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Use of a Theoretical Model to Evaluate and Strategically Scale-Up Midwifery Education and Workforce

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An abstract of
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Abstract

Use of a Theoretical Model to Evaluate and Strategically Scale-Up
Midwifery Education and Workforce
By Kathryn Woeber

Introduction
In the U.S., a scale-up and redistribution of midwives can assist in reversing an increasing rate of maternal mortality and persistent reproductive health disparities. As the growing profession is challenged to integrate and benefit from students and midwives with diverse background experiences, ethnicities, and professional interests, building a solid body of knowledge about the workforce will facilitate more strategic recruitment, preparation, distribution, and retention of midwives.

Methods
This cross-sectional research used an online survey, developed using the framework of Social Cognitive Career Theory, to contact early-career midwives through the ACNM listserv and social media during the fall of 2016. Statistical analysis of 244 completed surveys allowed for discovery and linkage of data related to the following constructs: personal characteristics, background and proximal contextual factors, educational experiences, employment situations, career perceptions, and future plans.

Results
Early-career midwives report generally high levels of support and success from midwifery education, high degrees of clinical engagement at work, and high scores on measures of job satisfaction, organizational commitment, and work performance. Midwives' career plans indicate possible workforce distribution concerns. A comparison of midwives with and without prior RN employment or health care certification found that groups used different strategies to achieve similar workforce outcomes, although those without prior RN experience complete their educations at a younger age, do so more quickly, and are more likely to have a dual major/degree. A comparison of under-represented minority (URM) and non-minority midwives revealed some concerning differences in the educational experiences and career plans of URM midwives, in terms of support for culture, passing the certification examination on first attempt, and planning to reduce clinical hours.

Discussion
Knowledge gained from this research has the potential to focus the efforts of those working in clinical, education, and policy arenas to scale-up midwifery. Midwifery educational programs should continue to use innovative strategies to accommodate different streams of students. Full professional integration of URM midwives will require cultural humility, as well as a revision of our professional structures. Optimal growth and distribution of the profession may be facilitated by strategic governmental funding for midwifery education, organizational support for precepting efforts, and further workforce research.

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Chapter 1: Introduction

For more than a decade, there have been persistent calls to improve the status of women and reproductive health care as a means of reducing high levels of maternal and newborn morbidity and mortality worldwide. The United Nations' Millennium Development Goal (MDG) 5, set in 2000 and supported by World Health Organization (WHO), UNICEF, and other international organizations, sought to reduce maternal mortality by 75% and to achieve universal access to reproductive health care by 2015 (*The Millennium Development Goals Report*, 2015). While access to care has improved significantly, the maternal mortality ratio is still 14 times higher in developing areas versus developed areas, and access to family planning still lags ("Sustainable Development Goals: 17 Goals to Transform Our World," 2017). In developing countries, disparities in maternal and newborn health outcomes persist across and within regions, a result of poor access to prenatal care and contraception, especially in rural areas (*The Millennium Development Goals Report*, 2015). In the United States, access disparities result from multiple factors, including socio-political factors disproportionately affecting the insurance coverage of minorities, inconsistent practice styles across regions and health systems, and from a worsening shortage of primary care providers (Francine Coeytaux, 2011; Maron, 2017). Further efforts at building and redistributing the women's health care workforce are required to eliminate preventable sickness and death both internationally and in the U.S., and through Sustainable Development Goal (SDG) 3—Good Health and Well-Being—the United Nations continues to call for universal access to reproductive health care ("Sustainable Development Goals: 17 Goals to Transform Our World," 2017).

It is generally recognized that more midwives are needed to address the challenges of an obstetric provider shortage and a growing population of reproductive-aged women (*The Millennium Development Goals Report*, 2015; Van Lerberghe, Manuel, Matthews, & Wolfheim, 2005). In the 2015 Series on Midwifery, The Lancet called for a scaling-up of the midwifery workforce to improve women's health in all countries with suboptimal outcomes, including in the U.S.(Homer et al., 2014), where health disparities and poor pregnancy outcomes persist, despite having the highest health care

expenditure in the world (*Comparative Price Report: Variation in Medical and Hospital Prices by Country*, 2013; M. MacDorman & Mathews, 2008; "March of Dimes 2013 Premature Birth Report Card: United States," 2014; Rosenthal, 2013). Studies consistently document that midwives provide high quality and cost-effective care for low- and moderate-risk mothers (Hatem, Sandall, Devane, Soltani, & Gates, 2009; Homer et al., 2014; Johantgen et al., 2012; Sandall, Soltani, Gates, Shennan, & Declan, 2013). In the U.S., the American Congress of Obstetricians and Gynecologists (ACOG) and the American College of Nurse-Midwives (ACNM) Joint Statement promotes a collaborative care model as optimal for the provision of high quality care (*Joint statement of practice relations between obstetrician-gynecologists and certified nurse-midwives/certified midwives*, 2011).

In 2015, the ACNM reiterated its strategic goal to increase the number and diversity of nurse-midwifery program graduates (*ACNM 2015-2020 Strategic Plan*; *Midwifery Education Trends Report*, 2015). Achieving this goal depends upon the capacity of educational programs to accommodate and prepare these students for practice. Through a variety of program innovations, the 38 U.S. nurse-midwifery programs increased the number of new graduates by 25% between 2000 and 2014 (*American Midwifery Certification 2016 Annual Report*, 2016; *Midwifery Education Trends Report*, 2015). As programs continue to expand and innovate, a greater understanding about the extent to which variations in individual student- and program-related characteristics influence program outcomes such as occupational self-efficacy[24], outcome expectations, and the career actions and plans of new midwives may improve the effectiveness of expansion and innovation. These understudied relationships have implications for educational programs and prospective nurse-midwives aiming to meet workforce needs, as well as for employers, health systems, and childbearing families who are most affected by the quality of the workforce.

This introductory chapter is comprised of four components. First, it details how the primary care provider shortage and mal-distribution contributes to the United States' high levels of maternal and newborn mortality, and explains why a scale-up of the midwifery workforce makes strategic sense in the pursuit of the U.N.'s Sustainable Development Goal 3, both internationally and in the

U.S. Second, it focuses on the U.S. midwifery workforce and the response of and challenges faced by U.S. midwifery education programs to meet workforce needs. Third, the chapter describes Social Cognitive Career Theory (R. Lent, Brown, & Hackett, 1994; R. W. Lent & Brown, 2013) and how this theory is used in the present research as a framework to increase our understanding of the factors that influence the overall effectiveness of midwifery educational programs to meet workforce needs. These factors include nurse-midwifery students' personal characteristics and educational experiences as well as their early-career employment, expectations, and plans. The chapter concludes with an introduction to the main objectives of this research, the focus of subsequent manuscripts.

Health Effects of the Shortage and Mal-distribution of Women's Health Providers

Despite international and domestic recognition of the adverse effects of the maternity workforce shortage on maternal health outcomes, an inadequate number and distribution of reproductive health care providers in the U.S. and abroad continues to result in unnecessary maternal and newborn morbidity and mortality (*Maternity care shortage areas: Expanding access to women's health*, 2015; *The Millennium Development Goals Report*, 2015). Complications during pregnancy or childbirth remain leading causes of death among adolescent girls and women in sub-Saharan Africa, where the risk of maternal death remains very high at 1 in 38 (versus 1 in 3,700 in developed countries) (*The Millennium Development Goals Report*, 2015). Although maternal mortality has declined by about two-thirds in Eastern Asia, Northern Africa and Southern Asia between 1990 and 2015, currently only half of pregnant women in high-burden developing regions receive the recommended minimum of four antenatal care visits, and 140 million women worldwide lack access to desired family planning measures (*The Millennium Development Goals Report*, 2015; "Sustainable Development Goals: 17 Goals to Transform Our World," 2017; The Partnership for Maternal). The United Nation's Partnership for Maternal Newborn Child Health has estimated that most of the 289,000 maternal deaths related to pregnancy and childbirth in 2013 could have been prevented if women had access to skilled routine and emergency care, including access to family planning, the presence of a skilled birth attendant during delivery, and emergency obstetric care (*The Millennium Development Goals Report*, 2015;

"Sustainable Development Goals: 17 Goals to Transform Our World," 2017; The Partnership for Maternal). The difficulty of building the physician workforce in developing areas like Sub Saharan Africa has been exacerbated by a consistent migration of their trained physicians to resource-rich countries like the U.S., a phenomenon known as the "brain drain" (*Nursing and Midwifery Workforce Management Guidelines*, 2003; Serour; Tankwanchi, Vermund, & Perkins, 2015).

Yet access to health resources is also a problem in high-resource nations. As of 2011, 40% of U.S. counties had no obstetrician-gynecologists (OB/GYNs), certified nurse-midwives (CNMs) or certified midwives (CMs) (*Maternity care shortage areas: Expanding access to women's health*, 2015). The American College of Obstetricians and Gynecologists (ACOG) has projected a 25% shortage of OB/GYNs by 2030 (*Midwifery Education Trends Report*, 2015), translating to a shortage of between 15,723 – 21,723 OB/GYNs by 2050 (W. F. Rayburn, Gant, Gilstrap, Elwell, & Williams, 2012). Furthermore, while the U.S. Census Bureau projects a 14% increase in the number of births per year by 2060, the number of obstetrics and gynecology (OB-GYN) residents has been static for 30 years (Bushman, 2015; *Midwifery Education Trends Report*, 2015). This provider shortage is expected to worsen over the next several decades due to increased OB/GYN specialization, fewer residency programs, provider retirement, and an increase in the proportion of female OB/GYNs (*Midwives: the answer to the US maternity care provider shortage*, 2015; W.F. Rayburn, 2011). The percentage of medical residents choosing subspecialties over primary care, including OB/GYN, has almost tripled since 2000 (7% in 2000, 20% in 2012) (W. F. Rayburn et al., 2012). Females now make up a majority of OB/GYN providers, but they are more likely than their male counterparts to work part time and to stop attending births at a younger age (*Midwives: the answer to the US maternity care provider shortage*, 2015; W.F. Rayburn, 2011).

The shortage and mal-distribution of providers in the U.S. is reflected in substandard reproductive health outcomes. Despite spending more on its highly medicalized maternity system than any other nation (*Comparative Price Report: Variation in Medical and Hospital Prices by Country*, 2013), the U.S. ranks 56th in infant mortality (H. K. Atrash, Johnson, Adams, Cordero, & Howse, 2006;

Floyd et al., 2013; MF MacDorman & Mathews, 2009; M. MacDorman & Mathews, 2008) and 48th in maternal mortality—worse than rates reported for other wealthy countries, and worse even than lower-resource nations such as Boznia-Herzegovina and Libya ("North America: United States," 2017). Despite MDG 5, which aimed to achieve universal access to reproductive health care by 2015, the U.S. maternal mortality ratio actually increased from 12 to 14 maternal deaths per 100,000 births between 1990 and 2015 (*The Millennium Development Goals Report*, 2015; "North America: United States," 2017). Although the rate of preterm birth has fluctuated recently (possible improvements may be resulting from a decreased rate of teen pregnancy), the March of Dimes continues to assign a grade of "C" to the U.S. Premature Birth Report Card—as it has for at least a decade—due to racial disparities; the rate among Black women is 48% higher than the rate for all other women in this country ("2016 Premature Birth Report Card: United States," 2016). Furthermore, the U.S. rate of preterm birth, at almost 12%, remains higher than that of any other industrialized country ("2016 Premature Birth Report Card: United States," 2016; Lynch & Dezen, 2013; "North America: United States," 2017).

Midwives and Scale-Up of the Midwifery Workforce as a Solution

An efficient approach to improving these statistics depends not only on ensuring access to reproductive health care, but on ensuring access to the appropriate types of care from the appropriate types of provider. As MDG 5 goals for reducing maternal mortality and providing universal access to reproductive health care are yet unrealized, the U.N. has, through the Sustainable Development Goals (SDGs) called for further efforts towards eliminating disparities and gaps in access to care (*The Millennium Development Goals Report*, 2015; "Sustainable Development Goals: 17 Goals to Transform Our World," 2017). As awareness about the international maternal health provider shortage has increased, the need to expand the midwifery workforce has been identified as an essential means of alleviating the deficit. More specifically, the U.N. Family Planning Association has called for partners, policymakers, and governments to increase their investment in midwifery services, to increase efforts towards ensuring a supportive work environment for midwives, and to

strengthen competency-based training for midwives ("Sustainable Development Goals: 17 Goals to Transform Our World," 2017). Through The Lancet's 2015 series on Midwifery, the potential impact of scaling up midwifery services was estimated to be the most effective means of reducing maternal, fetal, and neonatal deaths worldwide; an estimated 61% of these deaths can be prevented through universal coverage of midwifery interventions for maternal and newborn health (*Comparative Price Report: Variation in Medical and Hospital Prices by Country*, 2013; Homer et al., 2014; M. MacDorman & Mathews, 2008; "March of Dimes 2013 Premature Birth Report Card: United States," 2014; Rosenthal, 2013). The addition of family planning services and the inclusion of specialist care could avert a total of 83% of all maternal deaths, stillbirths, and neonatal deaths (Homer et al., 2014). Yet worldwide, only 42% of trained midwives work in the countries where over 90% of all maternal and newborn deaths and stillbirths occur ("Midwifery," 2017).

In the U.S., the proportions of provider types has been described as upside-down; compared to most other developed countries which have about 2.5 midwives per OB/GYN, the U.S. has about 4 OB/GYNs per midwife (Rowland, McLeod, & Froese-Burns, 2012), attending 2.4 million births to normal (low-risk) women and 1.5 million births to higher risk pregnancies in 2015 (Bushman, 2015). This imbalance is consistent with a greater social and economic commitment in the U.S. for high-tech obstetric and neonatal care—care that made cesarean section the most common major surgery in this country (which includes many unnecessary surgeries), and NICU care that has greatly improved survival among very premature and very ill babies—than for low-tech, preventive care aimed at maternal health (Martin, 2017; Pfuntner, Wier, & Stocks, 2006). Indeed, commitment to female reproductive health access remains uncertain in the U.S. As an example, Medicaid provides only 60 days of postpartum care for moms compared with 1 year of care for their babies (Martin, 2017). Prior to the administration of the Affordable Care Act in 2012, which requires maternity care coverage in addition to a variety of preventive services and screening, a minority of insurance policies covered maternity care ("Women's Health Insurance Coverage," 2017). Planned Parenthood, which provides contraception, screening tests, health education, and abortion services to hundreds of

thousands of women each year is at risk of being defunded during this political season ("Planned Parenthood at a Glance," 2017). In fact, all 3 programs, essential to the accessibility of reproductive health care in the U.S., are in jeopardy under the Trump presidency and Republican-dominated Congress in 2017 (Sanger-Katz, 2017). Although technological innovations have buffered some of the mortality that could have resulted from increasing neonatal morbidity, the need for effective preventive care strategies that benefits both women and their babies is recognized as vital for making further progress in improving the health of families (H. Atrash, Jack, & Johnson, 2008; Johnson et al., 2012-2014).

Also essential for a meaningful scale-up of women's health services in the U.S. are measures facilitating access for women living in rural areas who are more likely to represent ethnic minorities (Jablow, 2015) and who currently must travel long distances to access a provider for reproductive and maternal health care (*Health Disparities in Rural Women*, 2014). Although underrepresented minority providers are more likely to work in rural or low-resource settings (W. F. Rayburn, Xierali, Castillo-Page, & Nivet, 2016), only 18% of OB/GYNs and 9% of nurse-midwives are from underrepresented minorities (*Midwifery Education Trends Report*, 2015; W. F. Rayburn et al., 2016). For underrepresented providers in particular, increased funding for nurse-midwifery education might facilitate enrollment and subsequent redistribution of providers to low-resource settings. In general, midwifery students shoulder the majority of the costs of their education, as federal funding for the education of 2,400 midwifery students totals $2 million/year, or approximately $25/student, versus roughly $100,000/year for each OB/GYN resident (Bushman, 2015; Midwifery Education Trends Report, 2015). In 2014, National Health Service Corps scholarships and loan repayments funded 40 midwifery students in 2014 through 2 scholarships and 38 loan repayments, and Health Resources and Services Administration's Advanced Nursing Education Expansion Initiative provided traineeship funds for 66 midwifery students and 14/38 midwifery education programs (Midwifery Education Trends Report, 2015).

Increasingly, a scaling-up of midwifery services is recognized as an efficient strategy to improve access to care and related health outcomes. Studies consistently document that midwives are able to provide high quality and cost-effective care for low- and moderate-risk mothers (Hatem et al., 2009; Homer et al., 2014; Johantgen et al., 2012; Sandall et al., 2013), with equivalent or better outcomes for newborns, a lower use of technology for birth, and higher maternal satisfaction compared with obstetrician- or family practice physician-led models of care (Johantgen et al., 2012; Sandall et al., 2013). Nurse-midwives' training takes approximately 2 years and 54,000 U.S. dollars in 2015 (*Midwifery Education Trends Report*, 2015; *Midwives: the answer to the US maternity care provider shortage*, 2015), and allows for greater workforce agility—the ability of the workforce to respond efficiently and effectively to fill gaps in care—when compared with the training of OB/GYNs. OB/GYN preparation requires 4 years of medical school, 4 years of residency, and a year of internship, with medical school alone costing between 131,000 USD and 208,000 USD per medical student in 2015 (Bushman, 2015; *Graduate Medical Education that Meets the Nation's Health Needs*, 2014, July 29; *Tuition and Student Fees, First-Year Medical School Students 2014-2015*, 2015).

Even greater agility might be achieved with adoption of the Advanced Practice Registered Nursing (APRN) Consensus Model, which calls for advanced practice nurses, including CNMs, to be allowed to practice autonomously and to the full extent of their training, with governance by boards of nursing and without unnecessary regulatory barriers limiting practice and mobility (*Midwifery in the United States and the Consensus Model for APRN Regulation* 2011; Stanley, 2012). In the U.S., the ACOG and ACNM Joint Statement promotes a collaborative care model as optimal for the provision of high quality care (*Joint statement of practice relations between obstetrician-gynecologists and certified nurse-midwives/certified midwives*, 2011); both models of education should be supported if both types of providers are to be scaled up efficiently.

The Current State of U.S. Midwifery Workforce and Education

As of May 2015, the most recent available data show there were 11,194 CNMs and 97 CMs practicing in the U.S., attending 12% of all vaginal births and 8% of total births in 2014 ("Essential

Facts about Midwives," 2016). Ninety-four percent of midwife-attended births occurred in hospitals, and over 55% of working midwives were employed either by hospitals or physician practices ("Essential Facts about Midwives," 2016). Data from The U.S. Department of Health and Human Services (DHHS), Health Resources and Services Administration's (HRSA) National Sample Survey of Registered Nurses indicated that the average age for U.S. CNMs was 48 years in 2004 (Sipe, Fullerton, & Schuiling, 2009) and 50 years in 2008 (U.S. Department of Health and Human Services & Administration, 2017), and the 2010 ACNM Core Data Survey indicated a median age of 53 (range 23-85 years) (*The ACNM Core Data Survey*, 2010). However, ACNM's 2012 data reports a mean age of 51 (Fullerton et al., 2015). Earlier evidence of a "graying of the profession" may be leveling, likely due to the 25% increase in the number of new midwifery graduates (average age of 35 in 2012) between 2000 and 2014 (*American Midwifery Certification 2016 Annual Report*, 2016; *Midwifery Education Trends Report*, 2015). Most CNMs (70%) were employed full time and attended births (*The ACNM Core Data Survey*, 2010), although percentages may vary by state and setting.

Otherwise, data on nurse-midwives in the U.S. are lacking, aside from that reported in the following two workforce studies. In Connecticut in 2005, 74% of CNMs worked full time, while in Florida in 2001, approximately 68% worked full time (Holland & Holland, 2007; Jevitt & Beckstead, 2004). The Florida CNMs reported a 15% rate of underemployment (defined as fewer work hours or responsibilities than desired), citing a variety of contributing factors: competition from MDs, lack of MD sponsorship for hospital privileges, poor working conditions (too many hours, too little pay), and/or lack of a midwifery model of care (Jevitt & Beckstead, 2004). Outside the U.S., studies of midwives' burnout in Australia (2011) and the U.K. (2013) indicate that burnout increases with number of shifts, number of patients with psychosocial issues, and lack of autonomy, and that burnout is reduced by management support for work-life balance and by midwives' own self-care.(Mollart, Skinner, Newing, & Foureur, 2013; Yoshida & Sandall, 2013) Studies of European midwives explained a variety of influences on turnover, relating lower turnover to more experience (associated with less routine and more power), adequate work-life balance (including the ability to

manage family responsibilities), higher education (promotes career stability, but also increases marketability), opportunities for advancement, adequate pay, distributive justice (greater rewards for better performance, especially as compared with peers), positive work environment (involves quality of communication, role clarity, autonomy, and supervisor support), and job satisfaction (which is related to effective communication, adequate staffing, and high quality standards).(G. McCarthy, Tyrrell, & Cronin, 2002; Pugh, Twigg, Martin, & Rai, 2013)

Scale-up of the midwifery workforce requires a current and more complete characterization of the population of practicing midwives within the U.S. In 2015 the ACNM called for further research to better define and describe the projected need for midwives, based on current workforce demographics, work situations and preferences; clinical practice roles and relationships; capacity of the midwifery educational system; and factors influencing attrition (*Domains of inquiry for research studies on the CNM/CM workforce*, 2015). The call encouraged the collection of standardized "Midwifery Masterfile" data to help further characterize background characteristics, education, and employment, and to facilitate ongoing evaluation and comparison with the aim of adapting midwifery educational programs to workforce need (*Domains of inquiry for research studies on the CNM/CM workforce*, 2015).

Midwifery educational programs currently use a variety of strategies to meet workforce shortage and mal-distribution of providers. These strategies include increasing the number and types of programs, and increasing the number and types of students enrolled in programs. According to the 2015 Midwifery Education Trends Report, there have been 38 U.S. nurse-midwifery programs in the United States since 2010; although some programs have closed since that year, an equal number have opened. Through program growth and innovation, total midwifery program enrollment has increased significantly over those four years: 1,967 students enrolled in 2010, 2,212 in 2013, and 2,346 in 2014. The number of new midwifery graduates has increased correspondingly by 25% between 2000 and 2014, reaching a total of 583 new CNMs and CMs graduating in 2014 (*American Midwifery Certification 2016 Annual Report*, 2016; *Midwifery Education Trends Report*, 2015). Much of the increase in number of graduates is due to increased enrollment of students into six distance-based

programs and 16 partially distance programs, listed in Table 1 ("Midwifery education programs," 2017). These programs allow for higher numbers of students because clinical preceptor sites—the main bottleneck in increasing program capacity—are not as geographically limited as they are for campus-based programs. The remainder of programs are campus-based ("Midwifery education programs," 2017).

[Table 1]

While most nurse-midwifery programs are approximately two years in duration, they vary in pre-admission requirements (e.g., credentials and labor and delivery clinical experience), format, degrees offered, and clinical and mentorship opportunities available to students (Arbour, Nypaver, & Wika, 2015; Carr, 2015; Danhausen et al., 2015; A. M. McCarthy, 2015; *Midwifery Education Trends Report*, 2015; Munoz & Collins, 2015). The variety of options available facilitates program accessibility for students with different degrees of financial and scheduling flexibility, in addition to different types of preparation. Specifically, 19 of 38 midwifery programs ending with graduate nursing degrees allow non-nurse, bachelors-prepared admissions (*Midwifery Education Trends Report*, 2015), 6 offer fully distance learning, 16 offer partially distance learning, 2 offer CM (non-nursing midwifery degree), 33 offer post-graduate certificates, and 15 offer DNP (clinical doctorate) programs ("Pathways to Midwifery Education," 2017). Regardless of preparation, all midwifery graduates must earn a graduate degree or certificate, pass a national certification examination administered by the American Midwifery Certification Board (AMCB), and be licensed by their individual states. While CNMs are licensed in every state, CMs are licensed or authorized to practice in only four states ("Comparison of Certified Nurse-Midwives, Certified Midwives, and Certified Professional Midwives," 2014).

There is also increasing diversity among midwifery students (*Midwifery Education Trends Report*, 2015). Although 99% are women and most are white, the minority population increased from less than 5% of CNMs in 2004 (Sipe et al., 2009) to 19% in 2013 and 22% in 2014 (*Midwifery Education Trends Report*, 2015). Some notable increases include the following: American Indian/Alaskan Native

increased by 78%, Asian by 24%, Black/African American by 18%, Native American/Hawaiian by 250%, and Hispanic/Latino students increased by 16% (Sipe et al., 2009).

As the characteristics of students admitted to midwifery education programs have evolved, individual programs have developed innovative strategies to ensure competency of graduates while responding to some of the challenges presented by the changing student backgrounds and program designs. For example, increased use of simulation and use of standardized patients improves the performance and integration of skills by students prior to working with preceptors and actual patients in often scarce clinical sites (Lindsay Miller et al., 2015). Implementation of the clinical learning dyad model reduces the burden of teaching and mentorship by preceptors by integrating senior-to-junior student mentorship and collaboration (Cohen, Thomas, & Gerard, 2015). Inter-professional student-run free clinics allow for team training and enhanced understanding of professional roles and responsibilities (Danhausen et al., 2015). Volunteer doula programs increase student opportunities to learn labor support skills, increase familiarity with clinical jargon and routines, and provide mentoring for students even before they begin the midwifery portion of their academic training (Munoz & Collins, 2015). Thus, many program innovations are accommodations for shortages of clinical sites, preceptors, and faculty that also provide health care access for underserved populations.

Despite these innovations, the growth of midwifery educational programs has not kept pace with the increasing number of qualified applicants-- the most significant limiting factors being the availability of clinical preceptors and training sites (Bushman, 2015; Germano, Schorn, Phillippi, & Schuiling, 2014; *Midwifery Education Trends Report*, 2015). Precepting a midwifery student carries significant workload and financial cost (estimated at $24,000 per student) (Bushman, 2015) on the part of the preceptor. Yet, a recent survey showed that only 38% of CNM preceptors received any payment for training students (Germano et al., 2014). A standardized approach and pay scale for clinical training across programs is lacking, though some efforts are being made to incentivize midwifery preceptors. For example, the state of Georgia recently extended a "faculty preceptorship"

tax credit to midwifery preceptors if they are otherwise uncompensated ($750 per 160-hour rotation if the preceptor is an APRN, $1,000 per rotation if the preceptor is a physician—to a maximum of $10,000/year) ("Income tax; deduction for certain physicians, nurses, and physician assistants; delete and create new credit," 2016; *Midwives: the answer to the US maternity care provider shortage*, 2015). Nationally, the Graduate Nurse Education demonstration project allows for payment of precepting hospitals, partnered with accredited schools of nursing, under the Affordable Care Act—this modeled on graduate medical education program (which funds hospitals for education of residents), and could help midwifery education if expanded beyond the 5 hospitals currently involved ("Graduate Nurse Education Demonstration," 2017; *Midwifery Education Trends Report*, 2015). With the ACA under threat currently, this opportunity is in jeopardy.

In addition to clinical precepting, the ACNM cites increasing faculty shortages, in part due to non-competitive faculty salaries, as additional limitations on program capacity (*Midwifery Education Trends Report*, 2015). The overall U.S. nursing faculty shortage, at about 7% in 2014, is due to a general shortage of doctorally-prepared nurses, aging and retirement of existing faculty, and faculty salaries that do not always compensate at a rate higher than salaries for master's prepared midwives working in the clinical setting (Rosseter, 2015). According to Salary.com, the 2017 median salary for a master's prepared certified nurse-midwife working in a clinical setting is $102,330 (the range is generally between $94,087-$115,981), and the 2017 median salary for a doctorally-prepared nursing professor is $89,102 (with a wider range, $71,787-$130,796) ("Certified Nurse Midwife Salaries," 2017; "Professor- Nursing Salaries," 2017).

It is essential to gain an understanding of how variations in the characteristics of educational programs and in student characteristics (for example, age, prior RN experience, and personality) affect midwifery workforce in terms of provider numbers, their distribution and retention. In "The State of World's Midwifery 2014", the United Nations Population Fund (UNFPA), World Health Organization (WHO), and the International Confederation of Midwives (ICM) called for further data on the identity, status, salaries, and attrition of midwives (*The State of the World's Midwifery*, 2014).

Through its 2015 Midwifery Education Trends Report, the ACNM called for an increase in the capacity of midwifery educational programs as a means of building the midwifery workforce (*Midwifery Education Trends Report*, 2015). As part of its 2015 Issue Brief: Domains of Inquiry for Research Studies on the CNM/CM Workforce, the ACNM called for further analysis of midwifery workforce settings, responsibilities, salaries, career and job satisfaction, employment plans, educational funding, and factors leading to attrition(*Domains of inquiry for research studies on the CNM/CM workforce*, 2015). There is a need to evaluate these issues for the entire midwifery workforce. However, evaluating the employment aspirations and career actions of recently graduated midwives may provide greater insights to inform rapid adaptation of educational programs to better meet workforce needs. Gaps exist in workforce data for this population of recent graduates, and in knowledge of whether, and to what extent, personal, background, and learning experiences interact with early employment decisions and career plans.

Social Cognitive Career Theory

This research uses the Social Cognitive Career Theory (SCCT) model to frame the inquiry. Introduced by Robert Lent, Steven Brown, and Gail Hackett in 1994, SCCT was adapted from Bandura's Social Cognitive Theory to better understand three aspects of career development: the formation and development of career-related interests, decision-making related to academic and career options, and performance and persistence related to academic and occupational pursuits (R. Lent et al., 1994). The model, pictured in Figure 1, suggests that both inherent personal factors and acquired background contextual factors influence the learning experiences a person may access, depending on choice and availability. The quality and quantity of learning experiences affect work-related self-efficacy and outcome expectations, which in turn influence subsequent career-related options and pursuits. Social and environmental contextual influences further determine the person's performance expectations, options, and pursuits (R. Lent et al., 1994; R. W. Lent & Brown, 2013). While published versions of the model typically include career-related interests, goals, actions, and/or outcomes as endpoints, midwives' current career actions and future career plans are of primary

interest for this study; the model below is thus adapted (R. Lent et al., 1994; R. W. Lent & Brown, 2013).

[Figure 1]

Personal inputs include demographics, the physical ability to perform role requirements, and "internal cognitive and affective states, as well as physical attributes" that have psychological, social, and cultural significance (R. Lent et al., 1994). For example, age, sex, and ethnicity are background characteristics of nursing and midwifery students that are shown to correlate with attrition from academic programs (K. McLaughlin, Muldoon, & Moutray, 2010; Mulholland, Anionwu, Atkins, Tappern, & Franks, 2008; Pryjmachuk, Easton, & Littlewood, 2009). For this research, measurement of "grit"—trait-level perseverance and passion for long-term goals— is used to examine internal cognitive and affective states, as it is has been associated with educational attainment, number of career changes, surgeon burnout and sense of well-being, and medical resident attrition (Burkhart, Tholey, Guinto, Yeo, & Chojnacki, 2014; Duckworth & Quinn, 2009; K. McLaughlin, Moutray, & Muldoon, 2008; Salles, Cohen, & Mueller, 2014; Walker, Hines, & Brecknell, 2016).

Background contextual affordances include the supports and barriers that affect exposure and access to opportunities, choices, role models, education, and reinforcement of activities (R. Lent et al., 1994). For example, having RN work experience prior to matriculation may influence the learning opportunities available during matriculation (e.g., preceptor accessibility and quality of mentorship), types and amounts of learning experiences needed to develop levels of self-efficacy and outcome expectations, and employment options available upon graduation.

Learning experiences of interest for this study are those that may be influenced by educational program format (e.g., distance/online or campus-based), learning intensity (e.g., full-time, part-time, concurrent degree attainment), opportunities for repeated practice of skills (number of births attended as a student is the proxy indicator), quality of faculty and preceptor mentorship, and general academic and clinical success. According to the SCCT model, repeated exposure to learning activities and tasks—whether by observation or hands-on practice—influences self-efficacy (R. Lent

et al., 1994). All of these types of experiences reflect variations in midwifery educational programs that may influence professional expectations, opportunities, and choices.

Self-efficacy expectations answer the question "can I do this activity effectively", have a direct effect on activity goals and choices, and have been demonstrated to correlate with job satisfaction, organizational commitment, and role performance (R. Lent et al., 1994; Riggs, Warka, Babasa, Betancourt, & Hooker, 1994). Outcome expectations depend on personal performance accomplishments and vicarious learning, social learning (encouragement and persuasion), and physiologic states and reactions, and also correlate with job satisfaction, organizational commitment, and role performance (R. W. Lent & Brown, 2013; Riggs et al., 1994). Subsequent behaviors may include "content aspects" (e.g., the "what I am going to do") of career behavior such as occupational choices and plans, as well as "process aspects" (e.g., the "how I am going to do this") such as negotiation of transitions between roles, i.e., student to clinician, job searching, or self-management of daily work challenges (R. Lent et al., 1994, p. 557; R. W. Lent & Brown, 2013). Short- and longer-term content aspects will be important workforce outcomes measured in this research.

Contextual influences proximal to choice behavior includes those supports and barriers that may affect career choices. Of interest for this study are financial contribution to family income, educational loan obligations, educational scholarships and loan repayments, family caregiver commitments, time commuting for work, past midwifery role modeling, and family support for career.

SCCT has been used to guide a number of health career-related activities and research: In health research, the SCCT model has guided the teaching of mentorship competency skills in HIV researchers (Gandhi & Johnson, 2016); associating perceived research mentoring effectiveness with self-efficacy and academic outcomes among undergraduate researchers (Byars-Winston, Branchaw, Pfund, Leverett, & Newton, 2015); and examining the effect of an educational intervention on research self-efficacy, research outcome expectations, and research interest in dietitians (King et al., 2014). In medicine, the SCCT has been used to relate medical student trainees' characteristics, career

interests, career intentions, research self-efficacy, and performance (Bierer, Prayson, & Dannefer, 2015); develop guides to attract students to medical education (Blatt et al., 2013); and evaluate a program aimed at introducing medical students to academic careers (Coleman, Blatt, & Greenberg, 2012). In nursing, the SCCT model has guided confirmation of the career interest and career self-efficacy of undergraduate nursing students (compared to students with an undeclared major) (Fillman, 2015), and development of the Nurse Educator Scale, which measures students' intentions to become educators (Abou, McGrath, & Estes, 2013).

Thus, the SCCT model has been tested and proven useful for the health sciences, but has not yet been applied to research on midwives or advanced practice nurses. Application of this theory to nurse-midwifery education and early career development may assist nurse-midwifery programs in optimizing the size and distribution of the maternity care workforce within the United States and abroad.

For the purposes of this research, SCCT was applied to methodically characterize the personal, background, and learning factors that may be associated with career expectations, actions, and plans related to new midwives' integration into the midwifery workforce. Constructs of interest included were recent graduates' personal inputs (i.e., demographics, "grit", and personal health status), background contextual affordances (i.e., academic and occupational background prior to midwifery education), learning experiences (i.e., program characteristics including academic and clinical learning opportunities and engagement, preceptor and faculty mentorship, and academic and clinical performance), career goals (professional roles and settings), and career actions (current employment characteristics and practice environment quality). The model's constructs are presented with the study variables and psychometric tools in Table 2 below.

Research Strategy and Objectives

To advance knowledge of how constructs in the SCCT adapted model interact in the careers of early-career nurse-midwives, this research used a descriptive cohort strategy and involved a 78-question Survey Monkey® online questionnaire over two phases. The first phase was a pilot study,

in which seven working midwives completed a timed survey, and then critiqued each question for clarity and relevance. Based on this feedback, the survey was revised to minimize survey length (20-30 minutes maximum) while ensuring that the research aims were adequately addressed.

[Table 2]

The final survey included several validated questionnaires as well as additional items relevant to SCCT model constructs, as presented in Table 1. It was distributed in October 2016 through the ACNM email listserv and via snowball sampling on Facebook to the sample population of nurse-midwives graduating within 5 years of May 2016. In all, 255 CNMs who graduated from each of the 38 U.S. nurse-midwifery programs completed the survey.

The study's first aim was to *assess* ***how and to what extent recent nurse-midwifery graduates' personal inputs and background contextual affordances influence learning experiences.*** Specific research questions were:

> ***Question 1.1:*** *To what extent do person inputs, such as ethnicity, health/disability status, and "grit" relate to learning experiences within midwifery programs?*
>
> ***Question 1.2:*** *To what extent do prior education and employment influence the quantity and quality of learning experiences and mentorship?*

The section of the SCCT model relevant to these questions is represented in Figure 2, with each construct supported by related survey items.

[Figure 2]

Focusing on these relationships within the model allows for characterization of the personal and background factors potentially influencing midwives' academic and clinical learning choices and experiences. Descriptive data allow for a better understanding of who decides to enter into the midwifery profession, what types of programs they choose, and the quality of mentorship and quantity of clinical experiences available to students. Analysis of the relationships between the constructs in this area of the model might provide guidance for nurse-midwifery programs in terms of balancing admissions decisions with available didactic and clinical resources. For instance, there is

anecdotal evidence that midwifery students without prior work experience in nursing require more effort on the part of preceptors compared with those having such experience. This assumption can be directly examined, as well as other characteristics that may have greater influence on preceptor effort. Furthermore, as programs seek to diversity the midwifery workforce, they need to ensure that students' cultural needs are supported. This new knowledge may assist nurse-midwifery educational programs in ensuring that the variation in student backgrounds and academic choices is met with the adequate support and the types of appropriate options that are associated with a positive sense of self-efficacy and empowerment in recent graduates.

Aim 2 of this study was to ***assess how and to what extent recent nurse-midwifery graduates' learning experiences and proximal contextual influences determine occupational self-efficacy and outcome expectations.*** Specific research questions include:

> ***RQ2.1:*** *Is the format of the educational program (e.g., distance learning versus onsite) associated with a midwife's sense of self-efficacy or outcome expectations?*
>
> ***RQ2.2:*** *Is the intensity of the learning experience, i.e., full-time versus part-time or concurrent degree acquisition, associated with self-efficacy or outcome expectations?*
>
> ***RQ2.3:*** *How do the number of clinical experiences, especially births attended, correlate with self-efficacy and outcome expectations?*
>
> ***RQ2.4:*** *To what extent does mentorship by faculty and preceptors predict self-efficacy and outcome expectations?*
>
> ***RQ2.5:*** *To what extent do academic and clinical performance during school associate with self-efficacy and outcome expectations?*
>
> ***RQ2.6:*** *What are the relationships between contextual supports and barriers and occupational self-efficacy?*

The SCCT model suggests that if early career midwives are appropriately confident in their skills and abilities, career longevity and a stronger workforce may result. The SCCT model constructs and variables relevant to these questions is represented in Figure 3.

[Figure 3]

Aim 3 of this project was to examine the last section of the SCCT model as it applies to early-career nurse-midwives: ***assess how and to what extent recent nurse-midwifery graduates' occupational self-efficacy, outcome expectations, and proximal contextual influences impact their career actions and plans.*** Relevant research questions include:

RQ3.1: To what extent do CNMs feel challenged, empowered, supported, and incentivized with respect to the current work status?

RQ3.2: To what extent do CNMs' work expectations and contextual supports and barriers correlate with current employment, perceptions about current job environment, and future career plans. The SCCT model constructs and variables relevant to these questions is represented in Figure 4.

[Figure 4]

Manuscripts Deriving from SCCT Research

Manuscript 1 will address the three research aims and questions above by examining how differences in background contextual factors among midwifery students might influence those students' subjective and objective experiences, decisions, and plans throughout their education and employment. In addition to providing descriptive data about who enters into the midwifery profession with what types of prior experiences—contextual factors such as prior employment as an RN and prior certifications are of particular interest—exploration of the relationships between constructs will show whether and how these prior experiences influence the types of programs students choose, the degree of mentorship they experience from faculty and preceptors, the number of births they attend as students, their feelings of self-efficacy and empowerment, their work outcome expectations, their choices of employment, and their future career plans. Manuscript 1 further describes methodological strategies, findings, and possible implications of this inquiry.

Manuscript 2 is similar to manuscript 1, except that the independent variables of greatest interest are the personal factors—age, ethnicity, and "grit"—as they may influence educational and employment decisions.

Manuscript 3 is focused on aim 3 and its questions. It provides a description of how, and in what settings this entire cohort of nurse-midwives is employed, and it provides an analysis of some specific indicators of satisfaction with their current employment and plans for future employment. Furthermore, the nurse-midwives' self-efficacy, personal outcome expectations, and contextual supports and barriers are examined in relationship to their current employment situations as well as their future career plans.

The findings within these manuscripts provide important new knowledge about this subset of the profession with the longest-term potential for improving the reproductive health of women and their babies. Based on improved knowledge of who enters nurse-midwifery's preparation programs, programs might adjust their strategies for supporting students or their offerings for online, dual-major, or part-time options. Based on the description of nurse-midwifery student experiences and the impact of those on work attitudes and choices, educational and clinical resources may be purposefully redistributed to help minimize program attrition and to maximize board examination passing rates. Based on information about current employment—as well as job satisfaction and future work plans—practice agreements, organizational resources, and government or private incentives can be directed at optimal workforce distribution and longevity. Lastly, and hopefully, the model and strategies used for this project may provide a basis for further inquiry that can delve more deeply into these and other topics critical to developing the capacity of the nurse-midwifery profession.

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Table 1: Midwifery Education Program Options

Program	Campus-Based	Fully Distance	Partially Distance	DNP	MSN, MS, or MN	Post-Graduate Certificate	Masters Completion	BA/BS to RN/CNM	AD RN to CNM	CM
Baylor University	X			X						
Baystate Medical Center	X					X	X			
Bethel University		X			X					
California State University, Fullerton	X				X	X	X			
Case Western Reserve University	X				X	X	X	X	X	
Columbia University	X			X	X	X	X	X		
East Carolina University			X		X	X	X	X		
Emory University	X		X	X	X	X		X		
Frontier Nursing University		X			X	X	X		X	
Georgetown University		X	X		X		X			
Marquette University			X		X	X	X	X	X	
Midwifery Institute at Philadelphia University		X			X	X	X			X
New York University Rory Meyers	X				X	X	X			
Ohio State University			X		X	X		X		
Oregon Health Sciences University	X			X	X	X		X		
Rutgers Biomedical Health Sciences	X			X	X	X	X	X		
San Diego State University	X				X					
Seattle University	X			X		X		X		
Shenandoah University			X		X	X	X		X	
Stony Brook University		X		X	X	X	X			
SUNY Downstate Medical Center			X		X	X	X		X	X
Texas Tech University Health Sciences Center			X		X	X				
University of California at San Francisco	X				X	X	X	X		
University of Cincinnati		X			X			X		
University of Colorado Denver			X		X	X	X		X	

University of Illinois at Chicago			X	X		X		X	X	
University of Indianapolis			X		X	X				
University of Kansas School of Nursing			X	X		X				
University of Michigan			X	X	X	X	X	X	X	
University of Minnesota			X	X	X	X		X		
University of New Mexico	X				X	X				
University of Pennsylvania	X				X	X		X		
University of Pittsburgh	X			X				X		
University of Utah, College of Nursing	X			X		X				
University of Washington			X	X	X	X				
Vanderbilt University	X				X	X	X	X	X	
Wayne State University			X	X	X	X		X	X	
Yale University	X				X			X		

Table 2: Summary of SCCT constructs, questionnaire items, and psychometric tools used for the Midwifery Education and Workforce Survey.

Construct	Variables	Measurement Strategy
Personal Inputs	Age, sex, ethnicity Grit	Socio-demographic survey Short Grit Scale*
Background Contextual Affordances	Prior education Additional professional certifications and licenses Type and duration of prior work experience Perceived clinical competence prior to matriculation Pre-matriculation role-modeling and encouragement	Supports and barriers survey
Proximal Contextual Influences	Amount of loans and scholarships used to finance midwifery education Work commitment to repay public loan or scholarship Percent of family income earned by respondent Primary caregiving responsibilities Commute time to primary work site	Supports and barriers survey
Learning Experiences	Midwifery program format Learning intensity (full- or part-time, dual major/degree) Number of births attended as a student General clinical and academic competency Perceived support from preceptors and faculty Positivity of role modeling by preceptors and faculty Perceived adequacy of preparation	Learning experiences survey
Self-Efficacy Expectations	Occupational self-efficacy	Occupational Self-Efficacy Scale*
Outcome Expectations	Personal outcome expectancy	Personal Outcome Expectancy Scale*
Actions	Current employment status Primary areas of midwifery responsibility Primary employer type Approximate number of births at each intrapartum site Salary range Perceptions about autonomy/empowerment, professional recognition, and skills and resources	Employment-related survey Perceptions of Empowerment in Midwifery Scale*
Plans	Plans regarding future changes in clinical hours Plans about remaining with current employer Preferred setting for majority of midwifery career Interest in precepting student midwives	Employment-related survey

* Validated survey

Figure 1: Social Cognitive Career Theory, adapted model. Red box encompasses constructs for aim 1, blue box encompasses constructs for aim 2, and green box encompasses constructs for aim 3.

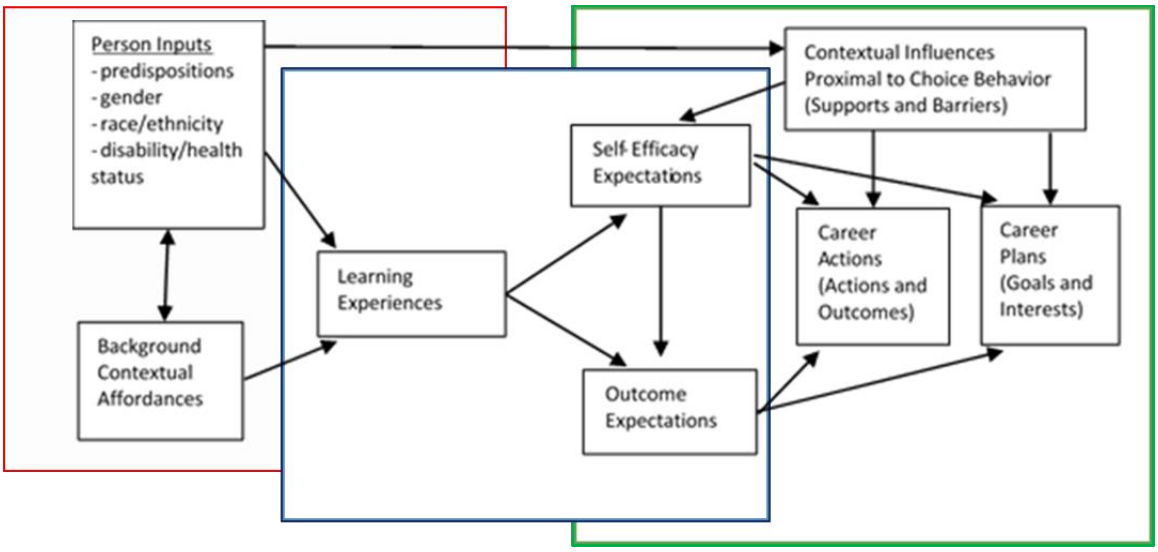
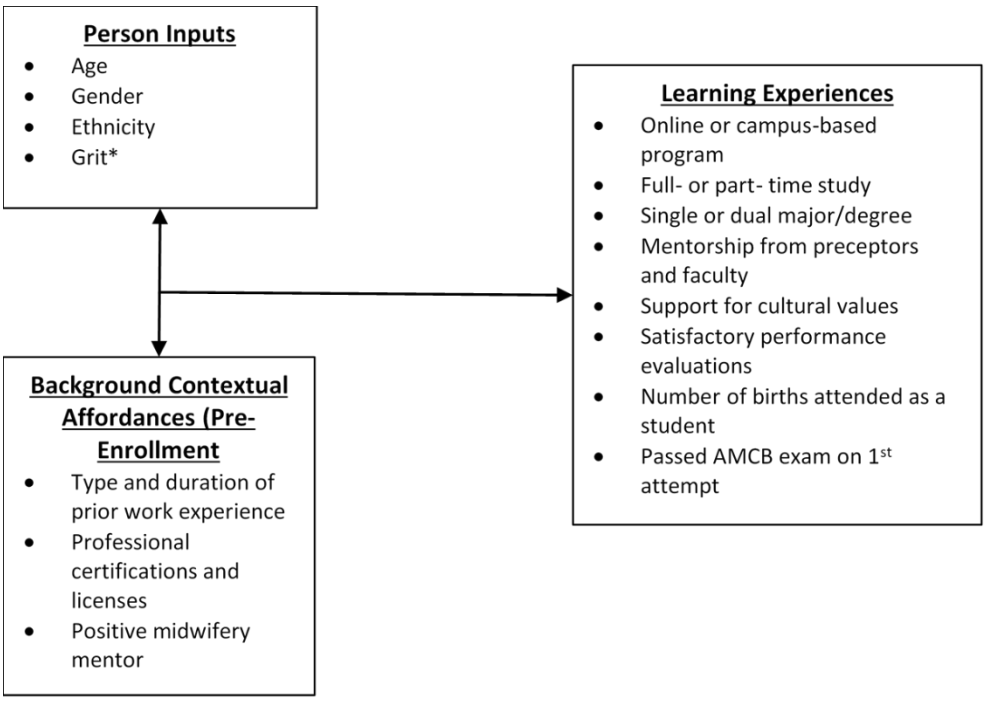


Figure 2: Portion of SCCT model examined by study aim 1.



* Short Grit Survey was used to assess these factors.

Figure 3: Portion of SCCT model examined by study aim 2.

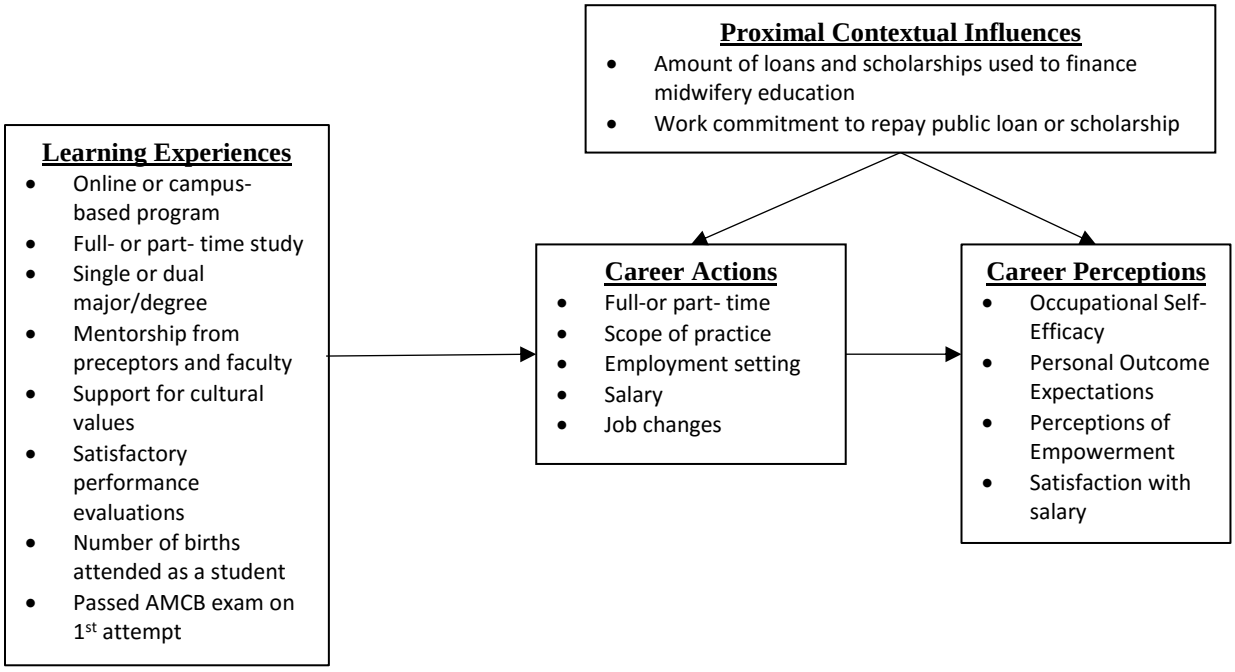
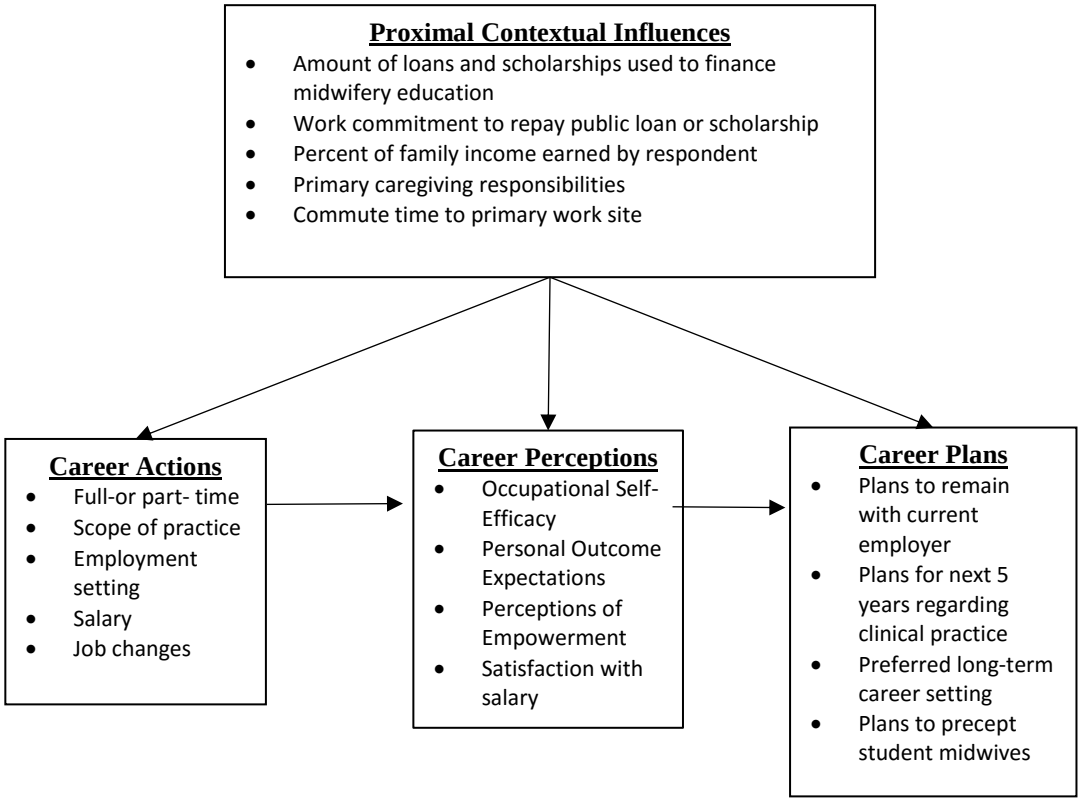


Figure 4: Portion of SCCT model examined by study aim 3.



Chapter 2: The effect of prior work experiences on the preparation and employment of early career midwives.

Introduction

There are growing calls to build and diversify the midwifery workforce as an important strategy to address the world's reproductive health provider shortage and mal-distribution. In the U.S., programs that prepare certified nurse midwives (CNMs) and certified midwives (CMs) have responded by offering a variety of program formats and options to accommodate greater numbers of students who enter into the programs with a range of nursing and non-nursing professional experiences. While these program initiatives have been successful in expanding midwives' numbers and diversity, ensuring an efficient scale-up of the midwifery profession calls for research into the experiences of these midwives as they complete their preparatory programs, enter the workforce, and plan their future careers. The aim of this manuscript is to examine how background factors, such as prior nursing work experience and other health certifications, influence the education and workforce experiences, career choices, and work plans of early-career midwives in the U.S.

Workforce Shortage

The increasing shortage and mal-distribution of primary care, reproductive health providers have adverse effects on health in both high- and low-resource countries. In 2011, for example, 40% of U.S. counties had no obstetrician-gynecologists (OB/GYNs), CNMs, or CMs (*Maternity care shortage areas: Expanding access to women's health*, 2015). The American College of Obstetricians and Gynecologists (ACOG) has projected a 25% shortage of OB/GYNs by 2030(*Midwifery Education Trends Report*, 2015), with the worsening shortage due to increased OB/GYN specialization, fewer residency programs, provider retirement, and an increased proportion of female OB/GYNs, who are more likely to work part time and to stop attending births at a younger age (*Midwives: the answer to the US maternity care provider shortage*, 2015; W.F. Rayburn, 2011). In addition, the proportion of provider types within the U.S. has been described as upside-down, especially considering the majority of reproductive health visits are for low-risk women; while most other developed countries have about

2.5 midwives per OB/GYN, the U.S. has about 4 OB/GYNs per midwife (W.F. Rayburn, 2011; Rowland et al., 2012). As the U.S. Census Bureau projects a 14% increase in the number of births per year by 2060, the time for active management of the reproductive health workforce is now (Bushman, 2015).

The Response of Midwifery Education Programs

Increasingly, a scaling-up of midwifery services is recognized as an efficient strategy to improve access to care and related health outcomes (Hatem et al., 2009; Homer et al., 2014; Johantgen et al., 2012; *Joint statement of practice relations between obstetrician-gynecologists and certified nurse-midwives/certified midwives*, 2011; Sandall et al., 2013). In its 2012 Annual Report, the American College of Nurse-Midwives (ACNM) set a goal of graduating 1,000 new CNMs/CMs every year (Nurse-Midwives, 2013), and in 2015, the ACNM reiterated its strategic goal to increase the number and diversity of midwifery program graduates (*ACNM 2015-2020 Strategic Plan*; *Midwifery Education Trends Report*, 2015). Achieving this goal depends upon the capacity of educational programs to accommodate and prepare these students for practice.

To facilitate program accessibility for students with different amounts of financial, geographic, and scheduling flexibility, in addition to different educational and employment backgrounds, U.S. midwifery programs vary in their pre-admission requirements (e.g., credentials and labor and delivery clinical experience), formats, degrees offered, and clinical and mentorship opportunities available to students during training (Arbour et al., 2015; Carr, 2015; Danhausen et al., 2015; A. M. McCarthy, 2015; *Midwifery Education Trends Report*, 2015; Munoz & Collins, 2015). Specifically, 19 of 38 midwifery graduate programs allow non-nurse, bachelors-prepared admissions(*Midwifery Education Trends Report*, 2015), 6 offer fully distance learning, 16 offer partially distance learning, 2 offer the CM (non-nursing midwifery) degree, 33 offer post-graduate certificates, and 15 offer DNP (clinical doctorate) programs ("Pathways to Midwifery Education," 2017). Regardless of program or experiences, all CNM and CM midwifery graduates must earn a graduate degree or certificate (indicating both didactic and clinical competence), pass a national certification

examination administered by the American Midwifery Certification Board (AMCB), and be licensed by their individual states ("Comparison of Certified Nurse-Midwives, Certified Midwives, and Certified Professional Midwives," 2014).

Through these program innovations, total midwifery program enrollment has increased substantially, from 1,967 students in 2010 to 2,346 students in 2014 (*Midwifery Education Trends Report*, 2015). Between 2000 and 2014, U.S. nurse-midwifery programs increased the number of new graduates by 25%, reaching a total of 583 new CNMs and CMs graduating in 2014 (*Midwifery Education Trends Report*, 2015). Despite this progress, the growth of midwifery educational programs has not kept pace with the increasing number of qualified applicants, the most significant limiting factors being the availability of clinical preceptors and training sites (Bushman, 2015; Germano et al., 2014; *Midwifery Education Trends Report*, 2015). In 2014, ACNM estimates that there were 1,600 qualified applications for 1,096 spaces, with 88.5% of the unfilled spaces occurring in the 19 programs that only accepted registered nurse applicants (*Midwifery Education Trends Report*, 2015). As of June, 2017, 10 programs still require at least 1 year of nursing experience (either before enrollment or before clinical coursework), and 3 of those require at least 1 year of labor and delivery nursing experience ("Midwifery Programs for Aspiring Midwives to Consider," 2017). Five additional programs state that they "prefer" labor and delivery experience ("Midwifery Programs for Aspiring Midwives to Consider," 2017).

In this paper, we describe the background characteristics of individuals entering midwifery educational programs. We then explore whether and how certain characteristics, including prior RN employment and prior professional certification, influence the type of midwifery program individuals choose and, during their education, the degree of mentorship received from faculty and preceptors, the number of births attended, and general academic and clinical performance. Lastly, we report on the midwives' employment choices, feelings of occupational self-efficacy and outcome expectations, sense of empowerment at work, and future career plans. We discuss the implications of these findings for midwifery educational programs as they continue to adapt to meet workforce needs.

Methods

Social Cognitive Career Theory

This research uses the Social Cognitive Career Theory (SCCT) to frame the inquiry. Introduced by Robert Lent, Steven Brown, and Gail Hackett in 1994, SCCT was adapted from Bandura's Social Cognitive Theory to understand three aspects of career development: the formation and development of career-related interests, decision-making related to academic and career options, and performance and persistence related to academic and occupational pursuits (R. Lent et al., 1994).

In Lent's model (Figure 1), both person inputs-- "internal cognitive and affective states as well as physical attributes"—and background contextual factors—the supports and barriers that influence exposure and access to learning opportunities and performance (R. Lent et al., 1994)—influence the learning experiences a person accesses, depending on choice and availability (R. Lent et al., 1994). The quality and quantity of learning experiences affect the learner's self-efficacy and outcome expectations as they enter into the job market, and these in turn influence career interests, goals, actions, and performance. Inadequate performance or knowledge gaps may result in further learning experiences, both formal (inservices, staff meetings) and informal (peer assistance). Proximal contextual influences, driven in part by person inputs, are the social and environmental factors outside of work that contribute to work interests, goals, actions, and performance (R. Lent et al., 1994; R. W. Lent & Brown, 2013). In subsequent SCCT models, Lent links proximal contextual influences to self-efficacy as well (R. W. Lent & Brown, 2013).

[Figure 1]

The SCCT model was adapted for this inquiry in order to account for our survey's timing—after the midwives' career actions were underway—and to allow for investigation into career outcomes of greatest interest. Figure 2 illustrates the adapted model, along with specific variables included in this inquiry. Here, *background contextual affordances* such as prior RN employment, professional certifications, and midwife role models are the supports and barriers relevant to midwifery program admissions, and potentially relevant to program-related experiences and

performance (R. Lent et al., 1994). *Person inputs* are social and demographic characteristics, such as age, gender, ethnicity, and grit-- trait-level perseverance, passion and long term goals—that facilitate learning opportunities, role performance, and proximal contextual influences (Duckworth & Quinn, 2009). Age, gender, and ethnicity have all been demonstrated to correlate with attrition from academic programs (K. McLaughlin et al., 2010; Mulholland et al., 2008; Pryjmachuk et al., 2009), and grit has been associated with educational attainment and subsequent job outcomes such as number of career changes, surgeon burnout and sense of well-being, and medical resident attrition (Burkhart et al., 2014; Duckworth & Quinn, 2009; K. McLaughlin et al., 2008; Salles et al., 2014; Walker et al., 2016).

[Figure 2]

For this adapted model, *learning experience*s refer to subjective and objective academic experiences, including learning format, quantity and quality of learning opportunities and mentorship, and academic and clinical performance. While in Lent's model, *self-efficacy expectations* and *personal outcome expectations* result directly from educational experiences and influence career choices, in the revised model, it is not only the educational experience, but the subsequent work experience and the proximal contextual influences that contribute to the sense of self efficacy.

In contrast to the outcomes described by Lent's model (R. Lent et al., 1994; R. W. Lent & Brown, 2013), the adapted model focuses on midwives' current career actions, perceptions, and future plans as the primary outcomes of interest. *Career actions* are related to their employment choices: full- or part- time employment, full- or partial- scope of practice, salary, work setting, and whether they had changed jobs within their first 5 years of practice. *Career plans* are focused on the midwives' job stability and on the extent to which their future career plans are likely to meet specific workforce needs.

The 6 parameters used to examine *career perceptions* of this sample were: Occupational Self-Efficacy (OSE), Personal Outcome Expectancy (POE), 3 of 4 components of the Perceptions of Empowerment in Midwifery Scale (PEMS)—autonomy/empowerment (AE), professional

recognition (PR), and skills and resources (SR)—and satisfaction with salary. Occupational Self-Efficacy refers to a sense that "I can do this activity effectively", and Personal Outcome Expectations are imagined consequences of job performance, dependent upon personal accomplishments and vicarious learning, encouragement and persuasion from others, and physiologic states and reactions (R. W. Lent & Brown, 2013; Riggs et al., 1994). OSE is a 6-item scale, validated in a healthcare population, which correlates with job satisfaction (r =0.30), organizational commitment (r =0.25), and individual performance (r = 0.22) (Rigotti, Schyns, & Mohr, 2008). OSE reliability across the five European countries studied ranged from 0.85-0.90 (Rigotti et al., 2008). The POE Scale is an 8-item tool found to correlate with job satisfaction (r =0.71), organizational commitment (r =0.71), and individual performance (r = 0.17) in a non-healthcare population (Riggs et al., 1994). The Perceptions of Empowerment in Midwifery Scale has 4 subscales: Autonomy and Empowerment (AE), Manager Support (MS), Professional Support (PS), and Skills and Resources (SR). Each of the 4 independent subscales of the demonstrated odds ratios > 2.0 when distinguishing whether a U.K. midwife considered leaving the profession within the past 6 months ($p < .001$) (Pallant, 2015). Because of the differences in practice structures between the U.S. and the U.K., the 5 questions of the MS subscale were omitted from our survey.

Design and Instrument

This cross-sectional study involved the distribution of a 78-multiple-choice question online survey that combined several validated questionnaires as well as additional items relevant to SCCT model constructs. When applicable, Midwifery Masterfile standardized question formatting was implemented, as recommended by ACNM and AMCB for midwifery workforce data gathering (*Domains of inquiry for research studies on the CNM/CM workforce*, 2015).

During the pilot phase of the study, 7 experienced, working midwives completed a timed survey, and then critiqued each question for clarity and relevance. Based on this feedback, the survey was revised to minimize survey length (20-30 minutes maximum) while meeting research aims. The final survey was uploaded to Survey Monkey® for online distribution. SCCT model constructs were

defined and measured as follows (response options below are post-recategorization, done for statistical purposes).

Background contextual affordances. We included two of three affordances in the model as independent variables: prior nursing employment (i.e., those with and without 1 year of RN employment) and professional certifications and licenses (i.e., those with and without a health-related certification such as doula, lactation consultant, social worker, or RN specialty certification). Midwife role modeling (measured on a 5-point Likert scale indicating strong disagreement to strong agreement that the respondent had a strong midwife role model prior to midwifery education), the third background affordance variable, was used as a control variable in the analysis.

Person inputs. We included age (years), gender (male, female, other) and ethnicity (minority or white) as control variables. Grit, measured using an 8-item Likert-type scale (5 options ranging from "this is not like me at all" to "this is very much like me"), was also used as a control variable (Duckworth & Quinn, 2009).

Learning experiences. We included three intermediate variables: program type (face-to-face, at least partly online), student enrollment (full-time, at least some part-time), and quality of preceptor and faculty mentorship. Preceptor and faculty mentorship were each measured as averaged scores of 3 Likert-type survey items (5 options from strongly disagree to strongly agree) focused on the mentors' role modeling, facilitation of learning opportunities, and shared philosophies.

Proximal contextual influences. Proximal contextual factors involved financial variables such as dollar amount of educational loans, scholarships, and grants; whether the respondent had loan repayment through work (yes/no); degree of responsibility for household earning (earns at least half of household earnings, earns less than half); responsibility for dependents (no dependents, 1 or more types of dependents); and commute time to work (< 15 min, 15-30 min, 31-60 min, over 60 min).

Career actions. For this research, *full-time work* was defined as at least 35 hours per week, and *full scope practice* indicates that well-woman, antepartum, intrapartum, postpartum, newborn, and primary care are all part of the CNM's clinical practice. For employment settings, *out-of-hospital* includes home birth practices, birth centers, and clinics managed by midwives, and *low-resource* includes federally-qualified health centers (and look-alikes), rural health clinics, community clinics (including free clinics), National Health Service Corps sites, Indian Health Service sites, and other Public Health Service sites. *Other* employment settings include private practices, educational institutions, federal government and military, and HMO or hospital-based sites.

Career perceptions. The 4 parameters used to examine career perceptions of this sample were Occupational Self-Efficacy (OSE), Personal Outcome Expectancy (POE), Perceptions of Empowerment in Midwifery (PEMS) Scale, and satisfaction with salary. Each tool used 5-point Likert-type questions with responses ranging from strongly disagree to strongly agree.

Career plans. In assessing workforce plans of early-career CNMs, we asked how long midwives planned to remain with their current employers (unsure, 5 years or less, more than 5 years), about their plans to change their number of clinical practice hours over the next 5 years (increase hours, decrease hours, leave clinical work, no change/undecided), about their plans for a long-term work setting (midwifery-run, low-resource, or other), and their plans to serve as midwifery preceptors in the future (y,n).

Sampling and Data Collection

In October and November of 2016 and after ethical approval was granted for the study through Emory University's Institutional Review Board, the SurveyMonkey® link was distributed nationally through the ACNM email listserv and through social media to CNMs and CMs certified since May, 2011. The sampling frame was the ACNM email listserv cohort that included 1,474 members. These members were contacted twice with reminders after the initial email. The link was also posted on social media several times, and contacts were encouraged to share the link. A total sample of 269 CNMs (no CMs) responded to the survey. Due to the snowball sampling distribution

of the link through social media (in addition to distribution through the ACNM email listserv), the response rate to the survey distribution is unknown. Data from those individuals who graduated before May, 2011 or who were not employed at the time of the study were removed, and data from surveys that had mostly complete responses for background, education, and workforce sections were retained, resulting in a possible 244 CNM responses for each item.

The link's introductory page included survey information, disclosures, and contact information for the principal investigator. Clicking to progress past the introductory page indicated informed consent. Survey completion rate was 93%, although not all respondents who completed the survey responded to every question.

Data Analysis

Survey results were downloaded from SurveyMonkey® to IBM SPSS statistical software version 24. Quantitative data were initially reviewed for normality, outliers, and implausible values. Missing data were examined for type, extent, and presence of bias. Categorical variables were checked for sparse cells and regrouped as needed. Skewed results from 5-point Likert scale questions were dichotomized such that "strongly agree" and "agree" responses are grouped separately from "strongly disagree," "disagree," and "neutral" responses. Statistical analysis, with alpha set at 0.05, was performed for descriptive data, correlations, t-tests or Chi squared tests, and regression parameter estimates for the research questions associated with study aims. To minimize multicollinearity and select the most parsimonious final models, tolerance and variance inflation factor were assessed, and variable selection methods were used within each regression to identify significant predictors.

Results

Study Participants

Respondents were from 42 U.S. states, the District of Columbia, 1 U.S. territory, and 1 international location (not specified). Thirty-eight U.S. midwifery educational programs were represented, with the greatest participation from Frontier (22.7% of respondents), Emory (12.5%),

Vanderbilt (9.4%), and Yale (7.4%) universities. Ten programs were represented by only 1 student, and another 4 programs by only 2 students.

The 166 early-career CNMs who were employed as RNs for at least one year prior to enrollment in a midwifery education program ("employed RNs" for the purposes of this discussion) made up 65.1% of this sample, and 100 of these CNMs' nursing experiences included at least one year working in labor and delivery (Table 1). Although 89% of the sample did not hold any certification prior to enrollment in their midwifery program, 28 CNMs held such prior certifications as lactation consultant, doula, health educator, specialized RN (RNC), social worker, and massage therapist. A naturopathic doctor and a licensed midwife were also included with this group since their experiences were as likely to provide them with significant expertise and skills that would likely transfer to CNM/CM practice. Most CNMs—68.6%-- agreed or strongly agreed with the statement "I had a positive midwife role model prior to my midwifery education". The proportion of minority CNMs for this cohort, at almost 12%, was lower than previously reported for all CNMs/CMs (*Midwifery Education Trends Report*, 2015). Since almost all of this sample was female, gender was not subsequently used as a control variable for data analysis.

Personal and Contextual Factors

There were several differences between the CNMs with and without prior RN employment, referred to as "employed RNs" and "non-employed RNs" for the remainder of this manuscript. Employed RNs were approximately 6 years older (average 39 versus 33, $P<.001$), "grittier" (average score 4.05 versus 3.84 out of 5, $P=.004$), and more likely to have a midwife role model prior to enrollment. Most CNMs had taken loans to finance their midwifery education; employed RNs were more likely than their counterparts to take out less than $100,000, but they were less likely to take out loans in excess of $100,000 or $150,000. They were also significantly less likely to have a grant or scholarship to finance their midwifery education, or to have a work commitment to repay an educational loan. They are less likely to be the sole earner in their families, but they are more likely to be responsible for half or most of their family's income. While 34% of non-employed RNs have

(child or adult) dependents, 70% of employed RNs are responsible for dependents. Otherwise, employed RNs and non-employed RNs were similar by gender (almost all female), ethnicity (88% white and 12% minority), prior certification, and commute time to work (Table 2).

There were very few differences dependent upon whether the respondent had a prior certification or a prior midwife role model, although those with prior certifications were approximately 8 years older than those without (average age 44 versus 36, $P<.001$). Other comparisons are summarized in Table 2.

Educational Perception and Performance

Employed RNs were more likely than non-employed RNs to enroll in an online program (71% versus 19%, $P<.001$), and they were less likely to complete dual majors (21% versus 45%, $P<.001$) or to study full-time throughout their education (60% versus 80%, $P<.001$). These differences persisted after controlling for person inputs and background variables that were statistically different between the 2 groups: age, Grit score, prior certification, and prior midwifery role model. The 2 groups did not differ significantly with respect to degree of mentorship from primary preceptor or faculty, program support for cultural values, adequacy of student performance throughout the program, attending at least 30 births (a predictor of success on passing the certification exam; approximately 90% of both groups attended at least 30 births), or passing the certification exam on the first attempt (94-95% first-time pass rate for this cohort).

Across groups, the majority of CNMs agreed or strongly agreed that they experienced positive mentorship from both preceptors and faculty. A large majority also agreed that their program supported their cultural values. Compared with those without a prior certification, those with a prior certification reported a lower level of mentorship from their primary midwifery preceptor, as well as a lower level of support for cultural values from their midwifery program. However, only the difference in preceptor mentorship persisted after controlling for significant variables. There were no other differences between groups by prior certification (Table 3).

Career Actions

Fewer than half of respondents worked in an out-of-hospital or low-resource setting. Compared to non-employed RNs, employed RNs were significantly more likely to work in a midwife-run setting (24% versus 18%), less likely to work in a low-resource setting (15% versus 30%), and less likely to have changed jobs since certification (41% versus 55%), but only before controlling other background factors and for other personal, proximal contextual, and educational variables that were significantly different between the 2 groups (Table 4). While most were employed full-time, employed RNs were more likely than non-employed RNs to work full-time only after controlling for these factors.

When comparing those with and without prior certification, there were no statistically significant differences between groups. Thus, RN employment and prior certification were not significant predictors of early career CNMs practicing full-scope midwifery, salary, or work setting.

Career Perceptions

In general, the midwives averaged above 3.5 of 5 on the scales measuring perceptions about their employment, and about half reported satisfaction with salary. Employed RNs scored higher than non-employed RNs on occupational self-efficacy only before controlling for other background variables and for those variables with statistical significance between employed and non-employed RNs (see Table 5). There were no other statistically significant differences between the groups compared.

It should be noted that the sample number for the 8-item Personal Outcome Expectancy was much lower than for the other parameters; 80 respondents declined to respond to the 5-point Likert scale statement "My work evaluations are accurate". Incomplete responses for this survey were not averaged for a Personal Outcome Expectancy score, reducing the available data for this variable.

Career Plans

When the career plans of employed and non-employed RNs were compared (Table 6), neither group was statistically more likely to increase or decrease their clinical practice hours—most

were either undecided or planning no change—and both groups were highly likely to precept midwifery students in the future. However, employed RNs were significantly less likely than non-employed RNs to report that they planned to remain with their current employer for more than 5 years.

There were no other differences in workforce plans when comparing CNMs by prior certification.

Discussion

This study provides important knowledge about early-career midwives' educations, employment, perspectives, and career plans. While CNMs with and without prior RN employment or health care certifications may differ in some respects, these findings provide reassurance that regardless of background experience, most midwifery students are able to become successful additions to the workforce. Opportunities for accelerated growth of the profession are discussed below. Results may be applied to midwifery program admissions and curricula, and may be useful for policy development within institutions and the government.

Education

There are several broad conclusions that can be reached from this study. First, regardless of midwifery students' prior RN employment or certification, the range of available program options appears, generally speaking, to be facilitating successful transitions into the reproductive health workforce. For instance, the finding of equivalent certification exam pass rates regardless of background context may be due to accommodations made by academic programs and/or accommodations made by students and preceptors. Alternatively, it may be that program formats and admission criteria are coordinated to reduce the need for accommodations; 5 of the 6 fully online (distance) programs require RN employment prior to admission, as do 8 of the 16 partially online programs.("Midwifery education programs," 2017) Future investigations might determine whether and what accommodations are made by programs, students, and preceptors for students with different background affordances. The finding that employed RNs and those with prior

certifications are older than their counterparts translates to fewer potential years in the workforce, so determining whether prior RN employment is important admissions criteria has implications for patient access and outcomes.

Another encouraging finding is that although some midwifery preceptors have expressed reluctance to precept students without RN work experience (or more specifically, without labor and delivery nursing experience)(Germano et al., 2014), this study shows that non-employed RNs report the same high level of mentorship—reflecting their preceptors' facilitation of hands-on opportunities, positive role modeling, and shared philosophy. This survey did not ask respondents to indicate whether they were matched with a preceptor by their school or by their own efforts, but it appears that from the students' perspectives, preceptors are accommodating students' needs effectively.

Our data highlight an opportunity that exists in increasing the financing of midwifery education in order to optimize the workforce sooner rather than later. Specifically, midwifery students are accumulating significant debt, especially considering that this study did not account for any pre-midwifery debt. Only 60% of employed RNs attend school full-time, and as this group also reports that they have more dependents and a high level of responsibility for household earning, one can surmise that many are working while attending school. Yet it is the non-employed RNs who benefit from the majority of scholarships and grants (and who also accumulate the greatest loan debt). If employed RNs were relieved of some of their financial responsibility while attending school (especially competency-based programs) full-time, perhaps this strategy could help minimize the time from program registration to employment. Increasing the amount of scholarships and grants available to midwifery students has also been identified as a means of increasing the proportion of midwives of color, and may have implications for both boosting minority enrollment and improving workforce distribution (Errickson et al., 2011).

Workforce

There are some conclusions to draw from the data related to workforce, both current and future. It is positive for the workforce that most CNMs work full-time and that they plan to continue working in clinical practice. High scores on the Grit and Perceptions of Empowerment in Midwifery scales are also positive as predictors of practice and career longevity (Burkhart et al., 2014; Pallant, 2015; Salles et al., 2014). Future study might determine reasons for working less than full-time, whether due to personal choice or underemployment factors, as well as possible structural factors (i.e., dependent-care costs or work scheduling) that might be addressed through practice or governmental policy.

It is not necessarily surprising or undesirable that half of early-career CNMs changed jobs within the first 5 years of practice, and half plan to change jobs again within the next 5 years (Zimmerman, 2016). As only half of this sample were satisfied with their salaries, changing jobs can help boost salary and offer advancement opportunities, as well as allow for better cultural and geographic workplace matching (Zimmerman, 2016). Future study might focus on the implications of income and career satisfaction for midwives' career decision-making over the longer term, and whether there are benefits or challenges for midwives related to changing jobs over the course of a career.

Based on our results related to scope of practice, clarified goals for the scope of care of the midwifery workforce, and implications for midwifery education, are needed. This cohort, practicing mostly in settings managed by physicians, hospitals, or management groups, reported that they rarely practice full-scope care in their settings. It is unclear whether this limit is desirable to the midwives, or beneficial to the workforce overall or outside of low-resource settings. Both the ACNM and the International Confederation of Midwives (ICM) identify newborn care and primary care of women as core (essential) competencies of midwifery practice (*Core Competencies for Basic Midwifery Practice*, 2012; *Essential Competencies for Basic Midwifery Practice*, 2013). A broader scope of practice seems especially important for the patients of midwives in low-resource settings, but if midwives are not utilizing

those skills upon graduation, there may be value lost to low-resource settings unless a knowledge and skills refresher is possible.

Further, the implications of practice setting may be relevant for quality of care; there is evidence that women-centered care, which may be more likely to be practiced in a midwifery-managed setting, is associated with superior outcomes across populations (Renfrew et al., 2014; Shaw et al., 2016), and it is clear that more data is needed to determine the optimal mix of settings and providers who can provide woman-centered care to both low- and high-risk women (Shaw et al., 2016).

Limitations

Survey responses are subject to coverage, sampling, and nonresponse error for two main reasons. First, this sample of CNMs does not account for academic or workforce attrition that predated the investigation. As AMCB's reported 2015 and 2016 certification exam pass rates were 91.8% and 93.9%, respectively, this study's findings should be fairly representative.(*American Midwifery Certification 2016 Annual Report*, 2016) Second, the majority of recruitment was through ACNM; not all midwives are members, and members may have differential resources, supports, and professional attitudes. It is unclear whether this may account for the low proportion of minority midwives who responded to the survey, or if this disparity is due to the nature of snowball sampling (Dudovskiy, 2017). Third, recall bias is possible for those items evaluating past experiences or impressions of past experiences. Response bias is possible for all self-report surveys, although confidentiality of responses for this survey was assured. Surveys omitted from analysis due to incomplete responses were more likely to be missing data related to current employment, i.e., salary information, and from questions at the end of the survey.

Conclusion

In general, midwifery education programs are successfully preparing competent midwives with different background characteristics for practice. It is important for patient outcomes to prepare sufficient numbers of midwives who will work in a variety of settings. To increase the size

of the workforce most efficiently, it may be necessary to revisit admissions criteria requiring RN employment, as well as increase scholarships and grants available for the funding of midwifery education. This research contributes important knowledge that may contribute to a deliberate, efficient approach by educational programs and policy-makers who are working to build the reproductive health workforce.

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Table 1: Personal inputs, background contextual affordances, and proximal contextual influences of this sample of early-career CNMs

Variable	**N**	**Mean (SD)**
Age	244	37.0 (8.10)
Grit score (out of 5)	241	4.0 (0.51)
Variable	**244**	**n (%)**
Gender		
Female		241 (98.8)
Male		2 (0.8)
Transgender		1 (0.4)
Ethnicity		
African American		15 (6.1)
Hispanic/Latino		4 (1.6)
White, not Hispanic or Latino		215 (88.1)
Other		10 (4.1)
Work history (pre-midwifery, for 1 or more years)*		
RN, any setting		161 (66.0)
RN, labor and delivery		115 (47.1)
RN, not labor and delivery		105 (43.0)
Non-nursing healthcare experience		103 (42.2)
Holds any health-related certification		28 (11.5)
Adult Health Nurse Practitioner		0
Family Nurse Practitioner		2 (0.8)
Women's Health Nurse Practitioner		6 (2.5)
Other career (non-nursing)		123 (50.4)
Had positive midwife role model (pre-enrollment)	244	168 (68.9)
Loans for midwifery education	242	
$0		31 (12.7)
Less than $49,000		58 (23.8)
$50,000-99,000		82 (33.6)
$100,000-150,000		34 (13.9)
More than $150,000		37 (15.2)

Scholarships and grants for midwifery education	242	
$0		106 (43.4)
Less than $25,000		92 (37.7)
$25,000-49,000		19 (7.8)
$50,000 or more		25 (10.2)
Household earning by midwife		
Sole earner		79 (32.4)
Primary earner		78 (32.0)
Earns half of family income		60 (24.6)
Earns less than half of family income		27 (11.1)
Has primary caregiving responsibilities		140 (57.4)
Estimated work commute time to primary work site	242	
Less than 15 minutes		73 (29.9)
15-30 minutes		87 (35.7)
31-60 minutes		60 (24.6)
More than 60 minutes		22 (9.0)

* These categories are not mutually exclusive, and do not add up to 100%

Table 2: Comparison of personal characteristics, background contextual affordances, and proximal contextual influences of early-career CNMs by RN experience and prior certification

Variable	Employed RN (N=244)			Prior Certification (N=244)		
	No	**Yes**	***P***	**No**	**Yes**	***P***
Age, Mean (SD)	33.1 (6.64)	39.02 (8.04)	<.001	36.02 (7.29)	44.68 (9.81)	<.001
Gender female, n (%)	83 (100)	158 (98.1)	.702	213 (98.6)	28 (100)	1.000
Ethnicity white, n (%)	73 (88.0)	142 (88.2)	1.00	191 (88.4)	24 (85.7)	.915
Grit score, Mean (SD) Out of 5 Missing=3	3.84 (0.57)	4.05 (0.47)	.004	3.96 (0.53)	4.08 (0.41)	.260
RN work experience ≥ 1 year, n (%)	--	--	--	142 (65.7)	19 (67.9)	.992
Prior certification(s), n (%)	9 (10.8)	19 (11.8)	.992	--	--	--
Prior midwife role model, n (%)	50 (60.2)	118 (73.3)	.052	150 (69.4)	18 (64.3)	.736
Loans for midwifery education, n (%) missing=2			<.001			.212
$0	5 (6.2)	26 (16.1)	--	24 (11.2)	7 (25.0)	--
Less than $50,000	14 (17.3)	44 (27.3)	--	50 (23.4)	8 (28.6)	--
$50,000-$99,000	19 (23.5)	63 (39.1)	--	76 (35.5)	6 (21.4)	--
$100,000-$150,000	18 (22.2)	16 (9.9)	--	30 (14.0)	4 (14.3)	--
Over $150,000	25 (30.9)	12 (7.5)	--	34 (15.9)	3 (10.7)	--
Scholarships/ Grants n (%), missing=2			<.001			.138
$0	16 (19.8)	90 (55.9)	--	90 (42.1)	16 (57.1)	--

Less than $25,000	36 (44.4)	56 (34.8)	--	81 (37.9)	11 (39.3)	--
$25,000-$49,000	11 (13.6)	8 (5.0)	--	18 (8.4)	1 (3.6)	--
$50,000 or more	18 (22.2)	7 (4.3)	--	25 (11.7)	0	--
Work commitment to repay loan, n (%) missing=3	28 (33.7)	30 (19.0)	.017	50 (23.5)	8 (28.6)	.720
Dependents, n (%)	28 (33.7)	112 (69.6)	<.001	122 (56.5)	18 (64.3)	.560
Proportion of family income, n (%)			.012			.164
Sole earner	37 (44.6)	42 (26.1)	--	75 (34.7)	4 (14.3)	--
Primary earner	20 (24.1)	58 (36.0)	--	66 (30.6)	12 (42.9)	--
Earns half	15 (18.1)	45 (28.0)	--	51 (23.6)	9 (32.1)	--
Earns < half	11 (13.3)	16 (9.9)	--	24 (11.1)	3 (10.7)	--
Commute time to work, n (%) missing=2			.307			.100
<15 minutes	30 (36.6)	43 (26.9)	--	67 (31.3)	6 (21.4)	--
15-30 min	23 (28.0)	64 (40.0)	--	73 (34.1)	14 (50.0)	--
31-60 min	23 (28.0)	37 (23.1)	--	57 (26.6)	3 (10.7)	--
61-120 min	5 (6.1)	13 (8.1)	--	14 (6.5)	4 (14.3)	--
> 2 hrs	1 (1.2)	3 (1.9)	--	3 (1.4)	1 (3.6)	--

Table 3: Comparison of educational perceptions and performance of early-career CNMs by RN experience and prior certification

Variable	Employed RN (N=240)					Prior Certification (N=243)				
	No	**Yes**	***P****	**OR; (CI)**	***P****	**No**	**Yes**	***P****	**OR; (CI)**	***P*******
Online program, n (%)	16 (19.3)	114 (71.3)	<.001	OR, 7.50; (3.66-15.34)	<.001	111 (51.6)	19 (67.9)	.156	OR, 1.29; (0.46-3.59)	.630
Full-time study only, n (%)	73 (88.0)	96 (59.6)	<.001	OR, 0.20; (0.09-0.44)	<.001	152 (70.4)	17 (60.7)	.410	OR, 1.38; (0.56-3.42)	.484
Dual major or degree, n (%)	37 (44.6)	34 (21.3)	<.001	OR, 0.41; (0.21-0.78)	.007	67 (31.0)	4 (14.8)	.128	OR, 0.48; (0.15-1.57)	.223
Program supported cultural values n (%)	71 (85.5)	131 (81.4)	.522	OR, 0.80; (0.41-1.56)	.515	183 (87.4)	19 (67.9)	.034	OR, 0.52; (0.19-1.40)	.196
Mentorship from primary preceptor, mean (SD)	4.43 (0.72)	4.52 (0.82)	.422	(-0.14 to 0.31)	.461	4.54 (0.68)	4.06 (1.29)	.062	(-0.74 to -0.09)	.012
Mentorship from faculty, mean (SD)	4.38 (0.71)	4.26 (0.91)	.254	(-0.21 to 0.19	.903	4.34 (0.77)	3.96 (1.25)	.131	(-0.38 to 0.21)	.581
Adequate performance during program, n (%)	72 (86.7)	144 (89.4)	.679	OR,1.68; (0.65-4.32)	.280	193 (89.4)	23 (82.1)	.338	OR, 0.86; (0.26-2.85)	.798
At least 30 births attended as a student n (%)	74 (89.2)	146 (90.7)	.879	OR, 1.05; (0.40-2.56)	.914	196 (90.7)	24 (85.7)	.495	OR, 0.40; (0.11-1.43)	.159
Passed boards 1st attempt, n (%)	78 (94.0)	153 (95.0)	.767	OR, 1.56; (0.44-5.57)	.496	206 (95.4)	25 (89.3)	.176	OR, 0.56; (0.12-2.62)	.460

*unadjusted

**adjusted for background characteristics (prior certification, and prior midwife role model), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age and grit)

*** adjusted for background characteristics (prior certification, and prior midwife role model), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age)

Table 4: Comparison of employment choices of early-career CNMs by RN experience and prior certification

Variable	Employed RN (N=233)					Prior Certification (N=243)				
	No	**Yes**	***P****	**OR; (CI)**	***P****	**No**	**Yes**	***P****	**OR; (CI)**	***P*****
Works full time or more, n (%)	66 (79.5)	141 (87.6)	.140	OR, 3.93; (1.12-13.70)	.032	182 (84.3)	25 (89.3)	.779	OR, 1.92; (0.45-8.08)	.376
Full-scope practice, n (%) missing=7	13 (15.9)	19 (12.3)	.568	OR, 0.68; (0.22-2.10)	.504	26 (12.4)	6 (22.2)	.267	OR, 2.21; (0.72-6.82)	.167
Salary, n (%) missing=1			.902					.625		
Less than $75,000	15 (18.3)	33 (20.5)	--	(reference)		43 (20.0	5 (17.9)	--	(reference)	
$75,000-99,000	43 (52.4)	84 (52.2)	--	OR, 1.51; (0.56-4.08)	.421	114 (53.0)	13 (46.4)	--	OR, 1.21; (0.36-4.07)	.754
$100,000 or more	24 (29.3)	44 (27.3)	--	OR, 1.42; (0.44-4.53)	.555	58 (27.0)	10 (35.7)	--	OR, 1.35; (0.37-4.89)	.647
Current work setting, n (%) missing=8			.075					.390		
Out-of-hospital	6 (7.2)	22 (13.8)	--	OR, 1.53; (0.34-6.86)	.578	25 (11.6)	3 (10.7)	--	OR, 0.94; (0.20-4.35)	.935
Low-resource	23 (27.7)	24 (15)	--	OR, 0.48; (0.13-1.78)	.276	44 (20.5)	3 (10.7)	--	OR, 0.57; (0.12-2.64)	.474
Private practice	28 (33.7)	60 (37.5)	--	OR, 0.63; (0.24-1.72)	.373	74 (34.4)	14 (50.0)		OR, 1.62; (0.59-4.47)	.348
Other	26 (31.3)	54 (33.8)	--	(reference)		72 (33.5)	8 (28.6)	--	(reference)	
Has held more than 1 CNM position since graduation, n (%) missing=1	45 (54.9)	66 (41.0)	.055	OR, 0.86 (0.37-2.00)	.720	96 (44.7)	15 (53.6)	.490	OR, 1.02; (0.41-2.53)	.975

*unadjusted

**adjusted for background characteristics (prior certification, and prior midwife role model), proximal contextual factors (loans, scholarships/grants, loan repayment job, income responsibility, dependents), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age, grit) and educational factors (online program, full-time, dual major/degree)

*** adjusted for background characteristics (prior certification, and prior midwife role model), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age), educational factors (supported cultural values, mentorship from primary preceptor, at least 30 births)

Table 5: Comparison of employment perceptions of early-career CNMs by RN experience and prior certification

Variable	Employed RN (N=230)					Prior Certification (N=233)				
	No	**Yes**	***P****	**OR; (CI)**	***P*** **	**No**	**Yes**	***P****	**OR; (CI)**	***P*** **
Occupational self-efficacy, mean (SD)	4.27 (0.54)	4.47 (0.49)	.005	(-0.17 to 0.19)	.945	4.40 (0.51)	4.42 (0.53)	.817	(-0.21 to 0.23)	.904
Personal outcome expectations, mean (SD) missing=80	3.51 (0.75)	3.60 (0.78)	.509	(-0.35 to 0.37)	.994	3.58 (0.78)	3.48 (0.72)	.608	(-0.43 to 0.43)	.990
Satisfied with salary, n (%)	46 (56.1)	74 (46.3)	.189	OR, 0.62; (0.29-1.39)	.251	106 (49.5)	14 (50.0)	1.00	OR, 1.27; (0.51-3.15)	.606
PEMS Autonomy/ Empowerment, mean (SD) missing=4	4.31 (0.59)	4.45 (0.56)	.064	(-0.13 to 0.28)	.462	4.40 (0.58)	4.45 (0.47)	.619	(-0.17 to 0.32)	.569
PEMS Professional Recognition, mean (SD) missing=4	3.93 (0.72)	3.94 (0.75)	.908	(-0.41 to 0.11)	.256	3.94 (0.74)	3.87 (0.75)	.638	(-0.36 to 0.30)	.855
PEMS Skills and Resources, mean (SD) missing=12	4.33 (0.65)	4.48 (0.54)	.060	(-0.24 to 0.17)	.744	4.42 (0.61)	4.56 (0.37)	.100	(-0.01 to 0.50)	.055

*unadjusted

**adjusted for background characteristics (prior certification, and prior midwife role model), proximal contextual factors (loans, scholarships/grants, loan repayment job, income responsibility, dependents, commute), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age, grit), educational factors (online program, full-time, dual major/degree), and employment factors (full-time)

*** adjusted for background characteristics (prior certification, and prior midwife role model), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age), educational factors (supported cultural values, mentorship from primary preceptor, at least 30 births), current employment factors (full-scope practice)

Table 6: Comparison of employment plans of early-career CNMs by RN experience and prior certification

Variable	Employed RN (N=230)					Prior Certification (N=236)				
	No	**Yes**	***P****	**OR; (CI)**	***P****	**No**	**Yes**	***P****	**OR; (CI)**	***P****
Plans to remain with current employer, N=240			.134					.491		
5 years or less	42 (51.2)	73 (45.9)	--	(reference)		104 (48.8)	11 (39.3)	--	(reference)	
Unsure	22 (26.8)	32 (20.1)	--	OR, 0.50; (0.18-1.37)	.178	48 (22.5)	6 (21.4)	--	OR, 0.96; (0.29-3.21)	.952
More than 5 years	18 (22.0)	54 (34.0)	--	OR, 0.35; (0.12-1.00)	.051	61 (28.6)	11 (39.3)	--	OR, 1.58; (0.56-4.48)	.386
Plans to change clinical hours over next 5 years, n (%)			.690					.214		
Increase hours	6 (7.2)	15 (9.4)	--	OR, 0.50; (0.09-2.75)	.422	16 (7.4)	5 (17.9)	--	OR, 2.68; (0.67-10.74)	.164
Decrease hours	14 (16.9)	30 (18.8)	--	OR, 1.38; (0.45-4.19)	.574	41 (19.1)	3 (10.7)	--	OR, 0.84; (0.21-3.33)	.804
Leave clinical work	3 (3.6)	10 (6.3)	--	OR, 1.65; (.22-12.11)	.625	11 (5.1)	2 (7.1)	--	OR, 1.306; (0.21-8.02)	.779
No change or undecided	60 (72.3)	105 (65.6)	--	(reference)		147 (68.4)	18 (64.3)	--	(reference)	
Long-term plan for work setting, n (%)			.075					.330		
Out-of-hospital	8 (9.6)	31 (19.3)	--	OR, 2.27; (0.67-7.70)	.188	31 (14.4)	8 (28.6)	--	OR,2.06; (0.66-6.45)	.214
Low-resource	15 (18.1)	18 (11.2)	--	OR, 0.68; (0.17-2.61)	.569	30 (13.9)	3 (10.7)	--	OR, 0.84; (0.19-3.79)	.819
Private practice	18 (21.7)	45 (28.0)	--	OR, 0.84; (0.28-2.48)	.768	57 (26.4)	6 (21.4)	--	OR, 0.98; (0.31-3.05)	.968
Other	59 (71.1)	109 (67.7)	--	(reference)		98 (45.4)	11 (39.3)	--	(reference)	
Plans to precept in the future, n (%)	73 (88.0)	139 (86.9)	.971	OR, 1.10; (0.34-3.53)	.874	190 (88.4)	22 (78.6)	.142	OR, 0.83; (0.25-2.79)	.765

*unadjusted
**adjusted for background characteristics (prior certification, and prior midwife role model), proximal contextual factors (loans, scholarships/grants, loan repayment job, income responsibility, dependents), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age, grit), educational factors (online program, full-time, dual major/degree), OSE, and employment factors (full-time, has changed jobs)
*** adjusted for background characteristics (prior certification, and prior midwife role model), and for other variables examined in this study and found to be statistically different between groups compared: personal characteristics (age), educational factors (supported cultural values, mentorship from primary preceptor, at least 30 births), current employment factors (full-scope practice)

Figure 1: Original Social Cognitive Career Theory (R. Lent et al., 1994)

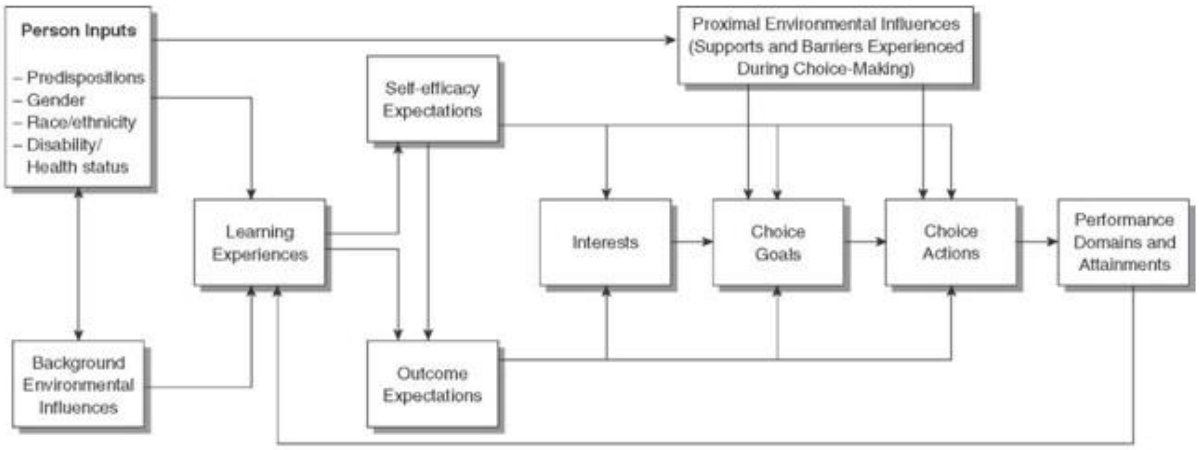
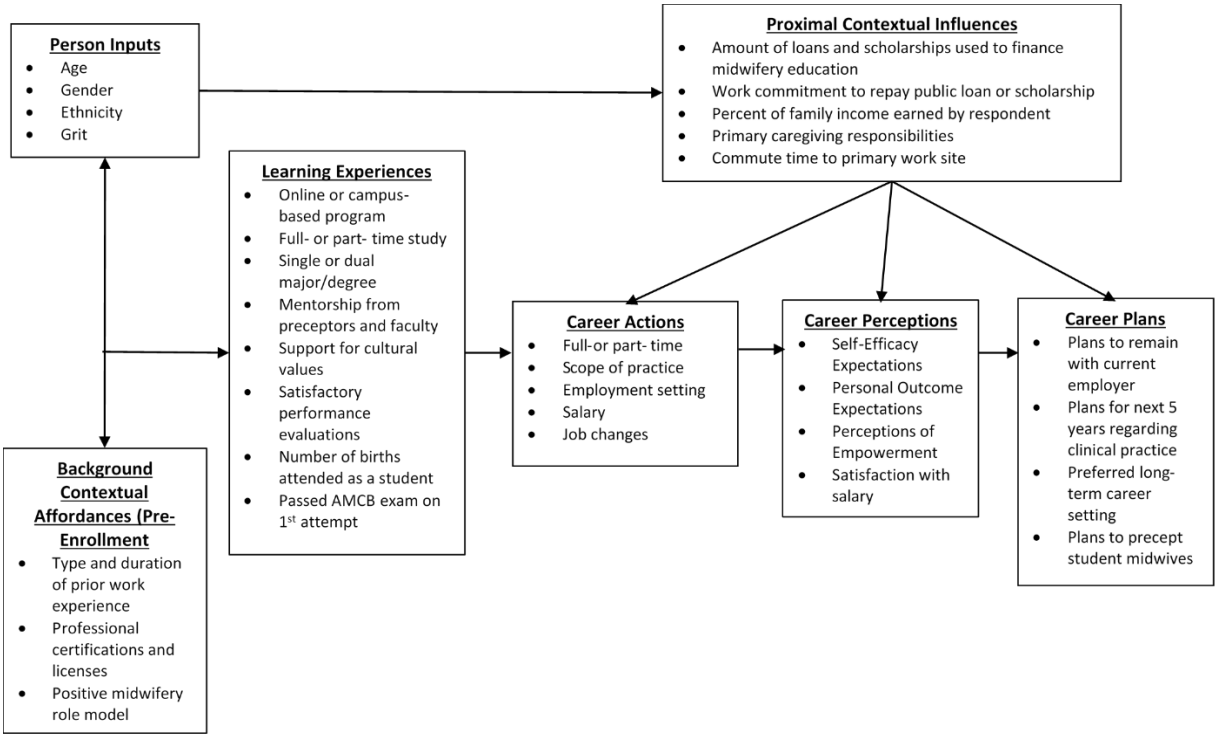


Figure 2: Adapted Social Cognitive Career Theory, with study variables grouped by construct.



Chapter 3: Associations between ethnicity and learning experiences, workforce decisions and perspectives, and career plans of early-career midwives in the U.S.

Introduction

While cultural competence refers to the education of health professions regarding generalized values, preferences, and habits of ethnic groups, "structural competence" takes into account how the social, economic, and political forces in our culture—such as those that are part of institutionalized racism—determine opportunities and barriers to each individual's health and wellness (Metzl & Roberts, 2014; Wren Serbin & Donnelly, 2016). As the U.S. works to develop its reproductive health workforce to overcome worsening provider shortages, significant provider mal-distribution, and the persistent health disparities of a growing population of underrepresented minorities (URMs), ensuring the cultural and structural competence of the workforce and the systems in which it operates are essential (*Maternity care shortage areas: Expanding access to women's health*, 2015).

For certified nurse-midwives (CNMs) and certified midwives (CMs), educational initiatives have had some success in expanding the numbers and diversity of midwives, but true inclusion of URM midwives into the profession, signaled by a shared sense of power and value, is still a work in progress (DeLibertis, 2015). For patients, midwives, and the profession to benefit from the richness diversity offers, gaining structural competence begins with learning more about the experiences of URM midwives as they complete their preparatory programs, enter the workforce, and plan their future careers. This manuscript examines how ethnicity influences the education and workforce experiences, career choices and perspectives, and work plans of early-career midwives in the U.S.

U.S. Reproductive Health Disparities and Midwifery Workforce Diversity

Currently, the U.S. ranks 56th in infant mortality (H. K. Atrash et al., 2006; Floyd et al., 2013; MF MacDorman & Mathews, 2009; M. MacDorman & Mathews, 2008) and 48th in maternal mortality—worse than rates reported for other wealthy countries, and worse even than lower-resource nations such as Boznia-Herzegovina and Libya ("North America: United States," 2017), and

our maternal mortality rate is actually increasing (Agrawal, 2015). While the reasons for these substandard outcomes are complex, they can only be understood by recognizing the impact of reproductive health disparities in the U.S. (*The Millennium Development Goals Report*, 2015; "North America: United States," 2017). Between 2011 and 2013, the maternal death ratio for white women was 12.1 per 100,000 live births, compared with 40.4 for black women, and 16.4 for women of other races (Health, 2017). The infant mortality rates in 2013 were 5.1 per 1,000 live births for white infants, compared with 11.3 deaths per 1,000 live births for black infants and varying rates for infants of other races (Mathews, MacDorman, & Thoma, 2015). The March of Dimes has continued to assign a grade of "C" to the U.S. Premature Birth Report Card—as it has for at least a decade—largely due to persistent racial disparities in preterm birth; the rate among black women is 48% higher than the rate for all other women in this country ("2016 Premature Birth Report Card: United States," 2016; "North America: United States," 2017). Although disparities in access to care are more inconsistent across ethnicities (e.g., rates of pap and mammography testing are similar between black and white women), black women are more likely to have unintended pregnancies and late prenatal care, and they are more likely to die from breast cancer, cervical cancer, and diabetes (*Racial and Ethnic Disparities in Obstetrics and Gynecology*, 2015).

There are several ways in which provider ethnic diversity improves professional practice and associated outcomes for underrepresented ethnic minority (URM) patients. From a public health standpoint, increasing the proportion of URM providers can alleviate the current mal-distribution of primary care providers, as URM providers are more likely to work in low-resource settings and with minority patients (W. F. Rayburn et al., 2016). From a professional development standpoint, there is evidence that higher workforce diversity results in higher levels of innovation within an organization (Institute of, 2004; Walter, 2014), and allows for a larger and stronger pool of applicants with a broader range of skills and ideas to meet the needs of consumers (or patients) (Walter, 2014). URM leaders provide role modeling for newer URM employees (Ayoola, 2013), which may have effects on advancement and attrition. From a quality of care standpoint, as well as from a social justice

standpoint, the contributions of URM participants within health science classrooms and organizations help build cultural competencies among peers as well as structural competency within the organization (DeLibertis, 2015; Guerra-Reyes & Hamilton, 2017; Institute of, 2004; Jackson & Gracia, 2014). URM providers often have reduced implicit (unconscious) bias, demonstrated to affect quality of communication, empathy, pain management, and treatment recommendations (Hall et al., 2015; Maina, Belton, Ginzberg, Singh, & Johnson, 2017; Sabin, Nosek, Greenwald, & Rivara, 2009). Several studies have demonstrated that patient:provider racial/ethnic and language concordance can facilitate improved communication, increase patient health behaviors, and raise patient satisfaction (Field & Caetano, 2010; Gonzalvo & Sharaya, 2016; Schinkel, Schouten, Street, van den Putte, & van Weert, 2016). URM midwives in particular report entering into midwifery in order to advocate for the health of disenfranchised communities, as well as to actively work to help train new midwives of color (Kennedy, Erickson-Owens, & Davis, 2006; Y. McLaughlin, 2012).

Although progress has been made, the proportion of URMs in the midwifery workforce does not yet reflect the ethnic distribution of the U.S., and this has implications for health outcomes and for the profession. U.S. minorities (non-white racial groups and Hispanics) comprised 23% of the U.S. population in 2015, and they are projected to make up more than half by 2044 (Colby & Ortman, 2015). Currently, 18% of obstetrician/gynecologists (OB/GYNs) are from URMs, compared with a 14% URM population among all physicians; there has been only a small increase overall and for all medical specialties since 2010 (W. F. Rayburn et al., 2016). Although URMs comprised less than 5% of all CNMs/CMs in 2004(*The ACNM Core Data Survey*, 2010; Sipe et al., 2009) and almost 9% in 2013, URMs comprised 22% of the cohort of newly certified CNMs/CMs in 2013 (Fullerton et al., 2015; *Midwifery Education Trends Report*, 2015). Increases among midwifery students from 2013 to 2014 include: American Indian/Alaskan Native increased by 78% (from 9 to 16), Asian by 24% (from 38 to 47) Black/African American by 18% (from 198 to 234), Native American/Hawaiian by 250% (from 4 to 14), and Hispanic/Latino by 16% (from 123 to 143) (Sipe et al., 2009). The increasing numbers of URM midwives are encouraging, but absolute numbers of

midwives are still relatively small and the rate of increase in URMs—both midwife and physician—may be inadequate to keep pace with the growth of the U.S. minority population.

Challenges and Opportunities in Midwifery Workforce Diversity

In addition to the challenge of building the numbers of URM reproductive health providers, there is an additional challenge of optimizing the integration and resources of a more diverse profession to bring about the best possible patient outcomes, build the strongest professions possible, and to maximize provider work satisfaction, productivity, and longevity. Research on the racism experiences of health care providers is lacking; A PubMed search of "racism against physicians" returned 12 articles, none based on the experiences of U.S. physicians, and almost all focused on the racism experienced by patients rather than by providers. The nursing literature includes qualitative work describing how nurses of all backgrounds face discrimination, often in the form of "microaggressions"—intentional or unintentional behaviors and habits that are not illegal, but that have the effect of exploitation and isolation (Baptiste, 2015). Microagressions are pervasive and originate from patients, co-workers, and administrators, with implications of increased work stress leading to higher workforce turnover and compromised patient care (Wheeler, Foster, & Hepburn, 2014). These effects also are relevant to the low minority proportion of the nurse educator workforce (Beard & Julion, 2016).

In midwifery, there is scant but growing qualitative evidence from interviews with URM CNMs, CMs, and direct-entry midwives that institutionalized racism has limited both the numbers and the sense of enfranchisement among these professionals (Wren Serbin & Donnelly, 2016). Beginning with midwifery education, URM midwives report disadvantages ranging from personal isolation to organizational discrimination, affecting clinical opportunities and increasing attrition among midwives of color (Kennedy et al., 2006; Y. McLaughlin, 2012). As professionals, URM midwives continue to sense that they are outsiders to the profession and not as eligible for leadership positions within ACNM, the primary professional organization for CNMs/CMs (DeLibertis, 2015; Goode, 2014). These experiences, combined with common workplace discrimination, have had the

effect of suppressing the number, if not the sense of empowerment or career satisfaction, of URM midwives (Goode, 2014; Kennedy et al., 2006).

Both the American College of Nurse-Midwives (ACNM) and The American College of Obstetrics and Gynecologists (ACOG) have dedicated task forces actively engaged in increasing workforce diversity (Dawley & Walsh, 2016; *Racial and Ethnic Disparities in Obstetrics and Gynecology*, 2015). The ACNM's Diversification and Inclusion (D/I) Task Force has worked to define objectives to make the profession inclusive, having contracted in 2015 a third party report, "Shifting the frame: A report on diversity and inclusion in the American College of Nurse-Midwives" (DeLibertis, 2015). This report details specific findings of ACNM's organizational strengths and improvement opportunities, describes the exclusion experiences of URM CNMs/CMs (using the term "minority" broadly, beyond ethnicity/race), and outlines general strategies for building inclusion within the organization and profession (DeLibertis, 2015). One action taken is the listing of Diversification and Inclusion as the first core commitment in ACNM's 2015-2020 Strategic Plan, providing an essential lens through which to approach each of the plan's strategic domains (*ACNM 2015-2020 Strategic Plan*). Other broad recommendations include ensuring the organization's sustained financial and structural commitment to learning about, acting upon, and monitoring inclusivity needs and progress (DeLibertis, 2015).

More specific objectives, developed by ACNM's D/I Task Force, seek to more clearly identify the strategies within educational, clinical, and organizational settings that promote and prevent inclusion of URM midwives. It is up to nurse midwifery and midwifery educational program institutions to recruit, train, and inspire meaningful professional contributions from people with diverse backgrounds, and it is the responsibility of the profession to support and promote opportunities that mobilize the tremendous resources increased diversity brings to the midwifery profession. To date, few published studies have evaluated the learning or employment experiences of URM CNMs/CMs.

The research presented in this manuscript aims to explore whether and how midwives' ethnicity influences their subjective and objective learning experiences as midwifery students, as well as their employment decisions, career perceptions, and career plans.

Methods

Social Cognitive Career Theory

The Social Cognitive Career Theory (SCCT) model was adapted for this research from the work of Robert Lent, Steven Brown, and Gail Hackett, who aimed their model at furthering our understanding of three aspects of career development: the formation and development of career-related interests, decision-making related to academic and career options, and performance and persistence related to academic and occupational pursuits (R. Lent et al., 1994). In both the original and in this adapted model, both person inputs—encompassing physical, cognitive, and emotional aspects of personality and ability—and background contextual factors—past experiences which influence interests, motivations, and skills (R. Lent et al., 1994)—affect the learning experiences a person seeks and accesses (R. Lent et al., 1994). Here, background contextual affordances are the supports and barriers relevant to midwifery program admissions, and potentially relevant to program-related opportunities, perceptions, and performance (R. Lent et al., 1994). Person inputs included are social and demographic characteristics, such as age, gender, ethnicity, and grit-- trait-level perseverance and passion for long term goals (Duckworth & Quinn, 2009). Age, gender, and ethnicity are all demonstrated to correlate with attrition from academic programs (K. McLaughlin et al., 2010; Mulholland et al., 2008; Pryjmachuk et al., 2009), and grit has been associated with educational attainment and number of career changes, surgeon burnout and sense of well-being, and medical resident attrition (Burkhart et al., 2014; Duckworth & Quinn, 2009; K. McLaughlin et al., 2008; Salles et al., 2014; Walker et al., 2016).

For this adapted model, learning experiences refer to the quantity and quality of opportunities inside the classroom and the clinical setting, as well as academic and clinical performance. Career actions are related to employment choices: full- or part- time employment, full-

or partial- scope practice, salary, work setting, and whether the midwives had changed jobs yet. Although midwifery offers a variety of essential career paths, career plans are focused on midwives' job stability and on their intentions related to longer-term workforce needs for full-time, full-scope providers who care for diverse patient populations.

While in Lent's model, self-efficacy expectations and personal outcome expectations result directly from educational experiences and influence career actions, this model positions career perceptions after career actions and in relation to proximal contextual influences, since working midwives' perceptions are affected by their most recent experiences in addition to their more remote experiences. Proximal contextual influences, determined partly by person inputs and partly by prior life choices, are the social and environmental circumstances that also influence self-efficacy, current career actions, perceptions, and future plans (R. Lent et al., 1994; R. W. Lent & Brown, 2013).

The 4 parameters used to examine career perceptions of this sample were: Occupational Self-Efficacy, Personal Outcome Expectancy, Perceptions of Empowerment in Midwifery Scale (3 subscales: autonomy/empowerment, professional recognition, and skills and resources), and satisfaction with salary. Occupational Self-Efficacy (OSE) refers to a sense of being prepared and of having adequate resources to meet work challenges, and Personal Outcome Expectations (POE) are anticipated financial, evaluative, and recognition-type consequences of job performance (R. W. Lent & Brown, 2013; Riggs et al., 1994). Both OSE and POE are demonstrated to correlate with job satisfaction, organizational commitment, and role performance (R. Lent et al., 1994; Riggs et al., 1994; Rigotti et al., 2008). Each of the 4 independent subscales of the Perceptions of Empowerment in Midwifery Scale (PEMS-Revised) demonstrated a moderate effect size in distinguishing whether a midwife considered leaving the profession within the past 6 months ($p < .001$) when used in a U.K. midwife population (Pallant, 2015).

Figure 2 illustrates the adapted model, along with specific variables included in this inquiry.

[Figure 1]

Design and Instrument

This cross-sectional study involved the distribution of a 78-multiple-choice question online survey combining the validated questionnaires described above as well as additional items relevant to the SCCT model. When applicable, Midwifery Masterfile question formatting was implemented, as recommended by ACNM and AMCB for standardized midwifery workforce data gathering (*Domains of inquiry for research studies on the CNM/CM workforce*, 2015).

During the pilot phase of the study, 7 midwives experienced in both clinical and academic settings completed a timed survey, and then critiqued each question for clarity and relevance. Based on this feedback, the survey was revised to minimize survey length (20-30 minutes maximum) and ensure that research aims were met. The final survey was uploaded to Survey Monkey®, an online survey software provider. SCCT model constructs were defined and measured as follows (response options below are post-re-categorization, done for statistical purposes).

Person inputs. Ethnicity is the independent variable of interest. Although the survey included 9 choices for ethnicity (including American Indian or Alaska Native; South Asian; East Asian; Black or African American; Native Hawaiian or other Pacific Islander; Hispanic/Latino; White, not Hispanic/Latino; Other; and "I choose not to respond"), responses were reduced to 2 categories, URM and non-minority (non-minority includes non-Hispanic whites) because of the likely differences between groups, as well as to accommodate statistical requirements—the number of URM respondents was insufficient to allow analysis between minority groups. Other person inputs included are age (years), gender (male, female, other) and grit, all used as control variables. Grit was measured using an 8-item Likert-type scale (5 options ranging from "this is not like me at all" to "this is very much like me").

Background contextual affordances. We include three background contextual affordances in the model as control variables: prior nursing employment (i.e., those with and without 1 year of RN employment), professional certifications and licenses (i.e., those with and without a health-related certification such as doula, lactation consultant, social worker, or RN specialty certification), and midwife role modeling.

Learning experiences. The three intermediate variables measured are: program type (face-to-face, at least partly online), student enrollment (full-time, at least some part-time), and quality of preceptor and faculty mentorship. Preceptor and faculty mentorship are each measured as composites of 3 Likert-type survey items (5 options from strongly disagree to strongly agree) asking respondents to rate faculty or preceptor role modeling, facilitation of learning opportunities, and shared philosophies.

Proximal contextual influences. Proximal contextual factors included dollar amount of educational loans, scholarships, and grants; whether the respondent had loan repayment through work (yes/no); degree of responsibility for household earning (earns at least half of household earnings, earns less than half); responsibility for dependents (no dependents, 1 or more types of dependents); and commute time to work (< 15 min, 15-30 min, 31-60 min, over 60 min).

Career actions. *Full-time work* is defined as at least 35 hours per week, and *full scope practice* indicates that the respondent's work responsibilities encompass well-woman, antepartum, intrapartum, postpartum, newborn, and primary care. *Out-of-hospital* employment settings include home-birth practices, birth centers, and clinics managed by midwives, and *low-resource* employment settings include federally-qualified health centers (and look-alikes), rural health clinics, community clinics (including free clinics), National Health Service Corps sites, Indian Health Service sites, and other Public Health Service sites. *Other* employment settings include private practices, educational institutions, federal government and military, and HMO or hospital-based sites.

Career perceptions. The Occupational Self-Efficacy (OSE) Questionnaire is a 6-item scale(Rigotti et al., 2008), and the Personal Outcome Expectancy (POE) Scale is an 8-item tool.(Riggs et al., 1994) One of the 4 subscales of the Perceptions of Empowerment in Midwifery Scale (PEMS-Revised) was omitted; the five questions related to the "manager support" subscale were omitted due to their lack of relevance within most U.S. practices.(Pallant, 2015) One question to determine salary satisfaction was also included. Each tool uses 5-point Likert-type questions with responses ranging from strongly disagree to strongly agree.

Career plans. In assessing workforce plans of early-career CNMs, respondents were asked how long they planned to remain with their current employers (unsure, 5 years or less, more than 5 years), about whether/how they planned to change their clinical practice hours over the next 5 years (increase hours, decrease hours, leave clinical work, no change/undecided), about their plans for a long-term work setting (out-of-hospital, low-resource, private practice, or other), and whether they planned to precept midwifery students in the future (y,n).

Sampling and Data Collection

In October and November of 2017 and after ethical approval was granted for the study through Emory University's Institutional Review Board, the SurveyMonkey® link was distributed nationally through the ACNM email listserv and through Facebook to CNMs and CMs certified within 5 years. The ACNM email listserv cohort included 1,474 members, who were contacted with an initial email plus two reminders. The link was also posted on social media several times, and contacts were encouraged to share the link. A total sample of 269 CNMs (no CMs) responded to the survey. Due to the snowball sampling distribution of the link through social media, the response rate to the survey distribution is unknown. Data cleaning involved removal of those respondents who graduated before May 2011 or who were not employed at the time of the study. Data from surveys that had mostly complete responses for background, education, and workforce sections were retained, resulting in a possible 244 CNM responses for each item.

Consent

The link's introductory page included survey information, disclosures, and contact information for the principle investigator. Clicking to progress past the introductory page implied informed consent. Ninety-three percent of those who began the survey completed the survey to the end, although some questions were skipped.

Data Analysis

Survey results were downloaded from SurveyMonkey® to IBM SPSS statistical software version 24. Quantitative data were initially reviewed for normality, outliers, and implausible values.

Missing data were examined for type, extent, and presence of bias. Categorical variables were checked for sparse cells and regrouped as needed. Skewed results from 5-point Likert scale questions were dichotomized such that "strongly agree" and "agree" responses are grouped separately from "strongly disagree," "disagree," and "neutral" responses. Statistical analysis, with alpha set at 0.05, was performed for descriptive data, correlations, t-tests or Chi squared tests, and regression parameter estimates for the research questions associated with study aims. To minimize multicollinearity and select the most parsimonious final models, tolerance and variance inflation factor were assessed, and variable selection methods were used within each regression to identify significant predictors.

Results

Study participants

Respondents were from 42 U.S. states, the District of Columbia, 1 U.S. territory, and 1 international location (not specified). Thirty-eight U.S. midwifery educational programs were represented, with the greatest participation from Frontier (22.7% of respondents), Emory (12.5%), Vanderbilt (9.4%), and Yale (7.4%) universities. Ten programs were represented by only 1 student, and another 4 programs by only 2 students.

The proportion of minority CNMs for this cohort, at almost 12%, was lower than previously reported for recently-graduated CNMs/CMs.(*Midwifery Education Trends Report*, 2015) The number of respondents by ethnicity are as follows: white (not Hispanic or Latino) 215, African American 15, Hispanic or Latino 4, Native Hawaiian/Pacific Islander 2, East Asian 1, I choose not to respond 2, and Other 5 (Figure 2). Of those who responded "other", 3 identified as biracial, 1 as American, and 1 as Hungarian.

Since the sample was mostly female, gender was not subsequently used as a control variable for data analysis.

[Figure 2]

Personal and contextual factors

With respect to person inputs and background contextual affordances (age, gender, grit, prior RN work experience, prior health care certification, or prior midwife role model), there were no statistically significant differences between URM and non-minority midwives (Table 1). With respect to proximal contextual influences, there were no statistically significant differences in loans taken to finance midwifery education, work commitment to repay a loan, dependents, level of responsibility for family income, or commute time to work. There was a difference between groups in amounts of grant or scholarship funding for midwifery education; a higher percentage of URMs reported no grants or scholarships, as well as being awarded grants or scholarships above $25,000. A higher percentage of non-minorities were awarded grants or scholarships up to $25,000 (*P*=.057).

[Table 1]

Learning Experiences and Performance

Compared with non-minority midwives, URM midwives were 2.4 times more likely to earn a dual major/degree (OR, 2.37; *P*=.044), but less likely to attend 30 births as a student midwife (OR, 0.35; *P*=.048). The difference in first-time pass rates on the AMCB certification exam was nearly significant (OR, 0.28; *P*=.054); these differences were apparent both before and after controlling for grants/scholarships (Table 2). Although there was no differences between groups' perceptions of program support for culture prior to controlling for grants/scholarships, the difference in ratings of program support for culture were nearly significant after adjusting (OR, 0.40; *P*=.053).

There were no statistically significant differences between groups when comparing midwifery program format, full- versus part-time attendance, rating of faculty and preceptor mentorship, or having received satisfactory student performance evaluations.

[Table 2]

Career Actions

Both URM and non-minority midwives are similarly likely to be working full-time or more, and both groups make approximately the same salary (Table 3). URM midwives are over 12 times more likely to work in an out-of-hospital setting (OR, 12.59; *P*=.052), over 3 times more likely to

work in full-scope practice (OR, 3.35; *P*=.020), and they are significantly less likely to have changed jobs since graduation (OR, 0.31; *P*=.015). These differences existed both before and after controlling for the significant variables above: grants/scholarships, earning a dual major/degree, perception of cultural support from program, attending at least 30 births as a student, and passing the certification exam on first attempt.

[Table 3]

Career Perceptions

Both before and after controlling for significant variables, URM midwives were significantly less likely to agree with the statement "The midwifery profession is a good fit for people within my culture" (CI, -0.84 to -0.22; *P*=.001). Interestingly, URM midwives rated higher on personal outcome expectations before and after controlling for significant variables (grants/scholarships, earning a dual major/degree, perception of cultural support from program, attending at least 30 births as a student, passing the certification exam on first attempt, full scope practice, and holding more than 1 position since graduation). Both URM and non-minority midwives reported moderately high personal outcome expectations, however; 3.80 and 3.54 out of 5, respectively. There were no significant differences in the other variables related to career perceptions (Table 4).

It should be noted that when asked to rate the statement "My work evaluations are accurate" (one of 8 items used to calculate a Personal Outcome Expectancy score), 80 respondents indicated that they do not receive work evaluations. Since URM midwives were less likely to receive work evaluations (48.3% for URMs versus 31.2% for non-minority midwives), POE scores were calculated both with and without this item, demonstrating that mean scores increased significantly when the item is included (including the item: mean 3.57, SD 0.77; excluding the item: mean 3.46, SD 0.79, *P*<.001). As POE score validity depends on responses to all 8 items, only POE scores including all items were used for further analysis, reducing the available data for this variable and for items related to career plans. However, differences in POE between URM and non-minority midwives may be overestimated.

[Table 4]

Career Plans

Prior to statistical adjustment using significant variables from the previous regressions, there were no differences in career plans except that URM midwives were less likely to continue or increase their clinical hours over the next 5 years (OR, 0.45; *P*=.054). After controlling for significant variables, there were no differences between groups' future career plans (Table 5).

[Table 5]

Discussion

This study is one of the first to allow for a broad comparison of the educational and employment experiences of early-career URM and non-minority midwives. While there are more similarities than differences between the 2 groups, these findings may assist in focusing our efforts towards meaningful inclusion of URM midwives within the profession. Our findings, as well as next steps towards structural competency for the midwifery profession, can be framed by adapting the 5 core competencies outlined by Metzl and Hansen (2014) towards our professional structures: 1) recognizing the structures that shape clinical interactions; 2) developing an extra-clinical language of structure; 3) rearticulating "cultural" formulations in structural terms; 4) observing and imagining structural interventions; and 5) developing structural humility (Metzl & Hansen, 2014).

To recognize the political, economic, and social structures shaping the midwifery workforce (adapted structural core competency 1), we need a thorough evaluation of the "who-what-where-when-why-how" forces determining whether those interested—including from disenfranchised groups—decide to pursue midwifery, as well as those forces determining attrition after the point of entry into the profession. Our research showed mainly similarities between early-career URM and non-minority CNMs in terms of their current situations—age, grit, dependents, mentorship, income, employment setting, salary, etc. However, it is critically important to determine why URM midwife students attended fewer births, especially since attending 30 births served as a proxy for quantity—and possibly quality—of opportunities presented by the educational program and/or by the

preceptors. Our survey did not assess the structures that led to matching students with their clinical sites, the types of clinical sites that precepted each student (site type may correlate with patient volume available for clinical opportunities), or the number of sites that precepted each student, but future investigation should determine the extent to which these structural variables and others affected student academic and clinical opportunities and outcomes.

Our research also showed that URM midwives are more likely to consider reducing their clinical hours prior to controlling for variables affected by their URM status, including the learning experiences above and their current perception of inclusion into the profession. This is an important finding, and longer-term consequences require exploration.

We also need to pursue a clearer understanding of the forces related to our unexpected finding that URM midwives were more likely to practice full-scope care, practice in out-of-hospital settings, and less likely to change employers, both before and after controlling for significant variables such as work setting and dual major/degree. The immediate implication is these URM midwives are utilizing a greater breadth of skills (this is likely linked to higher out-of-hospital employment), practicing more often using a midwifery model of care, and have greater employment stability, and there is value in understanding why. However, it is important to ensure that these findings are not reflective of lower career mobility options available to URM midwives, and to better characterize career mobility among early-career midwives in general. The reasons for these findings could also be methodological, i.e., "full-scope" includes responsibility for newborn care, and respondents might have different thresholds for claiming responsibility for the care of newborns.

To develop an extra-clinical language of structure, and to integrate structural terms into our understanding of culture (structural core competencies 2 and 3) (Metzl & Hansen, 2014), midwifery needs to institutionalize our fluency of holism into our documents and our discussions at every practical level and division of our professional work. If we are to *include* midwives from diverse backgrounds, we need to ensure that our systems—from our admissions committee meetings to our classroom case studies, and from our interprofessional consultations to our policy planning

sessions—reach beyond the medical model to continually determine and honor the holistic concerns of both our colleagues and patients. As the URM respondents from this study reported less educational program support for their culture, and a lower scoring of the statement "The midwifery profession is a good fit for people within my culture"—a detailed investigation into the types of economic, political, and cultural interventions that would facilitate inclusion are indicated. To enhance recruitment and minimize attrition of increasingly diverse cohorts of midwifery students, admissions procedures can work with student services to make a routine of determining how, and how well, prospective and current students situate their education into the rest of their lives, and design programs to facilitate students' abilities to maximize engagement in learning.

A variety of interventions may promote structural inclusion—structural core competency 4. By developing a wide variety of program options—full and part-time study, online and campus-based formats, accelerated BSN to MSN programs for non-nurses who wish to become midwives, etc., midwifery education programs have already taken steps to accommodate the needs of students with many contextual constraints, thereby substantially increasing the growth of our workforce (*Midwifery Education Trends Report*, 2015). To reduce economic barriers to workforce growth and distribution, the Institute of Medicine (IOM) in 2004 recommended the removal of financial barriers to health professions education through URM inclusion in a variety of private- and government-funded training and loan repayment programs (Institute of, 2004). Our research indicates that URM midwifery students received a higher level of grant and scholarships to finance their midwifery educations, but educational funding of midwives has been scant compared with government contributions to medical education (*Midwifery Education Trends Report*, 2015). Our finding that work settings did not differ between the 2 groups was unexpected given reports elsewhere of a higher tendency (and a sense of purpose) among URM providers to work with the underserved (Institute of, 2004; *Racial and Ethnic Disparities in Obstetrics and Gynecology*, 2015; W. F. Rayburn et al., 2016), also indicating an opportunity for further incentivizing midwifery workforce distribution.

Other IOM recommendations involve inclusion of people with diverse backgrounds among admissions personnel and faculty, accreditation standards for diversity among students and faculty (with sanctions for unmet standards), and collection and sharing of data related to meeting diversity objectives (Institute of, 2004). However, organizations planning structural interventions might also consider simple measures: a structural intervention that resulted in improved student attendance and engagement at a low-income San Francisco K-8 public school was the installment of no-charge clothes washing machines; the school identified the social barrier that poor hygiene presented and permitted students to wash clothing while in class (Tate, 2016).

To promote structural humility (structural core competency 5), midwives need to be aware of the limitations of structural competency for resolving the challenges of a complex, dynamic system (Metzl & Hansen, 2014). Metzel and Hansen recognized that many clinicians are not equipped with the skill set to resolve every structural issue (Metzl & Hansen, 2014), although beyond our classrooms, resourced interprofessional training and collaboration can help overcome those limitations. For the midwifery profession, structural humility reminds us that our structural competency skills are the beginning of the processes towards understanding and improvement. The IOM recommends institutional efforts to improve climate around diversity, such as cultural competency training of all personnel, partnering with community stakeholders, and mediation processes for those who experience barriers (Institute of, 2004). Becoming a more structurally competent organization will require knowledge of our own limitations, and persistent efforts using strong interprofessional and community partnerships to better understand and strategize the use of our economic, political, and social structures for workforce and patient care advocacy.

Limitations

Our survey responses are subject to coverage, sampling, and nonresponse error for several reasons. One limitation of this research is the small number of URM respondents, which both necessitated grouping all minorities together—a challenge to validity and generalizability—and limited the statistical power of the study to discern smaller effects. Second, the recruitment was

primarily through the ACNM email listserv; as membership is optional, respondents may differ from the entire population of midwives in terms of resources, supports, and professional attitudes. It is unclear whether this may might have contributed to the low response rate from minority midwives, or if this disparity is due to the nature of snowball sampling. Next, our sampling does not account for academic or workforce attrition that predated the investigation, such that the ethnicity-based differences in attrition might be over-or under-estimated. More generally, survey responses evaluating past experiences or impressions of past experiences are subject to recall and response bias.

Conclusion

In general, these findings raise more questions than they resolve, and the findings related to poor cultural support, differential student clinical experiences, and lower initial board pass rates are particularly concerning. Future exploration of these important concerns is essential to ensure that the full resources of a diverse midwifery workforce are mobilized to tackle the challenges presented by our national reproductive outcome disparities and our worldwide reproductive health workforce shortages.

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Table 1: Comparison of personal characteristics, background contextual affordances, and proximal contextual influences of early-career CNMs by ethnicity

Variable	Minority Ethnicity			
	N	**No**	**Yes**	***P***
Person Inputs				
Age, mean (SD)	244	37.22 (8.04)	35.48 (8.37)	.279
Gender female, n (%)	244	212 (98.6)	28 (100)	1.000
Grit score, Mean out of 5 (SD)	239	3.96 (0.52)	4.07 (0.50)	.284
Background Contextual Affordances				
RN work experience ≥ 1 year, n (%)	244	142 (66.0)	19 (65.5)	1.000
Has prior certification(s), n (%)	244	24 (11.2)	4 (13.8)	.755
Prior midwife role modeling, n (%)	244	148 (68.8)	20 (69.0)	1.000
Proximal Contextual Influences				
Loans for midwifery education, n (%)	242			.292
Less than $50,000		81 (38.0)	8 (27.6)	--
$50,000-$99,000		73 (34.3)	9 (31.0)	--
$100,000 or more		59 (27.7)	12 (41.4)	--

Scholarships/ Grants, n (%)	242			.057
$0		92 (43.2)	14 (48.3)	--
$1 to $25,000		86 (40.4)	6 (20.7)	--
$25,000 or more		35 (16.4)	9 (31.0)	--
Work commitment to repay loan, n (%)	241	52 (24.5)	6 (20.7)	.824
Dependents, n (%)	244	120 (55.8)	20 (69.0)	.252
Earns at least half of family's income, n (%)	244	137 (63.7)	20 (69.0)	.729
Commute time to work, n (%)	242			.501
<15 minutes		62 (29.1)	11 (37.9)	--
15-30 min		80 (37.6)	7 (24.1)	--
31-60 min		52 (24.4)	8 (24.6)	--
More than 60 min		19 (8.9)	3 (10.3)	--

Table 2: Minority ethnicity as a predictor of early-career midwives' learning experiences

	Minority Ethnicity							
	Unadjusted Results					Adjusted Results*		
Dependent Variables (Learning Experiences)	**N**	**URM n (%)[1] or mean (SD)[2]**	**non-minority n (%)[1] or mean (SD)[2]**	**OR or (CI)**	***P* for OR or CI**	**N**	**OR or (CI)**	***P* for OR or CI**
Attended online or partially online program	243	16 (55.2)[1]	114 (53.3)[1]	1.08	.847	241	1.19	.700
Enrolled as full-time student only	244	12 (41.4)[1]	63 (29.3)[1]	1.70	.268	242	2.04	.107
Completed dual major/degree	243	14 (48.3)[1]	57 (26.6)[1]	2.57	.029	241	2.37	.044
Faculty mentorship	243	4.19 (1.01)[2]	4.31 (0.82)[2]	(-0.21 to 0.45)	.489	241	(-0.46 to 0.20)	.450
Preceptor mentorship	244	4.26 (0.93)[2]	4.51 (0.77)[2]	(-0.05 to 0.56)	.107	242	(-0.56 to 0.06)	.114
Program was supportive of student's culture, out of 5	244	3.93 (1.28)[2]	4.45 (0.88)[2]	(-0.89 to -0.15)	.005	242	(-0.89 to -0.15)	.006
Received satisfactory performance evaluations throughout program	244	24 (82.8)[1]	192 (89.3)[1]	0.58	.347	242	0.50	.212
Attended at least 30 births as a student	244	23 (79.3)[1]	197 (91.6)[1]	0.35	.044	242	0.35	.048
Passed certification exam on first attempt	244	25 (86.2)[1]	206 (95.8)[1]	0.27	.042	242	0.28	.054

*controlled for grant/scholarship funding

Table 3: Minority ethnicity as a predictor of early-career midwives' career actions

	Minority Ethnicity							
	Unadjusted Results					Adjusted Results*		
Dependent Variables	**N**	**n (%) URM**	**n (%) non-minority**	**OR**	***P* for OR**	**N**	**OR**	***P* for OR**
Works full time or more	244	25 (86.2)	182 (84.7)	1.13	.827	241	1.34	.646
Full-scope practice	237	9 (31.0)	23 (11.1)	3.62	.005	234	3.35	.020
Salary								
Less than $75,000	243	8 (27.6)	40 (18.7)	Reference				
$75,000-99,000		11 (37.9)	116 (54.2)	0.48	.135	242	0.49	.177
$100,000 or more		10 (34.5)	58 (27.1)	0.86	.774		0.99	.981
Current work setting								
Out-of-hospital	236	7 (24.1)	21 (9.8)	3.48	.034	235	12.59	.052
Low-resource		6 (20.7)	41 (19.8)	1.53	.473		1.004	.995
Private practice		9 (31.0)	79 (36.9)	1.19	.745		1.053	.926
Other		7 (24.1)	73 (34.1)	Reference				
Has held more than 1 CNM position since graduation	243	7 (24.1)	104 (48.6)	0.34	.017	240	0.31	.015

* controlled for grants/scholarships, dual degree, support from program for culture, at least 30 births, and passed board on first attempt

Table 4: Minority ethnicity as a predictor of early-career midwives' career perspectives

	Minority Ethnicity							
	Unadjusted Results					Adjusted Results*		
Dependent Variables	**N**	**URM n (%)[1] or mean (SD)[2]**	**non-minority n (%)[1] or mean (SD)[2]**	**OR or (CI)**	***P* for OR or CI**	**N**	**OR or (CI)**	***P* for OR or CI**
Occupational self-efficacy, out of 5	242	4.25 (0.61)[2]	4.42 (0.50)[2]	(-0.37 to 0.02)	.083	231	(-0.37 to 0.05)	.124
Personal outcome expectations, out of 5	162	3.80 (0.65)[2]	3.54 (0.78)[2]	(-0.15 to 0.67)	.219	155	(0.02-0.87)	.040
Satisfied with salary	242	14 (48.3)[1]	106 (49.8)[1]	0.94	.880	232	0.88	.763
PEMS Autonomy/ Empowerment, out of 5	238	4.29 (0.82)[2]	4.42 (0.53)[2]	(-0.35 to 0.10)	.288	228	(-0.41 to 0.05)	.124
PEMS Professional Recognition, out of 5	238	3.94 (0.82)[2]	3.93 (0.73)[2]	(-0.28 to 0.30)	.930	228	(-0.21 to 0.38)	.561
PEMS Skills and Resources, out of 5	232	4.40 (0.75)[2]	4.44 (0.56)[2]	(-0.27 to 0.19)	.754	223	(-0.22 to 0.25)	.902
Midwifery profession is a good fit for people within my culture, out of 5	244	3.97 (1.30)[2]	4.61 (0.75)[2]	(-0.97 to -0.33)	<.001	233	(-0.84 to -0.22)	.001

* controlled for grants/scholarships, dual degree, support from program for culture, at least 30 births, passed board on first attempt, full scope practice, work setting, and held more than 1 position since graduation

Table 5: Minority ethnicity as a predictor of early-career midwives' career plans

	Minority Ethnicity							
	Unadjusted Results					Adjusted Results*		
Dependent Variables	**N**	**n (%) URM**	**n (%) non-minority**	**OR**	***P* for OR or CI**	**N**	**OR**	***P* for OR or CI**
Plans to remain with current employer more than 5 years	241	7 (24.1)	65 (30.7)	0.72	.473	154	0.56	.488
Plans to continue or increase clinical hours over next 5 years	243	18 (62.1)	168 (78.5)	0.45	.054	154	0.68	.598
Long-term plan to work in out-of-hospital	244	7 (24.1)	34 (15.8)	1.69	.265	155	2.58	.405
Long-term plan to work in low-resource setting	244	6 (20.7)	29 (13.5)	1.67	.303	155	1.04	.969
Plans to precept in the future	243	25 (86.2)	187 (87.4)	0.90	.859	154	0.54	.518

* controlled for grants/scholarships, dual degree, support from program for culture, at least 30 births, passed board on first attempt, full scope practice, and held more than 1 position since graduation, personal outcome expectations, midwifery is good fit for my culture

Figure 1: Adapted Social Cognitive Career Theory, with study variables grouped by construct.

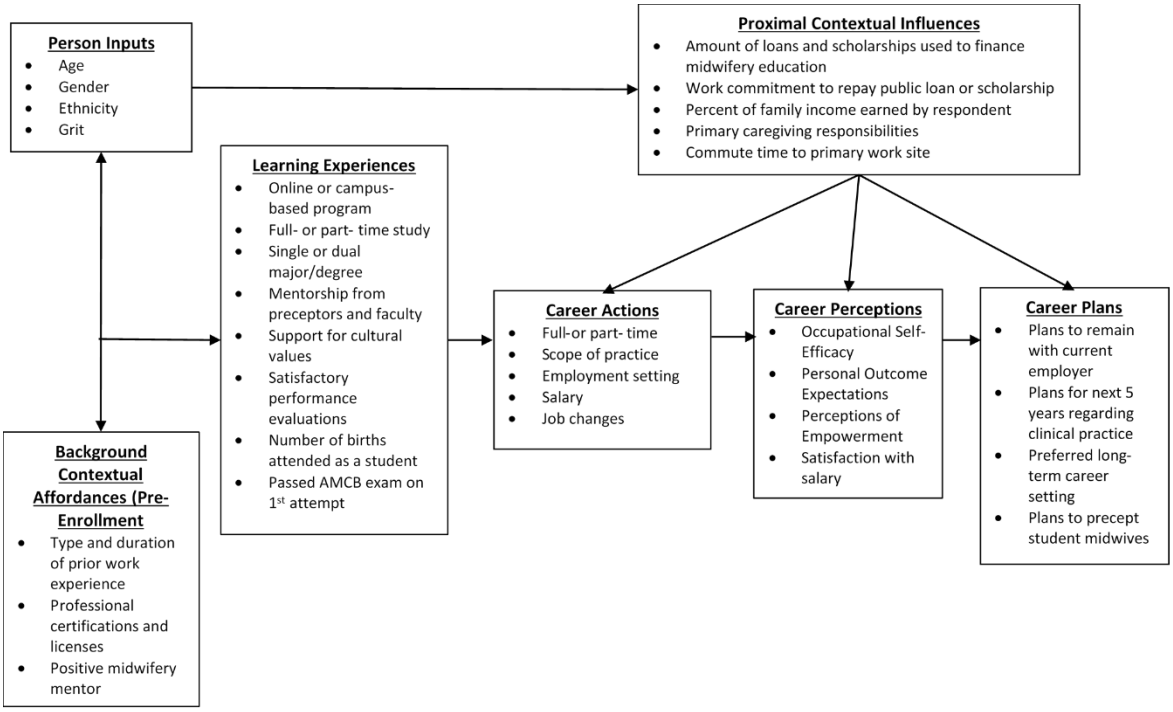
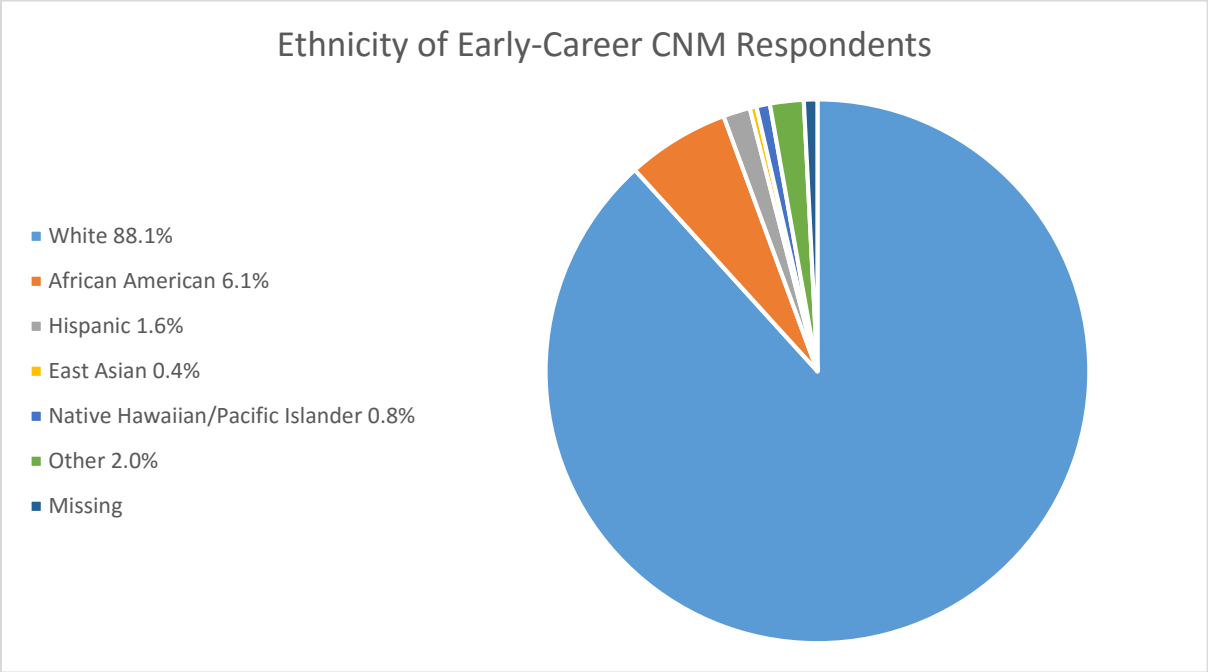


Figure 2: Ethnicity of Early-Career CNM Respondents



Chapter 4: Work environments, employment perceptions, and career plans of early-career nurse-midwives in the U.S.

Introduction

Building a solid body of knowledge about the U.S. midwifery workforce is essential if the profession is to prepare, distribute, and retain midwives to meet the need for greater access to reproductive and primary health care. In the 2015 Series on Midwifery, The Lancet estimated that universal coverage of midwifery interventions for maternal and newborn health has the potential to prevent an estimated 61% of maternal, fetal, and neonatal deaths worldwide (*Comparative Price Report: Variation in Medical and Hospital Prices by Country*, 2013; Homer et al., 2014; M. MacDorman & Mathews, 2008; "March of Dimes 2013 Premature Birth Report Card: United States," 2014; Rosenthal, 2013). This potential extends into the U.S., where despite having the highest health care expenditure in the world (*Comparative Price Report: Variation in Medical and Hospital Prices by Country*, 2013; Homer et al., 2014; M. MacDorman & Mathews, 2008; "March of Dimes 2013 Premature Birth Report Card: United States," 2014; Rosenthal, 2013), health disparities and poor reproductive health outcomes persist, and where 40% of counties had no reproductive health provider [obstetrician-gynecologists (OB/GYNs), certified nurse-midwives (CNMs) or certified midwives (CMs)] in 2011 (*Maternity care shortage areas: Expanding access to women's health*, 2015). In the U.S., the proportions of provider types has been described as upside-down; compared to most other developed countries which have about 2.5 midwives per OB/GYN (and better reproductive health outcomes), the U.S. has about 4 OB/GYNs per midwife (Rowland, McLeod, & Froese-Burns, 2012).

What is known about midwifery workforce size, distribution, and retention

A collaboration between the American College of Nurse-Midwives (ACNM), American Midwifery Certification Board (AMCB), the U.S. Health Resources and Services Administration (HRSA), and the National Center for Health Workforce Analysis (NCHWA) allows for the collection of descriptive data about CNMs, CMs, and midwifery students in programs accredited by the Accreditation Commission for Midwifery Education (ACME) (Fullerton et al., 2015). Data from

these agencies allows for monitoring of workforce trends such as those related to growth, aging, diversity, and employment factors (Fullerton et al., 2015). As of May 2015, the most recent published data show there were 11,194 CNMs and 97 CMs practicing in the U.S., attending 12% of all vaginal births and 8% of total births in 2014 ("Essential Facts about Midwives," 2016). Earlier evidence of a "graying of the profession" may be leveling, likely due to the 25% increase in the number of new midwifery graduates (average age of 35 in 2012) between 2000 and 2014 (*American Midwifery Certification 2016 Annual Report*, 2016; *Midwifery Education Trends Report*, 2015). HRSA's National Sample Survey of Registered Nurses indicated that the average age for U.S. CNMs was 48 years in 2004 (Sipe, Fullerton, & Schuiling, 2009) and 50 years in 2008 (U.S. Department of Health and Human Services & Administration, 2017), and the 2010 ACNM Core Data Survey indicated a median age of 53 (range 23-85 years) (*The ACNM Core Data Survey*, 2010). However, ACNM's 2012 data reports a mean age of 51 (Fullerton et al., 2015). Racial and ethnic diversity is increasing in the midwifery workforce; although underrepresented minorities (URMs) comprised less than 5% of all CNMs/CMs in 2004 (*The ACNM Core Data Survey*, 2010; Sipe et al., 2009) and almost 9% in 2013, URMs comprised 22% of the cohort of newly certified CNMs/CMs in 2013 (Fullerton et al., 2015; *Midwifery Education Trends Report*, 2015).

The number of U.S. midwives is growing, but especially when compounded by the mal-distribution of providers, the numbers remain inadequate to address the overall shortage of reproductive health care providers. The American College of Obstetricians and Gynecologists (ACOG) has projected a 25% shortage of OB/GYNs by 2030, at the same time that the U.S. Census Bureau projects that the number of U.S. births will increase 14% annually by 2060 (Bushman, 2015; *Midwifery Education Trends Report*, 2015). In its 2012 Annual Report, ACNM set a goal of graduating 1,000 new CNMs/CMs every year (Nurse-Midwives, 2013), but while the number of new midwifery graduates has increased, there was still only a total of 583 new CNMs and CMs graduating in 2014 (*American Midwifery Certification 2016 Annual Report*, 2016; *Midwifery Education Trends Report*, 2015). A trend towards increased out-of-hospital births can contribute to the safety and satisfaction of low-

risk women (and midwives) (M. F. MacDorman, Declercq, & Mathews, 2013), but in 2014 94% of midwife-attended births occurred in hospitals, and over 55% of working midwives were employed either by hospitals or physician practices ("Essential Facts about Midwives," 2016). As of 2010, midwives attend births in only 1/3 of rural maternity hospitals, but participation is limited by state regulations affecting midwives' practice autonomy (Kozhimannil, Henning-Smith, & Hung, 2016).

Little research addresses the employment or career retention of U.S. midwives. Descriptive data indicate an upward trend in the average number of years midwives remain certified, from 14 years in 2006 to 19 years in 2012, but a slight decrease in the percentage of midwives who are engaged in full-time midwifery employment, from 73% to 70% over the same period (Fullerton et al., 2015; Schuiling, Sipe, & Fullerton, 2010). Other than this type of descriptive data, midwifery workforce retention research is generally from outside of the U.S. For example, studies of midwives' burnout in Australia (2011) and the U.K. (2013) indicate that burnout increases with number of shifts, number of patients with psychosocial issues, and lack of autonomy, and that burnout is reduced by management support for work-life balance and by midwives' own self-care (Mollart, Skinner, Newing, & Foureur, 2013; Yoshida & Sandall, 2013). Studies of European midwives explained a variety of influences on turnover, relating lower turnover to more experience (associated with less routine and more power), adequate work-life balance (including the ability to manage family responsibilities), higher education (promotes career stability, but also increases marketability), opportunities for advancement, adequate pay, distributive justice (greater rewards for better performance, especially as compared with peers), positive work environment (involves quality of communication, role clarity, autonomy, and supervisor support), and job satisfaction (which is related to effective communication, adequate staffing, and high quality standards) (McCarthy, Tyrrell, & Cronin, 2002; Pugh, Twigg, Martin, & Rai, 2013).

While the existing research provides an initial foundation upon which to build our understanding of the midwifery workforce, there are gaps in our knowledge of how U.S. midwives' employment perspectives and career plans might impact workforce capacity and distribution. In

"The State of World's Midwifery 2014", the United Nations Population Fund, World Health Organization, and the International Confederation of Midwives called for further data on the identity, status, salaries, and attrition of midwives (*The State of the World's Midwifery*, 2014). As part of its 2015 Issue Brief: Domains of Inquiry for Research Studies on the CNM/CM Workforce, ACNM called for further analysis of midwifery workforce settings, responsibilities, salaries, career and job satisfaction, employment plans, educational funding, and factors leading to attrition (*Domains of inquiry for research studies on the CNM/CM workforce*, 2015). The call further encouraged the collection of standardized "Midwifery MasterFile" data to allow for improved workforce analysis and communication between agencies such as ACNM, AMCB, HRSA, and NCHWA (Fullerton et al., 2015).

There is a need to evaluate these issues for the entire midwifery workforce. However, evaluating the employment, perspectives, and career plans of early-career midwives may provide greater insights to inform rapid adaptation of educational programs, professional organizations, and health systems to better meet patient needs and workforce interests. While descriptive data exist and are collected systematically, gaps exist in the understanding of interactions between midwives' personal and background characteristics, learning experiences, work environments, employment perspectives, and career plans. This research aims to gain a better understanding of these interactions, as greater knowledge may facilitate the strategic preparation, distribution, and retention of the midwifery workforce.

Methods

Social Cognitive Career Theory

An adapted version of the Social Cognitive Career Theory (SCCT) model, pictured in Figure 1 with study variables listed under each construct, provides the framework for this research. SCCT, developed by Robert Lent, Steven Brown, and Gail Hackett, was developed to further our understanding of three aspects of career development: the formation and development of career-related interests, decision-making related to academic and career options, and performance and

persistence related to academic and occupational pursuits (R. Lent, Brown, & Hackett, 1994). Woeber and Sibley (2017) provide an explanation of how this model was adapted for the study of the early-career midwifery workforce, including detailed descriptions of the constructs whose related variables act as controls for the variables of primary interest for this investigation: person inputs, background contextual affordances, and learning experiences (Woeber & Sibley, 2017). For this research, the primary constructs of interest are career actions, career perceptions, proximal contextual factors, and career plans.

Career actions are related to employment choices: full- or part- time employment, full- or partial- scope practice, salary, work setting, and job turnover. Career perceptions include occupational self-efficacy (OSE), which evaluates functional and empowerment aspects of clinical practice; personal outcome expectancy (POE), which evaluates expectations of how work performance affects rewards such as compensation, advancement opportunities, and recognition; and other measures indicating a midwife's sense of mastery, meaning, and support for work. Proximal contextual influences are the social and environmental circumstances that may contribute to an individual's sense of self-efficacy, as well as to her/his current career actions, perceptions, and future plans (R. Lent et al., 1994; R. W. Lent & Brown, 2013). Career plans are focused on midwives' intentions related to workforce needs for full-time, full-scope providers who care for diverse patient populations and who assist in the training of the future midwifery workforce.

[Figure 1]

Design and Instrument

This cross-sectional study involved the distribution of a 78-multiple-choice question online survey that combined the validated questionnaires described above with additional items relevant to the SCCT model. When applicable, Midwifery Masterfile question formatting was implemented, as recommended by ACNM and AMCB for standardized midwifery workforce data gathering (*Domains of inquiry for research studies on the CNM/CM workforce*, 2015).

During the pilot phase of the study, 7 midwives experienced in both clinical and academic settings completed a timed survey, and then critiqued each question for clarity and relevance. Based on this feedback, the survey was revised to minimize survey length (20-30 minutes maximum) and ensure that research aims were met. The final survey was uploaded to Survey Monkey®, an online survey software provider. SCCT model constructs were defined and measured as follows (response options below are post-re-categorization, done for clarity and for statistical purposes).

Person inputs. Person inputs included are age (years), gender (male, female, other), grit, and ethnicity, all used as control variables. Grit was measured using an 8-item Likert-type scale (5 options ranging from "this is not like me at all" to "this is very much like me"). The survey included 9 choices for ethnicity (including American Indian or Alaska Native; South Asian; East Asian; Black or African American; Native Hawaiian or other Pacific Islander; Hispanic/Latino; White, not Hispanic/Latino; Other; and "I choose not to respond"), but responses were reduced to 2 categories, URM and non-minority (non-minority includes non-Hispanic whites) because of the likely differences between groups, and because the number of URM respondents from any individual minority group was insufficient to allow analysis between minority groups.

Background Contextual Affordances. We include three background contextual affordances in the model as control variables: prior nursing employment (i.e., those with and without 1 year of RN employment), professional certifications and licenses (i.e., those with and without a health-related certification such as doula, lactation consultant, social worker, or RN specialty certification), and midwife role modeling.

Learning Experiences. The 5 variables measured are: program type (face-to-face, at least partly online), student enrollment (full-time, at least some part-time), and three yes/no questions asking whether the student completed a dual major/degree, attended at least 30 births as a student midwife, and passed the certification exam on the first attempt.

Proximal Contextual Influences. Proximal contextual factors included dollar amount of educational loans, scholarships, and grants; whether the respondent had loan repayment through

work (yes/no); degree of responsibility for household earning (earns at least half of household earnings, earns less than half); responsibility for dependents (no dependents, 1 or more types of dependents); and commute time to work (< 15 min, 15-30 min, 31-60 min, over 60 min).

Career Actions. Full-time work is defined as at least 35 hours per week, and full scope practice indicates that the respondent's work responsibilities encompass well-woman, antepartum, intrapartum, postpartum, newborn, and primary care. Out-of-hospital employment settings include home birth practices, birth centers, and clinics managed by midwives, and low-resource employment settings include federally-qualified health centers (and look-alikes), rural health clinics, community clinics (including free clinics), National Health Service Corps sites, Indian Health Service sites, and other Public Health Service sites. Private practice sites include those owned or managed by a physician or a non-physician. Other employment settings include educational institutions, federal government and military, and HMO or hospital-based sites.

Career Perceptions. The 4 parameters used to examine career perceptions of this sample were Occupational Self-Efficacy (OSE), Personal Outcome Expectancy (POE), Perceptions of Empowerment in Midwifery (PEMS) Scale, and satisfaction with salary. Each tool uses 5-point Likert-type questions with responses ranging from strongly disagree to strongly agree. OSE is a 6-item scale, validated in a healthcare population, which correlates with job satisfaction ($r = 0.30$), organizational commitment ($r = 0.25$), and individual performance ($r = 0.22$) (Rigotti, Schyns, & Mohr, 2008). OSE reliability across the five European countries studied ranged from 0.85-0.90 (Rigotti et al., 2008). The POE Scale is an 8-item tool found to correlate with job satisfaction ($r = 0.71$), organizational commitment ($r = 0.71$), and individual performance ($r = 0.17$) in a non-healthcare population (Riggs, Warka, Babasa, Betancourt, & Hooker, 1994). The Perceptions of Empowerment in Midwifery Scale (PEMS-Revised) has 4 subscales: Autonomy and Empowerment (AE), Manager Support (MS), Professional Support (PS), and Skills and Resources (SR). Each of the 4 independent subscales of the demonstrated odds ratios > 2.0 when distinguishing whether a U.K. midwife considered leaving the profession within the past 6 months ($p < .001$) (Pallant, 2015).

Because of the differences in practice structures between the U.S. and the U.K., the 5 questions of the MS subscale were omitted from our survey.

Career Plans. In assessing workforce plans of early-career CNMs, respondents were asked how long they planned to remain with their current employers (unsure, 5 years or less, more than 5 years), about whether/how they planned to change their clinical practice hours over the next 5 years (increase hours, decrease hours, leave clinical work, no change/undecided), about their plans for a long-term work setting (midwifery-run, low-resource, or other), and whether they planned to precept midwifery students in the future (y,n).

Sampling and Data Collection

In October and November of 2017 and after ethical approval was granted for the study through Emory University's Institutional Review Board, the SurveyMonkey® link was distributed nationally as the Midwifery Education and Workforce Survey (MEW Survey) through the ACNM email listserv and through Facebook to CNMs and CMs certified within 5 years. The ACNM email listserv cohort included 1,474 members, who were contacted with an initial email plus two reminders. The link was also posted on social media several times, and contacts were encouraged to share the link. A total sample of 269 CNMs responded to the MEW Survey (no CMs responded). Due to the snowball sampling distribution of the link through social media, the response rate to the survey distribution is unknown. Data cleaning involved removal of those respondents who graduated before May 2011 or who were not employed at the time of the study. Data from surveys that had mostly complete responses for background, education, and workforce sections were retained, resulting in a possible 244 CNM responses for each item.

Consent

The link's introductory page included survey information, disclosures, and contact information for the principle investigator. Clicking to progress past the introductory page implied informed consent. Ninety-three percent of those who began the survey completed the survey to the end, although some questions were skipped.

Data Analysis

MEW Survey results were downloaded from SurveyMonkey® to IBM SPSS statistical software version 24. Quantitative data were initially reviewed for normality, outliers, and implausible values. Missing data were examined for type, extent, and presence of bias. Categorical variables were checked for sparse cells and regrouped as needed. Skewed results from 5-point Likert scale questions were dichotomized such that "strongly agree" and "agree" responses are grouped separately from "strongly disagree," "disagree," and "neutral" responses. Statistical analysis, with alpha set at 0.05, was performed for descriptive data, correlations, t-tests or Chi squared tests, and regression parameter estimates for the research questions associated with study aims. To minimize multicollinearity and select the most parsimonious final models, tolerance and variance inflation factor were assessed, and variable selection methods were used within each regression to identify significant predictors.

Results

Study Participants

The 244 respondents were from 42 U.S. states, the District of Columbia, 1 U.S. territory, and 1 unspecified international location (Table 1). Almost all (99%) were female, 88% non-Hispanic white, and respondents were 37 years of age on average. The majority (89%) were responsible for at least half of their household income, and 57% were primary caregivers. The average Grit score was 4.0 out of 5, "very gritty".(Duckworth & Quinn, 2009) Almost all (94%) worked in some capacity for at least a year prior to becoming midwives; most (66%) worked as RNs, and many (42%) reported working in another capacity in healthcare. A minority (12%) reported holding a professional certification, such as doula, lactation consultant, social worker, RN specialty, or Nurse Practitioner certification, prior to enrollment in a midwifery program, and another 29% earned a dual major or degree while becoming a midwife.

Respondents represented 38 U.S. midwifery educational programs, with the greatest participation from Frontier (22.7% of respondents), Emory (12.5%), Vanderbilt (9.4%), and Yale

(7.4%) universities (Table 1). Fourteen of the programs were represented by 1-2 students. Slightly over half (53%) attended a program that was at least partly online, 69% attended full-time, and 29% completed a dual major or degree. Most (87%) took loans to finance their midwifery educations, with 62% of respondents taking at least $50,000 in loans. Slightly over half (56%) also used scholarships or grants to finance their midwifery educations; the majority of these were under $25,000. Most (89%) consistently received positive academic and clinical performance evaluations, 90% attended at least 30 births as students, and 95% passed the midwifery certification examination on their initial attempt.

[Table 1]

Work Environments

The majority of early-career CNMs (85%) work at least 35 hours per week, and while 80-90% provide pregnancy and well-woman care, only 13% provide full-scope services (Table 1). Figure 2 illustrates the scope of practice for this sample (MEW Data), comparing those employed full-time with 2013 AMCB data of full-time midwives. While 11.5% work in out-of-hospital sites, 19% work in low-resource settings, and 36% work in private practice, one-third (33%) are employed in "other" sites, such as educational institutions, federal government and military, and HMO or hospital-based sites (Figure 3).

[Figure 2]

[Figure 3]

Midwives' work settings are significantly correlated with provision of full-scope care; full-scope care is provided by 41% of those in out-of-hospital settings, 22% of those in low-resource settings, 31% of those in private practice, and 6% of those in other settings ($P<.001$). Approximately half (52%) earn from $75,000-99,000 per year, with 20% making less and the remainder making at least $100,000 per year. Salaries vary by work setting; lower salaries are most likely out-of-hospital, and higher salaries are most likely in private practice ($P<.001$, Figure 4).

[Figure 4]

Almost half of respondents (46%) have changed positions since the time of graduation from their midwifery program; reasons are summarized in Figure 5. The most commonly cited reasons have to do with improving work hours/schedule, increasing compensation, changing (unspecified) work responsibilities, seeking a shared philosophy of care, and desiring more respect. "Other" reasons for changing jobs included taking opportunities to join or leave the military, open a birth center, attend out-of-hospital births (2 respondents), return to full scope care (2 respondents), change to hospitalist position, become self-employed, and attend to family responsibilities. Still others reported that the change resulted from practice closure (3 respondents) or change of ownership, fellowship completion, inadequate clinical support (2 respondents), or questionable practice viability. Having changed positions did not significantly predict any of the current measures of employment perceptions or future career plans.

Employment Perceptions

Excepting the data for satisfaction with salary (which were symmetrically distributed around the mean), data for employment perceptions were skewed left. Therefore, we used cutpoints at the medians (out of 5 points) to compare midwives who scored higher (cutpoint and above) versus lower (below the cutpoint) on these measures (Tables 2 and 3 show data for proximal contextual and career action predictors).

[Table 2]

[Table 3]

Occupational Self-Efficacy. The median Occupational Self-Efficacy (OSE) score was 4.5 of 5 (SD 0.51), and all 6 scale items were skewed left with medians of at least 4.0. Prior to controlling for other variables, there were several variables significantly related to higher OSE ($P<.05$): higher Grit score, prior RN employment, educational loans from $50,000 to $99,000, and being a primary caregiver. After controlling for those variables plus others approaching significance from simple regression, the following were significant predictors of reporting higher levels of occupational self-efficacy: Grit (OR 3.21, $P=<.001$), educational loans from $50,000 to $99,000 (OR

2.12; P=.036), responsibility for at least half of household earning (OR, 2.11; *P*=.021), and being a primary caregiver (OR, 2.19; *P*=.016). There were no significant background contextual factors, learning experiences, or career actions.

Personal Outcome Expectancy. The mean and median Personal Outcome Expectancy score were 3.56 and 3.75 of 5 (SD 0.77), respectively. Seven of the 8 items had means and medians above 3.0, but for the statement "Around here, such things as salary and promotions are determined by how well a person does his or her job", the mean was 2.47 and the mode was 2.0 (disagree). For the statement "My work evaluations are accurate", 80 respondents indicated that they do not receive work evaluations. When POE scores were calculated omitting this item, the mean and median scores were 3.46 and 3.57 (SD 0.79), respectively. Also, receipt of work evaluations was less likely for racial and ethnic minority midwives (48.3% missing for minority versus 31.2% for non-minority midwives), and depending upon employment site; work evaluations were not provided for 43% of CNMs at out-of-hospital sites (who in some cases are solo providers, making work evaluations unlikely), 23% of CNMs at low-resource sites, 53% at private practice sites, and 15% of CNMs from other sites. As POE score validity depends on responses to all 8 items, only POE scores including all items were used for further analysis, reducing the available data for this variable and for items related to career plans. Therefore, the POE scores reported may be over- or underestimated, especially for minority midwives and those working in out-of-hospital sites or private practices.

In unadjusted analyses, only earning a single major/degree (rather than a dual) was significantly associated with higher POE scores. After controlling for several other variables approaching significance from simple regression (including salary), single major/degree was no longer significant, and only salary of at least $100,000 was a significant predictor (OR, 2.85; *P*=.047).

Satisfaction with Salary. The mean and median scores for the item asking respondents their degree of agreement with the statement "I am satisfied with the amount I am paid for my work as a midwife" were 3.07 and 3.0 of 5 (SD 1.42), respectively. Prior to statistical adjustment, the following variables were associated with a rating of at least 3.0 (neutral-strongly agree): employment

fulfills loan repayment, full-time employment, and higher salary. After adjustment using these variables and near-significant variables, only salary was a significant predictor. Compared with those who earned less than $75,000 yearly, those who earned $75,000-$99,000 were over 9 times more likely to be more satisfied (*P*<.001), and those who earned at least $100,000 were 36 times more likely to be more satisfied with their salaries (*P*<.001).

Autonomy/Empowerment. The median score using the PEMS Autonomy/Empowerment scale was 4.5 of 5 (SD 0.57), and all 4 scale items were negatively skewed with means and medians of at least 4.0. The following variables were significantly associated with higher scores of autonomy and empowerment prior to adjustment: prior RN employment, having a midwife role model prior to midwifery education, graduating from an online midwifery program, scholarships/grants over $25,000 for midwifery education, being a primary caregiver, work setting, full-scope practice, and employment in an out-of-hospital setting. After adjustment, only working full time (OR, 2.63; P=.036) and full-scope practice (OR, 5.04; *P*=.009) increased the likelihood of scoring above the median. The personal, background, and learning variables were no longer statistically significant predictors.

Professional Recognition. The median score using the PEMS Professional Recognition scale was 4.2 (SD 0.74), and all 5 scale items had means above 3.5 and medians of at least 4.0. Prior to controlling for other variables, the following were associated with a higher Professional Recognition score: passing the certification exam on 1st attempt, longer commute, and full-time practice. After adjustment, only passing the certification exam on 1st attempt remained significant (OR, 8.45; *P*=.009).

Skills and Resources. The median score using the PEMS Skills and Resources scale was 4.6 (SD 0.58), and all 5 scale items had means and medians of at least 4.0. There were a number of variables significantly associated with higher Skills and Resources scores prior to adjustment: higher age, higher Grit score, graduating from an online midwifery program, completing a dual major/degree, consistently satisfactory student academic and clinical performance, loans between

$50,000 and $99,000 for midwifery education, having no scholarships/grants for midwifery education, responsibility for at least half of household earning, full-time practice, and full-scope practice. After controlling for these variables plus those approaching significance (ethnicity, prior RN employment, attending at least 30 births as a student, current employment at a loan repayment site, commute, and salary), many factors remained significant: Grit (OR, 3.90; *P*<.001), graduating from an online midwifery program (OR, 2.27; *P*=.040), consistently satisfactory student academic and clinical performance (OR, 4.72; *P*=.007), attending at least 30 births as a student (OR, 4.43, *P*=.011), loans between $50,000 and $99,000 for midwifery education (OR, 2.31, *P*=.049), having no scholarships/grants for midwifery education (OR, 0.37; *P*=.018 for scholarships/grants less than $25,000, and OR, 0.33; *P*=.047 for scholarships/grants $25,000 or more), and full-scope practice (OR, 3.76; *P*=.027).

Career Plans

Plans to Remain with Current Employer. Almost half (47%) of early-career CNMs plan to remain in their current employment position for 5 years or less, while 30% plan to remain longer than 5 years and the remainder are unsure of their plans. When determining factors related to the midwives' plans to remain with their current employers, there were many associations before controlling for other significant variables: higher age, higher grit score, online midwifery education, earning a single major/degree while enrolled, no scholarships/grants for midwifery education, having dependents, working full-time, higher OSE and POE scores, and higher scores on all 3 PEMS measures (Tables 4-6). When multinomial logistic regression was performed including those variables plus others approaching significance from simple regression, we found that the following variables reduced the likelihood of planning to remain with current employer: prior RN experience (OR 0.17; *P*=.016), scholarship/grant of at least $25K for midwifery education (OR, 0.11; *P*=.011), and holding more than 1 position since graduation (OR, 0.26; *P*=.022). In contrast, a higher POE score increased the likelihood of planning to remain with a current employer (OR, 4.42; *P*=.001).

[Table 4]

[Table 5]

[Table 6]

Plans for Employment in an Out-of-Hospital Setting. Approximately 14% of early-career CNMs plan to work in out-of-hospital settings in the future. Simple regression demonstrated a variety of associations with planning to work in an out-of-hospital setting: higher age, prior RN experience, not passing the certification exam on 1st attempt, absence of a scholarship/grant over $25,000 for midwifery education, current job not fulfilling loan repayment, full-scope practice, annual salary less than $75,000, current work in out-of-hospital or private practice setting, and lower POE score. Multinomial logistic regression demonstrated that current work in an out-of-hospital setting increases the likelihood of planning employment in an out-of-hospital setting by more than 35 times over other settings (OR, 35.95; *P*=.001) and that current work in a private practice setting increases the likelihood by over 6 times (OR, 6.20; *P*=.025). In contrast, those planning employment in an out-of-hospital setting were likely to currently have lower POE scores (OR, 0.28; *P*=.008) and a lower amount of education scholarships or grants (OR 0.21; P=.050).

Plans for Employment in a Low-Resource Setting. Approximately 14% of early-career CNMs plan to work in low-resource settings in the future. Simple regression showed an association between this plan and several variables: having a scholarship/grant over $25,000 for midwifery education, current job fulfilling loan repayment, responsibility for at least half of household earning, commute time 15-30 min, full-scope practice, and current work in low-resource setting. After multinomial logistic regression, the only significant predictors of planning to work in a low-resource setting were shorter commute (15-30 minutes, OR, 0.14; *P*=.026) and current work in low-resource setting—this predicted work in a low-resource setting by over 68 times (OR, 68.79; *P*=<.001).

Plans to Maintain or Change Clinical Hours. The majority of early-career CNMs (68%) are either undecided or plan to maintain their current number of clinical hours, while 9% plan to increase clinical hours, 18% plan to decrease clinical hours, and 5% plan to leave clinical practice altogether. Of the personal inputs, background and proximal contextual factors, learning

experiences, career actions, and career perceptions included in this research, none were significant predictors of the CNMs' plans to maintain or change their clinical hours.

Plans to Precept. A large majority (87%) plan to serve as preceptors to student midwives in the future. Simple regression showed an association between plans to precept and younger age, satisfactory student performance evaluations, responsibility for at least half of household earning, and a higher PEMS skills/resources score. After multinomial logistic regression, predictors included slightly younger age (OR, 0.94; *P*=.032) and higher PEMS skills/resources score (OR 3.10; *P*=.002).

Discussion

This study provides important, updated information about the employment, experiences, and career plans of an important U.S. workforce cohort—early-career midwives. Our findings provide insight about determinants of their career perspectives, and link their perspectives to future plans for participation within the reproductive health workforce. With consideration of goals related to reproductive health outcomes, we can work to strategize effective approaches for the contribution of midwives towards optimal workforce preparation, distribution, and retention.

Career Perspectives as Measureable Links to Career Plans

The measureable links between career actions and career plans are the career perspectives. The career perspectives measurement scales used for this research focus on two types of objectives: OSE and POE are associated with employment-related outcomes—greater job satisfaction, organizational commitment, and individual performance—and the PEMS measures (autonomy/empowerment, professional recognition, and skills and resources) are associated with career-level decisions about remaining in the profession. Our research demonstrates that despite working in a variety of settings, respondents' high ratings on scales of employment perceptions indicate a generally positive outlook for both employment- and career- related workforce outcomes.

Almost all of the SCCT constructs affect some aspect of early-career midwives' career perceptions. Midwives are a "very gritty" group of professionals in general, and the grittiest are more likely to score higher on scales relating to both employment- and career-related outcomes (OSE and

PEMS Skills and Resources). Unexpectedly, other person inputs (age, ethnicity) and background contextual factors such as prior RN employment, prior certification, or prior midwife role model, did not influence career perceptions. Likewise, although learning experiences occurred fairly recently for these early-career professionals, educational factors such as graduating from an online program, receiving satisfactory performance evaluations, attending at least 30 births, and passing the certification exam on first attempt only significantly influenced the career-related PEMS measures, and not those more closely related to current employment outcomes. However, these educational factors exhibited fairly large effects on career-related outcomes, perhaps indicating ongoing resourcefulness and success that increase career engagement.

While several proximal contextual factors increased scores for both employment-and career-related outcomes (variables such as educational loans and caregiving for dependents were significant), it was unexpected that educational scholarships and grants actually reduced PEMS scores related to skills and resources. Further research is needed to confirm and explore this finding, define a mechanism that clarifies this relationship, and develop a more strategic allocation of funding if indicated.

Not surprisingly, career action variables were linked to both employment- and career-related outcomes. For instance, POE scores, reflecting material and non-material personal gains expected from greater effort and work performance, were only predicted by higher salaries—not by any personal, contextual, or educational factors, nor by any of the survey's work-related variables besides higher salary. Meanwhile, other work-related variables such as full-time and full-scope employment increased PEMS scores related to autonomy/empowerment and skills/resources, which are linked with career-related decision-making. The finding that work setting did not influence any of the career perspectives surveyed was surprising, but this suggests that a variety of settings have been found suitable by the diverse group of midwives. Likewise, there were no differences in career perspectives for those who have already changed jobs, and together with generally high scores on

career perspectives measures, this suggests that midwives are able to effectively change their employment situations to suit their personal needs.

While the scales included in the survey may be associated with general employment and career outcomes, only POE significantly predicted some of the career plans of interest. Specifically, higher POE score, but not salary or satisfaction with salary, was predictive for planning to remain with current employer for more than 5 years. Since seeking higher pay or benefits was a top rationale given by those who had already changed midwifery jobs, this affirms for employers that employee turnover might be influenced by both financial and non-monetary rewards. Interestingly, lower POE scores were related to working in an out-of-hospital setting. As current work in an out-of-hospital setting is so highly predictive of planning to work in the same type of setting in the future, one can deduce that out-of-hospital settings either offer rewards that are not merit-based, or that those rewards are less important to midwives choosing to work out-of-hospital.

Possible Trends in Workforce Preparation, Distribution, and Retention

Our research highlights some interesting findings for the future preparation, distribution, and retention of midwives. One encouraging finding relates to having sufficient numbers of midwives planning to be employed by educational institutions. AMCB recertification data from 2013 reported that 8.7% of full-time midwives were employed by educational institutions (Fullerton et al., 2015), and 18% of our respondents indicated a plan to become employees of educational institutions. This increase may partially result from the availability of the DNP as a route to entry into faculty roles, although this group likely also includes masters-prepared midwives employed by schools of nursing or schools of medicine.

Possible shifts in the future distribution of the workforce are also notable. Based on our research, possible shifts may include an increase in employment in out-of-hospital birth settings, as the most recent Core Data Survey reported that 10% of midwives were attending births at home or in free-standing birth centers (Fullerton et al., 2015). Our respondents indicated that while 11.5% currently practice in out-of-hospital settings, 16% plan to do so in the future. Another shift indicated

by these data is a decrease in the proportion of midwives practicing in low-resource settings. AMCB Core Data reported that 15% of midwives work in community health or nonprofit settings (Fullerton et al., 2015), but only 13.5% of our respondents' future plans included low-resource settings. For this cohort, current out-of-hospital and low-resource work settings were strong predictors of remaining in those clinical settings.

Overall, our findings related to retention reflect typical early-career workforce patterns of employment and mobility as well as midwifery workforce patterns observed previously. Compared with 2012 AMCB recertification data, this cohort reports a higher rate of every type of clinical practice except newborn care, and their rate of full-time employment, at 85%, is higher than the rate of 66% reported for all midwives (Fullerton et al., 2015). However, given respondents' reported plans to reduce clinical hours (18%) or leave clinical practice (5%), the rate of full-time employment may return to baseline. Furthermore, the rate of the midwives' employment turnover is within normal range for early-career employees; Although the 2016 National Healthcare Retention & RN Staffing Report shows that Advanced Practice Nurses tend to have an annual turnover rate of 8.5%, it also allows for higher turnover in the first years of service (*2016 National Healthcare Retention & RN Staffing Report*, 2016). Forbes reports that 45% of employers expect new employees to stay only 2 years or less (Zimmerman, 2016). Workplace turnover may be costly for employers, but from the employee perspective—and likely for the advancement of the profession—job changes can be important for increasing salaries, offering advancement opportunities, and improving cultural and geographic compatibility (Zimmerman, 2016).

Implications for Preparation, Distribution, and Retention in the Workforce

The findings that PEMS Skills and Recognition score was a positive predictor of plans to precept midwifery students in the future, and that several learning experience variables influenced PEMS SR scores, reinforce the importance of ensuring the support of health care structural factors, i.e., adequate preceptor training, government support to finance training or preceptors and students, and organizational support valuing the effort of precepting towards work productivity. Future

research may provide further clarification of the roles of those reporting engagement in education, i.e., preceptor versus faculty, as well as necessary faculty:student ratios and effective incentives for each role, to allow strategic innovations to manage staffing for education and training.

As the safety of out-of-hospital births for low-risk women is established (both at home and in freestanding birth centers), and as the health system costs are lower than for hospital-based births, continued efforts towards building institutional capacity to accommodate increasing interests in working and birthing out-of-hospital are worthwhile (Cheyney et al., 2014; Stapleton, Osborne, & Illuzzi, 2013). If increased distribution of the workforce to these settings is desirable for improved health outcomes and reduced healthcare costs, further research might determine the extent to which higher numbers of midwifery students might train and find early employment in these sites.

Monetary and non-monetary compensation for midwives may affect recruitment, distribution, and retention, but these factors require a deeper understanding of the relationships between salary, satisfaction with salary, loans and scholarships for midwifery education, and POE scores. Those considering a career in midwifery—as clinicians or as educators—may turn to alternatives if compensation does not justify the time and effort expended for education and work. A better understanding of these relationships, combined with legislative reform of regulations limiting practice autonomy, may allow for more effective incentivization of workforce distribution to low-resource populations.

The scales used in the study survey to understand career perspectives appear to be useful for learning about general employment- and career plans, and may help predict some of the more specific outcomes such as remaining in a current position, working in an out-of-hospital setting, and precepting midwifery students. However, none of the variables measured here were significantly associated with changes in clinical hours, and longer-term studies are needed to determine how well midwives are able to meet their practical and vocational needs, and how changes in career plans over time affect the workforce and patient outcomes.

Limitations

Our survey responses are subject to coverage, sampling, and nonresponse error for several reasons. Recruitment was primarily through the ACNM email listserv; as membership is optional, respondents may differ from the entire population of midwives in terms of resources, supports, and professional attitudes. Also, our sampling does not account for academic or workforce attrition that predated the investigation. More generally, survey responses evaluating past experiences or impressions of past experiences are subject to recall and response bias. Surveys omitted from analysis due to incomplete responses were more likely to be missing data related to current employment, i.e., salary information, and from questions at the end of the survey.

Conclusion

This research illustrates a midwifery workforce that reports high levels of employment satisfaction and career dedication. Regardless of diverse backgrounds or differences between work sites, early-career midwives are developing meaningful, productive careers. Further workforce research can direct strategic efforts aimed at matching the needs of patients and the interests of midwives in order to maximize recruitment, preparation, distribution, and retention.

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Table 1: Personal inputs, background contextual affordances, learning experiences, and proximal contextual influences of this sample of early-career CNMs

Person Inputs and Background Contextual Affordances		
Variable	**N**	**Mean (SD)**
Age	244	37.0 (8.10)
Grit score (out of 5)	241	4.0 (0.51)
Variable	**N**	**n (%)**
Gender	**244**	
Female		241 (98.8)
Male		2 (0.8)
Transgender		1 (0.4)
Ethnicity		
African American		15 (6.1)
Hispanic/Latino		4 (1.6)
White, not Hispanic or Latino		215 (88.1)
Other		10 (4.1)
Work history (pre-midwifery, for 1 or more years)*		
RN, any setting		161 (66.0)
RN, labor and delivery		115 (47.1)
RN, not labor and delivery		105 (43.0)
Non-nursing healthcare experience		103 (42.2)
Any work experience		230 (94.3)
Holds any health-related certification		28 (11.5)
Adult Health Nurse Practitioner		0
Family Nurse Practitioner		2 (0.8)
Women's Health Nurse Practitioner		6 (2.5)
Had positive midwife role model (pre-enrollment)		168 (68.9)
Learning Experiences		
Attended online or partially online program	**244**	130 (53.3)
Enrolled as full-time student only		169 (69.3)
Completed dual major/degree		71 (29.1)
Received satisfactory performance evaluations		216 (88.5)
Attended at least 30 births as a student		220 (90.2)
Passed certification exam on first attempt		231 (94.7)
Proximal Contextual Influences		
Loans for midwifery education	242	
$0		31 (12.7)
Less than $49,000		58 (23.8)
$50,000-99,000		82 (33.6)
$100,000-150,000		34 (13.9)
More than $150,000		37 (15.2)

Scholarships and grants for midwifery education		
$0		106 (43.4)
Less than $25,000		92 (37.7)
$25,000-49,000		19 (7.8)
$50,000 or more		25 (10.2)
Current employment satisfies commitment for loan repayment or scholarship	244	58 (23.8)
Household earning by midwife		
Sole earner		79 (32.4)
Primary earner		78 (32.0)
Earns half of family income		60 (24.6)
Earns less than half of family income		27 (11.1)
Has primary caregiving responsibilities		140 (57.4)
Estimated work commute time to primary work site	242	
Less than 15 minutes		73 (29.9)
15-30 minutes		87 (35.7)
31-60 minutes		60 (24.6)
More than 60 minutes		22 (9.0)
Career Actions		
Works full time or more	244	207 (84.8)
Full-scope practice	237	32 (13.1)
Salary	243	
Less than $75,000		48 (19.7)
$75,000-99,000		127 (52.0)
$100,000 or more		68 (27.9)
Current work setting	243	
Out-of-hospital		28 (11.5)
Low-resource		47 (19.3)
Private practice		88 (36.1)
Other		80 (32.8)
Has held more than 1 CNM position since graduation	243	111 (45.5)
Career Perceptions		
	N	**Median out of 5 (SD)**
Occupational self-efficacy	242	4.50 (0.51)
Personal outcome expectations	162	3.75 (0.77)
Satisfied with salary	242	3.00 (1.42)
Autonomy/Empowerment	238	4.50 (0.57)
Professional Recognition	238	4.20 (0.74)

Skills and Resources	232	4.60 (0.58)
Career Plans		
	N	**n (%)**
Plans to remain with current employer	241	
5 years or less		115 (47.1)
Unsure		54 (22.1)
More than 5 years		72 (29.5)
Plans to change clinical hours over next 5 years	243	
Increase hours		21 (8.6)
Decrease hours		44 (18.0)
Leave clinical work		13 (5.3)
No change or undecided		165 (67.6)
Long-term plan for work setting	244	
Out-of-hospital		39 (16.0)
Low-resource		33 (13.5)
Private practice		63 (25.8)
Other		109 (44.7)
Plans to precept in the future	243	212 (86.9)

* these categories are not mutually exclusive, and do not add up to 100%

Table 2: Proximal contextual factors as predictors of employment perceptions

Independent Variables (Proximal Contextual Affordances)	Dependent Variables											
	Occupational self-efficacy ≥ 4.5, n= 242		**Personal outcome expectations ≥ 3.75, n= 162 OR, *P***		**Satisfied with salary ≥ 3, n= 233 OR, *P***		**PEMS Autonomy/ Empowerment ≥ 4.5, n= 238 OR, *P***		**PEMS Professional Recognition ≥ 4.2, n= 238 OR, *P***		**PEMS Skills and Resources ≥ 4.6, n= 232 OR, *P***	
	OR, P (Unadj)	**OR, P[1] (Adj)**	**OR, P (Unadj)**	**OR, P[2] (Adj)**	**OR, P (Unadj)**	**OR, P[3] (Adj)**	**OR, P (Unadj)**	**OR, P[4] (Adj)**	**OR, P (Unadj)**	**OR, P[5] (Adj)**	**OR, P (Unadj)**	**OR, P[6] (Adj)**
Loans for midwifery education Missing=2												
Less than $50,000	Reference		Reference		Reference		Reference		Reference		Reference	
$50,000-99,000	2.00, **.027**	2.12, **.036**	1.07, .862		0.95, .874		1.09, .788		0.96, .886		1.88, **.049**	2.31, **.049**
$100,000 or more	0.92, .801	0.97, .930	1.20, .629		0.94, .858		1.11, .760		1.03, .939		1.64, .137	2.31, .073
Scholarships and grants for midwifery education												
$0	Reference		Reference		Reference		Reference		Reference		Reference	
$1 to $25,000	0.57, .056	0.61, .157	0.65, .226		1.19, .536		0.87, .633	1.13, .736	0.58, .059	0.60, .117	0.42, **.005**	0.37, **.018**
$25,000 or more	0.53, .084	0.70, .447	0.74, .492		1.20, .619		0.48, **.051**	0.78, .589	0.66, .250	0.86, .711	0.34, **.005**	0.33, **.047**
Current job fulfills loan repayment Missing=3	1.34, .337		1.67, .146	1.58, .241	1.88, **.043**	0.93, .855	0.88, .679		1.48, .206		1.58, .157	2.14, .075
Responsible for at least half of household earning	1.62, .075	2.11, .021	1.90, .055	1.60, .200	1.62, .075	1.20, .575	1.37, .250		1.86, .720		1.90, **.022**	1.93, .100

Has primary caregiving responsibilities	2.06, **.006**	2.19, **.016**	0.95, .861		0.60, .054	0.71, .290	1.83, **.025**	1.70, .129	1.20, .481		1.26, .400	
Estimated work commute time to primary work site Missing=2												
Less than 15 minutes	Reference		Reference		Reference		Reference		Reference		Reference	
15-30 minutes	0.91, .777	0.88, .726	1.27, .553	1.12, .787	1.20, .572		1.00, .997	1.31, .493	0.60, .120	0.60, .147	1.02, .943	0.85, .719
31-60 minutes	0.53, .070	0.48, .069	0.46, .074	0.46, .095	1.20, .611		0.59, .134	0.77, .520	0.46, **.029**	0.50, .065	0.59, .145	0.53, .170
More than 60 minutes	0.89, .804	0.64, .416	0.76, .627	0.91, .882	0.93, .884		1.21, .712	2.12, .216	0.60, .298	0.77, .637	0.79, .637	1.26, .751

[1] adjusted for age, grit, prior RN employment, attended online program, attended at least 30 births as student, loans, grants, scholarships, responsibility for household earning, primary caregiver, commute

[2] adjusted for online program, earning a dual major/degree, current job fulfills loan repayment, responsibility for household earning, commute, salary

[3] adjusted for prior RN employment, current job fulfills loan repayment, responsibility for household earning, primary caregiver, employed full-time, salary, work setting

[4] adjusted for grit, prior RN employment, prior midwife role model, attended online program, full-time student, scholarships/grants, primary caregiver, commute, employed full-time, full-scope practice, work setting, has changed jobs

[5] adjusted grit, full-time student, passed certification exam on first attempt, scholarships/grants, commute, employed full-time, work setting

[6] adjusted for age, ethnicity, grit, prior RN employment, attended online program, earning a dual major/degree, satisfactory performance during education, attended 30 student births, loans, scholarships/grants, current job fulfills loan repayment, responsibility for household earning, commute, employed full-time, full-scope, salary

Table 3: Career actions as predictors of employment perceptions

Independent Variables (Career Actions)	Dependent Variables											
	Occupational self-efficacy ≥ 4.5, n= 242		**Personal outcome expectations ≥ 3.75, n= 162 OR, *P***		**Satisfied with salary ≥ 3, n= 233 OR, *P***		**PEMS Autonomy/ Empowerment ≥ 4.5, n= 238 OR, *P***		**PEMS Professional Recognition ≥ 4.2, n= 238 OR, *P***		**PEMS Skills and Resources ≥ 4.6, n= 232 OR, *P***	
	OR, P (Unadj)	**OR, P[1] (Adj)**	**OR, P (Unadj)**	**OR, P[2] (Adj)**	**OR, P (Unadj)**	**OR, P[3] (Adj)**	**OR, P (Unadj)**	**OR, P[4] (Adj)**	**OR, P (Unadj)**	**OR, P[5] (Adj)**	**OR, P (Unadj)**	**OR, P[6] (Adj)**
Works full time or more	1.46, .297		1.61, .263		2.55, **.016**	0.79, .663	1.98, .062	2.63, **.036**	2.12, **.046**	1.85, .145	2.77, **.008**	1.17, .792
Full-scope practice Missing=7	1.20, .634		1.57, .357		1.03, .938		5.33, **.003**	5.04, **.009**	1.39, .395		2.64, **.032**	3.76, **.027**
Salary												
Less than $75,000	Reference		Reference		Reference		Reference		Reference		Reference	
$75,000-99,000	1.45, .278		1.51, .360	1.68, .297	8.01, **<.001**	9.21, **<.001**	0.92, .809		1.32, .419		1.60, .180	2.24, .128
$100,000 or more	1.57, .239		2.25, .089	2.85, **.047**	29.68, **<.001**	35.51, **<.001**	0.72, .396		1.62, .207		1.67, .192	1.82, .311
Current work setting Missing=7												
Out-of-hospital	0.78, .581		0.65, .444		0.42, .057	1.65, .439	5.62, **.008**	2.41, .223	1.18, .702		1.23, .656	
Low-resource	1.33, .439		0.75, .486		0.82, .604	1.10, .834	0.88, .729	0.84, .682	1.22, .591		0.68, .306	
Private practice	0.95, .863		0.88, .746		0.63, .138	0.90, .767	0.99, .992	0.75, .417	1.08, .816		0.86, .651	
Other	Reference		Reference		Reference		Reference		Reference		Reference	

Has held more than 1 CNM position since graduation	0.79, .366		1.47, .227		1.39, .201		0.70, .175	1.13, .712	1.08, .765		0.89, .659	

[1] adjusted for age, grit, prior RN employment, attended online program, attended at least 30 births as student, loans, grants, scholarships, responsibility for household earning, primary caregiver, commute

[2] adjusted for online program, earning a dual major/degree, current job fulfills loan repayment, responsibility for household earning, commute, salary

[3] adjusted for prior RN employment, current job fulfills loan repayment, responsibility for household earning, primary caregiver, employed full-time, salary, work setting

[4] adjusted for grit, prior RN employment, prior midwife role model, attended online program, full-time student, scholarships/grants, primary caregiver, commute, employed full-time, full-scope practice, work setting, has changed jobs

[5] adjusted grit, full-time student, passed certification exam on first attempt, scholarships/grants, commute, employed full-time, work setting

[6] adjusted for age, ethnicity, grit, prior RN employment, attended online program, earning a dual major/degree, satisfactory performance during education, attended 30 student births, loans, scholarships/grants, current job fulfills loan repayment, responsibility for household earning, commute, employed full-time, full-scope, salary

Table 4: Proximal contextual factors as predictors of career plans

Independent Variables (Proximal Contextual Influences)	Dependent Variables									
	Plans to remain with current employer for more than 5 years		**Plans to continue or increase clinical hours over the next 5 years**		**Plans to work in out-of-hospital setting**		**Plans to work in low-resource setting**		**Plans to precept students**	
	OR, P (Unadj)	**OR, P[1] (Adj)**	**OR, P (Unadj)**	**OR, P[2] (Adj)**	**OR, P (Unadj)**	**OR, P[3] (Adj)**	**OR, P (Unadj)**	**OR, P[4] (Adj)**	**OR, P (Unadj)**	**OR, P[5] (Adj)**
Loans for midwifery education										
Less than $50,000	Reference		Reference		Reference		Reference		Reference	
$50,000-99,000	1.02, .965		1.58, .222		1.29, .517		0.99, .990		1.97, .166	1.62, .391
$100,000 or more	0.74, .405		0.97, .929		0.72, .463		1.31, .548		1.14, .772	0.82, .723
Scholarships and grants for midwifery education										
$0	Reference		Reference		Reference		Reference		Reference	
$1 to $25,000	0.48, **.021**	0.39, .110	0.87, .680		0.49, .061	0.21, **.050**	0.87, .760	0.93, .926	1.32, .505	
$25,000 or more	0.23, **.002**	0.11, **.011**	0.74, .463		0.32, **.049**	1.14, .889	2.68, **.028**	3.27, .179	1.80, .321	
Current job fulfills loan repayment	0.98, .958		1.90, .110	0.37, .071	0.21, **.011**	2.29, .455	3.29, **.002**	0.85, .842	1.25, .641	
Responsible for at least half of household earning	1.10, .746		1.42, .258		1.08, .825		3.06, **.017**	2.50, .262	2.16, **.047**	1.91, .180
Has primary caregiving responsibilities	2.51, **.003**	2.79, .086	1.68, .088	1.77, .185	0.94, .856		0.86, .690		1.53, .268	

Estimated work commute time to primary work site										
Less than 15 minutes	Reference		Reference		Reference		Reference		Reference	
15-30 minutes	0.61, .149	0.40, .169	1.13, .745		1.27, .577		0.21, **.002**	0.14, **.026**	1.10, .846	
31-60 minutes	0.54, .103	0.63, .490	1.30, .529		1.00, .991		0.50, .125	0.68, .626	0.93, .887	
More than 60 minutes	0.50, .224	0.36, .326	2.27, .225		1.66, .403		0.14, .059	0.12, .205	0.91, .889	

[1] adjusted for age, grit, prior RN employment, prior midwife role model, attended online program, dual major/degree, scholarships/loans, primary caregiver, commute, employed full-time, work setting, has changed jobs, OSE, POE, PEMS AE, PEMS PR, PEMS SR

[2] adjusted for age, ethnicity, job fulfills loan repayment, primary caregiver, employed full-time, work setting, OSE, POE, satisfied with salary

[3] adjusted for age, prior RN employment, prior certification, passed certification exam 1st try, scholarships/grants, job fulfills loan repayment, full-scope practice, salary, work setting, POE, satisfied with salary, PEMS AE

[4] adjusted for prior RN employment, full-time student, dual major/degree, scholarships/loans, current job fulfills loan repayment, responsibility for household earning, commute, full-scope practice, work setting, has changed jobs, POE, satisfied with salary, PEMS PR

[5] adjusted for age, prior certification, prior midwife role model, full-time student, satisfactory student evaluations, loans, responsibility for household earning, salary, PEMS PR, PEMS SR

Table 5: Career actions as predictors of career plans

Independent Variables (Career Actions)	Dependent Variables									
	Plans to remain with current employer for more than 5 years		**Plans to continue or increase clinical hours over the next 5 years**		**Plans to work in out-of-hospital setting**		**Plans to work in low-resource setting**		**Plans to precept students**	
	OR, P (Unadj)	**OR, P[1] (Adj)**	**OR, P (Unadj)**	**OR, P[2] (Adj)**	**OR, P (Unadj)**	**OR, P[3] (Adj)**	**OR, P (Unadj)**	**OR, P[4] (Adj)**	**OR, P (Unadj)**	**OR, P[5] (Adj)**
Works full time or more	2.78, **.044**	2.49, .221	0.35, .058	0.29, .083	0.84, .709		1.45, .508		1.77, .227	
Full-scope practice	1.48, .327		0.62, .256		3.18, **.006**	0.28, .215	2.82, **.021**	0.89, .906	2.39, .251	
Salary										
Less than $75,000	Reference		Reference		Reference		Reference		Reference	
$75,000-99,000	0.83, .629		0.98, .957		0.19, **<.001**	0.66, .617	1.08, .877		1.33, .545	0.69, .505
$100,000 or more	1.62, .241		1.41, .449		0.20, **.001**	0.28, .244	1.35, .582		2.12, .193	1.96, .370
Current work setting										
Out-of-hospital	0.67, .426	0.15, .084	0.42, .063	0.48, .251	27.00, **<.001**	35.95, **.001**	1.97, .470	2.25, .603	1.55, .520	
Low-resource	0.49, .097	0.48, .272	0.92, .852	0.66, .449	1.02, .976	1.49, .734	24.60, **<.001**	68.79, **<.001**	1.63, .385	
Private practice	0.81, .514	0.85, .798	1.67, .190	1.86, .249	2.60, .083	6.20, **.025**	1.55, .560	5.16, .123	1.51, .360	
Other	Reference		Reference		Reference		Reference		Reference	

Has held more than 1 CNM position since graduation	0.61, .091	0.26, **.022**	0.84, .573		1.16, .662		0.61, .193	1.70, .449	1.03, .933	

[1] adjusted for age, grit, prior RN employment, prior midwife role model, attended online program, dual major/degree, scholarships/loans, primary caregiver, commute, employed full-time, work setting, has changed jobs, OSE, POE, PEMS AE, PEMS PR, PEMS SR
[2] adjusted for age, ethnicity, job fulfills loan repayment, primary caregiver, employed full-time, work setting, OSE, POE, satisfied with salary
[3] adjusted for age, prior RN employment, prior certification, passed certification exam 1st try, scholarships/grants, job fulfills loan repayment, full-scope practice, salary, work setting, POE, satisfied with salary, PEMS AE
[4] adjusted for prior RN employment, full-time student, dual major/degree, scholarships/loans, current job fulfills loan repayment, responsibility for household earning, commute, full-scope practice, work setting, has changed jobs, POE, satisfied with salary, PEMS PR
[5] adjusted for age, prior certification, prior midwife role model, full-time student, satisfactory student evaluations, loans, responsibility for household earning, salary, PEMS PR, PEMS SR

Table 6: Career perceptions as predictors of career plans

Independent Variables (Career Perceptions)	Dependent Variables									
	Plans to remain with current employer for more than 5 years, n=146		**Plans to continue or increase clinical hours over the next 5 years, n=156**		**Plans to work in midwifery-run setting, n=151**		**Plans to work in low-resource setting, n=151**		**Plans to precept students, n=228**	
	OR, P (Unadj)	**OR, P[1] (Adj)**	**OR, P (Unadj)**	**OR, P[2] (Adj)**	**OR, P (Unadj)**	**OR, P[3] (Adj)**	**OR, P (Unadj)**	**OR, P[4] (Adj)**	**OR, P (Unadj)**	**OR, P[5] (Adj)**
Occupational self-efficacy	2.98, **.001**	0.85, .840	1.58, .112	1.04, .932	1.32, .427		0.82, .579		1.42, .330	
Personal outcome expectations	3.92, **<.001**	4.42, **.001**	1.40, .143	1.29, .360	0.47, **.008**	0.28, **.008**	1.69, .074	2.27, .089	1.35, .336	
Satisfied with salary	1.38, .261		1.70, .086	1.61, .264	0.53, .070	1.77, .463	2.06, .061	1.98, .315	1.35, .451	
PEMS Autonomy/ Empowerment	2.00, **.019**	1.49, .541	0.95, .849		2.09, **.053**	3.06, .146	0.88, .684		1.36, .324	
PEMS Professional Recognition	2.17, **.001**	2.39, .103	1.22, .321		0.80, .319		1.62, .096	1.35, .581	1.42, .155	1.12, .733
PEMS Skills and Resources	2.73, **.002**	0.44, .171	0.80, .431		1.04, .884		0.87, .640		2.59, **.001**	3.09, **.003**

[1] adjusted for age, grit, prior RN employment, prior midwife role model, attended online program, dual major/degree, scholarships/loans, primary caregiver, commute, employed full-time, work setting, has changed jobs, OSE, POE, PEMS AE, PEMS PR, PEMS SR

[2] adjusted for age, ethnicity, job fulfills loan repayment, primary caregiver, employed full-time, work setting, OSE, POE, satisfied with salary

[3] adjusted for age, prior RN employment, prior certification, passed certification exam 1st try, scholarships/grants, job fulfills loan repayment, full-scope practice, salary, work setting, POE, satisfied with salary, PEMS AE

[4] adjusted for prior RN employment, full-time student, dual major/degree, scholarships/loans, current job fulfills loan repayment, responsibility for household earning, commute, full-scope practice, work setting, has changed jobs, POE, satisfied with salary, PEMS PR

[5] adjusted for age, prior certification, prior midwife role model, full-time student, satisfactory student evaluations, loans, responsibility for household earning, salary, PEMS PR, PEMS SR

Figure 1: Adapted Social Cognitive Career Theory, with study variables grouped by construct.

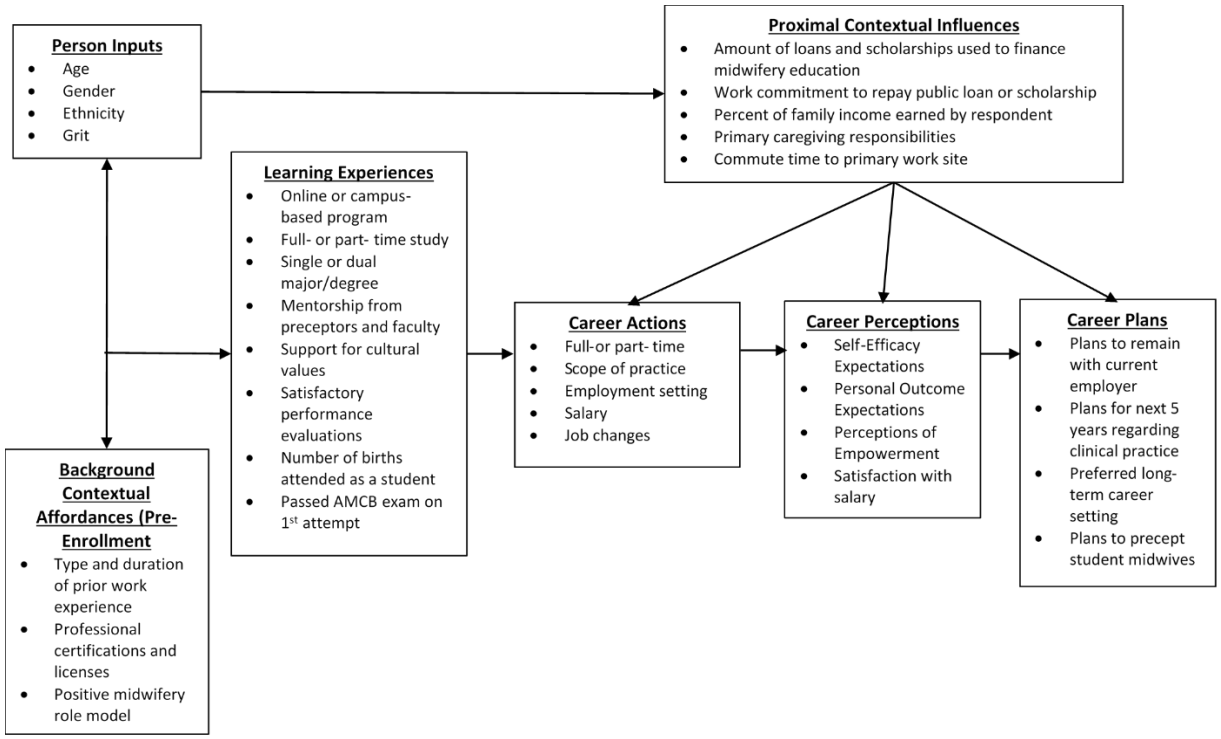


Figure 2: Comparison of scope of practice of full-time early-career midwives (MEW Data 2016) and ageneral sample of full-time midwives (AMCB 2013).[8] Respondents indicated that they provide any amount of care in each area, rather than indicating areas of primary responsibility.

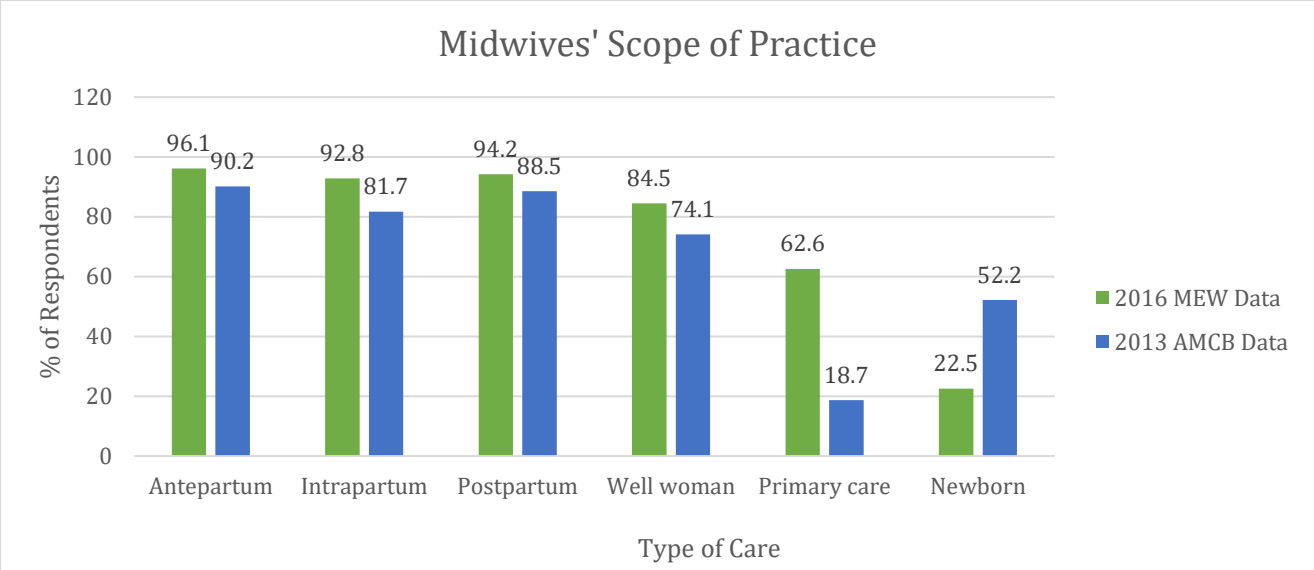


Figure 3: Current practice sites and planned future practice settings of early-career midwives in the U.S.

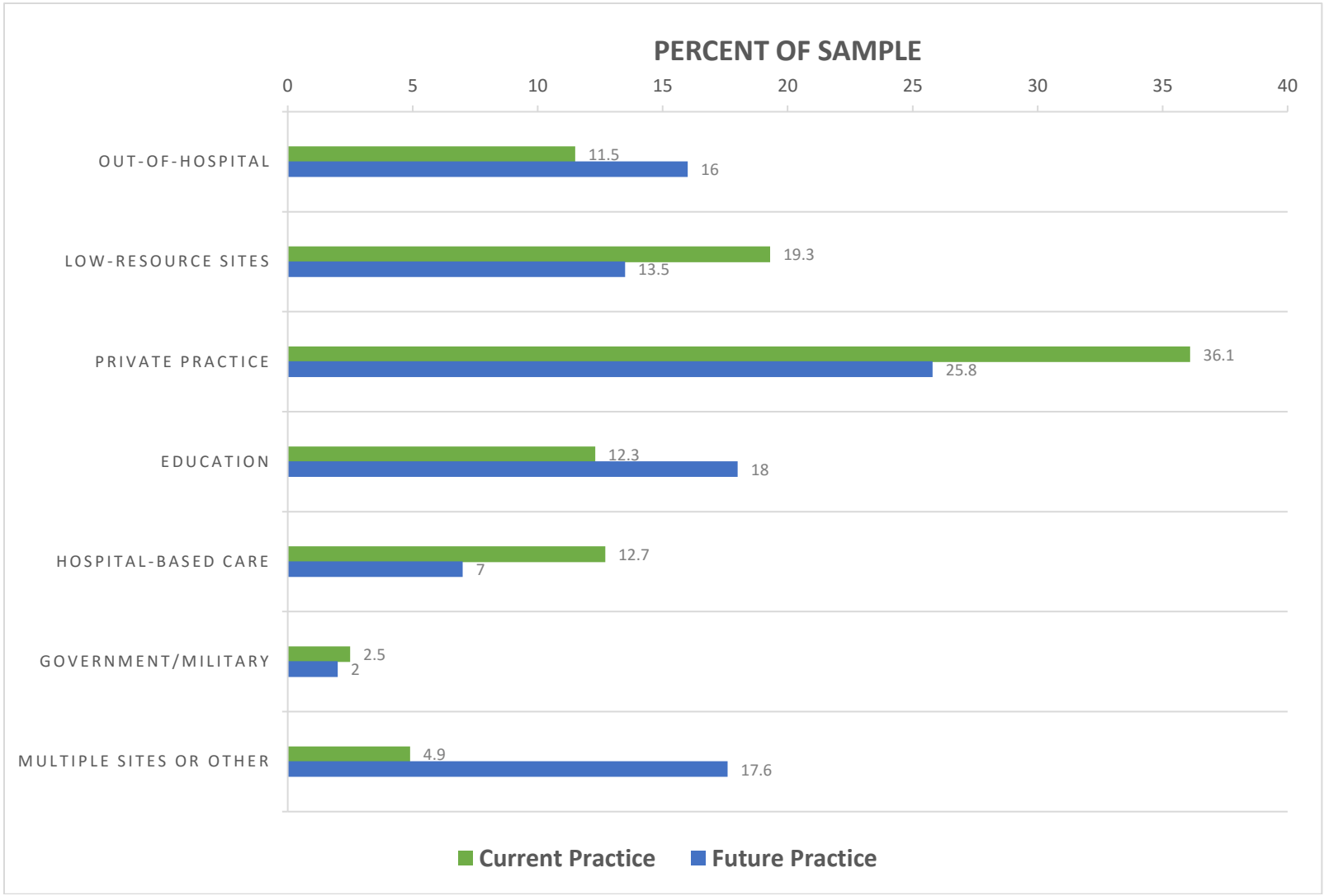


Figure 4: Comparison of early-career midwives' salaries by work setting

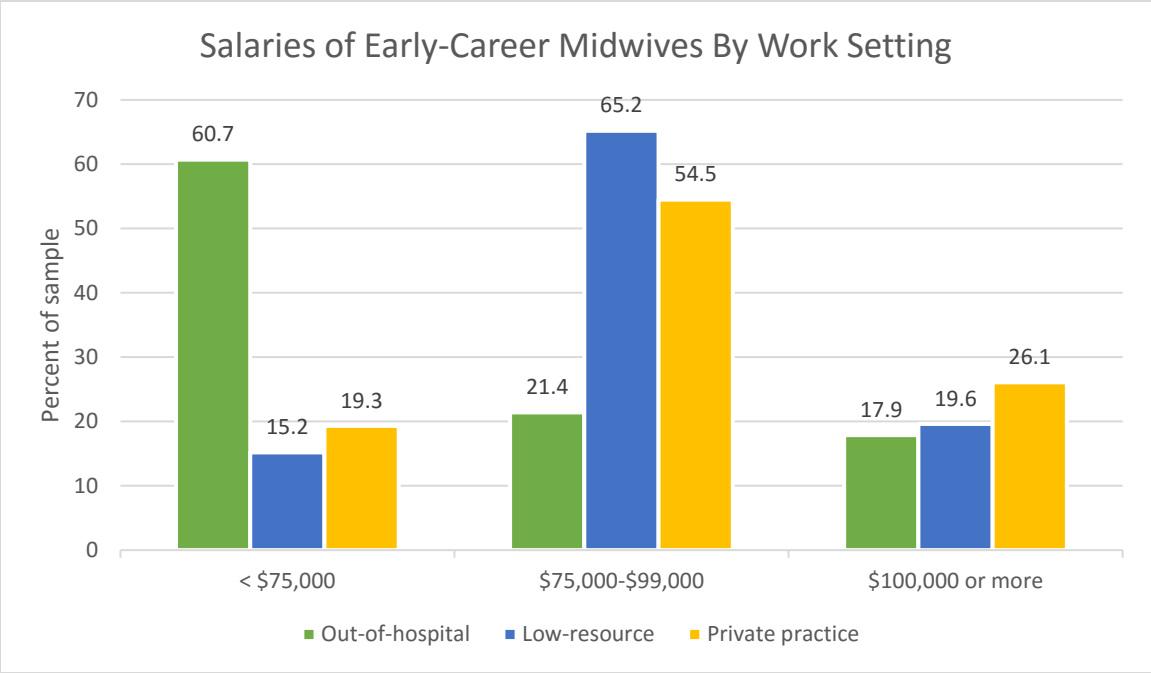
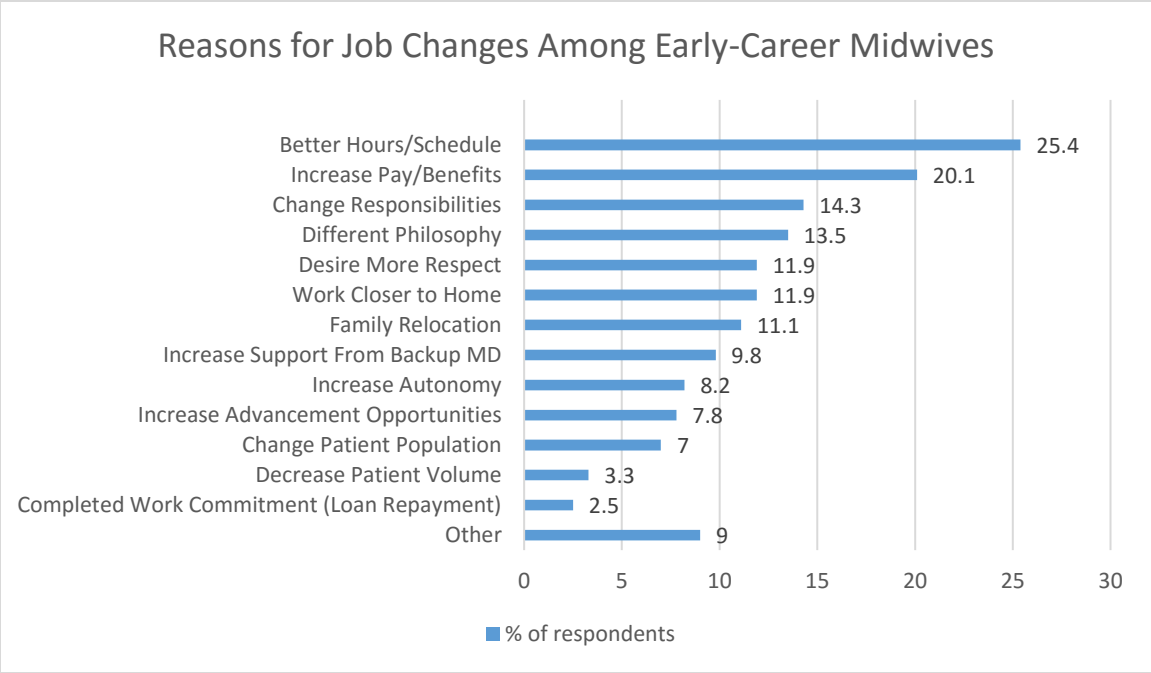


Figure 5: Reasons for job changes among early-career midwives. Respondents were able to check multiple options so percentages do not total 100%.



Chapter 5: Synthesis

Scaling-up the midwifery profession has the potential to save and improve thousands of lives every year, and an evidence-based approach to scale-up can increase the efficiency of the process and the quality of the workforce. Although there is descriptive data collected and published about the overall profile of U.S. midwives, there are gaps in the literature regarding the experiences of the midwives prior to and during their midwifery education, as well as their experiences in the workforce. Disagreements exist in clinical settings regarding what is adequate pre-midwifery experience (Germano, Schorn, Phillippi, & Schuiling, 2014; "Midwifery education programs," 2017), and the profession is struggling to become truly inclusive of diversity (DeLibertis, 2015; Wheeler, Foster, & Hepburn, 2014). Midwives' caregiving in out-of-hospital and low-resource settings is unique in meeting health care needs that might otherwise be unaddressed by our medicalized health care system, and greater knowledge of midwives' experiences and plans with respect to these settings is important for workforce planning. Deepening our understanding of midwives' experiences and plans will allow our profession to use more targeted strategies to determine how best to contribute to the reproductive health care in the U.S.

This research sought to reduce the size of these gaps while attempting to address the above concerns about pre-midwifery experience, inclusion of diversity, and workforce distribution to low-resource and out-of-hospital settings. Using Social Cognitive Career Theory as a framework, the Midwifery Education and Workforce Survey collected data about midwives in their first 5 years of practice, discovering and linking data related to personal characteristics, background and proximal contextual factors, educational experiences, employment situations, perceptions about their careers, and future career plansv(R. Lent, Brown, & Hackett, 1994; R. W. Lent & Brown, 2013). Manuscript 1 examined the relationships between these constructs by comparing midwives with and without RN experience or health care certification prior to their midwifery educations. Manuscript 2 did the same, instead comparing the experiences and choices of under-represented minority (URM) and non-minority midwives. Manuscript 3 described the current employment situations of this subset of

midwives, and linked their employment and life supports and constraints to their perceptions about work, and to their future career plans. The remainder of this chapter details our findings related to the research aims and related questions.

Aim 1:

Assess how and to what extent recent nurse-midwifery graduates' personal inputs and background contextual affordances influence learning experiences.

Aim 1 was addressed by the first manuscript (chapter 2), which focused on the RN work experience and health care certifications held by some midwives prior to their midwifery educations, and by manuscript 2, which focused on the midwives' ethnicities. Within the constructs of "person inputs" and "background contextual affordances", there were other variables that were analyzed as control variables, even if they were not the focus of investigation.

By comparing the similarities and differences between the learning experiences of incoming midwifery students with different types and degrees of education and employment, Manuscript 1 provides evidence and reassurance that the many formats, degree options, and educational opportunities provided by midwifery education programs are accommodating the needs of students and increasing the rate of growth of the workforce. We found that the differences between those with and without certifications were minimal in terms of educational formats, choices, and outcomes. Compared with non-employed RNs, employed RNs were 6 years older than non-employed RNs, more likely to access online (or partly online) educational formats and part-time programs, and more likely to continue to benefit the nursing workforce while attending graduate school. Employed RN and non-employed RN midwifery students experience the same degree of mentorship from faculty and preceptors and the same amount of cultural support, and are similarly likely to attend 30 births (a proxy for quantity and quality of clinical opportunities) and to pass the certification exam on their first attempt. Despite anecdotal concerns about training midwives lacking RN work experience, non-experienced RNs offer the workforce an employee who completes midwifery education at a younger age (potentially resulting in longer participation in the workforce), who may be educated more

quickly (due to a higher rate of full-time enrollment), and who is more likely to have earned a dual major or degree. Employed RNs may offer benefits to the workforce not measured by this study, i.e., there may be differences in situational awareness or performance especially during the earliest stages of their careers, and the perspectives of each group's preceptors may differ in terms of effort towards the learning curve.

Our findings from a comparison of the educational experiences of URM and non-minority midwives are concerning. URMs and non-minorities are strikingly similar in terms of the personal characteristics and background and proximal contextual factors (career supports and barriers) measured, with the only difference being the amounts of scholarships or grants awarded. Although URMs are less likely to have a scholarship or grant, they are also more likely to have the larger awards, over $25,000. Likewise, groups did not differ by educational program format, faculty or preceptor mentorship ratings, or satisfactory performance evaluations. Differences of concern involve our findings that URM midwives report less support for culture, and are less likely to attend 30 births or to pass the certification examination on the first attempt. These findings call for midwifery programs to review curricular integration of culture, clinical placement strategies affected by race/ethnicity, and structures in place to support struggling students.

Aim 2:

Assess how and to what extent recent nurse-midwifery graduates' learning experiences, proximal contextual influences, and career actions determine occupational self-efficacy, outcome expectations, and other career perspectives.

Aim 2 was addressed by all 3 manuscripts. Manuscript 3 provides an analysis of how proximal contextual factors and career actions influence the career perspectives of the total sample of midwives. Career perspectives were measured by occupational self-efficacy (OSE) (Rigotti, Schyns, & Mohr, 2008), personal outcome expectations (POE) (Riggs, Warka, Babasa, Betancourt, & Hooker, 1994), 3 subscales of the Perceptions of Empowerment in Midwifery (PEMS) scale (Pallant,

2015), and satisfaction with salary, and used personal factors, background factors, and learning experiences as control variables. Manuscripts 1 and 2 help to illustrate the relationships between these constructs by comparing the populations of interest described above.

As a whole, the sample of midwives reported high levels of the outcomes measured relating to their career perspectives. For the workforce, our research shows that early-career midwives are highly satisfied, committed to their organizations, likely performing well, and planning to remain in their midwifery careers for the near future. They understand their scope of practice, they feel able to meet the demands of their work, and they feel well-compensated in terms of benefits, recognition, and advancement opportunities. However, the lowest scoring question related to satisfaction with salary; midwives were split between agreeing and disagreeing with a statement indicating satisfaction. Awareness of salary amounts and satisfaction may influence recruitment into the profession, and as salary amount was a strong predictor of POE score—and higher POE score was a predictor of planning to remain in a given workplace—further evaluation of salary equity across professions, specialties, and levels of experience is indicated.

Predictors of career perceptions included both career actions and non-work factors. Working full-time and in a full-scope practice increased midwives' ratings of PEMS autonomy/empowerment, and full-scope practice also increased midwives' ratings of having adequate skills and resources. Some learning experiences, such as graduation from an online program, receiving satisfactory performance evaluations, and attending at least 30 births, increased midwives' sense of having adequate skills and resources, and passing the certification exam on first attempt strongly predicted midwives' sense of professional recognition. These findings indicate that both work- and education-related structural variables are important for both immediate and longer-term career outcomes, including career longevity.

Proximal contextual variables also have relevance for the how midwives perceive their employment and their careers. Our findings that household earning responsibility and primary caregiving increase OSE were somewhat unexpected, but illustrate a workforce whose sense of

competency is strengthened, rather than weakened, by a lifestyle of juggling multiple responsibilities in addition to work. The effect of other proximal contextual variables, such as loans and scholarships/grants for midwifery education, require further investigation since a clear mechanism for their relationships to PEMS skills and resources ratings is lacking.

Manuscript 1 found no significant differences in the career perceptions measured between those with and without prior certification or RN employment, a reassuring finding for those entering midwifery without prior clinical employment. However, our comparison of URM and non-minority midwives did reveal some differences. That URM midwives were less likely to report that the midwifery profession is a good fit for people within their culture demonstrates that the challenges of cultural integration are not only a challenge within the educational system; the consistency across educational and workplace settings signals the existence of systemic biases that require structural changes. That URM midwives have higher POE ratings was unexpected and seems inconsistent with the challenges of structural integration at every level of interaction (individual, organizational, and health system); further investigation may clarify this finding, especially given that POE scores may have been affected by a lack of work evaluations for URM midwives and those in out-of-hospital settings (and the overlap between these).

Aim 3:

Assess how and to what extent recent nurse-midwifery graduates' proximal contextual factors, career perceptions, and career actions impact their career plans.

Manuscript 3 analyzes relationships between proximal contextual influences, career perceptions, career actions, and career plans with a focus on how career plans might impact long term workforce capacity and distribution. Career plans of interest included midwives' plans to remain with their current employer for more than 5 years, plans to continue or change clinical hours over the next 5 years, plans to work in either an out-of-hospital setting or a low-resource setting, and plans to precept midwifery students in the future.

Our data reinforce the significance of early-career midwives for the workforce; overwhelmingly, they graduate from their educational programs and proceed to gain experience working full-time in clinical settings. Their willingness to seek new sites of employment may benefit the midwifery workforce, depending on their success in securing positions that meet their stated goals aiming at improved work-life balance, compensation, work culture, support, respect, or autonomy. Given their high overall scores related to OSE, POE, and PEMS measures, indications are that in a variety of work environments, midwives have found positions that are professionally satisfying. In fact, each of these measures increased midwives' likelihood of planning to remain with their current employer for at least 5 years.

Some proximal contextual factors were found to influence certain workforce plans. Lifestyle supports and barriers such as responsibility for household earning and caring for dependents did not predict workforce plans. Interestingly, larger (but not smaller) educational scholarships and grants reduced the likelihood of planning to remain in a current position, and smaller (but not larger) scholarships and grants reduced the likelihood of midwives planning to work in out-of-hospital settings. As those planning to work in out-of-hospital settings also reported lower POE scores and higher scores on PEMS autonomy/empowerment, the effect of scholarships and grants on planning to work out-of-hospital may reflect that some midwives choose to prioritize work culture over financial or other personal gains from employment. Our findings related to the financing of midwifery education need further research to confirm and explore these findings, to define mechanisms clarifying the relationships between financing methods and workforce outcomes, and to develop more strategic allocation of funding if indicated.

Current employment predictors of future career plans can be summarized as this: current setting that is out-of-hospital or in a low-resource area is a strong predictor of continuing to work in that setting, and having changed work place since graduation decreases the likelihood of planning to remain in a current position for more than 5 years. Rather than the general group of midwives finding increased satisfaction in one setting over another, it is clear that separate groups of midwives

are finding satisfaction in different settings. Thus, different groups are similar in terms of how they rate their career perceptions, and there are no major differences in whether they plan to stay in their current settings or to change their clinical hours.

Some important findings from our research concern potential trends that might be anticipated from the career plans of these early-career midwives. Specifically, by comparing existing data about midwives' current work settings (Fullerton et al., 2015) to our data about where early-career midwives' planned work settings, we identified possible trends towards an increased proportion of early-career midwives seeking employment out-of-hospital, a decreased proportion seeking employment in low-resource (and educational) settings, and an increased proportion planning to work in midwifery education. As opportunities to work in out-of-hospital and low-resource settings address workforce preferences, as well as patient safety and access needs, knowledge of these trends supports efforts to continue building the health care infrastructure to facilitate practice opportunities and midwives' autonomy to practice in these settings. Furthermore, efforts to fortify the educational infrastructure are also imperative, because as the numbers of midwifery students and graduates continues to grow, the absolute numbers within these proportions will increase, as will the need for higher numbers. Faculty recruitment and development, as well as preceptor training and incentivization, must be prioritized, as these are bottlenecks to the growth of the profession (*Midwifery Education Trends Report*, 2015).

Future Directions

The primary strength of this work is that it increases our knowledge of the educational and work experiences of early-career midwives, and links those experiences to their future plans. Knowledge of the midwives' experiences has implications for educational institutions and employers, the patients who might receive midwifery care, and the institutions that support and direct the effective functioning of the U.S. health care system. For the educational system, there is reassurance that midwifery educators and curricula are effectively managing streams of students with different employment backgrounds, but concern that students with different ethnicities are not afforded

equivalent experiences or cultural support. For the workforce, there is evidence that early-career midwives are finding satisfactory employment in a variety of settings, and that there are opportunities for workforce development and management to capitalize upon our new knowledge about expected trends in workforce setting. As the preparation of midwives and their efficient distribution into the workforce are "two sides of the same coin", workforce management must consider the opportunities and challenges of both subsystems together in order to maximize benefits for patients and for all of the system's stakeholders.

Another strength of this research was its methodology. As relatively little research has been done on the U.S. midwifery workforce, use of the constructs from Social Cognitive Career Theory's adapted model assisted in the inclusion and organization of a range of variables that proved relevant to our inquiry, and which might be instrumental with further research and policy/program development. Use of an online survey, and contacting respondents through the ACNM listserv and by social media, were simple, efficient means of contacting this sample of midwives and gathering data. The validated scales used within the online survey were also effective means of gathering important data about personality, i.e., Grit scale (Duckworth & Quinn, 2009) and career perspectives.

Use of Midwifery MasterFile formatting facilitated the comparison of our data with that of ACNM and AMCB (*Domains of inquiry for research studies on the CNM/CM workforce*, 2015; Fullerton et al., 2015). However, while this formatting likely increases the depth of information possible from large samples, the large numbers of possible responses for some questions resulted in some data that was difficult to use, although extensive regrouping salvaged most data. For example, specific challenges arose when ascertaining the number of hours worked or births attended overall (versus in multiple given settings), and when the range of employment settings was too many for our modestly sized, relatively inexperienced sample.

Aside from limitations normally associated with survey research, a significant limit of this research involves the populations not reached. For example, our inquiry into academic, clinical, and professional support and success did not capture data from those who have already left midwifery,

either during their educational experiences or after entering the workforce. Better knowledge of the numbers and experiences related to attrition might provide valuable feedback for the people and institutions most interested in the success of midwives and the scale-up of midwifery. Likewise, many experiences of those practicing midwifery but possibly without the same sense of inclusion into the profession might have been missed, since our sample included disproportionately few URM midwives, no CMs, and was less likely to reach non-members of ACNM.

Based on our findings, below is a research agenda aimed at forwarding the growth and optimal distribution of the midwifery workforce.

1. Further assessment of structural variables influencing differential experiences for URM and non-minority students and midwives. The midwifery profession requires a thorough understanding of how the academic and clinical experiences of URM and non-minority midwifery students differ, including why URM students may experience less cultural support, attend fewer births, and have lower first time pass rates on the certifying exam. A complete analysis of AMCB certification examination pass rates by ethnicity, including inquiry into both student- and test-related influences on differential pass rates, and sharing of this analysis within the midwifery community would assist academic programs and preceptors to correct inequities through meaningful structural changes. Furthermore, an inclusive profession requires a better understanding of variables explaining why practicing URM midwives may be more likely to consider reducing their clinical hours or to work in out-of-hospital settings, as well as an understanding of whether these differences are the preferences of the midwives or if they are retreats from a hostile system.
2. The role of scholarships/grants and loans for midwifery education. The profession needs an updated summary of what scholarship/grant/loan opportunities are available to the developing midwifery workforce, including information about how and whether amounts and repayment conditions provide strategic workforce incentives towards distribution and retention. The

opportunities available to midwives should be compared with those afforded other branches of the health care workforce.

3. A more in-depth inquiry into the differences in the learning curves and experiences of those with and without RN employment experience, both during training and in the first years of practice. Midwifery programs, internships, and employers need a better understanding of the different strengths and challenges presented by different streams of students if they are to best capitalize on the strengths and fortify the areas of weakness.
4. A related question to #3 is whether competency-based programs decrease enrollment periods for those entering midwifery with prior RN employment, and whether increased grant funding for this population of students would allow for increased full-time study and quicker entry into the workforce.
5. More detailed salary information. On local levels, how do midwifery salaries/compensation and hours compare with those weighing a midwifery career? Of particular interest may be the competing salaries and opportunities of RNs working in rural or underserved settings, especially if they might remain in (or return to) those settings after becoming midwives.
6. Further inquiry into midwifery scope of practice, including cost:benefit analyses. Efficient preparation of midwives requires updated information about midwives' scope of practice that extends beyond descriptive data. Research should compare core competencies with actual practice, and midwives' preparedness for full scope care with the actual needs of their local health care systems. Recommendations based on these comparisons should also take into account academic enrollment time and costs, opportunities for reimbursement, and the roles of existing clinical partnerships and professional relationships.

Research findings related to these questions have the potential to focus the efforts of midwives and others in clinical, education, and policy arenas as we work to scale-up midwifery. The health of our nation's families is at stake.

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