

UNDERSTANDING THE SPECIAL EDUCATION TEACHER PIPELINE IN HAWAI'I:
HOW CHARACTERISTICS, MOTIVATIONS, AND PROGRAM PREFERENCES INFLUENCED
ENROLLMENT OUTCOMES AMONG TARGETED POPULATIONS

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DEDICATION

This dissertation is dedicated to Dr. Niki Libarios and my two daughters, Addisyn and Audrie.

For Niki, as my college advisor, who convinced me to pursue licensure in special education and ended up changing the entire trajectory of my career. Also for Niki, later as my colleague and friend, who was the first person who helped me believe that I was capable of earning a doctoral degree. Although gone too soon, Niki's impact on me and so many others will last forever.

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ABSTRACT

Although Hawai'i suffers from a chronic teacher shortage similar to the rest of the country, there are variables that make Hawai'i's dilemma unique. Between 2015–2020, there were over 1,000 teaching positions unfilled, with more than a third of positions being specific to special education (HIDOE Employment Reports, 2015–2020). In 2019, the Hawai'i DOE reported 94% of their teachers as highly qualified, however, that percentage dropped to 84% for the field of special education. One of the primary drivers of the teacher shortage is teacher attrition. In Hawai'i, attrition accounts for about 88% of the annual demand and is caused most by teachers who leave the profession prematurely and many choosing to leave the state. Attrition rates are doubled for teachers who were not trained by a local teacher education program. The College of Education at the University of Hawai'i at Mānoa (UHM) is the largest local producer of newly certified teachers in the state each year. The targeted population for this study were 959 individuals who had started an application to a UHM special education teacher preparation program between 2015–2020. This mixed-methods exploratory sequential design study (qual → QUAN) examined applicant characteristics, motivations for entry, and program preferences. A sub-analysis determined if significant differences in motivations or preferences existed among targeted subgroups currently underrepresented in the teacher workforce in Hawai'i (i.e., nontraditional, male, minority, geographically isolated). As a final analysis, all variables were examined to determine if characteristics, motivations, or preferences impacted enrollment outcomes. This study served to better understand who expressed interest in pursuing the special education profession and why, as well as, to better understand what they wanted in a program in order to pursue it.

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Chapter I. Introduction

All students deserve a quality education. As a country, we fail on our promise to provide a free and appropriate public education when we do not give students with disabilities access to qualified special education teachers. Teacher shortages are nothing new, with shortages in special education being perennial since the 1960's. However, this longstanding dilemma has grown in severity over the last decade, placing it at the forefront of federal and state policies. Shortages are wide-spread, impacting education at local, state, and national levels. Although broad shortages exist, the severity of the shortage varies considerably state by state (Sutcher et al., 2019). What is common across the country is that shortages are worse in certain subject areas and across certain demographics, with special education in high-poverty and geographically isolated areas being the most compounded areas of need (Cowan et al., 2016).

To extend the problem, there are concerns in regards to workforce composition and in qualifying students for special education services. The under- or over-representation of certain groups suggests inequitable educational opportunities across the public education sector (Mason-Williams, 2015). In Hawai'i, for example, the largest ethnic groups receiving special education services are Hawaiian and Pacific Islanders, whereas the teacher workforce is predominantly White and Japanese (HIDOE, 2019). Having more teachers who are representative of student cultural and diverse backgrounds provides positive role models and culturally sensitive learning opportunities that end up benefiting all students, with and without disabilities (Goldhaber, 2015; King et al., 2016).

Given the national trend, it is no surprise that Hawai'i is also facing a teacher shortage crisis. During the 2018–2019 school year, 418 of the 1,029 positions filled by either an unlicensed teacher, or left vacant, were specific to special education (HSTA, 2019). Numerous variables contribute to the local shortage, including high attrition rates, low salaries, and declining enrollment across local teacher preparation programs. In Institutes of Higher Education (IHE), enrollment declines are exacerbated by increased competition with abbreviated, less rigorous programs run through alternative agencies. Although fast-track models of teacher preparation are more attractive to students, retention rates for students graduating from these abbreviated models of teacher preparation are substantially lower, thereby perpetuating the instability of the teaching workforce and prolonging shortages over time (Sindelar et al., 2014). In order to build capacity long-term and improve educational outcomes for students with disabilities, there is a need to recruit more committed individuals across the entire teacher preparation pipeline into pursuing comprehensive special education teacher training programs.

In 2014, I became the first full-time recruitment specialist for the University of Hawai'i at Mānoa (UHM). This role was created in direct response to the increasing shortage and declining enrollment across special education teacher preparation programs. As a graduate of the institution's dual elementary and special education program and having had six years of special education teaching experience in Hawai'i public schools, I was asked to take on this new role for the department. The purpose of the recruitment specialist position has been to identify and support more people into entering the profession

through the institution's special education certification programs. Over the last seven years, I have been in contact with over 3,000 prospective students. Being the initial contact with individuals who express interest in our special education programs has provided me with first-hand insight into general motivations and preferences of prospective students. In addition, working closely with a large range of individuals from across all Hawai'i islands, I developed an interest in determining how to meet the needs of different targeted groups with an equity-driven lens.

Being formally trained as an educator, this new recruitment role led me to learn more about marketing and enrollment principles as a way to support my efforts. Over the years, these new perspectives have had a positive impact on my approach and outcomes related to supporting more individuals into pursuing the special education teaching profession. As a result of my teaching and recruitment experiences, this research study is designed to bridge theories and frameworks between education, marketing, and enrollment management as an approach to addressing the longstanding teacher shortage in special education. However, I would like to clarify that my approach to the application of marketing frameworks and principles are specifically used as an approach towards identifying and understanding the needs and wants of its "consumers." This application of marketing is starkly different from arguments related to "marketization of education," aimed at profiting from the field of education through curricular and technological products used for teaching and learning.

Purpose of the Study

The purpose of this study was to identify characteristics, motivations, and program preferences of prospective special education teacher candidates in Hawai'i, as a way to more effectively target and support dedicated and qualified individuals into pursuing the profession. This study surveyed individuals who initiated an application between 2015–2020 to one of four special education teacher preparation programs offered at the largest Hawai'i public institution of higher education. Study participants re subgrouped using four variables targeted for diversifying the teacher workforce: (a) gender, (b) age, (c) geographic locale, and (d) ethnicity. Using each identified subgroup, I examined whether significant differences in motivations or program preferences existed. Then, a final analysis determined if applicant characteristics, motivations, or preferences were associated with enrollment outcomes. Findings are intended to inform programmatic decisions and support more systematic and differentiated recruitment efforts for increasing enrollment outcomes and diversifying the special education teacher workforce in Hawai'i.

Definition and Abbreviation of Terms

For the purpose of this research, the following terms are defined:

ARC	Alternative Route to Certification - teacher certification program that differs from traditional teacher education programs in that they are generally shorter, involve candidates in teaching immediately or shortly after the start of their program, have a greater field component, and cater to a more diverse student population (Wasburn-
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Moses & Rosenberg, 2008)

- HIDOE** **Hawai'i Department of Education** - the state education agency, which oversees 283 public schools and charter schools and over 13,000 teachers
- HTSB** **Hawai'i Teacher Standards Board** - the licensing board for Hawai'i teachers, school counselors, and school librarians
- IHE** **Institution of Higher Education** - all colleges and universities in the United States that are degree-granting and accredited by an agency recognized by the U.S. Secretary of Education (Shulman, 2001)
- SATEP** **State Approved Teacher Education Program** - teacher education program approved by the Hawai'i Teacher Standards Board as eligible for initial teacher certification
- Teacher Candidate** - someone currently enrolled in a SATEP
- Special Education Teacher** - public school teacher whose main teaching assignment is teaching students who are eligible for special education services within the 13 disability categories identified in IDEA and who provides care coordination duties (Bremer, 2012)
- General Education Teacher** - all public school teachers (K-12) other than special education teachers (Bremer, 2012)
- Disproportionality** - the over- or under-representation of individuals when compared to the general population
- Traditional Students** - full-time students, typically between the ages of 18–25, who entered an IHE soon after high school (Hanover, 2018; Kasworm, 2003)
- Nontraditional Students** - students who do not fit the traditional student definition, often being older with more life experience and who often juggle multiple roles involving work, family, and going back to school (Hanover, 2018; Kasworm, 2003)
- Teacher Shortage** - result of having an inadequate quantity of qualified individuals willing to offer their teacher services under prevailing wages and conditions (Sutcher et al., 2019)
- Teacher Attrition** - teachers who choose to leave the profession

Teacher Retention - teachers who choose to remain in the profession following the previous year

Teacher Supply - the number of qualified individuals willing to teach at a given level of overall compensation; including salaries, benefits and other rewards, such as working conditions (Guarino et al., 2006); supply is most associated with recruitment strategies

Teacher Demand - the number of teaching positions offered at a given level of overall compensation; including salaries, benefits and other rewards, such as working conditions (Guarino et al., 2006); demand is most associated with retention strategies

Title I Schools - Schools in which children from low-income families make up at least 40 percent of enrollment (US DOE, 2018)

Background and Significance

During the 2017–2018 school year, 46 states plus the District of Columbia reported having teacher shortages in one or more fields. Of the 19 fields with “considerable” shortages, 10 were specifically in special education (Sutcher et al., 2019). Nationally, reports indicate the teacher shortage as equating to about 110,000 teacher positions being unfilled or filled with unlicensed and unqualified individuals (Garcia & Weiss, 2019). According to the framework of supply and demand, the teacher shortage is a result of a severe imbalance between the numbers of individuals interested in teaching compared to the number of positions needing to be filled each year. On the whole, all 50 states and territories declared having one or more teacher shortages (Cross, 2017). What began in 1990–91 as almost exclusively special education shortages, has expanded over time to now include the majority of content and subject areas. Spanning almost three decades, Hawai‘i has had identified shortages in special education every reported year.

Attrition may be the most critical variable to address, as the number of teachers leaving the workforce equates to about 90% of the positions needing to be filled each year. The national average attrition rate for teachers is 8%; however, the attrition rate for special education teachers is the highest of any subgroup, currently averaging 17%–29% of the workforce annually (Mason-Williams et al., 2020). Attrition rates shed light on inequities existing in education, with attrition rates being 50% higher in Title I schools serving economically disadvantaged students. Additionally, the attrition rate is 80% higher among teachers trained through alternative route to certification (ARC) programs, who are also more likely to be teaching in Title I schools (Carver-Thomas & Darling-Hammond, 2019). Therefore, schools serving more economically disadvantaged students, often those from diverse ethnic populations, are less likely to have highly qualified and experienced teachers throughout their K-12 education (Mason-Williams, 2015; Podolsky et al., 2019).

Although the pervasive shortage is perpetuated by the high numbers of teachers who leave,

teacher preparation enrollment has significantly declined over the last decade making it harder to replace teachers year after year. At the national level, the Department of Education reported having fewer high school graduates express interest in education and, therefore, fewer college students pursuing careers in teaching (Aragon, 2016). As fewer traditional full-time students enter the teacher education pipeline, teacher education programs have experienced a shift in student demographics towards supporting older, nontraditional student populations. Teacher preparation programs, and institutions of higher education as a whole, need to consider how traditional program design and support may no longer match the population being served. Understanding the needs and preferences of this growing subset of students in teacher preparation programs is essential for supporting the teacher shortage, especially since nontraditional students are often seen as “at-risk” in regards to program completion given current program models within higher education (Hanover, 2018).

An important component regarding equity within the teacher shortage discussion is the need to address disproportionality in the teacher workforce. The national student body has continued to become more culturally, racially, and linguistically diverse, whereas, our teacher workforce remains predominantly composed of White females (Ford, 2012; Guarino et al., 2006; Ingersoll et al., 2019; King et al., 2016; Torres et al., 2004). As of 2012, 44% of students and 17.3% of teachers were from minority backgrounds. It is critically important to increase the number of underrepresented groups entering the teacher workforce, as cultural differences have been linked to over-referrals, deficit-thinking, low expectations, and misunderstanding of minority students (Ford, 2012; Ingersoll et al., 2019). In special education, the disproportionate representation of certain ethnic groups receiving special education services is imperative to address in assuring all students receive a quality education (Hosp & Reschly, 2004; Valle-Riestra et al., 2011).

In addition, the need for more male teachers is an additional issue to address, with only 26.5% of the Education workforce being male (US Bureau of Labor Statistics, 2019). In Hawai'i for SY 2020-2021 out of the 1,026 new teachers hired, only 25% of new hires were male ($N = 256$), with 79% of these individuals hired into secondary positions ($N = 201$), indicating an even larger discrepancy by gender at the elementary level (HIDOE Employment Report, 2021).

Over the past three decades, the teacher shortage has only gotten worse, reaching levels of crisis across most areas in education. Most national and local strategies for addressing shortages have prioritized short-term solutions, essentially filling classrooms with warm bodies having little to no training, preparation, or possibly even genuine interest in teaching as a career (Murphy et al., 2003; Rosenberg & Sindelar, 2005; Sutch et al., 2019). Although financial incentives to help pay for program costs attract more individuals into considering the profession, those not intrinsically motivated, especially in special education, may be more likely to leave the field once their service commitment is over, or may leave the profession entirely (Putney, 2009). Therefore, it is essential to better understand the different types of people who are interested in the profession and examine how their motivations and program preferences relate to enrollment outcomes.

A special series published in the 2019 Educational Policy Analysis Archives summarized literature around the teacher shortage in an effort to inform policy (Carver-Thomas & Darling-Hammond, 2019; Jordan et al., 1999; Podolsky et al., 2019; Sutchter et al., 2019). The compilation of research emphasized the need for more targeted solutions based on the needs of specific communities and states, as well as addressing issues around workforce diversity. Recommended solutions included: (a) addressing compensation, including competitive salaries and tuition stipends; (b) increasing enrollment in teacher education programs, with emphasis on structures, quality, and affordability; (c) making hiring and management procedures more efficient and effective; and (d) improving working conditions, including mentoring and induction programs and reduction of high-stakes accountability systems. Of these recommended solutions, three of the four have been governed by departments of education and state legislation. However, Institutions of Higher Education (IHE) can contribute to the solution by focusing on how to provide high-quality, accessible, and comprehensive teacher education programs that attract a larger pool of motivated individuals into pursuing the profession.

In a 2018 study that compared the seven states with the lowest shortages with the seven states having the highest shortages in special education, Hawai'i was identified as one of the states with the highest shortages (Peyton et al., 2018). One finding indicated statistically significant differences between high- and low-shortage states in regards to salaries when adjusted for cost of living. In addition, states with higher quantities of teacher education program graduates had significantly less shortages, verifying the need to look for more targeted ways to increase the number of people graduating from undergraduate, post-baccalaureate certificate, and master degree teacher preparation programs in special education in the state.

Regardless as to whether solutions to the teacher shortages are addressed at the national, state, or local levels, all identified solutions require substantial resources. In 2018, the US Department of Education spent \$95.2 billion dollars, with 17% of budget allocations for education of the disadvantaged, and an additional 14% for special education (USAspending, 2018). Of the \$13.4 billion spent on special education, the state of California received the most funding (\$1.3 billion; 9.9%), whereas Hawai'i was one of eight states receiving the least (\$42.8 million; .0032%). Podolsky et al. (2019) estimated a total of \$8.5 billion are lost each year due to the constant churn of the educator workforce. These estimates suggest that the cost of teacher attrition alone may be equivalent to 9% of the national education budget or 63% of the special education budget. Therefore, the need to address the teacher shortage is critical, as we could then apply these funds towards supporting other important investments in education such as increasing salaries, developing resources, and strategies specifically targeted for improving student outcomes.

Hawai'i's teacher shortage mirrors each of the concerns addressed at the national level. However, there are a few characteristics unique to the state that provide further insight into the broader problem. Hawai'i is the only state without an ethnic majority, nonetheless, disproportionate ethnic representation among students and teachers continue to exist. In addition, Hawai'i is the only state having a single, unified school district where funding is not dependent on community-based property taxes.

However, despite a more equitable school funding model, inequities among schools and turnover rates persist in communities serving higher proportions of economically disadvantaged populations. Finally, being a predominantly rural and remote chain of islands with high costs of living, recruitment and retention efforts are even more difficult, as a majority of individuals who relocate to Hawai'i to teach end up leaving the state within the first few years.

Having a lack of qualified special education teachers in Hawai'i is not only a genuine concern, but can also lead to legal action if students are not receiving services required by federal law. Special education in Hawai'i has already undergone transformation from a landmark class action lawsuit, known as the Felix Consent Decree (Chorpita & Donkervoet, 2005; State of Hawai'i Auditor, 2001). From 1993 to 2005, the HDOE was monitored externally and held accountable for providing appropriate services for individuals with disabilities. The billion dollar lawsuit spurred dramatic reforms for special education in Hawai'i, including prioritizing ways to fill the many vacant special education teaching positions. In response, a Memorandum of Agreement (MOA) was established, to provide tuition stipends to teacher candidates enrolled in approved special education licensure programs in return for a 3-year service payback teaching for the state. Despite two-decades of funding, enrollment outcomes have not been enough to fill workforce capacity needs for special education teachers.

To help counter the loss of continuing financial investments, there is a need to conduct research that supports efforts to best capitalize on the return on investment (RoI) of recruitment investments used for building up a continuous and sustainable supply of new teachers. One way to ensure funds for recruitment are used advantageously is to specifically target individuals who would be more likely to pursue and persist within the special education profession. The FIT-Choice Framework provides a structure for identifying characteristics and motivations specific to choosing teaching as a career (Richardson & Watt, 2006). Although widely used in general education research, this framework has not been adequately adapted to the field of special education. By understanding who is interested in a career in special education and what influences their decision to pursue a teacher preparation program, we can better invest in recruitment and marketing strategies to increase the number of individuals more committed to pursuing the profession. In addition, focusing on increasing the number of individuals from local, underrepresented populations helps address longstanding issues of equity within our public education system. In the end, building a teacher workforce of diverse and highly motivated special education teachers could lead to more equitable learning opportunities and improved educational outcomes for students with disabilities across the state.

Given that labor shortages are best understood using the supply and demand framework, a novel strategy for increasing the number of individuals into the special education teacher pipeline would be to adopt marketing theory and principles from the field of business. There is emerging literature on how the service marketing mix applies to higher education and could be used to increase enrollment and attract higher quality pools of applicants (Enache, 2011; Gajic, 2012). The first step in any marketing strategy involves identifying consumer markets and understanding their wants and needs (Krachenberg, 1972).

The service marketing mix, also referred to as the 7P model or the 7 P's of Booms and Bitner (1981), extended the original marketing mix model by Jerome McCarthy from four to seven elements and is a better fit for marketing education programs. The seven elements are product, price, place, promotion, people, physical evidence, and processes.

A strength of the 7Ps service marketing mix is that it systematizes capacity building by balancing the quality versus quantity dilemma in teacher preparation; this framework informs IHE which elements are most important to prospective students, thereby providing leverage for attracting more motivated individuals into pursuing the program. Understanding each element and how they relate to one another provides a framework for program faculty to help increase program attractiveness, while balancing quality and comprehensiveness of program design.

Understanding who chooses to pursue becoming a special education teacher and why, allows states, districts, and IHE to better invest in targeted recruitment efforts that are more likely to bring motivated individuals into the special education teacher profession long term. Next, understanding how program element preferences support or hinder different groups from pursuing a teacher licensure program can be analyzed to inform teacher preparation programmatic decisions. By increasing the number of motivated prospects to express interest and commit to pursuing special education teacher preparation programs, the state could begin to build the capacity of highly-qualified individuals within the teacher workforce. Having access to a well-prepared and experienced teacher positively impacts student learning and achievement more than any other variable, such as poverty, language background, and minority status (Darling-Hammond, 2000; Podolsky et al., 2019).

Finally, focusing on increasing underrepresented populations into entering the special education pipeline can foster a more diverse education workforce and potentially address issues of equity and disproportionate representations among students identified with disabilities. Having more teachers who mirror the students they serve may contribute to higher academic achievement for all students, especially for students from underrepresented backgrounds. Billingsley, Bettini, and Williams (2019) posit that teachers of color may have different motivations for entering, therefore, this research focuses on not only identifying who is interested in teaching special education, but purposefully targeting how to increase more individuals not adequately represented in the Hawai'i special education teacher workforce.

Research Questions and Theoretical Frameworks

There is a need to understand who expresses interest in a special education teacher career and what influences their likelihood to enroll or not enroll in a special education teacher preparation program. Understanding the variable of prospective students' age is grounded in andragogy, including understanding the differences between traditional and nontraditional student populations. In addition, underrepresented characteristics, such as gender, ethnicity, and geographic locale will be studied as a secondary component of this investigation.

Motivations for wanting to teach special education builds upon the Factors Influencing Teaching Choice (FIT-Choice) Framework, founded on expectancy-value theory (Richardson & Watt, 2006).

Although a scale had been developed to study motivations for teaching, this scale does not align with motivations commonly found in the field of special education. Therefore, adapting the scale based on findings from this study's literature review was conducted using an exploratory qualitative analysis, which was developed as part of this study's survey instrument prior to dissemination.

The 7 P's Service Marketing Mix provides the framework for identifying and evaluating teacher preparation program element preferences among targeted populations. The adaptation of this framework to special education teacher education programs had been piloted and published by the researcher and colleagues prior to this study (Chamberlin-Kim et al., 2019).

Lastly, enrollment management theory was used as the final analysis to evaluate whether characteristics, motivations, or preferences significantly impacted enrollment outcomes into special education teacher preparation programs (Dennis, 1998; Hossler et al., 2015). Analysis was conducted to examine enrolled applicants compared to non-enrolled applicants.

Based on the identified frameworks, the following research questions drive this research study:

1. What are the characteristics (i.e., gender, age, locale, ethnicity) of individuals who started an application to a special education teacher preparation program?
2. What is the motivational profile, as defined by the FIT-Choice Framework, of individuals who started an application to a special education teacher preparation program?
3. Which special education teacher preparation program elements, as defined by the 7 Ps Service Marketing Mix, did prospective students prefer?
4. Is there a relationship between characteristics, motivations, or preferences on enrollment outcomes?

Chapter II. Literature Review

Understanding the history and variables that have contributed to the longstanding teacher shortage in special education can provide a more well-informed approach to recruitment. This literature review will cover the following topics: (a) teacher shortage, (b) inequities and diversity, (c) proposed solutions, and (d) motivations for teaching. In addition, this review provides context on each of these topics specific to Hawai'i. Finally, this review discusses four theoretical frameworks guiding the study's research design: (a) adult learning theory and nontraditional students, (b) Factors Influencing Teaching Choice (FIT-Choice) Framework, (c) the 7 P's Service Marketing Mix, and (d) Strategic Enrollment Management.

Together, the purpose of this literature review is to support what is currently known about teacher shortages in special education, the importance in addressing inequities, and what motivations are currently associated with individuals who express interest in the special education teaching career. The addition of marketing and enrollment management strategies provide a framework for addressing how to effectively recruit and then enroll targeted groups into special education teacher preparation programs.

Teacher Shortage

Initial talks of teacher shortages began almost a century ago, beginning in the 1930's due to inadequate funding, low salaries, and poor working conditions (Darling-Hammond & Podolsky, 2019). As shortages worsened and expanded across more teaching fields, addressing the teacher shortage moved to the forefront of proposed educational reform. In 2019, the Educational Policy Analysis Archives (EPAA) published a series of articles to summarize what was known about the teacher shortage crisis in an effort to strengthen collective understanding and inform national policy (Carver-Thomas & Darling-Hammond, 2019; Darling-Hammond & Podolsky, 2019; Garcia & Weiss, 2020; Ingersoll et al., 2019; Podolsky et al., 2019; Sutchter et al., 2019). Darling-Hammond and Podolsky (2019) began the teacher shortage discussion by emphasizing the importance of viewing the shortage as much more than just the absence of warm bodies to fill each classroom. Rather, the need is for fully qualified teachers who are willing to serve in the fields where shortages are disproportionately worse.

Historical Context & Policy

For the field of special education, shortages have existed as long as the field itself (Brownell et al., 2010; Geiger et al, 2014). The push for equal educational opportunities for "educationally deprived children" began in 1965 with the Elementary and Secondary Education Act (ESEA) which helped to establish Title I funds for supplemental educational services. Although a promising first step, a large majority of students with disabilities continued to be excluded from public schools. Subsequent national policies specific to special education, such as the Education of all Handicapped Children Act (1975) and the Individuals with Disabilities Education Act (2004), focused on advocacy of access and equal opportunities for all students with disabilities. These policies successfully increased the number of students with disabilities within the public school system. However, initiatives to support recruitment and retention of enough personnel to properly teach the growing population of students with disabilities in

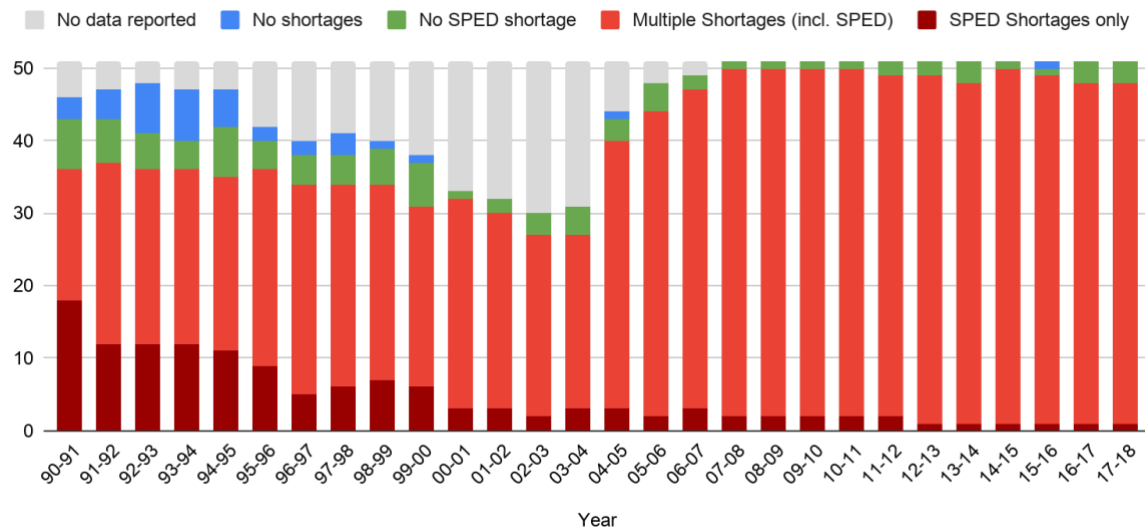
public schools were never included in policy decisions (Mason-Williams et al., 2020; Sundeen & Wienke, 2009).

Additional policies not specific to special education, such as No Child Left Behind (NCLB; 2001) and the GREAT Act (2011), may have inadvertently provoked the teacher shortage to its current state of crisis. In 2001, NCLB placed new regulations and requirements on teacher certification and expectations of “high-quality,” which led to more challenges related to recruitment and retention of the teacher workforce (Brownell et al., 2018). As an example, special education teachers were required to pursue licensure in each of their general education content areas on top of their specialized license in special education. These increased requirements placed heavy strain on many of the special education teachers already in the workforce, especially for special education teachers serving students with disabilities in multiple core subject areas or across multiple grade levels in smaller, rural schools (Brownell et al., 2018; Geiger et al., 2014; Johnson et al., 2009; McLeskey & Billingsley, 2008). In addition, increased pressure related to high-stakes testing, accountability, and teacher evaluation from NCLB mandates complicated special education teachers’ roles and responsibilities, further perpetuating already high attrition rates (Thornton et al., 2007). Special education teachers were tasked with not only meeting the diverse needs of their students, but also faced high-stakes accountability measures based on the academic standards and achievement expectations as their general education counterparts.

The U.S. Department of Education, Office of Post Secondary Education has provided data reports on teacher shortages by state for almost three decades (see Figure 1; Cross, 2017). In its first reported year, it can be seen that half of reported teacher shortages were exclusively in special education. Prior to NCLB, an average of thirty-five states had shortages in special education, with an average of twenty-five states also reporting shortages in other fields. By 2007, all 50 states and the District of Columbia reported having shortages in one or more fields each year, with the exception of Pennsylvania in 2015-2016. When analyzing the data by each state, a total of twenty states, including Hawai’i, have cited shortages in special education for every reported year between 1990-2018.

Figure 1

National Teacher Shortage Areas by Year (50 States + District of Columbia)



Note. Data taken from “Teacher Shortage Areas Nationwide Listing 1990-1991 through 2017-2018,” by F. Cross, 2017, U.S. Department of Education Office of Postsecondary Education.

Another federal policy that has had a significant impact on the teacher shortage crisis was the GREAT Act, which passed in 2011. This legislation opened up teacher preparation to organizations outside of IHE, led by a major private funder of K–12 public charter schools called the NewSchools Venture Fund (Zeichner & Peña-Sandoval, 2015). This legislation derived from public scrutiny of IHE as the “gatekeeper” of the teacher workforce and was intended to promote competition and innovation within the teacher preparation landscape. The GREAT Act allowed the private sector to create new models of teacher preparation without enforcing the same level of accountability and regulations that IHE had to continue adhering to (Rosenberg & Sindelar, 2005; Wasburn-Moses & Rosenberg, 2008). As a result, IHE were expected to compete with abbreviated program options, commonly referred to as alternative route to certification (ARC) programs, while being held to more rigorous and complex standards of teacher preparation measures.

As a result of the shifting landscape and increased competition in teacher preparation, IHE special education faculty have been facing the dilemma of balancing the interaction between teacher quality and pressures related to recruitment and increasing enrollment (Guarino et al., 2006). Criticisms related to traditional teacher preparation and monopolization of the educator preparation pipeline included stringent program designs, disconnectedness with the realities of today’s classrooms, and an overemphasis on theoretical knowledge over application (Burstein et al., 1999; Sindelar et al., 2014; Zeichner & Peña-Sandoval, 2015). However, what many critics do not understand is the history of special education teacher preparation and the increasing complexities that have made preparing quality special

education teachers more difficult.

Most education policies and mandates at the federal level have never acknowledged the distinguishing differences between special education and general education and do not acknowledge how its impact has continually expanded and broadened the scope of special education over time. In the beginning, otherwise known as the categorical area, special education teacher preparation was completely separate from general education, as special education teachers were being trained for separate schools and on strategies focusing on specific disability types (Blanton et al., 2017; Shepherd et al., 2016). When the Education for All Handicapped Children Act was passed in 1975, the number of students with disabilities entering public schools heavily increased, simultaneously increasing the demand for more special education teachers. Consequently, teacher shortages in special education were becoming more evident, therefore, teacher preparation programs had to accommodate by moving towards a noncategorical approach. This provided more flexibility and training so that new special education teachers could teach across a wider range of students and placements (Brownell et al., 2010).

More recent changes related to the push for inclusion and Response to Intervention, complicated even further how special education teachers were utilized and what types of knowledge and skills they needed (Blanton et al., 2017; Dewey et al., 2017). Special education teachers were expected to support more students within the general education classroom, often being asked to support multiple students across multiple classrooms, stretching them even further. Whereas most teacher preparation focuses on instructional pedagogy and subject-specific content knowledge, special education teacher preparation programs often have the added responsibility to prepare teachers to be knowledgeable in special education subject matter, general education subject matter, all while possibly being hired into different placement types and supporting a wider range of individual student needs (Blanton et al., 2017; Sindelar et al., 2014). In the end, “special education teacher preparation has evolved from specialized, clinical preparation in residential facilities into an enterprise that now lacks clear conceptual boundaries” (Brownell et. al, 2010, p. 358). The scope and complexity related to the roles and responsibilities of current special education teachers makes the ability to not only train them challenging, but also in being able to attract them into the profession.

Alternative Route to Certification Programs

Given how policy and the teacher shortage have reshaped special education, teacher preparation in this field has had to undergo a significant transformation over the last decade. The lack of confidence in IHE to prepare enough teachers to fill workforce needs led to new and nonconventional programs entering the teacher preparation landscape. Subsequently, as traditional teacher preparation program enrollment declined, an almost parallel shift towards increasing enrollment in ARC pathways have had profound implications on issues related to higher education, teacher quality, and the state of teacher shortages. The shift in enrollment and preparation has dramatically reshaped the teacher workforce in recent years (Chifeng Dai et al., 2007; Mason-Williams et al., 2020; Rosenberg & Sindelar, 2005; Rosenberg et al., 2007; Wasburn-Moses & Rosenberg, 2008).

One primary criticism of ARCs is the wide range of structures and lack of definitions of program components and standards (Wasburn-Moses & Rosenberg, 2008). Often using less credits, shortened program duration, and cheaper tuition costs, these programs lowered teacher preparation standards, while having an unfair advantage in recruitment. Even more concerning, these abbreviated program options may be compromising quality and accountability of long-term outcomes and retention of our teacher workforce (Podolsky et al., 2019; Rosenberg & Sindelar, 2005).

Rosenberg and Sindelar (2005) provided three primary variables as being indicative of identifying programs as alternative or traditional: (a) length and structure of program, (b) delivery mode, and (c) candidate population. Traditional teacher preparation programs are typically programs catering to traditional students who take face-to-face courses grounded in pedagogy and complete a semester of student teaching as their final practicum. Alternative teacher preparation programs cater to the more diverse and nontraditional student population, often using shorter program lengths, more flexibility in course delivery formats, and allow employment in school settings while in the program.

One common feature of an ARC program is having candidates already placed into teaching positions while beginning their preparation coursework (Podolsky et al., 2019). For general education content areas, alternative route program design is grounded on the assumption that candidates already have subject matter expertise and only need pedagogy to support their teaching practices. However, in special education, a majority of program candidates in similar ARCs are also lacking subject matter expertise in special education. Therefore, candidates enrolled in these shorter, abbreviated programs need to learn effective pedagogy on top of special education content knowledge, all while often being fully employed (Mason-Williams et al., 2020). Consequently, there is heightened scrutiny regarding the competency of special education teachers graduating from these fast-tracked alternative models of teacher preparation.

Evaluating teacher quality is a difficult concept to quantify, but measurable attributes include having knowledge and educational background in the subject being taught and more years of experience (McLeskey & Billingsley, 2008). Concerns over teacher quality have grown, as the percentage of teachers meeting these two attributes have decreased (Garcia & Weiss, 2020). As of 2015, the teacher workforce has reflected more individuals who did not complete a traditional teacher preparation program (17%), have less than five years of experience (22%), and do not have a degree or any educational background in their main teaching assignment (32%; Garcia & Weiss, 2020; Podolsky et al., 2019).

To say all ARC programs are not effective would be misleading (Castro & Edwards, 2021; Rosenberg & Sindelar, 2005). Variability among ARC program offerings and design can be better represented as a “continuum ranging from abbreviated to traditional training” (Rosenberg & Sindelar, 2005, p. 8). In fact, in addition to traditional teacher preparation programs, IHEs are now offering their own versions of ARC-type programs. However, being able to offer innovative and market-based new program designs gives an advantage to non-university-based institutions, as private sectors have more autonomy regarding production, processes, and products and have less bureaucratic oversight. Castro

and Edwards (2021) caution researchers from making dichotomous comparisons using the terms “traditional” and “alternative,” as these terms are “unproductive as the nature and scale of variation and competition broadens” (p. 3) and there may be “greater variation within preparation pathways than between them” (p. 4). Comparisons made to determine quality and effectiveness should include information related to program design, including coursework matter and field experience hours, in order to make informed assessments across programs.

One known benefit of the rise of alternative program options is its ability to fill the greatest needs within the teacher shortage dilemma. ARCs attract more people from underrepresented backgrounds into teaching, who often work in Title I schools serving higher percentages of multicultural students (Baumhardt et al., 2021; Rosenberg & Sindelar, 2005; Scott, 2017). Some hypothesize ARCs attract more underrepresented populations given the use of less stringent criteria for entry, including the removal of standardized entrance exams. Regardless of entry considerations, the key variable for addressing the teacher shortage is to track graduate retention. One essential deficiency associated with teachers from alternative programs using less course credits and time in mentored practicum experiences, is that graduates have significantly higher turnover rates than those from more comprehensive programs (Podolsky et al., 2019). Therefore, although ARCs are better at recruiting underrepresented populations, its impact on changing the diversity of the teacher workforce longterm is limited; a majority of these individuals leave the profession as quickly as they entered.

Unfortunately, the need for immediate solutions to filling special education vacancies has paved the way for a long history involving short-sighted solutions. The use of abbreviated preparation programs have led to weakening and devaluing the specialized knowledge and pedagogy unique to the special education profession. The solution to the teacher shortage cannot only be measured through increases in recruitment rates if done at the expense of teacher quality and retention (Guarino et al., 2006). Our most vulnerable students, those needing more intensive remediation and support, would suffer most from a workforce composed of individuals with the least amount of training and preparation (McLeskey & Billingsley, 2008).

In summary, policy and legislation in education have significantly impacted special education teacher shortages and teacher preparation. From the very beginning, policies aimed to increase access and services to individuals with disabilities did not include initiatives to support the growing need for more special education teachers to meet the growing population of students in the public schools. General education policies such as NCLB increased the number of requirements and expectations, while the GREAT Act lowered professional standards and accountability. Especially for special education teacher preparation, pressures to provide shortened, abbreviated teacher preparation programs as a way to alleviate extreme shortages is counter-intuitive to the heightened complexity and scope of what special education teachers need to know and do (Rosenberg et al., 2007). In the end, these policies have contributed to the current teacher shortage landscape today, with an average of 49 states reporting shortages in special education every year (Cross, 2017)

Low Shortage vs. High Shortage States. Peyton et al. (2018), analyzed differences between the seven states identified as having the highest and lowest shortages in special education to determine which factors may be contributing most to this long standing issue. In this study, Hawai'i was identified as one of the states having the highest shortages in the nation. Study findings identified four statistically significant differences between low- and high-shortage states: (a) increases in total student population, (b) salaries after being adjusted for cost-of-living, (c) salary differentials when compared to otherwise similar professions, and (d) ratio in production of state teacher preparation graduates.

Results found states with low shortages had higher increases in total student population, but a substantially larger ratio of state produced teacher preparation graduates; low shortage states had twice the number of programs and graduates than high shortage states. High shortage states had significantly lower salaries when adjusted for cost of living and when compared to other professional fields. Although not statistically significant, findings from this study showed additional notable differences such as high shortage states having higher percentages of minority students, as being more rural, and providing \$1800 less in per pupil expenditure. No notable differences were found across variables such as population size, population density, per capita GDP, median household income, or student-teacher ratios. According to this study, the most critical variables needed in addressing the special education teacher shortage would be increasing teacher salaries and producing more teacher preparation graduates within local IHE.

Supply and Demand

The most common framework for analyzing the teacher shortage comes from the economical model of supply and demand (Guarino et al., 2006; Sutchter et al., 2019). There have been many definitions and applications of this model in relation to the teacher shortage debate, including the recent analysis between low- and high-shortage states (Peyton et al., 2018). As another example, Sutchter et al. (2019) define the teacher shortage as the "inadequate quantity of qualified individuals willing to offer their services under prevailing wages and conditions" (p. 4). Within this context, supply refers to the available teacher workforce and is closely related to the attractiveness of the profession and recruitment efforts. Demand refers to the number of positions available and relates most to issues around student enrollment, class sizes, and teacher retention. Although the variables and conditions contributing to the longstanding teacher shortage are complex, the supply and demand model provides a lens to better understand the scope and variability of the problem.

Supply. There are two primary sources within the supply framework for teachers: (a) new graduates from teacher preparation programs, and (b) re-entrants or idle qualified teachers. Recruitment efforts should be analyzed and designed to incentivize both potential pools of teachers into entering the workforce (Bargerhuff et al., 2007; Sutchter et al., 2019). The most common argument for the dwindling supply of teachers has been the dramatic decrease in enrollment across traditional teacher preparation programs.

Between 2009–2014, teacher preparation enrollment declined nationally by an average of 35%, with an additional 23% of students who dropped out of programs before graduation (Sutchter et al., 2019).

Dwindling supplies of new teacher graduates are the most obvious reason for the teacher supply drought. However, Massachusetts has been identified as one of the states having a surplus of new teachers graduating each year, likely attributed to also having higher salaries. Yet, Massachusetts still suffers shortages in special education. This implied that even if there are larger proportions of teacher preparation programs available and more financial incentives, the field of special education is still not attractive enough to recruit enough individuals into the profession.

Finally, an overlooked pool of special education teachers would be individuals who had completed a teacher preparation program but are not currently teaching. This pool includes trained special education teachers who either chose not to enter after graduation, or who entered the profession but left prematurely. A 2005 report on teacher recruitment and retention claimed that between 25% and 37% of teachers who leave the profession end up returning (Allen, 2005). Therefore, a large supply of potential 're-entrants' exists, who could be targeted to help reduce shortages given the proper incentives (Poldolski et al., 2019).

Demand. The demand component of the framework involves the number of teacher positions available in comparison to the number of positions filled. Overall demand for teachers is influenced by a variety of factors: (a) number of students and student-teacher class sizes, (b) service delivery models, and (c) attrition rates (Boe et al., 2013; Sutchter et al., 2019).

Teacher demand can change depending on the population size of school-aged children. Between 1986 to 2007, the number of students in public schools grew by 26%, therefore increasing the need for more teachers. Over the next decade enrollment stayed relatively constant, however, projections estimate the student population will grow again by 3 million students by 2025 (Sutchter et al., 2019). In addition to the number of students attending public schools, the desire to lower student-to-teacher ratios as a method for improving student outcomes would also increase the demand for more teachers.

The progression of service delivery models is often an overlooked variable impacting demand, especially for special education. As more schools move towards inclusion, the roles and expectations for special education teachers have changed yet again (Shepherd et al., 2016). Instead of pulling out students from different classrooms and grade levels to receive services, inclusion models require providing services within each of the general education classrooms. One worry is that schools that have faced continual challenges in finding and hiring new special education teachers year after year may turn to "inclusion" as a way to less noticeably use non-licensed school personnel to service these students in place of a special education teacher. Then, special education teachers may be asked to work across multiple classrooms and grade levels, with a focus more on compliance and case management duties, rather than opportunities for specialized instruction and support. Increasing time and requirements for more administrative tasks while reducing time for providing direct student services has been linked to higher rates of attrition (Nance & Calabrese, 2009).

In the end, addressing teacher attrition is the most critical variable related to balancing the supply and demand dilemma. Considering how difficult it is to find people to enter the special education

profession, the inability to keep these teachers has had a devastating impact on our public education system (Darling-Hammond & Podolsky, 2019). The national teacher attrition rate is currently 8%, with an additional 8% of teachers who move schools, districts, or states each year. In special education, the attrition rate is significantly higher, comprising 17%–29% of the special education teacher workforce each year (Mason-Williams et al., 2020). The need to hire more teachers is largely dependent on the number of teachers leaving the workforce each year.

There are a variety of contributing factors attributing to the high rates of turnover and attrition including the perceptions of the profession, teacher salary, and working conditions (Carver-Thomas & Darling-Hammond, 2019). One of the more hidden contributors to attrition is related to the social status of the profession. Education is seen as less prestigious than other professions such as medicine, law, and engineering (Connelly & Rosenberg, 2009; Fish & Stephens, 2010; Rice & Goessling, 2005). Lower teacher salaries and the lowering of standards for entering, contribute to the overall lower social status of the profession in recent decades.

One way the teacher labor market is different from other labor markets is that teacher salaries are not influenced by market pressures. Therefore, although the need for more teachers increases, salaries are controlled by school districts and union negotiations and cannot be easily manipulated to incentivize more people into pursuing a teaching position (Garcia & Weiss, 2019). As a result, salaries in education are about 30% lower than those of graduates and professionals in other fields. The importance of having competitive salaries as a way to support the teacher shortage was most evident in the early 1990's when teacher salaries were commensurate to other professions; during that period teacher attrition was much lower, and more states reported having no shortages at all (Podolsky et al., 2019).

Stressful working conditions and lack of support contribute to many special education teachers choosing to leave the profession entirely. The added stress of paperwork related to eligibility and accountability measures, as well as role ambiguity, contribute to special education teachers preferring to transfer to general education positions (Shepherd et al., 2016). Teacher turnover, regardless if it is exiting the profession or transferring to another field, typically follow a U-shaped curve with teachers typically leaving the profession at the beginning or towards the end of their careers (Grissmer & Kirby, 1992; Guarino et al., 2006; Ingersoll, 2001). Therefore, one common solution to the attrition dilemma is to provide strong induction and mentoring programs to target comprehensive support for new teachers in their first years of teaching (Hudson, 2012).

Most notably, teacher attrition costs an average of about \$21,000 for every teacher who prematurely leaves the classroom (Carver-Thomas & Darling-Hammond, 2017). Estimated costs derived from investments related to new teacher recruitment, preparation, training, induction, and processing. Many districts are unaware of their attrition expenditures, as costs are “hidden in mounds of teacher records, school data, and district financial information” (Barnes et al., 2007, p. 5). However, Barnes and others conducted an in-depth analysis of turnover costs across five states. In the Chicago Public Schools alone, costs of teacher turnover were estimated at \$86 million dollars per year. Compounding the problem

is that attrition and turnover are not distributed equally among schools; the highest rates of turnover occur in schools where more than three-quarters of the students are eligible for free and reduced lunch (Mason-Williams, 2015). Research over time has continually acknowledged that schools serving those with the highest needs (i.e., disadvantaged, minority, urban/rural) are facing the largest shortages and have increasingly higher rates of turnover. Sutchter et al. (2019) summed up the tragic cost of constant turnover, stating “such schools must continually pour money into recruitment efforts and professional supports for new teachers, many of them untrained, without reaping dividends from those investments” (p. 26).

COVID-19. Given the current COVID-19 global pandemic, many fear budgetary cuts will be detrimental to any progress made towards addressing the teacher shortage. In a recent report on the post-pandemic Arizona workforce, authors warn that “the ambiguity of what schools will look like in the future and growing disparities of children have teachers concerned that their jobs are more untenable than ever before” (Audrain et al., 2022, p. 353). In a recent study conducted by the Learning Policy Institute regarding the role COVID-19 has had on teacher supply and demand, key initial findings suggest worsening teacher workload and burnout, along with growing retirements and resignations that will decimate our workforce needs even more (Carver-Thomas et al., 2021). Time will tell how this global pandemic crisis shifts the teacher education workforce over the next few years.

Variability. Similar to the current crises, there are many different variables that impact supply and demand of the teacher workforce over time. As a result, debates on how to identify, measure, and track the shortage over time have been mixed. In fact, some researchers worry that policy makers are not aware of the variability in the demand of special education teachers because of the focus on the national and broader teacher shortage (Boe, 2006; Dewey et al., 2017; Peyton et al., 2018). The Great Recession had played a large role in the changing supply and demand issues related to the teacher workforce, as working conditions worsened and teachers had to endure higher case loads with less resources and support. Many of the factors most contributing to a quality workforce were negatively affected during that period. Darling-Hammond and Podolsky (2019) summarized its impact, stating “salaries were often frozen; mentoring programs were cut; service scholarships for training were eliminated; and professional development supports were reduced” (p. 4). With the pandemic causing similar worries related to funding for education, the current Secretary of Education wrote a letter stating its commitment, investment, and proposed solutions toward mitigating the effects the pandemic is proposed to have on the teacher shortage (Cardona, 2021).

According to Boe et al. (2013), the number of special education teacher positions had declined for the first time beginning in 2005, even prior to the Great Recession. During this period, students identified with disabilities decreased and redistribution of funding and positions impacted the number of special education teachers being hired each year. As a result, the country saw its highest supply rates of special education teachers in 2012, with 95% of special education positions being filled with a highly qualified teacher. However, since then the numbers of students qualifying for special education services increased

while the numbers of students enrolling in teacher preparation programs decreased, causing an imbalance in supply and demand over the last decade.

Cowan et al. (2016) argues that the supply of special education teachers had actually kept up with increases in enrollment since the 1980's, however, only half of graduates were hired. Therefore, IHE may be unfairly targeted as the sole reason for the lack of teacher supply. Instead, educational leaders could examine the undesirable working conditions of the special education profession that often hinders those with the proper credentials to provide their services and teach. In addition, Boe et al. (2013) posit that during the Great Recession, cuts in special education teacher positions and teachers delaying their retirement had created a period where available special education teacher positions were less common and many new graduates did not immediately enter the workforce. In the end, there may be a large supply of previously trained special education teachers who may choose to enter the profession if strategic efforts were made in changing their willingness to teach given the current wages and working conditions of public schools (Boe et al., 2013; Cowen et al., 2016).

In regards to variability in attrition, it is one of the most difficult variables to track and analyze, as the term is used interchangeably with transfer, exit, and turnover (Billingsley, 2004). Transfer attrition is especially problematic in the field of special education, as the field "loses many teachers to general education, with a significantly higher proportion of special educators transferring to general education than the reverse" (p. 39). However, the most detrimental type of attrition are those who exit, being individuals who leave the teaching profession altogether.

Regardless of the attrition type, what is known is that more teachers leave special education positions each year than teacher education programs can produce (Garcia & Weiss, 2019; Sutchter et al., 2016). The instability of the teacher workforce wastes valuable resources, with hard-to-staff schools serving economically disadvantaged students having to give up the largest percentages of their budgets on the revolving door of teachers coming and going (Barnes et al., 2007; McLeskey & Billingsley, 2008; Nguyen, 2020; Ronfeldt et al., 2013). Barnes and colleagues (2007) summarized the problem, stating, "turnover costs become a drain on already scarce resources that could otherwise be invested to improve teacher effectiveness and student growth" (p. 5). Overall, teacher turnover disrupts the learning environment for everyone, from students to teachers and then the school community, negatively impacting student outcomes and achievement.

On the contrary, the solution to the teacher shortage does not require erasing attrition entirely. Some attrition is needed, as there is a subgroup of teachers who will retire each year and there are teachers who may not be a desirable fit for the profession (Mason-Williams et al., 2020). Unfortunately, current data shows that only one-third of annual attrition is caused by retirement; a majority of attrition is caused by "pre-retirement attrition". Pre-retirement attrition does not mean teachers who are unfit for the profession, but rather individuals who are voluntarily choosing to leave the profession early. Therefore, retention strategies are best served in specifically combating this sub-group of the teacher workforce.

In the end, the special education teacher shortage represents a long-standing problem related to

how to best attract, train, and then retain high-quality individuals within this field. Policies have complicated and extended the roles and responsibilities of special education teachers over time, making teacher preparation more difficult. Using the supply and demand model, the solution to addressing the severe shortage of special education teachers would require attracting more people into entering, while also advocating for better working conditions so they stay in the profession long-term.

Inequities and Diversity

With shortages having expanded across all states and most content areas, the expansion of shortage data has shed light on the most foundational inequities within the public education system. Educational injustices become more obvious when we understand who the shortages have impacted most. There are growing concerns regarding the national movement towards a one-size-fits-all approach strategy for addressing this issue (Cowan et al., 2016). Instead, there is a need for more targeted and localized initiatives, with shortages being more specific to certain types of schools, fields, and locations (Berry et al, 2011; Johnson et al., 2009; Nguyen, 2020; Tyler et al., 2003). Emphasis is being aimed towards the need to not only recruit more people into the profession, but specifically targeting more people needed to diversify the workforce. With shortages not being equally distributed, the need to solve the teacher shortage becomes an issue of equity and advocacy. Inequities based on disproportionate shortage areas are highlighted by the following variables: (a) gender, (b) age, (c) locale, and (d) ethnicity.

Gender

In many countries, education is “one of the most gender-segregated fields of employment” (Fray & Gore, 2018, p. 157). In the United States, the nation’s teacher workforce has always been predominantly female, comprising about 73.5% of the education workforce (United States Bureau of Labor Statistics, 2019). According to feminist theory, the high proportions of females in the teaching profession is a root cause of why teachers historically have been underpaid and face less desirable working conditions (Ponte, 2012). Similarly, even though there are fewer males in teaching overall, males make up a majority of educational administration and leadership positions. Although women have more employment options than in previous decades, women continue to pursue teaching as it better aligns with family and child-rearing obligations, furthering the notion that teaching is a female occupation (Fray & Gore, 2018).

Rice and Goessling (2005) discussed the dire need for recruiting and retaining more male special education teachers. Reasons for low percentages of male teachers included: (a) low status of the teaching profession, (b) low salary, (c) perception of teaching as women’s work, (d) potential for complaints of child abuse and sexual assault, and (e) lack of male role models in teaching. The lack of male teachers, especially at the elementary level, negatively impacts the experiences and outcomes of young males who would likely benefit from having more positive male role models.

Nationally, there are almost twice as many males (66.3%) qualifying for special education services than females (33.7%; CRDC, 2018). Many young boys are identified as having behavioral problems. Identification, including qualification for special education services, may be associated with

differences in tolerance between females and males. Ford (2012) states, “the field of special education needs to examine the pipeline to special education, which often begins with suspensions and expulsions, primarily among Black and Hispanic males” (p. 402). Therefore, more males in teaching may reduce disproportionality of boys qualifying for special education services (Scott, 2017).

Age

One characteristic not as commonly discussed within the inequity and diversity lens is the variable of age within higher education and teacher preparation. With decreases in traditional undergraduate enrollment in teacher preparation programs, a majority of the incoming teacher workforce are now older, nontraditional students (Wasburn-Moses & Rosenberg, 2008). Traditional students are defined as typically: (a) between the ages of 18-25 and (b) full-time students attending on-campus classes (Hanover, 2018). Nontraditional students are individuals who do not fit the traditional definition, often being older with more life experience and who often juggle multiple roles involving work, family, and going back to school (Hanover, 2018; Kasworm, 2003; Landrum, 2018).

A benefit to having a larger percentage of nontraditional students in higher education, is that this subgroup of students often includes underrepresented groups, such as males and individuals from diverse ethnic backgrounds (Hanover, 2018; Kasworm, 2003; Rosenberg & Sindelar, 2005, Scott & Alexander, 2017). Overall, nontraditional students have different needs and preferences associated with pursuing teacher preparation programs (Wasburn-Moses & Rosenberg, 2008). Many older students must maintain employment while taking courses, and almost all nontraditional students struggle with successful participation in higher education coursework while balancing competing roles and responsibilities (Hanover, 2018).

Adult students have different sets of priorities and needs in comparison to the younger, traditional population of college students (Hanover, 2018; Kasworm, 2003; Landrum, 2018). Although often independent and working, “financial uncertainty is a major barrier to enrollment” (Hanover, 2018, p. 4). Therefore, high costs of teacher preparation within IHE have become a worsening obstacle in recruiting more individuals from this population. Although adult students are typically employed, their expanding role of responsibilities in caring for their family and covering living expenses places their need for tuition support and scholarships as even more essential to their success. Adult students often do not get parental financial support to help cover higher education expenses, whereas many of the traditional undergraduate students do.

In addition to financial constraints, a primary need for adult students in higher education are flexible program offerings, which allow them to pursue programs while continuing to work and balance other life responsibilities (Hanover, 2018). Limited access and support based on traditional models of teacher preparation are often a barrier for entry. Therefore, a large percentage of adult learners are enrolling in private for-profit institutions, which have catered more to offering flexible course offerings in the evening and weekends or offering fully online programs. However, one contradictory variable is the element of technology; adult learners need to pursue distance options due to conflicting responsibilities,

however many adult students are uncomfortable or unfamiliar with how to use and engage in distance format technology and may need additional support in this area.

Although adult students are more independent and self-directed, the process of navigating the bureaucracy and processes within higher education can also be a barrier to success (Hanover, 2018). Adult students do not have the time to navigate through information and speak with numerous support staff regarding their options. Adult students need a different model of support that differs from what is traditionally offered through student services in higher education. Adult students benefit from having a single point of contact who can and help them to navigate the unfamiliar landscape of returning to school and act as an easy point of reference for getting their concerns addressed.

One of the primary differences between traditional younger college students and adult students is their priority and goal for pursuing higher education (Hanover, 2018). Traditional students often enter higher education after high school, using their time to discover their interests and career options. Adult students, on the other hand, typically enroll in higher education due to a significant life transition (e.g., divorce, denial of promotion, being let go, relocation, children leaving for college) and enter with a clear and specific goal for career advancement (Kasworm, 2003). Therefore, teacher preparation programs need to better capitalize on nontraditional students who express interest in becoming licensed in teaching, as teacher preparation programs often lead directly to the job market.

Given the differences between traditional and adult learners in higher education, the Hanover report (2018) warned IHE regarding the need to adjust their current policies and practice to meet the needs of the growing population of adult learners. Currently, models of higher education have not evolved in meeting these needs, therefore placing adult learners “at risk” of failure. For teacher preparation, the need to address the teacher shortage highlights the need to prioritize program design and support to better increase enrollment and graduation outcomes of this subgroup.

It is essential for traditional IHE to understand the growing adult population, what their needs and preferences are, and to apply that knowledge to adapt program offerings (Hanover, 2018; Kasworm, 2003). Subsequently, institutions can develop a targeted marketing strategy to increase the number of adult students recruited into each identified program. Especially in high needs fields, such as special education, which depends on the increased production of new teachers to meet the employment demand, the use of effective marketing strategies tailored to the adult student market is warranted.

Locale

The teacher shortage is not equitably distributed across schools. In 2019, the Economic Policy Institute published a special series on the teacher labor market, with its first report being titled, “the teacher shortage is real, larger and growing, and worse than we thought” (Garcia & Weiss, 2019, p. 1). This report described the shortage not only in numbers, but highlights the severest shortages as being an issue of teacher quality and inequality within high-poverty schools. Schools supporting higher percentages of minority and economically disadvantaged students are often in either rural or urban locations. The locale of the school impacts recruitment and retention, as schools in rural communities

face additional challenges based on their geographic isolation (Berry et al., 2011; Johnson et al., 2009; Nguyen, 2020; Tyler et al., 2003). Recruitment and retention struggles are exacerbated in rural communities, with some school districts experiencing 100% turnover of their special education personnel during a three-year period (Johnson et al., 2009; Tyler et al., 2003). Focusing on rural needs are essential, as a majority (53%) of youth in the U.S. live in rural settings (Johnson et al., 2009). While rural locations exist across all states, there are vast differences between states in regards to their rural education needs (Nguyen, 2020).

In general, far distances from IHE often cause barriers of access to teacher certification and professional development for individuals living in rural communities (Bargerhuff et al., 2007; Jensen et al., 2001; Jordan et al., 1999; Larwood, 2005; McLaren & Rutland, 2013; Rooks-Ellis, 2017; Tyler et al., 2003). Given their more isolated locales, administrators have increased challenges in recruiting highly qualified teachers who are willing to relocate to rural locations (Berry et al., 2011). Therefore, rural schools rely more on emergency hire teachers or teachers from alternative certification programs, due to more flexible online delivery methods used and often being the only teacher preparation program option available (Bargerhuff et al., 2007; Mason-Williams et al., 2020; Sindelar et al., 2018). Individuals from urban or suburban communities are typically not interested in the rural lifestyle, therefore rural schools are best served by finding individuals already in the community to join the teaching profession. However, with fewer high school graduates from rural schools continuing on for a college degree, there are less individuals from rural communities who are eligible for entry into most teacher certification programs, as alternative certification options often requiring a bachelor's degree or higher (Cegelka & Alvarado, 2000).

Additional challenges faced by many rural communities include lower salaries; lack of materials, resources, and technology; and geographical isolation (Sundeen & Wienke, 2009). Being smaller schools, most teachers in rural areas need to teach a broader range of subjects and grade levels (Berry et al., 2011). Related to earlier discussions on policy, rural teachers had more difficulty meeting the highly qualified requirements outlined during NCLB (Berry et al., 2011; Johnson et al., 2009; Sundeen & Wienke, 2009). These challenges make recruitment and retention of high quality teachers for rural schools more difficult than schools from urban or suburban communities.

A majority of rural schools qualify as Title I, having higher percentages of socio-economically disadvantaged students, who are also often more racially and ethnically diverse (Berry et al., 2011; Garcia & Weiss, 2019). These schools often have significant teacher shortages and a workforce composed of emergency certified teachers with little to no advanced preparation (Allen, 2005; Cardichon et al., 2020; Guarino et al., 2006; Mason-Williams et al., 2020). Darling-Hammond and Berry (2006) found that the quality and effectiveness of a teacher is the strongest indicator for potential student achievement, therefore limiting the number of times students are exposed to novice and underprepared teachers is pertinent to improving the quality of their K-12 education.

Ethnicity

As the face of public education, the importance of having teachers mirroring the ethnic, cultural, and linguistic diversity of their students is also important in matters related to social justice and equity in education (Billingsley et al., 2019; Goldhaber et al., 2015; Guarino et al., 2006; Torres et al., 2004). Across the country, those who have been long identified as the minority will soon become the majority (Ford, 2012). The teacher workforce is overwhelmingly homogenous, with 82% of elementary and secondary teachers identifying as White (King et al., 2016). Having teacher role models from underrepresented groups provides educational benefits for students from minority backgrounds in three ways: (a) it allows students to see adults like them in a position of authority, (b) expectations of minority students are higher, and (c) it helps address cultural differences that may impact interpretation of student behavior and ability (Goldhaber et al., 2015). In addition, Goldhaber et al. (2015) summarized empirical evidence regarding students' test performance, which showed that students performed higher when taught by a teacher of the same race/ethnicity. The effect sizes were similar to students having had a National Board certified teacher or teachers with more than five years of teaching experience.

Not only does a huge ethnic disparity between the teacher workforce and student population exist, it is important to understand how the prominence of a dominant White education workforce has likely contributed to inequitable educational opportunities (Billingsley et al., 2019, Torres et al., 2004). Numerous examples throughout history outline how teachers of color had been excluded or removed from the teacher workforce. As one example, *Brown v. Board of Education* (1954) unintentionally initiated the ethnic workforce divide, as "minority students were transferred in some numbers into majority-white schools," whereas, "African American teachers were transferred with far less frequency" (Torres et al., 2004, p. 9). More than half a century later, the racial and ethnic demographics of the education workforce has remained predominantly White despite the dramatic shift in ethnic diversity among the general population (Ingersoll et al., 2019).

In addition, the use of standardized exams in teacher preparation likely contributed to lower enrollments and lack of individuals from culturally and linguistically diverse backgrounds in the profession (Fenwick, 2021; Guarino et al., 2006; Mason-Williams et al., 2020, Torres et al., 2004). The use of exams for measuring teacher competency began in the early 1800's, however rigor and quality varied across schools and states, thereby initiating a movement towards more centralized systems of teacher preparation and quality regulations (Geiger et al., 2014). By the late 1800's the use of standardized exams was the primary measure of assessing and assuring teacher quality and its use is still embedded within the teacher preparation landscape to this day (Hirsch et al., 2001).

Concerns in using standardized exams as a valid assessment has been questioned since the 1980's, where "teacher tests, and the manner in which scores are being set, are differentiating among candidates more strongly on the basis of race than they are on the basis of teacher quality" (Torres et al., 2004, p. 16). In fact, the American Association of Colleges for Teacher Education (AACTE) had convened in 1987 to specifically discuss concerns regarding an overreliance on standardized tests for entrance,

claiming it “adversely affected the number of new minority teachers” (Fenwick, 2021, p. 3). Data at that time had shown pass rates for White students in three states (i.e., Alabama, Florida, Texas) as having been 78%, 92%, and 72%, whereas pass rates for Black students were 15%, 37%, and 23% respectively. Despite these grim statistics, the number of states adopting mandatory standardized testing for admissions continued to increase and has led to the severe disproportionate teacher workforce impacting our educational system today.

The reliance on high-stakes standardized exams has become heavily scrutinized again in recent years (Fenwick, 2021). In 2019, a superior court in Illinois abolished the use of the basic skills exam in teacher preparation, as evidence showed the tests disproportionately disadvantaged students of color and acted as a gatekeeper to licensure amidst a growing teacher shortage (Kunichoff, 2019). In addition, based on 2019 SAT scores, the National Center for Fair and Open Testing stated that gaps between demographic groups were growing wider and that over 1,000 colleges and universities had begun to remove SAT and ACT scores from admissions (Schaeffer, 2019). In a study examining four years of Praxis I® data, a common standardized exam used in the field of teacher education, findings showed White students as having higher pass rates on reading and writing subtests when compared to their non-white peers, and higher than all but Asian-Americans on the math subtest (Steinberg et al., 2014).

Not only have standardized exams been a barrier to entering teacher preparation programs, equal concern comes from its use as the sole measure of competency of special education content knowledge for licensure. As of 2019, at least eight states, including Hawai‘i, offer an “endorsement by exam” option to licensed teachers in other fields who want to add special education to their license (Hollo et al., 2019). With looming concerns regarding special education teachers entering classrooms through abbreviated alternative licensure programs, the endorsement by exam option opens up the field even further, allowing teachers from other fields to add special education to their license without receiving any special education training or experience.

The lack of diversity in education is not specific only to teacher composition. According to the 2016 report, titled ‘The State of Racial Diversity in the Educator Workforce,’ the proportion of individuals of color diminish at every stage of the educator pipeline, from post-secondary enrollment to teacher retention, indicating the need to address issues of equity at every level within the education system (King et al., 2016). The need for more underrepresented populations in teaching is apparent, especially when acknowledging that teachers of color promote stronger educational outcomes for students of color and help in closing the achievement gap (Artiles et al., 2010). Education Secretary John B. King stated, “we have strong evidence that students of color benefit from having teachers and leaders who look like them as role models and also benefit the classroom dynamics that diversity creates” (King et al., 2016, p. 1). The need for more diversity in the workforce is not only beneficial for students from underrepresented populations, as all students benefit from having more diverse role models and perspectives throughout their educational journey (Billingsley et al., 2019; Carver-Thomas, 2017; Ford, 2012; King et al., 2016; Scott, 2017; Valle-Riestra et al., 2011). Therefore, recruitment and retention strategies should be

developed in conjunction with specifically targeting individuals from underrepresented populations into entering the teaching profession.

Although a majority of the disproportionate workforce literature base is focused on general education, the need for more special education teachers from underrepresented populations is important to examine (Rosenberg & Sindelar, 2005). In fact, Mason-Williams et al. (2020) suggest the general education teacher workforce may be becoming more diverse, whereas the special education teacher workforce is not. Literature on the inequitable distribution of special education teachers by ethnicity and gender is scarce, indicating a need for more research in this area (Mason-Williams et al., 2020).

Not only is there disproportionate representation within the teacher workforce, disproportionality within students identified with disabilities is of additional concern. Research findings are mixed in regards to over- or under- representation of certain ethnic groups qualifying for special education. The debate is often determined by the lens in which special education is viewed (Ford, 2012). Researchers arguing that there is an over-representation of certain groups is grounded in perceiving the need for special education services as the result of negative attitudes or expectations due to cultural differences, thereby causing misidentification of students (Ahram et al., 2011; Christian & Sullivan, 2011; Hosp & Reschly, 2004). Within this lens, assessments used for eligibility are critiqued for being biased measures of student intelligence and potential.

On the contrary, researchers arguing there is an under-representation of minority students within special education view special education as an asset and resource that is not being provided equitably to certain groups (Morgan et al., 2015). Morgan states the overrepresentation debate is discriminatory and constrains access of minority families, being more at risk, to properly receiving special education services. Arguments include less contact with pediatricians and health professionals for early identification and language barriers as exacerbating inequalities for minority groups.

Regardless of the over- or under- representation debate, disproportionality across students qualifying for special education is a valid concern, as there is a need to ensure students qualifying for special education services are being appropriately identified, valued, and supported. Moreover, it is important to examine the intersectionality of disability and matters of social justice, as students with disabilities often represent diverse ethnic, racial, linguistic, and cultural backgrounds. Therefore, it becomes even more essential for special education teacher preparation programs to prepare educators who are culturally competent and able to value, nurture, and advocate for equity and inclusion of their diverse students (Lindo, 2020).

Asian American and Pacific Islander students have been the fastest-growing and most diverse group in the population, with more than 67 different subgroups represented (Sullivan et al., 2020). Given the majority of disproportionality research focuses on Black and Hispanic populations, Sullivan and colleagues studied special education disproportionality of Asian American and Pacific Islander students to highlight possible differences within this broad category. Comparisons were made across national, state, and individual data sources. Findings suggest Pacific Islander students have “higher national relative risk

for identification than Asian students compared to their White Peers” (p. 455). In addition, Pacific Islander students are “twice as likely as Whites to be suspended or expelled” (p. 451). Overall, using broad categories, such as Asian American and Pacific Islander, conceal varied experiences and needs of students in more specific ethnic categories. There is a need to disaggregate data further to prevent marginalization of certain ethnic groups.

Proposed Solutions

Given what is known about the chronic and worsening teacher shortage and the need to address diversity, comprehensive solutions are needed to balance the supply and demand variables within the special education teacher workforce. Solving the teacher shortage requires a multi-faceted approach involving the shared commitment of federal, state, local education agencies, schools, and IHE. Across all stakeholders, a multi-prong approach is needed; the Office of Special Education Programs (OSEP) has proposed a model for addressing the teacher shortage, organized across three key areas: (a) attract, (b) train, and (c) retain.

Attract

Recruitment strategies are needed to increase the supply of teachers entering the workforce. Solutions are needed across two types of supply pools: (a) to increase the number of people pursuing teacher preparation programs, and (b) to incentivize the ones already trained but not teaching. Numerous criticisms have been made over more popular large-scale recruitment incentives like districtwide pay increases; broad efforts would not benefit the areas of highest need, such as special education, math, science, and schools serving urban and rural areas (Cowan et al., 2016). Instead, recruitment strategies should be specific to localized contexts and target the fields or schools that have the largest shortages. One popular method for addressing the lack of supply is trying to recruit from other states or internationally. The HIDOE has had to recruit teachers from the continental United States for more than twenty years, and more recently has joined districts like Las Vegas, who have attempted to recruit teachers from as far away as the Philippines (Reed, 2007). However, these types of recruitment efforts are costly and recruiting teachers from neighboring states does not address the broader supply needs of the workforce.

The primary solution to increasing supply is efforts related to supporting teacher preparation enrollment. Zascavage et al. (2008) conducted a review of eight higher education institutions recruitment practices in special education. Findings indicated universities engaged in best practices regarding recruitment efforts, such as using grants and scholarships, community outreach, media advertisements, and technology. When analyzing effectiveness of proposed strategies, five themes emerged: (a) outreach to local schools and communities- geographical campaigns; (b) advertisement through literature, radio, and interactive websites; (c) tuition and scholarships; (d) mentorship support from university faculty; and (e) targeting “home grown” candidates such as local paraprofessionals. In addition, one primary solution was to have IHE partner directly with local education agencies to have teacher candidates placed in the communities where shortages are highest, so candidates can practice and become acculturated into the

school and larger community. Partnerships between institutions and schools are especially important in addressing the needs of rural communities, where there is greater need to recruit and support individuals from the community. These strategies are especially effective, as teacher candidates tend to prefer teaching near where they grew up or where they completed their student teaching (Mamlin & Diliberto, 2020; Sindelar et al., 2018).

To increase attractiveness of the profession, proposed recruitment efforts include providing financial incentives, such as: (a) higher salaries that are comparable to otherwise similar professions, (b) housing incentives, and (c) loan forgiveness or stipends (Carver-Thomas & Darling-Hammond, 2019). In addition, improving hiring and management processes are needed, such as: (a) less bureaucracy within the teacher licensure process, (b) improved timing and efficiency of hiring processes, and (c) easier reciprocation processes when transferring across district or state lines. Overall, the goal of recruitment initiatives is to “increase the rewards of teaching relative to those of the competing occupations available to the type of people they wish to attract” (Guarino et al., 2006, p. 175).

Financial Incentives. One of the most common proposed recruitment strategies involves better teacher compensation (Sutcher et al., 2019). Overall, research found that after accounting for education, experience, and other variables, teachers wages are 21.4% lower than relative non-teaching wages (Garcia & Weiss, 2020). Providing higher salaries or differential pay for hard-to-staff subjects and locations, including high-poverty schools, can serve to attract more individuals into positions facing the highest shortages (Prince, 2002; Sundeen & Wienke, 2009). Pay differentials are often difficult to achieve given strong collective bargaining units that push for more broad pay increases for all teachers (Mason-Williams et al., 2020). However, using higher pay to recruit teachers for hard-to-staff schools has shown to be effective, as one study documented that 600 New York City teachers had applied to transfer to the city’s 39 lowest performing schools when offered a 15% pay raise (Prince, 2002). Lastly, the use of housing incentives can be especially effective in rural and urban areas, where adequate housing can be more costly or harder to find (Hobart, 2001; McLeskey et al., 2004).

Hiring and Management Processes. A less known strategy for recruitment of new teachers would be to make hiring and management system processes easier and more efficient. As Darling-Hammond and Berry (2006) explained, “some states and districts create their own shortages by implementing cumbersome licensing and hiring procedures that create extensive barriers and delays in hiring qualified people” (p. 260). Although advances in technology have drastically improved how processes can be managed, school systems are often using archaic, outdated systems and tools. In order to prevent potential new teachers from changing their minds in pursuing the profession, providing streamlined, quick, and easy access to information and employment is one way to support recruitment efforts. In addition, providing clear and efficient processes for idle licensed teachers to re-enter the workforce is a strategy for targeting those who are trained but are not currently teaching (Allen, 2005; Podolsky et al., 2019; Sutcher et al., 2019).

Professional Attractiveness. As people consider what career to pursue, most prefer jobs with

high earnings and one that commands respect. Although teachers have always been revered as valuable members of society, the social status of teaching has dramatically declined (Sutcher et al., 2016). The teacher shortage is a result of the overall attractiveness of the profession, which is highly influenced by salary, working conditions, and other compensation or benefits (Guarino et al., 2006; Mason-Williams et al., 2020; Peyton et al., 2018; Torres et al., 2004). Countries where teaching still holds high status have fewer shortages and better gender representation within the profession (Darling-Hammond, 2017). Allen (2005) reports there is strong evidence that college graduates with the highest demonstrated intellectual proficiency are less likely to pursue teaching. There is a need to uplift the teaching profession as a way to encourage more individuals, especially youth and underrepresented populations, into pursuing the career (Torres et al., 2004). In special education, an added layer is needed to increase the attractiveness of the profession similar to other professions such as medicine, law, and engineering (Connelly & Rosenberg, 2009). There is a need to create more awareness about special education and to promote the inclusion of individuals with disabilities within society. Understanding what motivates individuals in their interest in the special education career can serve as the foundation for promoting the profession more effectively.

Train

Strategies for teacher preparation programs to support recruitment and retention include: (a) providing financial incentives, (b) offering high quality programs, and (c) utilizing effective distance education methods. It is important to ensure new teachers receive quality teacher preparation, as new teachers are influenced to stay in the profession when they perceive themselves to be effective and as making a difference in their students' lives (Hughes, 2012). Therefore, teacher preparation programs are tasked with finding ways to encourage more people into enrolling, while also maintaining the integrity of providing a high quality and effective training program so graduates can be successful from the onset of their teaching career.

Although immediate shortage needs promote more fast-track solutions, the high attrition rates of alternative teacher preparation program graduates may end up perpetuating the problem long-term. Therefore, in order to truly address the teacher shortage in special education, IHE need to shift focus from the traditional or alternative debate towards how to offer a range of quality programs that best attracts and accommodates the needs of traditional and nontraditional students within the teacher preparation pipeline (National Education Association [NEA], 2017). The NEA reinforced that having multiple pathways to enter the teaching workforce was needed and that judgment regarding traditional or alternative programs was not a matter of viewing one as superior over another, but in acknowledging the different approaches as equally valuable. The NEA called for diverting the traditional vs. alternative debate to focusing on the need to establish equal standards of rigor and emphasizing training on establishing effective skills, knowledge, and dispositions of all new teacher candidates.

Financial Incentives. To incentivize entry into teacher preparation programs, the use of stipends, loan forgiveness, or free resources such as books, computers, and childcare can recruit more individuals into pursuing a teaching license (Chamberlin-Kim et al., 2019; Chifeng Dai et al., 2007; Tyler

et al., 2003). Feng and Sass (2018) investigated the effects of loan forgiveness and one-time bonuses in Florida on teachers in “hard-to-staff” fields (i.e., special education, math, science). Findings found that fully funded loan forgiveness programs reduced special education teacher attrition by 12.3%. In addition, one-time bonuses reduced attrition as much as 32%. In conclusion, authors suggest both financial incentives as cost effective in recruiting and retaining teachers in “hard-to-staff” fields.

Quality Preparation. For IHE, the teacher shortage is a product of the quality vs quantity dilemma. Many problems are a result of short-term quantity priorities rather than long-term quality solutions (Sutcher et al., 2016). In order to balance these variables, it is important to re-establish high standards in teacher preparation while also looking at ways to provide better access and affordability. Research has not been able to directly correlate program type to increasing student outcomes, therefore the debate regarding the quality of traditional or alternative programs remains inconclusive (Sindelar et al., 2014).

One solution to high attrition rates could be a product of the training new teachers received, as special education teachers may be more likely to stay when they experience stronger preparation, better quality induction and mentoring, and more supportive working conditions (Mason-Williams et al., 2020; Thornton et al., 2007). Strategies for providing high-quality teacher preparation programs include: (a) strong partnerships with schools and communities, (b) residency models that allow candidates to work and practice within their training programs, (c) localized, ‘grow your own’ recruitment efforts, (d) flexible program design and supports, and (e) effective mentoring and practicum experiences (Andrews et al., 2003; Bargerhuff et al., 2007; Cegelka & Alvarado, 2000; Esposito & Lal, 2005; Jensen et al., 2001; Johnson et al., 2009; Jordan et al., 1999; Snell et al., 1997; Thornton et al., 2007; Tyler et al., 2003; White, 2004).

In conclusion, when looking at a comprehensive plan from recruitment to retention, it is important to create incentives for individuals to pursue more comprehensive teacher preparation programs rather than fast-tracked models using less rigorous training models. Partnerships between institutions of higher education and the local education agencies can better support teacher candidates during their training and then continue to foster early career growth through induction and mentoring support during the first three years of their teaching career (Tyler et al., 2003). Supporting a more streamlined pre-service to in-service model of professional development for new special education teachers would be an effective solution to high attrition rates.

Distance Education. Technology and distance education options are effective in supporting the highest targeted needs within the teacher shortage context: (a) supporting nontraditional students needing more flexible delivery options, (b) supporting rural communities with less access to IHE, and (c) preparing students with 21st century skills (Knapczyk et al., 2001, Rock et al., 2016). Therefore, the use of developing and refining teacher preparation programs using high-quality distance education methods and delivery formats can serve as a strategy in recruiting more special education teachers (Bargerhuff et al., 2007). Also, the recent COVID-19 pandemic has accelerated the notion that technology and online

instructional teaching practices should be an essential component of teacher preparation programs, as it initiated new instructional modalities into the teacher preparation skillset. More teachers are needing to understand how to provide instruction to students online, often while simultaneously still teaching students in-person (Audrain et al., 2022). The need to embed more technology into the teacher toolbox paves the way for teacher preparation programs to look at how to adapt program delivery, instruction, and experiences that take advantage of new technologies available.

Retain

If attrition accounts for 80-90% of the teacher demand each year, then the most pressing solution to the chronic teacher shortage would be to invest in teacher retention (Carver-Thomas & Darling Hammond, 2019; Guarino et al., 2006). For retention, compensation is also a common solution, using salary increases and career advancement opportunities. Another primary strategy for increasing retention is to improve working conditions, such as: (a) stronger leadership who understand the complexities of special education, (b) continuous professional development, (c) opportunities for collaboration and collegiality, and (d) teacher-directed initiatives and voice in school design (Podolsky et al., 2019). Lastly, one of the most practical solutions in addressing retention is to provide high quality induction and mentoring support to support beginning teachers (Allen, 2005).

Financial Incentives. Providing salary increases and opportunities for career advancement support retention of teachers, especially higher quality teachers who otherwise have high rates of attrition (Guarino et al., 2006). A longitudinal study of graduates in relation to college entrance examination scores showed that teachers with scores in the top quartile were twice as likely to leave the profession than those in the bottom quartile (p. 187). Similar to why raising the attractiveness of the teaching profession is important, individuals who perform higher on standards of academic achievement are more likely to seek out alternative employment options. Loan forgiveness and targeted bonuses helped reduce attrition rates for special education teachers, however the extent of its impact depended on the amount invested (Peyton et al., 2018). Lastly, the use of increased future earnings have been effective in persuading more men to stay in teaching (Guarino et al., 2006; Scott & Alexander, 2017).

Working Conditions. Improving the working conditions within schools can support the likeliness that teachers will stay in the profession long term (Garcia & Weiss, 2020; McLeskey & Billingsley, 2008; Sutchter et al., 2019). Working conditions include demands placed on teachers and the social and logistical support available. Unfavorable treatment from students and parents, along with a lack of influence in school policy and curriculum can negatively impact a teacher's working environment. Recommendations to improving special education working conditions and retention include providing lower caseloads, reducing paperwork and administrative tasks, and by providing collegial and administrative support (Berry et al., 2011). The structure of a school can also help reduce the burden of workloads by providing access to a wealth of instructional materials and providing more time for planning and collaboration. Lastly, addressing role ambiguity for special education teachers helps define and control their working conditions and expectations as another proposed solution to addressing retention

(Bettini et al., 2014; Mason-Williams et al., 2020).

Induction and Mentoring. With early career teacher attrition being a leading cause of the yearly demand of new teachers, investing in induction and mentoring would help schools recoup valuable funds otherwise lost to the costs of replacing teachers who leave (Guarino et al., 2006; Ingersoll & Strong, 2012; Sutchter et al., 2019). Barnes et al. (2007) recognized that the cost of creating quality induction and mentoring programs is less costly than teacher turnover. Therefore, prioritizing this type of effort could be one of the best returns on investment within a school district. Similarly, when analyzing the costs of turnover in Chicago Public Schools, Barnes et al. (2007) determined that providing a high-quality induction program costs significantly less per teacher than the cost to replace a teacher. Therefore, when financial resources become strained, it becomes counter-intuitive to cut induction and mentoring programs, as “every dollar invested in the teacher induction program paid out a 22 percent return the following year in reduced teacher attrition” (Schaffhauser, 2019, p.1). Lastly, given the needs of special education teachers as substantially different than general education teachers, providing special education mentors are even more critical; many general education mentors are unable to assist with important tasks such as IEP development and processes, navigating special education law and timelines, and other care coordinator duties specific to the field of special education (Mason-Williams, 2015).

Diversity

Female and White teachers have been shown to have higher rates of attrition than males and teachers of color (Guarino et al., 2006). Therefore, it becomes increasingly necessary to include specific recruitment and retention strategies that may be more effective than others when targeting underrepresented populations into teaching (Andrews et al., 2003; Lemke & Harrison, 2000; Salend et al., 2003; White, 2004).

One qualitative study of male teacher candidates shared successful recruitment and retention strategies, tips and recommendations (Ponte, 2012). As a recruitment strategy, participants shared advice for recruiting other males into the profession, which included: (a) countering preconceptions of teaching as a feminine occupation, and (b) emphasizing the rewards in teaching to counter economical concerns, such as low salaries. For retention, male participants expressed how witnessing student excitement and success was highly influential to the male teachers’ desire to stay in the classroom. In summary, Ponte (2012) discussed the need to focus on males as potential agents of change, and to utilize current male educators as having a large role in the recruitment and mentoring of other males into entering the profession. Finally, a suggestion for teacher preparation program design was to provide an emotionally safe environment, such as using a cohort model, that allows teacher candidates the space to challenge and discuss gender discord in education.

Scott and Alexander’s (2017) study of 18 Black men analyzed what recruitment and retention strategies had been effective in their decision to pursue the special education profession. Recruitment findings indicated the need for teacher preparation programs to: (a) provide tuition support, (b) offer flexible pathways, and (c) provide a mentor or advisor from diverse backgrounds. Respondents shared

the importance of purposefully targeting underrepresented populations with financial support and mentors who mirror their background and who can help in navigating both the program and the career. In addition, not only had a majority of respondents pursued an ARC program, they shared their preference in completing a program that allowed for more autonomy and control over their learning. Participants in this study also shared the need for the following retention solutions: (a) system of support, (b) competitive salary, (c) advancement opportunities, (d) more diverse curriculum, and (e) recruitment from local communities. Study participants emphasized the importance of being able to relate with the people in the program, in regards to the instructional faculty and fellow peers. Participants also sought support for advanced degree attainment, to allow for career advancement and leadership opportunities at the school and university level. To better recruit from local communities, study findings emphasized the need to build streamlined pipelines from the high schools into college and then back into the community.

Overall, the solution to the teacher shortage using the supply and demand framework requires the ability to produce more teachers than what is needed to fill every position. However, in order to realistically produce enough new teachers, increasing retention and reducing attrition is needed in order to ensure there are enough teachers to support all students. In addition, efforts to diversify the teacher workforce cannot happen by chance; recruitment and retention strategies need to include purposeful solutions for targeting more underrepresented populations into teaching (Carver-Thomas, 2017). Although many proposed solutions exist, strategies for the teacher shortage can not be done in isolation; recruitment and retention initiatives need to be implemented concurrently, and by all stakeholders, to produce successful outcomes long-term.

Motivations for Teaching

In the area of recruitment, there is a need to understand who chooses to pursue the teaching career and their motivations for entry into the profession. Motivations for teaching, as well as motivational literature in general, are most often categorized under three broad categories based on values: (a) intrinsic, (b) extrinsic, and (c) altruistic (Alexander et al., 2020; Fray & Gore, 2018; Richardson and Watt, 2006). However, interpretation of these categories were often not operationalized, causing errors in comparisons and analysis over time. In addition, validity and reliability of survey instruments were often not reported, making it difficult to clearly understand and define what motivated individuals to pursue teaching careers. As a proposed solution, Richardson and Watt created the FIT-Choice Framework (2006), followed by the development of the FIT-Choice Scale (Watt & Richardson, 2007), to provide an integrative and systematic method in identifying why individuals choose teaching and why they may or may not persist in the profession.

There has been a growing international concern regarding teacher shortages and the need to understand teacher motivations as a recruitment strategy. In 2020, Fray and Gore conducted a scoping literature review on empirical studies related to why people choose teaching as a career. This review included 70 articles from 2007 to 2016 across 41 journals. This body of literature came primarily from the United States ($N = 9$), Australia ($N = 9$), and Turkey ($N = 8$) and a majority of studies employed

quantitative methodology ($N = 45$). In addition, inclusion criteria was limited to school students with a majority being pre-service teachers ($N = 41$) or student teachers ($N = 21$). In this review, motivations were the driving explanatory focus, with most studies using the conventional intrinsic, extrinsic, altruistic typology ($N = 43$) or the FIT-Choice scale ($N = 17$).

Using the more traditional conceptual motivation constructs, many studies found that altruistic motivations were the single most important influence. Examples of common motivations in this area include: (a) service to others, (b) help and support students, (c) make a difference, (d) contribute to society, and (e) answer a calling. For intrinsic motivations, studies identified a passion for teaching and interest in the subject matter as the most common reasons for pursuing a teaching career. However, researchers identified that within this construct, studies had great variability in what they interpreted and described as examples of intrinsic motivations, ranging from suitability to the career, to a desire to work with young children.

Findings related to extrinsic motivations were classified into two categories: (a) lifestyle choices outside of work, and (b) working conditions. Lifestyle examples of motivation included balancing work and family commitments, flexible working hours, and holidays. Working conditions included job security, reliable income, job opportunities, and career prospects. However, one notable finding was the difference in extrinsic motivations relative to Western and non-Western countries; Western countries reported less influences within extrinsic motivations, whereas non-Western countries focused more on the influence of higher status, salaries, and tuition incentives towards pursuing the profession.

A secondary set of findings from the scoping literature review was an analysis of the seventeen studies that had used the FIT-Choice Scale. In summary, social utility values and intrinsic values were rated highest, such as the desire to make a social contribution, work with children and adolescents, enhance social equity, and shape the future of children. In addition, pre-service teachers' perceived abilities and positive prior learning and teaching experiences were also ranked high across studies. Regarding personal utility, the highest ranked items within this category were time for family, job transferability, and job security. Overall, the lowest ranked motivations were teaching as a fallback career and the social influences of others (p. 156).

In conclusion, the scoping literature review provides a recent summary on what has been found as primary motivations for teaching. The FIT-Choice Scale is seen as being more useful in providing more substantial and comparative advances in the field of teaching motivation, however, criticisms of the approach include key motivational factors not being included, such as a love for the subject matter and a desire to improve the quality of teaching. In addition, Fray and Gore point out that across the articles identified, comparative analyses by primary and secondary level, as well as differences by subject area were not discussed. Researchers were also surprised that despite education being a female dominated field, only nine studies had included gender differences on the decision to teach. Recommendations for future research on motivations include adding the intersection of societal conditions and workforce conditions, as well as, expanding to different targeted groups, such as studying male motivations and

perspectives of students prior to pursuing teacher education programs.

An initial effort to explore whether entry motivations relate to teacher retention, a recent study applied the FIT-Choice Scale to 1,165 in-service teachers in Australia to determine if the motivational framework could be used with current teachers (Alexander et al., 2020). In addition, this research included a sub-analysis to determine if differences existed by gender. For current classroom teachers, the top three motivational factors found were: (a) intrinsic career value, (b) teacher ability, and (c) desire to shape the future of children/adolescents. When analyzed by gender, the first two top motivations were consistent, however, the third highest motivation for males was subject interest rather than a focus on children and adolescents. Finally, the three lowest motivational factors were consistent across gender and were in the areas of: (a) fallback career, (b) social influences, and (c) job transferability. Overall, analysis by gender showed significant differences in motivations, spurring recommendations to study differences in teacher characteristics further. Additionally, authors claim that findings suggest that entry motivations are highly related to motivations of teachers who are retained in the workforce.

Special Education

Although there have been studies on motivation for teaching and a growing body of literature applying the FIT-Choice scale, none of the identified studies included motivations in special education. Individual studies focused on differences in motivation by grade levels, degree levels, or across subject interests, however, none of the identified participants in these studies included individuals pursuing special education licensure (Fray & Gore, 2018; Manual & Hughes, 2006; Richardson & Watt, 2006; Watt & Richardson, 2012).

Currently, there have been five studies that have focused on special education teacher motivation, based on the following attributes: (a) individuals who have siblings with disabilities (Marks et al., 2005), (b) differences between elementary and secondary special educators (Fish & Stephens, 2010), (c) issues of disproportionality (Scott & Alexander, 2017), and (d) motivations of individuals enrolled in special education teacher preparation programs (Mamlin & Diliberto, 2020; Reeves et al., 2021). In addition, one dissertation study used the FIT-Choice Scale to analyze if motivations of pre-service special education teacher candidates were significantly different from pre-service general education teacher candidates (Bremer, 2012).

Siblings with Disabilities. In a study by Marks et al. (2005), seven special education teachers or teacher candidates who had a sibling with significant disabilities were interviewed to determine the impacts of their relationships with their siblings and how it influenced their decision to pursue the career. Out of the seven study participants: (a) five were female, (b) five of the sibling pairs were the same gender, and (c) six participants were older than their sibling with a disability. Findings on how their relationship influenced their career choice resulted in two major themes: (a) a desire to improve services for individuals with disabilities, and (b) future career goals that did not involve staying in the classroom.

Participants shared their interest in teaching special education as a way to “reach their students in ways they had wanted their sibling to have been reached” and were often influenced by witnessing

negative experiences with their sibling's special education teachers (p. 211). Some participants emphasized their relationships with their siblings as essential to their career choice, as they felt they would have otherwise chosen a different career field. In addition, participants emphasized their life experiences as more influential than the teacher training coursework and shared recommendations on how programs could support and portray individuals with disabilities better. In relation to the participants' desire to improve services for individuals with disabilities, many had shared their interest in leaving the teaching field to go into advanced degree training and advocacy resulting in larger-scale impacts, especially in contributing to more independent living opportunities for their siblings with disabilities. Lastly, findings from this study indicated participants had strong philosophical beliefs in inclusion and emphasized the importance of family involvement.

Teaching Level. Fish and Stephens (2010) surveyed 57 individuals working in the field of special education (i.e., classroom teachers, diagnosticians, speech pathologists, administrators, paraprofessionals, other) on why they pursued the profession and what influenced them to remain in the field. Findings were organized to compare responses between elementary and secondary level educators. One finding indicated almost half of elementary special educators became interested in the career during their undergraduate years, whereas the majority of secondary educators did not express an interest in the career until their post bachelor years.

Overall, a large majority of elementary and secondary special educators indicated the "desire to serve those in need" as the most common reason for entering the career field (p. 402). In addition, elementary special educators indicated having family members (17%), and volunteer or charity experience (11%) were the next most common influences for entering the special education career field. In regards to retention, survey respondents indicated high levels of job satisfaction and the most common influence for remaining in the field across both subgroups was to serve those in need. However, secondary educators were more influenced by public policy and legislation (18%) whereas elementary educators were highly influenced by their school district or employer (31%). Overall, findings suggest an individual's motivation for entering the profession is connected to what influences them to remain in the profession if their purpose is to serve those in need.

Disproportionality. One study analyzed the experiences around recruitment into teacher training programs and motivations for becoming special education teachers in an effort to address the need for a more diverse workforce (Scott & Alexander, 2017). Authors shared concerns regarding the small ratio of Black male teachers to large percentages of Black students, especially boys, being qualified for special education services. In addition, concerns on how racial and gender differences impact placement, suspension rates, and types of academic instruction were motivations for conducting this study. Scott and Alexander (2017) interviewed 18 Black men using cultural identity and intersectionality frameworks to determine how they were recruited and what motivated them to become special education teachers.

Findings determined the main reason for pursuing the profession was to reverse a cultural stigma. Participants emphasized that Black students are subjected to poor educational outcomes and

stereotyped as being unable to learn. Being identified as qualifying for special education services was viewed poorly and therefore participants wanted to “tackle the negativity of this cultural stigma in the Black community” (p. 6). The final finding regarding motivations to enter was having personal connections to someone with a disability, such as a friend or relative, or from having previous experience in working with a person with a disability.

Teacher Candidates. Mamlin and Diliberto (2020) conducted a qualitative study on current and prospective students of special education licensure programs to determine their reasons for choosing to pursue special education. Findings aligned with the three broad areas of motivation identified above from previous research (e.g., intrinsic, extrinsic, altruistic), but added two additional attributes: (a) relationships with other individuals in the teaching profession, and (b) perceived ability in being able to help students. These findings support the domains established within the FIT-Choice Framework.

Study participants indicated some personal utility motivations, such as the need within the profession and increased job availability as also influencing their decision to pursue the career. A few respondents had shared concerns regarding the need for more diversity in special education, however, the study did not include ethnicity within their demographic questions to determine if individuals from underrepresented populations were more motivated by the need for more diverse representation in teaching. Additional study findings indicated that a third of respondents indicated a desire to return to their communities to teach. This finding supports localized recruitment priorities, especially within hard-to-fill rural areas. Lastly, the study asked respondents to share when they initially became interested in the teaching profession. Results indicated the onset of interest as widespread, with 23% of respondents interested during elementary school, 33% during secondary school, 19% during college, 11% post-college, and 15% who shared they always had wanted to teach. However, findings regarding onset of interest reflect a limitation of the study, as a large majority of respondents were homogeneously traditional students, being under the age of 25, single, and not having any dependents. Finally, one major limitation to the study was that survey dissemination was not tracked by the researchers, therefore the authors could not determine return rates or conduct any statistical analyses.

Finally, most recently, a qualitative study of nineteen graduate students enrolled in a master's of special education licensure program was conducted to identify motivations for pursuing becoming a special education teacher as a recruitment strategy (Reeves et al., 2021). The special education licensure program identified for this study provided licensure to teach all students with disabilities in all types of educational settings at either the elementary or secondary level. Students were either already licensed in other fields or were pursuing the program for initial licensure, requiring 12 extra credit hours.

Characteristics of study participants were predominantly female (84%), Caucasian (89.5%), and almost half were between the ages of 25-34 (42%). Remaining participants were either younger (21%) or older (37%) with some older than age 55. Using a questionnaire and semi-structured interviews, coded findings were organized into themes. For career awareness, there were three factors identified for motivation: (a) desire to be an advocate, (b) preference for special education, (c) personal reasons, (d)

degree program/career goals, (e) experiences with individuals with disabilities, (f) influence from others, and (g) other educational experiences.

Overall, the most prominent motivations were to advocate for students with disabilities and having a passion and love for working with these students. The urge for advocacy stemmed from an understanding that students with disabilities were not getting the support they needed. In addition, participants mentioned religion, fate, and a calling as their motivations to serve. In addition, respondents indicated working in smaller groups and the opportunity to be creative in addressing student needs as additional motivations. Finally, other findings indicated that many students had come from other fields and were changing careers, primarily because of having had varied experiences with individuals with disabilities in school settings.

Special Education vs. General Education. Bremer (2012) used the FIT-Choice Scale to study whether motivations differed between preservice special education and general education teacher candidates. The purpose of this dissertation research was to identify the motivational profile of preservice special education teachers and then compare motivations with their general education counterparts, based on the assumption that those who choose to teach special education are unique. This study used a cross-sectional survey design with 356 undergraduate pre-service education teacher candidates in a private faith-based institution. Survey design included demographic questions and questions using the FIT-Choice Scale. Initial response rates using electronic email requests were extremely low (4%), leading to a second attempt using a paper-pencil based questionnaire distributed to 20 classrooms yielding higher completion rates (31%). Demographic results indicated 95% of respondents were between the ages of 18–22, with 85% being female, and 78% majoring in general education. Of the 79 special education majors, all but five were female (95%).

Findings related to motivational influences using the FIT-Choice Scale confirmed altruistic and intrinsic motivations as the most significant motivator for teachers. In addition, extrinsic motivators such as personal utility values and tasks were the weakest motivators. Overall, there were no statistically significant differences found across motivational influences between special education and general education preservice teachers. Bremer (2012) claims findings challenge the assumption that preservice special education teachers are uniquely motivated in their choice to teach special education. However, one critical limitation to using the FIT-Choice scale to understand or compare motivations for special education teachers is that question stems and survey items do not include attributes specific to working with individuals with disabilities. In addition, the respondents in this study are homogeneous, being primarily younger, traditional students, therefore further limiting generalization of results.

Limitations. Although research begins to look at understanding motivations for teaching special education, many limitations exist across studies. Most identified research studies were conducted using small, non-random samples, and participation was often based on direct relationships with the researcher using convenience or snowball sampling methods (Fish & Stephens, 2010; Marks et al., 2005; Scott & Alexander, 2017). The remainder of research studies focused on candidates enrolled in preservice

teacher preparation programs, often composed of a more homogenous, traditional group of students within the teacher pipeline (Bremer, 2012; Mamlin and Diliberto, 2020; Reeves et al., 2021).

Overall, motivations identified across studies for teaching general or special education fit within the FIT-Choice Framework. However, specific connections to individuals with disabilities and issues of equity and advocacy are important attributes needing to be added in survey design when identifying motivations for teaching special education. This research study looks to expand on previous research, by adapting the FIT-Choice Framework to include special education specific survey items and by surveying a larger population of individuals, representing a wider range of targeted characteristics and includes individuals who were not enrolled in a teacher preparation program.

Hawai'i Context

Although Hawai'i has been facing the same teacher shortage battle as the rest of the country, there are many contextual factors that are unique to the state. These unique factors provide additional insight to discussions around the special education teacher shortage, while providing a case study to determine which proposed solutions may be effective.

Teacher Shortage

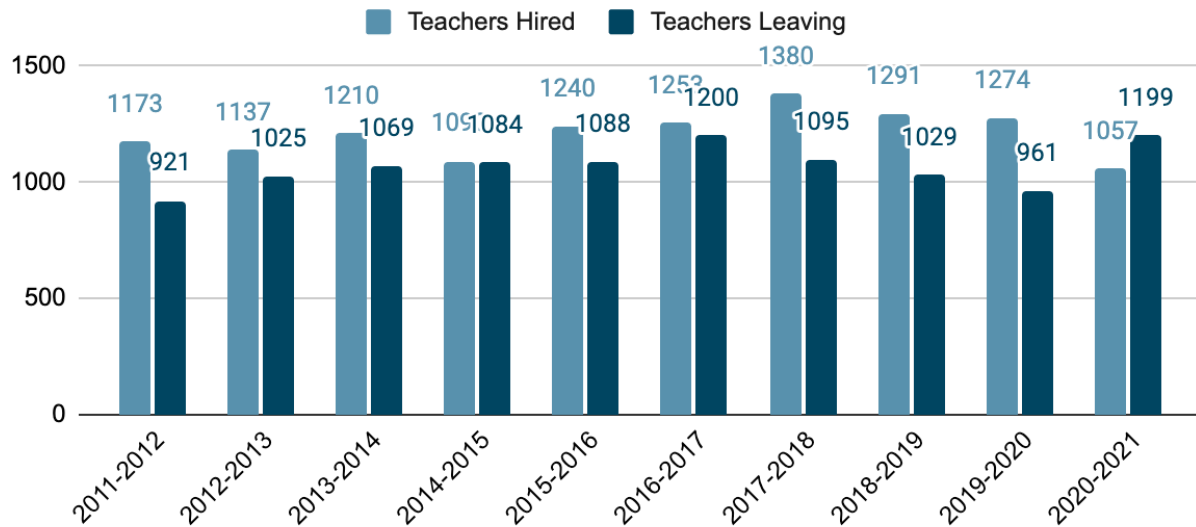
According to the Hawai'i State Teachers Association (HSTA; 2019), data from the 2018–2019 school year indicated there were over 1,000 positions left vacant [unfilled] or filled with an unlicensed, emergency-hire teacher. Not having access to licensed teachers negatively impacted over 60,000 school-aged children in the state. Shortages were worse in hard-to-staff schools, with some schools having up to 30% of their teacher positions unfilled by a qualified teacher. Hard-to-staff schools impact students from lower socioeconomic backgrounds and report having higher percentages of Native Hawaiian, Other Pacific Islander, and Filipino students. In addition, teacher attrition rates have increased over time, with the number of teachers choosing to leave Hawai'i being 70% higher than in 2012.

Overall, Hawai'i data for SY 2019–2020 indicated that 93% of the teacher workforce had completed a SATEP (HIDOE Strategic Plan Dynamic Report, 2020). Similar to criticisms regarding generalized shortage data, this workforce data does not highlight the gravity of the state's teacher shortage. For example, when you distinguish data between special education and general education teachers for that year, only 84% of special education teachers were highly qualified, indicating a much more significant shortage in this field. Furthermore, when you disaggregate data by districts and complex areas, the Nānākuli - Wai'anae Complex area, serving the largest Native Hawaiian community in the state, had only 72% of their special education teachers fully licensed.

Over the last 10 years, the HIDOE has hired 12,105 new teachers and lost 10,671 teachers within the same timeframe (see Figure 2; HIDOE Employment Reports, 2011–2021). Therefore, attrition alone accounted for 88% of the annual demand, with 71% of attrition caused by teachers who left the teaching profession prematurely. This does not include the additional 900 vacancies that go unfilled year after year, which extends the shortage even further.

Figure 2

Number of Teachers Hired Compared to Number of Teachers Separated

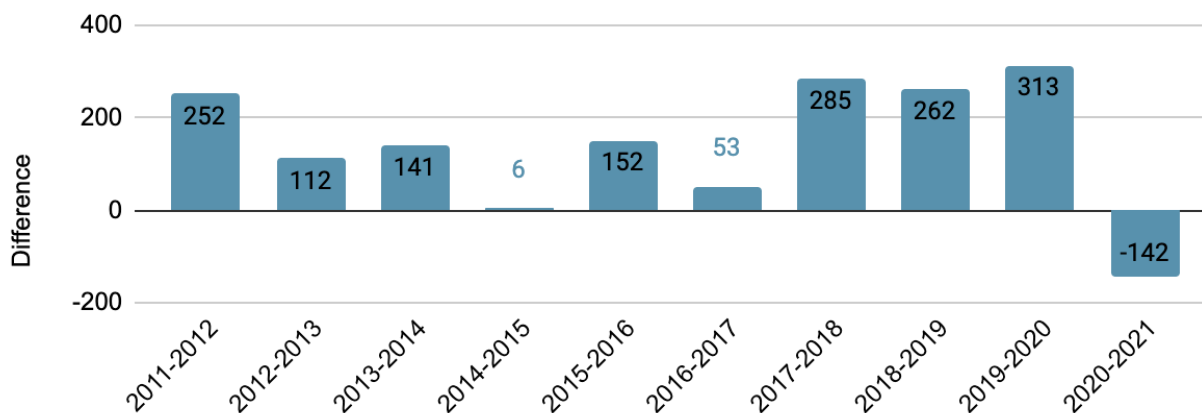


Note. Data taken from HIDOE Employment Reports, 2011–2021

According to HIDOE data, the number of new hires had exceeded the number of teachers leaving, suggesting that our teacher shortage was slowly improving over the past decade. From 2017 to 2019, the gap between the number of new hires and teachers leaving was improving, with 313 more hires than separations in the 2019–2020 school year (see Figure 3). However, the impacts of COVID-19 are evident for SY 2020–2021, as significantly more teachers left the profession with fewer teachers hired, making the surplus of teachers enter negative numbers for the first time in over 10 years.

Figure 3

Supply & Demand Surplus, 2011–2021

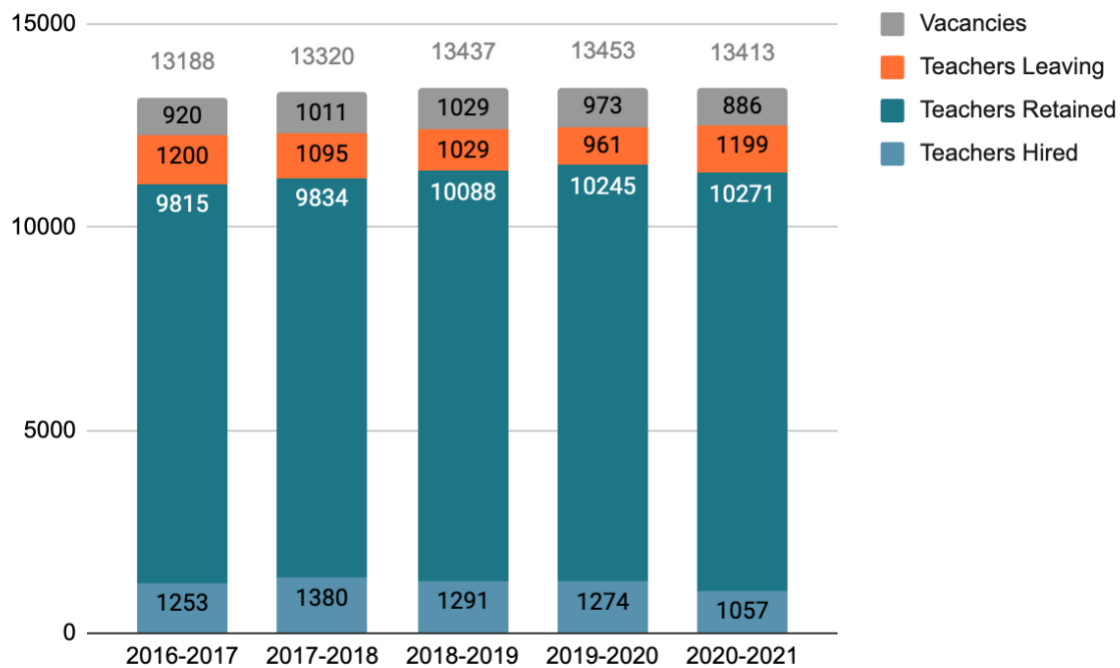


Note. Data taken from DOE Employment Reports, 2011–2021

When looking at the Hawai'i teacher workforce holistically, about 75% of total positions are filled by teachers retained from the previous year. The remaining positions reflect new hires (9%), teachers who leave (8%), and position vacancies (7%; HIDOE, 2016-2020; see Figure 4).

Figure 4

Hawai'i Teacher Workforce, 2016–2021

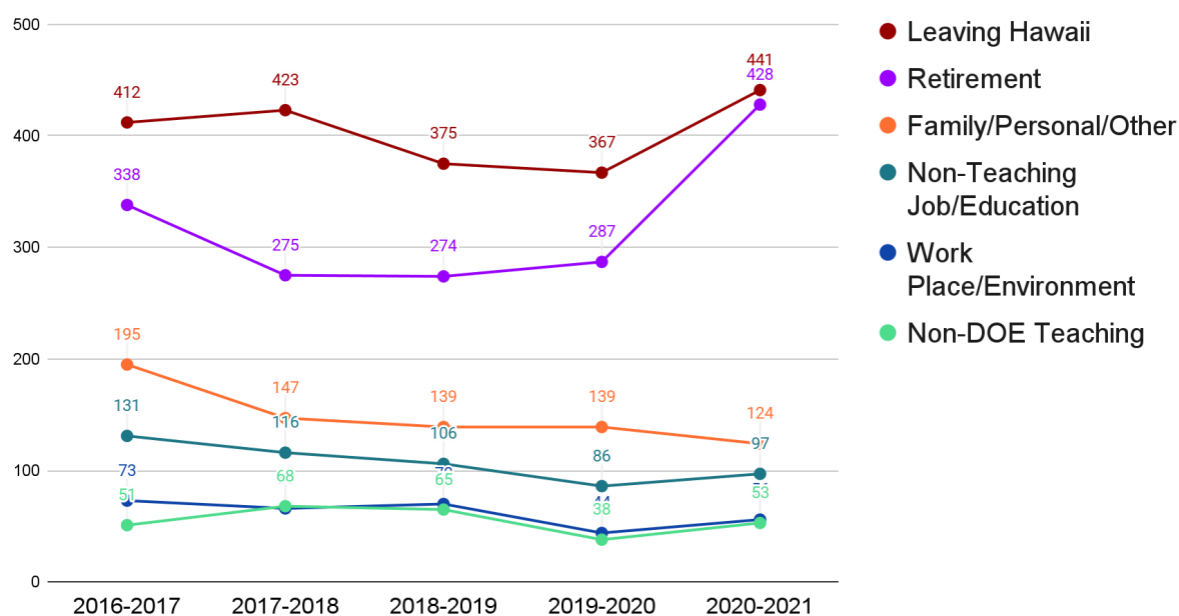


Note. Data taken from DOE Strategic Plan Dynamic Report and Employment Reports, 2016–2021

According to HIDOE employment reports, only 29% of teacher attrition is due to retirement, with almost three-fourths of all separations being premature (HIDOE Employment Reports, 2016–2021). Primary reasons for pre-retirement attrition are caused by individuals leaving Hawai'i (37%), family/personal/other reasons (14%), or leaving for a non-teaching job in education (10%; see Figure 5). The COVID-19 pandemic significantly increased the number of teachers retiring and increased the number of people leaving the state. In contrast, the number of people leaving the DOE to pursue non-DOE teaching roles decreased.

Figure 5

Reasons for Leaving Teaching, 2016–2021



Note. Data taken from Employment Reports, 2016–2021

Hawai'i's unique geographic locale and climate play a key role in the local teacher shortage. Hawai'i is known for its appealing weather and attractive landscape and can be used as a recruitment tool. However, individuals who move to Hawai'i to teach are quickly stunned at how different the living situation is outside the more popular tourist areas. Once adjusted for cost of living, Hawai'i teachers are the lowest paid in the nation and Hawai'i is one of the lowest ranked states for percentage of state and local expenditures supporting K–12 education (Hawai'i Scholars for Education and Social Justice, 2019). Although it requires a great deal of commitment and money to relocate thousands of miles from home to the isolated chain of islands, a majority of those who do relocate end up leaving the state within the first few years. In fact, the number of teachers leaving Hawai'i surpassed the number of retirements and was the main reason for voluntary separations of teachers beginning in SY 2015-2016 and continues to this day, with 1,931 teachers having left the state over the last 5 years (HIDOE Employment Reports, 2015–2021).

In an attempt to capitalize on the attractiveness of the state, the HIDOE has had to rely on recruitment of individuals from the continental United States to meet workforce demands for more than two decades (Reed, 2007). However, data from 2018 showed that of the 739 new teachers hired who were not trained in Hawai'i, only 365 (49%) continued teaching in Hawai'i the following year. In contrast, of the 242 locally trained new teachers, 200 (83%) continued to teach the following year (HSTA, 2019). Therefore, a more effective and cost-saving recruitment solution would be to invest in capacity building

within local teacher preparation programs in the state, as local teachers are more likely to be retained each year and can help prevent high rates of pre-retirement attrition.

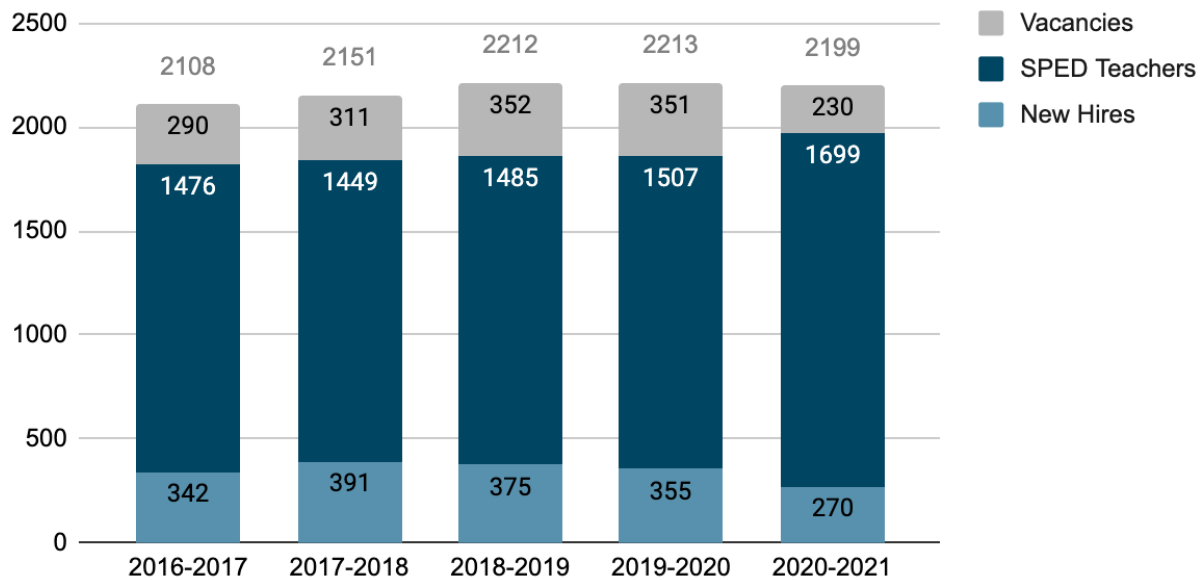
Special Education Shortage. The lack of qualified teachers and its impact on special education services in Hawai'i has already led to a multi-million dollar lawsuit against the state. Known as the Felix Consent Decree, the state faced a class action lawsuit in 1994 that required federal oversight and external guidance for addressing the shortage of quality special education teachers and services (Chorpita & Donkervoet, 2005). During this period, the state experienced a dramatic shift in how special education was designed and implemented. In order to find the teachers they needed, the state looked to Teach for America and hired a national consulting firm, Columbus Education Corporation, to recruit teachers from outside of the state. Despite concerted efforts, the state could not meet capacity and a majority of the teachers who did relocate to Hawai'i did not stay (Howard, 2014; Reed, 2007). In the end, although workforce capacities were never fully met, a settlement was reached in 2005. Although the Felix Consent Decree has ended, the state has remained mindful in prioritizing recruitment efforts as an effort to prevent a similar lawsuit from happening again.

The shortage of special education teachers has been perennial, with Hawai'i having reported a shortage of teachers in special education every year since 1990 (Cross, 2017). Between 2016–2021, the state needed an average of 2,177 special education teachers and had an average of 1,870 positions filled each year (85%). Although special education positions made up 16% of the teacher workforce in total, special education positions account for an average of 32% of vacancies in the HIDOE each year.

In 2019, the HIDOE took a bold step and provided \$10,000 pay differentials for all special education teachers in the state. As a result, the shortage in special education saw dramatic improvements by SY 2020–2021, as there were a significant number of special education positions filled internally (see Figure 6). Although there was a drop in new hires, more positions were being filled by general education teachers or licensed special education teachers who had taken other positions and chose to move back into the special education classroom. In the end, the state experienced the largest percentage of special education positions being filled, with 90% of the special education workforce comprised of licensed teachers and 95% of positions filled overall. This suggests that not only did this increase in pay support filling more positions in the state, it also significantly decreased the number of emergency hire positions by 9%. In conclusion, although the overall HIDOE shortage worsened as a result of the COVID-19 pandemic due to more teachers retiring or leaving the state, special education currently has the lowest percentage of vacancies ever recorded. This suggests that significant pay incentives for hard-to-fill fields are effective, as there were increases in supply and decreases in attrition of special education teachers in the state despite the negative impacts of the pandemic.

Figure 6

Special Education Positions, 2016–2021

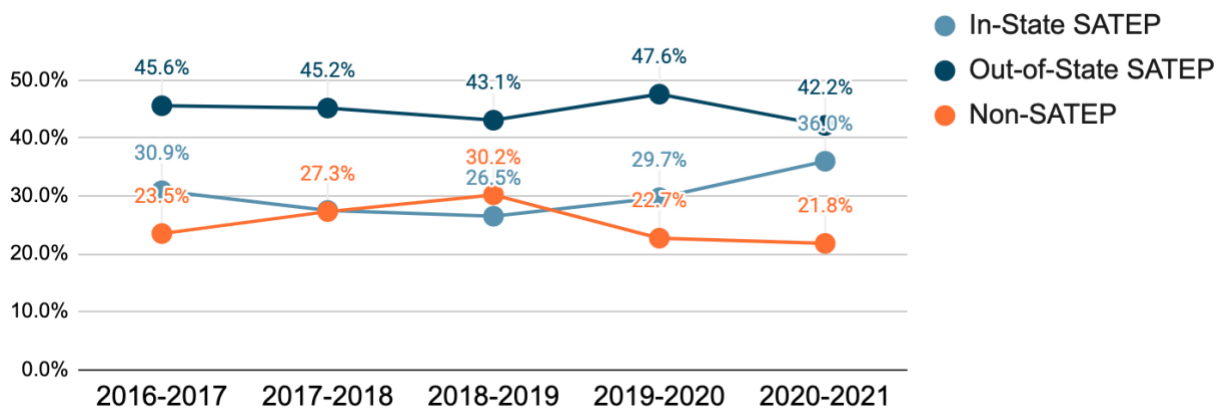


Note. Data taken from Strategic Plan Dynamic Reports, 2016–2021

Teacher Preparation. As of 2019, there were 14 Hawai'i-based SATEPs offered through IHE or alternative teacher preparation agencies. Since 2014, the largest percentage of new teachers hired each year were from out-of-state teacher preparation programs (44.1%), followed by in-state teacher preparation graduates (31.1%), and the remaining being emergency-hire teachers who had not yet completed a state teacher preparation program (21.8%; see Figure 7).

Figure 7

New Teachers Hired by SATEP Status, 2016–2021

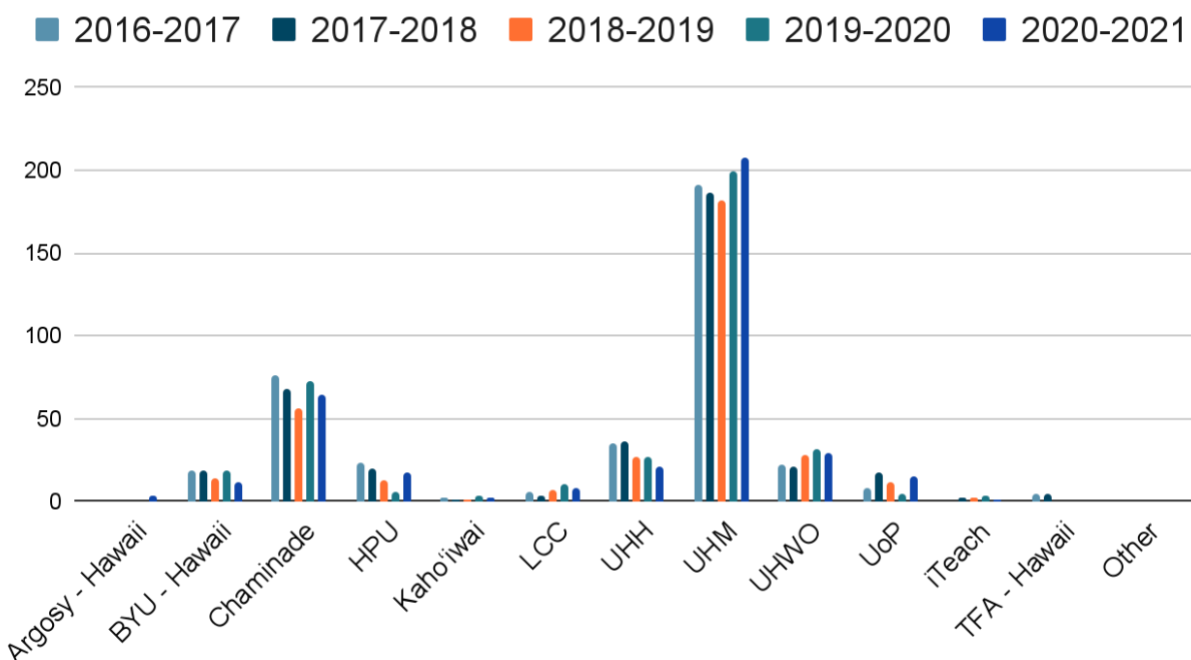


Note. Data taken from Employment Reports, 2016–2021

Beginning in 2019, we can see an increase in the number of in-state teachers being hired and a decrease of individuals hired as emergency teachers or from out-of-state. From 2014 to 2021, in-state teacher preparation programs produced 2,639 new teachers hired by the state, with an average of 376.6 teachers per year (HIDOE Employment Reports, 2014-2021). On average, the University of Hawai'i at Mānoa (UHM) produced a majority of new hires (52.5%), followed by Chaminade (18.4%; see Figure 8). The remaining ten educator preparation programs, combined, produced 30% of the in-state new hires each year. Considering the state loses about 1,097 teachers due to attrition, in addition to an average of 964 positions left vacant, the state would need to produce around 2,061 new teachers each year to successfully address Hawai'i's teacher shortage. Each institution would need to recruit 5.5 times the number of candidates it currently graduates to meet state workforce needs.

Figure 8

New Hires by In-State Educator Preparation Program and Year, 2016–2021



Note. Data taken from Employment Reports, 2016–2021

Special Education. As of 2020-2021, only six identified teacher preparation agencies were offering licensure in special education. The University of Hawai'i System, the only public land-grant institution in the state, has programs available through three of their campuses: (a) University of Hawai'i at Mānoa, (b) University of Hawai'i at West O'ahu, and (c) Leeward Community College. Chaminade University is the only private IHE offering a special education licensure program in the state. Finally, two alternative teacher preparation agencies, iTeach and Teach Now, offered licensure options in special

education for individuals who already held a bachelor's degree. Understanding the design of each program available helps to inform which needs and preferences are currently being served across all programs throughout the state.

The University of Hawai'i at West O'ahu provides special education certification as an add-on to their bachelor's degree in elementary, middle, or secondary education. The special education licensure option is provided as a 15-credit "add-a-field" program with a majority of coursework completed in the final summer of their degree. The program is face-to-face, with field placements primarily on the Central and Leeward areas of O'ahu. The program is accredited by the Council for the Accreditation of Educator Preparation (CAEP).

Leeward Community College (LCC) offers an Advanced Professional Certificate in Special Education, Mild/Moderate K–12 program for individuals who have already completed a bachelor's degree. The program is 19-credits, made up of five courses (3 credits each) followed by a student teaching portfolio (3 credits) and final semester of practicum (1 credit). The program can be completed in 18 months and all courses are delivered online in an asynchronous format. In the final semester of practicum, students receive up to 4 lesson observations. There are no eligibility requirements for entry, although candidates must maintain a 2.0 GPA throughout the program. This program has been approved by the Hawai'i Teacher Standards Board as an alternative route to licensure and LCC is the first community college in the country to receive accreditation from the Association for Advancing Quality in Educator Preparation (AAQEP).

Chaminade University offers two programs leading to licensure in special education: (a) B.S. in Special Education, in partnership with LCC, and (b) Master of Education in Teaching (MAT) with a concentration in Special Education with Licensure (K–12). The B.S. in Special Education is a 3+1 program, with students completing 90 credits at LCC, and then transferring to Chaminade to complete the remaining 33 credits of coursework towards licensure. The MAT program is 36 credits and can be completed in 18 months. Both programs are delivered online and coursework is completed asynchronously. Programs are accredited by the Council for the Accreditation of Educator Preparation (CAEP).

iTeach USA is a company based out of Denton, Texas and has locations in six states and the District of Columbia. It is a competency-based educator preparation program that is fully online. To enroll, candidates must already be able to pass the Praxis II exam in their licensure area, such as special education. Once passed, iTeach automatically accepts and enrolls anyone who has a bachelor's degree and minimum 2.5 GPA. Candidates must then secure their own position as an emergency hire teacher for one year and then the program assigns them a field supervisor to complete their final field experience course. The program includes nine subject-matter courses that are all online, self-paced, and must be completed within a six-month period. In addition, the same sequence of courses is given to all candidates, regardless of their pursued licensure area specialization. The program can be completed in one year and costs the candidate a flat rate of \$5,000. This program has received national accreditation from the

Council for the Accreditation of Educator Preparation (CAEP).

TeachNow is an alternative teacher preparation program approved in three states: Arizona, Hawai'i, and the District of Columbia. In July 2020, this company renamed itself as Moreland University, named after the CEO's grandmother. This program provides a series of eight modules that can be accessed year-round and takes nine months to complete. The program uses rolling admissions and enrolls 10–15 students as a cohort each month, who will work with one instructor throughout the program. The final 12-weeks include a teaching practicum experience. The entire program costs \$6,000 and is delivered entirely online using synchronous and asynchronous activities. Admission requirements include a bachelor's degree, GPA of 3.0 or higher, and a writing sample. Upon completion, students can add a master's degree in special education in 16 weeks for an additional \$7,000. This program was the first online program to receive national accreditation from the Council for the Accreditation of Educator Preparation (CAEP). However, in November 2021 the Hawai'i Teacher Standards Board revised their EPP requirements, ensuring that candidates must be living and completing their student teaching in Hawai'i in order to obtain state teacher licensure. Once this revision was passed, TeachNow withdrew their program saying they could no longer support Hawai'i licensure (Ruth, 2021).

The College of Education at the University of Hawai'i at Mānoa is the largest local producer of newly certified teachers in the state each year. The Department of Special Education offers four teacher preparation program options in special education: (a) Bachelor of Education, Early Childhood and Early Childhood Special Education, (b) Bachelor of Education, Exceptional Students and Elementary Education, (c) Post Baccalaureate Certificate in Special Education, and (d) Master of Education in Teaching, Dual Secondary and Special Education. The largest special education teacher preparation program is the Post Baccalaureate Certificate in Special Education (PBSPED) and is the department's primary ARC program, specifically designed to meet the needs of nontraditional students who are often already hired in HIDOE schools. In 2021, the University of Hawai'i at Mānoa received national accreditation by AAQEP through 2028 and was previously accredited from 2001–2018 by the National Council for Accreditation of Teacher Education (NCATE).

In need of building a more local and stable pipeline to special education in Hawai'i, and as a result of the Felix Consent Decree, a year-to-year Memorandum of Agreement (MOA) between HIDOE and UHM was developed to provide funding towards certification of new special education teachers in the state. Funding is provided to candidates while enrolled in the program, as long as they commit to teaching special education in a HIDOE school for three years upon graduation. As part of this agreement, the university was required to develop procedures related to recruitment, screening, enrollment, and awarding of tuition stipends to qualified candidates. In addition to tuition, funding provided IHE personnel needs, such as hiring additional faculty positions and the creation of a pre-service mentoring program. Currently, the HIDOE MOA agreement continues to support the recruitment and training of new special education teachers across all four special education licensure programs. Tuition funding for dual degree options covers the special education course and fieldwork components of the program, whereas, the post

baccalaureate certificate in special education is fully funded as it leads to licensure in special education only. Beginning in 2019, the MOA agreement was extended to include special education licensure programs across all UH system special education licensure programs, including UH West O'ahu and LCC.

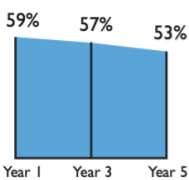
The MOA agreement began in 1998 and has been fully renewed each year, except in 2007 during the Great Recession. Despite concerted efforts, the Hawai'i shortage in special education remained significant. This suggests that tuition funding alone may not be enough incentive for individuals to pursue special education licensure, or that other barriers may be hindering their ability to pursue the career. In addition, concerns with exclusive use of funding incentives may not attract the types of people who are more likely to commit to the profession, as research shows most special education teachers are motivated by altruistic and social utility purposes rather than extrinsic or personal utility reasons (Bremer, 2011; Richardson & Watt, 2006; Stephens & Fish, 2010).

The HIDOE reports data on teacher retention, defined as the percentage of new teachers retained after five years (HIDOE, 2020). Since 2016, statewide retention rates range from 51% to 55%. Data includes teachers who stay in their complex area and the percentage who may have left the complex area, but are still either teaching or have moved into other HIDOE positions, such as administration. When broken down by complex area for SY 2020-2021, retention rates broaden, with Hilo-Waiakea complex having the highest retention rate (67% in complex area and 83% in HIDOE), compared to Nānākuli-Wai'anae complex having the lowest (35% in complex area and 35% in HIDOE). However, retention rates by complex area shift each year. The highest overall retention rate (55%) was in SY 2019-2020, but then dropped to its lowest retention rate (51%) in SY 2020-2021. Shifts in retention rates were likely impacted by the implementation of pay differentials, followed by the COVID-19 pandemic. Unfortunately, data reports on retention do not distinguish between general and special education teachers, therefore comparisons using this data set cannot be made.

The Hawai'i P-20 Partnerships for Education provide an Education to Workforce Report (2019) summarizing data related to the teacher preparation pipeline across the UH system. Although teacher preparation graduates are not enough to fill state workforce needs, the report highlights that UH graduates in education are more likely to be retained in Hawai'i's workforce after 5 years when compared to graduates from non-education fields. In addition, the number of public school students who completed a Career and Technical Education (CTE) program during high school has continually increased since 2016 and these students have higher college enrollment rates (61%) compared to the statewide average (55%). Lastly, the report shows that graduates in special education have higher retention rates in the education industry than all other education majors after one, three, and five years (see Table 1).

Table 1

UH System P–20 Employment Retention Data for Teacher Education Graduates

FOUND WORKING IN HAWAII'S EDUCATION INDUSTRY					
EDUCATION	MAJOR	GRADUATES	YEAR 1	YEAR 3	YEAR 5
	Early Childhood Education	369	25%	22%	21%
	Elementary Education	1,003	54%	58%	53%
	Secondary Education	633	70%	66%	63%
	Special Education	307	80%	71%	67%
	Other Education	1,507	63%	58%	55%

Note. Data taken from Hawai'i P-20 Education to Workforce Report, 2019

Given this data, HIDOE stipends provided to individuals who can commit to teaching special education for three years may be contributing to higher retention rates, even after the service commitment has been fully repaid.

Inequities and Diversity

The state of Hawai'i is geographically unique, being the only state composed exclusively of islands (i.e., Hawai'i, Maui, Moloka'i, Lāna'i, Kaua'i, O'ahu, and Ni'ihau) and is one of the most geographically isolated landmasses in the world. Being thousands of miles away from the next closest state makes recruitment of licensed teachers more difficult, due to additional costs associated with relocating. Being an isolated and predominantly rural state makes it additionally challenging to find individuals who are interested in living outside the one urban center on O'ahu. Over one million people reside on the island of O'ahu, which is about 81% of the total state population. The rest of the state, including all neighboring islands, are identified as rural and remote with a total population of 273,927 (USDA ERS, 2020). In addition, the poverty level is much higher in rural areas (12.1%) than in urban areas (8.3%), with rural areas being home to communities with higher percentages of Native Hawaiians. Lastly, a majority of Hawai'i public schools (62%) qualify as Title I, with 47% of the student population qualifying as economically disadvantaged (HIDOE, 2022)

One of the most unique attributes of Hawai'i's public education system is that it is the only state governed by a single, unified school district (HIDOE, 2022). Schools in Hawai'i are not funded differently based on local property taxes like the rest of the country, which is often cited as a foundational reason behind inequities in education. In other states, schools and districts can use higher salaries as an advantage in recruiting teachers from neighboring districts (Nguyen, 2020; Tyler et al., 2003). However, in Hawai'i, all schools are funded using the same funding formulas, and up until 2019, teacher salaries were the same no matter which school someone chose to teach at. Therefore, it is interesting to note that

despite a more equitable salary and school funding model, inequities in educational opportunities for minority and socioeconomically disadvantaged students have persisted.

The downside of having a unified school district is that the needs of the more rural and remote islands of the state are often not prioritized within larger policies and practices, often being determined by leaders who live and work in the urban center of O'ahu. In addition, national studies focusing on rurality use measures that do not fully capture Hawai'i's unique geographical needs. For example, identifying rurality includes population sparsity or by comparing population density with the geographical size of the state (Nguyen, 2020). Under these criteria, Hawai'i does not identify as being substantially rural. Although distances between Hawai'i islands may not be vast in miles or geographical size, the lack of resources and limited access, requiring a boat or plane, make the rural needs of Hawai'i unique.

Especially on the smaller islands, such as Moloka'i, schools find it difficult to recruit individuals to live and teach on the remote island. In fact, because of their needs, Moloka'i received an exception to allow high school graduates to work as educational assistants or substitutes even before the COVID-19 pandemic. On the island of Lāna'i, the total population size is just above 3,000 people and there is only one school serving PreK to Grade 12 students (US Census Bureau, 2020). Being one of the smallest, most isolated islands makes it even more difficult to properly recruit and train new teachers, as their licensure area needs are more dependent on the position(s) available in any given year. Overall, schools on these smaller islands have less workforce labor to draw from, less access and resources, and less opportunities to receive training and other professional development than schools on O'ahu.

Gender. Hawai'i's teacher demographics mirror the national gender disparity, with around 74% of newly hired teachers each year as female. When broken down between elementary and secondary teachers, the disproportionality within gender becomes even more evident. For SY 2018–2019 males made up 37% of new hires at the secondary level and 12% at the elementary level. Gender employment data do not distinguish between special educators and general educators, where disparities may be worse (HIDOE Employment Report, 2018). Given Hawai'i is the only state with a minority-majority ethnic population, Ponte (2012) suggests the underrepresentation of males in the teaching profession as a more apparent concern for diversifying the teacher workforce. In 2017, the student population was 52% male, however, students qualifying for special education services were 69.9% male (CRDC, 2022)

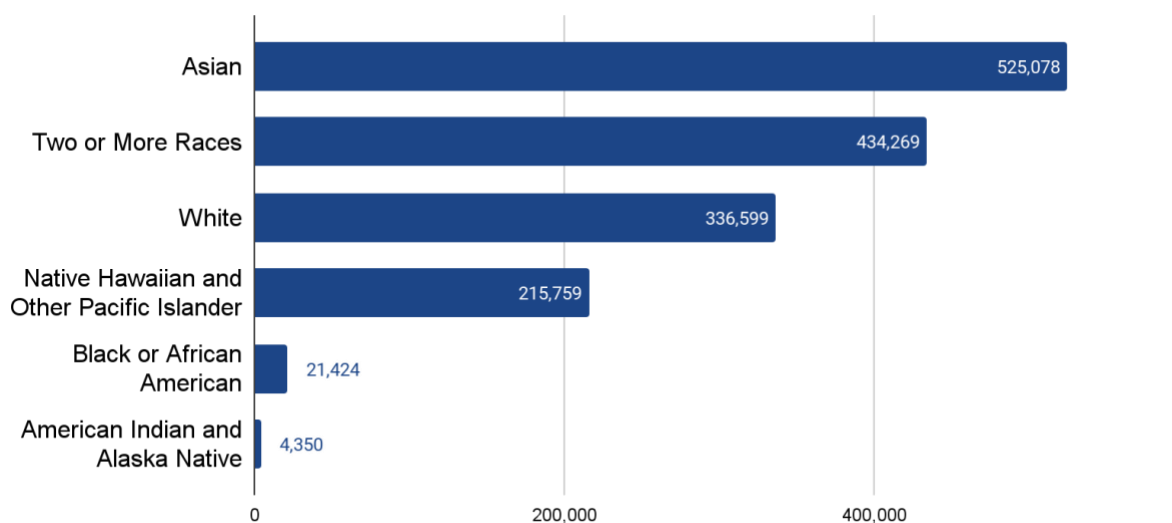
Ethnicity. Hawai'i is the most ethnically diverse state in the country and is the only state without an ethnic majority (US Census Bureau, 2020). Having a large range of different ethnic groups in the state highlights current limitations within national data sets, which often group multiple ethnic groups together. Understanding inequities based on ethnicity in Hawai'i can easily be overlooked because reported ethnicity categories are broad, and reported data are different across reporting agencies.

Based on reported Census data, the largest ethnic group in Hawai'i is Asian (34.2%), followed by Two or More Races (28.2%), White (21.9%), and Native Hawaiian or Pacific Islander (14%, see Figure 9). Given these data, Hawai'i could serve as the rationale for why national ethnic categories need to be disaggregated further (Sullivan et al., 2020). Fortunately, the US Census does separate Native Hawaiian

and Other Pacific Islanders from Asians. However, given that the category of Asian is the largest ethnic category represented, differentiating within this category is needed. Lastly, the growing percentage of individuals who identify as more than one race/ethnicity is expected to grow, with more than a quarter of Hawai'i's population already identifying as two or more races. Therefore, data analysis across different ethnic groups will continue to become more complex if national data sets continue to look at equity issues from a broad single-ethnic identity lens.

Figure 9

US Census Data 2020, Hawai'i Population Demographics by Race



The US census also provides separate data for identifying as Hispanic or Latino because they note that hispanics can be of any race. According to US Census Data, there were 120,842 people identified as Hispanic or Latino in Hawai'i (7.1 9%).

When comparing Census data to HIDOE data, the first notable difference is not only the larger number of ethnic group categories, but different ethnic categories are being used when collecting data across teacher and student populations. Similar to the US Census choosing categories that generalize to the largest known ethnic groups, it is interesting to note that HIDOE provides fewer options for identifying their teacher workforce as they do for their student population. The HIDOE provides 21 different ethnic categories for collecting student ethnicity, compared to only 11 ethnic categories on teacher ethnicity. In addition, the names of ethnicity categories between the two groups are not the same, making it even more difficult to make informed comparisons. For example, students can identify as Guamanian or Chamorro, Micronesian, Samoan, Tongan, Pacific Islander two or more, or Other Pacific Islander, making up a combined 18,368 students (10%) and thereby making them the fourth largest ethnic group of students. For teacher ethnicity, the only category available that would have fallen under Other Pacific

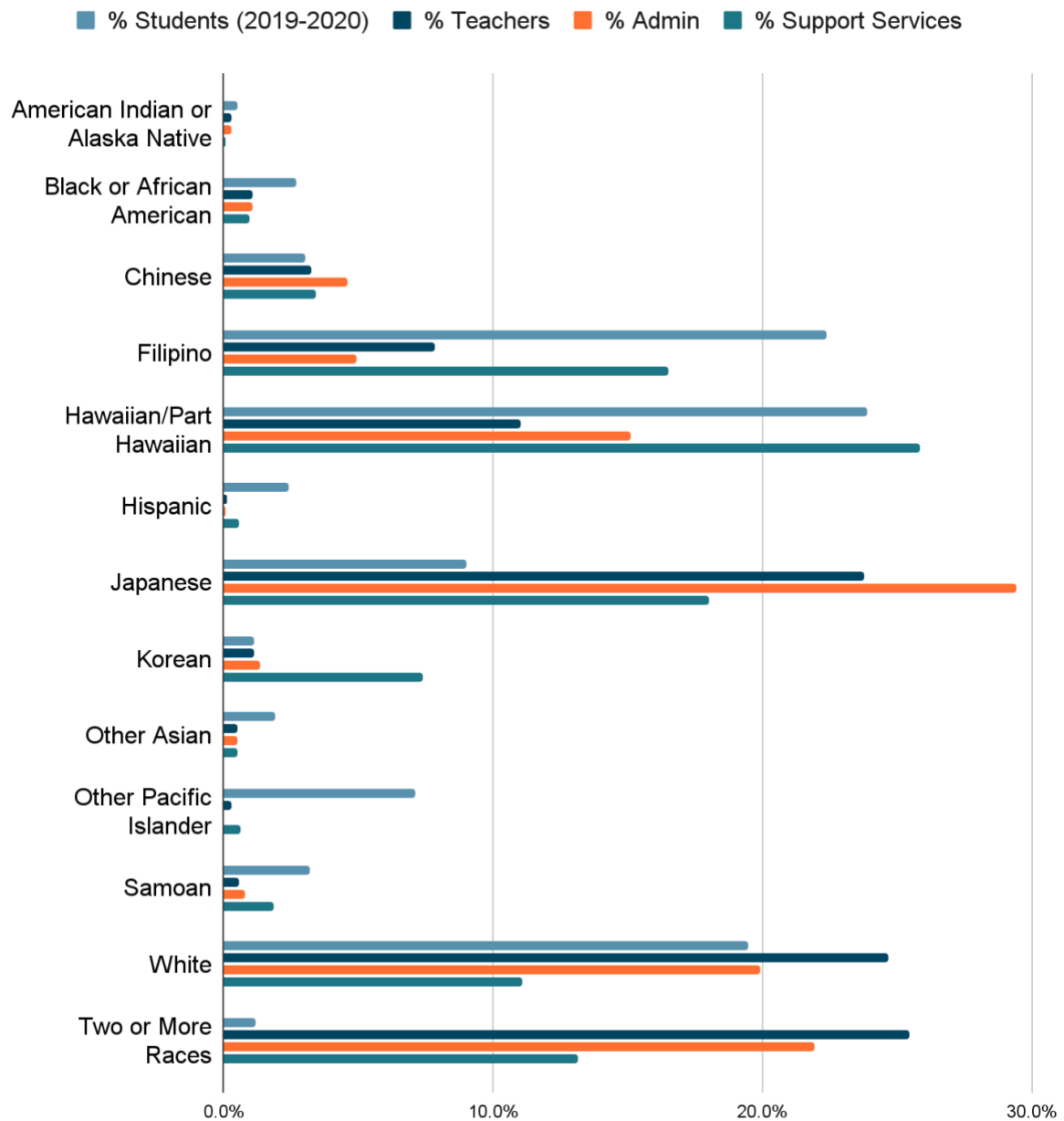
Islander is Samoan, which shows up as 0.5% of the teacher population. Perhaps there are more teachers who identify as Other Pacific Islander, but they would have been forced to select the category of “Other”. The category of “Other” is difficult to analyze, given it could encompass any other possible ethnic groups, especially since the option of “two or more” was not provided as an ethnicity option for teachers.

In an attempt to better understand disproportionality between ethnicities of students and teachers in Hawai‘i, I combined student data with annual HIDOE Employment Report data. HIDOE Employment reports share workforce ethnicity data on teachers, administrators, and classified/support services personnel (e.g., Educational Assistant, Office Assistant, School Custodian, School Security Attendant, Cafeteria Helper). By combining data from student and workforce percentages, comparisons on disproportionality of various ethnic groups can shed better light on whether possible inequities exist.

Overall, when comparing ethnicities across groups, the most significant disproportionality can be seen amongst the Filipino, Japanese, Native Hawaiian, and White ethnic populations (see Figure 10). There is also significant disproportionality for the Two or More Races group, however data reports are inconsistent and widely vary, making it harder to interpret. For Filipino and Native Hawaiian communities, they have significantly larger percentages of representation across students (22.5%) and support services personnel (16.5%) than teachers (7.8%) and administrators (5%). In direct contrast, the Japanese community makes up a larger percentage of teachers (23.8%) and administrators (29.4%) compared to students (9%) and classified services personnel (18%). Furthermore, Japanese administrators make up the largest percentage of any single ethnic group in the DOE. Within the White community, there are significantly more teachers (24.7%) and less support services personnel (11.1%), whereas the student population mirrors the percentage of administrators (19.5%, 19.9%).

Figure 10

HIDOE Ethnicity by Role Type and Percentage

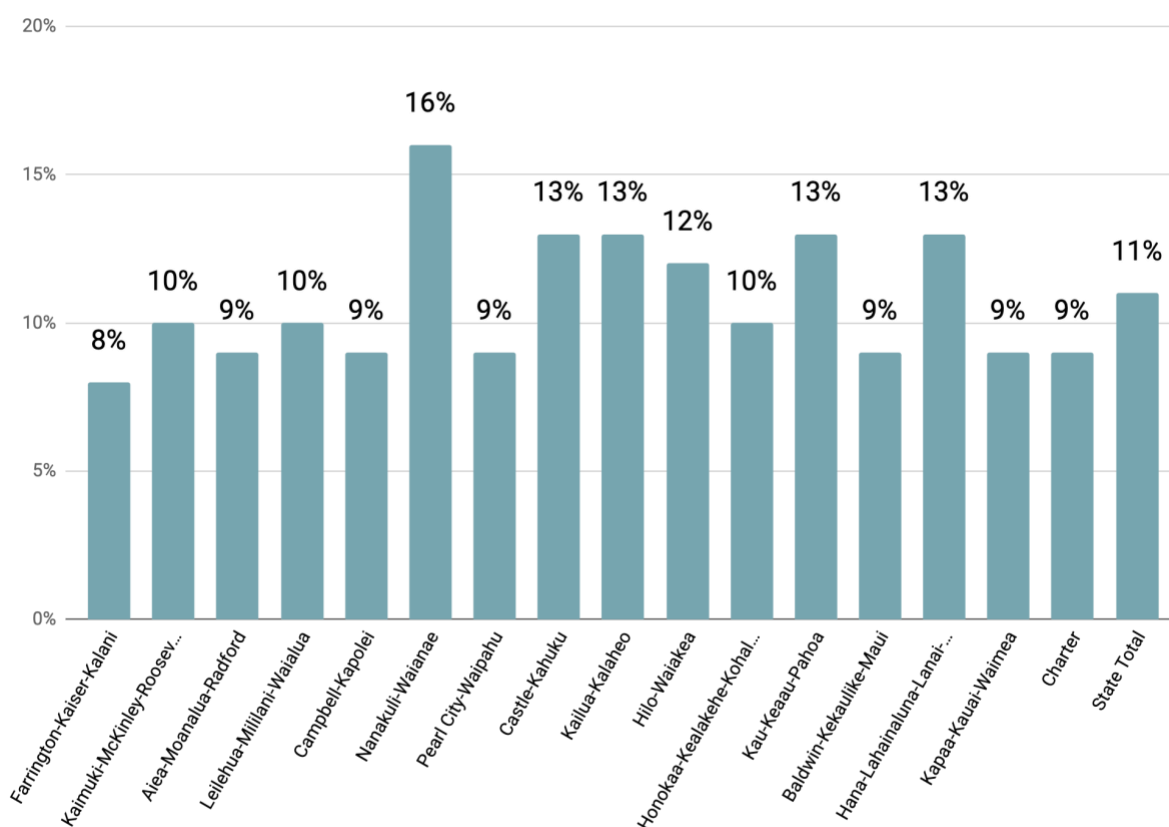


Note. Total might not be exactly 100% due to rounding. From “Hawai‘i DOE Databook”, Hawai‘i State Department of Education, 2019–2020, Office of Strategy, Innovation, and Performance and Hawai‘i DOE Employment Reports, 2020–2021

Furthermore, the issue of ethnicity and disproportion is even more apparent when looking at students who qualify for special education services. Issues of equity and disproportion become most obvious when analyzing our Native Hawaiian community. Overall, 10–11% of the HIDOE student body qualifies for special education, similar to the national average (HIDOE Databook, 2019). However, complex areas known to serve predominantly Native Hawaiian students have higher than average percentages of students qualifying for special education services, with the highest being from the Nānākuli - Waiʻanae complex (16%; see Figure 11).

Figure 11

Percentage of Students Qualifying for SPED Services by Complex Area



Note. From “Hawaiʻi Department of Education Data Book”, Office of the Superintendent, July 2020

Broken down even further, within complex areas the percentage of students qualifying for special education services range from 8% to 17% of the student body (HIDOE, 2020). The areas with the highest percentage of qualified students are in Pāhoā - Hawaiʻi (17%), Nānākuli - Oʻahu (16%), Molokaʻi (15%), and Waiʻanae - Oʻahu (15%). All four of these areas serve predominantly Native Hawaiian students. Lastly, given Office of Special Education Programs, Part B data, although Native Hawaiians make up

24% of the student body, this subgroup makes up 37% of students who qualify for special education services (HIDOE, 2019).

For the Filipino community, the ability to determine disproportionality in identification of special education services is much more complex. Going back to problems with using “Asian” as a single-ethnic category, data analyzing Filipino students who qualify for special education services cannot be understood using federal or state reports. According to HIDOE student data, there are 40,434 Filipino students (22.5%) and 4,584 Hispanic students (2.5%; HIDOE Databook, 2019). However, analysis of federal Office of Special Education Programs, Part B data reports 3,287 of Hawai’i students in special education identified as being Hispanic/Latino and only 2,953 students identified as Asian (see Figure 12).

Figure 12

Distribution of Children with Disabilities by Race/Ethnicity and Educational Environment

EDUCATIONAL ENVIRONMENT	RACE/ETHNICITY							
	HISPANIC/ LATINO	AMERICAN INDIAN OR ALASKA NATIVE	ASIAN	BLACK OR AFRICAN AMERICAN	NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER	WHITE	TWO OR MORE RACES	TOTAL
(A) INSIDE REGULAR CLASS 80% OR MORE OF DAY	1896	27	1246	153	2796	1174	1261	8353
(B) INSIDE REGULAR CLASS 79-40% OF DAY	1091	13	991	101	2259	597	865	5917
(C) INSIDE REGULAR CLASS LESS THAN 40% OF DAY	465		668	49	1064	273	332	2859
(D) SEPARATE SCHOOL			21		61	12	13	117
(E) RESIDENTIAL FACILITY								25
(F) HOMEBOUND/HOSPITAL					13	12		44
(G) CORRECTIONAL FACILITIES								10
(H) PARENTALLY PLACED IN PRIVATE SCHOOLS			12		22	25	14	96
(I) TOTAL (OF ROW A-H)	3287	50	2953	310	6228	2099	2494	17421

Note. From “Report of Children with Disabilities Receiving Special Education” Part B, Individuals with Disabilities Act, 2019

Given these data, one might assume that 72% of Hispanic students were qualifying for special education services compared to 17% of Asian students. However, additional data provided by the HIDOE Office of Strategy, Innovation, and Performance shared that race and ethnicity is self-identified and self-reported, therefore data may be inconsistent. For federal reporting purposes, Filipinos were self-identifying as the following: (a) Asian (67%), (b) Hispanic/Latino (12%), or (c) Two or More Races (21%). Given these additional data, it is still unclear how there is a significantly larger percentage of students qualifying under the category of Hispanic/Latino than Asian. In a final effort to understand, the U.S. Office of Civil Rights standards for maintaining, collecting, and presenting federal data on race and ethnicity indicated that, “when data on race and ethnicity are collected separately, provision shall be made to report the number of respondents in each racial category who are Hispanic or Latino” (US DOI, 2022). Therefore, despite which ethnicity Filipino families use to self-identify, if they select “Hispanic or Latino”

rather than “Not Hispanic or Latino” as their race, they will automatically be categorized under the category of Hispanic/Latino on OSEP reports.

In summary, understanding equity and representation of certain communities and populations can not be accurately analyzed for comparisons using current data reporting systems. However, what is known is that the largest disproportionate ethnic groups in Hawai‘i mirror national concerns related to a teacher workforce being representative of more privileged groups in society. According to Hawai‘i Business Magazine (Yuen, 2013), a summary of wealth by ethnic groups stated, “simply put, people of Japanese and Chinese descent and White people make the most money on average, while Native Hawaiians and people of Filipino and Samoan descent make the least on average” (p.1). This statement correlates with what is known about the disproportionate representation between student and education workforce demographics in Hawai‘i, with those from lower-socioeconomic backgrounds being underrepresented within the state’s teacher and administrator workforce. Therefore, efforts targeting the recruitment of more special education teachers should intentionally include efforts to encourage more Native Hawaiian, Filipino, and Other Pacific Islanders into pursuing the profession.

Proposed Solutions

Beginning in 2017, Hawai‘i formed the Teacher Education Coordinating Committee (TECC) through Section 304-20 of the Hawai‘i Revised Statutes. The TECC was tasked to identify, study, take action, or make recommendations on matters of education of common interest to the department of education and the institutions of higher learning in Hawai‘i. TECC is led by the Superintendent of the HIDOE and the Dean of the College of Education at UH Mānoa. This committee includes the president of HSTA and the director of HTSB, along with representatives from each teacher preparation agency in the state and other UH system educational stakeholders. Together, this advisory group created a 5-year strategic plan to build a collaborative effort in improving recruitment and retention in Hawai‘i (TECC, 2018). As a member of this committee, I provide insight and guide initiatives specific to recruitment and retention of special education teachers.

As a result of this collective work, the state has made considerable progress towards implementing nationally recommended solutions for addressing the state’s teacher shortages, by: (a) providing financial incentives and pay differentials, (b) improving hiring and management processes, and (c) increasing the attractiveness of the profession. Within five years, these collective efforts have begun to show success in reducing the number of teacher vacancies in the state.

Financial Incentives. Beginning in 2001, the HIDOE had been offering temporary \$3,000 bonuses to teachers who worked in the hardest-to-staff schools for three years (State of HIDOE, 2007). However, these bonuses did not incentivize a notable amount of teachers to pursue these positions and bolder action was needed. In December 2019, the Board of Education approved the HIDOE’s proposal to provide pay differentials for teachers in the areas with the highest and most long-standing shortages: (a) \$10,000 for special education classroom teachers, (b) \$8,000 for Hawaiian Immersion teachers, and (c) \$3,000-\$8,000 for teachers in hard-to-staff geographical areas.

Differentials were implemented in February 2020 and by July of that year, the president of HSTA stated that the differentials have “worked better than our dreams ever imagined” (HSTA, 2020). The increases in pay positively impacted both recruitment and retention of teachers in the identified shortage areas. Teacher preparation programs in special education saw increases in enrollment and the HDOE had higher rates of retention of special education and hard-to-staff positions for the 2020-2021 school year. In a statement by the HDOE Assistant Superintendent of Talent Management, the pay differentials decreased teacher vacancies by 66%, including a 77% increase in teachers selecting to move into special education teacher positions (HSTA, 2020). Currently, the pay differentials have been renewed for SY 2021–2022, however, not after having gone through heated debates around possibly cutting these incentives due to proposed HDOE budget shortfalls. As part of the current 2022 legislative session, if approved, bill SB2820 would establish these differentials permanently using state funds, requiring an additional \$32.5 million to be added to the \$100.2 million HDOE base budget (Lee, 2022). Given what is known about the chronic underfunding of public schools in Hawai‘i, commitment to funding these differentials long-term are needed, as it has been the most successful recruitment and retention strategy for the state thus far.

With high costs of living cited as one of the number one reasons people leave the state, the HDOE launched ‘Homes for Superheroes’ in February 2020, as an initiative to provide special housing opportunities for public school teachers in Hawai‘i. Through a partnership with the local military, Hawai‘i public school teachers were provided the opportunity to lease military housing at Schofield Army base, providing a cheaper monthly rate than the state average. In addition, participants would get access to base amenities. Initial data showed that only 4 teachers took advantage of this initial offering, however, the program is planning to expand the offering to include a more centralized and larger base, Joint Base Pearl Harbor Hickam, for its second round of implementation. In addition to the military partnership, HawaiiUSA Federal Credit Union created a mortgage program specifically for public school teachers as part of their HSTA union membership.

Lastly, in addition to the longstanding MOA between the HDOE and UH System, a new tuition stipend program was provided through the Hawai‘i State Legislature beginning in 2018, led by Senator Michelle Kidani. This “Grow our Own (GOO)” initiative, provided up to \$600,000 in scholarships stipends to current HDOE employees looking to earn a teaching license through the UHM Post-Baccalaureate Certificate in Secondary Education, with priority given to high-need general education subject areas such as English, mathematics, science, and world languages.

Hiring and Management Processes. In July 2019, the Governor of Hawai‘i signed House Bill 1070, Act 1116 into law, that covers all fees associated with applications, licenses, or permits for teachers in the state. In addition, funding was provided to HTSB to allow for six additional permanent staffing positions, which would help support more streamlined and effective licensure processes and support for current and prospective teachers.

Hawai‘i participates in the National Association of State Directors of Teacher Education and

Certification (NASDTEC) interstate agreement that facilitates reciprocity of teacher certification across states. As a result, individuals who received teacher certification from another state can move to Hawai'i to teach and would not need to complete another teacher preparation program.

Attractiveness of the Profession. There have been two initiatives to uplift the teaching profession in Hawai'i: (a) 'Be a Hero. Be a Teacher.' and (b) 'Someone Special for Students'. In 2017, the UH System funded an initiative to promote a teaching career in the state. Led by Dr. Niki Libarios from the UH Mānoa College of Education, this initiative was designed to create a positive public message to uplift the teaching profession; this campaign highlighted local teachers and schools through the use of printed posters and a TV commercial spot, which garnered over 7,000 views by 2021. As a co-lead of the campaign design team, I advocated for the selection of teachers and schools that specifically represented underrepresented populations and communities across all campaign materials. Public support was so well received, that the HDOE included additional funds into the 2020 special education MOA with UH Mānoa, to create a sub-campaign specific to special education. As the lead of this new campaign, 'Someone Special for Students', we have highlighted current quality Hawai'i special education teachers from across the state and developed five campaign videos and four radio spots as a way to uplift and attract more people into the special education profession. Upon success of this inaugural effort, the project received an additional \$315,600 from the Governor's Emergency Education Relief (GEER) grant to continue this work throughout the remaining 2021–2022 school year.

Over the last five years, Hawai'i has implemented a multi-faceted, collaborative approach to addressing the states' teacher shortage workforce needs. To supplement these efforts, this study serves to identify the characteristics, motivations, and program preferences of individuals who had expressed interest in becoming a special education teacher in Hawai'i. Findings from this study can guide future recruitment initiatives to better target those who are most likely to enter this specialized career field, with specific focus on recruiting individuals currently underrepresented within the Hawai'i teacher workforce.

Motivations for Teaching

In Hawai'i, one dissertation has been conducted on motivations to entry in education. However, this study was done for general education licensed teachers and was focused on motivations of male teachers (Ponte, 2012). Two dissertations have been conducted in special education, although both focused on retention and did not include motivations for entry (Benjamin, 2008; Reed, 2007).

Ponte (2012) conducted a qualitative study with 11 male teachers or teacher candidates from the Master of Education in Teaching program at UHM. The purpose of the study was to understand motivations to entry and experiences related to pursuing and sustaining themselves in the teaching career. Findings indicated a majority of male participants as motivated by altruistic factors, wanting to positively affect the lives of others. In addition, other primary motivational factors included: (a) a desire to promote positive changes in community and society, and (b) a desire to implement effective and engaging teaching practices that would provide all students with useful learning experiences (p. 46).

Across both types of motivations, findings found that motivations were influenced by either

positive or negative personal experiences from participants' own school-aged years. External motivational influences of the male study participants indicated having positive teacher role models as influential in their decision to pursue the career, including two participants who had positive teacher role models within their own family. Having family members provided participants the opportunity to engage around topics in education regularly, as well as allowing them to witness how teachers can positively impact their community.

Reed (2007) conducted a year-long study of six individuals who had relocated to Hawai'i to teach special education. The purpose of the study was to better understand experiences of special education teachers who relocated to teach in order to determine if out-of-state recruitment efforts were effective and to better understand why attrition rates were often higher. In addition, the study highlighted challenges specific to Hawai'i, targeting new teachers in the district with the highest teacher attrition rates in the state and home to one of the largest populations of Native Hawaiian students. Findings indicated three of the six new teachers had decided to leave Hawai'i after their first year of teaching. Common experiences of those who left included negative experiences with HDOE personnel and processes, lack of educational materials and mentorship, having too many meetings, and difficulty in making connections through social networks or engaging in extracurricular activities. On the other hand, factors related to successful retention of the three remaining teachers were heavily influenced by the ability to establish strong social and professional relationships. Important relationships shared included having support from the state-level New Teacher Advisor and school-level personnel including administration, staff, and students. In summary, findings suggested recruitment strategies should focus on helping teachers new to Hawai'i connect to the community, form positive social relationships, and receive effective induction and mentoring support.

The following year, Benjamin (2008) investigated the relationship between retention of novice special educators and the level of professional and personal support received. In addition, this study focused on teachers and conditions specific to more rural and remote islands in the state (i.e., Hawai'i, Kaua'i, Lana'i, Maui, Moloka'i). Findings included commitment to the profession and the desire to successfully impact students as the primary reasons for entering the profession. For retention, teachers rated the support they received from community professionals; on average, colleagues were rated highest and administration lowest. Teachers had shared they wanted administrators to provide them with clear expectations regarding their role as the special education teacher. In addition, participants wanted feedback from observations and validation or recognition when performing well. An area of frustration was expressed in regards to meetings and professional development, as teachers felt the meetings were unproductive and wasted valuable time that was otherwise needed for planning and other demands from the job. Although all study participants rated colleague support highest, teachers felt more supported by their special education colleagues than their general education colleagues.

In regards to institutional professional factors, study findings mirrored national research findings in that teachers expressed concerns regarding paperwork, resources, funding, mentoring, salary, and

professional development. Teachers also indicated the need for stronger relationships with administrators, colleagues, parents, students, and other school personnel. One additional notable finding was that none of the study participants believed their pre-service program prepared them for the realities of teaching special education. Although candidates shared they received training in standards and academics, they needed more training on how to work with staff and parents. In summary, study findings emphasized the importance of professional and social relationships and support as critical to retention of special educators. To tackle issues related to insufficient professional development and working conditions, developing stronger partnerships between teacher preparation programs and schools could lead to more streamlined training across the pre-service to in-service pipeline and could better support the quality and retention of all new teachers in Hawai'i.

In conclusion, a larger body of research exists around retention and why educators stay in the profession, but very little research identifies who and why people choose to enter. Therefore, there is a need to study recruitment and motivations for entry in Hawai'i as a way to address the longstanding special education teacher shortage in the state.

Foundational Frameworks

With the recent shift from traditional teacher preparation programs to more alternative certification options, understanding student characteristics requires becoming grounded in andragogy and understanding the differences between younger traditional and older nontraditional student populations (Knowles, 1968; Hanover, 2018). Motivations for wanting to teach special education builds upon the Factors Influencing Teaching Choice (FIT-Choice) Framework, founded on expectancy-value theory (Richardson & Watt, 2006). The 7 P's Service Marketing Mix (Booms & Bitner, 1981) provides a framework for identifying and evaluating teacher preparation program element preferences among targeted populations. As a final analysis, understanding what influences different targeted populations likelihood to enroll or not enroll in a special education teacher preparation program is needed to support increasing enrollment and how to diversify the teacher workforce. Therefore, strategic enrollment management theory will provide a framework for evaluating whether characteristics, motivations, or preferences predicted enrollment outcomes (Dennis, 1998; Hossler & Bertranger, 2014).

Adult Learning Theory

The field of adult learning theory began in the early 20th century with inquiries as to whether adults had the capacity to continue learning as they aged. Findings concluded that the question was not if adults could learn, but rather the need to understand how adults learn differently. Knowles (1968) provided the theory of adult learning, otherwise known as andragogy, which is based on the following five assumptions: (a) adults are independent with an understanding of self-concept, (b) adults have built up a wealth of experiences that they are then able to draw from, (c) adult learning needs are correlated to their current social role, (d) adults are problem-solving focused with a desire for immediate application of learning, and (e) adults are more intrinsically motivated than extrinsically motivated (Merriam, 2001).

The understanding of adult learning theory and the differences in what makes adult learning

different, is an important consideration when looking at the field of higher education, especially in teacher preparation. Teacher preparation is especially prone to misalignment in program design, given that faculty are more heavily grounded in pedagogy and child development. Snyder (2012) stated, “it is easy to forget that while our curriculum focuses on childhood learning, we are teaching adults” (p. 34). Therefore, the understanding of andragogy and the needs of nontraditional adult learners is essential to addressing the teacher shortage, as programs must attract and train this population effectively.

Adults in higher education have a level of maturity that has become more complex through the collection of experiences gained throughout their life and, therefore, adult learners prefer having more ownership and reciprocity within the learning process (Kasworm, 2003). Mezirow’s (1997) transformative learning theory builds upon andragogy in acknowledging that adults transform and change as they gain more experience and knowledge (Snyder, 2012). However, one important consideration within transformative learning theory is that adults have a tendency to reject new ideas that do not fit within preconceived beliefs or experiences (Mezirow, 1997). Therefore, when looking at inequities in education, it is important for teacher preparation programs to recruit more individuals from diverse backgrounds who can help model, inform, and create awareness around issues impacting underrepresented groups in education. Fortunately, there is a parallel shift related to not only having older, nontraditional adult students in higher education, but these individuals being more diverse and representative of groups previously underrepresented in higher education (Kasworm, 2003)

A common recruitment tool in special education is to target individuals working as educational assistants, skills trainers, or other professionals already working in school settings (Jordan et al., 1999; Burbank et al., 2009; Cegelka & Alvarado, 2000). Given these individuals are older working adults, teacher preparation programs are best served when capitalizing and validating the wealth of knowledge and experiences that these individuals already have in the field. Understanding that older, adult learners use prior experiences when gaining new knowledge, teacher preparation programs benefit from embedding opportunities for teacher candidates to share and build off their prior knowledge (Snyder, 2012). In order to make sense of new roles, knowledge, and experiences, adults build upon their own frames of references from their past.

A majority of adult students may be married or have kids, therefore family responsibilities become a priority and going back to school must offer accessible, cost-effective, and flexible program opportunities. Nontraditional adults are also likely to pursue higher education after a key transition or change in their life, such as losing a job, getting a divorce, or after children have grown and left the home (Merriam 2003). For example, following the 2007-2008 recession, enrollment of older working adults with families increased in higher education and have continued to grow at a higher percentage than traditional students ever since (Hanover, 2018). In addition, online college students cite affordability and flexibility in program design as the most important factor towards program enrollment decisions (Magda, 2020).

Adult learners are more purposeful and proactive in their decision and participation in education, therefore requiring a shift from more teacher-directed to self-directed learning models (Knowles, 1968;

Merriam, 2001). Given the desire to problem-solve and apply new learning to real-world situations, programs that provide on-the-job training or intensive fieldwork opportunities align well with adult learning theory (Wasburn-Moses & Rosenberg, 2008). The use of collaborative partnerships between IHE and local schools provide opportunities to capitalize on adult learner's desire to immediately apply new learning and school-life application opportunities within the classroom. Being in the classroom provides essential opportunities for reflection and experiential learning (Green & Ballard, 2011). The use of residencies or intensive field opportunities also provide a better transition for adult learners who understand the relationship between their education coursework and direct application to their career outcomes.

Adult learners are more intrinsically motivated than extrinsically motivated when it comes to learning new knowledge (Merriam, 2001). Adult learners see themselves as both capable and competent in their own learning, therefore not wanting to be in a program that uses a teacher-directed approach without engaging or providing choice and input into the learning process. According to andragogy, the role of the faculty educator is to be a mentor in supporting the adult learner in becoming self-directed in their teaching practices and development (Blaschke, 2012). Taking this further, heutagogy, or self-determined learning, focuses on adults as being in control of their own learning, through capitalizing on past experiences and using a problem-solving approach. The advancement of technology has opened up more opportunities to design a more autonomous approach to teacher education, with adult learners in control of their own learning. This approach is most often seen being used by ARC programs, often offered outside of IHE and using self-paced asynchronous learning modules.

Overall, there is a lot of overlap between adult learning theory and growing populations of nontraditional students. In order to address the special education teacher shortage and increase enrollment, IHE faculty would benefit from better understanding the preferences of individuals along the teacher pipeline, so they can better align and support various subgroups as they pursue teacher certification programs. With the growing numbers of older, nontraditional students pursuing teaching, study findings can then support design considerations for programs based on that targeted audience.

FIT-Choice Framework

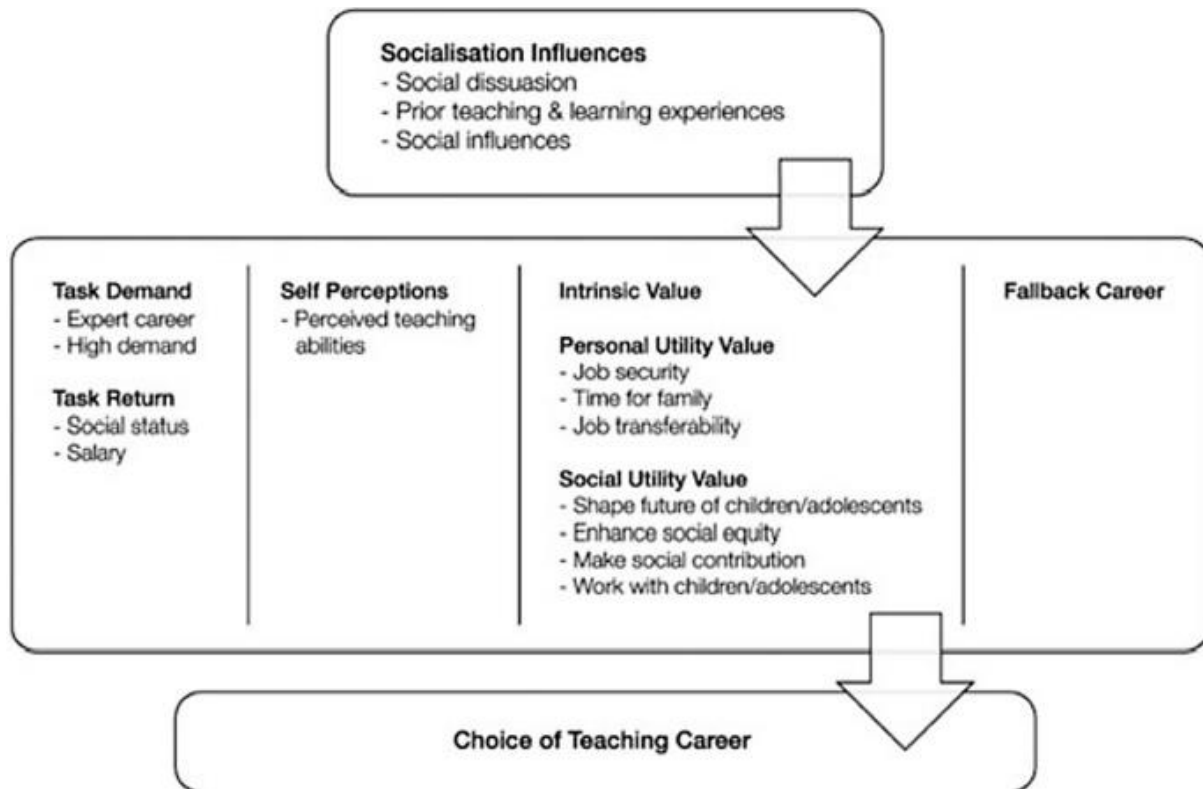
Richardson and Watt (2006) understood the importance of understanding motivations as a recruitment strategy for attracting people to the teaching profession. Although many previous studies had existed on general teaching choice, research was predominantly exploratory in nature and motivation categories varied during interpretation (Richardson & Watt, 2014). Therefore, Richardson and Watt (2006) developed the Factors Influencing Teaching Choice framework (FIT-Choice), to provide a more systematic approach to understanding motivations in teaching so that recommendations could be shared within teacher recruitment.

The theoretical framework was grounded in career theory and expectancy-value motivation theory taken from Wigfield and Eccles (2000) framework for explaining academic and career choice (Richardson & Watt, 2006). In its adaptation to motivations for teaching, the framework is designed in a

semi-linear fashion (see Figure 13). The antecedent to the primary constructs includes socialization influences, such as prior teaching and learning experiences, as well as social influences or dissuasion.

Figure 13

FIT-Choice Framework



Note. Watt and Richardson's FIT-Choice Theoretical Model. From "Why people choose teaching as a career: An expectancy-value approach to understanding teacher motivation" Richardson, P. W., & Watt, H. M. G., 2014, *Teacher motivation. Theory and practice* (pp. 3-19). Routledge.

Rather than using the more common intrinsic, extrinsic, and altruistic categories of motivation, Richardson and Watt based the FIT-Choice framework on the following three primary constructs: (a) task perceptions, (b) self perceptions, and (c) values. The final, more distal, component of the FIT-Choice framework analyzes whether teaching was chosen as a primary or "fallback" career option. As a result, Richardson and Watt claim that all of these factors combined impact an individual's decision to pursue teaching as a career.

The three primary constructs (i.e., task perceptions, self perceptions, values) are broken down into sub-domains. For example, task perceptions include task demand (i.e., expert career and high demand) and task return (i.e., social status and salary). Under the construct of self perceptions, the framework focuses on an individual's perceived teaching abilities. Similar to the more common intrinsic,

extrinsic, altruistic motivational framework, the final construct of value in the FIT-Choice framework is based on intrinsic, personal utility, and social utility values. Personal utility values include more extrinsic-related factors, such as job security, job transferability, and time for family. The social utility value mirrors altruistic-related factors, such as shaping the future, enhancing social equity, making a social contribution, and working with children.

In addition to the framework, Richardson and Watt developed the FIT-Choice Scale (2007) and have conducted large scale studies across different countries as a way to establish validity and reliability of the survey instrument (Watt & Richardson, 2008; Watt & Richardson, 2012). The FIT-Choice Scale includes one open-ended response question, asking the participant to state their main reason(s) for choosing to become a teacher, followed by 58 Likert-type survey items using 1 (not at all) to 7 (extremely). The statements were separated into three sections: (a) influential factors, (b) beliefs about teaching, and (c) decision to become a teacher.

Teacher Motivations using the FIT-Choice Scale. As an impetus of its start, Richardson and Watt (2007) shared that at the time of their study in Australia, teaching was being looked upon as a poor career choice through mass media and among the general public. Therefore, they implemented the newly developed FIT-Choice Scale across three Australian universities to determine the strength of influence of motivations on the career choice of all 1,653 first-year pre-service teacher education students. Participants represented undergraduate and graduate students, as well as early childhood, elementary, and secondary strands. However, special education was not a career option included in this study. Demographic survey items asked questions regarding gender, program level, degree type, combined parent income, age, language spoken at home, and countries where each of their parents had been born. In addition, career switchers were asked to list the details from their previous career.

Characteristics. Demographic survey data findings indicated that participants were largely female dominated, with participants at the early childhood level almost exclusively female. Secondary teacher candidates had the highest number of male participants, although females were still the majority. On average, the overall age of students fit the traditional model of students, with an average age of 19-20 at the undergraduate level and 25-26 at the graduate level. For income levels, the median combined parent income category was \$60,001-\$90,000 across all groups. English was overwhelmingly the dominant language spoken, with the highest non-English language being Arabic, identified by 6% of students at one institution. A majority of participants had parents born in Australia, with the next most common country of birth as the United Kingdom. In regards to career switchers, more than one-third of graduate participants indicated they had previously pursued another career. The most common career had been entertainment, followed by science and information technology.

Motivations. The highest rated motivations identified included perceived teaching abilities, intrinsic value, desire to make a social contribution, to shape the future, and to work with children/adolescents. The lowest rated motivation was fallback career, followed by social influences. There were only a few significant differences when comparing undergraduates to graduate students.

Undergraduates scored higher on: (a) job security, (b) time for family, (c) positive prior teaching and learning experiences, and (d) desire to work with children/adolescents. Graduates scored higher on the desire to make a social contribution.

Perceptions and Satisfaction. As the final component of the study, participants were asked about their general perceptions of the career choice. Findings indicated that, across groups, participants viewed teaching as a high demand (e.g., demanding and requirement expertise), but low return (e.g. low social status and salary) profession. Likewise, participants reported relatively strong experiences of social dissuasion from choosing teaching as a career, however mean satisfaction with their career choice was uniformly high.

Since 2007, many additional studies using the FIT-Choice Scale have been conducted, with particular focus on application across different countries. As an additional validation study, the scale was used to compare findings across participants from Australia, Germany, Norway, and the United States (Watt & Richardson, 2012). Findings suggest strong comparisons, as countries were more similar than different. However, motivations across factors were consistently highest within the United States subgroup.

Overall, the FIT-Choice Framework and Scale have been implemented across participants at different degree levels, universities, and countries. However, none of the studies to date have included participants specifically interested in teaching special education. Based on personal communications with prospective students and findings from the literature review, the FIT-Choice Scale does not include survey items commonly associated with special education motivations, such as having family members with disabilities, preference for working in small group or one-to-one settings, or reversing cultural stigma around disabilities. Therefore, this study will use the FIT-Choice framework rather than the scale, to include additional and more specific criteria to better identify motivations towards a special education teaching career.

7 P's Service Marketing Mix

Half a century ago, Krachenberg (1972) published a highly controversial piece regarding the need for marketing strategies to be implemented within the higher education landscape. At that time, marketing was seen as a manipulative for-profit endeavor exclusively confined within the business sector; applying the concepts of marketing to students had been viewed as blasphemy. However, Krachenberg had acknowledged that IHE were already involved in marketing tactics, such as advertising, direct student contact, and reaching out for alumni support. His goal was to express the need for IHE to take advantage of more comprehensive and targeted marketing strategies offered through the field of business marketing. In addition, Krachenberg predicted three very important changes that warranted the need for marketing in higher education: (a) the population of students was becoming more diverse; no longer being dominantly male, white, and between the ages of 18-23; (b) advances in technology would bring increased access and promote more competition, and (c) higher education systems would soon face more financial strains due to limited budgets.

Although Krachenberg had made these claims almost 50 years ago, the use of comprehensive marketing strategies in the public higher education sector is still limited. The most widely adopted marketing framework has been McCarthy's (1965) 4 P's marketing mix. The marketing mix is a combination of tools that an organization has to satisfy the wants and needs of its target market (Ivy, 2008). The four elements in the marketing mix include: (a) product, (a) price, (c) promotion, and (d) place (Rafiq & Ahmed, 1995). The product refers to the good that is being sold to the consumer; the price is how much the good costs; promotion refers to the methods used to share information with the market; and place refers to the location and how the product is delivered.

However, the need to modify the marketing mix became apparent, especially in the field of service marketing. Therefore, Booms and Bitner (1981) expanded the traditional 4 P's marketing mix into the 7 P's service marketing mix to meet the needs of the service sector. The primary difference between the traditional and service marketing mix is whether the product is seen as a tangible or intangible good. Because services are intangible, there is a need to include additional characteristics that introduce three new elements: (a) people, (b) physical evidence, and (c) process. The most important addition to the service marketing mix is the role of people, as the relationship and experience of the service is highly dependent on the individual(s) providing it (Rafiq & Ahmed, 1995). In addition, with the element of product now being the intangible good, the addition of physical evidence accounts for the tangible components of the service. Finally, process was added to account for the longevity of services required to provide support and foster efficiency throughout the duration of service delivery.

In higher education, the service marketing mix is most appropriate, as the knowledge and education provided is most often viewed as the product being offered to students (Enache, 2011). However, an additional viewpoint claims that the students themselves can be viewed as the product, for after they complete the program they are delivered to the labor market as a good (Enache, 2011; Ivy, 2008). Recognizing that the students are the ones paying for the knowledge needed to then enter the labor market, the most common approach is to view the student as the consumer and the educational program as the product. Regardless, IHE would benefit from understanding and balancing both viewpoints, as the expectations between faculty, students, and employers regarding the types of knowledge needed in the workforce should be aligned. This is especially important when applying the marketing mix to adult students, as their primary goal for attending higher education is directly related to their career outcomes (Hanover, 2018). Essentially, IHE would benefit from understanding all prospective student needs and preferences in order to better recruit and provide the educational service effectively (Landrum, 2018). For this study, I will be using the viewpoint of the adult student as the consumer market and the product as the educational program being offered.

Applying the 7 Ps to Teacher Education Programs. In 2018, a colleague and I conducted a pilot study on graduates across two cohorts from the department's ARC program to explore which programmatic supports best addressed the needs and preferences of its predominantly nontraditional student population. Instrumentation design was based on our own interpretation of programmatic support

from a faculty lens. After implementation, I discovered the Service Marketing Mix and was able to categorize findings using the 7 elements (Booms & Bitner, 1981). Although all given survey items fit into the framework, the element of price had not been included in survey design.

In this study, program faculty were also surveyed to determine if preferences and perspectives on programmatic elements were similar or different to students. A total of 70 graduates and 22 faculty were contacted to participate in the research survey. Parallel surveys were distributed and feedback was collected anonymously. The survey instrument included items related to program support and demographic information. Each program support element, later categorized by the 7 P's, were rated on a Likert-type scale from 1 (*not valuable*) to 5 (*extremely valuable*). Next, participants were asked to rank order all identified program elements from 1 (*most valuable*) to 9 (*least valuable*). Finally, demographic data collected descriptors used in nontraditional student research and diversity. Demographic survey items included: locale (island), age range, ethnicity, gender identity, dual language acquisition, and disability status.

A total of twenty-six students (37%) and fifteen faculty (68%) responded to the research survey. Findings indicated almost all programmatic supports and elements to be of high value for graduates and faculty, however, on average faculty rated supports higher than students. The two elements of least value, consistent across both groups, were (a) university organizational support, and (b) program seminars. The element of 'people,' such as MUSE mentors, field supervisors, and the recruitment specialist, on average were the highest valued elements across both groups. Although a majority of elements were rated similarly across faculty and graduates, the element of 'place,' such as the online format, was valued higher by graduates than for faculty. In contrast, the placement coordinator, another element of 'people' was valued higher by faculty than for graduates. When asked to rank-order valued supports, a majority of elements continued to be of similar value between graduates and faculty. However, one notable difference was for the MUSE mentors, an element of 'people,' which was overwhelmingly identified as the highest valued support for graduates, whereas faculty had ranked them third to last in comparison to other programmatic supports.

In summary, program preferences were identified using the 7 P's framework. Graduates had valued 'people' and 'place' the most, with 'process' being valued least. However, not including the element of 'price' posed a severe limitation to this study. Implications of this pilot study informed the dissertation research by showing how the 7 P's framework could be used to categorize programmatic elements. However, program preferences of graduates are likely different from prospective students; prospective students have not yet experienced each element and understand its impact the way graduates have.

Systematic Literature Review. In addition to the pilot study, my colleagues and I conducted a systematic review of the literature to identify ARC programs developed to address the teacher shortage in special education. As a result, this work was published in a Special Topics Edition on Alternative Teacher Preparation for Rural Special Education Quarterly (RSEQ; Chamberlin-Kim et al., 2019). Inclusion criteria

for this study were as follows: (a) preservice teacher preparation program designed as a result of the teacher shortage to recruit new PK-12 classroom teachers, (b) targeted special education endorsement, (c) within the United States, (d) peer-reviewed journal articles, and (e) published between 1997 and 2018. A total of 17 articles met criteria and were included in this review.

The goal of this study was to identify how the service marketing mix fits in with special education teacher preparation programs and then to analyze the identified programs to determine which elements were being addressed in program design. As a first step in this process, I used the Framework Analysis Method to code all the descriptive information provided by each article on programmatic design (Gale et al., 2013). Common program features and descriptions were noted, grouped and then categorized within each of the seven program elements. For example, each article identified the state in which the program was designed for, which was categorized under 'locale' and then associated with the marketing mix element of 'place.' After coding was complete, an interrater reliability check was completed by the second author on 35% of identified articles with an interrater reliability agreement of 100%.

Once program descriptors were identified and categorized within each of the seven elements, a consumer lens was used to determine how each of the elements could increase its attractiveness among nontraditional student populations (see Table 2). The identified seventeen programs were then coded across each element and results shared which elements were addressed across studies. Of the 17 programs identified, 10 had been specifically designed for rural and remote communities, justifying its submission to the RSEQ journal for publication.

Table 2

7Ps Service Marketing Mix Element Definitions and Application to Teacher Preparation Program Attractiveness

Element	Definition	Application to Education	Criteria Used in Review
Product	An object or service an organization produces on a large scale in a specific volume of units.	The product is the program designed to recruit new special educators. Includes total credits, program length, and targeted licensure outcomes (by level or by disability). Includes implementation of cohorted design, where program candidates complete the entire program as a unit.	Must include one of the following: • Less credits or shorter program duration • Targeted specific licensure outcomes • cohorted model
Price	Price the customer pays for a service or product. Price is the most important factor for marketing.	Cost of doing the program through tuition stipends or funding opportunities. Funding opportunities are provided for program development or directly to customers.	Must provide funding opportunities directly to customers.

Element	Definition	Application to Education	Criteria Used in Review
Place	The location where the product is available for the customers.	Method and format of program delivery: traditional face-to-face campus-based programs or distance methods (online or hybrid). Hybrid formats are a blend of face-to-face and online learning opportunities. For field experiences, on-the-job training (OJT) opportunities allow participants to continue employment in school settings while completing the program. Place includes geographic considerations such as urban or rural areas.	Must provide more targeted access through one of the following: • uses distance or hybrid options • targets rural/urban communities • offers OJT opportunities
Promotion	All efforts the company or organization makes to stimulate the popularity of their product in the market, for instance by advertising, promotional programs, etc.	How information is shared with prospects. Direct methods include efforts shared directly to prospective candidates or advertising. Indirect methods include creation of web-based materials, or sharing of information with non-prospective candidates, such as agencies or outside personnel.	Must include direct outreach methods.
People	People who are directly or indirectly involved in the trade of the product or service. Mainly customer contact employees, customers, personnel, and management.	Teaching and administrative staff involved within the program. Includes university staff who interact with prospective students before and during the program. Includes partnerships between IHE and other institutions, local education agencies (LEA), departments of education (DOE) or specific schools used in development, design, and delivery of programs.	Must include one of the following: • Hiring specific personnel related to program priorities • Use of partnership with other institutions or agencies
Physical Evidence	Refers to an environment in which a service comes about from an interaction with an employee and a customer which is combined with a tangible commodity.	Refers to whether program completers receive a certificate versus a degree. Also includes campus facilities or quality of teaching materials and technology.	Must include one of the following: • Provides opportunity for degree attainment • Use of high-quality facilities or technology

Element	Definition	Application to Education	Criteria Used in Review
Process	The activities, procedures, protocols and more by which the service in question is eventually delivered to the customer.	Processes used to help prospective or current candidates navigate stages from inquiry to graduation. Includes use of less paperwork or requirements, streamlined coursework, or specific personnel such as advisors or program coordinators.	Must include one of the following: • Specific course sequences • Modified entrance requirements • Specific personnel

Note. Element definitions provided by Van Vliet (2011)

Findings from the literature review indicated that people (94%), place (94%), and product (88%) were most consistently addressed in program design to support program attractiveness, whereas price (59%) and promotion (41%) were addressed least. A total of 1,419 teacher candidates were recruited across the seventeen identified programs, with a range of 15 to 475 candidates per program. The primary targeted consumer audience for programs were individuals already employed in school settings (e.g., emergency-hired teachers, paraeducators, licensed teachers in other fields, other school personnel). On the contrary, two programs had recruited adults with disabilities, or enrolled students at the community college or university level and one program sought parents of children with disabilities. Almost half of the identified programs did specifically target individuals from underrepresented ethnic backgrounds.

Overall, identified programs addressed three to six elements within program design, with an average of 4.9 elements. No program used all seven elements of the service marketing mix framework to attract prospective candidates and similarly, no specific element had been addressed by all seventeen programs. In line with literature on the broad scope of the teacher shortage, the seventeen identified programs represented ten different states, Hawai'i included. California was the most prominent state in this review, representing six of the seventeen identified articles.

Finally, one interesting outcome of this study addressed the quality versus quantity dilemma. Four of the identified programs provided descriptive details regarding meeting program capacity and having quality candidates. Of these four identified programs, three had addressed six of the seven marketing mix elements, whereas one addressed five elements, being the only identified program representing rural areas. In addition, all four programs specifically targeted underrepresented ethnic populations. Lastly, all four programs provided funding directly to the teacher candidates (i.e., price), had partnerships with local schools (i.e., people), and had specific program advisors or coordinators (i.e., people and processes). Findings suggest that utilizing more marketing mix elements in program design can support recruitment of more individuals, while maintaining quality needed to promote positive outcomes. Lastly, being able to recruit more underrepresented ethnic populations was successful when it had been made a priority and done intentionally.

Service Marketing Mix Elements. In summary, I will be referring to common definitions of each element of the service marketing mix already proposed in the current literature base regarding its application to the field of higher education (Enache, 2011; Gajic, 2012; Ivy, 2008; Landrum, 2018). In addition, each element will include findings from the pilot study and systematic literature review to inform how each element relates to nontraditional students and special education teacher preparation programs. The seven marketing mix elements include product, place, price, promotion, people, physical evidence, and process. Together, these elements provide a framework to allow stakeholders to effectively align their product and service to the needs of their customers.

Product. The product is the program itself, involving the specific curriculum being addressed and can include specialization areas (e.g., early childhood, mild/moderate disabilities, visual impairment). In addition, the product establishes the basic “facts” of the program, such as program length and number of credits. Program length influences affordability, therefore institutions should “minimize the total credits needed to graduate or try to accept as many credits as possible from past student learning” (Magda et al., 2020, p. 7). The focus on shorter or more flexible program offerings would be advantageous in relation to nontraditional students, as adults are often looking to quickly obtain their knowledge for immediate entry to the workforce.

Place. The place includes the location and/or delivery format being used for instruction. Formats can include face-to-face, online (asynchronous or synchronous), or hybrid models that blend face-to-face with online learning. Essentially, program formats should look to provide the “most efficient methods to deliver the knowledge to the students” (Enache, 2011, p. 26). For example, considerations for face-to-face courses would be the location of the course, whether on-campus or for rural areas, offering in additional locations/satellite campuses using technology. For adult learners, programs that offer courses in the evenings, on weekends, or using distance technology are preferred. If courses are required face-to-face, then providing multiple locations that allow for less commute times would be beneficial to students who are employed.

Price. The price refers to the tuition and any other additional costs the students would need to finance. The price is the only element of the service marketing mix that directly impacts revenue for the institution and is said to be the “only strategy capable to directly influence the incomes of an educational institution” (Enache, 2011, p. 26). One limitation of the price element in higher education are archaic tuition structures that are typically distinguished as undergraduate/graduate or resident/nonresident. IHE would benefit from more flexible tuition options that account for specific costs of program delivery and program demand. However, one additional consideration is that the price element influences the perception of value. Therefore, institutions could consider program costs as representative of the quality and prestige of the institution. For adult learners especially, the primary concern are financial barriers (Hanover, 2018; Landrum, 2018). Therefore, considerations for offering financial incentives or opportunities to reduce costs, such as stipends, scholarships, or financial aid would be an essential element for increasing enrollment.

Promotion. The element of promotion is the combination of methods and efforts to share program elements with their targeted markets. The image or prestige of the institution is important for promotion, as reputation can not easily be changed (Enache, 2011). As one of the most important elements, the challenge is to “adequately present and explain the educational product to potential students” (p. 27). Use of direct methods are needed, such as sharing information through advertising, websites, information sessions, and open houses. In addition, indirect methods of promoting programs through partner agencies are also important.

Tailoring promotional messaging based on the targeted consumer market is a strategy needed to increase outcomes across the entire teacher pipeline. For example, creating marketing materials that focus on the essential elements that are most appealing to adult students (i.e., price, physical evidence, people, and place) would help in increasing the return of investment related to promotional costs. Gajic (2012) also emphasizes that promotional efforts are only as valuable as the efforts made towards tailoring each of the other elements towards the preferences and needs of its targeted market, as “promotion cannot compensate for weaknesses in efficiency of other instruments” (p. 33). Therefore, promotion alone cannot increase enrollment if the other elements have not been addressed.

People. Given that the products are a service, the “people strategy is the most important add-on in service marketing” (Enache, 2011, p. 28). Faculty, administrators, and staff are all components of the people element, and are crucial to the success of the service product. Having high quality instructors, administrators, and staff are important to the success of the program. Staff or faculty who are likely to directly support the student throughout the program should be encouraged to establish a sense of community, support, and inclusion. One of the “at-risk” factors for adult students has been their sense of disconnectedness with institutions, therefore, understanding who they will be engaging with is important in promoting a collaborative environment (Hanover, 2018). In addition, having a single point of contact was another recommendation for supporting adult students, highlighting the importance of advising and mentoring personnel.

Physical Evidence. Since the product is the intangible component of the educational product, the addition of the physical evidence element is to highlight the tangible features. In higher education, the most obvious physical evidence is the degree. However, for non-degree programs, the physical evidence can be the certificate or direct career pathways provided upon completion (e.g., teaching licensure, Board Certified Behavior Analyst certification). In addition, the institution’s reputation acts as evidence of the quality of the student’s achievements. Lastly, physical evidence includes the buildings or facilities used, or includes the types of technology provided in distance methods. The quality of the facilities or technology used by the program can be an added attraction for students. However, when specifically targeting adult students, one of the most critical components to highlight are the direct, tangible career outcomes related to completing the program.

Processes. Processes refer to the experiences throughout the inquiry to graduation lifespan for a student. Processes can include admissions and enrollment procedures, how students receive and find

information, and methods to support student transition throughout the program. The experience of how students first navigate the institution's processes for finding information and enrollment heavily impacts a student's impression of program quality. In addition, one unique difference in higher education is that students must pay for the service prior to receiving it, therefore processes related to maintaining retention throughout the program are essential. For adult learners, streamlined processes that are efficient and easy to navigate throughout the enrollment to graduation pipeline is important, as adult students are continually managing multiple roles and responsibilities. For example, programs that use a cohort model supports the process element of the program, as coursework is sequenced and candidates transition through the program as a group. In addition, efforts to reduce bureaucratic barriers (e.g., entry exams, limited enrollment periods) are important to encouraging adult students to pursue a program. In addition, adult students often have prior credits or hope to use prior experience towards reducing entry requirements, therefore IHE can evaluate processes regarding transferable credits or competency-based exams as an attractive element of the service marketing mix.

Overall, the use of the 7 Ps service marketing mix framework can support IHE in reevaluating its services to meet the needs of its diverse prospective student pipeline. The service marketing mix provides a “tool kit” of elements to consider within the context of each program and institution, as there is no “one size fits all” approach (Gajic, 2012). Therefore, institutions and faculty must become familiar with how each element impacts their targeted markets' decisions related to pursuing the program, while also controlling for overall quality of program design. The need for IHE to adopt comprehensive marketing strategies has been touted for almost fifty years. With advances in globalization and technology, traditional IHE programs are facing increased competition and scrutiny over their ability to meet the needs of the evolving workplace and nontraditional adult student market. Use of the 7 Ps Service Marketing Mix serves as a framework for this study, as it guides instrumentation design in helping determine which program elements influence enrollment decisions across targeted populations.

Strategic Enrollment Management

In the book, “A Practical Guide to Enrollment and Retention Management in Higher Education,” Marguerite Dennis (1998) uses this memorandum statement to shed light on what many enrollment managers face at some point in their careers.

“Welcome aboard. Please recruit more and better students from a smaller and weaker pool of prospects without increased costs, more financial aid, or drastic program changes. Would like to see results reflected in next year's class. Best wishes.” (Dennis, 1998, Preface)

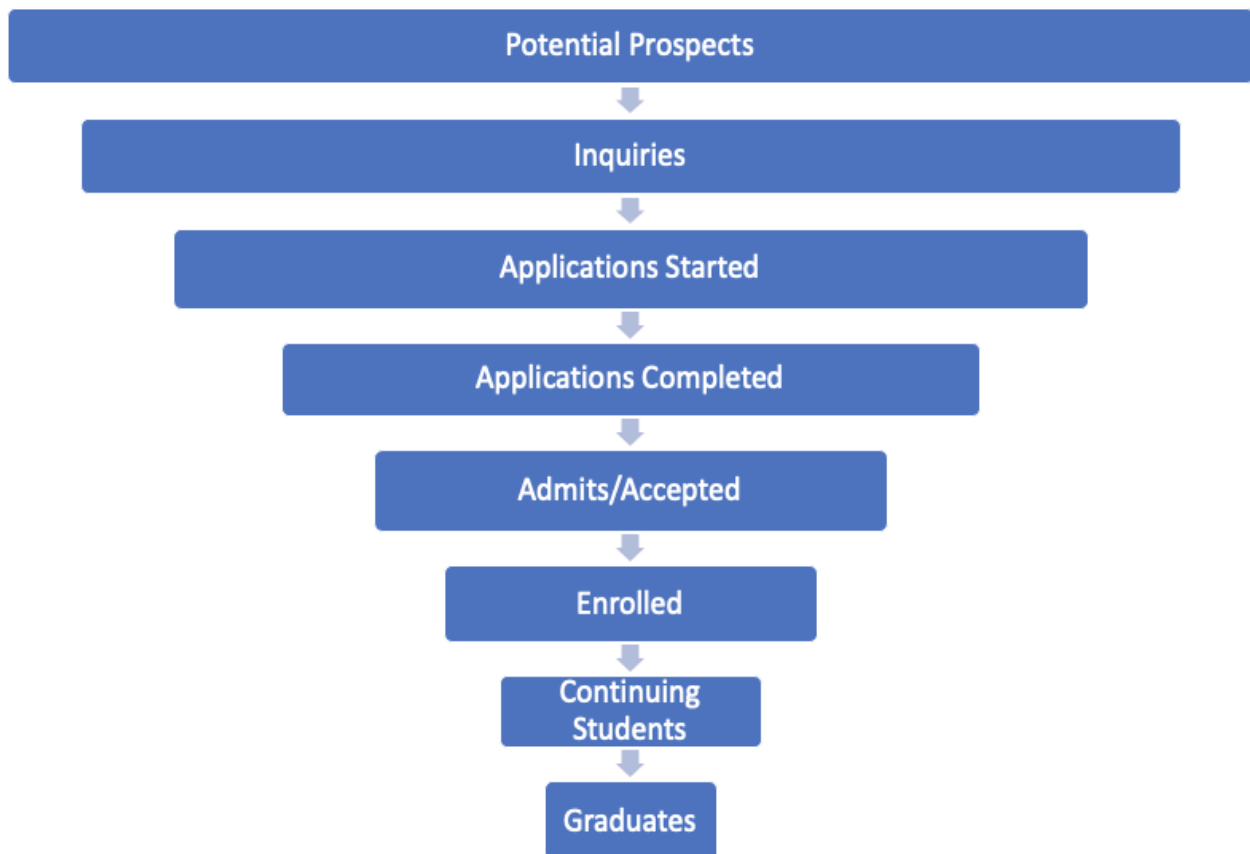
Enrollment managers are faced with enrolling qualified students and ensuring they are retained through graduation. However, Dennis suggests that enrollment and retention management is “one of the most difficult and least understood functions on college campuses today” (p. 2). One of the ways marketing in higher education is more difficult than traditional forms of marketing, is that the college degree or program is based on the hope that it leads to a better life or career, but it cannot be guaranteed. Fortunately, new

technology and tools have provided institutions with easier access and support for managing the enrollment management process (Noel-Levitz, 2009). Familiar to the field of special education, strategic enrollment management has found itself being influenced by the “era of evidence-based decision making” that needs to constantly change as student characteristics and environmental factors evolve (Hossler & Bontrager, 2014, p. xiii).

As part of enrollment management, the enrollment funnel provides a framework to identify each stage prospective students navigate as they pursue a program (see Figure 14, Noel-Levitz, 2009). The goal of enrollment management is to increase the number of people entering the funnel and retaining them at each stage in order to not only increase enrollment, but successfully graduating them from the program.

Figure 14

Enrollment Management Funnel



As enrollment managers, the goal is to track and embed strategies at each stage, in an effort to support more students matriculating from inquiry through to graduation. For example, in order to reach out to more potential prospects, a range of community strategies can be provided, such as website

development, newsletters, and direct mail (Noel-Levitz, 2009). Specializing in higher education enrollment trends, EducationDynamics® publishes an annual report to highlight changes and provide recommendations for enrollment managers. In its most recent report, transitions made to accommodate the global pandemic are likely to become permanent fixtures within the education landscape and traditional student enrollments are projected to decline even further (EducationDynamics, 2022). Similar to the purpose of this research study, findings in the report advocate for beginning with understanding the characteristics of your student population so programs can better invest in branding and marketing strategies tailored to each targeted audience.

Overall, the goal of strategic enrollment management is to collect and monitor data across each stage of the enrollment funnel to identify strengths and weaknesses regarding conversion rates from one stage to the next. For this study, enrollment outcomes being tracked are limited to the application started stage up to the enrolled stage; stages before and after were not included.

Conclusion

Our country's guarantee to offer students with disabilities the right to a free and appropriate public education will continue to suffer until our workforce supply and demand numbers are balanced. There is a need to better understand who is interested and suited for a special education teaching career and how to better target and support those individuals into pursuing the career. Research studies involving analyzing motivations for recruitment and retention have primarily studied: (a) individuals seeking licensure in general education, and (b) individuals already enrolled in the teacher preparation program or career. Very little research has studied special education motivations, and one population not yet included were those who expressed an interest in the career, but did not end up entering a teacher preparation program. In addition, understanding how motivations and priorities differ across underrepresented groups along the teacher preparation pipeline can be leveraged to grow enrollment among populations needed most to diversify the workforce.

My research sampled individuals along the teacher education enrollment funnel in order to better understand characteristics of those expressed interest in a special education career and what motivated them to commit, or not commit, to pursuing a teacher preparation program. Findings from this study can be utilized to develop a differentiated and comprehensive recruitment strategy for tackling the pervasive special education teacher shortage in Hawai'i. The following research questions drive this study:

1. What are the characteristics (i.e., gender, age, locale, ethnicity) of individuals who initiated an application to a special education teacher preparation program?
2. What is the motivational profile, as defined by the FIT-Choice Framework, of individuals who started an application to a special education teacher preparation program?
3. Which special education teacher preparation program elements, as defined by the 7 Ps Service Marketing Mix, did prospective students prefer?
4. Is there a relationship between characteristics, motivations, or preferences on enrollment outcomes?

Chapter III: Methods

In the state of Hawai'i, the HDOE has hired an average of 650 new special education teachers each year in order to address the longstanding teacher shortage. Over a five year period (2015–2020), a total of 1,054 prospective teacher candidates had begun an application to a special education teacher preparation program at the University of Hawai'i at Mānoa. Of these 1,054 prospective students, 260 had graduated and 180 were currently enrolled. Therefore, up to 610 (55%) prospective students were lost within this five year period. Reasons for loss included: (a) not having finished the application, (b) withdrawing the application, (c) not having been admitted, or (d) having been admitted but not enrolling. There was a need to determine if characteristics, motivations for entry, or program preferences impacted enrollment outcomes, especially across targeted subgroups currently underrepresented (i.e., nontraditional, male, minority, geographically isolated) across the special education teacher pipeline in Hawai'i.

Using the mixed methods sequential exploratory design (qual → QUAN), I developed a survey questionnaire and distributed it to all individuals who started an application to a special education teacher preparation program between 2015–2020. Initial analysis investigated characteristics, motivations, and program preferences of the sample population. A sub-analysis analyzed each variable to determine if significant differences existed between underrepresented groups. Finally, I used each of the three predictor variables (i.e., characteristics, motivation, preferences) to determine if the identified variables significantly impacted enrollment outcomes.

Research Questions

The following research questions guided this study:

1. (RQ1) What are the characteristics (i.e., gender, age, locale, ethnicity) of individuals who started an application to a special education teacher preparation program?
 - RQ1a Are nontraditional characteristics (i.e., part-time job, full-time job, spouse, children) related to age?
 - H_{1a} There is a statistically significant difference between younger students (i.e., 25 years or younger) and older students (i.e., 26 years or older) in their nontraditional characteristics.
2. (RQ2) What is the motivational profile, as defined by the FIT-Choice Framework, of individuals who started an application to a special education teacher preparation program?
 - (RQ2a) Are motivational profiles predicted by gender?
 - H_{2a} There is a statistically significant difference between males and females in their motivational profiles.
 - (RQ2b) Are motivational profiles predicted by age?
 - H_{2b} There is a statistically significant difference between younger students (i.e., 25 years or younger) and older students (i.e., 26 years or older) in their motivational profiles.

- (RQ2_c) Are motivational profiles predicted by geographic locale?
 - H_{2c} There is a statistically significant difference between individuals living in urban - O'ahu, rural - O'ahu, or Neighbor islands in their motivational profiles.
 - (RQ2_d) Are motivational profiles predicted by underrepresented or overrepresented ethnic groups within the special education teacher workforce?
 - H_{2d} There is a statistically significant difference between disproportionate ethnic groups (i.e., White, Japanese, Native Hawaiian, Filipino) in their motivational profiles.
3. (RQ3) Which special education teacher preparation program elements, as defined by the 7 Ps Service Marketing Mix, do prospective students prefer?
- (RQ3_a) Are teacher preparation program element preferences predicted by gender?
 - H_{3a} There is a statistically significant difference between males and females in their program preferences.
 - (RQ3_b) Are teacher preparation program element preferences predicted by age?
 - H_{3b} There is a statistically significant difference between younger students and older students in their program preferences.
 - (RQ3_c) Are teacher preparation program element preferences predicted by geographic locale?
 - H_{3c} There is a statistically significant difference between individuals living in urban - O'ahu, rural - O'ahu, or neighbor islands in their program preferences.
 - (RQ3_d) Are teacher preparation program element preferences predicted by disproportionate ethnic groups?
 - H_{3d} There is a statistically significant difference between disproportionate ethnic groups (i.e., White, Japanese, Native Hawaiian, Filipino) in their program preferences.
4. (RQ4) Is there a relationship between characteristics, motivations, or preferences on enrollment outcomes?
- (RQ4_a) Are enrollment outcomes predicted by applicant characteristics?
 - H_{4a} There is a statistically significant relationship between characteristics (i.e., gender, age, locale, ethnicity) and enrollment outcomes.
 - (RQ4_b) Are enrollment outcomes predicted by applicant motivations?
 - H_{4b} There is a statistically significant relationship between motivations and enrollment outcomes.
 - (RQ4_c) Are enrollment outcomes predicted by applicant preferences?
 - H_{4c} There is a statistically significant relationship between preferences and enrollment outcomes.

In contrast, the null hypothesis applied to all research questions, suggesting there were no effects between identified variables. However, the extended literature review and theoretical frameworks support the alternative hypotheses, suggesting each underrepresented characteristic type as influential to motivations for entry (RQ2_{a-d}). For example, individuals from underrepresented ethnic groups (RQ2_b) may be more motivated by the social utility value, given their desire to promote social equity or reverse cultural stigma (Scott & Alexander, 2017). In addition, program preferences (RQ3_{a-d}) are likely influenced more by nontraditional characteristics and geographic locale, rather than by gender or ethnicity. For example, individuals who live on a rural island outside of Hawai'i are more likely to seek a program that is online, given their isolated locale and lack of access to IHE campuses. Finally, the assumption was that applicants representing underrepresented characteristics, having fewer motivations, or having preferences not aligned with program design would predict enrollment outcomes (RQ4).

Research Design: Mixed Methods

Although the research questions involve quantitative survey methodology, this study was conducted through mixed methods research. This study began as quantitative, however findings from the literature review identified a gap in the motivational framework literature needing to be addressed. One criticism towards the mixed-methods approach comes from “purists” who claim that it is “inappropriate to mix quantitative and qualitative methods due to fundamental differences” (Tashakkori & Teddlie, 2010, p. 9). In addition, some claim the approach has grown so rapidly that researchers are mixing the two methods without reason or intent (Hanson et al, 2005).

In this study, the decision to employ mixed-methods was a result of the process, being entirely driven by the questions and purpose of the phenomenon at hand. Therefore, the decision to use mixed methods came from the need to develop a more appropriate survey instrument that included motivational variables unique to special education, as found through the literature review. Why put in all this work to complete quantitative survey research, only to find out the theoretical framework did not fit the phenomenon under study? To say adding the qualitative analysis would undermine the purity of quantitative results without ensuring the instrument is sound, was contrary to the purpose of conducting research. To counter these claims, Hanson et al. (2005) recommend researchers who use mixed methods research to explicitly provide the rationale and advantages for using mixed methods, including specifying the type of mixed methods design and using procedural notations.

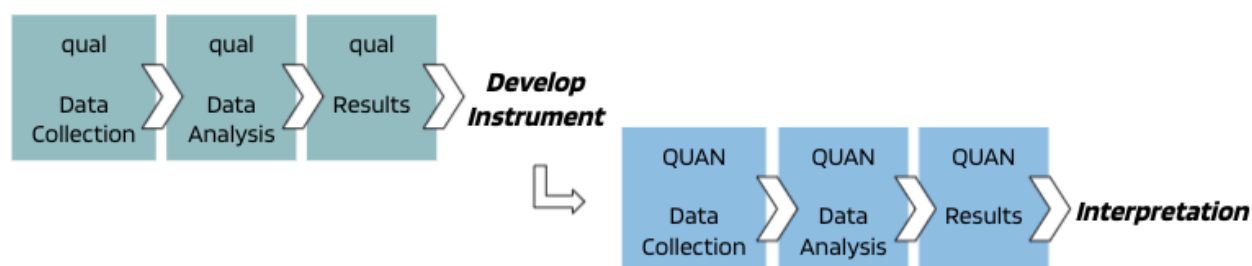
The FIT-Choice Framework had been used to study motivations for teaching across many institutions and countries, however the framework and scale had not included the field of special education. In addition, a majority of studies focused on teacher candidates already enrolled in teacher preparation programs, often representing a more traditional student population. Findings from the motivational literature specific to special education did not fit among items provided on the FIT-Choice Scale, indicating the need to first develop and test a more appropriate scale that fits the phenomenon. The benefit of the exploratory sequential mixed methods design is that it allows you to begin with findings from the existing literature and then expand and determine if new variables exist using a data-driven

approach to qualitative analysis (Mihás, 2019).

This research study employed a mixed methods sequential exploratory design, called the instrument development model (qual → QUAN; see Figure 15). This type of mixed-methods approach is ideal for studies where an instrument is not currently available for the phenomenon being studied. Therefore, the instrument needed to be developed and then tested across its targeted population (Creswell, 2003; Creswell & Plano-Clark, 2007; Mihás, 2019). In addition, this method is appropriate when a researcher “wants to generalize results to different groups,” which supports the study’s focus on underrepresented populations within the teacher workforce (Creswell & Plano-Clark, 2007, p. 75).

Figure 15

Exploratory Mixed Methods Design: Instrument Development Model



Note. Adapted from “Designing and Conducting Mixed Methods Research,” by J.W. Creswell, and V. L. Plano-Clark, 2006, *Sage Publications*, p. 76

The strength of this methodology is that it takes advantage of both qualitative and quantitative methods, while clearly separating phases to make it more straightforward in its description, implementation, and interpretation phases. The challenge with this approach included the need for more time to implement both phases, as well as not being able to provide exact details on instrumentation design during the IRB process, given the instrument had not been fully developed. However, this model had best fit the purpose and needs of this research study.

This study used previous applicant essays to develop the special education motivation survey scale and then employed quantitative survey methodology to test the new survey instrument across the targeted population. One of the benefits of survey methodology is that it can be applied to quantitative, qualitative, or mixed methods research (Creswell et al., 2005). I selected the sequential exploratory mixed methods design because the FIT-Choice Framework for teaching motivations had not yet been adapted to motivations specifically found in the field of special education. Therefore, I wanted to develop an adapted motivation scale prior to implementing the quantitative survey instrument. According to Creswell (2003), the exploratory mixed methods design allows the researcher to use quantitative data and results to assist in the interpretation of qualitative findings or to test an instrument and explore the distribution of a phenomenon within a population. In the model proposed for this study, “qualitative methods are used to

help develop quantitative measures and instruments” (p. 167). Therefore, this study looked to first adapt the FIT-Choice Framework to motivation towards teaching special education and then explored its distribution using survey instrumentation across applicants who applied to a special education teacher licensure program between 2015–2020.

Upon receiving IRB approval, the first phase of this research study conducted a qualitative analysis of applicant essays on motivations for teaching special education using the Framework Analysis Method (Gale et al., 2013; Ritchie & Spencer, 1994; Srivastava & Thomson, 2009; see Appendix A). Using this method, I analyzed previous applicant essays and coded their responses using the domains already identified in the FIT-Choice framework. During this qualitative analysis, I monitored the following: (a) whether survey items measured motivation to teaching special education, (b) whether survey constructs were mutually exclusive, (c) whether the survey items were appropriate to the targeted population, and (d) whether the survey items were comprehensive enough to cover all the identified motivations shared by applicants.

In between the qualitative essay coding phase and survey implementation phase, I used a cognitive interview to examine if possible errors existed in the adaptation of the new motivation scale within the full survey instrumentation design. In conjunction with Tourangeau’s (1984) cognitive theory in survey methodology, cognitive interviews allow researchers to not only identify if there were errors within the survey instrument, but also provide a means of examining sources of response error and why people may respond in different ways (Willis, 2006).

Finally, once the survey instrument was developed and tested through qualitative coding analysis and employment of the cognitive interview, I administered the quantitative survey across my targeted sampling frame to assess whether these qualitative findings were statistically generalizable (Mihas, 2019). This survey research allowed me to explore the distribution of this new scale on motivations, along with identifying characteristics and program preferences across special education teacher applicants. Utilizing the tailored design method, I utilized a web-based survey with an alternative multi-modal survey option, in addition to employing a comprehensive multi-modal dissemination plan using mail and web-based formats (Dillman et al., 2014). I first analyzed survey findings using descriptive statistics and then I conducted sub-analyses using nonparametric significance tests (i.e., Pearson’s chi-square test, Fisher’s exact test). Together, the purpose of this research was to identify participant characteristics, motivations, and preferences; analyze differences among targeted subgroups; and then determine whether the identified variables predicted enrollment outcomes.

Qualitative: Adapting the FIT-Choice Framework for Special Education Motivation

Since the survey section designed to analyze motivations had not been previously applied to the field of special education, there was a need to develop a new scale to better understand motivations typically found among individuals interested in special education. Oftentimes applicants to a licensure program are asked about their motivations for pursuing the program or profession as part of their entrance essay within the application process. For this study, I used responses provided from the 2019

application essay prompt, “Why do you want to become a special education teacher?” Responses to this prompt were used to create survey items using the Framework Analysis Method, in alignment with the FIT-Choice framework. Using this method, previous data could be “sifted, charted and sorted in accordance with key issues and themes” using a five part process: (a) familiarization, (b) identifying a thematic framework, (c) indexing, (d) charting, and (e) mapping and interpretation (Srivastava & Thomson, 2009, p.75).

The first step in the Framework Analysis Method was to become immersed in the data of the topic under study. As the Special Education Recruitment Specialist for the last seven years, I had been working with individuals who expressed interest in the special education career. Listening to stories of how people became interested in the career had been a common topic of discussion and therefore informal emerging themes had served as a catalyst for this research study. In addition, I had immersed myself in the research, although limited, around motivations in special education which aligned with what I had heard from prospective students.

The second step in the Framework Analysis Method was to identify a thematic framework. The FIT-Choice Framework was designed by Richardson and Watt (2006) to provide a systematic approach to studying motivations in the field of teacher education. This framework had been used and studied in multiple countries and contexts, forging the way for the development and validation of the FIT-Choice Scale. However, studies employing the FIT-Choice Scale were only conducted on general education teachers and practitioners. Bremer (2012) conducted a dissertation using the FIT-Choice Scale to determine whether motivational differences existed between preservice special education teachers and preservice general education teachers. Findings concluded there was no statistical significant difference in motivational influences between the two groups. However, themes understood from the familiarization stage of the process suggested that there were common motivations in special education not included on the FIT-Choice Scale, such as having had family members or work experiences with individuals with disabilities. Therefore, differences between general education and special education motivation can not be made using the items provided on the FIT-Choice Scale. Ritchie and Spencer (1994) argued that within the Framework Analysis Method, a researcher should maintain an open mind to determine if the issues and themes of the topic fit the framework, as the framework may need to be refined. Therefore, for this research study, I utilized the FIT-Choice Framework to develop a new instrument scale based on the themes found within the literature review on motivations for special education.

Using the FIT-Choice Framework and given sub-domains of the study, I already had the themes needed to conduct the third step of the process, indexing. Using an excel spreadsheet, each of the sub-domains were indexed and ordered to allow for coding of the applicant essay data (see Table 3). Original coding included items from the original FIT-Choice Scale in combination with special education motivation themes identified from the literature review.

Table 3*Instrument Blueprint for Indexing and Coding Special Education Motivations*

<i>FIT-Choice Dimension</i>	<i>FIT- Choice Sub-dimension</i>	<i>Special Education Motivation Themes from Literature Review</i>
Socialization Influences	Social Dissuasion & Influences	• Others have told me I should become a teacher • Others have told me I should become a SPED teacher • Family members are teachers • Family members are SPED teachers • Family member/friend with a disability
	Prior Teaching & Learning Exp.	• Had positive learning experiences • Had good teachers as role models • Had previous school or work experiences with SWD • Parent of a child with a disability • Identify as having a disability
Task Perceptions	Task Demand (expert career, high demand)	• Intellectually challenging • High levels of expert knowledge • SPED is challenging work • Teaching is emotionally challenging work • Teaching SPED is in high demand
	Task Return (social status, teacher morale, salary)	• Teaching is a respected profession • Teaching provides a stable career path • Teaching is a rewarding profession • Teaching provides an adequate income • Teachers love what they do
Self Perceptions	General	• I feel I have the traits needed to be a good SPED teacher • I feel I have the skills needed to be a good SPED teacher • I feel I can be a positive role model • I believe teaching SPED is suited to my abilities and experiences • I feel like teaching is my calling
Values	Intrinsic	• I want a career in helping others in need • I have enjoyed teaching others new things • I have enjoyed working with children or adolescents • I have enjoyed working with individuals with disabilities • Teaching would fulfill a spiritual or religious calling

<i>FIT-Choice Dimension</i>	<i>FIT- Choice Sub-dimension</i>	<i>Special Education Motivation Themes from Literature Review</i>
	Personal Utility (job security, time for family, and job transferability)	• Fulfills a high area of need • Provides a stable and secure job • Supports balancing work and family obligations • Provides me flexibility to work elsewhere • Provides opportunities and time for travel
	Social Utility (shape future, enhance social equity, make social contribution)	• Address social inequities • Helps reverse social stigmas around disabilities • Allows me to inspire and motivate the next generation of children and adolescents • Allows me to give back to my community and society • Allows me to advocate for underprivileged youth
Fallback Career	Onset	• Timeframe of deciding to become a teacher • First choice (always wanted to be a teacher) • Second Career (never wanted to be a teacher or calling later in life)

The fourth part of the Framework Analysis Method allowed me to pull original data and statements from each of the applicant essays and place it into the indexed excel spreadsheet. I randomly selected 20 of the 63 applicant essays (30%) submitted in 2019 to code. The spreadsheet included all the dimensions, sub-dimensions, and drafted question stems proposed, which was adapted from the original FIT-Choice Framework. Each row listed identified motivations from the instrument blueprint, and then applicant data were coded and organized by columns (see Appendix B). As the essay was read, an 'x' was placed into the cell that corresponded to the survey item in the adapted framework. Then, using the 'notes' feature in excel, application essay text was copied directly and placed into each charted cell box so that information remained intact and themes could be further analyzed by row for consistency and clarity.

Finally, the mapping and interpretation stage allowed me to conduct an analysis for the key characteristics across the excel spreadsheet. During this stage, I determined if the created survey items captured and represented all the motivations shared within the essays, a process otherwise referred to as content validity. Coding essay responses allowed me to see if applicants' reasons for pursuing the career fit into the identified framework and determined if all identified motivations were accounted for. Findings informed whether survey items needed to be reframed or whether inclusion of items not previously addressed needed to be added.

Using this process, I analyzed the findings to determine if the framework and instrument items met the following goals: (a) clear association between written motivations and survey items, (b) having at least one survey item for each area of motivation identified, each being distinct yet still related to the overarching construct, and (c) motivations were distributed across all domains identified across the sampled participant essays. One benefit of the Framework Analysis Method is that it provides a dynamic process, allowing continual change and amendments throughout the process (Srivastava & Thomson, 2009). Therefore, if the identified goals were not met, I continued the process to further refine the survey items. After each revision I selected 5 new essays to code. I continued this process until I was able to code 5 essays in a row where all motivations fit the framework and were clearly addressed within individual survey items.

One limitation of this qualitative approach was the role of social desirability bias, as applicants were more likely to write about certain types of motivations for teaching than others. However, past experiences speaking with applicants and reading their essays had included less socially desirable responses, such as sharing that teaching was not the first choice in profession or by their need to find a secure job. Overall, the Framework Analysis Method provided a systematic approach for developing a new instrument scale appropriate for exploring motivation in special education for this study.

Cognitive Interview

Once I designed the motivation component of the survey, it was added to the rest of the survey instrument, which included items related to respondent characteristics and program preferences. Next, there was a need to pre-test the survey instrument as a whole. Therefore, I employed the use of a cognitive interview to test each of the three parts within instrumentation design: (a) characteristics, (b) motivations to teaching special education, and (c) element preferences.

Based on Tourangeau's (1984) cognitive theory, there are four components of cognitive processes: (a) comprehension of the question, (b) retrieval of memory of relevant info, (c) decision processes, and (d) response processes (Willis, 2015). Compared to the more common pre-test method, a cognitive interview allows the researcher to not only identify a possible error, but more importantly to understand what the sources of measurement error are within the survey instrument. Cognitive interviews differ from pilot testing in that it requires a purposive, small sample of respondents who should each represent variables of the population that are sought within the study. In addition, the cognitive interview takes place prior to finalization of the instrument and before dissemination takes place.

There are two primary approaches for conducting cognitive interviews: (a) concurrent, or (b) retrospective (Willis, 2006). The concurrent method is where the survey respondent is trained to "think aloud" throughout the survey response, as a way of sharing the cognitive decision-making processes with the interviewer. The interviewer then has the option to use follow up probes to gather more information and would need to document and interpret the findings to locate sources for possible error. The advantages of this approach is that it capitalizes on the immediate reactions and thoughts related to each question and requires less training for the cognitive interviewer. However, the disadvantages are the

increased burden on the respondent, including the additional training on how to complete the “think aloud” process. In addition, the constant reflection on each question takes away from the genuine reality of the overall survey experience.

In contrast, the retrospective cognitive interview method allows the respondent to take the survey in a more natural and realistic setting, and then the interviewer takes notes based on observations and asks the respondent follow up questions after the survey has been completed. The advantages to this approach are that it is less burdensome on the respondent and represents a more realistic survey experience. However, retrospective cognitive interviews require a well-trained cognitive interviewer and increases the likeliness of error in that the respondent may not remember the cognitive processes used when asked to think back on sections of the survey.

Cognitive interviews work better in strengthening survey validity than pilot testing because it is a qualitative approach to examine why possible sources of measurement error may exist, including possible observable sources related to visual and technical design elements. For example, a pilot test might identify that a survey question has a large discrepancy between a closed-ended and follow up open-ended response, however, there would be no opportunity to understand the source of that discrepancy (e.g., jargon, structure, clarity). In that type of situation, the researcher would have to make changes based on their assumptions. Cognitive interviews, on the other hand, allow the researcher to identify the root cause of the error, allowing them to make changes specific to its source (Willis, 2015). In addition, the purposive sampling of respondents important to the context of the study allows the researcher to identify possible differences between segmented groups within the population and to ensure that the survey instrument accurately measures all variables and subgroups.

For this study, I employed the concurrent approach to cognitive interviewing. Given the survey had three distinct sections, it was likely participants may forget what they were thinking during the characteristic and motivation sections if probes were given retrospectively. In addition, those interested in the field of teaching have likely had experience in reflective practice and providing oral explanations of thoughts and processes. Therefore, having participants share their thoughts throughout the survey process may not be as cumbersome as compared to those from outside education who may be more uncomfortable with this format. For sampling, I selected participants who met characteristics being targeted and had applied to a special education teacher preparation program within the same timeframe, however, I specifically chose individuals who would not already be on the study sample frame as they did not apply to a UHM program.

Quantitative: Survey Research and Statistical Analyses

As part of this quantitative survey methodology, I used the Total Survey Error (TSE) Framework to guide procedures and instrumentation design. In addition, Dillman, Smyth, and Christian’s (2014) Tailored Design Method was used in guiding data collection and management decisions. There are many parallels between marketing principles and best practices in survey design and dissemination. Survey methodology has evolved over time, especially in the past few decades with advances in technology that

provide more efficient and cost-effective development, design, and data collection opportunities. Similar to marketing principles, the tailored design method focuses on how the design and approach of the survey research design should be tailored specifically to the targeted market and sample frame for the research study. This approach includes developing a comprehensive dissemination plan to effectively support nurturing responses from all potential survey respondents.

Procedures: Total Survey Error Framework

In survey research, it is important to understand the Total Survey Error (TSE) framework to minimize threats to validity across four different types of survey errors: (a) coverage error, (b) sampling error, (c) measurement error, and (d) nonresponse error (Dillman et al., 2014). Considerations for how to minimize these errors were addressed throughout the research design process and supported decision-making processes related to participant selection, instrumentation design, dissemination, and data collection methods.

Participants

The College of Education at UHM has been the largest local producer of newly certified teachers in the state each year. The targeted population for this study were individuals who had started an application to a UHM special education teacher preparation program between 2015–2020. Within this timeframe, the Department of Special Education offered four teacher preparation program options in special education: (a) Bachelor of Education, Early Childhood and Early Childhood Special Education (ECSPED), (b) Bachelor of Education, Exceptional Students and Elementary Education (ESEE), (c) Post Baccalaureate Certificate in Special Education (PBSPED), and (d) Master of Education in Teaching, Dual Secondary and Special Education (MEDT). Each program enrolls a new cohort once per year during the Fall semester.

The largest teacher preparation program is the PBSPED program and is the department's only ARC program that leads to special education licensure only. The remaining three degree program options lead to dual licensure in special education and general education. The ECSPED program is the newest program offering, which enrolled its first cohort in 2018. This undergraduate program caters to a blend of traditional and nontraditional students and is a statewide, online program option that offers courses online in the early evenings to accommodate working professionals. The ESEE program is an undergraduate face-to-face, traditional program that holds courses during the day and caters towards younger, full-time traditional students. Finally, the MEDT program is a graduate statewide program that caters more towards traditional full-time students, but is able to accommodate nontraditional working professionals. This study included all four program prospective students, as each program catered to individuals with characteristics being targeted for this study.

Survey Frame

This study utilized convenience sampling, as the researcher had access to the college-wide Student Information System (SIS) database and managed the application process throughout the timeframe under review.

Inclusion and Exclusion Criteria. My inclusion criteria for this study included individuals who: (a) started an application to one of four special education licensure programs at UHM, and (b) started an application for one of the following enrollment periods: Fall 2015, Fall 2016, Fall 2017, Fall 2018, Fall 2019, or Fall 2020. Exclusion criteria included: (a) individuals who started an application to non-special education licensure programs in the college of education, (b) individuals who started an application outside of the identified years under study, and (c) faculty or student support staff who started an application to test the usability and accuracy of the application process.

Coverage error. One of the first types of error within the Total Survey Error Framework occurs when identifying the population to include in the research survey. The survey frame is the list of individuals in the targeted population, and coverage error is the probability of an individual having a zero chance of being selected within the survey frame (Dillman et al., 2014). To reduce this type of error, the researcher would need to create a survey frame where every eligible participant has an equal, non-zero chance of being selected as part of the population sample.

After applying inclusion and exclusion criteria, the survey frame began with the 1,054 prospective students from application database records for the 2015-2020 admission and enrollment periods. In order to prevent coverage error within this study, I analyzed the survey list of 1,054 possible participants to remove duplicates. First, I ordered the sampling list by last name and applicants who had applied to more than one program or more than one year had duplicate entries removed, keeping the individual's most recent record on the survey frame. A total of 91 duplicate applicants were found, bringing the total number of potential survey respondents to 963. Next, knowing applicants may have changed their last name (e.g., marriage, divorce), I cross-referenced applicants who had a second surname listed in parentheses to ensure the same applicant was not represented twice, under each identified name. An additional four people were found under each last name, therefore the older listing was removed, bringing the total number of potential respondents to 959. Finally, I filtered the sampling list by email address to determine if duplicate individuals still existed, and two more individuals were identified as being listed twice under different surnames. When the older records were removed, the final total on the survey frame included 957 potential applicant respondents for this study.

Enrollment status. Once the final survey frame was cleaned to prevent coverage error, I separated the 957 applicants by program and program status to determine overall distribution based on the enrollment management funnel. The subgroups included applicants who had: (a) enrolled, (b) declined admission, (c) been denied, (d) withdrew their application, or (e) not completed their application by the end of the enrollment period (see Table 3). Enrolled students included those who had graduated or were currently enrolled as of the Fall 2020 semester.

Total applicants across programs were not equal and some programs did not enroll each year (see Table 4). The ECSPED program began accepting applications to the program in 2015, however, the program did not have enough qualified applicants to start the program until 2018 and only enrolls every other year. Therefore, graduate and enrollment data for this program only include candidates who applied

in 2018 and 2020. The ESEE and PBSPED programs have enrolled every year within the 2015–2020 timeframe and have the highest number of applicants on the sample frame. The MEDT program started its first cohort in 2016 and enrolled every year, with the exception of 2020 when the program delayed enrollment to make programmatic revisions.

Table 4

Special Education Applicants 2015–2020, by Program and Enrollment Status (N = 957)

Enrollment Status	Program				Total	
	ECSPED	ESEE	PBSPED	MEDT	N	%
Enrolled	56	123	263	51	493	52%
Declined	8	5	74	11	98	10%
Denied	21	14	74	7	116	12%
Withdrew	6	1	29	14	50	5%
Incomplete	27	65	83	25	200	21%
%	12%	22%	55%	11%		

According to the enrollment management funnel, about half of the participants on the sample frame successfully enrolled in one of the four program options. The next largest subgroup would be those who started an application, but never finished (21%). Only 116 prospective students were denied admission to a program (12%), thereby representing individuals who wanted to pursue becoming a special education teacher but were unable. The smallest subgroup within this part of the enrollment framework would be individuals who withdrew their application, indicating that they were no longer interested in pursuing the program prior to being given an admissions decision. Given the general distribution by program, the majority of the applicants were applicants to the PBSPED program, designed for special education licensure only. However, when combined, the remaining three programs represent dual certification programs. Therefore, about half of the applicants on the sample frame were pursuing licensure in both general and special education.

Limitations. Given the survey frame database comes from the College of Education Student Information System (SIS), limitations and possible coverage errors remain. For all teacher preparation programs, applicants must complete two separate application forms: (a) college of education application, and (b) university system application. There may be applicants who had started an application to the university but never started an application to the College of Education. If an individual had withdrawn or not completed the university application, they would not be represented on the SIS database. The number of potential applicants fitting this criteria are unknown and would serve as a possible limitation and coverage error for this study.

Sampling error. The use of probability sample surveys provides researchers a method for gathering a close estimate of the distribution of characteristics in a population by only having to survey some, and not all, members of a group. Probability sampling is more efficient and requires less resources without sacrificing the opportunity to obtain valid and high-quality research data (Dillman et al., 2014). However, the decision to sample introduces the second form of survey error, known as sampling error. Sampling error is the difference between the findings from a sampled population and the true population. Although nearly impossible to control, there are methods to calculate the chance of sampling error and inform researchers of how many people they would need to select within the total targeted population as well as the number of responses needed to increase the likelihood of generalizable and accurate results.

For this research study the multiple attributes under analysis made identification of appropriate sampling decisions complex. In addition, having a focus on underrepresented populations would result in naturally smaller sample sizes within each group. Sampling would have increased the chances there may not be enough respondents within the targeted subgroups to make appropriate assessments of results. Therefore, I decided to employ a census of all 957 potential respondents instead of selecting a sample within the survey frame. The decision to conduct a census prevented sampling error, however, choosing to survey everyone on the sample frame increased costs related to study design and dissemination. Costs related to time and financial resources are discussed in more detail during the instrumentation and dissemination processes.

Instrumentation

The final two sources of survey error within the Total Survey Error Framework focus on the design of the instrument and how it is distributed and managed throughout the data collection process. One of the most important sources of error to address is the chance that the results obtained do not accurately represent the phenomena being studied, otherwise known as measurement error (Dillman et al., 2014). Measurement error is a primary result of instrument design and is also a result of the initial planning and understanding of the purpose and construct being studied.

Measurement error. To reduce measurement error, Harrison (chapter in development) stresses the importance to first operationalize the variables of the research study prior to instrument design. The researchers must first have a clear purpose and understanding of the research questions in order to prevent creating an instrument that measures something different than the original intent of the study. In

order to do this, the researcher must operationalize both the observable concepts and unobservable phenomena, or attributes, of study. In addition, researchers should use an instrument blueprint to help identify the components and subcomponents needed to answer the research questions, prior to the actual development of the survey questions themselves. Lastly, it is important that the design of the survey instrument ensures that each survey item asked is applicable to every unit in the target population, and that identified categories or variables are mutually exclusive to provide clarity.

Creating an instrument blueprint helps to reduce measurement error by creating an outline, and then highlighting and focusing on the most critical features of the survey design. This promotes critical reflection regarding whether the survey is researcher-focused or respondent-focused. Oftentimes, researchers include too many questions without thinking about how it impacts the respondent. By following this process of operationalizing the variables and attributes and developing an instrument blueprint, it allows the researcher to see how including unnecessary or less critical components may become a threat to measurement error. In addition, the higher cost and cognitive load needed for the lengthier design increases costs related to errors that come from individuals who decide not to participate.

Dillman et al. (2014) provide easy-to-use guidelines to assist in the development of quality survey questions and design as a way of reducing overall measurement error. Questionnaire development design includes considerations for: (a) writing quality questions, (b) scope and sequence considerations, (c) visual design elements, and (d) capitalizing on the strengths of each or multiple modes. My survey instrument included three parts, separated by the three predictor variables identified in the research questions: (a) characteristics, (b) motivations, and (c) preferences.

Characteristics

The first component of the survey design was to identify characteristics in line with being able to analyze attributes across four targeted groups. Targeted groups were selected within the literature review as being specific areas of need in recruiting a more diverse and representative teacher workforce in Hawai'i. The four targeted characteristics under analysis included: (a) gender (b) age, (c) geographic locale, and (d) ethnicity.

After removing duplicate records, a total of 957 potential respondents were included in this research study. The following tables describe the study population by each of the known variables under investigation, based on known SIS data provided on application submissions.

Gender. To determine applicants by gender, data were analyzed to compare male and female applicants, as indicated on their application form. One limitation to using application reported data is that other gender identities (e.g., transgender, nonbinary) were not provided as options to applicants. For this research study, subgroups were created using applicants' self-reported identity as either female (coded 0) or male (coded 1).

Across all programs, there were 751 female applicants, 204 male applicants, and 2 unknown. Gender distribution confirms a predominantly female applicant base, however the sample frame is slightly more disproportional, with 21% of applicants being male compared to 25% of Hawai'i teachers being

male. However, gender differences by grade level are similar to research findings, with a larger percentage of males pursuing the MEDT program ($N = 37$, 35%), which is specific to obtaining licensure at the secondary level. The most disproportionate male representation was for applicants pursuing the ECSPED program at the early childhood level, where only 3 of the 116 applicants were male (3%).

Ethnicity. For this study, underrepresented ethnic groups in Hawai'i included applicants who identified as: (a) Native Hawaiian, (b) Filipino, or (c) Other Pacific Islander. However, as stated in chapter 2, ethnicity for the full sample frame was difficult to identify and analyze given inconsistencies in data collection processes and reporting. In addition, applicant ethnicity was not available on the College of Education SIS database, as ethnicity was not a question on the application form. The MEDT program included the UH Graduate System application form for applicants who submitted their full application, which did include applicant ethnicity designations. However, for the remaining three programs, the only known source for ethnicity data came from submitted Praxis test score reports. Praxis ethnicity data were a significant limitation for two primary reasons: (a) applicants were only able to select one category of ethnicity, and (b) Praxis reports were not required each reported year across programs. Based on each available data source, distribution of applicant ethnicity on the sample frame are provided (see Table 5).

Table 5

Special Education Applicants 2015–2020, by Program and Ethnicity ($N = 957$)

Ethnicity	Program				Total	
	ECSPED	ESEE	PBSPED	MEDT	<i>N</i>	%
Black or African American	0	1	6	1	8	2%
Asian or Asian American	7	27	56	10	100	22%
Southeast Asian or Southeast Asian American	2	1	9	6	18	4%
Pacific Islander	0	14	41	8	63	14%
American Indian or Alaska Native	0	1	5	1	7	2%
White or Caucasian	3	24	84	27	138	31%
Two or More Races	10	16	34	26	86	19%
Unknown	1	3	23	2	29	6%
No Reported Data	95	121	270	26	512	53%

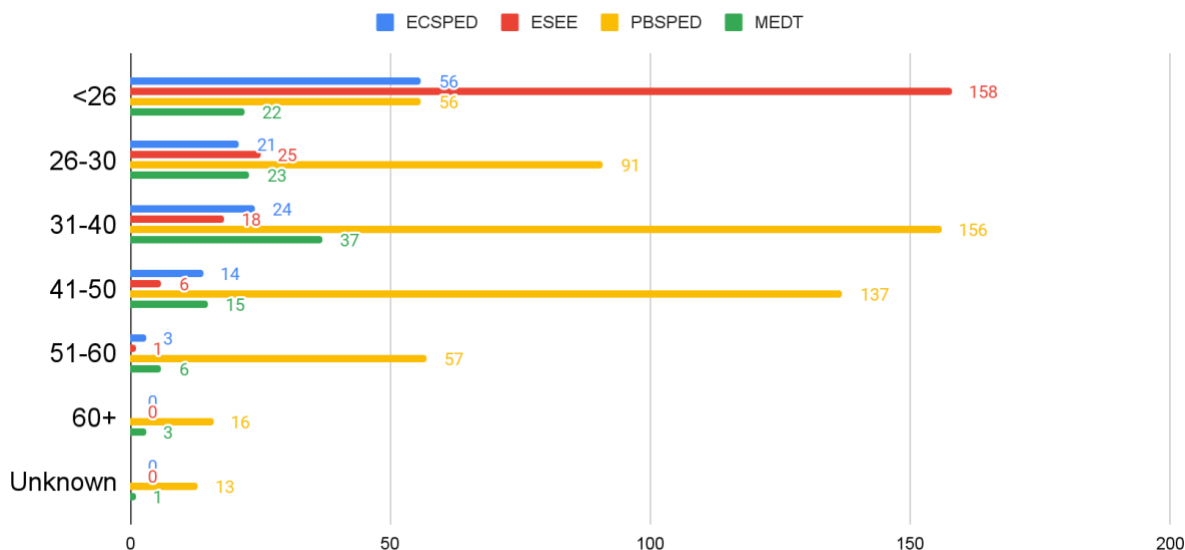
Although limited, ethnicity data did mirror state census ethnicity distribution, with the largest populations identifying as White (31%), Asian (22%), two or more races (19%), and Pacific Islander (14%). Similar to issues regarding identification of Filipinos, Praxis ethnic categories provided are unclear, as Filipinos may have identified themselves across various categories available. Given that more than half of the applicants have no reported data and the limitations to the ethnic categories used, all survey respondents will be asked to identify their ethnicity on the survey questionnaire in order to make comparisons across groups.

Age. To calculate age, birthdates were used to calculate the applicants age as of the start of the program in the year they applied. For greater consistency, age as of August 25th of the application year was used for calculating age, as it represents the average start date of the Fall semester. Two applicants were 17 years old at the time of their application to the ESEE program, however both applicants were over the age of 18 years old at the time of this study.

Overall, programs identified served a wide range of age groups (see Figure 16). The largest age group represented on the sample frame were traditional students, who were 25 years and younger. This subgroup represented 30% of the total applicant population and predominantly represented the ESEE program.

Figure 16

Special Education Applicants 2015–2020, by Program and Age (N = 957)



Although age was already known across the sample frame, the survey collected additional information often used to describe nontraditional students, such as marital and family status (i.e., married

and having children), and employment status (i.e., working part- or full-time) at the time they applied to the program.

Geographic Locale. Finally, the geographic locale of applicants was distinguished by the city listed as the home address on the application form. For data analysis, comparisons were analyzed across four groups: (a) applicants living in the urban center of O’ahu (i.e. Honolulu), (b) applicants living in rural areas of O’ahu, (c) applicants living on an island outside of O’ahu (i.e., Hawai’i, Kaua’i, Lāna’i, Maui, Moloka’i), and (d) individuals residing outside Hawai’i (i.e., Continental U.S., International; see Table 6).

Table 6

Special Education Applicants 2015–2022, by Program and Geographic Locale (N = 957)

Locale	Program				Total	
	ECSPED	ESEE	PBSPED	MEDT	n	%
O’ahu - urban	23	75	117	25	240	25%
O’ahu - rural	26	80	154	31	291	30%
Neighbor Island	58	12	220	40	330	34%
Non - Hawai’i	11	39	33	11	94	10%
Unknown	0	0	2	0	2	<1%

A majority of applicants across all programs resided on the island of O’ahu (55%). Within O’ahu, 45% of the applicants lived in the urban center of Honolulu county, with the remainder living in more rural areas of the island. About one-third of all applicants lived on neighboring islands to O’ahu. When looking at distribution across programs, it can be seen that the ESEE program has very few applicants from neighboring islands, yet has the highest number of applicants relocating from the continental U.S. The remaining programs have up to half of their applicants distributed across the various islands of Hawai’i outside of O’ahu. In addition, of the applicants from outside Hawai’i, only 4 of the 94 applicants were international students. The lack of international applicants were likely due to two reasons: (a) the HDOE does not issue work visas to teach in the state, and (b) international student visas require face-to-face coursework, therefore statewide programs, being three of the four programs identified, are unable to enroll international students.

Instrumentation Design. Overall, understanding characteristics of our targeted population was important in understanding who is more likely to choose a career in special education and who should be targeted for a more diverse and representative teacher workforce. By subgrouping analyses using identified characteristics, findings regarding motivations and program preferences can better inform recruitment and marketing efforts to more effectively support increased enrollment outcomes. Given the study sample are previous applicants to special education licensure programs, a majority of identified characteristics under analysis were already known (i.e., age, gender, geographical locale). Ethnicity information was limited, therefore, ethnicity was included as items on the survey instrument. In addition, factors commonly associated with comparing traditional and nontraditional students other than age was included as an additional survey item for this first part of the survey design. Finally, given the highest attrition rates were individuals leaving the state, the final survey item under characteristics included origination and identifying if and when each individual moved to Hawai'i.

Motivations

The next component of survey design identified motivations for entry across all participants. Motivations were grouped into three primary categories, as defined by the FIT-Choice Framework: (a) task perceptions, (b) self, and (c) value. In addition, socialization influences and whether teaching was viewed as a fallback career were two additional domains impacting motivation within this framework. Since this framework had not yet been applied to individuals interested in pursuing special education, the qualitative analysis component of this study was used to first develop the motivation section of the instrument tool.

Preferences

The final part of the survey instrument identified applicants' teacher preparation program preferences using elements identified within Boom and Bitner's (1981) Service Marketing Mix Framework. The Service Marketing Mix included seven elements, or sub-dimensions, known as the 7 P's, which include: product, price, place, promotion, people, physical evidence, and process. Each element included program characteristics specific to the design of each teacher preparation program. Although the service marketing mix framework had not previously been applied to teacher preparation, I had conducted two studies in support of applying and testing this framework within the field of special education teacher preparation. The first study employed survey methodology used to identify PBSPED alumni and faculty perspectives on programmatic supports, which was then categorized according to the service marketing mix elements. Next, I conducted a systematic literature review on the 7 P's Service Marketing Mix in alternative special education teacher preparation design, which was then published as a manuscript in the journal *Rural Special Education Quarterly (RSEQ)* in 2019. Together, these two studies supported the design of the final part of the survey instrument.

Instrumentation Design. Using the seven service marketing elements, each element was a sub-domain which was then broken into variables according to categories identified across each pilot study in this review. First, each survey asked participants to select their preference within the category. A

secondary survey item then asked participants to rate the importance of that preference in their decision-making to pursue the program, using the following Likert-type scale: (a) *not necessary*, (b) *preferred*, or (c) *essential*. In addition, each survey item provided the respondent the option to select: (a) *no preference*, or (b) *prefer not to answer*. If a respondent selected one of those options, then the secondary survey item for strength of preference was not shown. Overall, survey items covered descriptive information on program preferences, while also looking at the strength of those preferences in relation to enrollment decision-making processes.

Data Collection and Dissemination: Tailored Design Method

The tailored design method is similar to marketing theory, in that the survey research process does not offer a one-size-fits-all approach; rather, decisions and design must be tailored by context and targeted audience. The tailored design method becomes especially essential towards reducing the final threat to survey research, called nonresponse error (Dillman et al., 2014). As the final source of survey error within the Total Survey Error Framework, addressing nonresponse error is the primary focus within the data management and collection process for survey research design.

Nonresponse error. Nonresponse error is the difference in values between those who respond and those who do not respond from the targeted population (Dillman et al., 2014). The higher the nonresponse rate, the more likely nonrespondents' opinions will differ from those who respond, impacting generalizability of findings (Adams & Umbach, 2012). One method for reducing nonresponse error is to use strategies to increase the benefits, decrease the costs, and build a perception of trust to the respondents. This is done in an effort to increase the likelihood prospective participants will choose to take and complete the survey (Dillman et al., 2014).

Nonresponse error is also a result of instrumentation design. When analyzing the costs, the researcher must understand how the survey length, visual design, and complexity of the survey questions could negatively impact survey completion. As a strategy to combat cost, there is a need to increase the perceived benefits of participants who complete the survey. This can be done by providing monetary or material incentives within the survey request, creating a sense of purpose and selectivity that makes the respondent feel they are needed and special, and capitalizing on the theory of social exchange or perceived organizational support (Dillman et al., 2014). Fortunately, strategies for increasing benefits to the respondents use an additive model, therefore increasing benefits allows the researcher to utilize as many of the methods as is reasonable within the resources that are available.

Social Exchange Theory

Researchers conducting survey methodology are encouraged to consider how the relationships between the researcher or organization impacts nonresponse error (Dillman et al., 2004; Spitzmuller et al, 2006). Social exchange theory is the notion that individuals are more likely to give something if they feel the benefits are mutual. Therefore, clearly sharing how the results of the survey would benefit them directly or indirectly would help in increasing respondent behavior.

Another important consideration for reducing nonresponse error is the understanding of the differences between active and passive nonresponders. Passive nonrespondents are those who do not respond to a request due to time, convenience, or disinterest; whereas, active nonrespondents are individuals who consciously choose not to respond. In a study done by Spitzmuller et al. (2006), findings indicated that passive nonrespondents are more similar to respondents than active nonrespondents. Therefore, although increasing response rates is often seen as the gold standard of quality survey research, the methods used to increase response rates are more likely to encourage passive nonrespondents than active nonrespondents. Therefore, increasing response rates does not directly equate to decreasing nonresponse errors, as the difference between active nonrespondents and those who respond may still pose a threat to validity. The researcher must include strategies to establish buy-in from those who are more likely to be active nonrespondents.

For this research study, I used a variety of social exchange principles: (a) specified how the survey results would be useful, (b) asked for help or advice, (c) conveyed that others have responded, and (d) used material incentives to encourage reciprocity. The focus of this study was how to address the special education teacher shortage in Hawai'i, therefore I communicated that the respondent's participation would benefit our community and children. I asked for their help since they had expressed interest in this profession. By understanding who they were, their motivations, and program preferences, I conveyed that this research would work towards addressing the longstanding special education teacher shortage in Hawai'i by supporting more people like them.

NAGAP Research Grant. One consideration within the tailored design method is understanding decision-making processes needed to balance the desire for effective research design, within the realities of available resources (i.e., time and money). Given my interest in marketing principles and the power of strong visual design and multi-model dissemination options, I applied for a research grant to provide financial funding for this component of my research design (see Appendix C).

As stated earlier, the decision to conduct a census instead of a sample of the survey frame impacted costs related to this research design. As a quantitative study, costs associated with time for conducting data analysis were not negatively impacted by this decision, as it typically takes the same amount of time to run statistical analyses on 20 responses as it does to run the same analyses on 200 responses. However, financial costs are impacted, as this study used mail-based postcards, including providing a campaign sticker, as a method for providing participant benefits and increasing response rates. Therefore, choosing to include all potential respondents significantly increased financial costs to pay for having more potential respondents. Fortunately, I received the \$2,500 research grant, specifically awarded to support the design and dissemination methods for this research study. This funding provided me with the flexibility to include a more robust design and dissemination plan in a more comprehensive attempt to address nonresponse error.

Someone Special Like You. This research survey was connected to the "Someone Special for Students" campaign, designed to support recruitment of more special education teachers in Hawai'i. As

the lead on this project, I had been working in collaboration with Kai Media, a full-service marketing team. This campaign had been funded by the HDOE and was done in collaboration with our Department of Special Education at UHM. Through this campaign, visual design elements had already been created, which included a slogan, logo, website, and swag giveaway items (e.g., pens, tshirts, stickers). This research project served as an offshoot to this larger campaign, which used the same professional design elements. However, as a way to distinguish my research from the general campaign, my survey research utilized a slightly modified slogan: “Someone Special for Students *“Like You.”* In my original grant proposal I had requested funding to create the “branding” for this research project, however, the branding was developed as part of the larger campaign, so I did not need to use grant funds for the professional visual design aspect of my research project.

Project Website. Using the visual design elements from the campaign, I created a sub-page on the project website (<https://someonespecialforstudents.com/research-project/>) using WordPress. This sub-page provided more information on the research project, including the problem, rationale and need for conducting this study. In addition, I shared my inclusion criteria for participants and highlighted the need to include underrepresented population perspectives. In addition, I included tracking data of response rates, which were updated biweekly, and would be used to house the findings and results once data analysis was finalized. Overall, this website shared some basic facts around the teacher shortage nationally and specific to Hawai‘i, as well as how the findings from this study would support future recruitment initiatives.

Perceived Organizational Support

Similar to social exchange theory, perceived organizational support refers to the notion that a person’s positive or negative relationship with the organization hosting the survey will impact their likelihood to respond. It includes the extent to which the individual believes the organization values their contributions or cares about their well-being (Spitzmüller et al., 2006). Respondents who are more loyal and committed to the organization are more likely to respond, however, individuals who have less respect for the organization may choose to not respond as an act of revenge. Since the survey is contributing to the organization, individuals who purposefully choose not to respond provide an example of active nonrespondents. The differences between respondents and active nonrespondents are likely very different, causing nonresponse error. The use of sponsorship from credible organizations or institutions can be used as a way to build trust and encourage responses, however, Spitzmüller et al. (2006) warn that the organization can both positively and negatively impact respondent behavior depending on the perceived organizational support each respondent has with the institution. Understanding the organizations involved within the study needs to be evaluated to determine if highlighting the organization in an effort to build trust may also increase the chances of active nonrespondents, threatening the validity of the survey results.

Given this research study includes applicants specific to UHM programs, this study is likely impacted by the experience each applicant has had with the university. However, as the recruitment

specialist, most identified respondents had been in touch with me during the inquiry or application process, therefore some personal rapport had likely been established. However, if applicants had negative experiences throughout the inquiry to enrollment process, this may hinder their decision to participate in the study, thereby increasing nonresponse error. This would especially have been more likely among individuals who had been denied to the program. However, by using the preference component of the survey instrument, I shared with respondents that one possible outcome would be to improve program design to better meet the needs of our applicants. If messaging were tailored towards this subset of the sample frame, this could combat their initial negative perceptions of the study. Another subgroup that would have been impacted by perceived organizational support would be the candidates who were enrolled or had graduated from the program. Their current or past experiences, positive or negative, may have impacted their decision to participate or not participate in this survey. My goal was to create universal messaging around the need to address the teacher shortage for the entire state, and to convey that this survey was not only self-serving to the university. One way of demonstrating this was through the use of the 'Someone Special for Students,' which showed the partnership between the UHM and the HIDOE.

Multi-Modal Design

Surveys are commonly distributed using three modalities: (a) phone; (b) mail; and (c) web-based, including internet and email. There are advantages and disadvantages of each mode, therefore, researchers need to understand and analyze each mode to determine which mode(s) best serve the purpose and targeted groups responding to the survey. Using a multi-model design does not necessarily equate to offering multiple ways of completing a survey, however the use of multiple modes can also be used together to convince participants to respond through a more comprehensive dissemination and management plan (Dillman et al., 2014).

Phone-based surveys were more common in the past, when landlines were commonplace in a majority of homes and provided a cost-efficient method for reaching out to potential respondents. However, with the transition from landlines to cellular phones, the use of phone lists as a tool for selecting a sample of the population has been compromised as cellular phone numbers are no longer confined to a geographic location, and the population of those who use landlines and those who use cellular phones are substantially different. In addition, phone-based surveys are prone to multiple sources of error, as it is more difficult to maintain consistent data collection and preferences for this mode can vary by generational demographics.

Mail-based surveys provide more coverage, as a majority of the population uses a mailing address, however limitations include the fact that multiple individuals live in a single household, creating a potential likelihood that the survey would not be read by the targeted recipient. According to the U.S. Census, American Community Survey (2012), Hawai'i had the highest percentage of multigenerational homes in the country (11%), commonly due to high costs of living, large immigrant populations, and housing shortages. Another downside to using mail services is that it has now become one of the most

costly options available. Finally, mail-based surveys are not suitable for branching techniques or translation services that have become commonplace in web-based surveys.

Finally, the prominence of a technology-driven era has influenced the use of web-based surveys in both positive and negative ways. Distributing surveys over email or the web is the cheapest, often free, and fastest way to collect data from respondents. However, with the ease of this modality has come a saturation of survey requests, making it harder to receive a response from the targeted market. Technology has changed how people interact and respond to messaging, thereby requiring a more intentional and quality design. Therefore, survey researchers must combat consumer behavior where individuals quickly scan and ignore the plethora of concurrent messaging while checking email, browsing the web, or engaging on their cellular phones.

The role of the researcher is to determine which modalities to use and how to integrate them using a more comprehensive and targeted approach. Whether in higher education or across other contexts, the tailored method for research design is based on the need for researchers to not only focus on the design of their survey instrument, including which mode to use, but to also create a dissemination plan that can capitalize on the use of multiple modalities within a single research project.

Postcards. As the first step of my dissemination plan, I used initial mail-based postcards to draw attention, establish visibility, and introduce my research study to all prospective participants. Postcards were designed using the same visual elements used in campaign, website, and survey instrumentation so that respondents became familiar with the logo and purpose of this work (see Appendix D). The postcard information notified participants, similar to a “save the date” message, of when the web-based survey would be distributed to them, so they become aware of the survey request. Similar to advertising, the purpose of this postcard was to create awareness, but also curiosity, so that participants would become interested in learning more about the project.

As stated prior, the decision to conduct a census rather than a sample of my survey frame significantly increased the financial costs for this part of the overall research design. Fortunately, the money that was saved from the visual design elements were applied directly to support the dissemination of these mail-based postcards as part of my multi-modal dissemination plan. Although mail-based postcards used the bulk of this project’s grant money, the purpose of this strategy was to establish buy-in and appeal to social exchange principles by highlighting how important each respondent was to the problem at hand. In addition, I used sticker-backed postcards, which allowed me to give each potential respondent a sticker from the ‘Someone Special for Students’ campaign, as a strategy for providing material incentives to encourage reciprocity for participating in the survey. Also, by using strong visual design elements from the campaign and sharing a specific date, I hoped to prevent participants from overlooking the survey request as they scanned through their emails on the distribution date.

Multi-modal survey option. This research study used web-based surveys as its primary mode of data collection. The web-based survey mode was selected as all participants had started an online application and, therefore, the targeted population was familiar and had access to completing information

on a web-based platform. However, in order to cater to diverse needs and preferences, the mail-based postcard notified participants that they had the option to opt-in to a different survey format (i.e., paper-based survey to be mailed with stamped return envelope or request a phone survey) prior to the proposed dissemination date. This decision to offer a different mode was in consideration of rural and remote applicants who had less access to reliable internet connections when completing online surveys, as well as considering older, nontraditional applicants who may not have been as comfortable with computers and technology. As an additional approach, all participants were given the option to “opt-out” of participating in the study if they wanted to ensure they did not receive follow-up communications. The website had an opt-out form, where they could express their desire to not participate in the survey. By directing them to the website to complete the opt-out form, the hope was they would also see more information related to the project prior to opting out, potentially dissuading them from their decision. However, allowing participants to opt out was important, as it contributed to identifying the number of active vs. passive nonrespondents.

Data would be more consistent and easier to analyze using web-based surveys only, given the automated reports and abilities to use logic-branching techniques. Rather than contacting all participants and asking them which survey mode they prefer, making the web-based survey the default option increased the likelihood that most responses would be completed in this format. Using an “opt-in” option for the other formats requires participants to perform an extra step; providing this option addressed active nonrespondents, as it would then satisfy any strong preferences for not completing a web-based survey. Participants needed to complete a quick form embedded on the project website, where they identified who they were and selected their preferred format. Participants who opted in for the paper-based survey were prompted to provide their preferred mailing address, whereas participants who opted-in to a phone survey were prompted to select from a range of available days/times to be contacted by phone for completing the survey.

Nonresponse Management

Finally, once awareness was created and all potential respondents had been contacted, the next step was to disseminate the survey on the proposed date, which was two weeks after postcards were sent. Then, similar to methods used for nurturing applicants from the application started to application finished stage, I contacted respondents at different times, using differentiated nurturing emails, and tailored the messaging depending on their enrollment status. My dissemination and data collection management plan to nurture nonrespondents was conducted in phases: (a) nurturing email by enrollment funnel status, and (b) nurturing email by underrepresented group status. Similar to enrollment management theory, the purpose of this phased approach was to tailor the messaging to the respondent in multiple ways and to create a more comprehensive approach to targeting nonresponse error. Once a survey was completed, the respondent would no longer have received follow-up emails. However, for nonrespondents, these nurturing emails were scheduled and tailored specifically to them throughout the data collection and dissemination phase.

Enrollment Management Funnel. I tailored the first phase of the nurturing process for nonrespondents depending on the applicant's enrollment status, which was also a variable of study in data analysis. I grouped respondents by the following: (a) enrolled, (b) denied, and (c) lost. I then nurtured each subgroup depending on their identified needs and characteristics (see Appendix E). This first phase of nonresponse management was done two weeks after the initial survey distribution.

Students who were currently enrolled or had graduated were more likely to engage in the survey since they were already part of the university community. However, for students who were currently enrolled at the time of the survey request, their participation request included additional information on protections, such as ensuring that participating or not participating in this study would not impact their status as a student. Overall, the messaging for this subgroup of participants was tailored to their "success" and focused on the first two parts of the survey instrument: (a) characteristics, and (b) motivations. Messaging for this subgroup of students and alumni emphasized that they were exactly the type of person we were looking for and we hoped to find more people like them.

For applicants who were denied to the program, the tailored messaging took a different approach. Instead, the focus would be on parts two and three of the survey instrument: (a) motivations and (b) preferences. In other words, applicants who were denied were asked to participate as a way to determine if program design elements were a barrier to them becoming a teacher and whether their motivations for becoming a teacher should be given more consideration within the admission decision process. Messaging highlighted the importance of the need to diversify the teacher workforce, as a majority of the applicants who were denied to programs were a result of not being able to pass the entrance exam, which had been shown to negatively impact individuals from diverse backgrounds. The purpose for sharing that this project is to better understand the role of motivation among those interested in the special education career was to encourage participation by respondents from this subgroup.

Finally, for applicants who were lost throughout the enrollment period, either by having an incomplete application, withdrawing their application, or having been admitted but deciding not to enroll, messaging was tailored specific to the third part of the research survey, program preferences. Messaging conveyed that we wanted to better understand what they would have needed in order to follow through with pursuing the program, and whether the design of the program could have helped influence their decision.

Underrepresented Groups. Two weeks later, I sent a second email campaign to nurture nonresponders. I created messaging regarding the importance of collecting perspectives from groups currently underrepresented in the teacher workforce. I sent this message to anyone who fell within the variables being targeted in this study (e.g., male, Native Hawaiian, rural). This email spoke to the need to have a more diverse workforce and in supporting those who live in rural and remote areas of the state.

Throughout this process I managed the response "funnel," similar to how I managed applications. I tracked responses weekly, and updated the project website biweekly to show the growth in response rates. Each time I reached out to a potential respondent, I would always include a link to the project

website so they could see how others were contributing. I used these strategies to increase response rates and decrease nonresponse error.

SoGoSurvey

This study used the premium version of a survey design tool, called SoGoSurvey. I selected this tool because of its key role within the instrumentation, data collection, and dissemination management process of this research study in order to best address measurement and nonresponse error. This tool is comprehensive across four important considerations within survey research planning: (a) question design, (b) visual design, (c) dissemination plan, and (d) data analysis. Although a free version of this tool was available, I opted to purchase the student premium version (\$279) using grant funds. I chose to purchase the updated version because my primary research method is survey methodology and the premium version of this platform included more options I felt were essential to enhancing this study's research design.

Dillman, Smyth, and Christian (2014) provide a set of guidelines that follow best practices within instrumentation design and use of the tailored design method. Associated guidelines are shared to demonstrate the rationale for choosing SoGoSurvey as the survey tool for this study. SoGoSurvey helps to address measurement error because it provides a comprehensive range of options for survey item types. Its user-friendly design allows the researcher to drag and drop in question types as needed, and each question type is supported with tips on its use, including a sample test item (Guideline 4.1). Question types are categorized using the following: (a) simple questions, (b) grid questions, and (c) advanced questions. For example, a rating radio grid question type allows participants to provide a forced-choice answer to a set of related questions using a common rating scale (Guideline 5.12). This question type saves space and provides consistency across numerous survey items. As another example, one advanced question type, called horizontal radio, provides the option to design a Likert-type scale with labels at each point (Guideline 5.18). Other unique features of this survey design tool is that it allows the researcher to use text, images, or even videos for questions and responses, as well as the option to make questions mandatory if needed.

In regards to visual design of survey items, SoGoSurvey provides the option to manually adjust spacing between questions and responses (Guideline 6.15). There is also an option to easily add a page break to assist with survey flow (Guideline 6.17). In addition, the platform is compatible with different devices, such as a computer, tablet, or phone and allows the researcher to preview and test out the survey instrument across platforms (Guideline 9.2–9.4). Finally, the primary reason for paying for the premium version of SoGoSurvey was to have access to the advanced logic and branching tools, which allow the researcher to show or advance questions to the respondent based on a previous response (Guideline 5.20). This is essential to addressing measurement error, as well as nonresponse error, as it ensures each question applies to the respondent and hides questions that are not applicable (Guideline 4.2). In addition, advanced logic design allows the researcher to set conditions across multiple questions

in a nonlinear way, which is an advanced technique that I have not seen offered in any other type of survey platform.

To support efforts in addressing nonresponse error, the SoGoSurvey tool allows for personalization and customization as a strategy for establishing rapport, recognition, and quality of the survey design (Guideline 9.17). SoGoSurvey allows the researcher to assign logos, branding, and color schemes to the survey instrument. For my study, I will be utilizing the branding from the “Someone Special for Students” campaign to attract people into the special education profession. This allows me to create visual consistency across materials being used throughout the multi-modal dissemination plan (Guideline 6.15). The same logos and color scheme was applied to the postcard, website, and survey tool. Other design features include the ability to embed the survey directly on the website, or to distribute a link to the survey using a short message service (SMS) invitation as a text message. By providing multiple ways for respondents to access the survey allows more individuals to engage in their preferred format (Guideline 11.16). In addition to CSV files, SoGoSurvey includes data analysis tools and customer relationship management tools that allow the researcher to design their dissemination materials directly into the platform, as well as associate item responses with numerical values on the back end for data analysis.

For survey distribution, SoGoSurvey allows the option to send out a single-use or multi-use link. Single-use links can be created using a CSV file so that each respondent has a unique link, allowing them to save and return to the survey as needed. In addition, the single-use link allows the researcher to provide anonymity through SoGoSurvey, while being able to still send out nurturing and follow up emails to only respondents who have not yet submitted their survey responses. Lastly, as part of the long-term dissemination plan, SoGoSurvey allows the researcher to schedule out the initial survey request, as well as scheduling follow-up emails. All email communication can be tailored and designed based on known characteristics of the respondent. Together, these features set SoGoSurvey apart from other more common survey design tools, such as Google Forms, Survey Monkey, or Qualtrics. Therefore, the use of SoGoSurvey was a key feature of this study’s research design.

Chapter IV: Results

In this chapter, I report the results of this mixed method study. I begin by describing my survey development, which includes the qualitative analysis used to adapt the FIT-Choice Framework to motivations in special education. After the development of the survey instrument, I share the cognitive interview process and followed by the results of the quantitative survey analysis that was distributed to the 957 potential respondents on the sample frame. Survey results were separated by the three parts of the survey: (a) characteristics, (b) motivations, and (c) preferences. In addition, the motivation and preference section included the sub-analysis findings to determine if significant associations existed between characteristics and each of the identified variables. As the final section of the results, findings were analyzed by enrollment outcomes, to compare those who successfully had enrolled in the program and those who did not.

Adapting the Framework for Special Education

The Framework Analysis Method was used to analyze previous applicant essays in order to develop the motivational section of the survey instrument. Originally, the intent was to begin with the FIT-Choice Scale and add items found through this study's literature review that would better represent motivations found in special education. However, through the framework analysis process, it became apparent that there were too many unique items specific to special education to reasonably add them in addition to the original survey items. Therefore, as an exploratory research study, I decided to develop a motivation instrument specific to special education motivations only.

Beginning with the original instrument blueprint (see Table 3), I randomly selected and coded 20 previous applicant essays using an excel spreadsheet. The spreadsheet was organized by the five primary dimensions of the FIT-Choice Framework: (a) Socialization, (b) Self Perceptions, (c) Task Perceptions, (d) Values, and (e) Fallback Career (see Appendix F). The five dimensions were divided into nine sub-dimensions, with each sub-dimension having five variables of motivation identified using previous FIT-Choice Scale items, in combination with special education motivations identified in the literature review. The only sub-dimension with fewer variables was onset, which only had three variables for analysis. In total, there were 43 variables for motivation on the original framework for analysis.

As I read each of the applicant essays, I copied each sentence or section that applied to one of the identified motivations and placed it into the corresponding cell. Motivations not included on the instrument blueprint were added to the spreadsheet at the bottom. After coding the first 20 essays, there was evidence for 30 of the 43 variables and an additional nine possible motivations that did not clearly fit into the previously identified categories. Of the 13 motivations not present in the coded essays, four were in the sub-dimension of social dissuasion (e.g., family members who are SPED teachers) and four were in the sub-dimension of personal utility (e.g. provides stable and secure job). The lack of evidence for personal utility motivations was expected, given social desirability bias; applicants are not as likely to share motivations related to personal gains in their application essays.

As findings were indexed and charted, I made adjustments to original motivational statements to

support clarity and adapted wording more specific to special education. For statements not originally on the framework, I added them within each corresponding dimension and sub-dimension. I then pulled 20 new essays to code using the expanded framework, which now had a total of 50 possible motivations under analysis. After mapping each new essay, there was evidence provided across 34 of the variables, with no new motivations not having been represented on the framework. Using counts of evidence within each sub-dimension, I then narrowed down the options within each sub-dimension so there would not be more than five identified variables for each. Decisions included removing items that were consistently not being addressed in applicant essays in comparison to other motivations within that category. Five variables were removed, leaving a total of 45 possible motivation variables. Finally, I selected a total of 10 new essays and coded them using the remaining 45 variables to make sure: (a) no new motivations were found and (b) all identified motivations fit within the identified variables on the instrument blueprint.

In the end, there was evidence found across 38 of the 45 identified variables for motivation within applicant essays. The seven variables not addressed were in the subdimensions of social dissuasion, task return, and personal utility. However, these motivations would be kept on the survey instrument, as social desirability bias was likely a threat to why these variables were not being represented in applicant essay responses. As a short essay within the application, applicants were not likely to focus on motivations related to personal gains or whether others had tried discouraging them from pursuing the profession. However, as an exploratory study, I felt it was important to include these dimensions on the survey instrument. Overall, findings from this qualitative analysis indicated the following motivations as the most common reasons for pursuing becoming a special education teacher: (a) previous experience working with individuals with disabilities, (b) feeling they had the skills needed to be a good special education teacher, (c) pursuing teaching special education as a second career, (d) having felt the rewards that comes from teaching or working with individuals with disabilities, and (e) believing they can make a real difference.

Finalized Instrument Blueprint. Once the motivational variables were finalized, I adapted the items using the Total Survey Error Framework to develop common question stems and grouped items accordingly. As a result, I developed a finalized instrument to study motivations as part of the final survey instrument for this study. Socialization variables were all listed on a radio grid, using the initial prompt, “which of the following applied to you at the time you were applying to the program” (see Table 7). Respondents could select yes, no, or prefer not to answer. Because these socialization motivations were ones that impacted them before choosing to become special education teachers, this question type was moved into the first part of the survey instrument under “Getting to Know You.” Additional socialization questions asked about the level of support respondents received from their family, friends, and colleagues regarding their interest in becoming a special education teacher. Finally, two items within prior teaching and learning experiences used a separate Likert-type scale similar to the Self and Task Perceptions section of the survey instrument, therefore these response items were added to the following section for usability purposes.

Table 7*Instrument Blueprint: Socialization Motivations in Special Education*

FIT-Choice Dimension	FIT- Choice Sub-dimension	Drafted Question Stems
Socialization Influences	Social Dissuasion & Influences	Overall, my family, friends, and/or colleagues were... • supportive of my interest in becoming a teacher • somewhat supportive of my interest in becoming a teacher • not supportive of my interest in becoming a teacher • Prefer not to answer Which of the following applied to you at the time you were applying to the program? • I have had family member(s) who are teachers • I have had family member(s) who are special education teachers • I have had family member(s) who have a disability • I had had close non-family relationships with individuals with disabilities • I have had a child with a disability • I consider myself spiritual/religious
	Prior Teaching & Learning Exp.	Which of the following applied to you at the time you were applying to the program? • I have been identified as having a disability • I have had previous experiences with individuals with disabilities when I was in school (K-12) • I have had previous work or volunteer experiences with individuals with disabilities prior to applying to the program • I was already working at a school at the time I was applying to the program At the time you were applying, how strongly would you have agreed or disagreed with these statements? • Overall, I had positive experiences in school (K-12) • I had good teachers as role models

A radio grid using a Likert-type scale was used for assessing task perceptions and self perceptions (see Table 8). Applicants were asked “at the time you were applying how strongly would you have agreed or disagreed with these statements.” Radio grid options included: (a) Strongly Agree, (b) Agree, (c) Neutral, (d) Disagree, (e) Strongly Disagree, and (f) Prefer not to answer.

Table 8*Instrument Blueprint: Self and Task Perception Motivations in Special Education*

FIT-Choice Dimension	FIT- Choice Sub-dimension	Drafted Question Stems
Self Perceptions	General	At the time you were applying, how strongly would you have agreed or disagreed with these statements? • I felt I had the traits and characteristics to make a good special education teacher • I felt teaching special education would be well suited to my skills and abilities • I felt my previous experiences prepared me for becoming a good special education teacher • I felt I already had a lot of knowledge in the field of special education and individuals with disabilities
Task Perceptions	Task Demand (expert career, high demand)	At the time you were applying, how strongly would you have agreed or disagreed with these statements? • I felt being a special education teacher would be challenging work • I felt being a special education teacher would be rewarding work
	Task Return (social status, teacher morale, salary)	At the time you were applying, how strongly would you have agreed or disagreed with these statements? • I felt teaching special education would provide a good income • I felt I would be well-respected as a special education teacher

The values dimension of the instrument had five statements available to choose from for each of the three types of values (i.e., intrinsic, personal utility, social utility; see Table 9). Using a multi-select checkbox question stem, all 15 statements were listed using the prompt “Which of these statements, if any, would you say had influenced your personal motivation(s) to pursue licensure in special education?” Applicants could select all that apply. This part of the survey questionnaire took advantage of some of the advanced options SoGoSurvey provided, such as being able to randomize the fifteen statements for each respondent, in order to reduce question-order bias. In addition, a follow-up question was asked using logic branching to determine which, of all the motivations selected, was the most influential to them. SoGoSurvey could populate the follow-up question using only the statements selected in the previous question. This allowed respondents to see the motivations they had already picked, and made it easier for them to then select the one they felt as being the most influential in their decision to pursue licensure in special education.

Table 9*Instrument Blueprint for Identifying Motivational Values in Special Education*

FIT-Choice Dimension	FIT- Choice Sub-dimension	Drafted Question Stems
Values	Intrinsic	Which of these statements, if any, would you say had influenced your personal motivation(s) to pursue licensure in special education? • I felt like teaching special education was my calling • I enjoy working in small groups or one-to-one with students • I enjoy helping others in need • I enjoy a challenge • I enjoy the rewards that come with helping individuals with disabilities
	Personal Utility (job security, time for family, and job transferability)	Which of these statements, if any, would you say had influenced your personal motivation(s) to pursue licensure in special education? • Pursuing special education licensure would provide me with more job opportunities after graduation • Pursuing special education licensure would provide me with tuition support • Becoming a special education teacher would allow me to learn how to support my own children • Because of the need, I knew special education would help me get my foot in the door • The specialized skills and knowledge in special education would make me an asset to my community
	Social Utility (shape future, enhance social equity, make social contribution)	Which of these statements, if any, would you say had influenced your personal motivation(s) to pursue licensure in special education? • I want to help address social inequities • I want to reverse social or cultural stigmas arounds disabilities • I was to help students with disabilities reach their full potential • I want to give back to my community by fulfilling a high area of need • I want to be an advocate for students with disabilities

Finally, there were four questions used to determine the onset of respondents' teaching interest, as well as whether teaching special education would be considered a fallback career (see Table 10). Questions in this domain appeared at various points within the survey instrument, depending on the question type. However, onset of teaching interest in teaching and teaching special education were used at the first two questions in the motivation section of the survey instrument.

Table 10*Instrument Blueprint: Fallback Career or Interest Onset in Special Education*

FIT-Choice Dimension	FIT- Choice Sub-dimension	Drafted Question Stems
Fallback Career	Onset (Fallback career = After college, Second Career)	When did you first consider becoming a teacher (in general)? • As long as I can remember • During elementary school • During middle school • During high school • During college • After college • Prefer not to answer When did you first consider becoming a special education teacher? • As long as I can remember • During elementary school • During middle school • During high school • During college • After college • Prefer not to answer If offered both types of positions, which would have been your first choice? • General Education position • Special Education position • Prefer not to answer Which of the following applied to you at the time you were applying to the program? • Growing up I had always wanted to become a teacher • Growing up I had never thought I would become a teacher • Teaching would be a second career for me

In summary, the motivation component of the survey instrument used a total of eight question types that included 30 variables identified from the framework analysis. For the purposes of this research study, the motivation section of the survey instrument was designed to explore all the known sources of motivation specific to the field of special education and to explore its distribution within the targeted population.

Cognitive Interviews

In March 2021, I conducted cognitive interviews online using zoom to pre-test the survey instrument to selected participants. Two of the three identified interviewees participated in the cognitive

interview, as one participant canceled the day prior due to a family emergency. I invited each interviewee who participated to complete the cognitive interview using Zoom. For each interview, I gave an overview of the research project and trained each participant on the think aloud and cognitive interview process. Once the participants indicated they were ready to take the survey, I sent the survey link to the participants' email address, so they could experience and provide feedback on the entire process, which including the content of the email itself. Throughout the interviews, I used a structured note-taking protocol to record information in a uniform way, by creating a document that included a table that tracked notes on the following sections: (a) email, (b) first impression, (c) characteristics, (d) motivations, (e) preferences, (f) other: technicalities, and (g) overall impression (see Appendix G). Once the cognitive interviews were completed, I analyzed the notes, highlighting specific feedback or areas needing to be addressed. The first interview was conducted on March 11, 2021 and lasted 29 minutes. The second interview was conducted on March 14, 2021 and lasted 34 minutes.

I summarized primary findings from the cognitive interviews and used the results to revise items on the survey. The first interviewee provided more feedback on usability and visual design, whereas the second interviewee was focused more on the content of the survey questions. Together, these cognitive interviews provided valuable insight and recommendations for improving survey usability, visual design, and content. For usability, both participants said they enjoyed the design of the survey, and each made comments on how they were impressed that the follow-up question for their primary motivation were taken from the previous question. Edits for usability included removing repetitive statements and changing the entry options to the survey from two methods down to one method; having two ways to enter the same survey was confusing.

In the area of visual design, I made edits for uniformity, as one participant noticed key words were different colors throughout the survey. To address this issue, I went back and used one color to highlight all key words throughout the survey. In addition, as I observed the participants filling out the survey responses, I noticed that the sliding scale question types were set to "not important" on default. But if survey respondents did not actually click on "not important" as a response, it was left blank on the response spreadsheet. Therefore, I added a note to the top of the question prompt to clarify that respondents must click on "not important" if that is their response to that question.

Lastly, survey content edits in response to cognitive interview feedback provided specific opportunities to clarify wording, added new options in drop-down response question types, and changed one scale to include "neutral" as an option. Overall, other than the few key suggestions provided, both participants felt the survey was short, not stressful, and easy to complete.

Limitations. Cognitive interview findings are limited, as I was only able to conduct two interviews prior to the dissemination date. More interviews could not be completed, as the survey distribution date could not be changed since the date had been shared out to all 957 potential participants one month ahead of time. Therefore, I did not have time to secure additional participants. However, between the two participants, they represented male and female perspectives, as well as younger traditional, and older

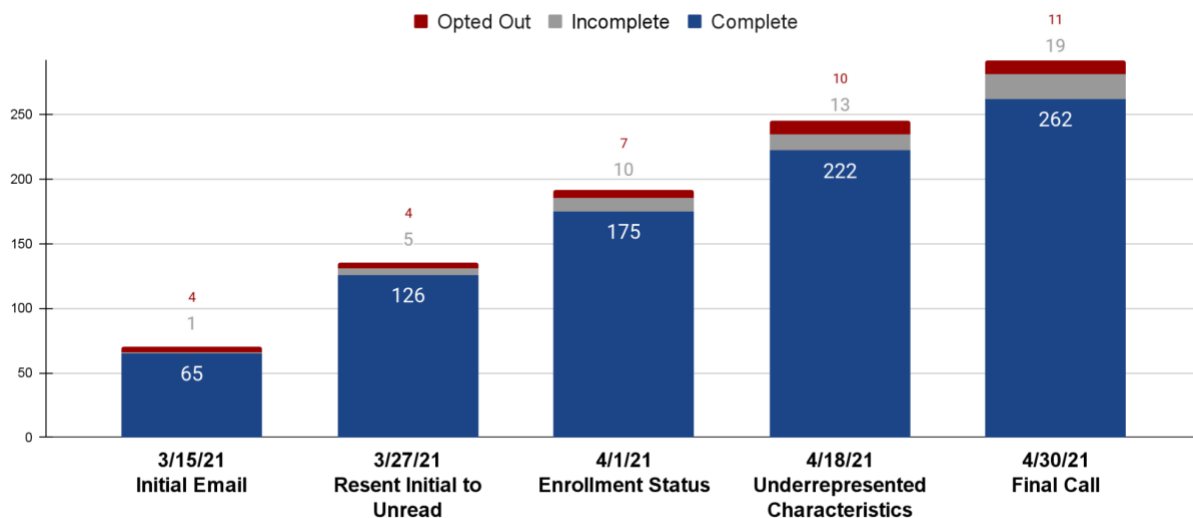
nontraditional perspectives. However, one limitation is that both participants were White and not originally from Hawai'i. The third participant who had canceled was an individual who had been born and raised in Hawai'i and was of Filipino and Japanese descent. Therefore, not having someone from targeted ethnicity and origination characteristics was a limitation to the cognitive interview process.

Quantitative Survey Results

Once the revisions from the cognitive interview were completed, the online survey instrument was disseminated to all 957 potential participants via SoGoSurvey on March 15, 2021 along with the research consent form (see Appendix H–I). Within the first two weeks, a total of 65 responses had been completed, with one incomplete, and four respondents opting-out of participating (see Figure 17).

Figure 17

Survey Response Rates



Using SoGoSurvey's tracking feature, I re-sent the initial email request on March 27, 2021 to all participants who had the email showing as delivered, but unread. I chose to resend this email on a Saturday, and it almost doubled the number of responses received over the weekend, encouraging 61 additional respondents and 4 new incomplete responses by April 1st.

Next, I sent the first set of nurturing emails, which were differentiated by enrollment status. These emails increased the number of respondents by 49, which was primarily from applicants who had enrolled ($n = 35$), followed by applicants who were incomplete ($n = 6$), declined ($n = 3$), withdrew ($n = 3$) or denied ($n = 2$). In addition, five new surveys were started, but incomplete and 3 respondents opted-out from participating. The next set of nurturing emails were sent out on April 18, 2021 and were differentiated by underrepresented characteristics. These emails increased the number of respondents by 47, primarily neighbor island applicants ($n = 15$) and nontraditional older applicants ($n = 15$), followed by male applicants ($n = 11$) and two applicants who did not fit any nontraditional characteristics. An additional

three participants started an application with another three opting-out. Finally, the final phase reminder increased the number of respondents by 40, with 6 new incomplete responses, and one final person opting-out. Utilizing social exchange theory, every time I sent a new email to nonrespondents, I included a graph for each phase that showed how many people had responded and told them my goal was to reach 200 responses.

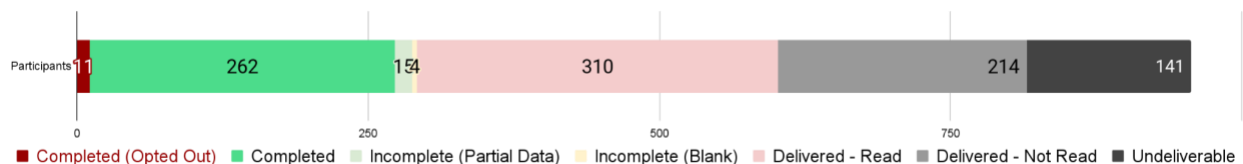
Response rates and outcomes were tracked using the SoGoSurvey platform for respondents who opened the research survey. In addition, two respondents had emailed me directly to opt-out, along with one person who had opted-out using the form on the project website. Overall, of the 292 total respondents, 262 completed responses to the survey, 19 started the survey but did not finish, and 11 had opted-out from participating. Of the 11 active non-responders, 7 were individuals who had originally not completed their application, 2 were individuals who had been denied, 1 had been admitted but declined enrollment, and then 2 were individuals who had enrolled but had since been dismissed from the program. None of the active nonrespondents were individuals who had successfully enrolled and/or graduated from the licensure programs.

Although the option to take the survey in a different format was provided, no participants opted in changing the survey format to either a phone or mail-based survey. However, three respondents did complete the project website form to update their contact information.

In sum, a total of 292 of the 957 potential respondents initiated a response to the research survey request, which is a 31% overall response rate. However, when breaking down this data further using the SoGoSurvey tracking tool, a total of 141 email addresses (14.7%) were immediately marked as undeliverable (see Figure 18). Of these 141 applicants, 107 of them had listed their University of Hawai'i email address on their application (76%) suggesting that their email account was no longer active.

Figure 18

Survey Email Tracking Data



When also accounting for the number of people who did get the email but never read the request ($N = 214$), I ended up with a total of 615 potential participants who received the survey request. In the end, 292 of these 615 potential participants responded (47%), including 11 active non-responders (1.7%), 262 completed responses (43%), and 19 incomplete responses (3%). Of the 19 incomplete responses, 4 participants dropped off on the first question, followed by 7 who dropped off during the motivation section, and 8 who dropped off during program preferences.

The American Association for Public Opinion Research (AAPOR; 2016) is the leading professional organization of public opinion and survey research. In an effort to provide standards of quality for conducting survey research, AAPOR provides a response rate calculator and spreadsheet to report overall survey outcomes. According to AAPOR outcome rates, this study had an estimated 34% response rate, 44% cooperation rate, 40% refusal rate, and 74% contact rate (see Table 11).

Table 11

AAPOR Outcome Rate

Type	Formula	Rate
Response Rate	$(I+P)/((I+P)+(R+NC+O)+(UH+UO))$	.339
Cooperation Rate	$(I+P)/((I+P)+R)$	.435
Refusal Rate	$R/((I+P)+(R+NC+O)+e(UH+UO))$	.398
Contact Rate	$((I+P)+R+O)/((I+P)+(R+NC+O))$	.738

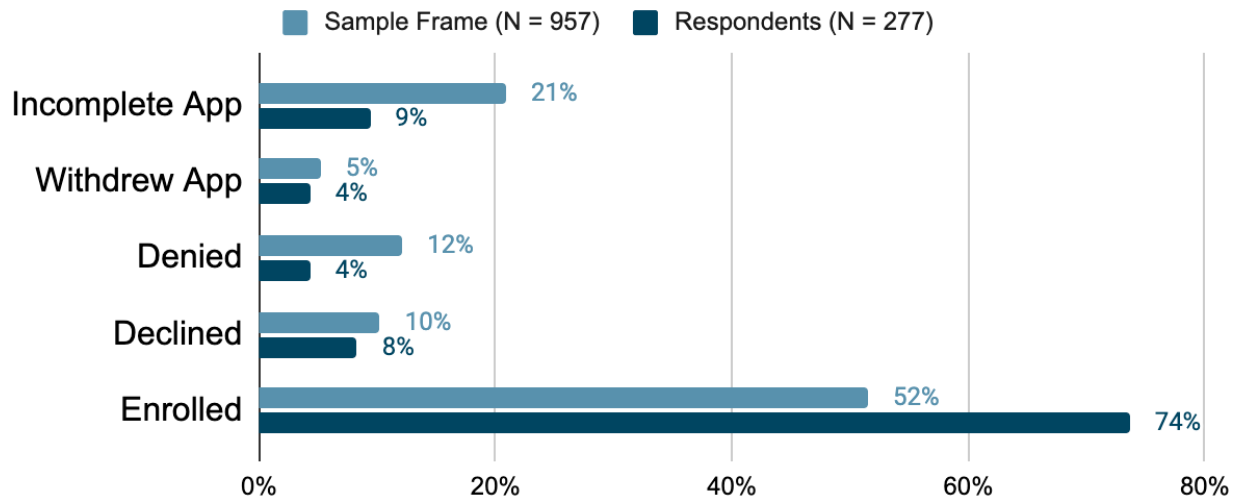
Note: I = Complete ($N = 262$), P = Partial ($N = 15$), R = Refusal and break off ($N = 325$), NC = Non Contact ($N = 214$), O = Other ($N = 0$). From “Standard Definitions used for Internet Surveys of Specifically Named Persons”, by AAPOR, 2016, p. 43–47

Respondents

Given all respondents were tracked internally using the SoGoSurvey platform, respondent characteristics could be compared to the original sample frame (see Figure 19). In the end, a large majority of the 277 responses for analysis were from applicants who had successfully enrolled in one of the four teacher preparation programs identified within the study ($N = 204$). Of the applicants who had not enrolled but completed the survey request, 23 had declined enrollment, 12 had been denied admission, 12 had withdrawn their application, and 26 had never finished their application. In total, there were 73 respondents to the survey request who had not enrolled (26%), compared to the 204 respondents who successfully enrolled (74%). When compared to the sample frame, there was a large overrepresentation of applicants who were enrolled and underrepresentation across all other enrollment outcomes; the lowest participation ratios were from individuals who had never completed their application and those who had been denied.

Figure 19

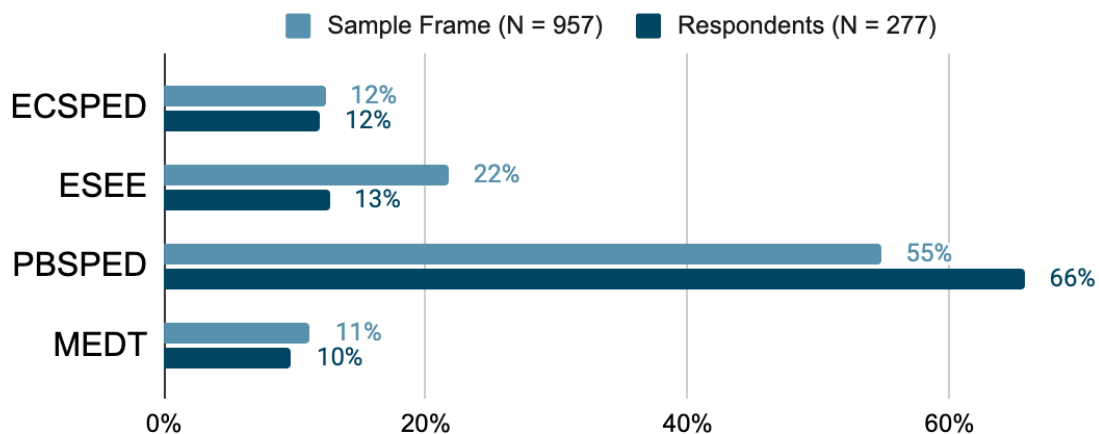
Sample Frame and Respondents by UHM Enrollment Status



When comparing respondents by licensure program being pursued, more than half of respondents had applied to the PBSPED program ($N = 182$), with the remaining respondents almost equally distributed among the other three programs (see Figure 20). There was an overrepresentation of PBSPED applicants and an underrepresentation of students from the ESEE program. ESEE applicants were the largest group having used a University of Hawai'i email address that was no longer deliverable ($N = 64$, 60%) likely accounting for the underrepresentation of participation from this subgroup.

Figure 20

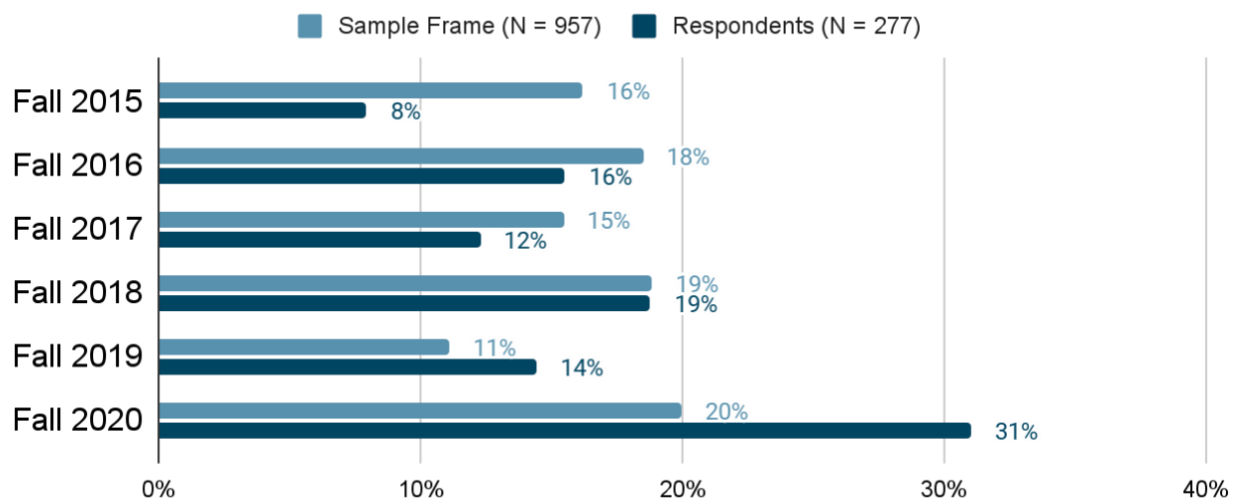
Sample Frame and Respondents by Program



The largest percentage of respondents were from the most recent 2020 application cycle ($N = 86$), whereas the remaining respondents had a range of 8%–19% participation from years 2015 to 2019 (see Figure 21). However, there is an overrepresentation of more recent applicants for Fall 2020 and Fall 2019, an even distribution of respondents from Fall 2018, and an underrepresentation of applicants from Fall 2015 to Fall 2017.

Figure 21

Sample Frame and Respondents by Application Semester



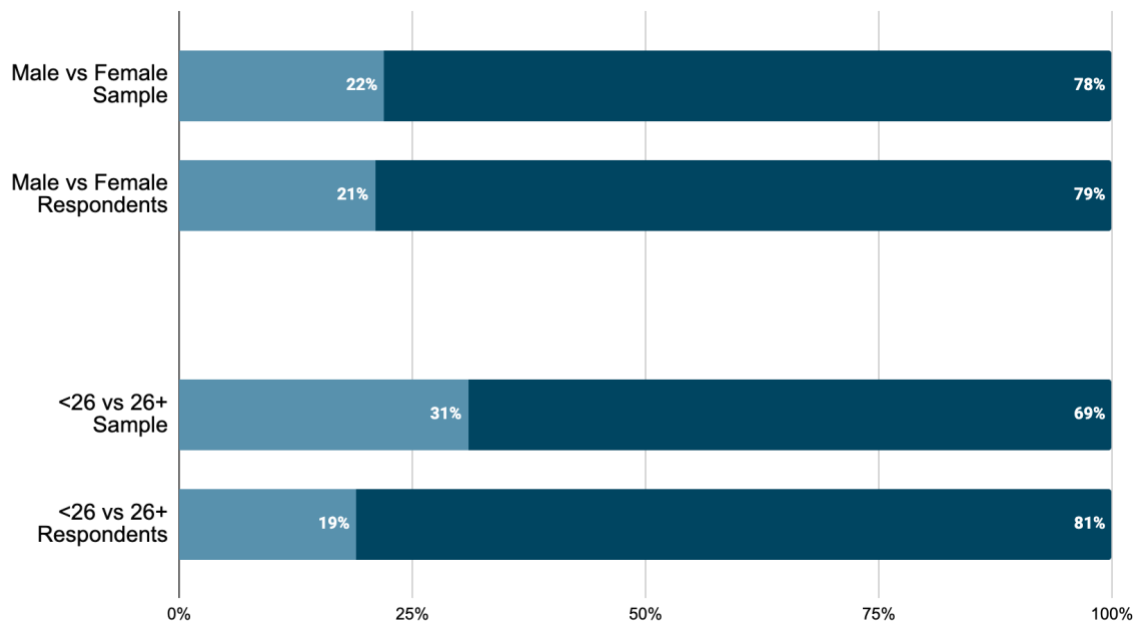
Characteristics (RQ1)

The first part of the survey asked questions related to characteristics of the respondents to better understand which characteristics were more common among special education teacher applicants, as well as to allow for comparisons and sub-analysis across other variables in this study. Some characteristics (i.e., gender, age, locale) were already known from the application database and were pre-populated into the result data spreadsheet for analysis.

Gender. Out of 277 survey respondents, 21% were male ($N = 59$), and 79% were female ($N = 215$; see Figure 22). Compared to the sample frame, there was an almost equal ratio of responses from males ($N = 204$; 22%) and females ($N = 751$; 78%).

Figure 22

Sample Frame and Respondents by Applicant Gender and Age



Age. Age was identified by the age at the time each respondent had started an application to the program. For respondents, 19% had been under the age of 26 ($N = 52$) and 81% had been 26 or older at the time they applied to a special education program ($N = 223$). A majority of respondents represented an older, more nontraditional subgroup. In addition, compared to the sample frame, younger survey responders were largely underrepresented.

Other Nontraditional Characteristics. Although age is the most common factor used for identifying nontraditional students, there are other factors that contribute to being a nontraditional student. Nontraditional students are often identified as those who have to balance multiple responsibilities on top of being a student, such as: (a) working a part-time job, (b) working a full-time job, (c) having a spouse, or (d) having a child or children (Hanover, 2018; Kasworm, 2003). As part of the survey questionnaire, applicants were asked to identify which of these nontraditional characteristics related to them at the time they were applying to the special education licensure program (see Table 12). On average, respondents had about two of these characteristics at the time they were applying to the program ($M = 1.91$)

Table 12*Frequencies and Chi-Square Results for Age and Nontraditional Characteristics (N = 275)*

Nontraditional Characteristic	<26		26+		χ^2
	<i>n</i>	%	<i>n</i>	%	
Part-Time Job	28	53.85	71	31.83	9.57**
Full-Time Job	17	32.69	153	68.61	21.93***
Spouse	5	9.61	117	42.55	30.59***
Child or Children	4	7.69	132	59.19	43.78***
None ^a	7	13.46	5	2.24	***

Note. None^a = Fisher's exact test was used due to small frequency sizes.

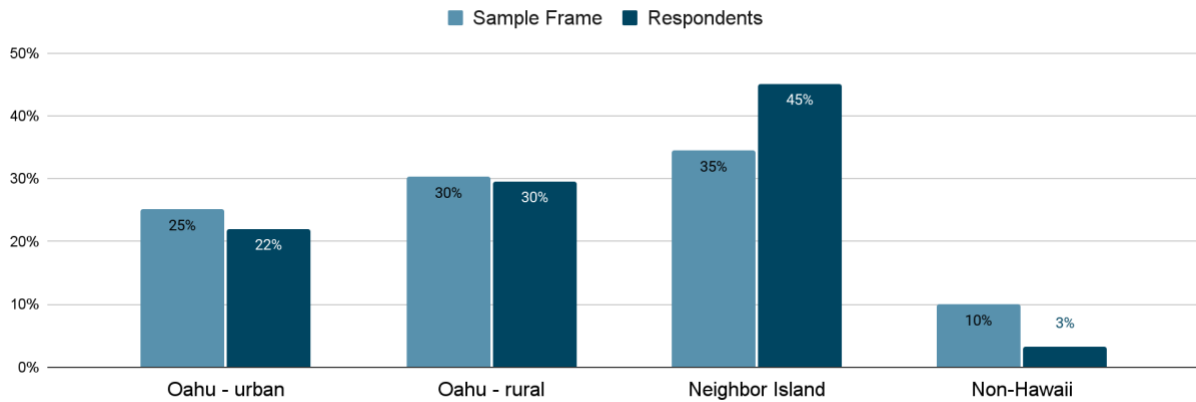
** $p < .01$. *** $p < .001$

Using Pearson's Chi-squared test, all identified characteristics were statistically significant when comparing students under the age of 26 to students age 26 or older. Younger students were significantly more likely to have a part-time job, $\chi^2 (1, N = 275) = 9.57, p < .002$, and more likely to not identify with any nontraditional characteristics ($p < .001$). Students 26 or older were significantly more likely to have a full-time job, $\chi^2 (1, N = 275) = 21.93, p < .001$, a spouse, $\chi^2 (1, N = 275) = 30.59, p < .001$, and a child or children, $\chi^2 (1, N = 275) = 43.78, p < .001$. Therefore, within sub-analyses, age likely represents differences between traditional and nontraditional student populations.

Locale. A little more than half of all respondents were those living on O'ahu ($N = 143, 52\%$), with 61 respondents living in urban O'ahu (22%) and 82 outside of Honolulu in more rural areas (30%; see Figure 23). The next largest group were individuals on neighbor islands, who lived on other islands in Hawai'i neighboring O'ahu ($N = 125, 35\%$). Only nine respondents (3%) were individuals who were living out-of-state at the time they applied to one of the programs. For survey respondents, there was an overrepresentation of individuals from neighbor islands and an underrepresentation from those living outside the state of Hawai'i. For the sub-analysis component of this research study, associations by locale excluded comparisons using Non-Hawaii respondents, given the small response size and being largely underrepresented in comparison to the sample frame.

Figure 23

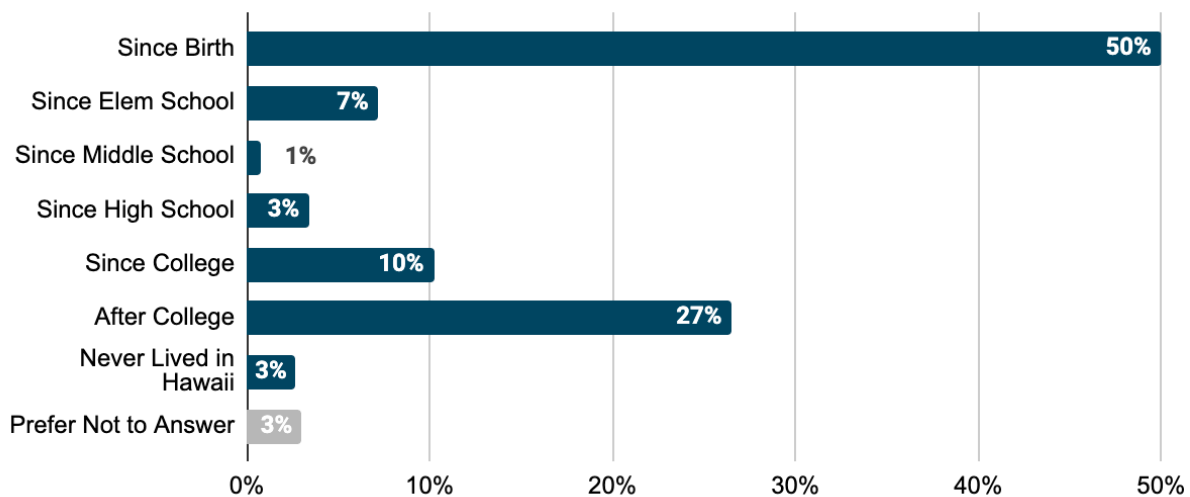
Sample Frame and Respondents by Applicant Locale



Other Origination Characteristics. State data suggest teachers who are from Hawai'i are more likely to stay in teaching than those who relocated from out-of-state. Therefore, survey respondents were asked how long they have been living in Hawai'i, if at all (see Figure 24).

Figure 24

Respondents by Origination of Hawai'i Residency (N = 274)

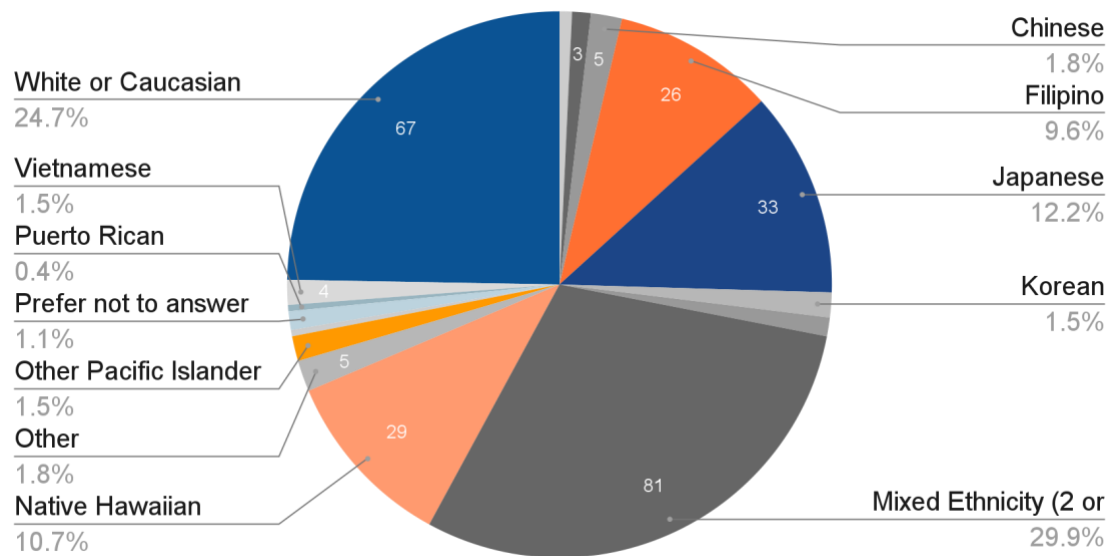


Responses indicated that half of the respondents were born and raised in the state ($N = 132$, 50%), with an additional 30 respondents who moved to Hawai'i during their K-12 school-aged years (11%). About 10% of respondents ($N = 27$) moved to Hawai'i during college and about one-fourth moved to Hawai'i after college ($N = 70$).

Ethnicity. Ethnicity data were not available for a majority of the sample frame, therefore only respondent ethnicity is presented. The most common ethnicity for respondents were individuals who identified as mixed, having more than one ethnicity ($N = 81$, 29.9%; see Figure 25). The next four largest ethnic groups were White or Caucasian ($N = 67$, 24.7%), Japanese ($N = 33$, 12.2%), Native Hawaiian ($N = 29$, 10.7%), and Filipino ($N = 26$, 9.6%). All remaining ethnic groups had five or less respondents each ($< 2\%$).

Figure 25

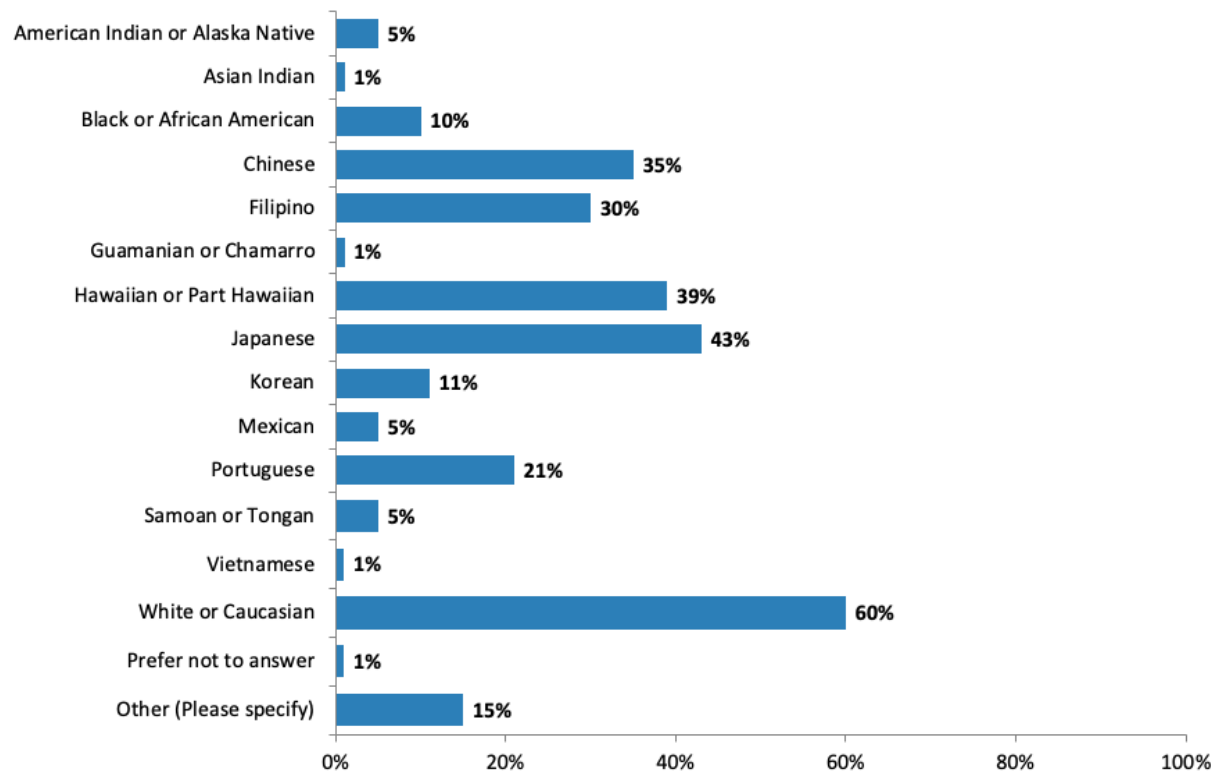
Respondents by Ethnicity ($N = 272$)



For individuals who were more than one ethnicity, a majority identified as part-White, followed by part-Japanese, part-Native Hawaiian, part-Chinese, and part-Filipino (see Figure 26).

Figure 26

Respondents by Mixed Ethnicity (n = 83)



For the sub-analysis component of this study, respondents were grouped according to the four largest single ethnic groups, which also happen to represent the ethnicities currently disproportionately represented in the Hawai'i teacher workforce: (a) underrepresented groups (Native Hawaiian, $N = 29$; Filipino, $N = 26$), and (b) overrepresented groups (White or Caucasian, $N = 67$; Japanese, $N = 33$). Other Pacific Islander responses were extremely low ($N = 4$), therefore were not included as an underrepresented group for this analysis. In addition, all other respondents were not included, including individuals identified as mixed ethnicity due to large variability within that subgroup ($N = 116$).

Other Ethnicity Characteristics. In addition to age, research suggests that nontraditional students were more likely to represent students from underrepresented populations in teaching. To test this relationship, I used Pearson's Chi-squared test to compare age with identified ethnicities. Results were statistically significant, $X^2(3, n = 154) = 12.38, p = .006$ (see Table 13), however, younger respondents had higher proportions of Japanese and Filipinos, whereas older respondents had higher proportions of White and Native Hawaiian students. Therefore, for this research study's findings, age will be associated with nontraditional students, but not for underrepresented ethnicities.

Table 13*Frequencies and Chi-Square Results for Ethnicity and Age (n = 154)*

Age	White		Japanese		Native Hawaiian		Filipino		χ^2
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
<26	8	26.67	13	43.33	3	10	6	20	12.38**
26+	58	46.77	20	16.12	26	20.97	20	16.13	

** $p < .01$ **Motivational Profile (RQ2)**

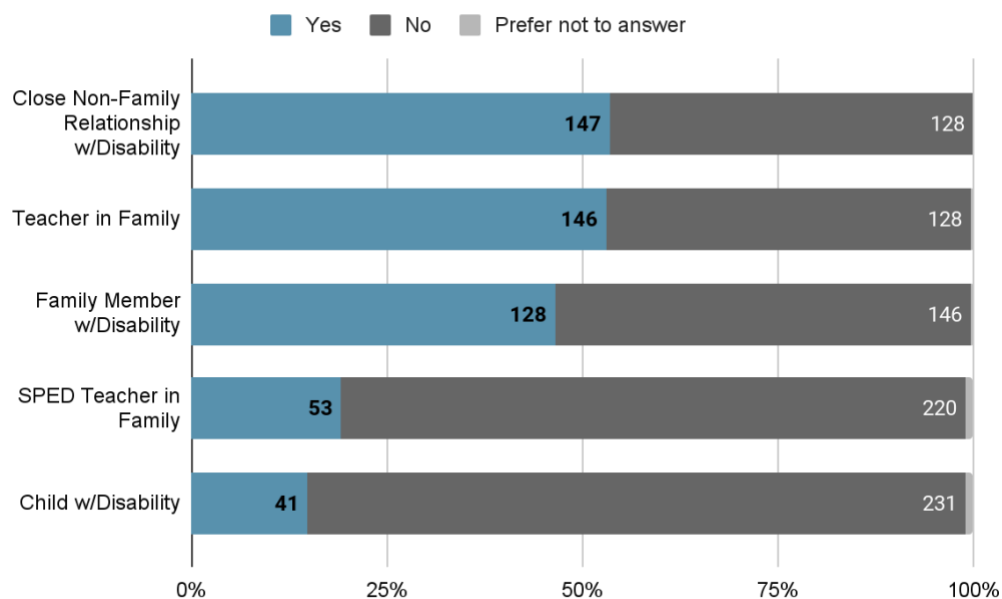
The second section of the survey asked questions related to motivations for starting an application to a special education teacher preparation program. Although the analyses were done using the sub-domains provided on the FIT-Choice Framework, questions were not always separated by domains on the survey itself; questions using the same questions stem were grouped together and results were then separated by sub-domain for analysis. Based on the FIT-Choice Framework, motivations for teaching were categorized using five overarching domains: (a) Socialization, (b) Self Perceptions, (c) Task Perceptions, (d) Values, and (e) Onset/Fallback Career.

Socialization. First, applicants were asked to identify which socialization factors related to them, which were separated into two categories: (a) Social Dissuasion and Influences, and (b) Prior Teaching and Learning Experiences. Social Dissuasion and Influences included six response items and were related more to family connections or relationships with individuals with disabilities, whereas teaching and learning experiences were connected more to prior schooling and work or volunteer experiences related to individuals with disabilities.

Social dissuasion and influences. A majority of the respondents had close non-family relationships with individuals with disabilities or had a family member who was a teacher (53%; see Figure 27). Almost half of the respondents had a family member with a disability (47%). The least common social dissuasion influences were having a family member who was a special education teacher (19%), or having a child with a disability (15%). When adding up the number of social dissuasion connections to teachers or individuals with disabilities (0-5), the average mean of social dissuasion factors for respondents was 1.88. A total of 54 respondents did not have any social dissuasion factors listed (20%).

Figure 27

Social Dissuasion and Influences (N = 275)

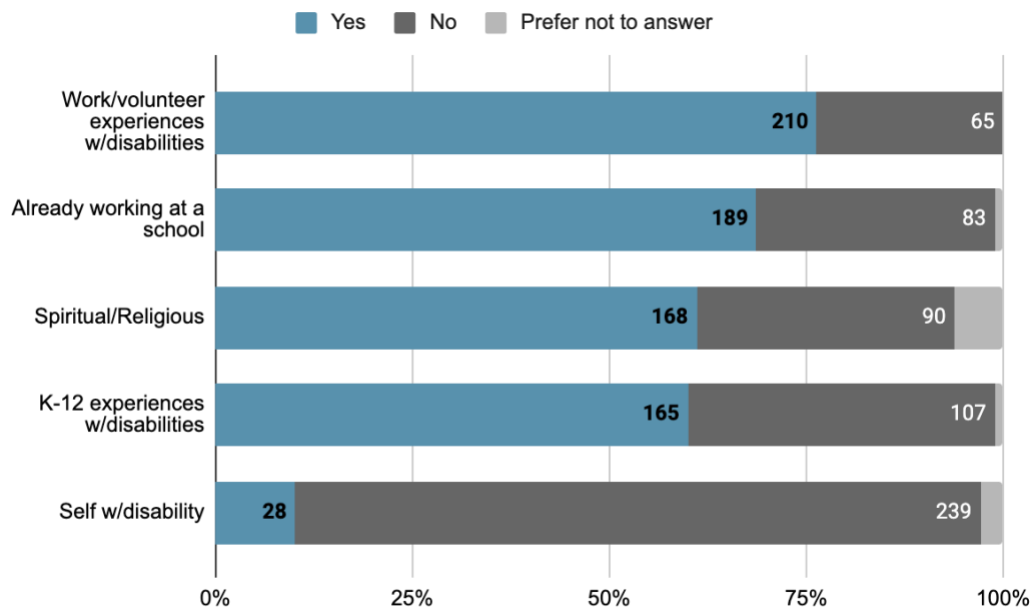


In a separate question, respondents were asked if their family, friends, and colleagues were supportive of their interest in becoming a special education teacher. Results indicated that a large majority of applicants felt supported ($N = 211$, 77%), with 17% of applicants feeling somewhat supported ($N = 46$), and only 4% of applicants feeling not supported ($N = 12$).

Prior teaching and learning. A large majority of respondents had previous work or volunteer experience prior to applying ($N = 210$, 76%) or were already working at a school ($N = 189$, 69%; see Figure 28). More than half of respondents identified as being spiritual/religious ($N = 168$, 61%), as well as having had experience with individuals with disabilities during their K-12 schooling ($N = 165$, 60%). Only 28 respondents identified as having a disability themselves (10%). Overall, the average number of teaching and learning experience factors was 2.76, with only six respondents (2%) not identifying as having any. Although most respondents provided an answer to each prompt, questions preferred not to be answered including identifying as spiritual/religious ($N = 17$) or as having a disability ($N = 8$).

Figure 28

Prior Teaching & Learning (N = 275)

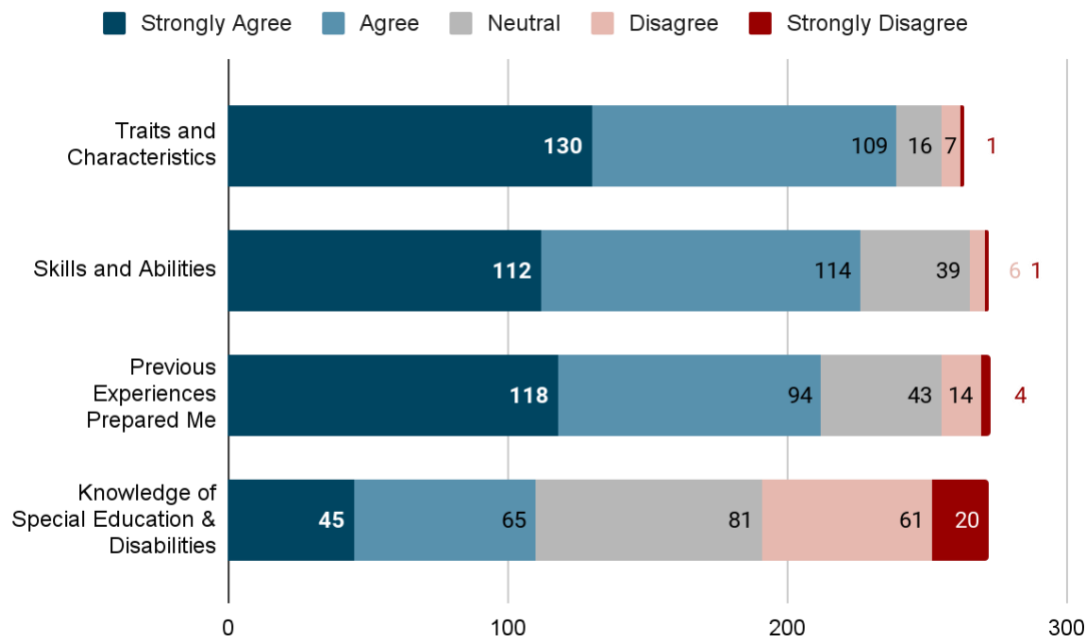


In addition, applicants were asked, overall, if they had positive experiences in school and if they had good teachers as role models. Respondents were asked to rate statements using a scale from Strongly Agree (2) to Strongly Disagree (-2). A majority of respondents strongly agreed ($N = 133$, 49%) or agreed ($N = 115$, 42%) that they had positive experiences in school. Only 21 respondents felt neutral (8%), with an additional one respondent each who selected disagree or strongly disagree. For having good teachers as role models, an even greater majority of respondents strongly agreed ($N = 133$, 63%) or agreed ($N = 86$, 32%). Only eight respondents felt neutral (3%) and two disagreed. There were no respondents who strongly disagreed with this statement. Overall, having good teachers as role models ($M = 1.16$) was rated higher than having positive schooling experiences ($M = .87$).

Self Perceptions. A majority of respondents either agreed or strongly agreed with three positive self perceptions towards becoming a special education teacher (see Figure 29). Overall, respondents felt teaching special education was well suited for their traits and characteristics ($N = 239$, 88%), was well suited for their skills and abilities ($N = 226$, 83%), and that their previous experiences had prepared them ($N = 212$, 77%). However, a majority of respondents did not feel like they were very knowledgeable in the field of special education and individuals with disabilities, with only 40% ($N = 110$) of respondents agreeing or strongly agreeing with that statement. Furthermore, a total of 81 respondents (30%) had disagreed or strongly disagreed with that statement.

Figure 29

Self Perceptions (N = 275)



On average, the highest rated self perception was traits and characteristics ($M = 1.32$), followed by skills and abilities ($M = 1.21$), and previous experiences ($M = 1.13$). Having knowledge in the field of special education or individuals with disabilities was almost neutral on average ($M = .02$).

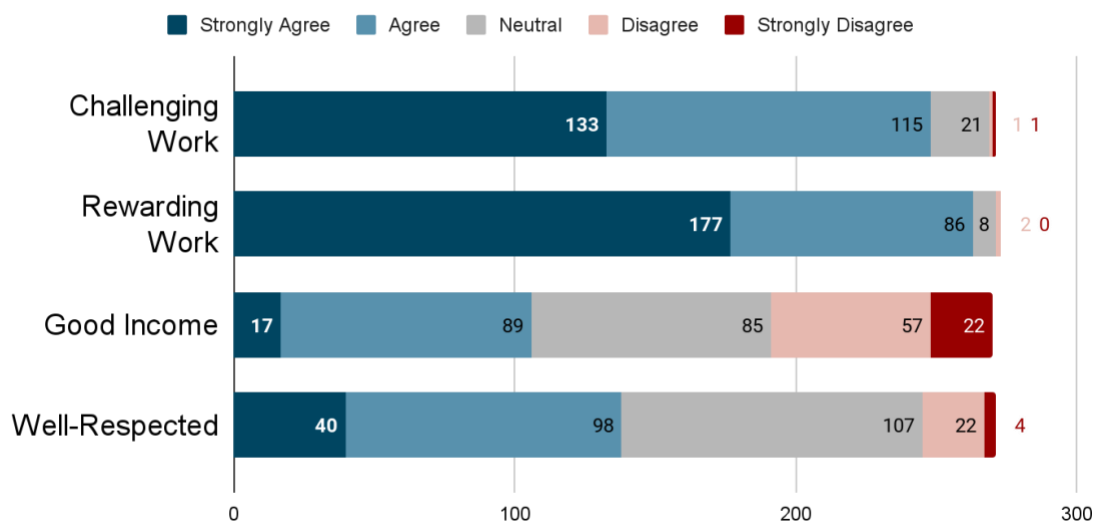
Task Perceptions. Respondents were also asked to rate statements regarding task demands and task returns using a scale from Strongly Agree (2) to Strongly Disagree (-2). Almost half of all respondents strongly agreed that teaching special education would be challenging work, with an additional 42% who agreed (see Figure 30). However, an even greater percentage of respondents felt that teaching special education would be rewarding work, with 65% who strongly agreed and an additional 32% who agreed. When compared individually, a majority of respondents felt the challenges and rewards were equally balanced ($N = 169$, 62%), whereas 27% felt being a special education teacher was more rewarding than challenging ($N = 73$), and 11% of respondents felt teaching special education would be more challenging than rewarding ($N = 29$). Perceptions on whether teaching special education provided a good income was mixed. About one-third of respondents felt neutral, with 33% who agreed and 6% who strongly agreed, compared to 21% who disagreed and an additional 8% who strongly disagreed. When asked whether special education teachers were well-respected, the largest subgroup felt neutral ($N = 107$, 39%), with a combined 51% of respondents who agreed or strongly agreed ($N = 136$), and the remaining 10% of respondents who disagreed or strongly disagreed with that statement.

On average, respondents felt teaching special education would be rewarding ($M = 1.6$) and

challenging ($M = 1.39$). However, respondents did not feel teaching special education was as well-respected ($M = .55$) or would pay a good income ($M = .08$).

Figure 30

Task Perceptions (N = 273)



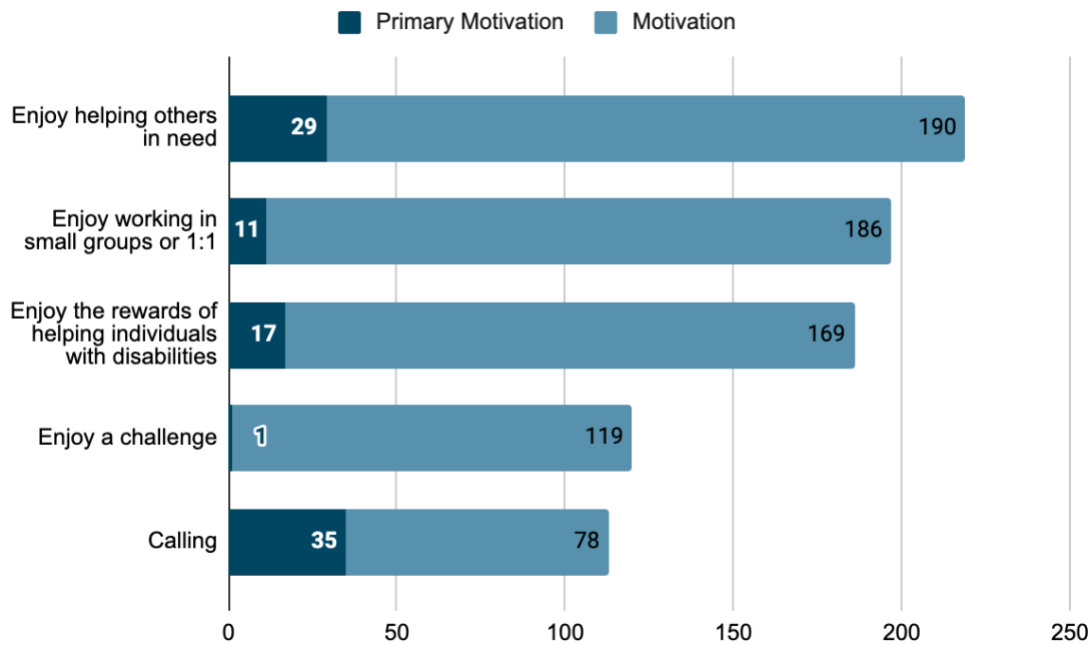
As a follow-up question, respondents who had identified as having had a full-time job were asked how the current DOE entry teacher salary compared to their salary at the time they had applied ($n = 172$). A majority indicated that the teacher salary would be more than what they had been making ($n = 113$, 67%), with 19 respondents who indicated their salary would be about the same (11%), and 30 who would be making less (17%). Five respondents preferred not to answer the question.

Values. In the FIT-Choice Framework, motivation by values were separated into three subdomains: (a) intrinsic, (b) personal utility, and (c) social utility. Each subdomain had five motivation items and respondents were asked to identify which of the 15 motivational statements related to them at the time they applied to the program. Then, a follow-up question asked them to choose their primary motivation out of all the statements they had previously selected.

Intrinsic Values. Intrinsic motivators were selected by almost half or more of all survey respondents (see Figure 31). The most common intrinsic motivator was that 80% of applicants enjoyed helping others in need, followed by 72% who enjoyed working in small groups or one-to-one with students. For the statement “I felt like teaching special education was my calling”, although it was the least common intrinsic motivation overall (41%), it ended up being the most common intrinsic primary motivation selected within this subdomain (13%). In contrast, 44% of respondents said they enjoy a challenge as a motivator, yet only one of them had selected this motivator as their primary motivation. All but 19 respondents selected at least one intrinsic motivator (93%, $M = 3.06$).

Figure 31

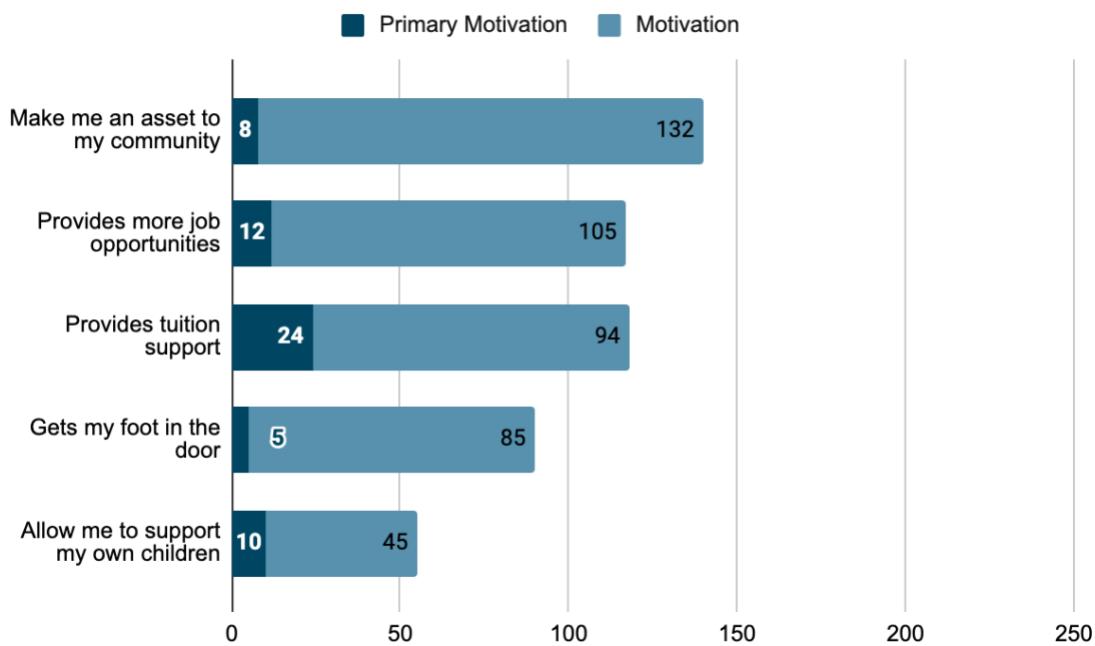
Intrinsic Values (N = 273)



Personal Utility Values. Overall, personal utility motivators were not as common as intrinsic or social utility motivators (see Figure 32). About half of the respondents felt like becoming a special education teacher would make them an asset to their community (51%). Almost half of the respondents were motivated by tuition support and the likeliness of having more job opportunities after graduation (43%). One-third felt that teaching special education would help them get their foot in the door. Only 20% of respondents were motivated to teach special education as a way to learn how to support their own children. For primary motivations, the most common personal utility motivation was the ability to receive tuition support (9%). Overall, a majority of respondents selected almost two personal utility motivations as influencing their decision to pursue special education (79%, $M = 1.9$).

Figure 32

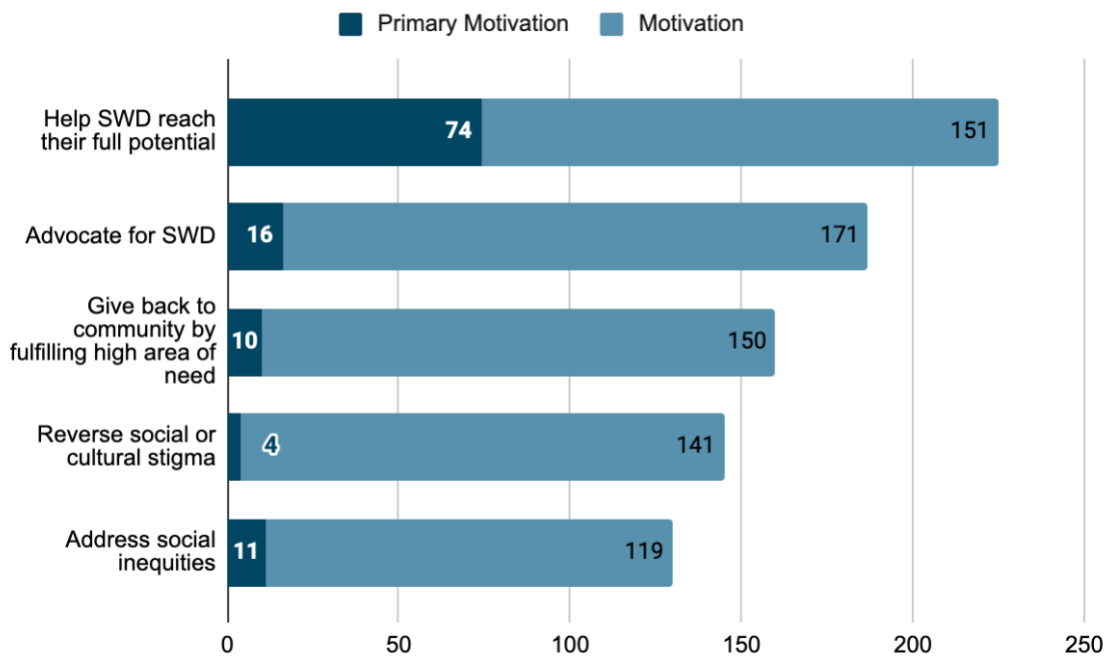
Personal Utility Values (N = 273)



Social Utility Values. Each social utility value was found to be a motivator for about half or more of all respondents (see Figure 33). The most common motivator across all values, as well as the most common primary motivator, was the desire to help students with disabilities reach their full potential (82%, $N = 225$). In addition, a majority of respondents wanted to be an advocate for students with disabilities (68%), followed by the desire to give back to their community by fulfilling a high area of need (59%) and to reverse social or cultural stigmas around disabilities (53%). The least common social utility value was the desire to help address social inequities, which was selected by a little less than half of respondents (48%, $N = 130$). All but 21 respondents selected at least one social utility motivator as having influenced their interest in becoming a special education teacher (92%, $M = 3.1$).

Figure 33

Social Utility Values (N = 273)

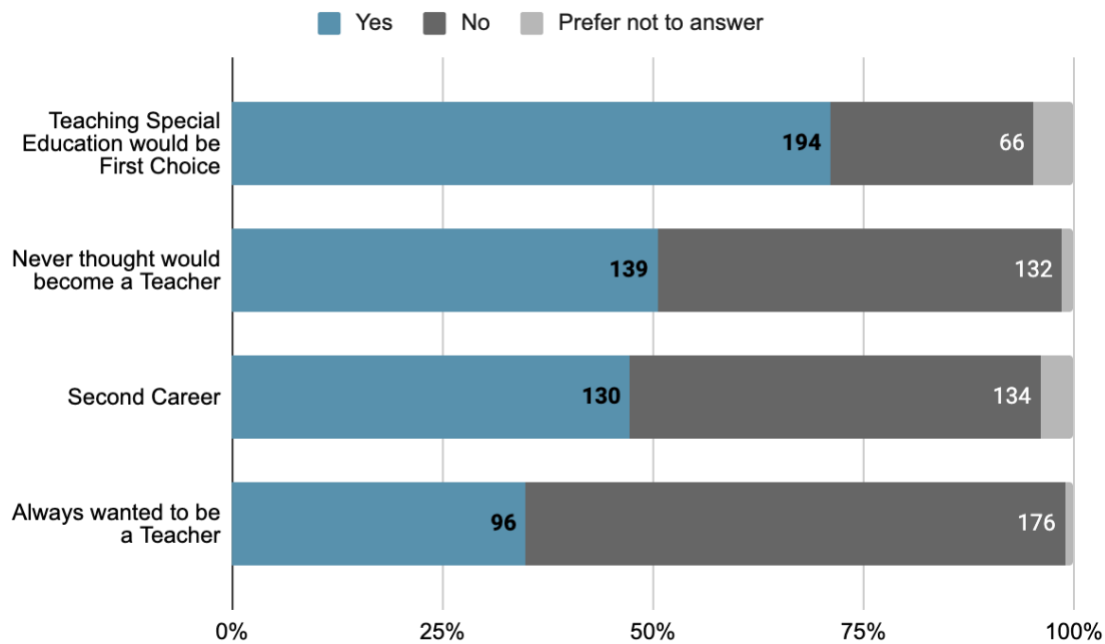


Primary Motivation. The most common primary motivations were within social utility ($N = 129$, 42%), followed by intrinsic ($N = 93$, 34%), and personal utility ($N = 44$, 22%; see Figures 31-33). However, primary motivations greatly varied across participants, and each identified motivation had been selected by at least one respondent. Of all 15 motivations, the most common primary motivations were: (a) to help students with disabilities reach their full potential ($N = 74$, 27%), (b) teaching special education was a calling ($N = 35$, 13%), and (c) enjoy helping others in need ($N = 29$, 11%).

Onset and Fallback Career. To analyze whether choosing to pursue licensure as a special education teacher would fall under the category of fallback career, respondents were given three types of questions. One question asked, "If offered both types of positions, which would have been your first choice?" A majority of respondents chose special education ($N = 194$, 71%), 24% chose general education ($N = 66$), and 5% preferred not to answer ($N = 13$). In addition, respondents were asked whether they had always wanted to become a teacher, never thought they would want to become a teacher, and whether teaching would be a second career for them (see Figure 34). Responses indicated that 51% grew up thinking they would never become a teacher and 48% said teaching would be a second career. In contrast, only 35% of respondents had always wanted to be a teacher growing up.

Figure 34

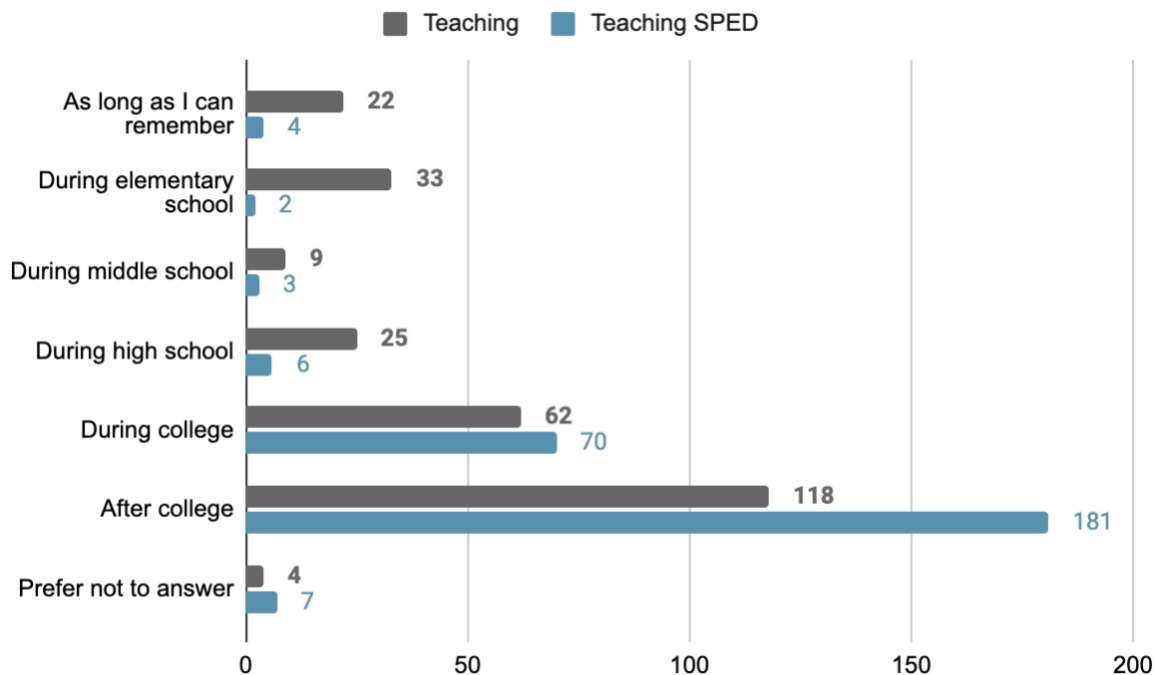
Fallback Career (N = 253)



The final question for this subdomain asked respondents to select the initial onset of their interest in teaching in general, followed by their interest in teaching special education (see Figure 35). In general, respondents developed their interest in teaching and teaching special education later in life, most commonly after college. However, interest prior to graduating from highschool was a total of 33% for teaching in general ($N = 89$), compared to only 5% for teaching special education ($N = 15$). About one-quarter of respondents (23%–26%) developed an interest in teaching during college, regardless if it was teaching in general or in special education. A majority of respondents did not develop an interest in teaching special education until after college ($N = 181$, 66%).

Figure 35

Onset of Teaching Interest in General and Special Education (N = 273)



Subgroup Comparisons. Next, for each motivation, a sub-analysis was conducted to determine if there were significant differences in motivations across targeted subgroups. Pearson's Chi-squared test was used across survey items for each identified characteristic under study (i.e., gender, age, locale, ethnicity; see Appendix J). Fisher's exact test was used whenever Pearson's Chi-squared test was not available due to low frequencies across one or more items. To prevent low frequencies, Likert-type questions using 5-point scales (e.g., Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree) were converted into 3-point scales (e.g., Agree, Neutral, Disagree) for comparative analyses.

Gender. Three motivational factors were identified as statistically significant when comparing male respondents to female respondents (see Table 14). Overall, males were more likely than females to identify as having a disability, $\chi^2 (1, N = 266) = 7.75, p = .005$, and were more likely to be motivated by fulfilling a high area of need, $\chi^2 (1, N = 272) = 4.54, p = .033$. Females were more likely than males to identify as being spiritual or religious, $\chi^2 (1, N = 257) = 14.35, p < .001$.

Table 14*Frequencies and Chi-Square Results for Gender and Motivations (N = 273)*

Motivations	Female		Male		χ^2
	<i>n</i>	%	<i>n</i>	%	
Self Disability	16	7.8	12	20.33	7.75**
Spiritual/Religious	142	71.36	25	43.86	14.35***
Fulfill High Area of Need	118	55.14	41	70.69	4.54**

** $p < .01$. *** $p < .001$

Age. Significant differences were found between age across all five domains within the FIT-Choice Framework. Overall, there were sixteen motivational factors found as significantly different between younger and older students. In the area of Socialization, there were five significant differences, with three in the sub-domain of social dissuasion and two in the sub-domain of prior teaching and learning experiences (see Table 15). Younger traditional students were significantly more likely to have family members who were teachers, $\chi^2 (1, N = 272) = 4.26, p = .039$, and family members who were special education teachers, $\chi^2 (1, N = 271) = 5.57, p = .018$. Older nontraditional students were more likely to have a child with a disability, $\chi^2 (1, N = 270) = 11.58, p < .001$, be religious, $\chi^2 (1, N = 256) = 5.097, p = .024$, and had already been working in schools, $\chi^2 (1, N = 270) = 17.31, p < .001$.

Table 15*Frequencies and Chi-Square Results for Age and Socialization Motivations*

Socialization	<26		26+		χ^2
	<i>n</i>	%	<i>n</i>	%	
Family Member Teacher	34	67.77	112	50.68	4.26*
Family Member SPED Teacher	16	31.37	37	16.81	5.57*
Child w/Disability	0	0	42	19.18	11.58***
Worked at School	22	44.9	166	75.11	17.78***
Spiritual/Religious	24	51.06	143	68.42	5.1*

* $p < .05$. ** $p < .01$. *** $p < .001$

The domain of self perception was significantly different by age across all identified variables. Overall, older nontraditional applicants were significantly more likely to agree that they had the traits and characteristics ($p = .024$), skills and abilities ($p = .021$), previous experiences ($p < .001$), and special education knowledge ($p = .042$) to become a good special education teacher. When each of the statements were combined into a total score and coded by agree, neutral, or disagree, there was an additional significant association between age and self perceptions ($p < .001$), with 24% of students under the age of 26 having overall negative self perceptions, compared to only 7% of older students ($N = 15$).

For task perceptions, there was one significant difference between younger respondents and older respondents. Younger respondents were significantly more likely to see teaching special education as more rewarding than challenging, $X^2 (2, N = 271) = 6.99, p = 0.03$.

For values, there were three value statements that came out as significantly different between younger and older applicants (see Table 16). There were no significant differences by age for intrinsic motivations. Regarding personal utility, older nontraditional students were significantly more likely to pursue special education licensure for the tuition support, $X^2 (1, N = 271) = 4.6, p = .032$. However, younger traditional students were significantly more likely to value social utility motivations, such as wanting to reverse social or cultural stigmas around disabilities, $X^2 (1, N = 271) = 5.77, p = .016$, and wanting to be an advocate for students with disabilities, $X^2 (1, N = 271) = 5.49, p = .019$.

Table 16

Frequencies and Chi-Square Results for Age and Values (N = 271)

Motivations	<26		26+		X^2
	<i>n</i>	%	<i>n</i>	%	
Tuition Support	15	29.41	101	45.9	4.6*
Address Social or Cultural Stigma	35	68.63	110	50	5.77*
Become an Advocate for SWD	42	82.35	144	65.45	5.49*

Note: SWD = students with disabilities.

* $p < .05$

Almost all items related to onset and whether respondents chose special education as a fallback career were significant when comparing younger to older students. However, findings may be skewed, given onset and age are both related to time. Younger students were significantly more likely to have always wanted to teach, $X^2 (1, N = 270) = 4.7008, p = 0.03$, whereas older students were more likely to choose teaching as a second career, $X^2 (1, N = 262) = 17.348, p < .001$. In addition, there was a statistically significant association between age and onset of teaching interest in general ($p < .001$) and

onset of teaching interest in special education ($p < .001$). One notable difference is that a majority of younger students developed an interest in teaching before college ($N = 28$, 55%) and teaching special education during college ($N = 33$, 66%). A majority of older students were likely to develop an interest after college, for both teaching ($N = 112$, 52%) and teaching special education ($N = 169$, 79%).

Locale. Significant motivational differences by locale were found in the domains of socialization, task perceptions, and personal utility values (see Table 17). In the domain of socialization, applicants who lived in urban O'ahu were more likely to have a family member who was a special education teacher, $X^2(2, n = 264) = 6.25, p = .034$. The Fisher's exact test was used to determine if there was a significant association between locale and level of support. There was a statistically significant association ($p = .015$); descriptive data suggests that neighbor island respondents had more support than those in urban or rural O'ahu, with urban O'ahu respondents having the least support from family, friends, or colleagues in their interest to become a special education teacher.

Table 17

Frequencies and Chi-Square Results for Locale and Motivations ($n = 264$)

Motivations	Urban Oahu		Rural Oahu		Neighbor Island		X^2
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Family Member SPED Teacher	18	30.5	11	13.41	22	17.89	6.74*
Felt Supported ^a	38	63.33	61	77.21	103	85.12	*
Good Income	20	33.9	27	34.18	56	45.53	9.51*
To Support Own Children	18	30	18	22.5	18	14.52	6.25*

Note. Felt Supported^a = Fisher's exact test was used due to small frequency sizes.

* $p < .05$

Within task perceptions, neighbor island respondents were more likely to agree that teaching provides a good income, $X^2(4, n = 261) = 9.51, p = .05$. Lastly, within the sub-domain of personal utility values, urban O'ahu respondents were more likely to pursue teaching special education because it would help them support their own children.

Ethnicity. When comparing the four identified ethnic groups, 11 significant motivational differences were found across each domain except self perceptions. For socialization, significant differences were found between ethnic groups and having had family members as teachers, $X^2(3, n = 153) = 9.94, p = .019$, and in identifying as spiritual or religious, $X^2(3, n = 153) = 15.65, p = .001$ (see Table 18). Japanese and White respondents were more likely to have family members as teachers than Native Hawaiian or Filipino respondents. Japanese were less likely to identify as spiritual or religious.

Table 18*Frequencies and Chi-Square Results for Ethnicity and Socialization (n = 154)*

Socialization	White		Japanese		Native Hawaiian		Filipino		χ^2
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Family Teachers	39	58.21	24	75	11	39.29	11	42.3	9.94**
Religious	46	70.31	15	38.71	21	65.38	19	87.5	15.65**

** $p < .01$

There were two significant differences found when comparing ethnicity and task perceptions. Fisher's exact test determined there was a statistically significant association between ethnicity and perceptions on teaching special education as rewarding ($p = .009$). Although a small percentage and frequency, Filipino respondents were the only ethnic group to disagree that teaching special education would be rewarding ($N = 2$, 7.7%).

In addition, perceptions on whether teaching provided a good income was significantly different, $\chi^2 (6, n = 150) = 14.49, p = .025$. Filipino ($n = 14$, 54%) and White ($n = 33$, 50%) respondents were more likely to agree that teaching provided a good income than Native Hawaiian ($n = 7$, 26%) and Japanese ($n = 8$, 26%) respondents.

Three significant differences were found between ethnicity and values. For intrinsic values, ethnic groups were significantly different when identifying motivations in teaching special education as a calling, $\chi^2 (3, n = 152) = 7.94, p = .047$. For social utility values, ethnic groups were significantly different when identifying teaching special education as providing more job opportunities, $\chi^2 (3, n = 152) = 11.73, p = .008$, and as making them an asset to their community, $\chi^2 (3, n = 152) = 8.13, p = .043$ (see Table 19).

Table 19*Frequencies and Chi-Square Results for Ethnicity and Values (n = 154)*

Socialization	White		Japanese		Native Hawaiian		Filipino		χ^2
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Calling	27	40.9	14	43.75	14	50	4	15.38	7.94*
More Job Opportunities	30	45.45	7	21.88	8	28.57	16	61.54	11.73**
Community Asset	46	60.06	15	31.25	21	46.43	19	57.69	8.13*

* $p < .05$. ** $p < .01$

Significant differences by ethnicity were found in the domain of fallback career and onset. There was a significant difference between ethnicity and onset of teaching interest in general, $X^2(6, n = 149) = 17.16, p = .009$, as well as, onset of interest in teaching special education ($p = .02$). More Filipinos became interested in teaching before college ($n = 11, 45.8\%$), whereas Native Hawaiians were more interested in teaching during college ($n = 13, 46.4\%$), and Japanese ($n = 13, 40.6\%$) and Whites were more interested after college ($n = 38, 58.5\%$). A majority of interest in teaching special education was after college across all four ethnicities, however the proportion of Whites ($n = 53, 82.8\%$) were much higher than for Filipinos ($n = 15, 60\%$), Native Hawaiians ($n = 15, 53.7\%$), and Japanese ($n = 17, 53.1\%$).

Lastly, when asked their first choice between teaching general education or special education, there was a significant difference by ethnicity, $X^2(3, n = 144) = 13.76, p = .003$. Filipino respondents were significantly less likely to choose special education as their first choice ($n = 12, 48\%$), compared to White ($n = 51, 81.5\%$), Japanese ($n = 24, 85.7\%$), and Native Hawaiian ($n = 23, 82.1\%$) respondents.

Program Preferences (RQ3)

As the final part of the survey, respondents were asked to identify which program characteristics, organized by the 7 Ps Service Marketing Mix, they preferred when pursuing a special education teacher preparation program. Respondents first selected their preference, and then a secondary subset of questions asked them the strength of that preference in their decision-making process towards pursuing a program.

Product. Respondents were asked to identify their preferences related to the type of program they were interested in. General program facts included program length and time commitment (see Figures 36–37).

Figure 36

General Product Preference: Program Length (N = 268)

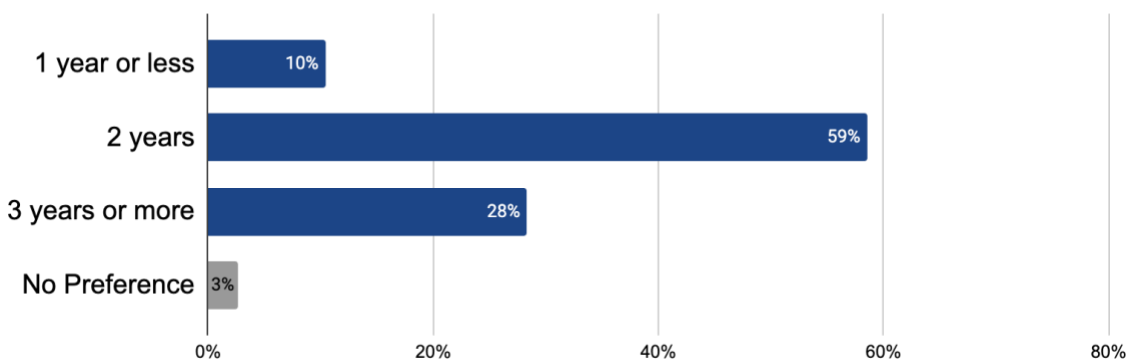
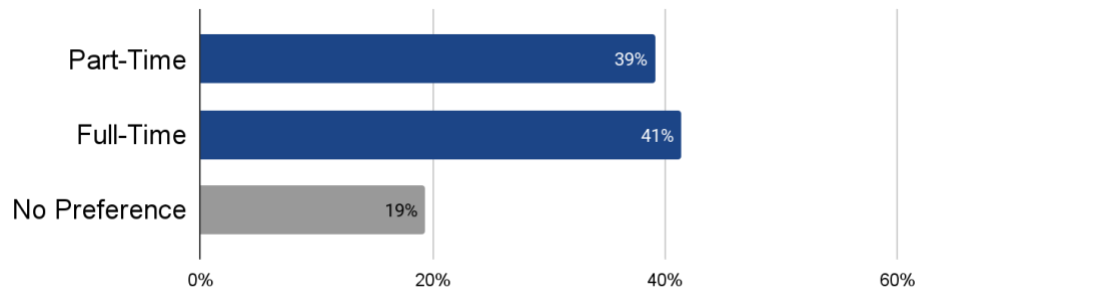


Figure 37

General Product Preference: Time Commitment (N = 268)

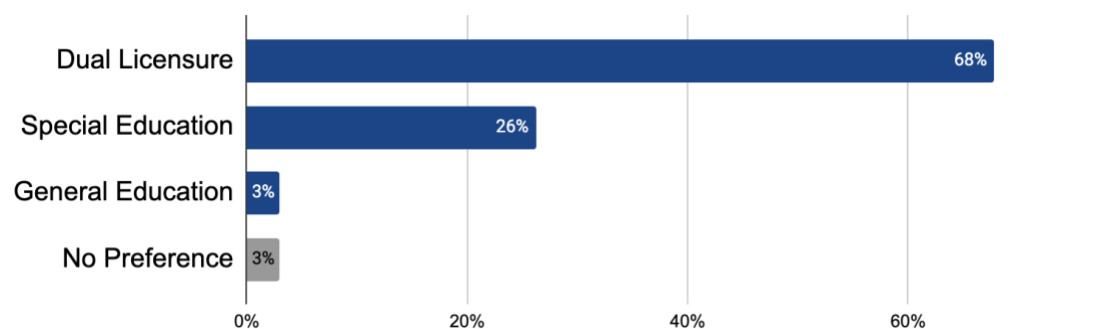


A majority of respondents preferred to have a program that was no more than two years in length ($N = 157$, 59%), with an additional 28% who were willing to complete a program in 3 years or more ($N = 76$), and 10% who wanted a program that was one year or less ($N = 28$). For time commitment, preferences were almost evenly split between full-time (41%) and part-time (39%) programs. However, about one in five respondents did not have a preference (19%).

In addition to general program facts, teacher preparation programs include additional product elements specific to becoming a special education teacher, such as type of licensure, specialization, and licensure level. When considering program type for licensure, a majority of respondents preferred to pursue a dual licensure program in general education and special education ($N = 181$, 68%; see Figure 38). The remaining applicants preferred special education licensure only ($N = 70$, 26%), general education licensure only ($N = 8$, 3%), or did not have a preference ($N = 8$, 3%).

Figure 38

Licensure Product Preference: Program Type (N = 267)

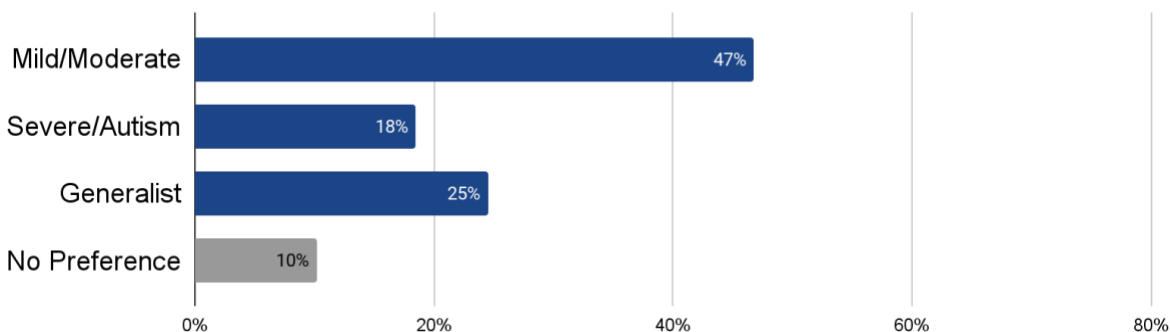


Almost half of all respondents preferred to specialize in teaching students with mild to moderate disabilities ($N = 124$, 47%; see Figure 39). There were more respondents who preferred pursuing a generalized special education program for all disabilities ($N = 65$, 24%) than respondents who preferred to specialize in severe disabilities and autism ($N = 49$, 18%). However, one in ten applicants did not have

any preference for program specialization ($N = 27$, 10%).

Figure 39

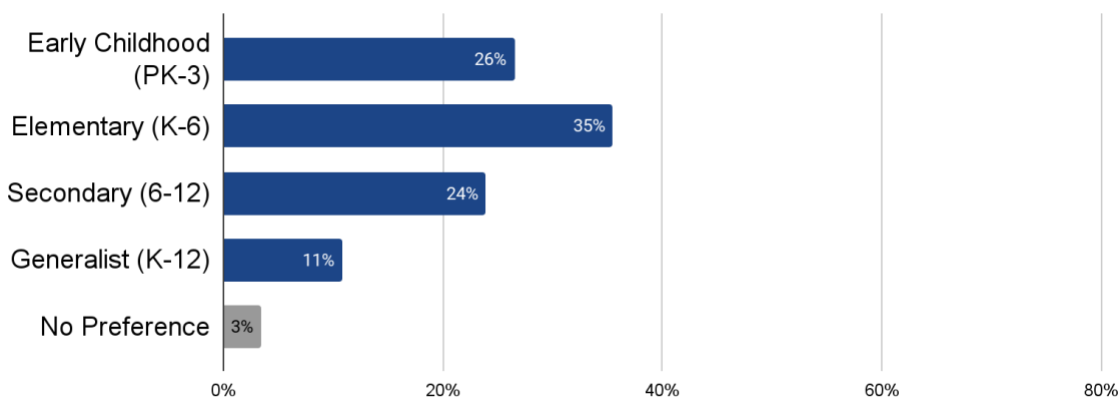
Licensure Product Preference: Specialization ($N = 265$)



Lastly, for preferred licensure level, responses were widely distributed, with applicants preferring to teach at the elementary level ($N = 95$, 35%), early childhood level ($N = 71$, 26%), or secondary level ($N = 64$, 24%; see Figure 40). There were 29 respondents who preferred a more generalized K-12 teaching license (11%) and only nine respondents who did not have a preference for which level they obtained licensure in (3%).

Figure 40

Licensure Product Preference: Grade Level ($N = 268$)

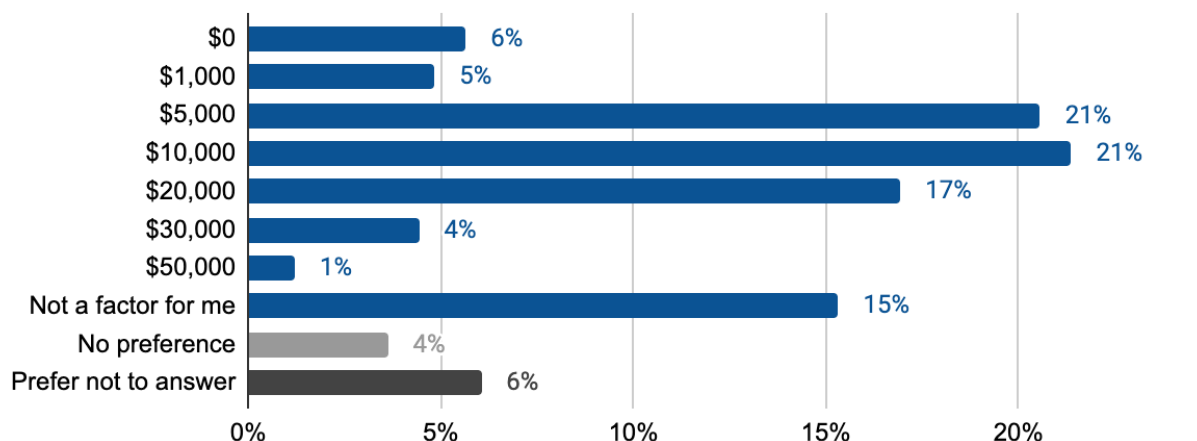


Price. Respondents were asked to provide preferences regarding the maximum tuition cost they would have paid to complete their ideal teacher preparation program (see Figure 41). The largest subgroup of applicants were willing to pay \$5,000-\$10,000 for their licensure program ($N = 104$, 42%).

The next largest subgroup was willing to pay up to \$20,000 for their ideal licensure program ($N = 53$, 21%). Fifteen percent of applicants said tuition costs were not a factor for them ($N = 38$). A total of 14 respondents were not willing to pay anything for their program (6%) with a final 12 respondents who would only pay up to \$1,000 (5%). There were 15 respondents who preferred not to answer (6%), and an additional 20 respondents who had left this question unanswered.

Figure 41

Price Preference: Maximum Tuition Cost ($N = 248$)



In addition, respondents were asked to indicate their tuition stipend preference. A large majority of respondents said they would prefer to take the tuition stipend funding in return for a service commitment to teach ($N = 226$, 89%). The remaining applicants preferred not to take the stipend with any service commitment ($N = 14$, 5%) or did not have a preference ($N = 13$, 5%). Nine respondents preferred not to answer this question (3%).

Place. For the element of place, respondents were asked to provide preferences related to program format and time commitment (see Figures 42–43). More than half of respondents preferred the hybrid coursework format ($N = 152$, 57%). The next preferred method was fully online coursework ($N = 69$, 26%), followed by face-to-face coursework ($N = 40$, 15%). The remaining five respondents did not have a preference for format (2%). For class offerings, half of respondents preferred to be in classes on weeknights ($N = 132$, followed by weekdays ($N = 61$, 23%), and then weekends ($N = 36$, 14%). The remaining 26 respondents did not have a preference for when classes were held (14%).

Figure 42

Place Preference: Program Format (N = 266)

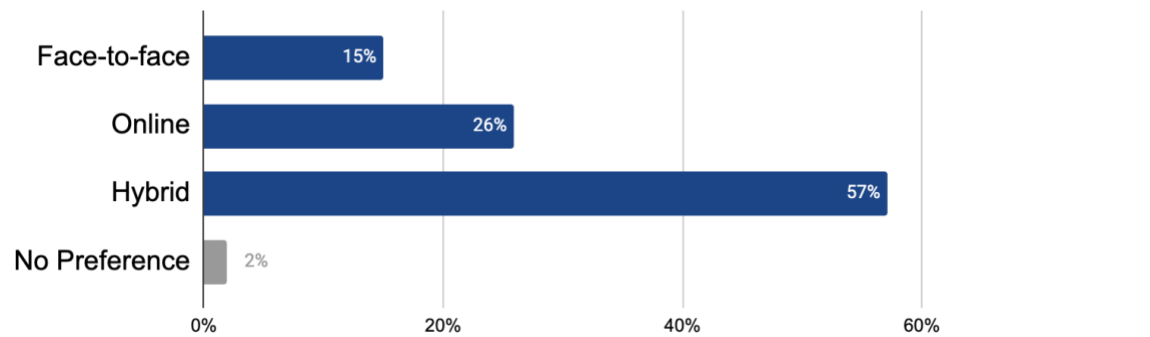
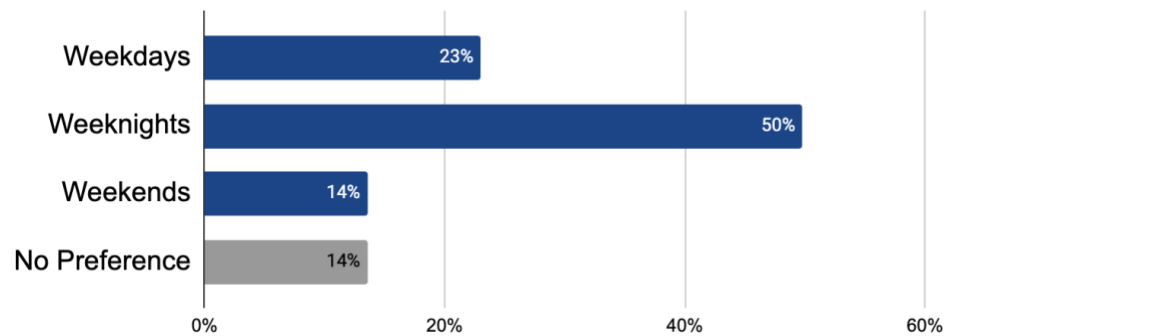


Figure 43

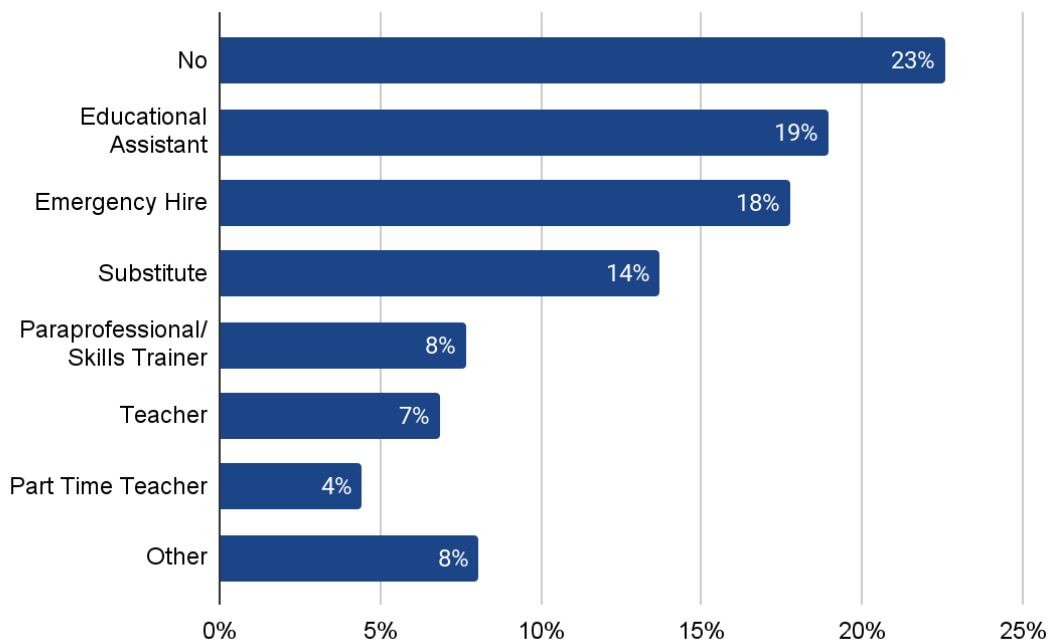
Place Preference: Time of Course Offering (N = 265)



In addition, of the 246 respondents who had indicated they were working at the time of their application, a follow-up question was asked about whether they had already been working in a school and, if yes, to indicate what type of position they had been in (see Figure 44). About one-fourth of respondents were not already working in a school ($N = 56$). The remaining respondents were working across a variety of positions, with the most common being educational assistants ($N = 47$), emergency hire teachers ($N = 44$), or substitutes ($N = 34$).

Figure 44

Already Working in Schools and Type of Position ($n = 248$)

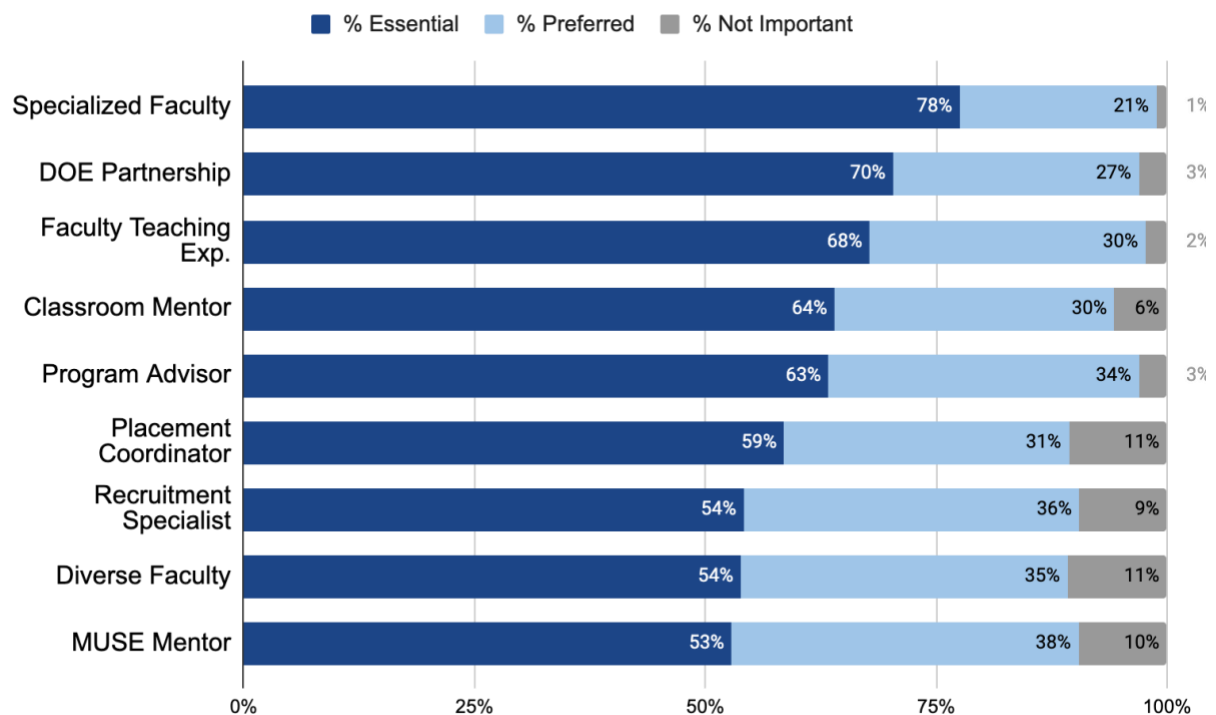


Promotion. There was only one survey question related to the element of promotion. Respondents were asked their referrer, or how they first learned of the program they applied for. Almost half of respondents said they sought out information on their own ($N = 122$, 46%). The next largest subgroup were individuals who had been referred to the program by others ($N = 106$, 40%). About 12% of respondents learned about the program through media or advertisements ($N = 31$). Finally, nine respondents said none of the options applied to them (3%).

People. For the element of people, respondents were asked, “how important to you were the following?” and respondents were given the options to select essential, preferred, or not important for each identified role associated with pursuing a teacher preparation program (see Figure 45). Almost all respondents responded to each role type, with a range of 1-5 choosing prefer not to answer (< 2%).

Figure 45

People Preference: Program Roles

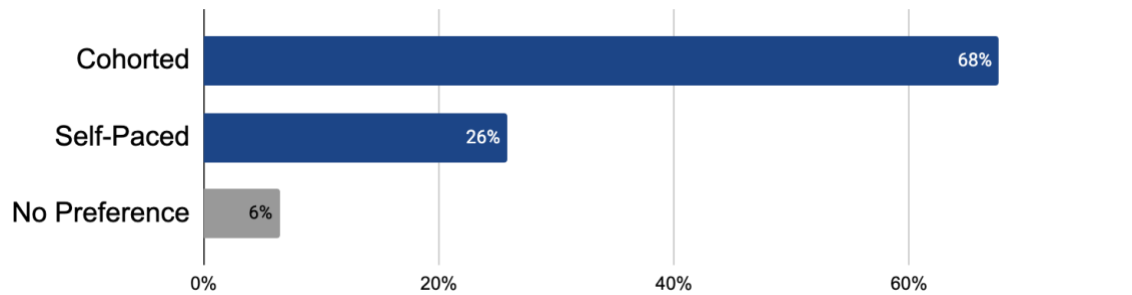


All reported roles were found essential by at least half of all respondents. Overall, the most essential role for respondents was having specialized faculty ($N = 204$, 78%), followed by the program having partnerships with the HIDOE ($N = 185$, 70%), and having faculty who had recent teaching experience ($N = 177$, 68%). The next more essential roles included having a classroom mentor ($N = 169$, 64%), program advisor ($N = 166$, 63%), and field placement coordinator ($N = 154$, 59%). The least essential roles included having a recruitment specialist ($N = 143$, 54%), diverse faculty ($N = 140$, 54%), and non-classroom MUSE mentors ($N = 138$, 53%).

Process. Respondents were asked to indicate their program structure preference (see Figure 46). A majority of respondents preferred a cohort model, where courses are sequenced and the students complete the program as a group ($N = 178$, 68%). On the other hand, about one-fourth of respondents preferred to pursue a self-paced program ($N = 68$, 26%). A total of 17 of respondents did not have a program structure preference (6%).

Figure 46

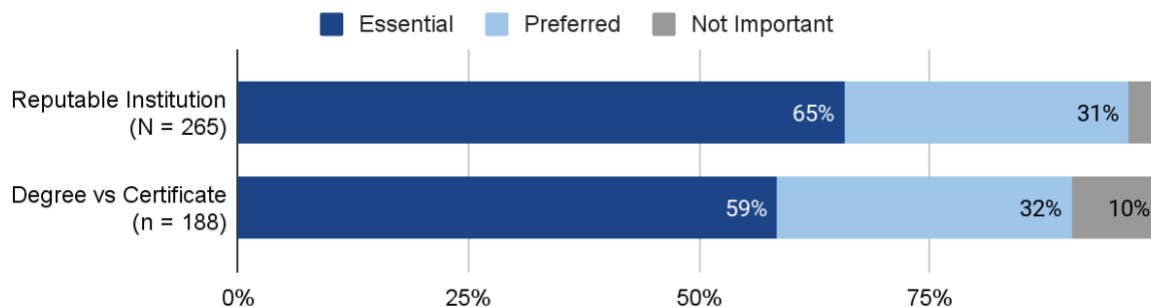
Process Preference: Program Structure (N = 263)



Physical Evidence. There were two questions related to physical evidence (see Figure 47). First, respondents were asked how important attending a reputable institution was to them ($N = 265$). A majority of respondents said that attending a reputable institution was essential ($N = 173$, 66%), with about one-third of respondents finding it preferred ($N = 60$, 31%). Only nine respondents said attending a reputable institution was not important (3%). The second question related to physical evidence was only asked to respondents who already had a bachelor's degree and had applied to either the PBSPED or MEDT program. Respondents were asked how essential their desire to get a master's degree was if they were to pursue a teacher preparation program. Of the 188 eligible respondents, a majority felt getting a degree was essential ($n = 110$, 59%), with another 32% saying it was preferred, but not essential ($n = 60$). One in ten respondents said that getting a degree was not important to them ($n = 18$, 10%).

Figure 47

Physical Evidence Preference: Reputable Institution and Degree Attainment



Strength of Preferences. For each program preference, respondents who indicated their preference were asked a final series of questions related to the strength of that preference. Using SoGoSurvey's advanced features, the questions pulled the actual response from previous respondents' preferences as part of the question. For example, respondents who had selected secondary as their preferred licensure level had been asked "How important was getting licensed at the [secondary level] in

your decision-making process to pursue a program?” To determine the overall strength of each element in the decision-making process, averages were created for each identified program element (see Table 20). Not all respondents were given an option to select “no preference” for each item, therefore responses for “no preference” and “not important” were combined to create averages across all elements. Averages were determined by the number of respondents who selected no preference/not important (coded 1), preferred (coded 2), or essential (coded 3).

Table 20
Frequencies and Means for Strengths of Preferences

Element	Sub-Domain	Not Imp	Preferred	Essential	<i>n</i>	<i>M</i>
People	Specialized Faculty	3	56	204	263	2.76
Place	Being able to Work	9	48	194	251	2.74
People	DOE Partnership	8	70	185	263	2.67
Product	Max Length	10	64	182	256	2.67
People	Faculty Teaching Exp	6	78	177	261	2.66
Price	Stipend	15	55	161	231	2.63
Phys. Ev.	Reputable Institution	9	81	173	263	2.62
People	Program Advisor	8	88	166	262	2.60
People	Classroom Mentor	15	80	169	264	2.58
Product	Grade Level	20	79	155	254	2.53
Place	Format	14	97	145	256	2.51
Price	Max Cost	16	80	132	228	2.51
Phys. Ev.	Degree vs Cert	18	60	110	188	2.49
People	Placement coordinator	28	81	154	263	2.48
People	Recruitment specialist	25	96	143	264	2.45
People	MUSE Mentor	25	98	138	261	2.43
People	Diverse Faculty	28	92	140	260	2.43
Product	Licensure Type	19	116	110	245	2.37
Place	Time of Coursework	39	92	119	250	2.32
Product	SPED Specialization	36	101	113	250	2.31
Process	Cohort Structure	29	123	88	240	2.25
Product	Time Commitment	60	78	118	256	2.23

Note. Not Imp = not important

Overall, the elements of people, place, and product were found as most essential. Respondents felt having specialized faculty ($M = 2.76$), being able to continue working while enrolled ($M = 2.74$), having DOE partnerships ($M = 2.67$), the maximum length of the program ($M = 2.67$), and having faculty with recent teaching experience ($M = 2.66$) were the most influential elements to decision-making towards pursuing a special education licensure program.

In addition, other highly essential elements included price and physical evidence. The next highest preferences were having stipends ($M = 2.63$), attending a reputable institution ($M = 2.62$), having program advisors ($M = 2.6$) and program mentors ($M = 2.58$), and which grade level they were pursuing licensure in ($M = 2.53$).

Finally, the least essential element was process, as respondents preferred doing a cohorted program, but it was not as essential to their decision-making process ($M = 2.25$). In addition, three other product domains were not as essential compared to other elements, including time commitment ($M = 2.23$), special education specialization ($M = 2.31$), and type of licensure program ($M = 2.37$). In the element of place, when courses were offered was the least essential element on average by respondents ($M = 2.32$).

Subgroup Comparisons. Next, for each preference, a sub-analysis was conducted to determine if there were significant differences in characteristics across targeted subgroups. Due to multiple categorical variables for both the independent and dependent variables in analysis, Fisher's exact test was used across most survey items.

Gender. Two statistically significant differences were found within the sub domain of product and two in the subdomain of people. For product, there were statistically significant associations between gender and program type ($p = .02$), as well as gender and grade level ($p < .001$). Using a cross table, findings suggest that males are more likely than females to prefer a program for SPED licensure only, whereas females are more likely than males to prefer a dual licensure program. Males are more likely than females to pursue teaching at the secondary level, whereas females are more likely than males to pursue teaching at the early childhood level (see Table 21).

Table 21*Frequencies and Fisher's Exact Test Results for Gender and Product (N = 266)*

Product Sub-Domains	Female		Male		<i>p</i>
	<i>n</i>	%	<i>n</i>	%	
Program Type					.02
Dual Licensure	150	71.43	30	53.57	
SPED Licensure	51	24.29	19	33.93	
GenEd Licensure	4	1.9	4	7.14	
No Preference	5	2.38	3	5.36	
Grade Level					< .001
Early Childhood (PK-3)	66	31.28	4	7.14	
Elementary (K-6)	75	35.55	20	35.71	
Secondary (6-12)	41	19.43	23	41.07	
Generalist (K-12)	23	10.9	6	10.71	
No Preference	6	2.84	3	5.36	

In addition, there was a significant association between gender and strength of preference in time commitment ($p = .002$). Females felt that being able to pursue either a part-time program or full-time program was more essential ($N = 103$, 64%) to their decision-making process to pursue a program than males ($N = 15$, 37%). Lastly, for the element of people, significant associations were found between gender and the importance of having specialized faculty ($p = .038$) and having DOE partnerships ($p = .042$). In both cases, females were more likely to find each of the roles as more essential than males.

Age. Significant differences were found between age and program preferences across four elements: (a) product, (b) price, (c) place, and (d) people (see Table 22). For product, younger students were more likely to prefer full-time programs, $X^2(2, N = 270) = 6.94$, $p = .031$, and preferred taking courses during the weekdays, $X^2(3, N = 263) = 37.874$, $p < .001$. Additional associations were found between age and program length ($p = .017$), program type ($p = .01$), and special education specialization ($p = .048$). In addition, older students felt program length was significantly more essential than younger students ($p = .008$). Finally, younger students were more likely to take three or more years to complete their licensure program, to prefer dual licensure, and to prefer a more generalist specialization.

Table 22*Frequencies and Fisher's Exact Test Results for Age and Product (N = 266)*

Product Sub-Domains	<26		26+		<i>p</i>
	<i>n</i>	%	<i>n</i>	%	
Time Commitment					.031
Part-Time	12	24.49	92	42.39	
Full-Time	28	57.14	82	37.79	
No Preference	9	18.37	43	19.81	
Program Length					.021
3 or more years	6	12.24	22	10.13	
2 years	21	42.86	136	62.67	
1 year or less	22	44.9	53	24.42	
No Preference	0	0	6	2.76	
Program Type					.01
Dual Licensure	39	79.59	142	65.74	
SPED Licensure	5	10.2	64	29.63	
GenEd Licensure	3	6.12	5	2.31	
No Preference	2	4.08	5	2.31	
Specialization					.048
Mild/Moderate	23	47.91	100	46.51	
Severe/Autism	3	6.25	46	21.4	
Generalist	16	33.33	48	22.32	
No Preference	6	54.17	34	15.81	

For the element of price, both the maximum costs they were willing to pay ($p < .001$) and their stipend preference ($p = .017$) were significantly different between younger and older respondents. The largest subgroup within younger students said tuition costs were not a factor for them ($N = 15$, 37%),

whereas the largest subgroup of older students were more likely to prefer paying less than \$10,000 for their program ($N = 73$, 38%). For the tuition stipends, almost all older students would choose to take the stipend ($N = 187$, 92%) compared to 78% of younger students ($N = 37$). Lastly, there was a statistical association between age and strength of their stipend preferences ($p = .006$), being valued as more essential by older students.

For the element of place, there were three statistical differences between younger and older respondents (see Table 23). Older students were more likely than younger students to already be working in a DOE school, $X^2 (1, N = 216) = 5.35$, $p = .021$. Younger students were more likely than older students to prefer courses on weekdays, $X^2 (3, N = 263) = 37.87$, $p < .001$. In addition, none of the younger students preferred to take courses on the weekend. There was a statistical association between age and program format ($p < .001$). Younger students preferred a hybrid program ($N = 20$, 42%) or a face-to-face program ($N = 19$, 40%), whereas older students preferred a hybrid program ($N = 131$, 61%), or a fully online program ($N = 61$, 28%).

Table 23

Frequencies and Chi-Square Results for Age and Place ($N = 263$)

Motivations	<26		26+		X^2
	<i>n</i>	%	<i>n</i>	%	
Working in DOE	26	63.41	164	80	5.35*
Program Format ^a					***
Face-to-face	19	39.58	20	9.26	
Online	8	16.67	61	28.24	
Hybrid	20	41.67	131	60.64	
No Preference	1	2.08	4	1.85	
Time of Course Offerings					37.87***
Weekdays	26	54.17	34	15.81	
Weeknights	20	41.67	112	52.09	
Weekends	0	0	36	16.74	
No Preference	2	4.17	33	15.34	

Note. Program Format^a = Fisher's exact test was used due to small frequency sizes.

* $p < .05$. ** $p < .01$. *** $p < .001$

Finally, there were two roles within the element of people that were statistically significant between younger and older students. Having diverse faculty was more essential for younger students ($N = 35$, 74%) than older students ($N = 105$, 50%; $p = .01$). Having classroom mentors was more essential for younger students ($N = 37$, 77%) than older students ($N = 131$, 61%; $p = .043$).

Locale. Significant associations between locale and preferences were found across four program elements: (a) price, (b) place, (c) promotion, and (d) people (see Table 24). For product, each locale had a different preference of when courses were offered, $X^2 (6, n = 256) = 16.15, p = .013$. Neighbor island respondents indicated they would have preferred to pay less than \$10,000 for their program, $X^2 (6, n = 224) = 14.29, p = .027$, were more likely to have learned about the program through media ads, $X^2 (1, n = 246) = 5.3454, p = .021$, and were more likely to already be working in DOE schools, $X^2 (2, n = 240) = 11.23, p = .004$. For urban O'ahu, having a classroom mentor was more important than for other locales, $X^2 (4, n = 255) = 10.51, p = .033$. Lastly, Fisher's exact test was used to determine that there was a statistically significant association between locale and stipend preference ($p = .008$). Respondents in rural O'ahu areas found stipends as less essential than other locales ($N = 38$, 61%).

Table 24

Frequencies and Chi-Square Results for Locale

Product Sub-Domains	Urban Oahu		Rural Oahu		Neighbor Island		χ^2
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Max Cost							14.29*
> \$10,000	15	28.85	18	27.27	21	19.81	
= \$10,000	9	17.3	17	25.76	23	21.7	
< \$10,000	13	25	16	24.24	48	45.28	
No Pref/Not a Factor	15	28.85	15	22.72	14	13.2	
Time of Course Offerings							16.15*
Weekdays	22	37.29	18	23.08	18	15.12	
Weeknights	28	47.46	41	52.56	58	48.74	
Weekends	5	8.47	8	10.26	23	19.33	
No Preference	4	6.78	11	14.1	20	16.8	

Referrer								11.73*
On Own	33	57.89	36	48.65	44	36.97		
Referred	20	35.09	33	44.59	53	44.54		
Media Ads	4	7.02	5	6.77	22	18.49		
Working in DOE	40	72.73	49	68.06	99	87.61	11.23**	
Classroom Mentor Essential	46	77.97	42	53.85	74	62.71	10.51*	

* $p < .05$. ** $p < .01$

Ethnicity. There were five statistically significant associations between ethnicity and program preferences. However, all associations were within the strength of their preference, rather than the type of preference itself. Differences in strength of preferences were found across four elements: (a) product, (b) place, (c) people, and (d) physical evidence. Table 25 shows the frequencies for choosing each element as essential by ethnicity. Statistically significant differences were found between ethnicity and program type ($p = .048$), program format ($p = .036$), placement coordinator ($p = .018$), faculty having recent teaching experience ($p = .049$), and whether respondents found attaining a degree as more essential than a certificate ($p = .035$).

Table 25

Frequencies and Fisher's Exact Test Results for Ethnicity and Preferences as Essential (n = 154)

Sub-domain	White		Japanese		Native Hawaiian		Filipino		p
	n	%	n	%	n	%	n	%	
Program Type	23	41.07	13	41.94	11	47.83	19	76	.048
Format	32	51.61	25	78.13	10	40	16	66.67	.036
Placement Coord.	33	51.56	20	62.5	10	37.03	19	79.17	.018
Recent Teach. Exp	38	59.38	25	78.13	18	66.67	22	91.67	.049
Degree Attainment	32	58.18	8	42.11	9	56.25	17	94.44	.035

Note. Placement Coord. = placement coordinator, Recent Teach. Exp = recent teaching experience.

* $p < .05$. ** $p < .01$

Japanese respondents were more likely to feel that format type was essential to their decision-making process ($n = 25$, 78%). Native Hawaiian respondents were less likely to feel that format type ($n = 10$, 40%) and having a placement coordinator ($n = 10$, 37%) were essential. Filipino respondents were more likely to feel that program type ($n = 19$, 76%), placement coordinator ($n = 19$, 79%), faculty with recent teaching experience ($n = 22$, 92%), and obtaining a degree ($n = 17$, 94%) were more essential to their decision-making process.

Lastly, when the nine sub-domains of people were combined, the average across all respondents was 13.9. During sub-analysis of results, there was a statistically significant difference between ethnicity and importance of people, $X^2 (6, n = 147) = 20.176, p = 0.003$. Japanese and Filipino respondents valued the element of people most, whereas Native Hawaiian respondents valued the element of people least (see Table 26).

Table 26

Frequencies and Fisher's Exact Test Results for Ethnicity and Importance of People ($n = 108$)

Imp. People	White		Japanese		Native Hawaiian		Filipino		χ^2
	n	%	n	%	n	%	n	%	
Low (9–12)	21	32.81	9	28.13	11	40.74	3	12.5	
Medium (13–15)	28	43.75	6	18.75	7	25.93	5	20.83	20.18**
High (16–18)	15	23.44	17	53.13	9	33.33	16	66.67	

** $p < .01$

Enrollment Outcomes (RQ4)

As a final research question, categorical data analysis examined if characteristics, motivations, or program preferences had a statistical association with enrollment outcomes. Due to small frequencies within multiple categories across the enrollment funnel, sub-analysis was used to compare respondents who had enrolled ($N = 204$, 73.6%; coded 0) with respondents who had not enrolled ($N = 73$, 26.4%; coded 1). Individuals who declined admissions, were denied, withdrew, or had incomplete applications were combined into the category of not enrolled.

Characteristics. There was a statistically significant association between age and enrollment, $X^2 (1, N = 276) = 5.11, p = 0.024$. Older students made up 78% of enrolled students ($N = 159$), yet 90% of students who did not enroll ($N = 64$).

Motivations. The only motivations that were statistically significant by enrollment outcomes were in the sub-domain of values (see Table 27). Two significant differences were found within intrinsic values and two within social utility values. For intrinsic values, respondents were statistically more likely to have

enrolled if they felt teaching special education was a calling, $X^2 (1, N = 273) = 4.38, p = 0.038$, and if they prefer working in small groups, $X^2 (1, N = 273) = 4.96, p = 0.026$. For social utility values, respondents were statistically more likely to have enrolled if they wanted to help students with disabilities reach their full potential, $X^2 (1, N = 273) = 5.58, p = 0.018$, and if they wanted to be an advocate for students with disabilities, $X^2 (1, N = 273) = 18.89, p < .001$. In addition, when comparisons were made between respondents who had at least one motivation within a value subdomain, there was a significant difference in enrollment for respondents who had social utility motivations compared to those who did not, $X^2 (1, N = 273) = 4.96, p = 0.019$.

Table 27

Frequencies and Chi-Square Results for Enrollment and Values (N = 273)

Values	Enrolled		Not Enrolled		X^2
	<i>n</i>	%	<i>n</i>	%	
Calling	91	45.05	22	30.99	4.28*
Enjoy Working in Small Groups	153	75.74	44	61.97	4.96*
Help SWD Reach Potential	173	85.64	52	73.24	5.58*
Be an Advocate for SWD	153	75.74	34	47.89	18.89***

Note. SWD = students with disabilities

* $p < .05$. ** $p < .01$. *** $p < .001$

Finally, there was a significant difference between the total number of total motivations and their likeliness to enroll, $X^2 (1, N = 273) = 8.58, p = 0.014$. Respondents who selected a total of 1-5 motivations were more prevalent to not enroll (35.2%) than enroll (19.3%).

Preferences. There were significant differences in enrollment outcomes across five elements: (a) product, (b) price, (c) place, (d) people, and (e) physical evidence. A Chi-square test was used to determine differences in enrollment by preferences in time commitment, maximum cost, and program format (see Table 28). Enrollment outcomes were significantly different by time commitment, $X^2 (2, N = 268) = 7.72, p = .021$. Respondents interested in part-time programs were more likely not to enroll. For price, there was a significant difference between enrollment and the maximum cost respondents preferred, $X^2 (3, N = 233) = 12.41, p = .006$. Students looking for a program that costs less than \$10,000 were more likely not to enroll. For place, there was a significant association between enrollment and program format ($p = .004$). Respondents who preferred online programs were more likely not to enroll.

Table 28*Frequencies and Chi-Square Results for Enrollment and Preferences (N = 273)*

Preferences	Enrolled		Not Enrolled		χ^2
	<i>n</i>	%	<i>n</i>	%	
Time Commitment					7.72*
Full-Time	91	45.5	20	29.41	
Part-Time	69	34.5	36	52.9	
No Preference	40	20	12	17.65	
Maximum Cost					12.41**
> \$10,000	37	21.26	19	32.2	
= \$10,000	44	25.29	9	15.25	
< \$10,000	51	29.31	26	44.07	
Cost Not a Factor/No Pref	42	24.14	5	8.47	
Program Format ^a					**
Face-to-Face	31	15.67	9	13.24	
Online	42	21.21	27	39.7	
Hybrid	123	62.12	29	42.65	
No Preference	2	1.01	3	4.41	

Note. Program Format^a = Fisher's exact test was used due to small frequency sizes.

* $p < .05$. ** $p < .01$

For the elements of people and price, respondents were compared by the strength of their preferences. Statistically significant differences were found between enrollment and four types of roles: (a) program advisor ($p = .005$), (b) specialized faculty ($p = .046$), (c) diverse faculty ($p = .035$), and (d) MUSE mentor ($p = .005$). In each case, respondents who enrolled found each of these role types as more essential than respondents who did not enroll. Furthermore, when the total preferences for people were combined, there was a significant difference between enrollment and people, $\chi^2 (3, N = 265) = 7.45$, $p = .024$.

Chapter V: Discussion and Implications

This study served to conduct an initial exploration into understanding what type of person expresses interest in special education and why. In addition, findings from this study shed light into program preferences of prospective applicants to special education licensure programs. As a first step in this mixed-method design, I adapted the FIT-Choice Framework to include survey items specific to what was already known about motivations in special education, and then added it to a survey that included items related to personal demographic characteristics and program preferences. As a result, this study serves to provide special education teacher preparation programs with information needed to more effectively recruit and enroll students into pursuing teaching licensure programs in order to address the persistent teacher shortage in this field.

Discussion: Special Education Teacher Pipeline in Hawai'i

At UHM, the majority of special education applicants mirrored national data, representing a predominantly female student population. Applicants were almost all in-state (90%), with an almost even distribution between applicants living on O'ahu and neighboring islands. With that being said, the needs of our interpretation of rural and remote populations are likely different from those of other states. There was a large underrepresentation of applicants who applied while living outside of Hawai'i, therefore study findings were not able to explore differences between the local population and individuals who are interested in moving to Hawaii to pursue a teacher preparation program. Although, one positive aspect of UHM programs is that they are more likely to recruit local applicants from within the community, as half of the respondents were born and raised in the state, with an additional 10% who had moved to Hawaii prior to college.

Based on study findings, UHM programs were recruiting higher proportions of Filipinos (9.6%) than what is currently represented within the HDOE teacher workforce (7.8%). White and Native Hawaiian student proportions were equivalent and Japanese student proportions were about half (12%) of what is currently found within the local teacher workforce. Overall, the applicant student body was extremely diverse, with the largest percentage of respondents indicating that they were of mixed ethnicities (30%), followed by White, Japanese, Native Hawaiian, and Filipino. However, there were very few applicants representing Other Pacific Islanders on the sample frame, indicating a need to more intentionally target individuals from this community and recruit them to pursue teacher preparation programs. Student ethnicity proportions are similar to state proportions, reflecting no ethnic majority. Findings confirm the need to expand ethnic reporting data at the federal level, as there are growing numbers of individuals identifying as multiple ethnicities, and broader categories such as "Asian and Pacific Islander" do not capture information on subgroups that is necessary to examine issues of educational equity in the context of varied ethnic groups in Hawai'i.

Study findings mirrored previous research suggesting that a majority of individuals interested in teaching special education are tending to be more representative of older, nontraditional students rather than younger, traditional-aged students under the age of 26. As IHE faculty, we need to understand

whether the designs of our programs and the supports we offer align with this growing nontraditional population, who are significantly more likely to be balancing full-time jobs and families while furthering their education. This is especially important considering age was the only identified characteristic impacting enrollment outcomes, with younger applicants as significantly more likely to enroll in a program than older applicants.

When comparing nontraditional students and ethnicity in this data set, although there was a significant association between ethnic groups and age, the differences did not align with previous literature. In this study, younger students had higher proportions of Japanese and Filipino students, whereas older students had higher proportions of White and Native Hawaiian students. Therefore, the ethnicity distribution was mixed regarding underrepresented and overrepresented groups across younger and older student populations.

Motivations

Using the FIT-Choice Framework, I was able to use previous applicant essays to develop a new survey scale that includes specific motivations more commonly found in pursuing licensure in special education. As an initial attempt to explore the distributions of identified motivations across the targeted population, findings from this research study serve to give a broad overview of why individuals may or may not choose to pursue this profession.

Socialization. Contrary to previous research that indicated socialization as one of the lowest rated motivations within teaching, findings from this study indicate socialization influences as highly motivational, especially within the domain of prior teaching and learning experiences. Over three-fourths of respondents had prior work or volunteer experience with disabilities, with a majority already working in schools. This suggests that experiences are more influential than personal connections and relationships, as about half of respondents had a teacher or individual with disabilities in their family. In fact, more respondents had a close non-family relationship with an individual with disability than having had a family member with a disability. Future studies can examine where and how these non-family relationships were established. Similar to previous research, there was a small percentage of applicants who were either a parent of a child with a disability or as having a disability themselves. Overall, findings suggest individuals who have had the opportunity to work or volunteer with individuals with disabilities are most likely to become interested in teaching special education as a career.

In addition, one notable finding was that less than a quarter of respondents had felt their family, friends, and colleagues were somewhat or not supportive of their interest in becoming a special education teacher. Given the general narrative around teaching special education, it was surprising that only a small sample had felt any discouragement towards pursuing the profession, especially when previous research had indicated strong social dissuasion for candidates who were enrolled in general education teacher preparation programs. From personal experiences in special education recruitment over the last seven years, I most often hear that potential applicants were being dissuaded from pursuing the profession by parents and current teachers in the field. For future research I would be interested in separating out this

survey question to determine if levels of support are different between friends, family, and colleagues.

Self Perceptions. A majority of respondents felt they had the traits, skills, and experiences to become a special education teacher, yet they did not feel they had a lot of knowledge in the field. These findings support why it may be even more important for special education applicants to pursue comprehensive teacher training programs over alternative certification options using shorter program duration and less coursework. Future research may look to compare general education and special education self-perceptions to determine if general education teachers are more confident in their content knowledge for the field they are pursuing licensure in.

Task Perceptions. Given the history of special education and how complex the role of a special education teacher has become, it was a relief to see that applicants were fully aware of how challenging teaching special education would be, but also understood that it would be just as rewarding, if not more. Rather than hiding or negating how difficult this profession is, a key recruitment tool would be to emphasize that the challenges exist, although the rewards make it all worthwhile. However, similar to previous research, respondents were much less likely to agree that teaching special education would provide a good income or is well-respected.

Similar to complexities within how to best prepare special education teachers, the ambiguity of roles and lack of continued professional development opportunities may be contributing to a public perception that special education teachers are not well-respected or valued as professionals. In addition, having had teacher shortages in the field for so long may be negatively impacting the quality and experiences people have had within the field. Especially considering the high rates of attrition, the state may want to assess how role ambiguity and working conditions may be impacting how special education teachers are treated within the profession.

It was interesting to note that although about one-third of respondents felt neutral and one-third disagreed that teaching special education would provide a good income, a large majority of respondents who had been working full-time jobs said that the teaching salary would be more than what they had been making (67%). Teachers unions have been advocating for pay increases for special education teachers across many states and have been very vocal in sharing about the dismal living conditions teachers are generally in. This may be inadvertently hindering our ability to recruit more prospective teachers who continue to hear that teaching does not provide a good wage. In Hawai'i, it is true that teachers make the least amount of money when adjusted for cost of living, however most industries in Hawai'i are the same, as the costs of living continue to rise. Therefore, even individuals who could be making more money as a teacher may not consider the profession due to this strong public narrative regarding poor teacher salaries. Fortunately, in Hawai'i it would be interesting to see if perceptions of the profession shift given the fortunate development of large salary differentials being implemented for special education teachers in the state.

Values. Similar to previous research on motivations in teaching, findings found that respondents in special education were overall more motivated by social utility and intrinsic motivations. The most

common motivations across values were: (a) helping students with disabilities reach their full potential, (b) enjoying helping other in need, (c) enjoying working in small group or one-to-one, (d) wanting to advocate for students with disabilities, and (e) enjoying the rewards that come from helping individuals with disabilities. In addition, although personal utility was not as common, a total of 216 respondents had selected at least one personal utility motivation as influencing their decision to teach special education (79%).

Findings supported that all motivations identified for special education through the framework analysis method were valid, with each possible item having at least 20% of respondents selecting it as a motivation. In addition to overall motivations, when asked to only select one as a primary motivation, a few notable differences were found. The most common primary motivations were: (a) social utility - helping students with disabilities to reach their full potential, (b) intrinsic - feeling that teaching special education was their calling, (c) intrinsic - enjoying helping others in need, and (d) personal utility - would be provided with tuition support. It was especially interesting that although identifying teaching special education as a calling was the least common intrinsic motivator across all respondents (41%), it was the most common primary motivation (13%) and it was found to have statistically impacted enrollment outcomes. Therefore, although special education may not be a calling for the majority, those who do feel a calling are significantly more motivated in pursuing the profession and enrolling in a teacher preparation program.

Programs looking to increase enrollment may also look at how to appeal to three additional motivations that were found as statistically significant when compared to enrollment outcomes. Respondents who enjoyed working in small groups were more likely to enroll, therefore emphasizing smaller class sizes and the opportunity to work more closely with fewer students as a special education teacher may be a useful recruitment tool. In addition, tailoring marketing materials to appeal to social utility values, such as helping students with disabilities reach their potential and the ability to be an advocate may appeal to the types of people who are more likely to enroll in the program.

One final finding regarding values was that the least common social utility value was in the desire to address social inequities, such as disproportionality by gender or ethnicity in special education (48%). In recent years, there have been many more campaigns to address inequities in education. However, most social justice narratives do not include disabilities as a topic of inequity. For example, in Hawai'i, the teachers union selects one teacher a year for the "Pono Award", which celebrates a teacher who has successfully advocated on social justice issues. In the criteria for the award, it identifies social justice issues as immigration reform, school-to-prison pipeline, equity in education, LGBTQ bias and issues, English-language learner advocacy, racial profiling, voter suppression and/or rights, and bullying (HSTA, 2021). It makes me wonder why advocacy for students with disabilities is not specifically included as a social inequity and if this contributes to why fewer respondents identified this type of motivation within the framework. Another possible reason for individuals not associating disability within a social equity lens may be due to the fact that identification of students with disabilities are confidential, therefore there may

be a general lack of awareness within disproportionality concerns in this field.

Fallback Career. I agree with Fray and Gore (2020) who acknowledged that “teaching as a fallback career should not be automatically associated with negative influences” (p. 156). My recommendation towards the use of the FIT-Choice Framework would be to change or modify the term “Fallback Career” towards identifying the individual’s onset of interest in teaching. Fallback career is subject to social desirability bias, as the term lends itself to a more negative perception of an interest in teaching. Onset, on the other hand, is a more nonsubjective attribute that may be able to better explain this construct within motivational research.

In the end, one of the most evident findings that distinguished special education motivations from general education motivations would be in the domain of fallback career and onset. For this study population, respondents were more likely to have never thought they would become a teacher than those who have always wanted to become a teacher. In addition, almost half of all respondents indicated that teaching special education would be a second career.

In previous literature, fallback career was most cited as the least common motivation amongst participants. However, in this study, findings showed a significant difference between when respondents became interested in teaching special education, with 66% of respondents not having been interested until after college, and an additional 26% who became interested during college. Related to declines in traditional program enrollment over time, there were only 15 respondents who expressed interest in becoming a special education teacher before college (5%). This lack of interest in teaching special education is starkly different within this same population for general teaching interest, which had 89 individuals who identified as being interested in teaching prior to college (33%).

Given that the primary influences for pursuing special education come from having work or volunteer experiences with individuals with disabilities, a possible solution for addressing the shortage could be investigating how to create more opportunities for individuals to gain experiences working with students with disabilities during their K-12 schooling. With advances in inclusion and inclusive practices, it would be interesting to see if more entering college students begin to express interest in a special education career in the near future.

Preferences

The 7 Ps Service Marketing Mix provides a framework for identifying elements within program design and how these elements may support or hinder potential applicants from pursuing a teacher preparation program. Together, understanding what the targeted market wants, IHE can make more informed and strategic decisions related to programmatic changes and design. For program preferences, findings are more reflective of contextual considerations rather than general trends, therefore results are best used to inform how current UHM program offerings relate to its targeted market.

Product. At the time of this study, all four licensure programs in special education were 2-year programs, therefore findings indicated that more than half of respondents were willing to complete a two-year program (59%) with an additional 26% of respondents who were willing to take longer. Only 10% of

respondents were interested in a program that was one year or less. Findings for length may be limited, as an 18-month program option was not provided. For time commitment, responses were evenly split between part-time and full-time programs, with a rather large percentage of respondents who did not have a preference. This is interesting, given that time commitment was one of the variables that had a significant impact on enrollment, with applicants who preferred part-time programs as less likely to enroll.

Given a majority of respondents were from the PBSPED program (66%), which is the only program that offered special education licensure only, it was surprising that only 26% of respondents preferred this type of licensure program. The majority of respondents were seeking dual licensure (68%), which suggests there may have been a large number of applicants to the PBSPED program who would have preferred to complete a dual-licensure option instead. Currently, there is no option to pursue dual licensure for elementary or early childhood at the graduate level, therefore perhaps offering this option within the MEDT program would be appealing to more applicants.

Price. It is no surprise that an overwhelming majority of respondents preferred to take the HIDOE tuition stipend with the 3-year service commitment (86%), than those who would prefer to not take the funding in order to not have a service obligation (5%). In regards to the maximum costs of completing a program, comparisons are harder to make given that most applicants have access to various forms of financial aid and scholarships. However, 15% of respondents selected “not a factor for me” which made me reflect about the importance of conducting a cognitive interview, as the addition of this option on the survey item was in direct response to what one of the cognitive interviewees had said when completing that part of the survey.

One recommendation for future research using this framework would be to move the element of total program credits from the element of product to the element of price. The rationale behind this change is that the number of credits in the program directly correlates to the cost, as IHE are confined to using standardized tuition costs based on undergraduate or graduate tuition credit rates. In addition, questions related to the salary potential of graduates were informative, as this information was then used within the motivation component of this survey research. Therefore, recommendations for future application of the 7 Ps service marketing mix would be to include survey questions regarding the maximum number of credits an applicant is willing to complete, as well as their perceptions on the salary tied to possible career outcomes.

Place. For program format, about one-fourth of respondents had selected they preferred to complete an online program. However, at UHM we do not currently offer any fully-online teacher licensure programs. Related to this difference in preferences, analysis based on enrollment outcomes determined that there was a significant association between format and enrollment, with individuals who had preferred an online program as having a less likely chance of enrolling. Therefore, not having an online program option may be negatively impacting enrollment into special education teacher preparation programs.

Another important finding was that being able to work while doing the program was the second

most essential item on average for respondents. Overall, findings suggest that logistical program features are likely the most essential elements of program design that impacts enrollment outcomes. For example, whether an applicant is able to complete the program, given the extent of their responsibilities, impacts their ability to enroll. IHE would benefit from designing programs that can best accommodate working professionals, especially those who do not want to have to come to campus for face-to-face coursework.

Promotion. The element of promotion is different from the rest of the elements, as it does not reflect a feature of the program itself. Rather, promotion is the strategy of taking what is known about the targeted market and sharing information about the rest of the elements so that more individuals are interested in pursuing the program. Therefore, applicant preferences were not assessed for promotion outside of indicating how they had learned about the program. Findings were consistent with previous program data that showed most prospective students learn about the program through seeking out information on our website or via word-of-mouth.

People. There were a couple of different findings most notable within the element of people. First, it was surprising that of all the roles provided, respondents found having access to specialized faculty as most essential. Based on this finding, programs would benefit from highlighting their faculty on the program website and materials. Strategies such as including notable achievements, research areas, and experiences related to the coursework they teach may influence more applicants into pursuing the program.

The role of MUSE mentors continue to produce interesting results, as this role was least essential across the total respondents (53%), yet came out as significantly associated with enrollment outcomes. Those who had enrolled were more likely to find MUSE mentors essential. This corresponds to my previous pilot study, where graduates had indicated that the MUSE mentors were the highest rated type of program support. Combined with findings from this study, I believe that MUSE mentors are not perceived as valuable by potential applicants, however once they enroll in the program they begin to understand how valuable and important MUSE mentors are to their success.

This dilemma relates back to the original foundation of why the service marketing mix is different from the original 4 P's framework; the perspectives of prospective students will be different from enrolled students, as they have to base their decision to pursue a program on the face-value of what the program offers. The challenge of promotion is to determine how to convey key features of program design that have not yet been experienced. This is why programs using appealing product-based incentives (e.g., shorter durations) have an advantage in recruitment. Therefore, using findings from this study, I believe finding a way to convey the value of less tangible features, such as the MUSE mentors, may be a strategy for increasing enrollment into more comprehensive programs. This could be done through the use of videos of current students or alumni who share about their experiences and how these elements have impacted them, along with sharing feedback or quotes that convey the enrolled student perspective.

Physical Evidence. One unexpected finding was the importance of institutional reputation within respondent preferences, as well as, this element as having a statistical association with enrollment

outcomes. This finding is comforting, given increased competition with abbreviated program options offered by non-IHE organizations. With a majority of respondents indicating institutional reputation as essential, IHE would benefit from developing promotional materials that highlight evidence of quality, accreditation, and institutional achievements as a recruitment strategy.

Process. The concept of the cohorted model and program structure was initially placed under the element of “product” during the initial adaptation of the 7 P’s to teacher preparation programs. However, during this study, it began to make more sense that the cohorted model primarily serves to streamline the processes related to completing the program. Having a cohorted program allows for the ability to streamline coursework and provide more seamless transitions for candidates each semester while navigating the program. Therefore, the recommendation is to move cohort, under the domain of program structure, into the element of process.

Similar to the role of MUSE mentors, the structure of a program and how it impacts a potential student’s experience is difficult to convey prior to enrolling in the program. Therefore, it was not a surprise when the subdomain of program structure was found as one of the least essential components in regards to applicant preferences. Although a majority of respondents did prefer a cohorted program over a self-paced one (68%), a majority of respondents did not feel that this preference would strongly impact their decision to enroll. However, the element of process is an often overlooked element in recruitment and design. IHE would benefit from showcasing the benefits of how their program processes contribute to the success of their students. For example, graduation rates, including on-time graduation rates, could be used in connection with a cohorted model to demonstrate the value and importance of offering a program with this type of structure.

Program Fit and Enrollment. The assumption was that applicants whose preferences did not align with the program they were applying to would be less likely to enroll. However, initial analysis using findings from this study did not support that hypothesis ($p = .19$). In reflection, one primary limitation to this study was the fact that the inclusion criteria using the enrollment funnel did not include prospective students who had inquired about the program, but never started an application. It may be more likely that those who never started an application may have been impacted more by not having a program that fits their preferences. Future research should include opportunities to survey prospective students across the entire enrollment funnel, including individuals who never started an application to a program.

Implications: Addressing Inequities

Combined, finding across motivations, preferences, and enrollment outcomes can help to inform a more intentional and effective recruitment strategy for addressing the special education teacher shortage, as well as intentionally recruiting disproportionate groups into the profession.

Recruiting Males

There is a need to recruit more males into the special education teaching profession, especially at the younger grade levels, as males are significantly more likely to be teaching at the secondary level. The two significant differences in motivations between males and females were that males were more likely to

self-identify as having a disability, and more likely to pursue teaching special education to fulfill a high area of need. These two findings may work together as an innovative approach to addressing recruitment.

Previous research has advocated to encourage more males into teaching at the elementary level in order to counter the over-identification of young boys qualifying for special education services. Given males are more motivated to fulfill a high area of need and can better relate to the identification of having a disability, one recruitment strategy would be to create messaging and marketing that specifically identifies these inequities. Campaign materials could specifically target males into pursuing becoming elementary special education teachers, stating they are needed so they can advocate and support young boys as a way to address this disproportionality and create better awareness of this need.

Differences in program preferences were minimal, with most findings related to female preferences as being more essential in the areas of time commitment and people. The only finding that could support more males into pursuing a special education teacher preparation program is that while a majority still prefer a dual-licensure program, males are more likely than females to prefer a special education licensure program only. This means it would be valuable to share both program options with male prospective students.

Recruiting Traditional and Nontraditional Students

One of the most consistent findings across motivations and preferences was that the element of age was the most statistically significant variable across all identified characteristics. This emphasizes the importance of better understanding younger, traditional students, as well as older, nontraditional students so that IHE can design different programs to meet the needs of each population. In addition, most statistical differences were identified at the strongest level of significance ($p < .001$), supporting earlier research findings that advocate for moving away from trying to determine whether ARC programs or traditional programs are superior, and instead focusing on providing a variety of different program options to meet the different needs of each targeted population. Program elements are not automatically tied to certain outcomes; a longer program does not automatically make it better than a shorter program, just as a face-to-face program does not automatically make it better than an online program. The real solution comes in the intentional design within each element based on what is truly needed to prepare someone for entering the profession. The goal would be to create the most effective, yet efficient program that fits the needs of its targeted population.

Traditional Students. Declines in traditional program enrollment have been identified as one of the primary causes of the teacher shortage, therefore understanding how to better recruit younger students into special education teacher preparation programs is needed as part of the teacher shortage solution. Primary finding across both motivations and program preferences was a significant relationship between younger students and variables related to diversity and social utility. Additional motivational findings included younger students as more likely to feel that teaching special education would be more rewarding than challenging, however, are less confident in their skills, abilities, and knowledge needed to

be a good special education teacher.

Thus, the recommendation would be to use a social justice lens across marketing materials for recruiting younger students into traditional licensure programs. Materials should create messaging around the rewards of becoming an advocate for students with disabilities and being able to reverse social and cultural stigma as a special education teacher. In addition, materials could emphasize the diverse faculty involved in the program and the role of the classroom mentors who would be supporting them in developing their skills and knowledge in the field.

Finally, younger students were significantly more likely to consider a teaching career before college, however, they did not consider teaching special education until college. Additional findings suggested that individuals who had the opportunity to work or have volunteer experiences with individuals with disabilities were more likely to become interested in teaching special education as a career. Therefore, one strategy for expanding the traditional student pipeline would be to embed more opportunities for students during their K-12 schooling to gain experiences with individuals with disabilities. Outside of general inclusive practices, schools should build in meaningful experiences for students to interact positively with their peers who have disabilities, or in working and teaching younger students with disabilities so they can experience the rewards that come with this type of profession.

Nontraditional Students. Age, including anyone over the age of 26, was statistically associated with factors commonly identified from the literature as indicative of nontraditional students. Older students were significantly more likely to be working a full-time job, have a spouse, and have a child or children at the time they applied to the program (Hanover, 2018; Kasworm, 2003). These additional responsibilities impact both motivations and preferences related to pursuing a special education preparation program.

The reality is that nontraditional students are more likely to be focused on factors related to personal utility. The need for tuition support and their ability to return to school while working and balancing other responsibilities make the recruitment strategy for this targeted population very different from ones targeting younger traditional students. Recruitment materials would be more effective if they focused on program product, price, and place. Essentially, the goal of promotion to this targeted market would be to best convey how the program can be completed within the constraints of their other responsibilities.

IHE faculty should consider how to best support individuals who are working full-time, including those already in school settings. The U.S. Department of Education, Office of Special Education Programs is currently advocating for more residency-style program options for nontraditional students. Residency models, where candidates are being paid and complete both their fieldwork and coursework within the school setting would be one way to appeal to this particular student population. This model may be especially appealing for individuals who are seeking a career change and not yet hired into a school prior to applying to the program. Having a residency model that provides a full-time, more intensive training option using shorter program durations may be a better fit than providing a part-time option that is spread out over time, as candidates have to balance program needs outside of their employment needs.

Otherwise, findings from this research indicated that 28% of applicants were looking for a fully online program and analysis on enrollment outcomes indicated these applicants as significantly less likely to enroll. Therefore, IHE may want to consider how to design a program that best fits this target population, rather than trying to fit it into current structures and models already existing within more traditional types of program designs.

One final finding that supports recruitment of nontraditional students comes from the domain of self-perceptions, where older students were statistically more likely to strongly agree that they had the characteristics, skills, and experiences to become a good special education teacher. However, the one area of self perception that was significantly different was in the area of special education content knowledge. When considering ARC programs better support nontraditional student populations, the history of how ARC programs are designed conflict with these research findings; ARC programs began as an option for individuals who were looking for a quicker entry into the classroom, as they already had content knowledge expertise and therefore only needed pedagogical knowledge and experience. However, findings from this study affirm previous research that claims special education candidates as needing content knowledge on top of the other teacher preparation areas, making it harder to prepare quality teachers using shorter program duration and less coursework.

Unfortunately, as ARC programs have become more and more popular, there are fewer nontraditional prospective students willing to complete longer and more robust training programs. This is especially conflicting for special education teacher preparation, given that almost all respondents did not express interest in teaching until after college. The population most likely to pursue special education licensure are older, nontraditional students who inevitably are looking for the shortest and cheapest program option that will get them into the classroom. Given how complex special education roles and responsibilities are, the continuing challenge is determining how to balance the needs of this nontraditional student population with the need to provide the content knowledge, skills, and experiences to support these students in being successful long-term.

Recruiting in Rural and Remote Locales

Overall, motivations and preferences were less influential when considering how to recruit more individuals from rural and remote communities. Most differences were found among respondents living in urban O'ahu, such as more likely to have had a family member who was a special education teacher or have been motivated by the opportunity to support their own children. Significant motivational differences within more rural parts of O'ahu were not found, yet neighbor island respondents were more likely to have received more support from their family, friends, and colleagues in pursuing teaching special education, as well as more likely to agree that teaching would provide a good income.

For program preferences, the primary element, which was significantly different, was the element of place, as urban O'ahu respondents were more likely to prefer weekday classes, whereas rural O'ahu respondents were more likely to prefer classes on weeknights, and neighbor island respondents more likely to prefer courses on weekends. However, none of the findings from this study particularly lead to

recommendations on how to better recruit students from these areas. Further research is needed in this area.

However, one notable finding was that the element of promotion was only statistically significant within the variables of locale, as neighbor island respondents were significantly more likely to have been referred by media ads. This finding can be better explained with additional context. Radio and newspaper ads were more expensive on O'ahu, and since department funds for recruitment were limited, almost all media advertising for programs was conducted on neighboring islands. Therefore, this finding suggests that media ads may be worth the investment, as a larger proportion of neighbor island applicants had indicated that they first learned about the program through these advertisements.

Recruiting Underrepresented Ethnic Groups

The first implication of this sub-analysis is that, within underrepresented ethnic groups, they may be more different than similar in their motivations and preferences. This was learned when my initial analysis had sub-grouped Native Hawaiian and Filipino respondents together, while also combining White and Japanese respondents to represent differences between underrepresented and overrepresented groups. Initial findings were limited, and when I had begun to analyze the cross tables of data, I realized that many differences were being hidden by the fact that each ethnic group was independently different across many variables. Therefore, I separated the respondents by each ethnic group and ran the analysis again, which helped to identify more meaningful differences. As a result, similar to the need to move away from overly broad categories of ethnicity at the federal and state levels, when considering how motivations and preferences impact different ethnic groups, the recommendation would be to study this phenomenon for each group independently when possible.

Similar to previous literature and Hawaii workforce data, there was a significant difference between ethnic groups when identifying if they had a family member who was a teacher. Not surprising, Japanese respondents were the most likely to have had a teacher in the family (75%), followed by White respondents (58%), Filipino respondents (42%) and then Native Hawaiian respondents (39%). Given the disproportionate representation of certain ethnic groups in teaching, recruitment strategies should intentionally look at how to include visual representation of underrepresented groups within campaign and marketing materials. Using this strategy, students from underrepresented ethnic groups may begin to see themselves more in the profession.

As a result of the varied differences across each ethnic group, the recommendation would be to create multiple campaigns for recruitment, with each campaign specifically targeting a different group, including the use of different messaging narratives and highlighting different programmatic elements.

Native Hawaiian. Unfortunately, significant differences unique to Native Hawaiians were extremely limited within this research study. However, the one significant finding was in the area of teaching interest onset, with almost half of all Native Hawaiian respondents as having first developed an interest in teaching during college, rather than afterward. This suggests that recruitment efforts may be best served by targeting Native Hawaiians at the IHE, and providing information on the various teacher

preparation programs available. At UHM, there was a recent initiative to develop a streamlined bachelor to master's pathway to teaching. Future recommendations would be to consider how to offer a similar pathway to teaching special education.

Filipino. The most significant differences related to ethnicity were most often specific to Filipino respondents. For motivations, Filipino respondents were more likely to be motivated by personal utility, given that teaching special education would provide them with more job opportunities. In addition, they were less intrinsically motivated to feel that teaching special education was a calling. Similarly, Filipino respondents were significantly more likely to choose special education as a fallback career, with a majority saying if offered both teaching positions, they would choose to teach general education. One final motivational difference was that Filipino respondents were more likely to have developed an initial interest in teaching before college.

In regards to program preferences, Filipino respondents were significantly more likely to prefer dual certification. In addition, the element of people was significant, with Filipino respondents feeling that placement coordinators and faculty having recent teaching experience as more essential. Finally, for individuals who already had a bachelor's degree, the desire to get a graduate degree rather than a certificate was significantly higher for Filipino respondents compared to other ethnic groups.

When combined, a recruitment campaign targeting Filipinos would be most effective by highlighting the dual certification program options. The messaging regarding dual certification should highlight that adding a special education license would provide more job opportunities, however graduates would have the option to teach general education if offered. In addition, the use of video profiles should include current candidates who can highlight the rewards of teaching special education and current faculty who can share about their recent teaching experience in the field.

Limitations

The targeted population for this study were 957 individuals who had started an application to a special education teacher preparation program between 2015–2022. Most research in teacher preparation was conducted using convenience sampling, often using more homogenous groups, such as currently enrolled students or graduates from teacher preparation programs. This study served to expand the study population to include individuals earlier on the enrollment management funnel, as an attempt to explore perspectives and insights from individuals who had not successfully enrolled in a program. However, having a more diverse targeted population increased risks across the Total Survey Error framework. Limitations within this study are organized using the four primary sources of error within survey research.

Coverage Error

Due to convenience sampling, only applicants to special education licensure programs at the University of Hawai'i at Mānoa were included in this study. Generalizability of the findings would not include the perspective of individuals who were interested in becoming a special education teacher, but had not yet attempted to apply, as well as individuals who may have applied to other institutions or

programs. Also, some applicants may have started an application to the University of Hawai'i system, but withdrew before starting an application to the College of Education, which causes coverage error as they would not have been identified or included on the sample frame.

Although attempts were made to ensure that each potential respondent had a probability greater than zero of being included in the study, coverage error was still present. Generalizations to the broader population should take into account that the findings of this study are based on a sample with underrepresentation from younger, traditional-aged students, applicants from outside of the state, as well as those who were either denied to the program or had an incomplete application.

The underrepresentation of younger, traditional-aged students was likely caused by a larger proportion of undergraduate ESEE applicants having had ineligible email addresses. A large majority of ESEE applicants had already been full-time students at the time they applied to the program in their sophomore year. As a result, most ESEE applicants had only listed their institutional email address (hawaii.edu) on their application. Students who are not currently enrolled or have since graduated have likely lost access to their institutional email accounts unless they had opted-in to keep it. Even candidates who still had access to their UH email accounts may not be checking it very often. As a result, of the 141 email addresses that were marked as undeliverable, 107 were from university email accounts (76%). Furthermore, although ESEE candidates made up 22% of the total sample frame, they made up 45% of the individuals who were unable to receive the survey request from having undeliverable email addresses. This poses a severe limitation to generalization of the results for findings related to age and nontraditional students, as ESEE students were the most representative subgroup within this population yet were largely underrepresented.

In addition, the inclusion of applicants across a span of six years attributed to coverage error, as responses were more likely to be received from more recent applicants. Based on response rates, there was an overrepresentation of more recent applicants for Fall 2020 and Fall 2019, an even distribution of respondents from Fall 2018, and an underrepresentation of applicants from Fall 2015 to Fall 2017. This suggests that research using previous applicants may be more accurate when limiting its scope to within the most recent three years.

Measurement Error

As an exploratory study, there are multiple possible sources of measurement error that may have impacted the quality and accuracy of research findings. Although a systematic qualitative analysis was conducted using the Framework Analysis Method, the scope of this study's research methods did not include validation of the survey instrument. In addition, the limited number of cognitive interviews conducted, especially not including individuals across the various ethnic groups, may have limited the ability to detect and understand more sources of measurement error. In addition, I did not include an inter-rater reliability test for the development of the motivation section of the survey instrument. My goals for future research would be to take findings from this initial exploration into special education motivations and edit the identified survey items. Then I would follow up with a validation study that included another

form of evidence, such as from confirmatory factor analysis.

Related to coverage error, this research study identified individuals across the enrollment funnel over a span of six years. Given this study's focus was on motivations and preferences at the time of application, findings may not be accurate, as it is likely that individuals' perspectives have changed, especially for respondents who had applied many years ago. Perspectives may be more indicative of current motivations and preferences, especially as students who had successfully enrolled were able to experience the program and its various elements, which may likely have influenced their perceptions of importance. The possibility of subject-expectancy effect, or social desirability bias, may have impacted enrolled students to have a greater sense of belonging to the program and thereby would want it to be viewed favorably by outsiders.

Overall, survey completion rates were high, with a small percentage of respondents who started the application but did not finish. Of the 281 respondents who opened the survey request, 262 completed the entire survey (93%), with 15 who partially completed the survey (5%), and 4 who left their survey blank (1%). Respondents who dropped off during the survey were dispersed throughout the survey questions (range = 1–3). The three questions with the highest drop off, having lost three respondents each, were when the survey asked respondents about their socialization characteristics, to choose which motivation was their primary motivation, and then the very last page that asked them to indicate the strength of each of their preferences. However, overall, there was very little drop-off and no question had noticeably higher drop-off rates than other questions. One contributing factor was the use of “prefer not to answer” as an option across all survey items. This response option was utilized across the entire instrument by almost every respondent at different times throughout the survey, which provided a consistent and effective way for respondents to avoid questions that may have been uncomfortable to answer or increased cognitive load. The effectiveness of this response option was most evident within the motivation section addressing prior teaching and learning experiences, as there were noticeably more respondents who preferred not to answer questions asking if they were spiritual/religious or if they identified as having a disability.

Finally, the last question on the survey asked respondents to indicate their current status in relation to pursuing licensure in special education. This question was used to determine if current enrollment status correlated with the enrollment status that was known at the end of the application cycle. Although respondents may have since applied to another program or have had their status change, the assumption is that respondents who had enrolled in the UHM program would have selected that they already applied/enrolled/graduated from a teacher licensure program, whereas those who had not enrolled (i.e., declined, denied, withdrew, incomplete) would have been more likely to have selected that they were still interested, or no longer interested in pursuing becoming a teacher. Chi-squared test using respondents' UHM status with their final status shared as the final question on the survey instrument was significant, $\chi^2 (2, N = 260) = 117.5, p < .001$. Overall, I believe the design of the survey instrument helped to reduce measurement error, in the sense that 93% of respondents were able to successfully complete

the full survey, suggesting cognitive load and fatigue were not sources of error for a majority of respondents.

Nonresponse Error

According to AAPOR outcome rates, this survey research analysis had a 73.8% contact rate, with a 43.5% cooperation rate, 33.9% response rate, and 39.8% refusal rate. This indicates that the rate of nonresponders was higher than responders, leading to possible nonresponse error. Perceived organizational support and social exchange theory provides a means to explain this nonresponse error, as response rates were highest from applicants who had more positive relationships with the institution (i.e., enrolled, admitted but declined admission). There was an overrepresentation of applicants who had enrolled in the programs, and an almost equal proportion of applicants who had declined admissions or had withdrawn their application. Considering that these types of applicants had self-selected not to attend, their relationship with the institution was not as likely to have been tarnished. Conversely, active nonrespondents were primarily from individuals who had incomplete applications ($n = 7$, 64%), had been denied ($n = 2$, 18%), or had enrolled but were since dismissed from the program ($n = 2$, 18%).

Using a multi-modal format option for participating in this research study suggests that a web-based survey instrument may have been most appropriate, as no respondents opted-in to the phone or mail-based survey option. However, overall form submissions were low ($N = 6$), with one respondent utilizing it to opt-out of the study, four respondents choosing to update their contact information, and one respondent asking to learn more about the study. It is still possible that many of the nonresponders may have preferred an alternative survey format, yet not motivated enough to actively seek out their preferred option.

The nonresponse management plan for this research study increased response rates across all five phases of the dissemination process. A total of 126 completed response submissions (45%) had been received using the original survey request. This suggests that implementing a differentiated and phased approach to nonresponse can be effective. However, one phase did not appear to be more effective than others, as the number of new respondents at each phase ranged from 40-65, with a slight decrease in new responses at each phase. In addition, there were no substantial differences across phases in the number of incomplete respondents or individuals opting-out from the study.

Recommendations for Future Research

Being an explorative study, there are a number of ideas and suggestions for future research that can help to build up a more collective understanding on how to address our teacher shortage dilemma. First, I would be interested in using this data set to conduct a few follow-up studies. I would be interested in conducting an instrument validation study, to seek reliability and consistency in the use of the FIT-Choice Framework for studying motivations in special education, as well as the adaptation of the 7 Ps Service Marketing mix towards studying teacher preparation program preferences.

In addition, I would be interested in testing the interactions between identified variables, such as determining if certain variables moderate differences between certain characteristics and subgroups. For

example, I am interested to know if individuals who had experience with students with disabilities during their K-12 schooling would be significantly more likely to have developed an onset in teaching special education before college. I'd also be interested in seeing how multiple characteristics may produce interaction effects, such as the difference between urban applicants who are under the age of 26 and neighbor island applicants who are under the age of 26. These interaction effects would be especially important when analyzing impacts on enrollment outcomes, especially across each part of the funnel. As part of this follow-up research, I would be interested in adding a few new variables for analysis, such as comparisons between: (a) undergraduate students and graduate students, (b) dual licensure applicants and single licensure applicants, and (c) adding socialization and onset as characteristics for analysis across motivations and preferences.

Once validation of the survey instrument and expansion of the exploratory analysis was completed, I would want to replicate this study in two ways. First, I would want to give this study to all the prospective students on my Hubspot CRM database who had never started an application to one of the programs. This could shed better insight on whether certain types of motivations or preferences are more likely to impact an individual's decision to even start an application to a program. In addition, I would want to replicate this study every 3 years, given that response rates are proportional within this period of time and the additional studies could shed better insight on long-term trends. I am particularly interested in knowing if the pay differentials in special education will have an impact on future task perceptions within this profession. In addition, since this study began, the Department of Special Education developed a new licensure program option at the undergraduate level for special education licensure only in either secondary mild/moderate or K-12 severe/autism. Therefore, a follow-up study could include further insight into program preferences and enrollment outcomes.

Another area for future research would be to conduct more qualitative analysis of characteristics that had limited findings through this quantitative approach. A deeper dive into the motivations and preferences of individuals living in more rural areas, as well as focusing on the perspectives of Native Hawaiian and Other Pacific Islanders may help to identify critical variables that could help with recruitment of these needed populations.

In addition, I recommend that state-level reporting systems use distinguishable and consistent ethnic categories for identifying the workforce population in comparison to the student population so that future research can conduct more effective comparisons. The need for better ethnicity data sources can help to understand and address issues of inequity and disproportionality within our educational system.

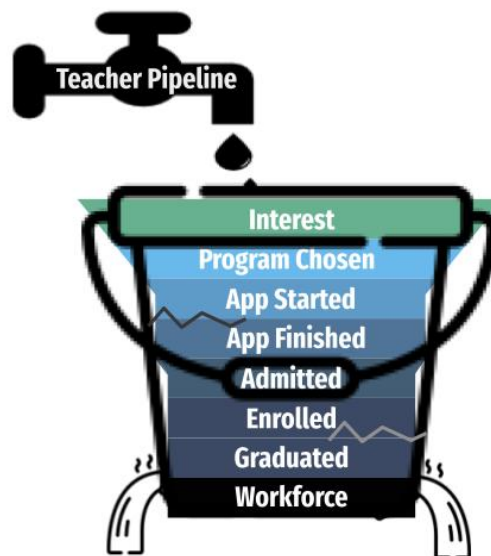
Finally, I would be interested in expanding this research in two different areas. First, I would like to look at how motivations and teacher preparation design impacts special education teacher retention. In addition, I would be interested in adapting the motivation component so that both motivations and preferences can be studied across all prospective teacher candidates in the College of Education at UHM.

Final Thoughts: Bucket Analogy

Altogether, this study served as an initial attempt to merge foundational frameworks and theories within education and the field of business to inform recruitment strategies needed to address the longstanding teacher shortage. However, I would like to end this discussion with an analogy that represents the broader problem. There is little point investing in recruitment if investments in retention are not included. If we visualize the teacher shortage as the filling of a leaky bucket, there are three key variables involved: (a) the tap, which represents the new teacher pipeline and recruitment efforts; (b) the bucket, which represents the role of teacher preparation and entry into the teacher workforce, and (c) the hole, which represents teacher attrition (see Figure 48).

Figure 48

The Leaky Bucket Analogy



This study proposes findings to help recruit more individuals into pursuing the special education profession, which could be understood as the ability to open the tap, to allow more water to enter the bucket. The bucket itself represents how these individuals are trained and the conversion rates across each stage of the enrollment funnel. Understanding preferences can help IHE redesign the bucket to best support its targeted population and widen the capacity of the bucket while preventing cracks from forming at each stage of the enrollment funnel (e.g., application completion conversion rate, admission conversion rate, graduation conversion rate). However, the most critical piece of this process comes from the hole in the bucket, which represents all the individuals who either choose not to enter the profession after obtaining licensure or who enter but leave the profession prematurely. Unless efforts are made to repair the hole, the widening of the tap and the bucket would be a waste of resources. In addition, the proliferation of alternative routes that use tactics to rush individuals through the bucket without the proper

preparation and skills can be thought of as widening the hole, which perpetuates the problem.

In the end, a productive solution to the teacher shortage involves a comprehensive and collaborative approach across all stakeholders that would lead to a steady flow of water into a large and sturdy bucket. Once the bucket is filled, the supply and demand needs of the teacher workforce would have been met. The goal from that point forward would be to continue supporting a steady stream of new water into the bucket to replace the small amount of water that invariably “leaks” as teachers leave the workforce due to retirement and other factors. Keeping the bucket full, with enough water to meet demands, would be indicative that a strong and high-quality teacher workforce can be maintained without great attrition at any step of the process. Together, recruitment and retention efforts could work in tandem to successfully address the special education teacher shortage long-term.

Appendix A. IRB Approval



UNIVERSITY
of HAWAII®
MĀNOA

Office of Research Compliance
Human Studies Program

DATE: February 10, 2021
TO: Ormelles, Cecily, PhD, University of Hawaii at Manoa, Special Education
Kim, Janet, University of Hawaii at Manoa, Special Education, Yoshioka, Jon, University of Hawaii at Manoa, Institute for Teacher Education, Master of Education in Teaching
FROM: Rivera, Victoria, Dir, Ofc of Rsch Compliance, Social&Behav Exempt
PROTOCOL TITLE: Understanding the Special Education Teacher Pipeline in Hawaii: How Motivations for Entry and Elements of the Service Marketing Mix Influence Enrollment Outcomes among Targeted Populations
FUNDING SOURCE: NAGAP Graduate Education Research Grant
PROTOCOL NUMBER: 2021-00077
APPROVAL DATE: February 10, 2021

NOTICE OF APPROVAL FOR HUMAN RESEARCH

This letter is your record of the Human Studies Program approval of this study as exempt.

On February 10, 2021, the University of Hawaii (UH) Human Studies Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The authority for the exemption applicable to your study is documented in the Code of Federal Regulations at 45 CFR 46.104(d) 2, 4.

Exempt studies are subject to the ethical principles articulated in The Belmont Report, found at the OHRP Website www.hhs.gov/ohrp/humansubjects/guidance/belmont.html.

Exempt studies do not require regular continuing review by the Human Studies Program. However, if you propose to modify your study, you must receive approval from the Human Studies Program prior to implementing any changes. You can submit your proposed changes via the UH eProtocol application. The Human Studies Program may review the exempt status at that time and request an application for approval as non-exempt research.

In order to protect the confidentiality of research participants, we encourage you to destroy private information which can be linked to the identities of individuals as soon as it is reasonable to do so. Signed consent forms, as applicable to your study, should be maintained for at least the duration of your project.

This approval does not expire. However, please notify the Human Studies Program when your study is complete. Upon notification, we will close our files pertaining to your study.

If you have any questions relating to the protection of human research participants, please contact the Human Studies Program by phone at 956-5007 or email uhirb@hawaii.edu. We wish you success in carrying out your research project.

UH Human Studies Program, Office of Research Compliance
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<https://www.hawaii.edu/researchcompliance/human-studies>
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Instrument Blueprint

The first component of the survey design will be to identify characteristics in line with being able to analyze attributes across four targeted groups. Targeted groups were selected within the literature review as being specific areas of need in growing a more diverse and representative teacher workforce. The four targeted subgroups will analyze factors by:

- A. Age at start of program (as of August 25th on the year of application):
 - a. traditional = 25 and under for BEd programs, or 30 and under for post bac/MEd program
 - b. nontraditional students = older than traditional students
- B. Gender:
 - a. female
 - b. male
- C. Ethnicity:
 - a. underrepresented groups = part/full of the following: Native Hawaiian, Filipino/a, and Other Pacific Islander)
 - b. other
- D. Geographic Locale:
 - a. Oahu, urban = Honolulu County
 - b. Rural/Remote = all neighbor islands + Oahu other
 - c. Continental U.S. + International

The next component of survey design will identify motivations for entry across all participants. Motivations are grouped into three primary categories, as defined by FIT-Choice® Framework: (a) task perceptions, (b) self, and (c) value. In addition, socialization influences and whether teaching is viewed as a fallback career are two additional categories impacting motivation within this framework. The FIT-Choice® framework was designed with a general education lens, therefore findings from the literature specific to motivations for special education will be added for this study. Motivations will then be analyzed across each subgroup to determine if differences exist between characteristics being targeted in this study.

Finally, in order to determine teacher preparation program preferences, analysis using elements identified within Boom & Bitner's Service Marketing Mix Framework (1981), will be conducted. The Service Marketing Mix includes 7 elements, known as the 7 P's: product, price, place, promotion, people, physical evidence, and processes. Each element includes program characteristics and sub-dimensions specific to the design of each teacher preparation program. For example, the 'product' includes elements of the program itself, which includes the total number of credits, program length, specific licensure outcomes, and whether the program is cohorting. Therefore, questions would be created to determine preferences within each element and which elements influence prospects most from enrolling in a special education teacher preparation program. (Also include a chart of each characteristic in relation to the 4 SPED teacher preparation programs)

SURVEY INSTRUMENT: bit.ly/someonespeciallikeyou

1. FIRST QUESTION: consent to participate in the study

TARGETED CHARACTERISTICS, “WHO” - Level 1 (2-4 questions)			
Level 2-Targeted Personas	Level 3-Sub-dimension	Drafted Question Stems (Include, “prefer not to answer” for all items)	Rationale/notes for inclusion in survey
Enrollment	Current Status	What is your current status related to pursuing a teacher preparation program? ☐ Not yet enrolled or no longer interested ☐ Currently enrolled or have graduated from a teacher preparation program	Used to adjust question items and responses throughout survey to fit status (parallel surveys with adjusted wording)
Traditional, Nontraditional	Age	• Under 20 • 21-30 • 31-40 • 41-50 • 51-60 • Over 60 • Prefer not to answer	➤ Variable for analysis ➤ Already known from applicant database
	Competing Responsibilities	LOGIC BRANCHING: depending on current status <if not enrolled/interested> Besides student responsibilities, which of the following would apply to you? (Check all that apply) ☐ I have a spouse (married) ☐ I have a child/children ☐ I work a part-time job ☐ I work a full-time job ☐ None of the above ☐ Prefer not to answer <enrolled/graduated> Besides students responsibilities, which of the following applied to you when you first began the program? (Check all that apply, use past-tense) → LOGIC BRANCHING (PART III - PLACE, if work a part-time or full-time job was selected)	To identify additional nontraditional factors other than age
	Previous Education/Field	Have you earned degree(s) in other fields? ☐ Yes ☐ No ☐ Prefer not to answer If yes What field(s) did you receive your degree(s) in? (open-ended response)	To determine what other colleges/fields should be targeted for recruitment (e.g. psychology)
Underrepresented Populations	Gender	• Female • Male • Transgender • Do not identify as female, male, or transgender • Prefer not to answer	➤ Variable of analysis ➤ Already known from applicant database *Include limitation: only using male/female

	Ethnicity	• (List all) • Mixed (2 or more) (If 2 or more: checkboxes) • List all	➤ Variable of analysis ○ Part or Full: Hawaiian, Filipino, Pacific Islander = underrepresented ○ Other = represented
Locale	Residency	<i>Where did you reside when you applied?</i> • Hawaii (Define Hawaii island) • Kauai • Lanai • Maui • Molokai • Oahu • Continental U.S. • Outside the U.S.	➤ Variable of analysis ➤ Already known from applicant database (island/city)
	Origination	How long have you lived in Hawaii? • Since birth • Since elementary school • Since middle school • Since high school • Since college • After college • I have never lived in Hawaii • Prefer not to answer	➤ Local (before college) more likely to stay and teach than non-local (since/after college)

MOTIVATIONS, “WHY” - Level 1

Level 2-Sub-dimension	Level 3-Sub-dimension (General & SPED)	Drafted Question Stems	Rationale/notes for inclusion in survey
		A. Which of the following applies to you? B. Share the extent you agree or disagree with these statement related to becoming a teacher C. How true or untrue are these statements for you in regards to your own motivations to become a special education teacher? (logic branch according to status) *specific to special education = added to framework	A. Yes/No items B. Strongly Agree to Strongly Disagree, with Not Applicable/Unsure in middle items C. Not true of me, True of Me, Very True of Me items
Fallback Career First or Second Choice Career	Onset (Fallback career = After college) (5)	When did you FIRST become interested in a teaching career? • As long as I can remember • During elementary school • During middle school • During high school • During college • After college • After having children • Other • Prefer not to answer When did you first become interested in becoming a special education teacher? • As long as I can remember • During elementary school • During middle school • During high school	➤ Determine when individuals first considered teaching - understand focus of recruitment along pipeline (can help validate the “values” section of the framework) ➤ Difference between wanting to become a teacher and wanting to become a special education teacher - is it the same or does special education come later? ➤ More likely to be a fallback career if onset is later in life (can help to validate the “fallback career”)

		• During college • After college • After having children • Other • Prefer not to answer (B) Becoming a teacher was my first (ideal) career choice? (B) Becoming a special education teacher was my first (ideal) career choice? (A8) Teaching would be a second career for me. Why did you first become interested in special education? (open-ended) What would you say are the top 3 reasons you wanted to become a special education teacher (open-ended)?	component of the framework) Strongly Agree to Strongly Disagree Yes/No Note: Instead of using open-ended responses, I will use Fall 2019 application essay responses as a pilot study to validate survey instrument design.
Socialization Influences	Social Dissuasion & Influences (5)	• (B1) My friends, family, or colleagues have told me I should become a teacher • *(B2) My friends, family, or colleagues have told me to become a special education teacher • My family have told me to become a teacher • *My family have told me to become a special education teacher • People I have worked with have told me I should become a teacher • *People I have worked with have told me I should become a special education teacher • (A1) I have family member(s) who are teachers • * (A2) I have family member(s) who are special education teachers • * (A3) I have a family member or close relationship with someone with a disability	Strongly Agree to Strongly Disagree Yes/No
	Prior Teaching & Learning Exp. (5)	• (B) Overall, I had positive learning experiences in school • (B) Overall, I had good teachers as role models growing up • * (A6) I have had previous school experiences with individuals with disabilities • * (A7) I have had previous work experiences with individuals with disabilities • * (A5) I have been identified as having a disability	Strongly Agree to Strongly Disagree Yes/No
Task Perceptions	Task Demand (expert career,	• (B) I want a career that is intellectually challenging • (B) I want a career that acquires high levels of expert knowledge	Strongly Agree to Strongly Disagree

	high demand) (5)	• (B) Overall, I feel like teaching special education is very challenging work • (B) Teaching is emotionally challenging • (B) Teaching special education is in high demand	
	Task Return (social status, teacher morale, salary) (5)	• (B) Teaching is a respectable profession • (B) Teaching provides a stable career path • (B) Teaching is a rewarding profession • (B) Teaching provides an adequate income • (B) Teachers love what they do	Strongly Agree to Strongly Disagree
Self Perceptions	General (5)	• * (B) I feel I have the traits needed to be a good special education teacher • * (B) I feel I have the skills needed to be a good special education teacher. • (B) I feel I can be a positive role model for students. • * (B) I believe teaching special education is a career suited to my abilities • (B) I feel like teaching is my calling	Strongly Agree to Strongly Disagree • Can correlate with previous question regarding prior experience
Values	Intrinsic (5)	I would get the chance to: (forced-choice) • (C) I want a career in helping others in need • (C) I have enjoyed teaching others new things • (C) I have enjoyed working with children or adolescents • * (C) I have enjoyed working with individuals with disabilities • (C) Teaching would fulfill a spiritual or religious calling	Yes/No Not motivating for me Motivating for me Very motivating for me
	Personal Utility (job security, time for family, and job transferability)	<i>I would get the chance to...forced-choice)</i> • (C) Fulfills a high area of need • (C) Provides a stable and secure job • (C) Supports balancing work and family obligations • (C) Provides me flexibility in case I relocate • (C) Provides opportunities and time for travel	Not true/True/Very True Can correlate with task return
	Social Utility (shape future, enhance social equity, make social contribution)	<i>I would get the chance to... - (forced choice option)</i> • (C) Address social inequities • (C) Helps reverse social stigmas around disabilities • (C) Allows me to inspire and motivate the next generation of children and adolescents • (C) Allows me to give back to my community and society • (C) Allows me to advocate for underprivileged youth	

Marketing Mix (Level 1) (30 questions)			
Level 2 - Sub-dimension (Elements)	Level 3 - Variables	Drafted Question Stems - Preference (analysis on "Fit" with pursued program) - Logic Branching, if a preference is provided, ask "How important to decision making?" using the likert scale: Not necessary Neutral Preferred Necessary Essential	"If we could design a program based on your preferences, what would that look like?" Create crosswalk of all Hawaii SATEP programs according to their program design elements.
Product	Length/Duration	- Less than 2 years 2 years - More than 2 years	
	Credits	- More credits/content - Less credits/content	
	Licensure Outcomes	- Special Education licensure - General Education licensure - Dual licensure in general and special education - Chosen licensure level (Pk-3, K-6, or 6-12) - General licensure level (K-12) - Chosen specialization (mild/moderate disabilities or severe/disabilities) - General special education license (all disability types).	
	Cohorted	- Cohort of individuals to complete entire program with - Individual program, self-paced	
Price	Indirect Costs	Time Commitment - Part-Time Program - Full-Time Program	
	Direct Costs	Prerequisites, Application Fee, Standardized exams - Stipend funding with a 3 year commitment to teach - No stipend funding and no commitment If your ideal program was available, what is the maximum amount you would invest to pursue it? 0\$ - Less than \$1000 \$1000-\$5,000 \$5,000-\$10,000 \$10,000-\$20,000 \$20,000-\$30,000 \$30,000-\$50,000 - More than \$50,000	

Place	Format	- Fully online (modules, self-paced) - Hybrid (some online, some face-to-face) - Face to Face - Daytime weekday courses - Evening weekday courses - Weekend courses	
	Field Placements	(Branching: Q5, Part 1: if part-time or full-time = yes) Were you working in a school at the time you applied to the program? - Yes - No - Prefer not to answer (if yes) What type of position did you have? Substitute Emergency hire teacher Part-time Teacher Paraprofessional Tutor Other Prefer not to answer What type of program field placements do you prefer? - traditional placements (Define traditional) - on-the-job training opportunities (Define on-the-job training) How often would you prefer to be in the classroom during your program? - Fieldwork every semester - Fieldwork only in final semester	
Promotion	General	How did you first learn about our program? - I sought out information (indirect) - Someone told me about the program (direct) - I learned about the program from through media (advertisement, event, radio, news)	-
	Direct Methods	Preferred method of communication phone email virtual meeting Face to face meeting Which of the following did you access during process? Communication with recruitment specialist/advisor Information Sessions Newsletters/Email Reminders	
	Indirect Methods	Website/Program Sheets Program information Profiles Frequently Asked Questions How to Apply	

		Other None Prefer not to answer	
People	Personnel	Would you rather? - Find own placement - Placement coordinator who coordinates placements - Small Faculty (1-5) - Large Faculty (6+) - Attend a large institution - Attend a small institution How important is it to have the following types of supports: - Someone to assist with program info and applications - Someone to provide advising throughout the program - Faculty who are highly specialized in their field - Faculty who are highly experienced in classroom teaching - Mentoring in the classroom - Mentoring outside of the classroom - Program that partners with the Hawaii DOE	
	Partnerships	(How important do you value or not value...) Program that partners with Hawaii DOE	
Physical Evidence	Certificate/Degree	- Teaching Certificate - Degree	
	Technology/Facilities	- Online Tools - Library - Gym	
	Institutional Reputation	"I value the reputation of the teacher preparation institution" "I believe UH Manoa is a highly reputable institution"	
Processes	Course Sequences	- Fixed - Not Fixed	
	Entrance Requirements	- Standardized exam - Interview - Writing sample - Transcripts - Applications	Include Scale of impacting decision to apply/enroll
	Personnel	Did you receive personalized support throughout the application process?	

Appendix C. NAGAP Award



December 13, 2019

Dear Janet Kim,

Congratulations! We are delighted to inform you that your proposal, Understanding the Special Education Teacher Pipeline, will be awarded a [2020 NAGAP Graduate Education Research Grant](#). You should feel especially proud of your accomplishment!

Award

- This award entails:
 - \$2,500 to support your research
 - Recognition at the award ceremony for this year's [2020 NAGAP GEM Summit](#) in Orlando, Florida
 - Complimentary NAGAP membership for one year
 - Complimentary registration, travel (up to \$500), hotel costs (up to 2 nights), and \$50 per diem expenses (up to 2 days) for the [2021 GEM Summit](#) in San Francisco, California

Expectations

- You will present your research at the 2021 GEM Summit in San Francisco. The Research Committee will work with you to submit a conference proposal.
- In order to share your important work with all of our membership, an article summarizing your research must be submitted for publication in NAGAP's Newsmagazine *Perspectives* by no later than July 1, 2021.
- You will conduct your research in an ethical and responsible manner following the research protocols of your academic institution.
- NAGAP reserves the right to publish an abstract of your research in its Abstract Library, announce your award on its website, and to publish the full research paper in digital and print publications made available to NAGAP members.

Appendix D. Mail-based Postcard



Aloha, my name is Janet Kim and I work as the Special Education Recruitment Specialist at UH Mānoa. I am pursuing my PhD in Education and I am excited to learn more about who expresses interest in special education and why.

I will be inviting you to participate in my research survey because you had started an application to one of our licensure programs between 2015-2020. The online survey will be emailed to you on **March 15, 2021.**

In the meantime, learn more about this project and our @Some1Special campaign as we work to uplift special education in Hawaii. You can also opt-in to a different survey format, update your contact info, or opt-out of participating:

someonespecialforstudents.com/research-project/



Appendix E. Nonresponse Email Drafts

Nonresponse Email #1: April 1, Based on Enrollment Funnel Status	
Enrolled	Aloha, I would like to invite you to participate in my dissertation research project, called “Understanding the Special Education Pipeline in Hawaii.” My goal is to better identify common characteristics related to those who become interested in the special education profession. In addition, I hope to learn about your own motivations towards your decision to pursue this career path. The ultimate goal is to find more people like you so we can build a strong and committed pipeline into special education here in Hawai‘i. Participation in this survey is completely optional and responses are recorded so that all responses are de-identified. Also, I ensure that participating, or not participating, in this study would not impact your status now or in the future at our institution. If you have a moment to share about your own journey and experience, please complete this survey: bit.ly/someonespeciallikeyou. All the questions are multiple choice and it shouldn’t take longer than 15 minutes to complete. You can even save your responses and return to it when you have time. Thank you in advance and please reach out if you have any questions or concerns related to this research project. <Attachment: Consent Form>
Denied	Aloha, I would like to invite you to participate in my dissertation research project, called “Understanding the Special Education Pipeline in Hawaii.” My goal is to better identify common and unique motivations related to those who express interest in the special education profession. In addition, I hope to learn about your own preferences to determine which programmatic design factors, if any, may have encouraged or prohibited individuals from pursuing the profession. The ultimate goal is to better understand why people become interested in special education and how program design may impact enrollment outcomes. Participation in this survey is completely optional and responses are recorded so that all responses are de-identified. Also, I ensure that participating, or not participating, in this study would not impact your status now or in the future at our institution. If you have a moment to share about your own journey and experience, please complete this survey: bit.ly/someonespeciallikeyou. All the questions are multiple choice and it shouldn’t take longer than 15 minutes to complete. You can even save your responses and return to it when you have time.

	Thank you in advance and please reach out if you have any questions or concerns related to this research project. <Attachment: Consent Form>
Lost	Aloha, I would like to invite you to participate in my dissertation research project, called “Understanding the Special Education Pipeline in Hawaii.” My goal is to better identify common and unique motivations related to those who had initially expressed interest in our special education licensure programs, but did not end up pursuing it. I’d like to learn about what motivated you to consider becoming a licensed special education teacher and then what your preferences would be if we were to redesign our programs. The ultimate goal is to better understand why people become interested in special education and how program design may impact enrollment outcomes. Participation in this survey is completely optional and responses are recorded so that all responses are de-identified. Also, I ensure that participating, or not participating, in this study would not impact your status now or in the future at our institution. If you have a moment to share about your own experiences and preferences, please complete this survey: bit.ly/someonespeciallikeyou. All the questions are multiple choice and it shouldn’t take longer than 15 minutes to complete. You can even save your responses and return to it when you have time. Thank you in advance and please reach out if you have any questions or concerns related to this research project. <Attachment: Consent Form>

Nonresponse Email #2: April 15, Underrepresented Groups	
Gender	Aloha, Did you know that only 25% of the teacher workforce in Hawaii is male? We believe it’s important in having more male role models in education, especially in special education where 70% of identified students are male (https://ocrdata.ed.gov/profile/9/district/29005/studentswithdisabilitiesidea). As part of my research project, I am trying to better understand what motivates males into pursuing becoming special education teachers. This information may help us understand how to better recruit and support more males into joining the profession in the future. I hope you will consider participating in this research survey: bit.ly/someonespeciallikeyou. All the questions are multiple choice and it shouldn’t take longer than 15 minutes to complete. You can even save your responses and return to it when you have time.

	If you have any questions, please don't hesitate to ask. Thank you for your time, <Attachment: Consent Form>
Ethnicity	Aloha, Did you know that Hawaii is the only state without an ethnic majority? However, even though we are the most diverse state, there is a disproportionate representation among Native Hawaiians, Filipinos, and other Pacific Islanders in our education system. Although these ethnic groups make up more than 50% of the student body, they make up less than 25% of the teacher workforce. As part of my research project, I am trying to better understand what motivates those from Native Hawaiian, Filipino, and other Pacific Islander backgrounds into pursuing becoming special education teachers. This information may help us understand how to better recruit and support more individuals from underrepresented groups into joining the profession in the future. I hope you will consider participating in this research survey: bit.ly/someonespeciallikeyou. All the questions are multiple choice and it shouldn't take longer than 15 minutes to complete. You can even save your responses and return to it when you have time. If you have any questions, please don't hesitate to ask. Thank you for your time, <Attachment: Consent Form>
Nontraditional	Aloha, Did you know that more and more older, nontraditional students are pursuing teacher licensure programs than traditional full-time students? Nontraditional students are identified as those who often come with more life experience and often juggle multiple roles involving work, family, and going back to school. As part of my research project, I am trying to better understand what motivates nontraditional students into pursuing becoming special education teachers and what types of program designs are needed to support them in their pursuit. This information may help us understand how to better recruit and design our programs to support this growing population of nontraditional students. I hope you will consider participating in this research survey: bit.ly/someonespeciallikeyou. All the questions are multiple choice and it shouldn't take longer than 15 minutes to complete. You can even save your responses and return to it when you have time.

	If you have any questions, please don't hesitate to ask. Thank you for your time, <Attachment: Consent Form>
Locale	Aloha, The special education teacher shortage in Hawai'i is unique because we are the only state composed exclusively of islands (i.e., Hawai'i, Maui, Moloka'i, Lāna'i, Kaua'i, O'ahu, and Ni'ihau). Being thousands of miles away from the next closest state also impacts recruitment, as it requires additional costs and commitment associated with relocating. Therefore, being an institution on O'ahu, we do our best in better understanding how to support those who either live on neighboring islands or are looking to relocate from far away. In order to do this, I hope you will consider participating in this research survey: bit.ly/someonespeciallikeyou. All the questions are multiple choice and it shouldn't take longer than 15 minutes to complete. You can even save your responses and return to it when you have time. If you have any questions, please don't hesitate to ask. Thank you for your time, <Attachment: Consent Form>

Appendix F. Framework Analysis Spreadsheet

Dimension	Sub-dimension	Motivational Variable	414	439	433	442	426	417	453	449	416	452	459	464	463	435	446	Total
Fallback Career	Onset	Timeframe of deciding to become a teacher			x			x [1]	x [2]					x [3]		x [4]	5	
		0 First Choice (always wanted to be teacher)															0	
Socialization		1 Second Career (never wanted to be a teacher or calling later in life)															8	
	Social Disapproval	others have told me I should become a teacher															0	
	0/1	other have told me I should become a SPED teacher															0	
	0/1	family members are teachers															0	
		family members are SPED teachers															0	
		family member/friend with disability															0	
	0/1	positive learning experiences															1	
	Prior Teaching	good teachers as role models															0	
		good teachers as role models															0	
		previous school or work experiences with SWD															0	
	0/1	<parent of a child with a disability>															0	
	0/1	identified as having a disability															1	
Task Perceptions	Task Demand	intellectually challenging															1	
		high levels of expert knowledge															5	
		SPED is challenging work															9	
	(balanced/not ba	teaching is emotionally challenging work															0	
	Task Return	Teaching SPED is in high demand															2	
		teaching is a respected profession															0	
		teaching provides a stable career path															11	
		teaching is a rewarding profession															1	
Self Perceptions		teaching provides an adequate income															0	
		teachers love what they do															0	
	Self Perceptions	I feel I have the traits needed to be a good SPED T															2	
	0/1	I feel I have the skills needed to be a good SPED T															1	
Values		I feel I can be a positive role model															4	
		I believe teaching SPED is suited to my abilities and previous experiences															2	
		I feel like teaching is my calling															2	
	Intrinsic (0)	I want a career in helping others in need															4	
		I have enjoyed teaching others new things															1	
		I enjoy/am passionate about working with children/adolescer															0	
		I enjoy working with individuals with disabilities															1	
		Teaching fulfills spiritual/religious calling															0	
Personal Utility	(get to fulfil high area of need	provides stable and secure job															0	
		supports balancing work and family															0	
		flexibility to work elsewhere															0	
		opportunities and time for travel															0	
Social Utility (2)		address social inequities															3	
		reverse social or cultural stigmas around disabilities															2	
		inspire or motivate next generation															3	
		give back to community or society															3	
		advocate for <SWD>															5	
																	3	
	Prior Experience	parent - watching own children grow															1	
		help children learn															7	
Social Utility		reach full potential															3	
	Intrinsic	want to teach children differently, design curriculum															2	
		witnessing (experiencing) growth															3	
	Social Utility	Make a difference															2	

Appendix G. Cognitive Interview-Redacted

Participant: [REDACTED]

Date: 3/14/21

Start Time: 4:07pm

End Time: 4:41pm

Sent invitation through email.

Email	- Went straight into the survey
First Impression	- Clicked on consent form - Like how it has an intro consent. It's good it has something about the project. I know about the project, but if I didn't I would want to learn more. - Love seeing your kids, cute! - Like the visuals at the top
Characteristics	- Close relationships with disabilities-- hmm, I wouldn't say "close" but he kind of inspired me. But I didn't stay in touch with him so I guess no. - I didn't know what I wanted to do when I was younger, but I didn't really decide until highschool (chose no) - Laughed- it's like the next question predicted what she was thinking about - Question- at the time I was applying I wasn't applying for special education (clarified timeline) - Using a lot of neutral responses for the statements - "I didn't really know what it was going to take to be a special education teacher" - Overall I had good experiences in school - is this for K-12 or for college? <change to K-12>
Motivations	- <my notice- change the motivation statements to past tense> - Oh, so it took all the ones I had selected? That's fancy! - Motivation was because she knew special education would help her get into the university of her choice. - Added "Because of the need, I knew special education would help me get my foot in the door"
Preferences	- Pretty fast- shared stories for each one - Falling in line with traditional student info - Maximum amount- this is hard because my parents paid. But if I had to pay, it would be \$20,000 - Ask for help with new wording: - Financial support was available, therefore

	tuition cost was not a factor. - Chose preferred for reputable institution, but shared story about how her institution was ranked #1 in state. - Can you do a half-sies on the sliding scale? No - As she answered, she went back to change a response
Other: Technicalities	-
Overall Impression	- Last page was more difficult because I'm not currently applying and in that mindset. If I was in that mindset I could have answered easier. - Since I had a lot of financial support I had the freedom to pick. But if I was able to go back and then that would have been important factors for choosing a program. - <back when I was in school or when I was in college>

Participant: [REDACTED]
 Date: 3/11/21
 Start Time: 6:11pm
 End Time: 6:40pm

Sent invitation through email.

Email	- Error add so “we” can better support a strong and committed... - 5-15 minute section is repetitive, remove on - Take out - Weird that you have two options to go into survey - Want to click on all the options to see what would happen ?- which would you have preferred? - Click here. Remove the first question. I prefer click here because I chose to do it.
First Impression	- Received an error on the first page.
Characteristics	- How convenient that the drop down lets you search - Stalled- was looking for “White” and found it later under “Caucasian or White” - Had to scroll up to remember which ones were yes/no when it got too long - Hesitated: “Teaching would be a second career” - think how to reword
Motivations	Likert scale- “damn that’s a long list” - For “I felt like sped would be challenging work” - would want a neutral response because I had no idea (also needed to scroll to look at original responses) - also neutral Perspective back then: - Chose 4 Most influential - I see it gave me my four choices. It was my calling.
Preferences	- Need to read the introduction paragraph again (too long or complex) - Oh! (question about salary) - Looking at all the options - Skills trainer, PPT are other types of positions too - Licensure specialization- need to remove capital D in first option

	- Is cohorted a word? I've never heard that. Only the word "cohort" - Why are the key words different colors? Red, yellow, blue? - I would reword it is "how important were the following to you?" Under "have a mentor in the classroom" - need clarification - mentor for what? Mentor for student teaching, mentor for the program?" Mentor outside of the classroom, not sure what that means. Not sure about these at all. I am clicking "essential" because I am assuming that it must be important. Partnering with DOE schools? What does this mean? In what way? Final Page: - First one is too wordy and redundant, "program" twice - "Special education licensure only" reads a little funny Problem: for the "not important", it seems like you can just leave it at that, but it actually won't record it until you click it. Thank you- capital R in the thank you message.
Other: Technicalities	- Error in the beginning - Likert scale at the end.
Overall Impression	- Wording in email can be more intentional - Remove the inserted question - "Click here to begin the survey" would be better wording - Use the orange color to highlight words Not stressful Short, quick survey Other than the few that was pointed out, it was clear.

Appendix H. Survey Instrument



Full consent form: bit.ly/someonespecialconsentform
About this project: <https://someonespecialforstudents.com/research-project/>

For the purposes of this survey, please think back to when you were first applying to the program. Who were you, why were you thinking about pursuing a licensure program in special education, and what kind of program were you looking for? This survey has been designed to try and capture those three topics! Thank you in advance for your participation!

1. Permission status to take part in this research survey (Select one option)

[Please consider providing a response. This information will be helpful for survey administrators.]

- ☐ I AGREE to participate in this survey
- ☐ I DO NOT AGREE to participate in this survey

NOTE : IF ANSWER TO Q1 is

I AGREE to participate in this survey Go to Page No. 2

I DO NOT AGREE to participate in this survey Stop, you have finished the survey

If Did Not Answer Then Go to Page No. 2



Part I: Getting to Know You

This section will go over basic characteristics to help us understand the types of people who are most interested in this career. All information will be kept confidential and will only be reported in summary form.

10. At the time you were applying to the teacher preparation program, besides student responsibilities, which of these additional responsibilities applied to you? (Check all that apply)

- ☐ I worked a part-time job.
- ☐ I worked a full-time job.
- ☐ I had a spouse.
- ☐ I had a child/children.
- ☐ None of the above.
- ☐ Prefer not to answer.

11. Ethnicity* (Choose one)

If you identify as more than one ethnicity, please select the first option: "Mixed Ethnicity (2 or more)" and then you will be directed to select all ethnicity options that apply to you. (Select one option)

Tip: *Categories shown represent those used on Hawaii DOE student ethnicity data reports

- ☐ Mixed Ethnicity (2 or more)
- ☐ American Indian or Alaska Native
- ☐ Asian Indian
- ☐ Black or African American
- ☐ Chinese
- ☐ Filipino
- ☐ Guamanian or Chamorro
- ☐ Native Hawaiian
- ☐ Japanese
- ☐ Korean
- ☐ Mexican
- ☐ Portuguese
- ☐ Puerto Rican
- ☐ Samoan or Tongan
- ☐ Vietnamese
- ☐ White or Caucasian
- ☐ Other
- ☐ Prefer not to answer

NOTE : Answer the below question only if answer to Q#11 is Mixed Ethnicity (2 or more) OR Other

12. Mixed Ethnicity (Select all)

- ☐ American Indian or Alaska Native
- ☐ Asian Indian
- ☐ Black or African American
- ☐ Chinese
- ☐ Filipino
- ☐ Guamanian or Chamorro
- ☐ Hawaiian or Part Hawaiian
- ☐ Japanese
- ☐ Korean
- ☐ Mexican
- ☐ Portuguese
- ☐ Puerto Rican
- ☐ Samoan or Tongan
- ☐ Vietnamese
- ☐ White or Caucasian
- ☐ Prefer not to answer
- ☐ Other (Please specify) _____

13. How long have you lived in Hawaii? (Select one option)

- ☐ Since birth
- ☐ Since elementary school
- ☐ Since middle school
- ☐ Since high school
- ☐ Since college
- ☐ After college
- ☐ I have never lived in Hawaii
- ☐ I grew up in Hawaii but do not currently live in Hawaii
- ☐ Prefer not to answer

14. Which of the following applied to you at the time you were applying to the program?

	Yes	No	Prefer not to answer
(a) I have had family member(s) who are teachers.	☐	☐	☐
(b) I have had family member(s) who are special education teachers.	☐	☐	☐
(c) I have had family member(s) who have a disability.	☐	☐	☐
(d) I have had close non-family relationships with individuals with disabilities.	☐	☐	☐
(e) I have had a child with a disability.	☐	☐	☐
(f) I have been identified as having a disability.	☐	☐	☐
(g) I have had previous experiences with individuals with disabilities when I was in school (K-12).	☐	☐	☐
(h) I have had previous work or volunteer experiences with individuals with disabilities prior to applying to the program.	☐	☐	☐
(i) I was already working at a school at the time I was applying to the program.	☐	☐	☐
(j) I consider myself spiritual/religious.	☐	☐	☐
(k) Growing up I had always wanted to become a teacher.	☐	☐	☐
(l) Growing up I had never thought I would become a teacher.	☐	☐	☐
(m) Teaching would be a second career for me.	☐	☐	☐



Part II: Interest in Teaching Special Education

This section will ask questions to help understand motivations and how or why people develop an interest in the special education teaching career.

15. When did you first consider becoming a teacher (in general)? (Select one option)

- ☐ As long as I can remember
- ☐ During elementary school
- ☐ During middle school
- ☐ During high school
- ☐ During college
- ☐ After college
- ☐ Prefer not to answer

16. When did you first consider becoming a **special education teacher**? (Select one option)

- ☐ As long as I can remember
- ☐ During elementary school
- ☐ During middle school
- ☐ During high school
- ☐ During college
- ☐ After college
- ☐ Prefer not to answer

17. Overall, my family, friends, and/or colleagues were... (Select one option)

- ☐ supportive of my interest in becoming a special education teacher.
- ☐ somewhat supportive of my interest in becoming a special education teacher.
- ☐ not supportive of my interest in becoming a special education teacher.
- ☐ Prefer not to answer.

18. At the time you were applying, how strongly would you have agreed or disagreed with these statements?

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Prefer not to answer
(a) I felt I had the traits and characteristics to make a good special education teacher.	☐	☐	☐	☐	☐	☐
(b) I felt teaching special education would be well suited to my skills and abilities.	☐	☐	☐	☐	☐	☐
(c) I felt my previous experiences prepared me for becoming a good special education teacher.	☐	☐	☐	☐	☐	☐
(d) I felt I already had a lot of knowledge in the field of special education and individuals with disabilities.	☐	☐	☐	☐	☐	☐
(e) I felt being a special education teacher would be challenging work.	☐	☐	☐	☐	☐	☐
(f) I felt being a special education teacher would be rewarding work.	☐	☐	☐	☐	☐	☐
(g) I felt teaching special education would provide a good income.	☐	☐	☐	☐	☐	☐
(h) I felt I would be well-respected as a special education teacher.	☐	☐	☐	☐	☐	☐
(i) Overall, I had positive experiences in school (K-12).	☐	☐	☐	☐	☐	☐
(j) I have had good teachers as role models.	☐	☐	☐	☐	☐	☐

19. If offered both types of positions, which would have been your first choice? (Select one option)

- ☐ General Education position
- ☐ Special Education position
- ☐ Prefer not to answer

20. Which of these statements, if any, would you say had influenced your personal motivation(s) to pursue licensure in special education? (Select all that apply)

- ☐ I felt like teaching special education was my calling.
- ☐ I enjoy working in small groups or one-to-one with students.
- ☐ I enjoy helping others in need.
- ☐ I enjoy a challenge.
- ☐ I enjoy the rewards that come with helping individuals with disabilities.
- ☐ Pursuing special education licensure would provide me with more job opportunities after graduation.
- ☐ Pursuing special education licensure would provide me with tuition support.
- ☐ Becoming a special education teacher would allow me to learn how to support my own children.
- ☐ Because of the need, I knew special education would help me get my foot in the door.
- ☐ The specialized skills and knowledge in special education would make me an asset to my community.
- ☐ I want to help address social inequities (e.g. disproportionality in special education by gender or ethnicity).
- ☐ I want to reverse social or cultural stigmas around disabilities.
- ☐ I want to help students with disabilities reach their full potential.
- ☐ I want to give back to my community by fulfilling a high area of need.
- ☐ I want to be an advocate for students with disabilities.

21. Of all the reasons you selected, which one would you say is the **most influential in your interest to pursue a special education licensure program? (Select one option)**

- ☐ I felt like teaching special education was my calling.
- ☐ I enjoy working in small groups or one-to-one with students.
- ☐ I enjoy helping others in need.
- ☐ I enjoy a challenge.
- ☐ I enjoy the rewards that come with helping individuals with disabilities.
- ☐ Pursuing special education licensure would provide me with more job opportunities after graduation.
- ☐ Pursuing special education licensure would provide me with tuition support.
- ☐ Becoming a special education teacher would allow me to learn how to support my own children.
- ☐ Because of the need, I knew special education would help me get my foot in the door.
- ☐ The specialized skills and knowledge in special education would make me an asset to my community.
- ☐ I want to help address social inequities (e.g. disproportionality in special education by gender or ethnicity).
- ☐ I want to reverse social or cultural stigmas around disabilities.
- ☐ I want to help students with disabilities reach their full potential.
- ☐ I want to give back to my community by fulfilling a high area of need.
- ☐ I want to be an advocate for students with disabilities.



Part III: Teacher Preparation Program Preferences

This final section of the survey helps determine which features of teacher preparation programs you would have preferred at the time you were applying. In other words, if we could have designed a program to fit your exact preferences, what would it have looked like?

22. How did you first learn about our program? (Select one option)

- ☐ I sought out information on my own.
- ☐ Someone referred me to the program.
- ☐ I learned about the program through media or advertisements.
- ☐ None of the above.
- ☐ Prefer not to answer.

23. Would you have preferred a part-time program or full-time program? (Select one option)

- ☐ part-time
- ☐ full-time
- ☐ no preference

NOTE : Answer the below question only if answer to Q#10 is I worked a part-time job. OR I worked a full-time job.

**24. The current starting salary for teachers in Hawaii is \$49,000-\$53,000 per year.
How did this relate to your salary at the time you were applying? (Select one option)**

Tip: This salary estimate does not include the current bonus differentials being given for special education and geographically hard-to-fill schools.

- ☐ more than what I was making at the time
- ☐ about the same of what I was making at the time
- ☐ less than what I was making at the time
- ☐ prefer not to answer

NOTE : Answer the below question only if answer to Q#24 is more than what I was making at the time OR about the same of what I was making at the time OR less than what I was making at the time OR prefer not to answer

25. Was your part-time or full-time job working in a school? (Select one option)

- ☐ No
- ☐ Yes - Substitute
- ☐ Yes - Emergency Hire Teacher
- ☐ Yes - Teacher
- ☐ Yes - Part Time Teacher
- ☐ Yes - Paraprofessional Tutor/Skills Trainer
- ☐ Yes - Educational Assistant
- ☐ Yes - Other
- ☐ Prefer not to answer

26. What is the maximum length of time you would have been willing to give to complete your ideal teacher preparation program? (Select one option)

- ☐ < 1 year
- ☐ 1 year
- ☐ 2 years
- ☐ 3 years
- ☐ 4 years
- ☐ 4+ years
- ☐ No preference

27. Which type of licensure program would you have preferred pursuing? (Select one option)

- ☐ special education licensure only
- ☐ general education licensure only
- ☐ dual licensure in general and special education
- ☐ no preference

28. Which **grade level** would you have preferred getting licensure in? (Select one option)

- ☐ early childhood (PreK-3)
- ☐ elementary (K-6)
- ☐ secondary (6-12)
- ☐ general licensure (K-12)
- ☐ No preference

29. Which special education licensure **specialization** would you have preferred? (Select one option)

- ☐ mild to moderate disabilities
- ☐ severe disabilities and autism
- ☐ special education (generalized)
- ☐ no preference

30. Which program **format** would you have preferred?

Hybrid = mix of online and face-to-face opportunities (Select one option)

- ☐ online coursework
- ☐ face-to-face coursework
- ☐ hybrid coursework
- ☐ no preference

31. Which program **structure** would you have preferred?

Cohorted = Candidates complete program as a group, classes are sequenced and offered together

Self-Paced = Candidates select courses each semester until requirements are filled (Select one option)

- ☐ cohorted
- ☐ self-paced
- ☐ no preference

32. **When** would you have preferred to take courses? (Select one option)

- ☐ weekdays
- ☐ weeknights
- ☐ weekends
- ☐ no preference

33. What would have been the **maximum amount** you would have been willing to pay to complete your ideal teacher preparation program? (Select one option)

- ☐ \$0
☐ \$1,000
☐ \$5,000
☐ \$10,000
☐ \$20,000
☐ \$30,000
☐ \$50,000
☐ Tuition costs were not a factor for me because I knew I had financial support (e.g. scholarships, grants, parents, college-fund).
☐ No preference
☐ Prefer not to answer

34. The Hawaii DOE has been funding **tuition stipends** in return for a service commitment to teach special education in Hawaii public schools. What would you have preferred? (Select one option)

- ☐ Stipend (tuition) funding in return for a service commitment to teach
☐ No funding with no commitment
☐ No preference
☐ Prefer not to answer

35. How important to you were the following?

	Not Important	Preferred	Essential	Prefer not to answer
(a) Having someone to assist with program information and applications	☐	☐	☐	☐
(b) Having someone to assist with securing a field placement in a school.	☐	☐	☐	☐
(c) Having someone to provide advising throughout the program.	☐	☐	☐	☐
(d) Having faculty who are highly specialized in their field.	☐	☐	☐	☐
(e) Having faculty who are recently experienced in classroom teaching.	☐	☐	☐	☐
(f) Having faculty from diverse cultural and ethnic backgrounds.	☐	☐	☐	☐
(g) Having a mentor in the classroom for field experience and student teaching.	☐	☐	☐	☐
(h) Having a mentor outside of the classroom to help with balancing various demands and providing emotional support.	☐	☐	☐	☐
(i) Having a program that has a close partnership with Hawaii DOE schools.	☐	☐	☐	☐
(j) Attending a reputable institution.	☐	☐	☐	☐

This final section is looking at the strength of your preferences in your decision to pursue a licensure program. In other words, which of those preferences were most important to you when choosing a licensure program?

Not important - you could have easily gone with the other options presented if needed

Preferred - you have a preference, but it wouldn't have stopped you from applying or enrolling

Essential - you needed this as part of the program otherwise you would not have enrolled

You must click on either not important, preferred, or essential for each question, otherwise your response will show up blank.

NOTE : Answer the below question only if answer to Q#23 is part-time OR full-time

36. How important was having a [check your answer to question number 23] program in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

37. How important would it have been to be able to work while pursuing a teacher preparation program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#26 is < 1 year OR 1 year OR 2 years OR 3 years OR 4 years OR 4+ years

38. How important was it to you to be able to finish the program in [check your answer to question number 26]? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#3 is PBSPED OR MEDT

39. How important was it to be able to earn a degree while pursuing a teaching license? (Select one option)

Tip: Some licensure programs are certificates, which do not lead to a degree. Would you be okay pursuing a certificate program, or was it important that you earned a degree if you were going to pursue a teacher preparation program?

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#27 is special education licensure only OR general education licensure only OR dual licensure in general and special education

40. How important was obtaining [check your answer to question number 27] in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#28 is early childhood (PreK-3) OR elementary (K-6) OR secondary (6-12) OR general licensure (K-12)

41. How important was getting licensed at the [check your answer to question number 28] level in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#29 is mild to moderate disabilities OR severe disabilities and autism OR special education (generalized)

42. How important was specializing in [check your answer to question number 29] in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#30 is online coursework OR face-to-face coursework OR hybrid coursework

43. How important was doing a(n) [check your answer to question number 30] program in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#31 is cohorted OR self-paced

44. How important was having a [check your answer to question number 31] program in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#32 is weekdays OR weeknights OR weekends

45. How important was being able to take courses on [check your answer to question number 32] in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#33 is \$0 OR \$1,000 OR \$5,000 OR \$10,000 OR \$20,000 OR \$30,000 OR \$50,000 OR Tuition costs were not a factor for me because I knew I had financial support (e.g. scholarships, grants, parents, college-fund). OR No preference

46. How important were tuition costs being less than [check your answer to question number 33] in your decision-making process to pursue a program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

NOTE : Answer the below question only if answer to Q#34 is Stipend (tuition) funding in return for a service commitment to teach

47. How important would having the DOE tuition stipend be in pursuing a special education teacher preparation program? (Select one option)

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1 | 2 | 3 |
| ☐ | ☐ | ☐ |
| Not
Important | Preferred | Essential |

48. Last question! What is your current status* in regards to pursuing licensure?

**Your program/interest does not have to be affiliated with UH Manoa. This is in reference to your overall status. (Select one option)*

- ☐ I have already applied/enrolled/graduated from a teacher licensure program.
- ☐ I am still interested in becoming licensed but have not yet applied/enrolled in a program.
- ☐ I am no longer interested in pursuing becoming a teacher.
- ☐ Prefer not to answer

Appendix I. Consent Form



University of Hawai'i Consent to Participate in a Research Project

Janet Kim, Student Investigator

Project title: Understanding the Special Education Teacher Pipeline in Hawaii

Aloha! My name is Janet Kim and you are invited to take part in a research study. I am a graduate student at the University of Hawai'i at Mānoa in the Department of Special Education. As part of the requirements for earning my graduate degree, I am doing a research project.

What am I being asked to do?

If you participate in this project, you will be asked to fill out an electronic survey. If you prefer to complete a mail-based version or respond over the phone, you may opt-in to an alternative format at <http://someonespecialforstudents.com/research-project>

Taking part in this study is your choice.

Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you. If you would like to opt-out of participating in this project, please complete the form on the project website: <http://someonespecialforstudents.com/research-project>

Why is this study being done?

The purpose of this project is to better understand who demonstrates interest in a special education teacher career and why. In addition, this survey gathers information related to your personal program preferences to determine if program design impacts enrollment outcomes. Together, this information will inform recruitment and programmatic decision-making, so we can better address the special education teacher shortage in Hawai'i. I am asking you to participate because you started an application to one of our special education teacher licensure programs at the University of Hawai'i at Mānoa between 2015 and 2020.

What will happen if I decide to take part in this study?

The survey will consist of about a series of multiple-choice questions, which should take about 5-15 minutes to complete. The survey questions will include questions like, "When did you first become interested in teaching" and "Would you prefer to complete a part-time or full-time program? How important is this preference in your decision-making process to pursue a program?"

What are the risks and benefits of taking part in this study?

I believe there is little risk to you for participating in this research project. If you become stressed or uncomfortable during the survey you can skip the question, select "prefer not to answer", or take a break. You can also stop taking the survey or you can withdraw from the project altogether.

There will be no direct benefit to you for participating in this survey. The results of this project may help improve recruitment of more special education teachers, leading to better outcomes for students with disabilities in Hawai'i.



University of Hawai'i
Consent to Participate in a Research Project
Janet Kim, Student Investigator

Project title: Understanding the Special Education Teacher Pipeline in Hawaii

Confidentiality and Privacy:

All survey responses will remain confidential. I will keep all study data secure in a locked filing cabinet in a locked office/encrypted on a password protected computer. Only my University of Hawai'i advisor and I will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawai'i Human Studies Program has the right to review research records for this study.

Compensation:

You will not be compensated for your participation in this research study.

Future Research Studies:

Even after removing identifiers, the data from this study will not be used or distributed for future research studies. However, research finding summaries may be shared with faculty to inform future program planning.

Questions: If you have any questions about this study, please call or email me at 808.726.0054 & janetmc@hawaii.edu. You may also contact my faculty advisors, Dr. Cecily Ornelles, at 808.956.4460 & cecily@hawaii.edu and Jon Yoshioka at 808.956.7989 & jonyoshi@hawaii.edu. You may contact the UH Human Studies Program at 808.956.5007 or uhirb@hawaii.edu to discuss problems, concerns and questions, obtain information, or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <http://go.hawaii.edu/jRd> for more information on your rights as a research participant.

To Access the Survey: To access the survey directly, please use the link sent to you through the email address listed on your previous application to the program. To request a new link or update your email address, please contact janetmc@hawaii.edu.

Responding to the first question in the survey indicates your consent to participate in this study.

Please print or save a copy of this page for your reference.

Mahalo!

Appendix J. Coded Survey Days with P-Values

Quest Section	Domain	Sub-domain	Topic/Item	0	1	2	3	4	Gender	Under 26	Locale	Ethnic Grps	Dual Status
48	Characteristics	Enrollment	Current Status	Enrolled/Graduated	Still Interested	Not Interested							0.000
4	Characteristics	Gender	Gender	Female	Male				0.490				0.123
6	Characteristics	Age	Under 26	<26	26+				0.282	0.000			0.024
10	Characteristics	Age	NT Factors (PT job, FT job, spouse, c/o)	0-1	2-4				0.735	0.160			0.448
7	Characteristics	Locale	Locale (w/o Non-Hawaii)	Urban	Oahu - rural	Neighbor Island			0.282	0.006	N/A		0.776
11	Characteristics	Ethnicity	Ethnic Groups	W	J	NH	F						0.524
13	Motivations	Socialization	Social Disillusion & Infr. Family Teachers	No	Yes				0.592	0.039	0.217	0.019	0.515
14.a	Motivations	Socialization	Social Disillusion & Infr. Family SPED Teachers	No	Yes				0.220	0.018	0.034	0.423	0.492
14.b	Motivations	Socialization	Social Disillusion & Infr. Family Disability	No	Yes				0.921	0.405	0.114	0.743	0.355
14.c	Motivations	Socialization	Social Disillusion & Infr. Non-family Disability	No	Yes				0.473	0.821	0.716	0.233	0.888
14.d	Motivations	Socialization	Social Disillusion & Infr. Child Disability	No	Yes				0.092	0.001	0.469	0.400	0.942
	Motivations	Socialization	Social Disillusion & Infr. Social Disillusion	No	Yes				0.213	0.054	0.456	0.549	0.182
16	Motivations	Socialization	Social Disillusion & Infr. Support	not supportive	somewhat supp	supportive			0.413	0.744	0.011	0.444	0.285
14.e	Motivations	Socialization	Prior Teaching & Learnir Self Disability	No	Yes				0.005	0.146	0.822	0.775	0.840
14.f	Motivations	Socialization	Prior Teaching & Learnir School Exp w/Disability	No	Yes				0.924	0.268	0.663	0.189	0.301
14.g	Motivations	Socialization	Prior Teaching & Learnir Work Exp w/Disability	No	Yes				0.489	0.498	0.704	0.688	0.195
14.h	Motivations	Socialization	Prior Teaching & Learnir Worked at school	No	Yes				0.266	0.000	0.172	0.055	0.162
14.i	Motivations	Socialization	Prior Teaching & Learnir Religious	No	Yes				0.000	0.024	0.559	0.001	0.831
	Motivations	Socialization	Prior Teaching & Learnir Prior TL	No	Yes				0.086	0.352	0.694	0.833	0.687
18h	Motivations	Socialization	Prior Teaching & Learnir Positive school exp	No	Yes				0.347	0.885	0.756	0.129	0.921
18i	Motivations	Socialization	Prior Teaching & Learnir Good Teachers	No	Yes				0.425	0.504	0.150	0.286	0.066
17	Motivations	Self Perceptions	Traits and characteristics	Agree	Neutral	Disagree			0.382	0.024	0.392	0.251	0.705
18a	Motivations	Self Perceptions	Skills and abilities.	Agree	Neutral	Disagree			0.686	0.021	0.876	0.219	0.935
18b	Motivations	Self Perceptions	Previous exp	Agree	Neutral	Disagree			0.097	0.001	0.929	0.898	0.754
18c	Motivations	Self Perceptions	SPED knowledge	Agree	Neutral	Disagree			0.058	0.040	0.646	0.645	0.629
	Motivations	Self Perceptions	Self Perceptions	Positive SP	Neutral	Negative SP			0.271	0.001	0.370	0.301	0.361
18d	Motivations	Task Perceptions	Challenging (Reversed Coding)	Disagree	Neutral	Agree			0.297	0.406	0.297	0.116	0.053
18e	Motivations	Task Perceptions	Rewarding	Agree	Neutral	Disagree			0.738	0.707	0.459	0.009	0.057
18f	Motivations	Task Perceptions	Good income	Agree	Neutral	Disagree			0.216	0.066	0.050	0.023	0.177
18g	Motivations	Task Perceptions	Well respected	Agree	Neutral	Disagree			0.110	0.598	0.139	0.172	0.846
24	Motivations	Task Perceptions	Salary	More than before	Same	Less			0.217	0.215	0.527	0.145	0.833
	Motivations	Task Perceptions	Balanced Collapsed (challenging vs r More Rewarding)	Positive	Balanced	More Challenging			0.778	0.030	0.669	0.311	0.160
	Motivations	Task Perceptions	Task Perceptions	Positive	Balanced (0)	Negative			0.473	0.316	0.943	0.195	0.501
19	Motivations	Values	Calling	0 - not selected	1 - selected				0.791	0.771	0.208	0.047	0.038
20	Motivations	Values	Small groups	0 - not selected	1 - selected				0.998	0.171	0.134	0.569	0.026
20	Motivations	Values	Helping others in need	0 - not selected	1 - selected				0.351	0.651	0.186	0.341	0.086
20	Motivations	Values	Enjoy challenge	0 - not selected	1 - selected				0.628	0.662	0.875	0.094	0.372
20	Motivations	Values	Enjoy rewards helping disabilities	0 - not selected	1 - selected				0.078	0.288	0.557	0.383	0.112
	Motivations	Values	Intrinsic	No	Yes				0.541	0.726	0.392	0.344	0.108
20	Motivations	Values	More job opportunities	0 - not selected	1 - selected				0.498	0.092	0.142	0.008	0.130
20	Motivations	Values	Tuition support	0 - not selected	1 - selected				0.148	0.032	0.139	0.123	0.062
20	Motivations	Values	Support own children	0 - not selected	1 - selected				0.081	0.524	0.044	0.365	0.811
20	Motivations	Values	Foot in the door	0 - not selected	1 - selected				0.377	0.282	0.053	0.504	0.640
20	Motivations	Values	Community asset	0 - not selected	1 - selected				0.850	0.607	0.070	0.043	0.347
	Motivations	Values	Personal Utility	No	Yes				0.433	0.782	0.261	0.100	0.079
20	Motivations	Values	Social inequities	0 - not selected	1 - selected				0.460	0.247	0.968	0.183	0.109
20	Motivations	Values	Social or cultural stigma	0 - not selected	1 - selected				0.203	0.016	0.101	0.781	0.114
20	Motivations	Values	Reach potential	0 - not selected	1 - selected				0.927	0.101	0.073	0.954	0.018

Questi Section	Domain	Sub-domain	Topic/Item	0	1	2	3	4	Gender	Under 26	Locale	Ethnic Grps	Dual Status
20	Motivations	Social Utility	Fulfill high area of need	0 - not selected	1 - selected				0.033	0.734	0.079	0.073	0.864
20	Motivations	Social Utility	Advocate	0 - not selected	1 - selected				0.670	0.019	0.211	0.387	0.000
21	Motivations	Social Utility	Social Utility	No	Yes				0.399	0.257	0.187	0.049	0.019
21	Motivations	Social Utility	Primary Motivation	Intrinsic	Personal Utility	Social Utility			0.634	0.302	0.526	0.782	0.185
21	Motivations	Social Utility	Total Motivations	1-5	6-10	11-15			0.268	0.291	0.059	0.571	0.014
14.j	Motivations	Onset/Fallback	Always Wanted to Teach	No	Yes				0.408	0.030	0.181		0.506
14.k	Motivations	Onset/Fallback	Never Wanted to Teach	No	Yes				0.439	0.374	0.108	0.089	0.222
14.l	Motivations	Onset/Fallback	Second Career	No	Yes				0.923	0.000	0.840		0.882
14.m	Motivations	Onset/Fallback	Onset Teaching	Before College	During College	After College			0.399	0.000	0.419	0.009	0.136
15	Motivations	Onset/Fallback	Onset SPED Teaching	Before College	During College	After College			0.302	0.000	0.170	0.020	0.935
18j	Motivations	Onset/Fallback	First choice	GenEd	SPed				0.925	0.173	0.649	0.003	0.104
23	Preferences	Product	Time commitment	No Pref	PT	FT			0.608	0.031	0.587	0.331	0.021
26	Preferences	Product	Max Length	No Pref	1 year or less	2 years	3 or more years		0.590	0.021	0.323	0.232	0.992
27	Preferences	Product	Program type	No Pref	SPED	GENED	DUAL		0.020	0.010	0.861	0.061	0.176
28	Preferences	Product	Grade level	No Pref	General	ECE	ELEM	SEC	0.000	0.666	0.603	0.714	0.567
29	Preferences	Product	Specialization	No Pref	General	MM	SA		0.413	0.048	0.599	0.184	0.742
36	Preferences	Product	Imp FT or PT	Not Important	Preferred	Essential			0.002	0.513	0.357	0.523	0.074
38	Preferences	Product	Imp Program Length	Not Important	Preferred	Essential			0.956	0.008	0.677	0.091	0.136
40	Preferences	Product	Imp License Type (program type)	Not Important	Preferred	Essential			0.712	0.131	0.063	0.048	0.443
41	Preferences	Product	Imp Grade Level	Not Important	Preferred	Essential			0.277	0.580	0.342	0.333	0.268
42	Preferences	Product	Imp Specialization	Not Important	Preferred	Essential			0.250	0.350	0.324	0.201	0.628
33	Preferences	Price	Max cost	No Pref/costs <10,000	10,000 >10,000				N/A	0.000	0.027	0.451	0.006
34	Preferences	Price	Stipend preferences	No Pref	No	Yes			0.700	0.017	0.257	0.998	0.229
46	Preferences	Price	Imp Cost	Not Important	Preferred	Essential			0.685	0.955	0.114	0.345	0.043
47	Preferences	Price	Imp Stipends	Not Important	Preferred	Essential			0.618	0.006	0.008	0.499	0.000
25	Preferences	Place	DOE position	No Pref	Yes				0.364	0.021	0.004	0.379	0.614
30	Preferences	Place	Format	No Pref	Online	F2F	Hybrid		0.747	0.000	0.510	0.076	0.004
32	Preferences	Place	When (time of course offerings)	No Pref	Weekdays	Weeknights	Weekends		0.250	0.000	0.013	0.871	0.307
37	Preferences	Place	Imp Work	Not Important	Preferred	Essential			0.159	0.313	0.291	0.574	0.694
43	Preferences	Place	Imp Format	Not Important	Preferred	Essential			0.425	0.361	0.172	0.036	0.644
45	Preferences	Place	Imp When	Not Important	Preferred	Essential			0.210	0.617	0.214	0.083	0.363
22	Preferences	Promotion	Referral	on own	referred	media ads			0.496	0.259	0.020	0.534	0.178
35a	Preferences	People	Recruitment specialist	Not Important	Preferred	Essential			0.428	0.054	0.166	0.240	0.298
35b	Preferences	People	Placement coordinator	Not Important	Preferred	Essential			0.605	0.139	0.089	0.018	0.214
35c	Preferences	People	Advisor	Not Important	Preferred	Essential			0.967	0.784	0.240	0.681	0.005
35d	Preferences	People	Specialized Faculty	Not Important	Preferred	Essential			0.038	0.456	0.508	0.173	0.046
35e	Preferences	People	Recent Teaching Exp	Not Important	Preferred	Essential			0.530	0.354	0.294	0.049	0.149
35f	Preferences	People	Diverse Faculty	Not Important	Preferred	Essential			0.154	0.010	0.322	0.174	0.035
35g	Preferences	People	Classroom Mentor	Not Important	Preferred	Essential			0.950	0.044	0.034	0.215	0.152
35h	Preferences	People	MUSE Mentor	Not Important	Preferred	Essential			0.492	0.680	0.858	0.078	0.005
35i	Preferences	People	DOE Partnership	Not Important	Preferred	Essential			0.042	0.228	0.437	0.122	0.075
35j	Preferences	People	Imp People (Collapsed)	Avg = 13.9	Low (0-12)	Med (13-15)	High (16-18)		0.857	0.147	0.073	0.003	0.024
31	Preferences	Process	Structure	No Pref	Cohorted	Self-Paced			0.513	0.331	0.672	0.830	0.059
44	Preferences	Process	Imp Structure	Not Important	Preferred	Essential			0.843	0.471	0.308	0.181	0.209
35j	Preferences	Physical Evidence	Reputable Institution	Not Important	Preferred	Essential			0.171	0.231	0.867	0.295	0.002
39	Preferences	Physical Evidence	Imp Degree* (Grad only)	Not Important	Preferred	Essential			0.162	0.067	0.260	0.035	0.313
Preferences			Program Fit Collapsed	Not Good Fit (0-5)	Good Fit (5-6)	Good Fit (6-7)	Good Fit (7-8)		0.075	0.077	0.590	0.100	0.191

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