 50 math teachers. What the heck we going to school, why we have these institutions for? To solve problems, one of our problems is we don't have enough math teachers and science teachers and in specialized things that can come in here and teach our kids. We need to produce them.

Thus, this principal recognizes the importance of a teacher candidates' hometown, and believes that it is necessary to capitalize on this knowledge as it is, from his experience, an important predictor of where they will teach, and where they will put roots to stay. This suggestion of growing their own candidates has merit, and has been proven effective in other parts of the country that have implemented such policies (Skinner et al., 2011).

In fact, NPS seems to have instated an unofficial Grow Your Own initiative with regards to leadership. Several of the school administrators interviewed had grown-up in Newark. One principal explains his ties:

I went to parochial school in Newark, I went to high school in Newark. And I spent a good part of my youth in Newark because both of my grandmothers lived in Newark and you know you're always at grandma's house. And I have a long history in Newark, my grandfather was a Newark fireman. My other grandfather owned a store in Newark. And my parents grew up in Newark and were married in Newark. My father worked in Newark and I ended up going to high school in Newark and spending my whole career in Newark.

In addition to where a teacher candidate may have grown up, the only other personal characteristic mentioned by administrators with regard to recruiting teacher candidates to Newark Public Schools, was teacher candidates' race. One area where race was brought up by a principal as "some level of importance" in new teacher recruitment is "in trying to recruit African American male teachers in hard-to-staff areas where we're underrepresented at, like Math and Science." African American males are also seen as desirable mentors for other minority teachers, as well as students. However, the overall

consensus among the administrators is the racial makeup of a prospective teacher was not important. As these principals stated:

[Principal 1]: You know, what your race, color, creed. Doesn't really matter to me. I've seen good teachers of every race, color and creed be able to make transition into an urban district, you know certainly not gender. I've seen great male teacher, I've seen great female teachers.

[Principal 2] And if you're in an urban city and you have a predominantly African-American population, you don't necessary need to have total African-American instructors. It's about what the instructor brings and the types of culture he/she has in his/her classroom, that is most effective. Regardless of color, race, whatever it is.

Thus, although principals did not appear to consider race in the hiring process, it seems that for some, immigrants with strong accents are not particularly sought as teachers. This principal elaborates further::

And I don't think that in Newark or in an urban area or even an area that's high crime or poverty stricken that you need people of the same racial ethnicity. I don't think that you necessarily go to all black colleges or whatever other colleges or whatever. I have some definitely good tough interesting personalities in my building that are not predominantly African American. I have no statistically significant subgroup and it takes 30 to be statistically significant on the HESPA, you understand what I'm saying. I didn't say black I said African American, that's what I have. So I don't think that that's, I've got some [teachers that are] extremely good, tough, sharp, strong instructionally, relate to the kids extremely well and handle the community climate extremely well that are not African American. So I don't think that's necessary at all. People sometimes do think that but I can say where I am I have seen that not to be the case. Some more often than I would have thought [it] quite frankly, absolutely. I mean quite frankly I've got some really great white teachers. I got good Black and Latino but I'm just saying I have some great white teachers that are as tough as they can be. Now I will say this, that in the math and science and I'm not exactly sure how to recruit this but a lot of those be it right, wrong this or that, tend to be teachers that speak with accents that are very difficult for students.

It may be the case, however, in the North and East Wards, with the majority of students from Latino or Portuguese, that teachers who are bilingual may be sought after.

However, there is no interview evidence to support or reject this.

Summary

This chapter presented data from a mixed method study on Newark Public School's recruitment and hiring challenge. The staffing challenge was discussed as a result of teacher candidates' perception of working conditions, the reality of working conditions such as safety. This chapter also described how school and district level administrators were searching for an urban educator, who not only can handle the challenges of high-needs students in urban cities, but had the 3 C's needed in an urban educator: content knowledge, commitment, and cultural understanding.

The case study of NPS also demonstrated the importance of teacher candidates having experiences and exposure to the city prior to teaching there—or, as one principal suggested, the teacher candidate needed to be “city smart” in order to function as the kind of teacher the students needed. One experience highly recommended by administrators, and corroborated by the teacher candidate survey, is field experiences in city schools. Administrators found that it was an opportunity for both the district personnel and the teacher candidates to decide if the school was a good fit.

Field experiences not only provided teacher candidates with exposure, it also served as an informal mechanism for recruitment. Teachers and school level administrators also suggested personal referrals were another popular means of informal job searching and recruitment. This scenario is juxtaposed by the heavily bureaucratic, formal, centralized recruitment and hiring process that often frustrates both prospective

teacher candidates and principals. The tension that results between formal centralized recruitment mechanisms and the informal decentralized recruitment mechanisms exacerbates the inequalities between schools, where schools with the leadership capacity to ‘work the system’ gain an edge in finding candidates earlier, when the numbers of prospective teachers are more.

The one reliable formal mechanism for teacher recruitment is NPS’s agreement with TFA and TNTP. Yet, the constant preparation, induction, and support that goes into acculturating TFA and TNTP candidates into Newark is not rewarded by their retention. This has lead NPS administrators to believe that a home-grown recruitment effort would lead to a better teaching staff, as the stability will help their schools focus more on student achievement, rather than talent acquisition.

Thus, the challenge in recruiting teachers for Newark Public schools is an issue of both a lack of a quality supply of high-need teachers, such as STEM or urban educators, and a demand challenge as the centralized system of hiring causes confusion according to both the principals’ and teacher candidates’ perceptions. The lower supply of candidates may also be due to perceptions of safety and a lack of convenient conditions in Newark. Moreover, NPS administrators are looking for teacher candidates who not only meet the HQT mandates of dual (some times triple) certification requirements often needed for English Language Learners, special-needs students, as well as content area, but they must also understand the urban environment they seek to teach in, and ought to have social experiences prior to entering teaching there. The practical suggestion to support local students to return to teaching in Newark Public Schools is an endeavor several principals suggested, and as this principal explains:

After awhile, it is not about the university or the program you come through it's about whether you can perform in a district that has you know, the economic, social, and poverty, you know all the aspects of an urban district. I think they all want to be able to do that. So happen that they come in to the district wanting to do their job but with a lack sometime of mentorship... there's a disconnect, you're not going to learn how to be a teacher in college, just like you don't learn to be a great doctor in law school or medical school. You know it's a practice, but you know, that's why lawyers in a practice, and a doctor in a practice. So a teacher is in a practice.... You know we hear the debate about on whether you know charter schools are better than traditional public schools, all those teachers come from the same place. And to blankly think that one place is attracting better teachers over another it's, you know, a fallacy, because they're all coming from the same place, you know, I often said you can take the great teacher in a suburban district might not make a good teacher in an urban district. I think the great teacher in an urban district would be a great teacher in any district.

It should be noted that the staffing challenge in Newark Public School persist despite the layoffs of many teachers in many school districts, and despite the fact that NPS has consistently had one of the highest teacher salary schedules in the state. The implications of these findings will be discussed further in the next chapter.

CHAPTER SIX. RESULT SUMMARIES AND DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The quality of a child's teacher is the most important in-school predictor of his or her achievement (Darling-Hammond et al., 2001; Rivkin et al., 2005; Rowan et al., 2002; Sanders & Rivers, 1996; Wright et al., 1997). Consequently, teacher supply and the initial distribution of teachers into classrooms are important education policy issues. The challenge of distributing teachers equitably mainly exists in urban districts, where urban schools serve predominantly low-income, low achieving, minority student populations (Lankford et al., 2002). The staffing challenge of recruiting teachers into urban districts is further exacerbated by retention issues, where constant teacher turnover has created a teacher quality gap that is directly linked to the racial and socioeconomic student achievement gap, thereby perpetuating the division into haves and have-nots in the United States (Hanushek et al., 2004; Liu et al., 2008a; Rivkin et al., 2005).

A review of the literature shows that within five years, half of new teachers leave education and this number is reported to be higher in high-needs areas such as urban districts (Ingersoll, 2001; Ingersoll & May, 2011). To attract and retain highly qualified teachers, stakeholders across the country have implemented recruitment initiatives such as signing bonuses, student loan forgiveness, and subsidized graduate education, and have recognized the importance of improving organizational working conditions as retention levers (Hirsch, 2005). At the federal level, NCLB was designed to provide all students with equitable access to quality teachers, by mandating that every student in America have teachers who are a certified to teach their content areas via its Highly Qualified Teacher (HQT) requirement. What researchers have not focused upon thus far

is the degree to which certain factors from the recruitment and retention literature relate to teacher candidates' career plans, and how their perceptions, preferences, expectations, experiences, and job hunting processes influence their intentions for their initial workplace setting, i.e., where they want to teach. This study focuses on this issue.

For the last decade, teacher shortages have plagued urban school districts throughout the country (Hanushek et al., 2004; Ingersoll, 2000; Lankford et al., 2002; Loeb et al., 2005). By better understanding the expectations of teachers entering the profession, it may be possible to refine recruitment and retention efforts to provide more effective support measures and more attractive alternatives within urban school settings. Understanding these trends is important, as teachers' initial job choices have been shown to impact their distribution into urban vs. non-urban areas (Boyd et al., 2002). Moreover, this study looks at the factors that may affect teacher attrition intention; as it is attrition from turnover and not solely a lack of supply that is the main cause for the teacher shortage. The goal then is to also have better educational policies that target retention as well, since thus far teacher labor market studies have "focused too narrowly on recruitment and not enough on retention" (Liu et al., 2004, p. 234).

The intent of this study is further to understand and address the challenges of recruiting and hiring teacher candidates in urban schools, specifically in hard-to-staff subject areas such as mathematics and science. In this study a model was built to predict factors from five theoretical constructs (working conditions, job search methods, social learning experiences, personal and professional characteristics) that influence the locale of teacher candidate's preferred job placement, while exploring how these constructs are interpreted by school administrators during their recruitment and hiring efforts. The goal

is for policy makers facing teacher shortages to have more specific knowledge and recommendations about what they may do to recruit and retain teachers more effectively, specifically in high-need low-income urban districts. The research questions that frame this study include:

(R1) Do teacher candidate's personal and professional characteristics, their social experiences and job search methods, and their perception of working conditions relate to their career plans of where to teach? If so, which factors are most significant?

(R2) Do these factors (personal characteristics, professional characteristics, social experiences, job search methods, and perceptions of working conditions) influence STEM teacher candidate's career plans of where to teach? How are the significant predictors of all teacher candidates' career plans similar or different than STEM teacher candidates' career plans?

(R3) How do teacher candidates' perceptions of working conditions, social learning experiences, job search methods, and personal and professional characteristics impact Newark Public School's (NPS) recruitment and hiring challenge, according to the perspectives of both NPS's school administrators and incoming teacher candidates?

These questions were answered through a convergent parallel mixed method design, in which the quantitative survey data and the qualitative interview data were collected in parallel, analyzed and summarized separately, and will now be merged for the interpretation and discussion below.

The first two questions were answered through a descriptive, correlational quantitative research design that explored the expectations of 614 teacher candidates from New Jersey to better predict their preferences and expectations for the profession, including where do teacher candidates, from myriad teaching certification pathways most prefer to teach, and what factors impact their decision about where to teach. The first two research questions were operationalized through the use of a single dependent variable – Teacher Candidates' Career Plans, and through 18 variable components. Chapter 4 provides a full account of the data and results of the survey.

The third question was answered through a case study design that analyzed 15 qualitative semi-structured interviews with Newark Public School's district and school administrators, and augmented by NPS survey data, in order to explore a more comprehensive understanding of recruitment and hiring by comparing multiple levels (teacher candidates, school administrators, district administrators) within a recruiting and hiring system. By triangulating teacher candidates' perspectives with school administrators' perspectives on the challenges one urban district experienced, the Newark case study provided an opportunity to make sense of the process teacher candidate career planning/decision making is executed, within the five constructs of the conceptual framework. Chapter 5 provides a full account of the case study that utilizes results from both the NPS interview data and NPS survey data items. The following section provides a summary of the findings and discusses it within the literature context.

Summary of Findings and Discussion

The Impact of Working Conditions on the Preference for Teaching in an Urban District

The findings of this study affirm earlier studies that found working conditions to be an important influence on teacher candidates' career decisions (Ingersoll, 2001; Loeb et al, 2005). While earlier research demonstrates teacher working conditions are an important component of job satisfaction and turnover (Ingersoll, 2001; Loeb et al., 2003), this study demonstrates that teacher candidates' perception of working conditions prior to entering full time teaching can affect their career plans of teaching or not teaching in urban districts.

According to terminology coined by Kalleberg (1977) in his framework for understanding working conditions and job satisfaction, teacher candidates who sought “dimensions of work” that include “resource adequacy” and “convenience,” were less likely to prefer to teach in an urban district (p.128).

The resource adequacy dimension of working conditions in this study refers to teacher candidates’ preferences for physical resources such as instructional materials and school safety, professional learning resources such as good reputation for teaching practice and support for new teachers, and leadership capacity such as supportive school leadership and effective discipline policy. The teacher candidates in this study’s sample who had preferences for such conditions were relatively less likely to plan to teach in an urban school, as these are resources that are perceived to be lacking in urban districts. The Adequate Resource factor became statistically significant after controlling for teacher candidates’ professional characteristics, and increased in effect and statistical significance after controlling for personal characteristics; specifically the reduction in the odds of preferring to teach in an urban school goes from a 26% to a 37% reduction multiplicatively for every one standard deviation increase in their preference for Adequate Resources. The importance of adequate resources to teacher career plans is corroborated by Ingersoll’s (2001) findings in an exploratory factor analysis of working conditions’ influence on teacher turnover, where he found that it was primarily a lack of adequate resource conditions that lead to teacher’s dissatisfaction and turnover. Specifically, it was inadequate leadership and support from school administrators and student disciplinary issues that influenced teachers to leave, where the odds of a teacher leaving when such working conditions existed was approximately 23%. Similarly,

Farkas, Johnson, and Folen (2000) described how more than 75% of the new teachers they surveyed preferred to work in schools with good leadership over schools with higher salary. While a lack of teaching supplies was not found to be a significant predictor of turnover in prior quantitative studies (Ingersoll, 2001; Stockard & Lehman, 2004), in this study the perception of a lack of adequate resources including instructional resources did reduce the likelihood that teacher candidates would prefer to teach in an urban district.

The case study of Newark Public Schools (NPS) illustrated the importance of adequate resources from both administrators' perspective as well as the teacher candidates' perspective. In an open-ended question about what teacher candidates would like addressed to make Newark Public Schools a more attractive place to teach, 28% (142 responses) cited community factors, and said they would consider NPS if it had better "reputation," "disciplinary measures" and more positive "community culture," an additional 17% (88 responses) voiced the need for more adequate resources, facilities, salaries and benefits; and another 16% (82 responses) pointed to the specific professional support such as strong school leadership support, new teacher support and ongoing professional development.

An additional element of the impact of adequate resources on recruiting new teachers to urban schools is teacher candidates' perception of a school's safety. In a qualitative study on the views of teachers who left urban schools, Smith and Smith (2006) explained how teacher's perceptions of school violence led to increased stress levels and turnover. The authors suggested that their study is the first to link perceptions of violence with attrition, and point to the gap in the literature explaining this phenomenon.

More recently, Dworkin and Tobe (2012) have linked teacher burnout with unsafe and disorderly schools in their longitudinal study of high minority districts in Texas. They suggested that school safety is an additional burden that teachers must bear in an era of high accountability and diminished leadership support, all of which leads to a lack of commitment to teaching and higher turnover among teachers. While previous studies demonstrate a link between perceptions of school safety and violence and teacher turnover, the results of this study offers the first empirical study on how the perception of lack of safety acts as a deterrence to recruitment, and may actually be based on the reality of neighbourhood violence in some areas in Newark (Khalil et al., 2012).

The Newark case study provided empirical evidence that teacher candidates' perceptions of safety acted as a deterrent for applying to teach in NPS. In an open-ended question about what teacher candidates would like addressed to make NPS a more attractive place to teach, 31% (156 responses) mentioned safety concerns, and said they would consider NPS if it was more secure and had a lower violence and crime rate. Indeed, as teacher candidates' concerns regarding safety perceptions about NPS and their perception of the city reputation increased, they were less likely to choose teaching in Newark than teacher candidates who did not have safety concerns. School administrators corroborated teacher candidates' perspectives that safety is a deterrent for teacher candidates applying to teach in NPS, explaining "once you say the word Newark they are going to run in the other direction whether it's to reside or to work in the city."

Additionally, principals pointed out that the reality of violence and safety in Newark was directly linked to areas that were demographically lower income and majority minority. Those areas also experienced lower student achievement, thereby

conflating the concepts of race, safety, and low student achievement. So, in addition to actual violence acting as a deterrent, some wards in Newark have a ethnic or racial makeup that may contribute to teacher candidates' fears surrounding those areas; these findings are supported by prior research that indicated areas with a high number of youth from black or Hispanic backgrounds made the public feel less safe (Anderson, 1999; Cornell, 2006; Wilson, 1996).

Moreover, NPS principals often felt the public's fear is sensationalized by media; researchers label this phenomenon as *moral panic*, whereby policies that result from this social construction of fear "affect students of color, males, ...and students in poverty--- that is, those with the least social capital" (Lindle, 2008, p. 34). Smith and Smith (2006) corroborated that perceptions of violence are not always justified, reporting that even when the incidence of violence in schools are low, and regardless of the district's effort in making its urban schools appear safe, violence is often exaggerated in urban schools and effects the recruitment of teachers by word of mouth.

The convenience dimension of working conditions refers to how convenient the teaching job is perceived by the teacher candidate, including whether it generally provides "freedom from conflicting demands" (Kalleberg, 1977, p. 128). This study provided evidence that teacher candidates looking for convenient conditions such as a choice of grade level or a particular curriculum were also less likely to prefer to teach in urban districts ($p < 0.001$). This predictor had a lower coefficient and a lower level of statistical significance (from $p < 0.001$ to $p < 0.05$) after controlling for demographic characteristics such as race, where a teacher candidate grew up, and their parents' highest education level. This suggests that when teacher candidates' race or socioeconomic

background (as measured by parents' education level and where they grew up) are controlled, convenient conditions are less influential.

One inconvenient condition often cited by researchers is the extra workload of educating disadvantaged urban students, as it causes stress, burnout, and turnover (Boyd et al., 2005; Hanushek et al., 2004; Ingersoll & Smith 2003; Stinebrickner et al., 2005). Urban districts often have higher numbers of English Language Learners and special-needs children, all within a setting that is affected by poverty and a lack of support and resources (Falch & Strom, 2005; Hanushek et al., 1999; Johnson & Birkland, 2003; Lankford et al., 2002).

The case study on Newark provides further evidence that convenient conditions are a factor in deterring teacher candidates from considering teaching in NPS. The lack of accessible public transportation to all city schools, the lack of convenient parking, and the commute time into a large city for non-city residents poses a problem according to NPS principals. This corroborates the research that has shown that as cities are net importers of educators, proximity is an important factor that impacts teacher recruitment and retention, as teachers prefer to teach close to where they grew up, usually in suburban and rural areas (Boyd et al, 2005). Indeed, over 60 open-ended responses from possible NPS applicants indicated that it was NPS's distance and proximity from their home, and the resulting commuting difficulty, that had them finding NPS a less attractive work place.

In this study, STEM teacher candidates' preferences for working conditions, such as convenient or adequate resource conditions, or schools that were 'similar' to them racially and or socioeconomically, did not seem to predict their preference for teaching in

urban schools. Perhaps this can be explained by the fact that STEM teacher candidates are aware that STEM majors are in tight supply and high demand, and therefore can command the best of working conditions wherever they go (Liu et al., 2008a). While STEM teacher candidates' preferences for working in urban schools did not seem to have a relationship with their preference for working in schools similar to them racially/ethnically and socioeconomically, in the overall sample, teacher candidates who prefer Similarity-Homophily conditions, i.e. to teach in schools that are similar to the ones they attended, or that have a similar population to them, are less likely to prefer to teach in urban districts.

Thus the Similarity-Homophily factor was negatively associated with teacher candidates' preferences to teach in urban districts ($p < 0.01$). In fact, for every one standard deviation increase in the Similarity-Homophily factor, the odds of teacher candidates preferring to teach in urban schools would decrease by about 46%, or alternatively the odds they will prefer a suburban and/or rural school will double for every one standard deviation increase in their Similarity-Homophily preference. This finding is not surprising as majority of the teachers in the sample were white and from suburban background (as is the total teacher population, see Broughman & Rollefson, 2000) desiring to teach in a middle-class suburban district (Khalil, forthcoming). However, this association is true even when controlling for race, thus the implication is that the desire to teach in a school similar to oneself transcends race, and may in fact be a question of socioeconomic status—all variables Young et al. (1997) suggested is a result of the similarity-attraction hypothesis.

If these teacher candidates preferred surroundings that were “similar” to them, this may suggest they would much rather not teach in urban districts that are racially, ethnically, and socioeconomically diverse. Hodkinson and Sparkes (1997) argued that such decision making is pragmatic, in that it is “located in the familiar and the known,” (p. 33) and utilized Bourdieu’s idea of habitus to explain the point where one’s action (i.e. career decisions) and beliefs (i.e. perceptions and dispositions) intersect. Similarly, other researchers expanded on Bourdieu’s idea of habitus in their studies on the processes prospective teachers use to find teaching positions, and emphasized how prospective teachers end up in schools that are familiar to them socially and culturally because it is social proximity that is important to them rather than solely physical proximity (Cannata, 2010; Clotfelter et al., 2006).

Conversely, teacher candidates who had a preference for teaching in high-needs schools’, i.e. schools that were majority minority with a high number of poor, lower achieving students, many of whom are English language learners, had 3.5 times the odds of preferring to teach in urban districts than teacher candidates who preferred high needs schools at the mean ($p < 0.001$). This predictor was highly significant statistically throughout all the models and the magnitude of its effect did not decrease much despite the addition of numerous other predictors. To corroborate this, teacher candidates with better perceptions of student characteristics had double the odds of applying to teach in Newark than teacher candidates without a good perception of student characteristics ($p < 0.05$). This factor had an even higher impact of predicting STEM teacher candidates’ preferences for urban districts; the odds of STEM teacher candidates who preferred high-needs schools, i.e. schools with low income, low

achieving, majority minority students, to prefer urban schools were nearly 10 times higher for one standard deviation increase in the preference for high-needs schools.

The search for teacher candidates with such preferences is one of the major challenges principals in NPS report, where they are continuously struggling to find an “urban educator,” who not only had the cultural competence to understand their student population, but also had the other two C’s they sought: commitment and content knowledge. This study demonstrates Newark Public School’s struggle to find urban educators who had the cultural competence, as well as the content knowledge (especially in highly sought after STEM disciplines), as well as the commitment to stay in urban education a constant challenge. When NPS administrators would find an urban educator with the cultural understanding and content knowledge, especially in STEM, it was often a Teach For America candidate whose commitment was for only two years.

If one were to utilize the earlier example of teacher candidates preferring schools that are familiar to them culturally, as when Lankford et al. (2002) found that candidates who came from similar racial/ethnic, and/or socioeconomic backgrounds as the students in urban district may be more disposed to teaching in urban schools, then it would suggest that minority teacher candidates are the solution to the urban teacher staffing challenge. However, while nationally over 41% of the student population are minorities, only 17% of the teaching force are minorities—i.e. the supply of minority teachers is low and not enough (Ingersoll & May, 2011). In fact, in a simulated survival analysis on districts that included 90% of all minorities, Kirshstein and Cartwright (2012) found that it would take over 75 years for 97% of the districts to close the “minority gap,” where teacher’s racial and ethnic diversity will match that of their students.

The Impact of Job Search Methods on the Preference for Teaching in an Urban District

Given the variety of ways that teachers can use to locate teaching jobs, there is an opportunity to look for patterns in how job search methods may relate with preferences for urban teaching. This understanding may provide opportunities to refine recruitment efforts and perhaps help teachers find a strong initial fit, as it is teacher's initial job match that is key to an equitable distribution of teachers in urban districts (Boyd et al., 2002).

The results of this study indicate formal job search methods were negatively associated with teacher candidates' preferences to teach in urban districts. If a teacher candidate utilized a formal job search method (e.g., attended job fairs or applied on-line), the odds that he or she would prefer an urban district decreased by 67% in comparison to the teacher candidate who did not utilize a formal job search method ($p < 0.05$). Cannata (2010) proposed that teacher candidates may learn about teacher openings via internet searches to districts that are familiar to them, and that they overlook districts that are unfamiliar to them; as the majority of the candidates in this sample were white middle class females, it stands to reason that is why they wouldn't apply to urban districts. An alternative explanation found in this study is that the more job search methods a teacher candidate utilizes (formal or informal), the fewer the proportion of teacher candidates who will prefer an urban district. Perhaps the higher number of job searches led teacher candidates to more job options that were a better 'fit' for them, where fit is familiarity and better working conditions (Liu & Johnson, 2006).

Perhaps another explanation for teacher candidates' likelihood to prefer a nonurban teaching placement if they use formal job search methods is because teacher candidates with a preference for urban teaching usually find their jobs through informal

channels; while there wasn't any statistically significant evidence of this in the overall survey, evidence from the NPS study can illustrate this. Most experienced NPS principals said they rely on informal job mechanisms to recruit and hire new teachers, as they tap into personal connections they deem trustworthy. There is substantial corroborating prior research on the value of one's social capital on one's career decision and social networking (Coleman, 1988; Granovetter, 1995; Hodkinson & Sparkes, 1997). Moreover, aside from utilizing websites (NPS's and others), the main sources of information teacher candidates utilized to learn about NPS job openings were through family and friends, followed by student teaching. Specifically, NPS applicants were more likely than non-NPS applicants to report professors as a source of information about jobs, and were also more likely than non-applicants to report direct inquiries to schools concerning jobs. Prior research corroborates the importance of these informal job search mechanisms for learning about open teaching positions (Cannata 2011; Johnson & Liu 2004; Maier & Youngs 2009).

However, family and friend referrals, a professor's recommendation, or inquiring directly with the school are not the official way NPS advertises for teacher candidates to apply to teach in Newark Public Schools. NPS's principal and teacher candidates' reliance on informal hiring strategies calls into question the effectiveness of the centralized formal mechanism of NPS' application process, and perhaps explains why teacher candidates who use formal mechanisms do not prefer urban districts like Newark. Indeed, in an open-ended question about what teacher candidates would like addressed to make Newark Public Schools a more attractive place to teach, over 70 responses referred to the hiring bottleneck in NPS and described a desire to be hired earlier, a need for more

transparency and organization in the hiring process, for more information about the district, and for the hiring process and timeline to occur earlier. Some phrases teacher candidates wrote include: “not such a red-tape laden, messed up hiring process,” “more organization earlier in the hiring process (since they still are not sure of vacancies now, in mid-August),” “less bureaucratic hiring process,” “A call back! Less nepotism!,” “updates to the District website that might make it more clear,” “more help finding these job openings,” “give us more info about the district,” and finally, “if they answered the phone or called you back when you're interested in a job.”

Teacher candidates’ calls for more timely and transparent information about the district so that they can make informed decisions is a point Liu and Johnson (2006) addressed in their paper *New Teachers' Experiences of Hiring: Late, Rushed, and Information-Poor*. Liu and Johnson (2006) contended that in order for good matches to occur between prospective teachers and school districts, there needs to be more interaction between schools and prospective teachers, so that both parties understand the needs and merits of the other (Liu & Johnson, 2006).

The concern that this finding raises is that for large urban districts, a formal centralized mechanism of hiring were instated to protect the districts’ individual schools from inequitable access to new teachers, whereby the better performing schools would get the larger number of applicants (Liu et al., 2008b). However, the danger in districts similar to NPS occurs when a centralized system that is officially in place pacifies individual school leadership in their search for talent. The push-pull of a formal centralized system but an informal, unstated decentralized system of hiring has led to a system that is largely reliant on the principal’s capacity for informal networking, as well

as a school's reputation for luring candidates—potentially tying the inequitable distribution of new teachers to the inequitable distribution in school leadership capacity (Liu et al., 2009b).

The Impact of Social Learning Experiences on the Preference for Teaching in Urban Districts

Career choice is often shaped by the influence of friends and family and by other experiences and exposures. As the previous section indicated, a teacher candidate's family and friends provide him or her with a “strong link” (Granovetter, 1995) of networks that supports their job search. This study found that family and friend's influence to enter teaching as a career had a negative impact on teacher candidates' preferences to teach in urban districts. After controlling for personal and professional characteristics, as well as their perception of working conditions and job search methods, teacher candidates influenced by family and friends to enter teaching had a decreased odds ratio of preferring an urban district by approximately 60% as compared to teacher candidates not influenced by family and friends to enter teaching.

In fact, after controlling for demographics and including the family and friend predictor, the Similarity-Homophily factor gained higher impact and statistical significance (from a decreased odds of 32% to a decreased odds of 47%). Perhaps the teacher candidates who prefer schools with student and teacher populations similar to themselves may very well be the teacher candidates who are influenced into a career of teaching by family and friends, and their desire to be with people that are familiar may be to recreate that family and friend-like atmosphere/culture—i.e. the idea of homophily

McPherson et al. (2001) described in their seminal paper *Birds of a Feather: Homophily in Social Networks*.

Moreover, as noted in the literature earlier, many candidates prefer to teach in districts similar to them (Bourdieu, 1986; Cannata 2010; Hodkinson & Sparkes, 1997). Thus, the impact of social learning experiences on teacher candidates' perception of working conditions is important, as it hypothesizes that teacher candidates' prior experiences to their teacher preparation have a large impact on their plans post-teacher preparation, thereby necessitating early social learning experience interventions in teacher preparation.

Conversely, experience with low income children prior to entering a teacher preparation program was positively associated with preference for an urban school, where the odds of a teacher candidate who has experience with low income children prior to entering their education program preferring to teach in an urban district is 66% larger than the odds of a teacher candidate who does not have experience with low income children. Consistent with the Chapman and Green (1986) model that identified quality learning experiences as important factors, this study offers evidence that social learning experiences can impact teacher candidates' recruitment in general, and perceptions of where they want to teach in particular.

The study of NPS provides further affirmation of the importance of social learning to teacher candidates' preferences for teaching in an urban setting. The search for an urban educator by NPS administrators is a search for a teacher candidate with prior exposure and experience to urban areas before teaching in an urban district like Newark. Teacher candidates who had prior exposure in Newark through work, undergraduate

education, recreational entertainment, or services, were much more likely to apply to NPS than teacher candidates with no experience in NPS. Teacher candidates who had gone to college in Newark or had other contact with Newark institutions of higher education were also more likely to apply to NPS than those with no such experiences.

Candidates with prior Newark work experience were highly likely to apply to NPS as those with no local work experience, and those with Newark friends were more likely to apply to NPS than those without. Prior recreation, such as attending galleries, museums, or games, or even shopping experience had weaker effects, but was still highly significant. Similarly, prior exposure to Newark via services such job fairs, hospitals, the YMCA, and other professional services were statistically significant. This data is consistent with the tenets of social learning theory that highlights that learning is grounded in social context and is a phenomenon that occurs by observing and socially interacting with others (Bandura, 1997).

Several NPS principals repeatedly emphasized the necessity and benefit of exposure to urban areas, as it changes teacher candidates' perceptions of what urban schools are really like, corroborating Bandura's (1977) belief that one's perception is the way a person may feel about a situation and that it can be influenced by modeled behaviour. In fact, NPS principals believed these urban experiences and exposures gave prospective teachers "city smart[s]" (i.e. a trait that allows them to recognize situations for what they are). This was thought by the principals to be a critical trait that teacher candidates need when dealing with parents who may, for example, be possible gang members, but who are approaching the candidates as concerned parents.

Finally, these findings corroborate prior research suggestions that teachers need to

have more education relating to inner city urban cultures in order to avoid culture shock (Haberman, 2005; Rushton, 2003) and the deficit way of thinking about culture (Ladson-Billings, 2000). Thus, social learning theory “address[es] the interaction of social and cultural factors on decision-making and acknowledges that they become enmeshed in an individual's identity, as life develops and experiences are accumulated” (Hodkinson & Sparkes, 1997, p. 32).

In this study, teacher candidates who preferred urban districts also seem to have prior experiences in urban districts that include: having grown up or attended a high school in an urban area, having experience with low income children prior to enrollment in their teacher education program, performing their field experiences and/or student teaching in urban areas, and finally, having their teacher preparation program located in an urban area. Thus, the more social experiences and program preparation experiences teacher candidates have within urban areas, the more likely they are to choose to teach in an urban district. The next two sections will elaborate on those experiences further.

The Impact of Professional Teacher Characteristics on the Preference for Teaching in Urban Districts

Teacher preparation programs and field experiences are a major investment at the local, state, and national levels. Urban teacher preparation programs are designed to recruit teachers who are prepared for the rigors of teaching in an urban environment, and to ensure a good fit in such an environment (Haberman, 2005; Ladson-Billings, 1994). The findings in this study provide evidence that having an urban field experience is highly significant in predicting teacher candidates' preference for urban teaching. More precisely, the odds of preferring to teach in an urban district are five times larger for

teacher candidates with urban field experiences via student or alternate route teaching. For STEM teachers with urban field experiences, the odds are nearly 12 larger than teacher candidates without urban field experiences.

Few studies have tied teacher candidate' teacher preparation programs, and specifically their field experience locations, with their recruitment and retention (Boyd et al., 2009; Maier & Youngs, 2009; Ronfeldt, 2012), though many researchers have advocated for community-based field experiences to prepare teachers to teach culturally responsive pedagogy in multicultural settings (Banks et al., 2007; Cochran-Smith & Zeichner, 2005; Haberman & Post, 1998; Ladson-Billings, 1994, 2000; Sleeter, 2008). More recently, McDonald et al. (2011) discussed the idea of preparing teacher candidates for diverse placements through partnerships between universities, community-based organizations, and local schools. They argued that such an experience will "give prospective teachers opportunities to develop a holistic and assets-based view" of ethnically and racially diverse students (p. 1669).

This is consistent with the perspectives of NPS district and school administrators, who often mentioned teacher preparation field placements as a means of affording teacher candidates social learning experiences, including cultural understanding. They believed field placements in urban areas have the possibility of decreasing teacher candidates' fears and increasing their cultural understanding of urban schools and their students. NPS administrators surmised that a positive urban placement can challenge a teacher candidate's negative views of an urban area, while a negative placement can support his/her fears or anxieties, a summation consistent with prior literature (Ronfeldt,

2012; Zeichner & Melnick, 1996), especially with Ronfelt's (2012) recent study where he links field placement quality effects to retention and student achievement.

Teacher candidates' field placements not only served as a means to provide potential NPS applicants with exposure to Newark, but it also served as an informal mechanism for student teachers and principals to network with one another for vacancy placement. The partnership between principals and teacher preparation programs, aside from the partnership with Teach For America, was an informal one established by directors of teacher preparation programs and principals. The majority of principals felt that building partnerships with universities to develop their teacher candidates in NPS is a 'win-win' for both partners in that the school administration has 'first dibs' on teacher candidates for potential vacancies, and schools of education have a convenient organization to place their teacher candidates, while learning and possibly permanently upon graduation.

In fact, nearly all teacher candidates with NPS student teaching experience planned to apply for positions in the district. Almost two-fifths of the teacher candidates who had student teaching experiences in NPS actually had a specific school or principal in mind that they targeted for their job search in NPS. The number of respondents who had prior student teaching experience in NPS and were able to name a specific school or principal were in fact 3.6 times more than the number of respondents who did not have a specific school or principal. More generally, the number of respondents with urban experience who were to apply to NPS were 39.3% more than the number of respondents who did not apply (and did not plan on applying), similarly the number of respondents who substitute taught in urban experience were 67.3% more than the number of

respondents who did not apply (and did not plan on applying). These findings are consistent with Maier and Youngs' (2009) findings that "social networks among candidates and between candidates and schools" influence their career decisions (p. 393). Accordingly, it is teacher candidates' dissemination of and access to information in their urban teaching placement that seems to positively affect their preference to teach in an urban setting.

Field experiences offer teacher candidates a chance to learn more about the realities of urban areas via a social learning experience. Consistent with the Chapman and Green (1986) model that identified the quality of the first teaching experience as an important factor influencing teacher retention; this study offers evidence that field experiences can impact teacher candidates' recruitment in general, and perceptions of where they want to teach in particular. This finding has implications for teacher preparation programs across the nation. Urban field experience, or field experiences in high-needs schools with majority minority students, need to become a staple requirement for full licensing in all states, as the overall student population of the United States is nearly 50% children of color (Ingersoll et al., 2011; Kirshstein et al., 2012).

Similar to Boyd et al.'s (2002) Teacher Pathway Project, this study was intended to determine if teacher pathway (traditional teacher preparation program versus alternative teacher preparation programs) had an impact on teacher candidates' preferences in general, and, specific to this study, on whether they want to teach in an urban versus suburban and/or rural district. Consistent with the study of Boyd et al. (2005) where they examined how the location of a teacher's university affected the location of their initial and subsequent jobs, this study demonstrated that the candidates'

teacher preparation program's location is positively associated with the teaching preference for urban districts.

Specifically, the odds of teacher candidates' preference for urban settings increased more than 2.5 times when comparing teacher candidates who attended teacher preparation programs in low income districts (identified in this study as District Factor Groups A or B) versus those who attended teacher preparation programs in moderate or higher income districts (identified in this study as District Factor Groups CD to IJ). This suggests that teacher preparation programs should make use of their surrounding urban areas to help teacher candidates build practical field experiences, as this finding's effect is such even when controlling for other geographical considerations such as the effect of one's childhood location, which has been previously found to be significant (Boyd et al., 2006).

Two pathways that were positively associated with teacher candidates' preferences for urban settings, Teach For American (TFA) and The New Teacher Project (TNTP), produced teacher candidates who were highly likely to prefer to teach in urban areas, where their odds of preferring was four times larger than traditional and state alternate route candidates. STEM teacher candidates who attended TFA or TNTP were also highly likely to prefer to teach in urban areas, where their odds were nearly 7 times larger than the odds of traditional and state alternate route candidates. This is not surprising, as the mission of these national non-profit programs is to prepare their teacher candidates for teaching in urban and rural areas (Loeb et al., 2005). While the TFA_ TNTP predictor was included as a control variable to understand the effect of their candidates' perceptions and experiences, it has been suggested that this population is a

noteworthy pipeline of urban educators regardless of their two year commitment, as over two-thirds of TFA candidates remain in education in some capacity (Dobbie & Fryer, 2011), though it is unclear if they remain in urban education.

Research has shown that nearly half of teachers leave their schools within 5 years (Loeb et al., 2005; Ingersoll, 2001). Some researchers have used the intention of turnover as a predictor for turnover (Price, 1981, 2004). In this research, findings indicate that teacher candidates who are at risk to leave (attrition risk is indicated when a candidate reported he or she will leave in less than five years) have 2.5 times the odds of preferring an urban district when compared to teacher candidates who reported the intention to teach for six or more years. This is true even controlling for TFA, TNTP, and STEM certification participants, who all have high attrition risks with regards to teaching (Loeb et al., 2005; Dobbie & Fryer, 2011; Ingersoll & May, 2011). STEM teacher candidates who were an attrition risk (i.e. they planned to teach less than five years) had five times the odds of preferring urban districts as STEM teacher candidates who planned on teaching six or more years; again this is true even controlling for TFA and TNTP pathway.

Several NPS principals recognized the challenge of recruiting and retaining STEM teachers, where the majority of principals posited that the short supply of STEM majors, and "an even smaller percent of those [who] want to teach" in urban districts, makes it an area they are constantly recruiting for. One principal pointed out that people in STEM fields previously traded higher salaries in industry for job stability in education. However, with budget cuts and the subsequent lack of funding for public education, there is no longer stability in teaching careers. This factor, combined with less pay and fewer

benefits for continuing education have made the challenge worse. Moreover, while there is a lack of career STEM candidates from traditional pathways; TFA and TNTP have been NPS's best resource for helping the district fill their math and science teacher vacancies. This study adds to the literature that discusses the challenges of recruiting and retaining STEM teachers (Ingersoll & May, 2011; Liu et al, 2008a) by predicting that STEM teachers' eventual turnover may very well be premeditated.

The Impact of Personal Characteristics on the Preference for Teaching in Urban Districts

The addition of personal characteristics into the model had significant impact on the magnitude and estimated odds-ratio for preferring an urban district. While demographic characteristics cannot be directly addressed through policies aimed at teacher candidates' preferences, it can provide a deeper understanding of the relationship between these characteristics and the phenomenon of teacher recruitment and retention, and perhaps provide insight into target audiences.

Not surprisingly, the odds of Non-Asian Minority teacher candidates, the majority of whom are Black and Hispanic, preferring an urban district are nearly 2.5 more than the odds of Asian and White teacher candidates. That Blacks and Hispanics are more likely to teach in urban districts is not surprising (Achinstein et al., 2010), but it is an important finding because while they are the most likely of races to teach in urban districts, they are more likely than Whites to leave schools because of working conditions (Ingersoll & May, 2011). This is especially troubling because the number of Black and Hispanic teachers is still small in the overall teacher population, despite the recent efforts to increase the teacher diversity pipelines (Ingersoll & May, 2011; Kirshstein et al, 2012).

Having minority teachers is a desired teacher qualification in urban districts, as there is a discrepancy between the majority of teachers being white while the majority of students are not (Boyd et al., 2011). The discussion on the disparity between the demographics of teachers and the students they teach has been labeled as a “critical aspect of the current demographic imperative” (Zeichner, 2003, p. 492). Currently, about 45% of school aged children and 17% of teachers are minorities (Ingersoll & May, 2011; Kirshstein et al., 2012). The hypothesis is that this imperative creates a cultural divide between teachers and students, where some researchers consider race to be a measure of desired teacher quality in urban districts, as there is evidence that black students’ test scores improve when they have black teachers (Dee, 2004; Rivkin et al., 2005). In fact, Dee (2004) noted minority students’ gains with teachers of a similar race is equal to the effect of small class sizes—a considerable effect.

For the total sample of teacher candidates as well as the subsample of STEM teachers, the strongest predictor of preferring to teach in an urban district is whether they grew up or attended high school in an urban area. Teacher candidates who grew up and/or attended high school in urban area have 6.3 times the odds of preferring an urban district setting as teacher candidates who grew up and/or attended high schools in suburban or rural areas (the odds for STEM teacher candidates is nearly eight times as large, and depending on the specific model that controls for working conditions, professional characteristics, along with other demographics variables, the odds for STEM teacher candidates is nearly 20 times as large). This finding is consistent with Boyd et al. (2005) findings, where 34% of the teachers in their sample took their first job near their high

school, 61% of them chose a school within 15 miles from their home, and a whopping 85% were within 40 miles of their hometown.

Several NPS administrators recognized this “draw of home” (Boyd et al., 2005) and suggested a sustainable pipeline of committed teachers for their district can be drawn from Newark residents and NPS students, as opposed to the wholesale entrance and exodus of TFA and TNTP candidates who are recruited nationally for short term commitments. In fact, all but one of the teacher candidates who had grown up in Newark or had attended NPS were willing to teach in NPS, thus suggesting support for a community-based Grow Your Own (GYO) model for a teacher pipeline, similar to the program instated in Illinois, would produce more committed, culturally aware teachers from the community (Skinner et al., 2011).

First Career Late Starters (i.e. teacher candidates in their late 20s), as a predictor is noteworthy; their odds of choosing to teach in an urban setting are approximately 88% higher than teacher candidates in their early 20s. STEM candidates in their late twenties were even more likely to prefer an urban district—their odds are nearly 10 times as large as teacher candidates in their early 20s—controlling for all other demographic characteristics, professional characteristics, working condition perceptions and social learning experiences. One possible explanation of this is research has shown college bound students who are first generation, people of color, or lower income may take longer to complete their education (Bowen et al., 2009; Radford et al., 2010); hence as the label first careers with a late start implies, these teacher candidates may just be beginning their professional careers.

Another possibility is that teacher candidates in their late 20s have more social experiences in urban settings than younger teacher candidates in their early 20s, and thus are less apt to buy in to the moral panic of working in an urban district. Still another possibility is that this age group has fewer family commitments than teacher candidates over 30 who may prefer to live outside of urban areas for the lower cost of living or the better performing schools (Adams, 1996; Allen, 2005; Boe et al., 1997; Clotfelter et al., 2006).

Summary

This research study adds to the growing body of literature that examines strategies for recruiting teachers to high needs districts such as urban districts. The goal of such initiatives is to improve the quantity of teachers entering urban districts, in order to have more choice in quality teachers who can help reduce urban students' academic achievement gaps.

Through this research, a picture of a teacher candidate who prefers urban schools is formed: this individual will have grown up and/or attended high schools in urban area, and would be someone with experience in urban areas. For example, he or she may have worked with low income children prior to entering education, or they may have field experience in urban areas, or attended a teacher preparation program physically located in or near urban centers. This individual would have a clear understanding and preference to teach a high needs population that includes low-income, low-achieving students, many of whom are English Language Learners and students of color. The results further indicate that teacher candidates who are Black or Hispanic and in their late 20s are the candidates most likely to embody these characteristics.

An alternative picture of teacher candidates who do not want to enter urban schools was also formed by the data: These are individuals who have been influenced and encouraged to enter teaching by family and friends, and they would like to teach in schools that are similar to themselves, both racially and socio-economically. Moreover, these teacher candidates consider adequate resources and convenient working conditions very important; they perceive these conditions to be lacking in urban schools, and this makes them less likely to enter teaching in these areas.

From these two pictures, one clear implication is that experiences in urban areas, and with diverse populations, are critical to teacher candidates' preferences to teach in urban areas. As over three quarters of the teacher population is from white suburban backgrounds, it is imperative that these teachers have an opportunity to socially and professionally experience students from diverse backgrounds in urban settings. Our students' futures and the future of this country's economic growth are dependent on quality education for all.

Recommendations for Practice

This study generates a number of recommendations for improving efforts to effectively recruit teachers to urban schools. Although districts and teacher candidates' perceptions are affected by broader economic factors, the results of this study suggest that prospective teachers' decisions can be affected if social learning experiences are established before graduation from a teacher preparation program, and updated policies and procedures to improve perceptions (and the reality) of working conditions are implemented. These findings provide a basis for recommendations to improve educational leadership practice in the recruitment, hiring and retention of urban teachers.

At the Teacher Preparation Program Level--Need to Highlight Urban Education

Through field experiences. At the teacher preparation level, there needs to be a renewed commitment in traditional teacher education programs to prepare teacher candidates to teach in urban districts. In densely populated states like New Jersey, field placements in urban areas should become a uniform policy among all programs. The largest one hundred urban districts in the country educate a total of 23% of the country's school-age population, 30% of the nation's economically deprived students, and 40% of the nation's minority students (Snipes et al., 2002). It is forecasted that the number of children in urban settings will double in the coming decade, reemphasizing the need to train the next generation of urban teachers. A larger need is to prepare all teachers to teach low-income students and students of color, as they are no longer in urban schools alone, and are migrating more and more into suburbs (Liu et al., 2009a; Wells, 2009). In fact, 90% of all minorities are concentrated in 42% of districts, and are taught by 77% of the teacher population (Kirshstein et al., 2012), thereby emphasizing the need for more urban field experiences for all teacher candidates.

Through capitalizing upon the expertise of K-12 urban practitioners in teacher preparation programs. Teacher education programs can benefit from enlisting K-12 urban practitioners and administrators in an effort to illustrate the realities of urban education. K-12 practitioners can also serve as liaisons for creating further field placement opportunities outside of formal observations or student teaching. Principals in this study and prior studies have clear ideas of what is needed in a teacher who will fit with their districts (Liu et al., 2009b; Roellke & Rice, 2008a). Hiring decisions are often made by principals in a very short amount of time, and a principal's or other

practitioner's perspective during a teacher's preparation program can greatly inform his or her fit between teacher candidates and districts, thereby reducing potential turnover (Rutledge et al., 2007).

Through an emphasis on community-based experiences. Teacher preparation programs can prepare more culturally attuned, professional urban teacher candidates by offering opportunities for teacher candidates to have exposure to low-income students outside of schools. For example, teachers as researchers within a community setting can socialize teachers to their environment (Falk & Blumenreich, 2012); this is one more way teacher candidates can experience urban districts through a critical lens, thereby improving their understanding and commitment to schools that may be different from their prior experiences.

At the District Level--Need to Address Identified Issues

Personnel need to build relationships. The findings demonstrate that relationships are a useful resource in recruiting high quality teachers, especially in hard-to-staff subject areas. The administrators who were most successful in hiring the candidates they wanted utilized social and institutional networks. Urban districts should work to establish formal relationships with teacher education programs, just as many have established with TFA.

Student teaching has been shown to have a positive effect on a teacher's preference to teach in urban districts; and schools that established connections to teacher education programs had more success finding teacher candidates. Formal relationships between urban districts and teacher producing institutions can allow university students access to the district through observing classes, working with teachers, as well as student

teaching. This could attract more candidates to apply to urban districts, and it can improve perceptions of safety and working conditions. At the district level, urban districts can help teacher candidates become better informed about the realities of working conditions in order to develop in new teachers a commitment to their districts and their students so that they will make their careers there (Liu et al., 2008).

Create clear hiring procedures. More capacity needs to be built into operation management of large urban human resource systems (HRS). Operating with an online system needs human resource employees to be properly trained in the process, especially with regard to utilizing technology effectively. Additionally, the HRS department should work with principals to develop a comprehensive list of all vacancies in each school earlier than late August. This would be timely and efficient for both teacher candidates and HRS personnel, who must sort where applications are to be sent (Liu et al., 2009b).

In addition to refining the centralized process, the urban HRS department could work to develop a system to give principals more autonomy, empowerment and accountability to hire their own teachers without relying on HRS for the contract draw-up, similar to what is currently happening in NYC schools. Candidates could be hired based on a process of peer review, or teachers could sit on the panel for interviewing candidates. Additionally, there could be an open market system for principals to identify the teachers they would like to fill a position. This would avoid principals having to settle for candidates who do not have all the qualities they desire, thereby allowing for better teacher placement, and improving teacher retention.

Improve working conditions. Although scarce resources make it difficult for urban districts to improve working conditions (such as salaries and other physical

resources), the findings in this study suggest creating convenient conditions (such as offering teachers' choices, as in curriculum development and grade level) can improve the school's intellectual capacity. These changes need to be done in conjunction with building teacher and leadership capacity and voice as they are the people that help guide schools into success (Ingersoll et al., 2011; Liu et al., 2008b).

At the City Level--Involve City Government and Local Initiatives

Cities and their community-based organizations need to utilize positive information technology, including television media and social media, to counter the moral panic that is often caused by the media's sensationalism that portrays cities as places of poverty, danger, and people of color, as these messages exacerbate racism and fear. Advertisement campaigns are powerful tools that are often used to influence people's perceptions; in the case of cities, these are needed to counter the local news that often reports only the most negative statistics (Avraham, 2000). Findings from this study also indicate that safety is still a basic need that city officials are having difficulty with, and more systemic policy efforts are needed to address issues of poverty, especially in African American communities, to address the perceptions of crime and race.

Nowhere is the prevalence of poverty greater than in the inner cities; since more than half of minorities reside within urban cities, minorities (especially blacks at 25% and Hispanics at 21%) have the highest rate with respect to race of being poor (Teller-Elsberg, Heinz & Folbre, 2006; Wilson, 1996). Accordingly, when discussing the issues of education achievement, poverty, race, and safety within the inner city, public policies need to overcome social and economic structural inequalities of urban systems. Reforms that create jobs offering a livable wage for inner city residents, social welfare that does

not penalize people's healthcare or housing subsidy if they join the work market, along with reforms that address the lack of affordable housing in all communities, are all necessary for a better education, and a better tomorrow (Anyon, 2005).

At the State Level--Involve Government Officials

In addition to districts' attempts to formalize relationships with teacher education programs, the state of New Jersey can help establish a Grow Your Own (GYO) program, or a program that is similar in mission and scope. Just as there are national alternate route agencies that supply new teachers, such as TNTP and TFA, GYO teacher recruitment and preparation projects have proven to be a promising route that involves organizing local and state stakeholders (Skinner, et al., 2011). The notion behind the program is to center the recruitment of urban teachers locally. This study demonstrated that local recruits are more likely to remain in the neighborhood for longer periods of time, as they would be more invested in the neighborhood they are from, and would also relate with students, parents, and the community at large better than teachers from outside the city.

Active recruitment can begin at the high school level. For example, have a student group of "Future Teachers of America" where the school's most respected teachers can talk to the students regularly about the human benefits of becoming a teacher, and the importance of giving back to the community. Such organizations can also provide students with experiences and skills (e.g., tutoring younger students) that will help them to clarify their choice of teaching as a profession. Such efforts are supported by the study's earlier findings that teacher candidates prefer to teach in the kinds of schools that they attended.

However, given the fact that the graduates of many urban high schools come to college underprepared, postsecondary institutions must improve their remedial and developmental programs to ensure local students have the opportunities to translate access to success (Panlilio, 2012; Rosenbaum, 1998; Sadovnik, 1994).

Moreover, as Vegas et al. (2001) discussed, the challenge of recruiting a more diverse teacher population is not “primarily one of influencing the occupational decisions of Black, Hispanic, and Native American *college graduates*. Instead, the critical challenge is to increase the high school graduation, college enrollment, and college graduation of Black, Hispanic, and Native American youth” (p. 427). This represents the cycle of challenge associated with recruiting and retaining urban teachers. The need to recruit and retain teachers, especially teachers of color, is necessary for the improvement of student achievement and to eliminate the racial achievement gap; and the need to improve student achievement is necessary in order to recruit and retain a population from the community that may come back to serve the community as teachers. It is only through deliberate and strategic action that this cycle can be broken and urban schools can recruit and retain high quality teachers.

Recommendations for Further Study

There are several key recommendations for future research, these recommendations fall into three categories:

1. What may be further explored with the current data:
 - a. Comparing different sub-samples of the current data sample to examine the variations between different groups of teacher candidates, for example:

- i. How do hard-to-staff STEM teacher candidates' perceptions, experiences, and characteristics compare to non-STEM teachers?

Does the variation between hard-to-staff teacher candidates and other teacher candidates influence career plan measures?
- ii. Are the variables that predict preferring to teach in urban districts different than the variables that predict preferring to teach in suburban districts? How do these variables differ between teacher candidates who aspire to teach in high-income, mid-income, and low-income suburbs? What implications are there for these districts that are experiencing a change in demographics as gentrification occurs in urban districts and urbanization occurs in suburban districts?
- iii. How do the two measures of teacher candidates' career plans of where to teach compare? Specifically, how are the characteristics, perceptions, and experiences of teacher candidates who most want to teach in suburbs but are willing to teach in urban districts different than teacher candidates who most want to teach in suburbs and are not willing to teach in urban districts? What would it take to get the borderline people (those who have some interest in urban teaching but hesitate) to become truly interested in pursuing urban teaching jobs? What could policymakers or practitioners do to pursue them?

- b. Reviewing the data through a different theoretical lens:
 - i. Social reproduction theory: For example, Cannata (2010) utilized social reproduction theory to understand how teacher candidates' perceptions and dispositions, i.e. their habitus, differed according to the structure of the teaching field, their place in the field, and the relationship between the teaching field and the field of the schools. She also explored how these perceptions and dispositions influenced the processes teacher candidates experienced during their career planning and decision making. How may this theoretical lens further deepen our understandings of the current challenge of recruiting urban teachers using data from this study?
 - ii. Motivation theory: For example, Sinclair, Dowson, and McInerney (2006) utilized motivation theory to investigate pre-service teachers' motivations to teach, how their motivation may have changed over time, and the variables that influenced their motivation to teach, such as age or gender. The authors suggest psychometric measures may influence teacher candidates' recruitment and retention; if so, how may this theory inform teacher educators and policymakers of the influence of motivation theory on data from this study?
- c. Utilizing different statistical methodologies to understand teacher career plans:
 - i. Test the effect of interaction variables on teacher career plans;

specifically the interaction between demographic characteristics such as race, age, gender, and socioeconomic status; the interactions between personal and professional characteristics such as where they grew up and where their teacher preparation program is located; the interactions between teacher characteristics and their social learning experiences such as field experiences and working with low income children; and finally the interaction between social learning experiences and perceptions of working conditions, such as family and friend influence and similarity-homophily conditions.

- ii. To explain the relationship between teacher characteristics, experiences, and career plans using structural equation modeling or pathway analysis.
2. Follow-up research with the sample to explore, examine, and explain predictors of retention and turnover, and their influence on student achievement
 - a. Explore retention and attrition variables: This study focused only on the intentions of teacher candidates. To better understand the alignment between teacher candidates' expectations and their actual experiences once they work, a survey of teacher candidates after teaching placements would be useful. Specifically, a follow up study with the teacher candidates, especially STEM teacher candidates who are in short supply, to explore how their career preferences for a teaching setting matched

their final career destination, and if their distribution was equitable among schools and between districts. Moreover, a review of how they perceive their working conditions as teachers of record, and whether their social learning experiences prepared them to teach, can be linked to whether they are at risk for turnover. Explaining the predictors of STEM teacher candidates' career decisions, and their satisfaction with those positions, may provide needed insight into this particularly difficult-to-fill teaching specialization.

- b. Explore the influence of safety perception: Perceptions of safety before and after placement could be created using Ting, Sanders and Smith's (2002) The Teachers' Reactions to School Violence Scale: Psychometric Properties and Scale Development as a framework. The literature on perception of safety as a recruitment and retention of public service employees, be it teachers, nurses, or social workers, is scarce. This and other factors might be evaluated on a before and after basis to provide insight into how perceptions change with experience.
- c. Explore the motivations to teach: Examining how motivation perspectives may change before and after field placement in urban districts, using Sinclair et al. (2006) instruments measuring motivations to teach

3. Conducting similar research in different geographic areas: Since this study was completed in one state in the Northeast, the results of this study may not necessarily generalize to other states, regions or countries. Thus, this study

should be replicated in other locations to identify regional differences and influences that might be location or culture-specific. Given the strong influence of social learning, it is important to consider such influences in diagnosing possible factors that influence the teacher staffing challenge.

Conclusion

The goal of this study was to understand teacher candidates' career preference to teach in an urban district or not, and what factors influence these preferences. The levels of significance of the predictors of teacher candidates' career preference to teach in urban districts, and the magnitude of their effects, indicate that the findings of this study can be generalized to larger populations.

What this study has uncovered is that perceptions of working conditions not only result in turnover, but that perceptions of working conditions prevent certain candidates from even considering urban schools. Only teacher candidates with preferences for high needs schools are likely to prefer teaching in urban districts. Teacher candidates who prefer convenient working conditions or adequate resources are not likely to prefer teaching in urban districts. Moreover, teacher candidates who prefer school demographics that are similar to themselves racially and socioeconomically are not likely to prefer urban districts either. These candidates are also likely to be influenced by the perceptions of family and friends. For example, teacher candidates' perception of safety in Newark was partially informed by their family and friends, and that perception deterred many teacher candidates from applying to Newark.

Ambiguous tension between hiring practices as formally used in urban districts

and the informal mechanisms that are often used as a result unnecessarily complicates the recruitment and hiring challenge in urban districts, and it was demonstrated in this study that these variables are important predictors of teacher candidates' career plans of where they most prefer to teach. Specifically, teacher candidates who utilize numerous job search methods are less likely to prefer urban districts, due in part to confusing and sometimes contradictory application processes. Furthermore, formal job search methods are negatively associated with preferring to teach in urban districts. The findings in the study on NPS's experience with the recruitment and hiring of teacher candidates suggests that informal recruitment methods are more often used in urban districts even though formal mechanisms of recruitment and hiring are advertised.

The evidence in this study also strongly suggests that experience and exposure to urban districts and urban students will influence teacher candidates' preferences for urban districts. Thus, the odds of preferring an urban district are greater among those who have experience with low income children or urban field placements, or have attended teacher preparation programs located in urban districts. Similarly, the odds of a preference for an urban placement are greater among teacher candidates who grew up or have attended high schools in urban areas. Teacher candidates in their late twenties, i.e. referred to as first career late starters in this study, are significantly more likely to prefer teaching in urban districts.

Unfortunately, even controlling for demographics, working condition perceptions, experiences, and teacher certification route, teacher candidates who reveal an intention to teach in a setting for a period of five years or less are more likely to prefer urban settings. This is especially troubling for the STEM teacher candidates who prefer urban district

and yet are also planning to leave, as they are commodity that is in tight supply and high demand. It is important to note that all of the aforementioned preferences are occurring in a market that is highly advantageous to urban districts in New Jersey, as the job market is tight, and New Jersey urban districts have competitively high salaries as a result of the *Abbott v. Burke* cases that legislated for the poorest urban districts in New Jersey to have parity funding equal to the wealthiest school districts in New Jersey.

Finally, this study sought to contribute to the understanding of the urban teacher staffing challenge. The study's findings illustrate the recruitment and retention nexus as a two-pronged problem. The implications for the suggested explanatory predictors have generated policy recommendations for practitioners and policy makers that can help address the recruitment challenges facing urban districts. As these challenges are addressed, there is the additional hope that such solutions will also help address the overarching student achievement gap in urban schools today.

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APPENDIX A. INTRODUCTORY LETTER



Examining Teacher Candidates' Pathway into Teaching

Personnel

The study will be conducted by Deena Khalil, a doctoral student in the Urban Systems Ph.D. Program, a joint program between Rutgers University, New Jersey Institute of Technology, and University of Medicine and Dentistry. This study will provide the majority of her dissertation data.

Goal

The proposed study seeks to examine the attributes of teachers who make particular decisions about their career paths, specifically with regards to where they teach. In particular, it will document prospective teachers' experiences and perspectives concerning their pre-service preparation and their future teaching plans. It is part of a larger collaborative study that seeks to gain a better understanding of how Newark Public Schools (NPS) can more effectively meet the teacher supply and workforce challenges that it faces, on the assumption that having a healthy teacher workforce is essential for improving overall school quality, especially student achievement. Ultimately, the study proposes to develop a framework to describe how urban districts may effectively recruit and retain high quality teachers, primarily by identifying the policies and practices that can be adopted by school leaders and policymakers in the city to make improvements.

Sponsorship.

This research study is sponsored by the Newark School Research Collaborative, Center for Urban and Public Service, based at Rutgers University and funded by the Ford Foundation.

Methodology.

In the initial phase of this study, the researcher will survey teacher candidates in teacher producing institutions, including students in Teacher Education Programs, Teach for America, New Jersey Alternate Route, and the New Teacher Project. The survey will examine teacher candidates' personal decisions to become teachers, their experiences or perceptions about the district they wish to teach in, and their overall experience in the teacher hiring process by demographics. All participants in the study will be assured that all information will be kept confidential.

This study will involve both contextual analysis to understand each institution's approach to preparing new teachers, as well as cross-case analysis to understand patterns and themes across the institutions.

Timeline.

It is anticipated that the collection of data for the study will be completed by August 2010, to coincide with the end of the teacher hiring season. The analysis of the data and preparation of the report will take place during the Fall of 2011.

APPENDIX B. SAMPLE EMAIL



Deena Khalil <khalil.deena@gmail.com>

**XXXX XXX's Participation in the Teacher Candidate
Pathway Study**

Wed, Apr 7, 2010 at 2:38 PM

To: XXX@XXX.edu

Dear Dr. XXX,

Thank you for your interest in this study. I am trying to understand what it will take to ensure that urban school districts are able to attract and retain hard-to-staff teachers. The study is funded by the Ford Foundation, and is part of a larger study co-directed by Professor Edward Liu and Alan Sadovnik here at Rutgers University. It grew out of a National Science Foundation MetroMath study directed by Professor Joseph Rosenstein. A one-page description of my research study is attached.

Ideally, I would like to conduct the survey during the student teaching seminar (it will take approximately 30 minutes for teachers to fill it out). Please note all the data collected is confidential.

Should you agree to participate, please email a few dates and times that are good for a site visit, or the contact information of the person I would need to coordinate the logistics with (date, time, number of students, etc.).

I look forward to meeting you, if you have any further questions or concerns, please do not hesitate to contact me via email or call my number at [201-xxx-xxx](tel:201-xxx-xxx).

Regards,

Deena

Deena Khalil

Rutgers, The State University of New Jersey

APPENDIX C. SAMPLE EMAIL



Deena Khalil <khalil.deena@gmail.com>

Interview Request

Tue, May 11, 2010 at 11:16 PM

To: XXX@XXX.k12.nj.us

Dear Mr. XXX,

I am writing to ask for your participation in a study entitled "An Analysis of the Newark Teacher Work Force." We are trying to understand what it will take to ensure that school districts are able to attract and retain quality teachers, especially in shortage areas as designated by NJDOE. The study is funded by the Ford Foundation and directed by Professor Alan Sadovnik, Professor of Education, Sociology and Public Affairs, here at Rutgers University. A one-page description of the research study is attached.

Newark Public Schools has agreed to participate in this project, and we believe that you will provide a unique perspective on issues related to recruiting, hiring, and retaining teachers. The telephone interview would be scheduled for a mutually convenient time and last approximately 35 minutes. We hope that you will agree to participate in this interview. If so, please email a few dates and times that are good for you, and also sign and return the attached Consent Form (Fax to [973 xxx-xxx](tel:973-xxx-xxx)).

Thank you in advance for your cooperation.

If you have any questions about this, please do not hesitate to reply to this email or to contact Alan Sadovnik ([973-xxx-xxx](tel:973-xxx-xxx))

Sincerely,

Deena

Rutgers, The State University of New Jersey

APPENDIX D. SURVEY OF PROSPECTIVE TEACHERS

Thank you for taking a few moments to complete this survey. This survey is being conducted in several teacher education programs across New Jersey by a team of researchers from the Newark School Research Collaborative, Center for Urban and Public Service, Rutgers University. The survey solicits prospective teachers' experiences and perspectives concerning their pre-service preparation and their future teaching plans. The purpose of this survey is to gain a better understanding of the attributes of teachers who make particular decisions about their career paths, specifically with regards to where they teach. It is part of a study that seeks to gain a better understanding of how Newark Public Schools and other urban districts can more effectively recruit and retain qualified teachers. Your participation is vitally important, and the results will help inform local and state policy makers, particularly with regards to the state's poorest urban districts.

PROTECTING YOUR PRIVACY

Filling out this questionnaire will take about 35 minutes and is completely voluntary. If there are any questions you wish to leave unanswered then you may opt to skip them. All the information you provide will be held confidential by the NSRC research team, and will be used only for the purposes of this study. All survey information collected will be presented as summative figures only, with no individually-identifying information. At no time will this information be used to evaluate any individual. Thus, there are no risks involved in participating in this study.

Research at Rutgers University that involves human participants is overseen by the Institutional Review Board. Questions or problems regarding your rights as a participant should be addressed to the Office of Research and Sponsored Programs, (732) 932-0150, x 2104.

Completing the survey indicates your consent to participate.

A. FUTURE PLANS

1. What are your plans for the 2010-11 school year? MARK ALL THAT APPLY

- | | |
|---|--|
| <input type="checkbox"/> Teach in a public school | <input type="checkbox"/> Attend graduate school full time, in the following field: |
| <input type="checkbox"/> Teach in a charter school | _____ |
| <input type="checkbox"/> Teach in a private school | _____ |
| <input type="checkbox"/> Work as a substitute teacher or teaching assistant | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Continue as a student | _____ |
| <input type="checkbox"/> Work in a non-teaching job | |
| _____ | |
| _____ | |

2. Will you apply (or have you applied) for teaching positions to start teaching in this coming 2010-11 school year?

- ☐ Yes
- ☐ No → If no, why do you plan NOT to apply for a teaching position for the 2010-11 school year?
- ☐ I have decided not to enter teaching
- ☐ I have decided to delay entering teaching because _____
- ☐ Other _____

3. What level do you plan to teach? MARK ALL THAT APPLY

- | | |
|--|--|
| <input type="checkbox"/> Elementary school | <input type="checkbox"/> Middle school |
| | <input type="checkbox"/> High school |

4. a) How long do you plan on teaching?

- | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> Not at all | <input type="checkbox"/> 3-5 years | <input type="checkbox"/> 11 or more |
| <input type="checkbox"/> 1-2 years | <input type="checkbox"/> 6-10 years | |

b) Why do you plan on teaching that long? _____

5. Do you plan to earn additional income from a second job OUTSIDE of teaching during the school year?

- ☐ No
☐ Yes, if yes, please specify _____

6. As you are/were applying to teach, how are/were you learning about district openings?
MARK ALL THAT APPLY

- | | |
|---|---|
| <input type="checkbox"/> Job fair (please specify below) | <input type="checkbox"/> Student teaching experience |
| <input type="checkbox"/> Newspaper ad | <input type="checkbox"/> Recommended to apply by teacher or principal |
| <input type="checkbox"/> District website | <input type="checkbox"/> Website other than district website (please specify below) |
| <input type="checkbox"/> Direct inquiry to the district | <input type="checkbox"/> If you selected Job Fair, Website, or Other, please specify here _____ |
| <input type="checkbox"/> Friend/family referral | |
| <input type="checkbox"/> College/university career office | |
| <input type="checkbox"/> College/university professor | |
| <input type="checkbox"/> Direct inquiry to individual school(s) | |

7. In considering where you would prefer to teach, how do you view each of the following school characteristics? **CIRCLE ONE IN EACH ROW.**

	Would prefer NOT to have this	Neutral	Would somewhat prefer this	Would prefer this	Would strongly prefer this
a. Close proximity to home	1	2	3	4	5
b. Salary/benefits	1	2	3	4	5
c. Good facility conditions	1	2	3	4	5
d. Small school size	1	2	3	4	5
e. Good reputation for teaching practices	1	2	3	4	5
f. Low achieving students	1	2	3	4	5

g. High achieving students	1	2	3	4	5
h. Racial/ethnic diversity of staff	1	2	3	4	5
i. Collegial school culture	1	2	3	4	5
j. Supportive school leadership	1	2	3	4	5
k. School Safety	1	2	3	4	5
l. Many students of poverty	1	2	3	4	5
m. Many English language learners	1	2	3	4	5
n. Student from the same racial/ethnic background as me	1	2	3	4	5
o. Choice of grade level	1	2	3	4	5
p. Curriculum that I like to teach	1	2	3	4	5
q. School in which I have had field experiences	1	2	3	4	5
r. Friends teaching in the school	1	2	3	4	5
s. Availability of instructional resources and materials	1	2	3	4	5
t. Effective school discipline policy	1	2	3	4	5
u. Support for new teachers	1	2	3	4	5
v. School that is similar to the one I attended as a student	1	2	3	4	5

w. Mission/vision of the school compatible with my own.	1	2	3	4	5
x. Many racial/ethnic minority students	1	2	3	4	5
y. Students from the same socio-economic background as me	1	2	3	4	5
z. Strong parental support	1	2	3	4	5

8. Of the characteristics listed above in question 7 above, what are the three that are most important to you? ENTER THE LETTER

1st characteristic _____ 2nd characteristic _____ 3rd characteristic _____

9. Of the characteristics listed above in question 7 above, what are the three that are least important to you? ENTER THE LETTER

1st characteristic _____ 2nd characteristic _____ 3rd characteristic _____

B. LOCATION

1. Where would you MOST like to teach? Mark ONE only

- | | | |
|---|--|---|
| <input type="checkbox"/> Large urban district | <input type="checkbox"/> High-income suburban district | <input type="checkbox"/> suburban district |
| <input type="checkbox"/> Small urban district | <input type="checkbox"/> Moderate-income | <input type="checkbox"/> Low-income suburban district |
| | | <input type="checkbox"/> Rural district |

2. Where would you be willing to teach? Mark ALL that apply

- | | | |
|---|---|--|
| <input type="checkbox"/> Large urban district | <input type="checkbox"/> Small urban district | <input type="checkbox"/> High-income suburban district |
|---|---|--|

- | | |
|--|---|
| <input type="checkbox"/> Moderate-income suburban district | <input type="checkbox"/> Low-income suburban district |
| | <input type="checkbox"/> Rural district |

3. Are you planning on applying (or have you already applied) to any urban districts (large or small)?

If yes, please list the urban districts

—

If no, please list your primary reasons:

—

—

4. Prior to enrolling in your teacher education program, how often did you work with low-income children in an urban setting? MARK ONLY ONE

- | | | |
|--|--|---|
| <input type="checkbox"/> Not at all | <input type="checkbox"/> 1 to 3 months | <input type="checkbox"/> 9 or more months |
| <input type="checkbox"/> Less than 1 month | <input type="checkbox"/> 4 to 8 months | |

**5. Outside of the school system, have you spent time in an urban area.....
MARK ALL THAT APPLY**

- | | | |
|--|---|--|
| <input type="checkbox"/> Working | <input type="checkbox"/> Visiting friends | <input type="checkbox"/> Using professional services (doctors, lawyers, etc) |
| <input type="checkbox"/> Shopping or Dining | <input type="checkbox"/> Job Fairs | <input type="checkbox"/> Other_____ |
| <input type="checkbox"/> Attending galleries, museums, games | <input type="checkbox"/> Hospitals | |
| | <input type="checkbox"/> Universities | |
| | <input type="checkbox"/> YMCA | |
| | <input type="checkbox"/> Airport | |

List these NJ urban city/cities: _____

Have you worked in any of the following capacities in an urban district?

MARK ALL THAT APPLY

- | | | |
|---|--|---|
| <input type="checkbox"/> Student teacher | <input type="checkbox"/> Summer school teacher | <input type="checkbox"/> After-school Program Teacher |
| <input type="checkbox"/> Substitute teacher | <input type="checkbox"/> Clerical staff | <input type="checkbox"/> Other_____ |
| <input type="checkbox"/> Teacher Assistant | | _____ |

C. NEWARK PUBLIC SCHOOLS

1. Outside of the school system, have you spent time in Newark.....

MARK ALL THAT APPLY

- | | | |
|--|---|--|
| <input type="checkbox"/> Working | <input type="checkbox"/> Visiting friends | <input type="checkbox"/> Using professional services (doctors, lawyers, etc) |
| <input type="checkbox"/> Shopping or Dining | <input type="checkbox"/> Job Fairs | <input type="checkbox"/> Other_____ |
| <input type="checkbox"/> Attending galleries, museums, games | <input type="checkbox"/> Hospitals | _____ |
| | <input type="checkbox"/> Universities | |
| | <input type="checkbox"/> YMCA | |
| | <input type="checkbox"/> Airport | |

2. Have you worked in any of the following capacities in the Newark Public Schools (NPS)?

MARK ALL THAT APPLY

- | | | |
|---|--|-------------------------------------|
| <input type="checkbox"/> Student teacher | <input type="checkbox"/> Summer school teacher | <input type="checkbox"/> Teacher |
| <input type="checkbox"/> Substitute teacher | <input type="checkbox"/> Clerical staff | <input type="checkbox"/> Other_____ |
| <input type="checkbox"/> Teacher Assistant | | _____ |

3. Are you planning on applying to teach in the Newark Public Schools ?

- ☐ Yes, I have already applied to the Newark Public Schools
- ☐ Yes, I am planning to apply but haven't yet (**skip to question 5**)
- ☐ No (**skip to question 7**)

4. When you applied to teach in NPS, how did you hear about openings in the district?

MARK ALL THAT APPLY

- | | |
|--|---|
| <input type="checkbox"/> Job fair (please specify below) | <input type="checkbox"/> Direct inquiry to the district |
| <input type="checkbox"/> Newspaper ad | <input type="checkbox"/> Friend/family referral |
| <input type="checkbox"/> District website | |

- | | |
|--|--|
| <input type="checkbox"/> College/university career office
<input type="checkbox"/> College/university professor
<input type="checkbox"/> Direct inquiry to individual school(s)
<input type="checkbox"/> Student teaching experience
<input type="checkbox"/> Recommended to apply by NPS teacher or principal | <input type="checkbox"/> Website other than district website (please specify below)
<input type="checkbox"/> If you selected Job Fair, Website, or Other, please specify here

_____ |
|--|--|

5. Which of the following factors do you find attractive about teaching in Newark Public Schools?

MARK ALL THAT APPLY.

- | | |
|---|--|
| <input type="checkbox"/> Geographic location
<input type="checkbox"/> Grew up in or around Newark
<input type="checkbox"/> NPS student demographics
<input type="checkbox"/> Attended Newark Public Schools
<input type="checkbox"/> Salary/Benefits/financial incentives (e.g., tuition remission, etc)
<input type="checkbox"/> Professional development offerings | <input type="checkbox"/> Quality of principals and faculty
<input type="checkbox"/> Relationships with current staff members/faculty
<input type="checkbox"/> Referral/Personal recommendation
<input type="checkbox"/> Vacancies in my credential area
<input type="checkbox"/> Other

_____ |
|---|--|

6. If you were to teach in Newark, please rank your school type preference (1 is your first choice, 6 being your last choice)

- ___ Elementary schools
- ___ Middle schools
- ___ Comprehensive high schools
- ___ Magnet schools
- ___ Charter schools
- ___ Parochial schools

b) Do you have specific Newark schools/principals in mind that you would like to teach in/with?

- ☐ No
- ☐ Yes, if yes, please list them:

7. What would be the reasons for you to NOT apply or to hesitate in applying to teach in Newark Public Schools?

- | | |
|---|---|
| <input type="checkbox"/> Working conditions | <input type="checkbox"/> Hiring process |
|---|---|

- | | |
|--|--|
| <input type="checkbox"/> Community culture | <input type="checkbox"/> Lack of parental involvement |
| <input type="checkbox"/> District reputation | <input type="checkbox"/> Inadequate urban teaching preparation |
| <input type="checkbox"/> City reputation | <input type="checkbox"/> Challenging students |
| <input type="checkbox"/> Location | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Safety concerns | |
| <input type="checkbox"/> Student discipline issues | |

8. What would help make Newark Public Schools more attractive to you?

9. Where else did/will you apply?

- | | | |
|---|---|--|
| <input type="checkbox"/> Charter school in Newark | <input type="checkbox"/> East Orange P.S. | <input type="checkbox"/> New York City P.S. |
| <input type="checkbox"/> Charter school outside of Newark | <input type="checkbox"/> East Newark P.S. | <input type="checkbox"/> Orange P.S. |
| <input type="checkbox"/> Private/Parochial school in Newark | <input type="checkbox"/> Elizabeth P.S. | <input type="checkbox"/> Passaic City P.S. |
| <input type="checkbox"/> Private / Parochial school outside of Newark | <input type="checkbox"/> Harrison P.S. | <input type="checkbox"/> Patterson P.S. |
| <input type="checkbox"/> Belleville Public Sch. | <input type="checkbox"/> Hoboken P.S. | <input type="checkbox"/> South Orange & Maplewood P.S. |
| <input type="checkbox"/> Bloomfield P.S. | <input type="checkbox"/> Irvington P.S. | <input type="checkbox"/> Trenton P.S. |
| | <input type="checkbox"/> Jersey City P.S. | <input type="checkbox"/> Union City P.S. |
| | <input type="checkbox"/> Kearny P.S. | <input type="checkbox"/> West New York P.S. |
| | <input type="checkbox"/> Livingston P.S. | <input type="checkbox"/> West Orange P.S. |
| | <input type="checkbox"/> Millburn Twp. P.S. | <input type="checkbox"/> Other _____ |
| | <input type="checkbox"/> Montclair P.S. | |

10. Do you have any other comments you would like to share about your future career plans?

11. Given the current budget difficulties New Jersey school districts are facing, to what extent do you agree with each of the following statements about teaching? MARK ONE IN EACH ROW

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
As a result of the current state budget context, I am more open to teaching in wider range of schools and district settings	1	2	3	4	5
I expect to be less picky in evaluating job offers than if the state budget situation were better.	1	2	3	4	5
Despite the state budget situation, I still am not interested in teaching in an urban district	1	2	3	4	5
Because of the state budget situation, I am more interested in teaching in urban districts.	1	2	3	4	5

D. BACKGROUND INFORMATION

1. How have you attended your teacher preparation program?

☐ Part Time

☐ Mix of

☐ Full Time

full-time

and part-
time

2. What was the highest level math course you took in high school?

MARK ALL THAT APPLY

- ☐ Vocational
☐ Algebra
 ☐ Pre-calculus
☐ Calculus
 ☐ Geometry
☐ Other _____

3. **How many college level courses in English (including literature) have you completed?**

MARK ONLY ONE

- ☐ None
☐ 1 or 2 courses
☐ 3 or 4
☐ 5 or 6
☐ 7 or 8
☐ More than 8

4. **Are any of your credits towards this teacher preparation program from a 2-year college or community college? MARK ONLY ONE**

- ☐ Yes
☐ No

5. **Are any of your credits towards your undergraduate degree from a 2-year college or community college?**

- ☐ Yes
☐ No

6. **What was your undergraduate GPA on a 4.0 scale?**

- ☐ 2.0-2.49
☐ 2.5-2.99
☐ 3.0-3.49
☐ 3.5-4.0

7. **For how long have you done each of the following? MARK ONE IN EACH ROW**
Do not include activities you have done as part of your teacher education program, such as field experience or student teaching

	No t at all	Less than 1 year	1-2 years	3-5 years	6 or more years
Taught your own class in a PUBLIC school full-time					
Taught your own class in a PRIVATE school full-time					
Taught your own class in a preschool or childcare					

facility full-time					
Substitute taught or taught part-time in either a public or private school					
Worked in another professional position in the field of education full-time					
Had the primary care-giving responsibilities for children under 5 years old or older adults in need of care?					
Worked in a position OUTSIDE the field of education full-time If so, in what field did you work? _____					

**8. Which of the following certification areas are you currently pursuing?
MARK ALL THAT APPLY**

- | | |
|---|---|
| <input type="checkbox"/> Bilingual Bicultural Education | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Biology | <input type="checkbox"/> Middle School Mathematics |
| <input type="checkbox"/> Chemistry | <input type="checkbox"/> Middle School Science |
| <input type="checkbox"/> Early Childhood Education | <input type="checkbox"/> Physics |
| <input type="checkbox"/> Earth Science | <input type="checkbox"/> Social Studies |
| <input type="checkbox"/> Elementary Education | <input type="checkbox"/> Special Education (All grades) |
| <input type="checkbox"/> English | <input type="checkbox"/> World Languages |
| <input type="checkbox"/> English as a Second Language (ESL) | <input type="checkbox"/> Other _____ |

9. What is/was your undergraduate/graduate major and minor?

Major

Minor

E. PERSONAL INFORMATION

1. What is your gender?

- ☐ Female ☐ Male

2. How many children are you legally responsible for at home? MARK ONLY ONE

- ☐ 0 ☐ 1 ☐ 2 ☐ 3

□ 4

5

$$\square \quad 6$$

3. Did you graduate from high school in...? MARK ONLY ONE

- ☐ A suburban area in the U.S. ☐ Rural area in the U.S.
- ☐ An urban area in the U.S. ☐ Outside of the U.S.

4. Are you and/or your sibling(s) the first generation born in the United States?

- ☐ Yes ☐ No

5. Are you a financial dependent on your parents/spouse? MARK ONLY ONE

- ☐ Yes ☐ No ☐ Partially

6. Is English your native language? Circle One Yes No

7. Mark all other languages other than English that you speak fluently:

- ☐ a South-East Asian Language (Hindi, Vietnamese, Thai...)
- ☐ Spanish
- ☐ a Western European Language aside from Spanish (German, French...)
- ☐ an Eastern European Language (Polish, Russian...)
- ☐ an African language
- ☐ a Middle Eastern Language (Arabic, Farsi,...)
- ☐ Another language (please specify)_____
- ☐ NOT APPLICABLE

8. What is your race/ethnicity? MARK ALL THAT APPLY

- | | |
|---|---|
| <input type="checkbox"/> Black or African American (Non-Hispanic) | <input type="checkbox"/> Japanese, Samoan, Vietnamese, other Asian) |
| <input type="checkbox"/> White or Caucasian (Non-Hispanic) | <input type="checkbox"/> Native Hawaiian or Other Pacific Islander |
| <input type="checkbox"/> Hispanic | <input type="checkbox"/> Afro-Caribbean |
| <input type="checkbox"/> American Indian or Alaska Native (Alaska Indian, Aleut, Inupiat Yupik) | <input type="checkbox"/> Multiracial (please specify)
_____ |
| <input type="checkbox"/> African | <input type="checkbox"/> Other
_____ |
| <input type="checkbox"/> Asian (Asian Indian, Chinese, Filipino, Korean, | <input type="checkbox"/> Prefer not to answer |

9. Please mark the highest level of education attained by your MOTHER, FATHER, OR PRIMARY GUARDIAN.

- | | |
|--|--|
| <input type="checkbox"/> Less than high school | <input type="checkbox"/> Some college |
| <input type="checkbox"/> High school degree | <input type="checkbox"/> College degree (bachelor's) |
| <input type="checkbox"/> GED (High school equivalency diploma) | <input type="checkbox"/> Post-graduate education |

10. Mark your combined family annual income. (Choose the definition of family that best fits your situation: (1) just yourself if you are not financially dependent on your parents and are not married or in similarly committed relationship; (2) you, your parents and any other dependents of your parents if you are financially dependent on your parents; or (3) you and your spouse or domestic partner and any dependents of your spouse or partner.) MARK ONLY ONE

- | | | |
|--|---|---|
| <input type="checkbox"/> \$15,000 or less | <input type="checkbox"/> \$75,001-\$100,000 | <input type="checkbox"/> More than \$200,000 |
| <input type="checkbox"/> \$15,001-\$30,000 | <input type="checkbox"/> \$100,001 - | <input type="checkbox"/> Prefer not to answer |
| <input type="checkbox"/> \$30,001-\$50,000 | <input type="checkbox"/> \$150,000 | |
| <input type="checkbox"/> \$50,001-\$75,000 | <input type="checkbox"/> \$150,001 - | |
| | <input type="checkbox"/> \$200,000 | |

11. What is your year of birth? _____

12. What is your current marital status? MARK ONLY ONE

- | | |
|---|-----------------------------------|
| <input type="checkbox"/> Never married, no domestic partner | <input type="checkbox"/> Engaged |
| <input type="checkbox"/> Married | <input type="checkbox"/> Divorced |
| <input type="checkbox"/> Living with domestic partner | <input type="checkbox"/> Widowed |

13. What location below best describes the location you grew up in?

- | | |
|--|--|
| <input type="checkbox"/> Large urban district | <input type="checkbox"/> Moderate-income suburban district |
| <input type="checkbox"/> Small urban district | <input type="checkbox"/> Low-income suburban district |
| <input type="checkbox"/> High-income suburban district | <input type="checkbox"/> Rural district |

F. TEACHER CAREER PATH: TO BE OR NOT TO BE

1. Has an event/person influenced you to pursue teaching?

- ☐ No
- ☐ Yes, if so, elaborate what/who it is:
(ex. divorce, tutoring/ priest, teacher, coach)_____

2. Which best characterizes the type of setting in which you had your ALT RTE teaching experience:

- ☐ Large urban district
- ☐ Small urban district
- ☐ High-income suburban district
- ☐ Moderate-income suburban district
- ☐ Low-income suburban district
- ☐ Rural district

3. Rate the following statements according to their importance in contributing to your decision TO BECOME a teacher

	Not at all important	Somewhat important	Important	Very Important
Experience/knowledge gained in previous job provided skills to teach	1	2	3	4
Teaching will provide me with an opportunity to impact high needs students	1	2	3	4
I have valuable subject-area knowledge I will be able share w/ students	1	2	3	4
The prospect of tenure will ensure constant employment, limiting the threat of firing/lay-offs/downsizing	1	2	3	4

Based on my past experiences, I'm confident I can succeed in teaching	1	2	3	4
The fringe benefits (health, retirement, etc) are good	1	2	3	4

G. PROGRAM CHARACTERISTICS

Field experiences are any experiences with PreK-12 students in schools as part of your program, prior to becoming a full-time classroom teacher. For Alternative Route candidates, this may include pre-service summer field experiences, or substitute teaching.

1. How much time will you have spent with *complete* responsibility for classroom instruction prior to becoming a full-time classroom teacher? A classroom teacher may have been observing or out of the classroom at the time.

MARK ONLY ONE

- | | | |
|---|---------------------------------------|--|
| <input type="checkbox"/> < 1 school day | <input type="checkbox"/> 6 – 10 days | <input type="checkbox"/> More than 30 days |
| <input type="checkbox"/> 1 – 2 days | <input type="checkbox"/> 11 – 20 days | |
| <input type="checkbox"/> 3 – 5 days | <input type="checkbox"/> 21 – 30 days | |

2. Did you have field experiences prior to full time teaching in schools that VARIED in:

Grade Levels	Yes	No
Subject Matter	Yes	No
Schools, if yes, <i>did the schools differ in terms of:</i>	Yes	No
The race/ethnicity of the student population	Yes	No
The socio-economic status of the students	Yes	No
The number of ELL enrolled	Yes	No

3. How much do you agree with each of the following statements about teaching?

MARK ONE IN EACH ROW

	Strongly	Disagree	Neither	Agree	Strongly	N/A
--	----------	----------	---------	-------	----------	-----

	Disagree		Agree nor Disagree		Agree	
I would gladly teach in a district like the one in which I ALT RTE taught	1	2	3	4	5	
I have applied to teach in the district where I ALT RTE taught	1	2	3	4	5	
I have made some valuable professional contacts through my ALT RTE teaching experience	1	2	3	4	5	
My ALT RTE teaching experience increased my interest in teaching in a suburban or non-urban setting	1	2	3	4	5	
Administrators in the district where I ALTE RTE taught have encouraged me to apply to teach in the district	1	2	3	4	5	
My ALT RTE teaching experience increased my interest in teaching in a urban district or setting	1	2	3	4	5	
My ALT RTE teaching has given	1	2	3	4	5	

me experience that would be useful for future teaching in an urban context						
My ALTE RTE teaching experience has reduced my interest in teaching in an urban district.	1	2	3	4	5	
If offered a job in the district where I ALT RTE taught, I would accept it.	1	2	3	4	5	

4. To the best of your knowledge, how many years of teaching experience did your school mentor teacher(s) have? _____ (N/A)

5. To what extent do you agree or disagree with the following statements about your program?

MARK ONE IN EACH ROW

Program Mission and Coherence	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Teaching for social justice is central to my program's mission	1	2	3	4	5
My program places a lot of emphasis on teaching in urban schools	1	2	3	4	5
Teaching for democracy is central to my program's mission	1	2	3	4	5

The criteria by which I am evaluated as an ALT RTE teacher are consistent with what I am taught in my methods classes	1	2	3	4	5
What I learn in methods courses reflects what I observe in my field	1	2	3	4	5
My instructors impart practical knowledge about the realities of contemporary schools and youth	1	2	3	4	5

6. In your program, how much *opportunity* did you have to do the following?

CIRCLE A NUMBER IF YOU LEARNED IT DURING ALT RTE TEACHING

MARK AN X IF YOU LEARNED IT BEFORE ALT RTE TEACHING

Preparation and Learners	None	Touched on it briefly	Spent time discussing or doing	Explored in some depth	Extensive opportunity
Identify and address learning needs and/or difficulties of students	1	2	3	4	5
Develop strategies for working with parents and families to better understand and support the students	1	2	3	4	5
Develop strategies for handling student misbehaviors	1	2	3	4	5
Preparation and	None	Touched	Spent time	Explored in	Extensive

Learners		on it briefly	discussing or doing	some depth	opportunity
Gain knowledge about the communities of the students you are likely to teach	1	2	3	4	5
Develop curriculum that builds on students' experiences, interests, and abilities	1	2	3	4	5
Develop specific strategies for teaching those with limited English proficiency)	1	2	3	4	5
Develop strategies for setting classroom procedures	1	2	3	4	5
Develop strategies for reflecting on your teaching to make instructional changes	1	2	3	4	5
Learn about the Individualized Education Plan (IEP) process and other formal processes and means of obtaining help for children with special need	1	2	3	4	5

H. PROGRAM SELECTION

1. How important was each of the following when you were considering which teacher education program or alternative route into teaching to pursue? MARK ONE IN EACH ROW

	Not a Consider ation	Not very Importa nt	Somew hat Import ant	Impo rtant	Very Import ant
Low tuition	1	2	3	4	5
Availability of financial aid or stipend	1	2	3	4	5
Ability to sustain a steady income while in the program	1	2	3	4	5
Short length of program	1	2	3	4	5
Flexibility of classes (e.g., evening, weekends)	1	2	3	4	5
	Not a Consider ation	Not very Importa nt	Somew hat Import ant	Impo rtant	Very Import ant
Location of ALT RTE teaching	1	2	3	4	5
Location of program	1	2	3	4	5
Positive program reputation	1	2	3	4	5
Admissions requirements	1	2	3	4	5
Ease of transition from a non- teaching career	1	2	3	4	5

- If you are in a program and focusing on Mathematics Education, continue below
- If you are in a program and focusing on Science Education, skip to last 2 pages
- If you are not in one of the programs listed above, PLEASE STOP! Hand in your completed survey to the survey administrator.

Thank you for your time, effort, and thoughtful responses!

II. MATH EDUCATION

- 1. For each course, please mark if you took it. MARK ONE IN EACH ROW**

	Yes	No
Abstract Algebra		
Algebra for Teachers		
Analytic Geometry		
Applied Math		
Business Math		
Calculus		
Fill in number of calculus courses _____		
Computer Math		
Data Analysis or Statistics		
Data Processing Math		
Differential Eq'n		
	Yes	No

Discrete Math		
History or Foundations of Math		
Finite Math		
Mathematical Modeling		
Number Theory		
Probability		
Stochastic Processes		
Technical or Vocational Math		
Topology		
Trigonometry		
Math in other subject areas (econ., finance, etc.)		

- 2. Mathematics Education Field Experiences: To what extent do you agree or disagree with the following statements about your ALTE RTE experiences and the mentor teacher you had while you were teaching? If you had more than one mentor teacher, answer *on average*.**

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
I had many opportunities to develop my own lessons for math	1	2	3	4	5	
My mentor teacher taught mathematics in ways that were quite different from the methods advocated by my course instructors	1	2	3	4	5	
My mentor teacher had extensive knowledge of the material covered	1	2	3	4	5	
My mentor teacher had extensive knowledge of the pedagogical methods for teaching mathematics	1	2	3	4	5	
During my ALT RTE teaching I had to use the material my mentor teacher or the school gave me	1	2	3	4	5	

This survey represents the initial part of this study. I would like to conduct a follow up interview to gather more information about your job search for a mathematics teaching position and subsequent career path. All the information provided will be kept strictly confidential and used only for the purpose of this study, in accordance with the guidelines of the Institutional Review Boards at Rutgers University. For this purpose, please provide the following contact information.

Name: _____

Phone Number: (_____) Email: _____

Please also provide the name of someone we can contact who would know how to reach you in the event the contact information you list above changes.

Name: _____

Phone Number: (_____) Email: _____

THANK YOU for your time, effort and thoughtful responses!

12. SCIENCE EDUCATION

1. For each course, please mark if you took it. **MARK ONE IN EACH ROW. MARK ONE IN EACH ROW**

	Yes	No
Anatomy		
Astronomy		
Atmospheric Science and Meteorology		
Biochemistry and Biophysics		
Biology		
Biometrics or Biostatistics		
Biotechnology		
Botany		
Cell or Molecular Biology		
Chemistry (General)		
Ecology		
Environmental Science		
Genetics		
	Yes	No
Geology or Earth Science		
Marine Biology or Oceanography		
Microbiology or Bacteriology		
Neuroscience		
Organic Chemistry		
Physical Science		
Physics		
Physiology		
Psychology		
Radiation Biology		
Toxicology		
Virology		

Zoology		

2. **Science Education Field Experiences:** To what extent do you agree or disagree with the following statements about your ALT RTE experiences and the mentor teacher you had while you were teaching? If you had more than one mentor teacher, answer *on average*.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
I had many opportunities to develop my own lessons for science	1	2	3	4	5	
My mentor teacher taught science in ways that were quite different from the methods advocated by my course instructors	1	2	3	4	5	
My mentor teacher had extensive knowledge of the material covered	1	2	3	4	5	

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
My mentor teacher had extensive pedagogical knowledge for teaching mathematics	1	2	3	4	5	
During my ALT RTE	1	2	3	4	5	

**teaching I had to use
the material my mentor
teacher or the school
gave me**

This survey represents the initial part of this study. I would like to conduct a follow up interview to gather more information about your job search for a science teaching position and subsequent career path. All the information provided will be kept strictly confidential and used only for the purpose of this study, in accordance with the guidelines of the Institutional Review Boards at Rutgers University. For this purpose, please provide the following contact information.

Name: _____

Phone Number: (_____) Email: _____

Please also provide the name of someone we can contact who would know how to reach you in the event the contact information you list above changes.

Name: _____

Phone Number: (_____) Email: _____

THANK YOU for your time, effort and thoughtful responses!

APPENDIX E. ADMINISTRATOR INTERVIEW

ID# _____ Interviewer _____ Date _____

Before we begin, I just want to thank you for taking the time out of your busy schedule to participate in this interview. We really appreciate it.

For our records, I'd like to confirm a couple things before we begin.

- The first is that you received and read through the informed consent form that we sent to you, and that you are participating in this study voluntarily.
- The second is that you understand that I would like to record this interview, so that we can capture exactly what you say. At any time you can ask me to stop and turn off the tape. Either way, we will not identify you, or anyone you mention in anything we write or share with others.
- Do I have your permission to tape record this interview? Do you have any questions before we begin?
- Great! Let's begin.

Introduction

1. What is your official title, or position, in the district?
 - How long have you held this position?
 - How long have you worked in the district as a whole?
 - Could you briefly describe your major responsibilities?
 - Probe: could you elaborate on your responsibilities with regards to recruitment and hiring?
2. How many teachers are there in your school?
3. Would you say that finding and hiring good teachers, especially in shortage areas like math, science, and special education, is a challenge that your school faces?

Recruitment

4. When you try to fill an opening, what do you look for in a candidate?
5. From where do you typically get your candidates? Do you have preferences in terms of where they come from?
6. Are there specific teacher producing institutions that you prefer or that you think do a better job than others in producing teachers that are a good fit for NPS in general?

7. When you talk with candidates, what do you tell prospective teachers about why they should come teach in your district? What about why they should come to teach in your school?

Hiring

8. How does the hiring process work in your school?
9. How can you tell if a candidate is a good fit for your school?

Reflections on the hiring process:

10. Would you say that your school is more successful or less successful than other NPS schools in getting applicants and also hiring the candidates you want? Why or why not?
11. In what ways would you say the HR office helps your recruitment and hiring efforts?
12. Are there any policy changes in the district that you feel would greatly enhance your ability to recruit and hire qualified teachers in shortage areas like math and science?
13. What sorts of things do you think the Human Resource Office personnel, or other stakeholders in the district, could do to help the hiring process work more effectively?
14. Overall, would you say that you and your school are able to hire the people that you want, or do you feel that your school sometimes has to settle for less than ideal candidates?

Staffing & Retention Challenge

15. Overall, over the last few years, would you say that you and your school has had a problem with retaining teachers (aside from the current fiscal crisis)?
16. What is your impression about why teachers leave the school or district (other than because of budgetary reasons)?
17. How has the recent budget crisis affected your ability to recruit and retain good teachers?

Effect of Policy on Recruitment and Retention

What impact, if any, have the current educational debates had on the recruitment, hiring, and retention of teachers in your school?

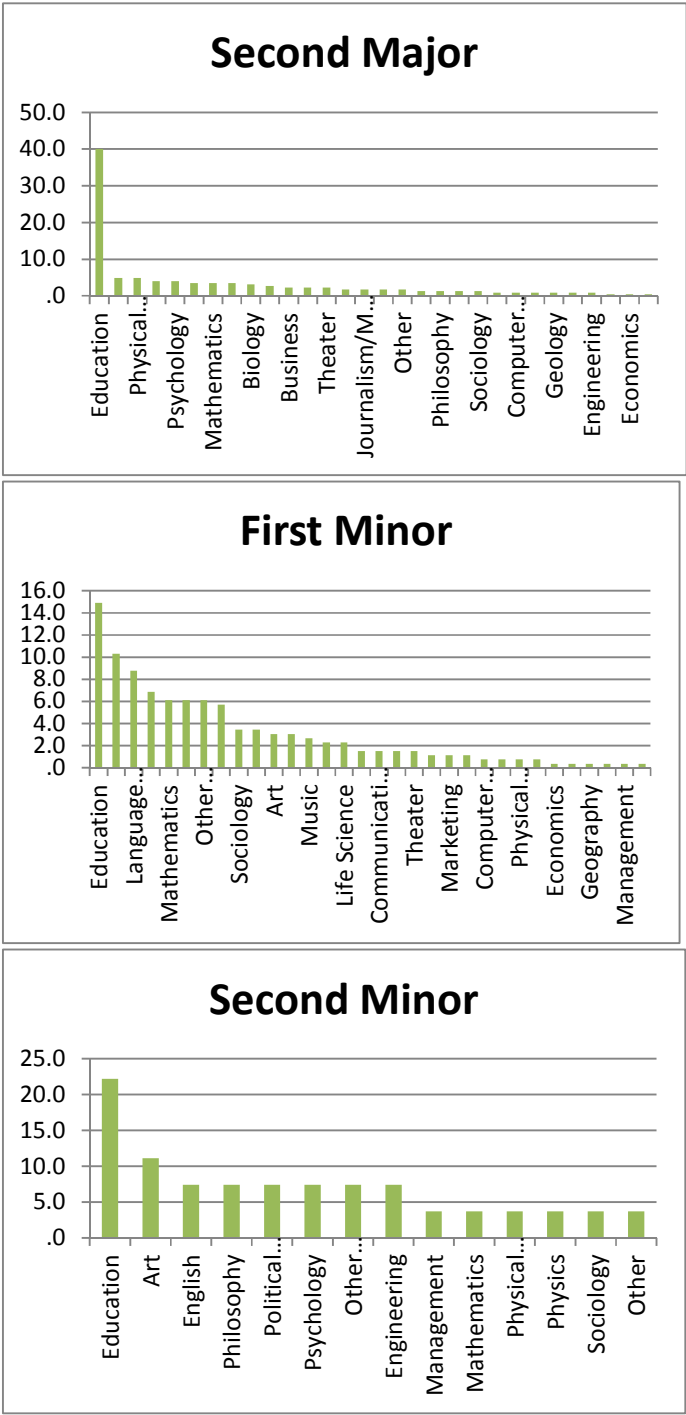
Wrap-Up

18. We've covered a lot of topics. Overall, what aspects of recruiting, hiring, and retaining teachers has your school had the most success with?

19. Finally, is there anything we haven't discussed that you think we ought to know in order to understanding your school's experience with recruiting and retaining teachers?

APPENDIX F. SECOND MAJOR AND MINORS

Teacher Candidates Second Majors And Two Minors



APPENDIX G. MORE ANALYSIS

The Table Below is a STEM model without TFA_TNTP (i.e. they were filtered out). Attrition risk still significant.

Variables in the Equation		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Z_High_Needs_factor	2.092	.486	18.565	1	.000	8.102
	Low_SES_DFG_flag	1.613	.638	6.393	1	.011	5.016
	Field_exp_loc_flag	2.651	.741	12.803	1	.000	14.172
	Attrition_risk_flag	2.242	1.042	4.629	1	.031	9.412
	First_career_late_flag	2.111	.862	5.995	1	.014	8.254
	Second_career_flag	-.153	.873	.031	1	.861	.858
	Childhood_or_HS_loc_flag	2.671	.841	10.077	1	.002	14.457
	Non_Asian_minority_flag	.369	.763	.233	1	.629	1.446
	Educ_above_HS_flag	1.118	.779	2.058	1	.151	3.058
	Constant	-5.235	1.240	17.821	1	.000	.005

a. Variable(s) entered on step 1: First_career_late_flag, Second_career_flag, Childhood_or_HS_loc_flag, Non_Asian_minority_flag, Educ_above_HS_flag.

APPENDIX H. COMPARING STEM MODELS

									I.V.	Sig.	Exp (B)
									Z_Similarity_factor	0.69	0.861
			I.V.	Sig.	Exp (B)	I.V.	Sig.	Exp (B)	Z_Convenience_factor	0.447	0.792
			Family_friend_influence	~0.065	0.333	Formal_job_search_route	~.066	0.263	Z_Adequacy_factor	0.157	0.636
			Low_income_children	0.548	1.341	Informal_job_search_route	0.256	1.867	Z_High_Needs_factor	***.000	9.789
I.V.	Sig.	Exp (B)	Low_SES_DFG	**0.009	3.921	Low_SES_DFG	*.035	3.108	Low_SES_DFG	**0.006	6.155
Field_exp_loc	***0.00	11.772	Field_exp_loc	***0.000	13.203	Field_exp_loc	***.000	12.032	Field_exp_loc	***.000	11.661
Attrition_risk	*0.037	4.845	Attrition_risk_flag	~0.068	4.068	Attrition_risk	*.035	5.169	Attrition_risk	~.052	6.993
TFA_NTP	*0.021	7.055	TFA_NTP	***0.015	7.819	TFA_NTP	**0.008	11.92	TFA_NTP	0.261	3.362
First_career_late	***0.001	8.715	First_career_late	***0.001	10.083	First_career_late	***.001	10.343	First_career_late	**0.004	12.555
Second_career	0.635	1.365	Second_career	0.766	1.216	Second_career	0.604	1.418	Second_career	0.951	1.057
Childhood/HS_loc	***0.003	6.574	Childhood_or_HS_loc	***0.001	8.253	Childhood_or_HS_loc	**0.003	7.367	Childhood_or_HS_loc	***.000	20.225
Non_Asian_minority	~0.098	2.709	Non_Asian_minority	~0.086	2.895	Non_Asian_minority	0.122	2.635	Non_Asian_minority	0.945	0.948
Educ_above_HS	0.122	2.849	Educ_above_HS	0.151	2.643	Educ_above_HS	~.092	3.196	Educ_above_HS	0.101	3.718
Constant	0	0.008	Constant	0	0.008	Constant	0.001	0.014	Constant	0	0.003

VITA--DEENA KHALIL

EDUCATION

- 2006 - 2012** **Rutgers University- Newark, New Jersey Institute of Technology, and The University of Medicine and Dentistry of New Jersey**
Ph.D. in Urban Systems--Urban Educational Policy, Newark, NJ
- 2007 - 2009** **Rutgers Graduate School -Newark: School of Public Affairs and Administration** *Certificate in Urban Education Leadership, Newark, NJ*
- 1999 - 2003** **Rutgers, The State University of New Jersey**
Bachelor of Arts in Mathematics, summa cum laude, Newark, NJ

AWARDS AND FELLOWSHIPS

- 2009-2011** Dissertation Fellow, funded by the Ford Foundation
- 2008-2009** Teaching Fellow, funded by the Graduate School of Newark
- 2006 - 2009** MetroMath Doctoral Fellow, funded by the National Science Foundation

TEACHING EXPERIENCE

- 2011 -** **University of Maryland—College Park, MD**
Mathematics Teacher Education Program University Instructor
- 2008 - 2011** **Rutgers, The State University of New Jersey--Newark, NJ**
Urban Teacher Education Program University Instructor
- 2004-2006** **Janis Dismus Middle School--Englewood, NJ**
Middle School Mathematics Teacher
- 2003-2004** **Bloomfield Public High School--Bloomfield, NJ**
High School Mathematics Teacher

RESEARCH EXPERIENCE

- 2009 –** **Rutgers, The State University of New Jersey—Newark, NJ**
Newark Schools Research Collaborative Research Fellow
- 2006 - 2009** **Rutgers, The State University of New Jersey, New Brunswick, NJ**
MetroMath Center for Mathematics in America's Cities Research Fellow