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The Mandatory Accreditation Of Emergency Medical Services Paramedic Programs In The United States: A Workforce Perspective

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THE MANDATORY ACCREDITATION OF EMERGENCY MEDICAL SERVICES PARAMEDIC PROGRAMS IN THE UNITED STATES: A WORKFORCE PERSPECTIVE

by

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Abstract

The purpose of this research study was to investigate the mandatory accreditation of paramedic initial education programs on the paramedic workforce while looking through the lens of professionalization theory and occupational closure. The study included a non-probability convenience expert sampling of the state EMS Director in each of the 48 contiguous states and yielded an 80.85% return rate. The online survey utilized dichotomous and multi-option variables and included skip logic questioning with open text boxes to allow the respondent to add explanations in their own words. The survey contained three parts, including the demographics of the leaders, workforce staffing, and paramedic initial education availability within their state. This study found that EMS leaders across the nation are an educated, dedicated, and diverse group. Most (89.5%) have a bachelor's degree or higher. Leaders (84.2%) indicated a lack of full staffing in their states citing low recruitment, low wages and benefits, and career competition. State leaders noted a positive change for initial education programs after accreditation, seen in the consistency of education that led to more confident paramedics and less compliance issues. However, 53% of leaders illustrated initial education courses were not full, again noting fewer recruits, low wages, and career competition. An educated workforce is the foundation of EMS. Thirty-seven percent of leaders indicated they did not maintain data for the census of initial education courses. While many leaders lack data, the results of this study illustrate improved and

more consistent education following accreditation; however, the number of graduates entering the workforce has remained the same. The workforce simply has not kept up with population growth.

Keywords: *Professionalization theory, paramedic, workforce, occupational closure, Emergency Medical Services*

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CHAPTER ONE

INTRODUCTION

Without prehospital medical providers, emergencies would go unanswered, leaving the global population vulnerable to accidents, medical emergencies, weather events, and terrorism. Emergency Medical Paramedics (Paramedics) serve on the front lines of the national healthcare field. Prehospital paramedics provide vital access to out-of-hospital medical care and transport to definitive care, yet despite the role the paramedic plays within the larger healthcare system, there has been little effort to ensure the future workforce (Joyce, Wainer, Piterman, Wyatt, & Archer, 2009).

The most important part of Emergency Medical Services (EMS) is its workforce (NAEMSO, 2014). However, workforce shortages have challenged the EMS industry for decades and have been the subject of publications such as the "Workforce Agenda for the Future" (NHTSA, 2008) and EMS Workforce Planning and Development (NAESMO, 2014). NHTSA (2008) published The Emergency Medical Services Workforce Agenda for the Future as 2020 benchmarks for the EMS industry. This analysis of the workforce focused on four areas:

- health, safety, and wellness,
- education and certification,
- data and research, and
- planning and development.

With 2020 on the horizon, some components of the agenda have moved forward, while many have not (NHTSA, 2008).

While the workforce is the most critical part of the EMS system, the foundation of the work force is its education. Formal EMS education was initiated fifty years ago by the Department of Transportation (DOT) out of the need to assist car accident victims. EMS education was virtually nonexistent during the beginning stages of a formalized pre-hospital care system. During the past fifty years, a progression from a fragmented system of training to a system that utilizes a traditional college setting has occurred (Page, 1978).

The oversight of EMS paramedic education is the responsibility of few regulators, including the National Registry of Emergency Medical Technicians (NREMT), the Committee on Accreditation of Educational Programs for Emergency Medical Services Professions (CoAEMSP), and the individual states. The NREMT began in 1970 as a result of the recommendation from President Lyndon Johnson's Committee on Highway Traffic Safety to create a national registration of emergency ambulance personnel (Edgerly, 2013; NHTSA, 2009). Prior to 1970, each state had the option of creating and maintaining its own exams or joining the NREMT. Paramedic graduates could then take the NREMT exam and be granted reciprocity in other states. Reciprocity is the ability to move from one state to another without taking the licensure exam again. Reciprocity allowances vary by state (NREMT, 2016). Today, all but five states utilize the NREMT for their initial credentialing exams. Florida, North Carolina, New York, Montana, and Illinois have alternate pathways for the credentialing exam. NREMT is the only national agency that credentials EMS personnel through examination and licensing. Recertification is required biannually (NREMT, 2017).

Accreditation of all paramedic programs is the responsibility of CoAEMSP under the auspices of the Commission on Accreditation of Allied Health Education Programs (CAAHEP) (CAAHEP, 2016). The purpose of the accrediting body is to ensure that the student has the best

possible education and that the public gets the best possible care. The oversight of accreditors ensures that the highest quality of paramedics is entering the workforce. The implementation of mandatory accreditation on January 1, 2013, has decreased the number of nontraditional schools, leaving much of the teaching to career colleges and universities (IOM, 2006). The decrease in available schools formed through the accreditation process limits entrance into the profession (Wilfong, 2009; Fox4KC, 2014; TRIBlive, 2012). As the number of paramedic graduates attempting the licensure exam is decreasing, researchers must look at the funnel effect accreditation has narrowed entrance to the workforce and consider alternate paths for paramedic education.

Previous literature illustrates challenges individuals face in obtaining and maintaining accreditation. These challenges include the vast amount of paperwork and the cost of initially gaining and then maintaining accreditation. Mandatory accreditation has done away with many non-traditional programs, especially in rural areas (IOM, 2006; Wilfong, 2009). The focus of this research study is the decrease in the number of classes/schools available to potential future students, which will lead to a decrease in graduates entering the workforce (Wilfong, 2009; The Joint Committee on Rural Emergency Care, 2010; WRDW, 2013; Fox4KC, 2014).

Like other specialties in the health care field, the EMS industry has moved toward professionalization. Waddington (1990) noted that in the early 1800s, the abundance of physicians spurred the creation of a regulating committee, the General Medical Council. This council raised the qualifications of the profession, therefore limiting the entry into the profession. The practice of limiting entry into a profession by raising qualifications and requiring certification is called *occupational closure*. After the passage of the 1858 Act, recruitment fell so sharply that by the 1870s there was a drastic shortage of physicians (Waddington, 1990). Joyce

(2009, p. 535) stated "the shifts taking place in the paramedic workforce can be framed as part of the process of professionalization of this group." Professionalization is a social process by which a trade or occupation relies on formal education, qualifications, or certifications, and creates the norms and the conformity of the profession (Leeming, 2001; Forsyth & Danisiewicz, 1985). Professionalization also creates a hierarchal divide between the occupation's members and citizens, limiting entry into the occupation (Waddington, 1990; Freidson, 1989; Forsyth & Danisiewicz, 1985; Nancarrow & Borthwick, 2005).

In 2010, only 31% of paramedic programs were accredited (CoAEMSP, 2010). By 2013, all paramedic programs had to be accredited, meaning that except the five states with alternate pathways, all paramedic graduates had to come from an accredited program, or they could not take the NREMT credentialing exam (CoAEMSP, 2010; Wilfong, 2009). Mandatory accreditation has been implemented for the prehospital paramedic level only. The EMT and AEMT level has not been included at this time (CAAHEP, 2016). Wilfong (2009, p. 13) noted "If programmatic accreditation requirements curtail available EMS education programs, the number of graduates may be reduced in a system with a current shortage of EMS providers nationally."

Professionalization theory describes a professions evolution from a trade to a recognized profession (Jarausch 1990). EMS education fits the key elements of professionalization and the changes seen in the profession are not natural and should be pre-planned for this unique group. Accreditation is a critical piece of the professionalization process (Wilfong, 2009). The professionalization and mandatory accreditation of paramedic education, however, could have drastic impacts on the workforce.

Statement of the Problem

EMS has been plagued with workforce challenges in the past decades. The funnel effect, or occupational closure, identified during the professionalization process of other professions, has been mentioned in several research studies (U.S. Homeland Security, 2013; Ghafferzadegon, Xue, Larson, 2017; Waddington, 1990). However, occupational closure has not been the focus regarding outcomes of the workforce within those studies. As evidenced in the nursing profession (Waddington, 1990; Wilfong, 2009), the mandatory accreditation of paramedic education will impact the workforce.

Purpose of the Study

The purpose of the study is to investigate the relationship between mandatory accreditation and the impact on the paramedic workforce and initial education programs. The study will examine perceptions of State Office of EMS Directors regarding work force trends within their state and the availability of initial paramedic education programs since the implementation of mandatory accreditation, or within the past five years. This study serves to identify and quantify the impact of mandatory accreditation on graduate paramedics entering the workforce and give recommendations for future EMS education accreditation involving the EMT and AEMT levels.

Research Questions

The questions for this research study are as follows:

1. What are State Office of EMS Directors' perceptions of work force staffing since implementation of mandatory accreditation of paramedic programs?

2. What are State Office of EMS Directors' perceptions on the availability of paramedic education programs since implementation of mandatory accreditation of paramedic programs?

Conceptual Framework

Professionalization, also called credentialism, is a social process by which a trade or occupation relies on formal education, qualifications, or certifications (Professionalization, 2014). The process creates norms of the profession and creates conformity to the agreed upon norms of that society. Professional status implies that a group of practitioners has the education and jurisdiction over the specialty of its work (Welsh, Kelner, Wellman, & Boon, 2004). The focus of the professionalization process, and this research study, is on *occupational closure*, the time when the occupation becomes closed to nonmembers, such as non-qualified or amateur practitioners (First, Tomlin, & Swinburn, 2010; Muzio & Kirkpatrick, 2011; Welsh, Kelner, Wellman, & Boon, 2004). Numerous authors have written on the professionalization of the emergency paramedic (First, Tomlin, & Swinburn, 2010, Joyce, Wainer, Piterman, Wyatt, & Archer, 2009; Mccann, Edward, Hyde, & Hassard, 2013); however, none have specifically studied occupational closure while the professionalization process is occurring.

Assumptions/Limitations

Limitations to the study are noted and follow. Only the paramedic level was studied since it is the only level to fall under the auspices of mandatory accreditation. The workforce is represented by the number of paramedic graduates obtaining NREMT licensure and does not include states with alternate pathways. This does not accurately represent the active vs. non-active workforce due to the number of graduates obtaining licensure for work promotions who do not care for patients, and it does not represent prior licensures who have not recertified. The

underlying assumption of the study is that there will be a negative trend in the numbers of new paramedics entering the workforce since the implementation of mandatory accreditation and a decrease in paramedic initial education programs. Finally, the survey is voluntary and therefore limited the sample size.

Significance

A decrease in the EMS workforce has had consequences at the national level. As the workforce decreases, a greater workload will be shifted to existing paramedics. This shift of burden, through extra work shifts or longer hours, may create a secondary effect as fatigued EMS personnel leave the field for work in hospitals or other fields, further depleting the workforce. Without an adequate EMS workforce that meets the highest standard of education, some emergencies may go unanswered, substantially increasing the morbidity and mortality rate.

Conclusion

The EMS workforce is vital for the health and safety of the nation. Workforce shortages have plagued EMS for decades. Since the mandatory accreditation of the EMS paramedic programs was implemented, the workforce has decreased even more. The oversight of the accrediting body assures the highest quality of paramedics are entering the workforce; however, as the number of graduates is decreasing, one must look at the effects occupational closure has had on the workforce and consider alternate paths for paramedic education. This study examined the mandatory accreditation of the EMS paramedic programs and the perception of EMS state directors in those states regarding EMS workforce staffing and availability of paramedic education programs. In the next chapter, the literature will demonstrate the past and present workforce of EMS, the history of EMS education, current EMS education, professionalization of the emergency paramedic, and the oversight of accreditors and licensure agencies.

Definition of Terms and Abbreviations

For this study, the following terms are defined:

AEMT: Advanced Emergency Medical Technician. A mid-level EMS provider.

Accreditation: A process that a health care institution, provider, or program undergoes to demonstrate compliance with standards developed by an official agency. (*The Free Dictionary,* n.d.)

Attrition: A reduction in employees or students. Opposite of retention.

CAAHEP: The Commission on Accreditation of Allied Health Education Programs.
A governing agency that monitors CoAEMSP as an accreditor.

Certification: The status when a paramedic student completes all coursework and is approved to take the credentialing exam.

CoAEMSP: Committee on Accreditation of Educational Programs for Emergency Medical Services Professions. The agency responsible for upholding the rules and regulations for all programs accredited by CAAHEP.

CMS: Centers for Medicare and Medicaid Services

Department of Homeland Security (DHS): An agency that protects the United States. The United States Department of Homeland Security (**DHS**) is a federal agency designed to protect the United States against threats.

Department of Transportation: The United States Department of Transportation (USDOT or DOT) is a federal cabinet department of the U.S. government concerned with transportation. ("DOT," n.d.)

Dual Enrollment: Academically, students are enrolled in two different institutions gaining credit for both. This is typically seen when a student is in high school and taking college courses.

EMS: The acronym for Emergency Medical Services. This term refers to the treatment and transport of people in crisis health situations that may be life threatening. (EMS1, 2011)

EMT: Emergency Medical Technician. A basic life support provider.

Leader: Someone who is knowledgeable and has experience within their industry.

Licensure: Grants the right to practice within the state that authorizes the license.

NAEMT: The National Association of Emergency Medical Technicians.

NAEMSO: The National Association of Emergency Medical Services Officials

National Highway Traffic Safety Administration (NHTSA): An agency of the Executive Branch of the U.S. government, part of the Department of Transportation. ("National Highway Traffic Safety Administration," n.d.)

National Registry of Emergency Medical Technicians (NREMT): An organization founded in 1970 to create a national registry of ambulance personnel that certifies such personnel by exam and monitors recertifications.

Paramedic: A person trained to manage the emergency care of sick or injured persons during transport to a hospital, including administration of injections and intravenous fluids, reading of electrocardiograms, and performance of defibrillation and other advanced life-support measures if ordered by a physician. (*The Free Dictionary,* 2003)

Professionalization: "Professionalization, also called credentialism, is a social process by which any trade or occupation relies on formal education, qualifications, or certifications. This process creates norms of the profession and creates conformity to the agreed upon norms of that society" (Professionalization, 2014).

Retention: The retaining of employees or students. Opposite of Attrition.

CHAPTER 2

REVIEW OF THE LITERATURE

To fully understand the dynamic foundation of the problems associated with the mandatory accreditation of EMS training programs, one must first understand the evolution and uniqueness of EMS as a profession, EMS education, and the professionalization of EMS. The literature illustrates the progression in prior and current oversight, accreditation of EMS paramedic education, parallels in nursing workforce challenges and occupational closure, and implications for the paramedic workforce.

Professionalization

"Professionalization, also called credentialism, is a social process by which any trade or occupation relies on formal education, qualifications, or certifications. This process creates norms of the profession and creates conformity to the agreed upon norms of that society" (*Professionalization,* 2014). Kelner, Wellman, and Boon (2004) found that professional status implies a group has expert knowledge as well as exclusive control over its work.

Historically, professionalization theory is represented by three major views: power, trait, and functionalist. The trait view defines a profession by its characteristics (Welsh, Kelner, Wellman, & Boon, 2004; Greenwood, 1957; Freidson, 1989; Forsyth & Danisiewicz, 1985; Leeming, 2001). Greenwood's (1957) trait theory listed attributes or characteristics of an occupation as the component that made it a profession, having skills-based knowledge, formal education, an occupational organization, code of ethics, and a form of licensure.

The functionalist view, first described in 1928 by Carr-Saunders, noted the behavior of the occupation and its function in society. Carr-Saunders also noted that professionals had rigorous training and education, a code of ethics, and exams prior to entry (Margolis, 2005). The

view became popular in the 1940s and 1950s and focused on the profession's ability to help stabilize societal needs and that professions could morph and fill gaps as needed (Crossman, 2018).

According to Freidson's power theory (1970), professional status suggests that a group has the required knowledge and expertise, exclusive control over its work, and the conditions under which its members practice. Autonomy is the most important characteristic of a profession (Margolis, 2005). The power view, established by Freidson (1989) defined a profession as an occupation whose practitioners control recruitment, education, and the job responsibilities they perform and requires the practitioner to use discretionary judgment. In essence, the occupation has the monopoly on knowledge and market (Starr, 2009). The profession is knowledge-heavy, residing in larger schools, and may include a practical section to learn the skills of the profession. The profession has power and jurisdictional control of the market and entry into the market through regulations and certifications. Professionals are separate from laborers in that they are devoted to the good of the client above their own material interests. The profession has a code of ethics that helps protect and assure the public against abuse or mistrust (Freidson, 1989). Professionalization can be a process beginning from the bottom, the top, or any combination of the two. (Approaches to Professionalization, 2013; First & Tomlins, 2012). McCann, Granter, Hyde and Hassard (2013) stated that successful professionalization comes from a "double closure," occurring simultaneously from the top and bottom, that is, from senior levels as well as local levels.

While each of these views is important to the underlying knowledge of this research, this author specifically focuses on the "occupational closure," "social closure," "market closure," "funnel effect," or the "pipeline" of graduates entering the profession. For the purposes of this

research, the term *occupational closure* will be used. Historically, occupational closure has been associated with the broad analysis of the professions (Muzio & Kirkpatrick, 2011). The focus of this research is on the EMS occupation and the effects of occupational closure, the time when the occupation becomes closed to nonmembers such as non-qualified or amateur practitioners. This process shuts off the occupation to "just anyone" and creates a funnel effect into the profession. (Ghaffarzadegan, Xue, & Larson, 2017; Waddington, 1990; Welsh, Kelner, Wellman, & Boon, 2004; First & Tomlins, 2012; Starr, 2009).

Occupational closure limits entry into the profession by creating oversight and limitations, such as availability of education to only those who qualify (Klein, 2016; First & Tomlin, 2012). These oversights and limitations create closure to the occupation and decrease the number of graduates entering the workforce as seen previously in other professionalization processes, including the nursing profession (HRSA, 2002; Waddington, 1990).

Evolution of Modern EMS

In 1865, the first civilian ambulance began operating out of Commercial Hospital in Cincinnati, Ohio. Four years later, in 1869, the first ambulance service began running response calls out of Bellevue Hospital in New York, NY (Bucher & Zaidi, n.d.). The beginning of the nation's ambulance response began in hospitals just prior to World War I (Page, 1978; Peate, 2015). Between World War I and II, the idea grew and in the early 1900s hospitals began putting interns on ambulances. In 1926, the Phoenix Fire Department began using rescue squads. They were followed 2 years later by Roanoke, VA. During the period of 1939–1945, during WWII, hospitals shut down ambulance responses due to the lack of manpower related directly to the war. It was in this period that the ambulance services were turned over to police and fire departments. There were no rules on the minimum amount of training a person needed to work

on an ambulance. After World War II, EMS became more integrated into the civilian system (Shah, 2006; Page, 1978). By 1960, EMS was fragmented into unregulated systems being provided by hospitals, fire departments, volunteers, and undertakers. Since then, and while other health care areas expanded, EMS received little attention. Despite the lack of support, the EMS profession was growing and providing care (Shah, 2006).

The beginning of modern EMS is considered by most to be closely linked to the publishing of the "Accidental Death & Disability: The Neglected Disease of Modern Society" or "The EMS White Paper" in 1965 (Shah, 2006; NHTSA, 2005; Edgerly, 2013). The paper was a scathing report on the lack of regulations, equipment, training, and communication. The paper stated that more people died in auto accidents than in the Vietnam War (Edgerly, 2013; Shah, 2006). As a result, in 1966 the EMS Guidelines: The Highway Safety Act was created. In 1968, basic training education was drafted and 9-1-1 began. The Highway Safety Act required each state to create highway safety initiatives, including emergency services (NHTSA, 2009). In 1969, the nation's first paramedic program began in Miami, Florida, established by Dr. Eugene Nagel. That same year, the Committee on Ambulance Design Criteria published "Medical Requirements for Ambulance Design and Equipment." This document was the beginning of a national standard for the design and equipping of ambulances.

The first textbook for EMS training, titled *Emergency Care and Transportation of the Sick and Injured*, was published in 1970 by the American Academy of Orthopedic Surgeons (AAOS) (NHTSA, 2009). In 1970, the National Registry of Emergency Medical Technicians was also established. The agency's goal was to maintain a national register of all EMS workers and verify recertifications biannually. Although EMS was born from the Department of Transportation, in 1975 the American Medical Association recognized Emergency Medicine as a

specialty. A standard national curriculum was created and the National Association of EMTs (NAEMT) was formed (NHTSA, 2005). NAEMT represents all levels of prehospital providers and includes educational content, initiatives, position papers, and advocates for EMS on current issues (NAEMT, 2018).

Evolution of EMS Education

EMS education is new in comparison with other health care specialties, including physicians and nursing, which have been around for hundreds of years. Prior to World War II, "No laws required minimal training for ambulance personnel and no training programs existed beyond basic first aid. In many fire departments, assignment to ambulance duty became an unofficial form of punishment" (Page, 1978). Paramedics were being taught by nurses and physicians who had an interest in emergency medicine but only had a vision of what the training should look like (Edgerly, 2013). In 1972, at the University of Cincinnati, the first residency program began to train physicians in emergency medicine, and by 1975, there were 32 emergency medical residencies across the nation (Bucher and Zaidi, n.d.).

Currently, there are several levels of EMS providers. The least trained is the Emergency Medical Responder (EMR), followed by the Emergency Medical Technician, the Advanced Emergency Medical Technician, and, finally, the Paramedic, which involves the most training (NHTSA, 2005). Along with the initiative to standardize EMS education, there has been a push to standardize prehospital personnel licensure levels, however, in 2007, it was noted that more than forty levels of emergency responders existed across the United States (IOM, 2007). Creating a vision for the future of EMS education, Michael and French (1996) put into motion the document that pushed EMS education forward by writing the National EMS Education Agenda for the Future. This was the first document to truly assess EMS education specifically.

The document gives the EMS educator a roadmap of where they needed to be as part of a field of medicine by 2010. This book illustrated where the EMS field started, what the goals were for the profession by 2010, and recommendations to accomplish those goals by covering the topics of new system components, core content, scope of practice, accreditation, and certifications. This Agenda parallels the EMS Agenda for the Future and the Rural EMS Agenda for the Future. All three documents have helped unify the EMS system (Michael & French, 1996).

Since the first paramedic curriculum was written, there have been two updates, the first in 1985 and the next in 1998. In 2009, paramedic education standards were adopted in lieu of the previous curriculum that allowed the document to adapt to changes as needed (Edgerly, 2013). The national EMS education standards outline the terminal competencies for paramedic education programs. These standards use the National education standards as well as the National EMS core content, the National EMS scope of practice, National EMS certification, and National EMS program accreditation (NHTSA, 2009).

EMS education has expanded greatly in the past five decades, commencing from requiring no training to a fragmented training program, and finally residing predominantly in the traditional college system. Previously, paramedic education has been unregulated, allowing students to choose to take courses at a 2-year college, a fire department, EMS agency, private school, or a random class (COAEMSP, 2017). Now, the majority of paramedic education is completed in the 2-year college setting and paramedic education has moved under the regulatory umbrella of accreditation. Classes are structured in the traditional format and the length of the course is two years ("CAAHEP," 2016). This may or may not lead to an associate degree. Klein (2016) noted, “Closure in the educational system produces occupational closure in the labor

market." However, a 2016 report revealed that 64% of EMS respondents believed that Paramedics should have at minimum an associate degree (Fitch, 2016).

The standard in EMS education now includes the National EMS Scope of Practice Model and National EMS Education Standards. The models and standards serve as a foundation to all EMS practices. EMS standards include each unique level, understanding that the emergency medical education builds up to each level (NHTSA, 2005). Therefore, one must become an EMT before they can become a paramedic. To ensure advancement of paramedic education standards, paramedic programs have fallen under mandatory accreditation. At this time, only the level of paramedic is affected (Skalko, 2017).

As the education of paramedics pushes beyond certificate courses to associate degrees and further, questions arise about the ever-evolving curriculum and the increasing scope of practice of today's paramedic. Pushing paramedic education past the associate degree is met with resistance due to the stringent standards created by higher education institutions. As more graduate and post-graduate degrees are offered in the field of prehospital education, organizations should use higher education achievement as motivation for employees to advance in the field of EMS (Peate, 2015).

EMS Evolution as a Profession

Professionalization theory describes a professions evolution from a trade to a recognized profession (Jarausch 1990). Emms and Armitage (2010) stated that although it appears EMS fits the characteristics of professionalization,

> The natural progression to a profession for the paramedic may not be so natural. The history of EMS education conflicts with higher education merely for the reason it never began there. As EMS education advances in that direction, struggles will likely ensue. By

all meanings, EMS education fits the key elements of the professional. The changes seen in the profession are natural and should be pre-thought out for this unique group. Joyce (2009) stated "the shifts taking place in the paramedic workforce can be framed as part of the process of professionalization of this group" (p. 535). NHTSA agreed (2009), stating that EMS is in the initial stages as a profession.

Oversight

In the past, the oversight of EMS and EMS education was fragmented. The oversight of EMS paramedic education falls to just a few regulators. CoAEMSP provides oversight of EMS education programs and they are overseen by CAAHEP. In 2006, the Institute of Medicine report called for the accreditation of all EMS paramedic education programs (IOM, 2006). Until January 1, 2013, there was much freedom in the education platform of a paramedic. Initial education courses could take place in a variety of places including a structured post-secondary school, private business, fire department, or a community center in a rural area. As of January 2013, only those individuals who complete and graduate from an accredited EMS education program will be permitted to take the National Registry paramedic certification exam (Wilfong, 2009).

There are two types of accreditation in the United States, institutional and programmatic. The mandatory accreditation of paramedic programs is a programmatic accreditation and oversees the actual program, not the full institution. Figure 2.1 illustrates the number of initial paramedic education programs accredited in each state as well as the programs that fall under a Letter of Review (LOR). A LOR indicates the programs is going through the accreditation process and is allowed to teach paramedic courses (CoAEMSP, 2017). While there are many recognized accrediting agencies, only one, CoAEMSP, oversees the nation's paramedic

programs. For modern professions, regulation or state licensure is a primary way to achieve market closure (Welsh, Kelner, Wellman, & Boon, 2004).

Figure 2.1. Current accredited organizations by state (2018).

NREMT is the only national agency that credentials EMS personnel through examination and maintaining licensure in biannual cycle (NREMT, 2017). The NREMT is responsible for credentialing, which includes provider certification by exam, verification of certification, National registration, and reciprocity. Reciprocity allows personnel to move between NREMT states with fewer obstacles (NREMT, 2017). Most states in the United States are considered national registry states except for Florida, North Carolina, Illinois, Montana, and New York, which have alternate pathways for certification.

Challenges of Accreditation

The purpose of the CAAHEP/CoAEMSP accreditation is to ensure that the paramedic student has the best possible education and the public gets the best possible care (CoAEMSP, 2017). While the overarching goal remains positive, previous literature illustrated that there are challenges to obtaining and maintaining accreditation status (Wilfong, 2008). One of these challenges is the high cost in achieving and maintaining accreditation status. The cost associated with the accreditation process equals several thousand dollars (CoAEMSP, 2017; Wilfong, 2009). While some education institutions can circumvent this with ease, many in the EMS education community falter and cannot accomplish the task. The greatest impact seen is in the rural areas where community centers hosted paramedic courses free of charge. Mandatory accreditation has done away with nontraditional programs that operated on a small or nonexistent budget, especially in rural areas, therefore decreasing classes, graduates, and the available workforce (Wilfong, 2009). Specifically, in the state of Georgia, 2012 yielded a high 56 cohorts for paramedic education where the following year yielded only 17. The number of Georgia cohorts climbed to 43 in 2017(Georgia Trauma Foundation, 2017). Abbott (1988) illustrated demographic rigidity greatly limits the ability of educators to keep up with workforce supply and demand. Requiring more knowledge from the student lengthens the amount of schooling and therefore lengthens the time until graduates can enter the workforce (Abbot, 1988).

Workforce and Challenges

From the inception of modern day EMS, there has been little data portraying the actual workforce (McCallion, 2011). The EMS system across the nation is fragmented and varies drastically among geographic areas (Armstrong, 2006). Until recently, no attempts have been

made to collect data to gain an understanding of the current workforce and future needs (NHTSA, 2005; Armstrong, 2006).

The National Association of Emergency Services Officials (NASEMSO) undertook a comprehensive study tracking data in all fifty states and four U.S. territories. This study found the workforce in 2011 included 826,111 personnel, which included the three main levels of EMS professionals at the time. The study did not include the first responder level (McCallion, 2011). The Bureau of Labor and Statistics does not track volunteers (BLS, 2017). It has been estimated that one-third of all EMTs registered in the US are volunteers (Armstrong, 2006; McGinnis & Moore, 2006; NHTSA, 2008).

According to *EMS Magazine,* in 2003 approximately 757,000 personnel in the country were trained at the EMT and paramedic levels; however, this included licensed EMTs not actively practicing and does not include the AEMT level (Armstrong, McGinnis, & Moore, 2006). The NREMT tracks initial licensure but does not include five states who are dual pathway states or licensed paramedics who are not mandated to maintain NREMT licensure during each renewal period (NREMT, 2017). (Figure 2.1)

> In recent years, awareness of the urgency of EMS workforce issues has increased. Media and anecdotal reports of EMS worker shortages, problems with recruitment and retention, declining volunteerism, low worker pay and poor employment benefits, and concerns about worker health and safety issues has raised uncertainty about the viability of the workforce. At the same time, recent national disasters have brought new attention to the vital roles EMS workers play in community health and public safety. (NHTSA, 2005)

The *EMS Workforce for the 21st Century: A National Assessment* (2008) asked four important questions regarding the future EMS workforce:

1) Will the EMS workforce be adequate for the future population?
2) How can recruitment and retention be increased?
3) How can resources be aligned no matter the geography or population?
4) Do we have the data needed to assess supply and demand of the EMS workforce?

The most important part of EMS is its workforce (FICEMS, 2011; NAEMSE, 2014). "More than 826,000 women and men, in both paid and volunteer roles, provide response to more than 36.5 million calls for treatment and transport to more than 28 million patients each year" (NASEMSO, 2014, p. 6; McCallion, 2001). The delivery of high quality, prehospital emergency care depends on this workforce; however, very little focus has been on the training of the EMS workforce until now. Some have been successful, but it appears to be an ongoing process (NHTSA, 2005).

Numerous interviews have shown that leaders in the EMS field are worried about the EMS workforce (EMS1, 2017; Fox4KC, 2014; TRIBlive, 2012; WRDW, 2013). Workforce shortages are the most consistently identified workforce concern of EMS employers and there is concern with issues such as recruitment and retention to fulfill the mission of providing quality emergency care (NHTSA, 1996). Wilfong (2009, p. 12) stated, "requiring accreditation will potentially have dramatic impacts on EMS education programs and EMS education leaders" and "if programmatic accreditation requirements curtail available EMS education programs, the number of graduates may be reduced in a system with a current shortage of EMS providers nationally" (p. 13, Wilfong, 2009). Due to the highly fractured nature of EMS and the inability to

gather an accurate workforce database, one looks to the credentialing process and the data from the NREMT to set the trend of paramedics attempting the credentialing exam (Figure 2.2).

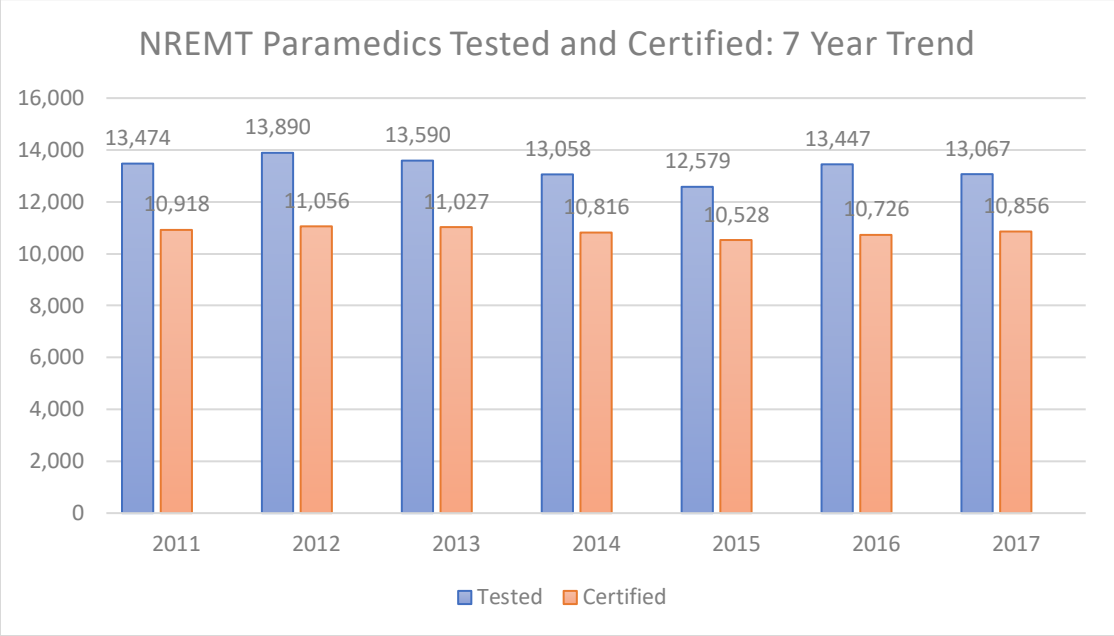


Figure 2.2. NREMT paramedic testing initial licensure in the United States from 2011–2017 (2018).

A recent workforce study in the state of Georgia illustrated 8,591 licensed paramedics in the state. However, only 5,471 licensed paramedics were on an active agency roster or signed a patient care report in a one-year time frame. Phase 2 of this study is currently trying to account for the missing 3,120 medics who maintain licensure but serve in areas other than EMS. (Georgia Trauma Foundation, 2017). NAEMSO (2014) stated that the Bureau of Labor Statistics forecasted a 33% increase in the need for EMTs and paramedics between 2010 and 2020.

Nurses: Workforce Comparison

Like the paramedic profession, the nursing profession involves different levels of workers: registered nurses, licensed practical nurses, and nurse aides. Registered nurses provide direct patient care and manage nursing care. They are state licensed and hold associate degrees (two-year community colleges), diplomas (three-year hospital programs), or baccalaureate

degrees (four-year colleges). The completion of these programs and passing the National Council Licensure Examination (NCLEX-RN), allows for licensure as an RN (Carnevale, Smith, & Gulish, 2015). Licensed Practical Nurses (LPNs) provide patient care under the direction of an RN or physician (Keenan, 2003). After completion of their program and passing the NCLEX-PN, they can gain licensure (Carnevale, Smith, & Gulish, 2015).

In comparison, registered nurses have undergone similar workforce shortages. In 2000, the estimated 2 million nurses needed for the field fell short by 110,000 or 6%, and the shortage was expected to grow to 29% by 2020. This shortage illustrates a 40% increase in demand (HRSA, 2002). The lengthened time of education requirements has a constraining effect on the growth of supply in nursing graduates (HRSA, 2002).

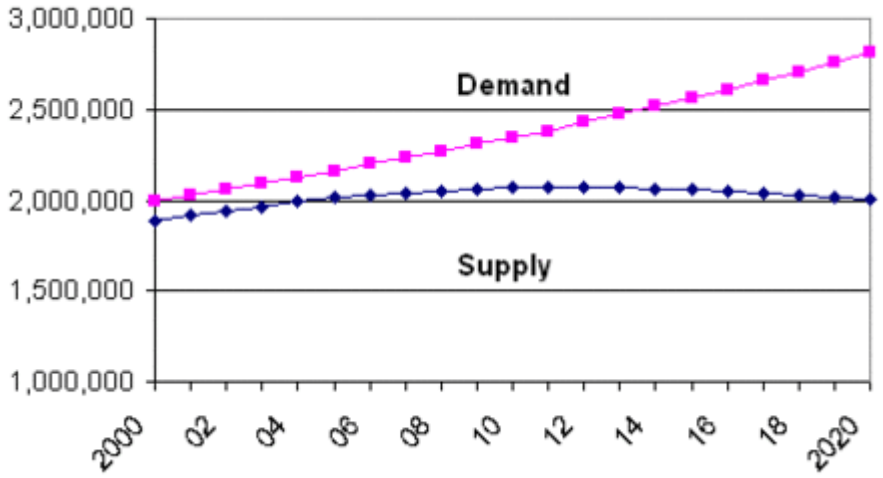


Figure 2.3. National supply and demand projections for FTE registered nurses: 2000 to 2020 (HRSA; 2002).

Accounting for workforce age, graduates entering the workforce, and career changes, current estimates indicate the growth of people entering the nursing profession from 3.5 million to 3.9 million will not keep up with the predicted demand of 4.14 million by 2020. This demand comes in the form of the increasing population. By 2030, more than 70 million baby boomers will be over 65 years old, including 1.1 million baby boomer nursing professionals (Carnevale,

Smith, & Gulish, 2015). Millennials have recently flooded the nursing profession potentially staving off a deepening shortage (Rudavsky, 2018).

Analogous to EMS, 30% of all licensed RNs and LPNs do not work in the health care field (Figure 2.4). Recruitment and retention is a challenge and attrition growing due to an aging workforce, lack of wage increases, and demanding work environments (Carnevale, Smith, & Gulish, 2015). Compounding the problem, between 2011 and 2012 educational institutions turned away 37% of BSN and 51% of Associates degree qualified applicants. One reason is the lack of faculty and resources to move students through the education to workforce pipeline fast enough to keep up with demand (Carnevale, Smith, & Gulish, 2015).

Between 1952 and 1998, nursing accreditation moved to a single accrediting organization, the National League for Nursing. In 1998, based on recommendations from the American Association of Colleges of Nursing, the Commission on Collegiate Nursing Education was created specifically to accredit nursing baccalaureate and graduate programs, creating competition for the accrediting agencies (Wilfong, 2009). Wilfong (2009) noted that the 1965 Nurse Training Act implemented mandatory accreditation and created problems for educators and organization. The problems eventually led to the reversal of accreditation in 1968 and the sharing of program approval with each state. Currently, these agencies are still the two main accrediting bodies for nursing education (Nursingschool.org, 2018).

LICENSED NURSES VERSUS WORKING NURSES, BY STATE (VARIOUS YEARS):

State	Employed nursing professionals	Licensed nursing professionals	Licensed nursing professionals not working in nursing	State	Employed nursing professionals	Licensed nursing professionals	Licensed nursing professionals not working in nursing
AL*	44,560	62,898	18,338	MT	9,088	20,850	11,762
AK	6,271	18,096	11,825	NC	63,465	143,062	79,597
AR	37,375	51,924	14,549	ND	12,839	16,531	3,692
AZ	35,713	86,089	50,376	NE	23,133	33,396	10,263
CA	390,972	475,444	84,472	NH	**	24,219	**
CO	45,640	73,663	28,023	NJ	76,778	141,688	64,910
CT*	54,057	69,806	15,749	NM	15,746	27,954	12,208
DC	1,733	27,363	25,630	NV	26,360	31,798	5,438
DE	10,277	19,560	9,283	NY	219,080	364,200	145,120
FL	193,267	330,396	137,129	OH	171,756	247,013	75,257
GA	107,397	147,662	40,265	OK	48,231	69,469	21,238
HI	7,429	21,873	14,444	OR	26,396	54,158	27,762
IA	37,803	60,573	22,770	PA	155,810	268,556	112,746
ID	11,658	25,407	13,750	RI	10,327	19,831	9,505
IL	158,430	198,953	40,523	SC	66,362	69,989	3,627
IN	69,855	131,117	61,262	SD	15,584	18,063	2,479
KS	32,397	61,316	28,919	TN	79,041	119,690	40,649
KY	55,993	81,813	25,820	TX	248,497	353,582	105,085
LA*	43,187	81,484	38,297	UT	33,206	33,365	159
MA	56,276	142,376	86,101	VA	113,664	125,311	11,647
ME	17,131	25,558	8,427	VT	9,128	17,260	8,132
MD	79,209	87,376	8,167	WA	70,138	96,607	26,469
MI	131,587	170,525	38,938	WI	80,100	104,527	24,427
MN	78,288	115,018	36,730	WV	29,719	42,288	12,569
MS	36,548	57,326	20,778	WY	3,650	12,493	8,843
MO	82,010	116,841	34,831				

*Note: Alabama, Connecticut and Louisiana did not have the 2012-2013 licensing volume data available for all nursing professionals, so the most recent data, as reported in National Council of State Boards of Nursing (NCSBN), *2012 and 2013 Nurse Licensee Volume and NCLEX Examination Statistics*, 2014, were used in the analysis.

** Data withheld due to insufficient sample size.

Source: Georgetown University Center on Education and the Workforce analysis of data from the National Council of State Boards of Nursing (NCSBN), *2012 and 2013 Nurse Licensee Volume and NCLEX Examination Statistics*, 2014; and the U.S. Census Bureau, *Current Population Survey (CPS), March Supplement*, 2013.

Figure 2.4. Licensed nurses vs. non-practicing nurses by state.

Conclusion

The purpose of this literature review was to find and illustrate the existing knowledge on professionalization and occupational closure, the evolution of modern EMS and uniqueness of EMS and EMS education. Previous literature illustrates EMS is in the professionalization process. The literature described the progression in prior and current oversight, the progression to mandatory accreditation of EMS paramedic education, including the challenges associated with obtaining and maintaining accreditation. The literature demonstrates parallels in nursing

workforce challenges, including the comparison in training levels, workforce shortages, lengthened training, active vs. non-active nursing personnel and population growth impacts. The literature has demonstrated that since the beginning of modern EMS, there have been paramedic workforce shortages and current literature indicates this has not changed. Finally, the literature shows multiple documents calling for data on the workforce. Comprehensive collection of data has yet to come to fruition. The industry must move forward to answer workforce questions asked in the past to ensure the highest quality EMS professional and a full workforce.

CHAPTER 3

METHODOLOGY

The aim of this study is to investigate the perceptions of State Office of EMS Directors regarding workforce staffing and availability of paramedic initial education programs in their state since the implementation of mandatory accreditation. On January 1, 2013, all paramedic initial education programs in the United States fell under mandatory accreditation, meaning any paramedic graduate requesting to take the NREMT certification exam had to come from one of these programs. This did not include the five states that have alternate pathways for testing and certification. This study serves to identify and quantify the impact of mandatory accreditation on paramedic graduates. The questions for this research study are as follows:

1. What are State Office of EMS Directors' perceptions of work force staffing since implementation of mandatory accreditation of paramedic programs?
2. What are State Office of EMS Directors' perceptions on the availability of paramedic education programs since implementation of mandatory accreditation of paramedic programs?

This chapter will explain the setting of the study, the participants, types of data collected and the analysis of each. All ethical and participant rights will be addressed as well as the limitations of the research.

Setting

The research used convenience expert sampling. The sample population included the state office of EMS Director, interim, or equivalent in the 48 contiguous states.

Participants

The study included an electronic survey that was sent to the EMS Director or equivalent in each state. This included all 48 contiguous states (N=48). These professionals were chosen due to the abundance of knowledge and experience they hold in EMS, EMS accreditation, and the global view of EMS issues within their state regarding accreditation.

Data

This study uses an explanatory design. A cross sectional survey was sent to the state office EMS Director or equivalent within each state. The survey instrument was a structured response survey with dichotomous and multi-option variables and utilized skip logic questioning with open text boxes to allow the respondent to explain answers in their own words. The survey instrument provided a snapshot of the EMS leaders within the United States, including their work history and education history, and their perceptions of the paramedic staffing and paramedic educational opportunities within their state.

Analysis

The survey data was downloaded from Google Forms into an Excel format and analyzed by the researcher by hand. Use of skip logic questioning allowed for themes to be pre-created and then to be further analyzed for subthemes. Unidimensional and multidimensional scales were used to illustrate the findings.

Participant/Ethical Considerations

The researcher is responsible for the completion of work while ensuring an ethical and responsible research process. The study utilizes an encrypted online survey instrument. Participants were given a letter identifier, and all state identifiers were removed. All documents were protected in a password protected computer stored in a locked room.

Limitations and Delimitations

Delimitations of the study include the focus on the nationally registered emergency paramedic level only. The study did not include the national EMT or AEMT levels or any state created level. Another delimitation is the use of one leader from each state instead of the entire upper echelon. Limitations to this research study were the limited size of the sample. This sample population was chosen for their knowledge and experience within the EMS field. This sample also allowed for a general understanding of each state that responded. Each state received equal weight during the analyzing phase.

CHAPTER 4

FINDINGS

This study examined the perceptions of EMS leaders on the workforce staffing and availability of initial education programs within their state over the past five years since the mandatory accreditation of EMS Paramedic programs. These leaders were chosen due to their extensive knowledge and expertise in the EMS system. An electronic survey was sent to the recognized State EMS Director of each of the 48 contiguous states. One state was excluded due to lack of contact information available in that state (n=47). Out of the 47 surveys sent out, the response rate was 38 (80.85%).

Google Form Surveys were sent out via email in the month of June 2018. Each successive email included an update of the number and percentage of responses. At the end of the open survey period, the data was downloaded into an Excel format to clean and begin analysis. One respondent submitted the survey twice; therefore one was deleted. One respondent had to be changed from 44 years old to 44. One respondent changed from 30 years of service in most areas to 30. The first respondent did not receive question 7c: Where the vacancies are? due to a broken link in the skip logic question. This was immediately fixed and did not happen again. Respondents were assigned letters as identifiers “A” through “LL” and all surveys containing state identifiers were changed to the word *state.*

The survey contained three parts: the demographics of current EMS leaders, paramedic workforce staffing, and paramedic initial education availability within each state. The demographics section included: age, gender, highest level of education, years in EMS, and years in current leadership position. The workforce staffing section included the number of paramedics currently licensed in the state, the trend of new paramedics requesting licensure in the past five

years, whether paramedic staffing levels are full or have vacant positions, and if the vacancies are rural, urban, or both. The paramedic initial education availability section asked: Are seats full in all paramedic programs? What is the trend in availability in the past five years in these programs? and How has the accreditation of these programs impacted the provision of care in the state?

Questions 7–10 were constructed as multiple-choice questions that led to skip logic questions with text boxes. This allowed the respondent the ability to explain the answer in their own words. Multiple choice questions are illustrated throughout this chapter in charts. The skip logic responses were analyzed for themes within the group of respondents, then placed into tables demonstrating the subthemes found with supporting quotes.

Part One: The Snapshot of Our Leaders

The ages of our EMS leaders (N=38) range from 30 years old to 65 years old. Figure 4.1 below illustrates the different ages in nine-year increments. The average age of our leaders is 52.3 years old.

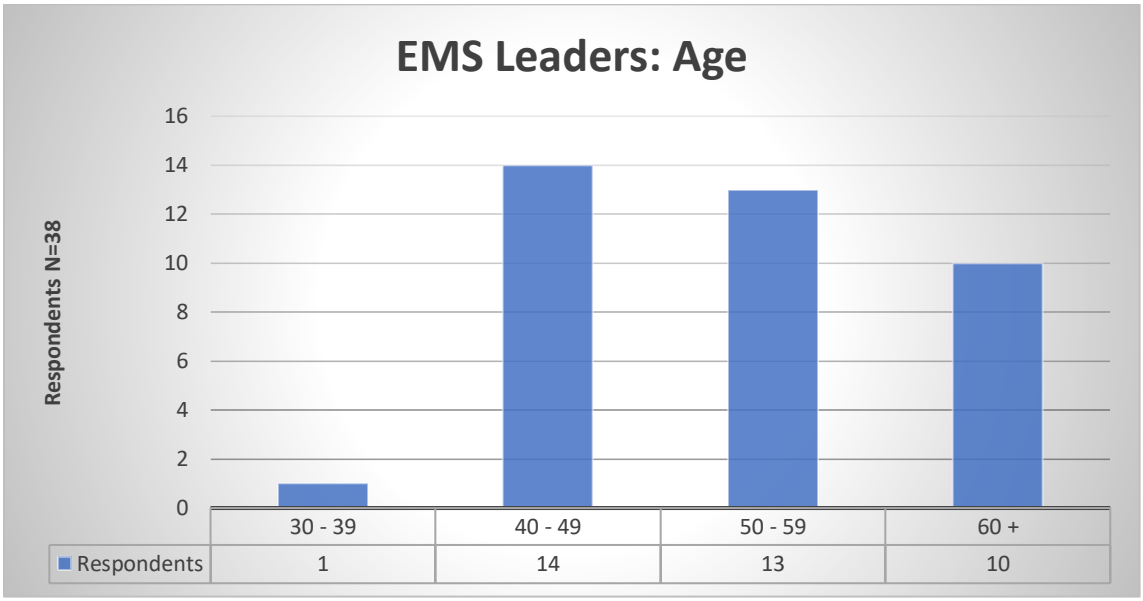


Figure 4.1. EMS leaders: Age.

Figure 4.2 illustrates that out of 38 respondents, our EMS leaders by gender are N=10 (26%) are female and N=28 (74%) are male.

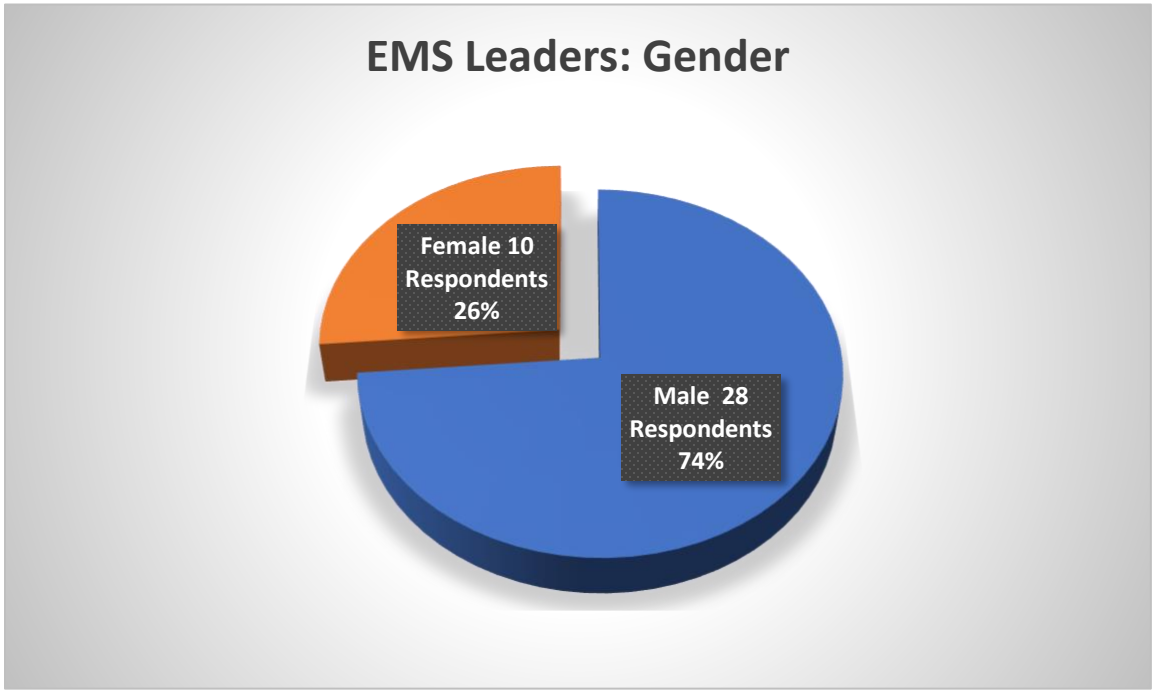
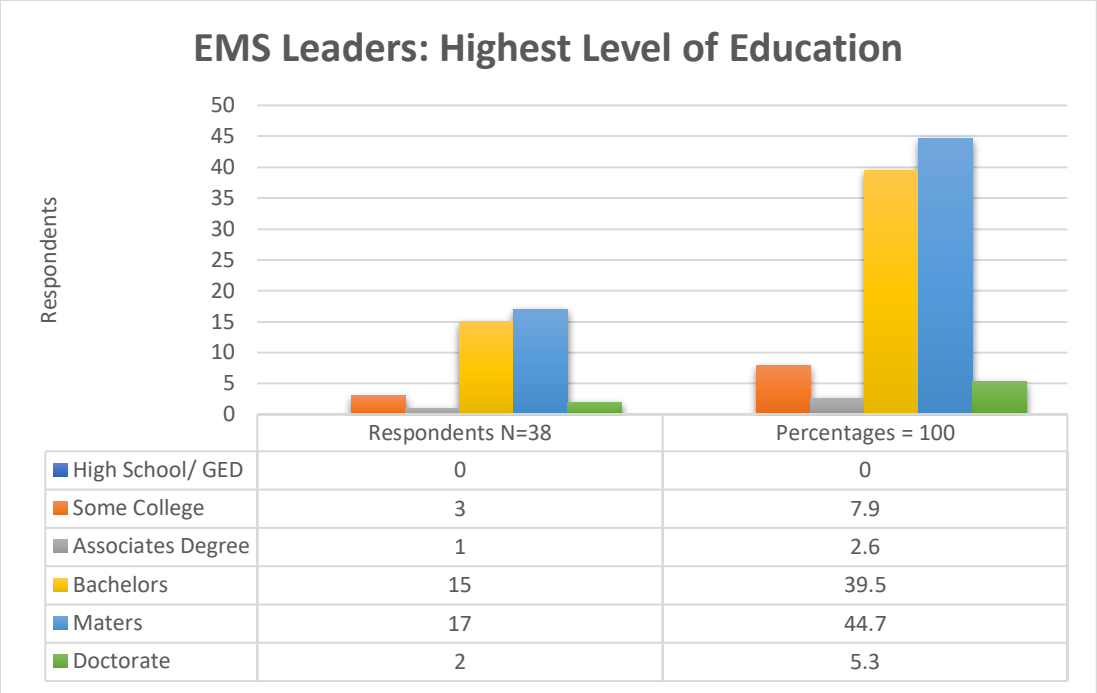


Figure 4.2 EMS leaders: Gender.

Our EMS leaders' highest level of education (shown in figure 4.3), show out of all respondents, N=38 (100%), 3 (7.9%) had some college level work, 1 (2.6%) had an associate degree, 15(39.5%) had a bachelor's degree, 17 (44.7%) had a master's degree, and 2 (5.3%) had a doctorate. Out of 38 (100%), 34 (89.5%) have a bachelor's degree or higher. (Figure 4.3)



	Respondents N=38	Percentages = 100
High School/ GED	0	0
Some College	3	7.9
Associates Degree	1	2.6
Bachelors	15	39.5
Maters	17	44.7
Doctorate	2	5.3

Figure 4.3. EMS leaders: Highest level of education.

Figure 4.4 illustrates EMS leaders' responses (N=38) when asked how long they have been serving in the EMS field. Given the following categories, one (2.6%) had been serving between one and five years, two (5.3%) had been serving between six and ten years, four (10.5%) between 11 and 15 years, two (5.3%) between 16 and 20 years, four (10.5%) between 21 and 25 years, twelve (31.6%) between 26 and 30 years, five (13.2%) between 31 and 35 years, three (7.9%) between 36 and 40 years, four (10.5%) between 41 and 45 years and one (2.6%) 46 years or greater.

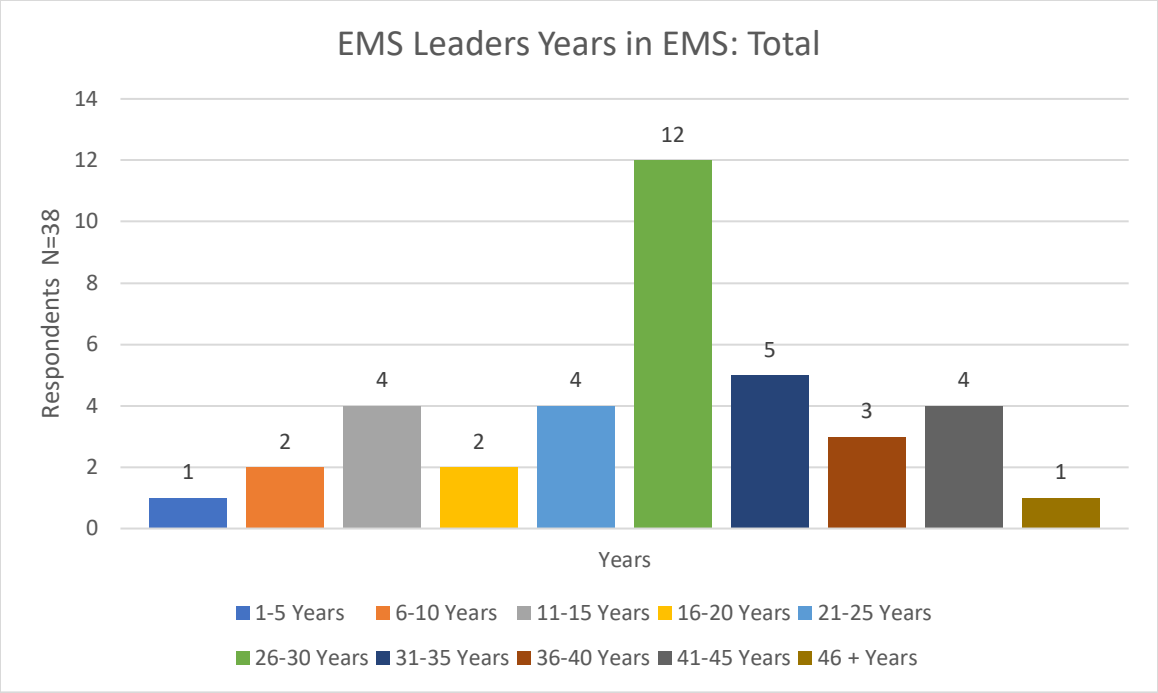
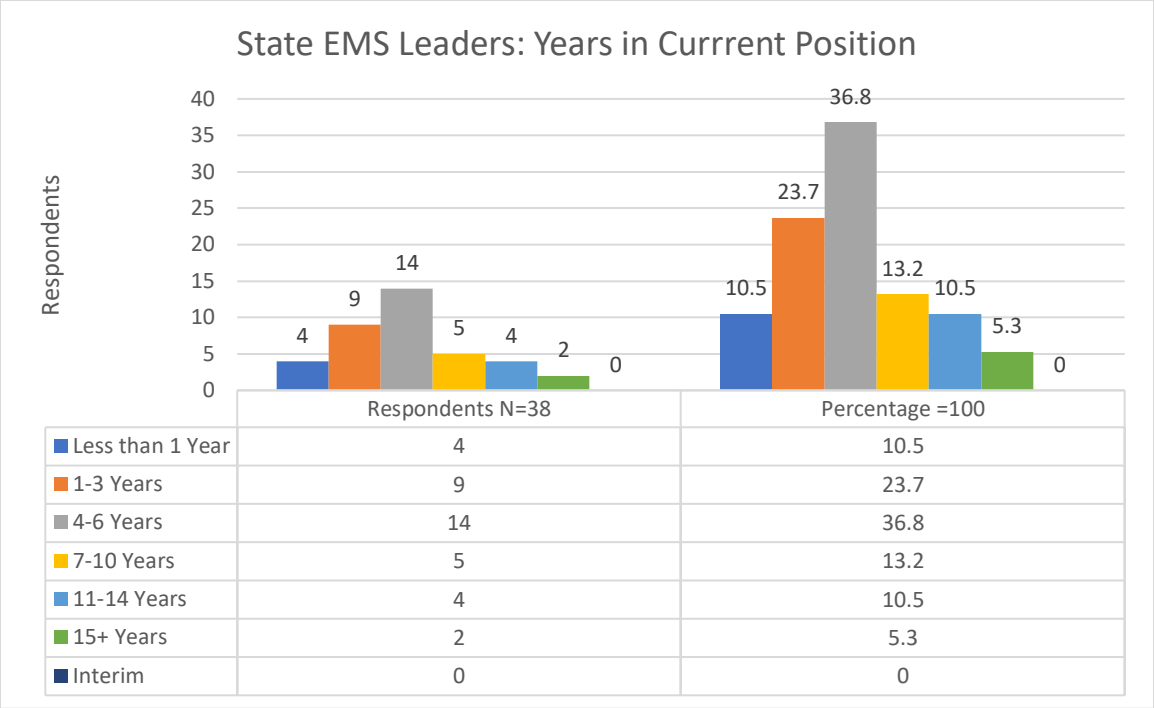


Figure 4.4. EMS leaders years in EMS: Total.

EMS leaders' responses (N=38) demonstrates that four (10.5%) have been in their current position less than one year, nine (23.7%) between one and three years, fourteen (36.8%) between four and six years, five (13.2%) between seven and ten years, four (10.5%) between 11 and 14 years and two (5.3%) for 15 or more years. There were no respondents that indicated they were an interim director. (Figure 4.5)



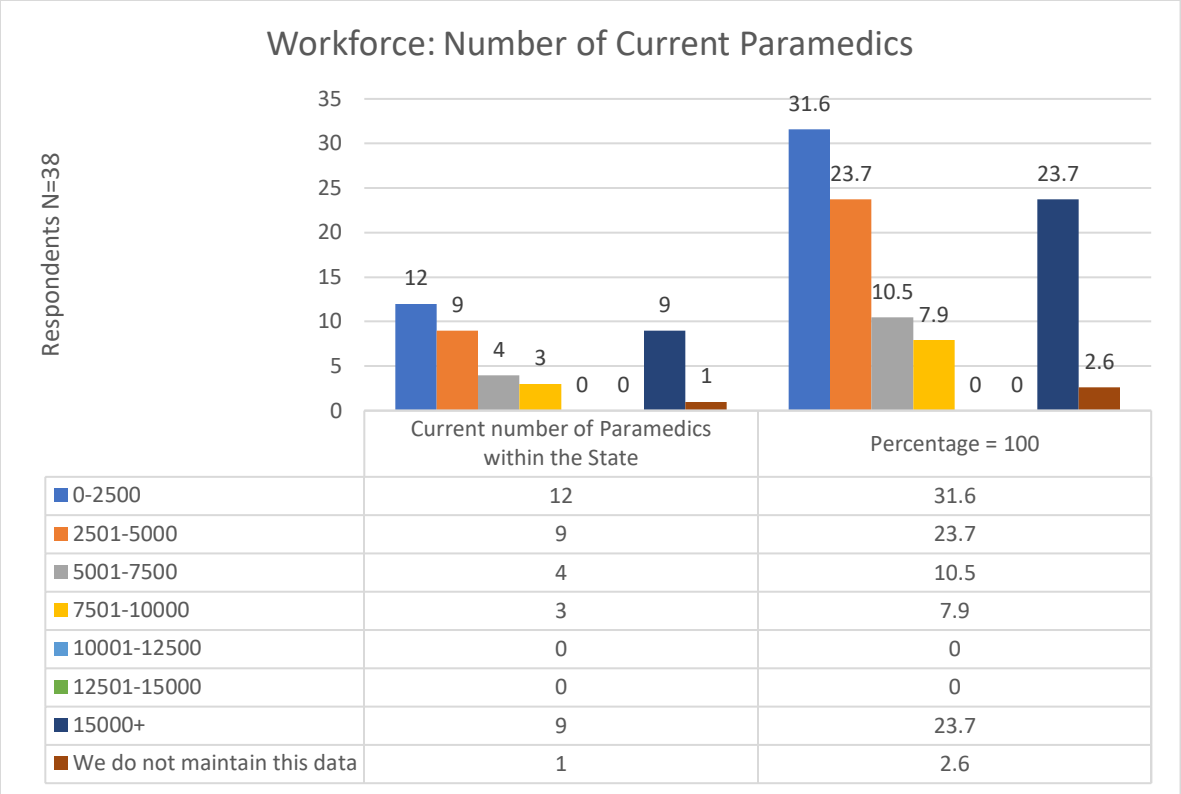
	Respondents N=38	Percentage =100
Less than 1 Year	4	10.5
1-3 Years	9	23.7
4-6 Years	14	36.8
7-10 Years	5	13.2
11-14 Years	4	10.5
15+ Years	2	5.3
Interim	0	0

Figure 4.5. State EMS leaders: Years in current position.

Part Two: State Workforce

The following questions focused on the leader's perception of the paramedic workforce within their state in the past five years. The definition of paramedic is based on the NREMT certification level of paramedic and does not include any other level.

When asked about the current number of paramedics currently licensed within their state, leaders (N=38) responded that 12 (31.6%) had fewer than 2500. Nine (23.7%) states responded they had between 2501 and 5000 licensed paramedics. Four (10.5%) stated they had between 5001 and 7500 paramedics and 3 (7.9%) stated they had between 7501 and 10,000. There were no states (0%) that indicated they had between 10,001 and 12,500 or 12,501 and 15,000. Nine (23.7%) states stated they had 15,000+ paramedics. One state leader (2.6%) indicated that they do not maintain this data. (Figure 4.6)



	Current number of Paramedics within the State	Percentage = 100
0-2500	12	31.6
2501-5000	9	23.7
5001-7500	4	10.5
7501-10000	3	7.9
10001-12500	0	0
12501-15000	0	0
15000+	9	23.7
We do not maintain this data	1	2.6

Figure 4.6. Workforce: Number of current paramedics.

Each leader was questioned about the paramedics seeking licensure within their state over the past five years. Out of all responses N=38 (100%), 16 (42.1%) states stated they noticed an increase in licensures. Fifteen (39.5%) saw no change while six (15.8%) indicated a decrease. One state (2.6%) does not maintain this data. (Figure 4.7)

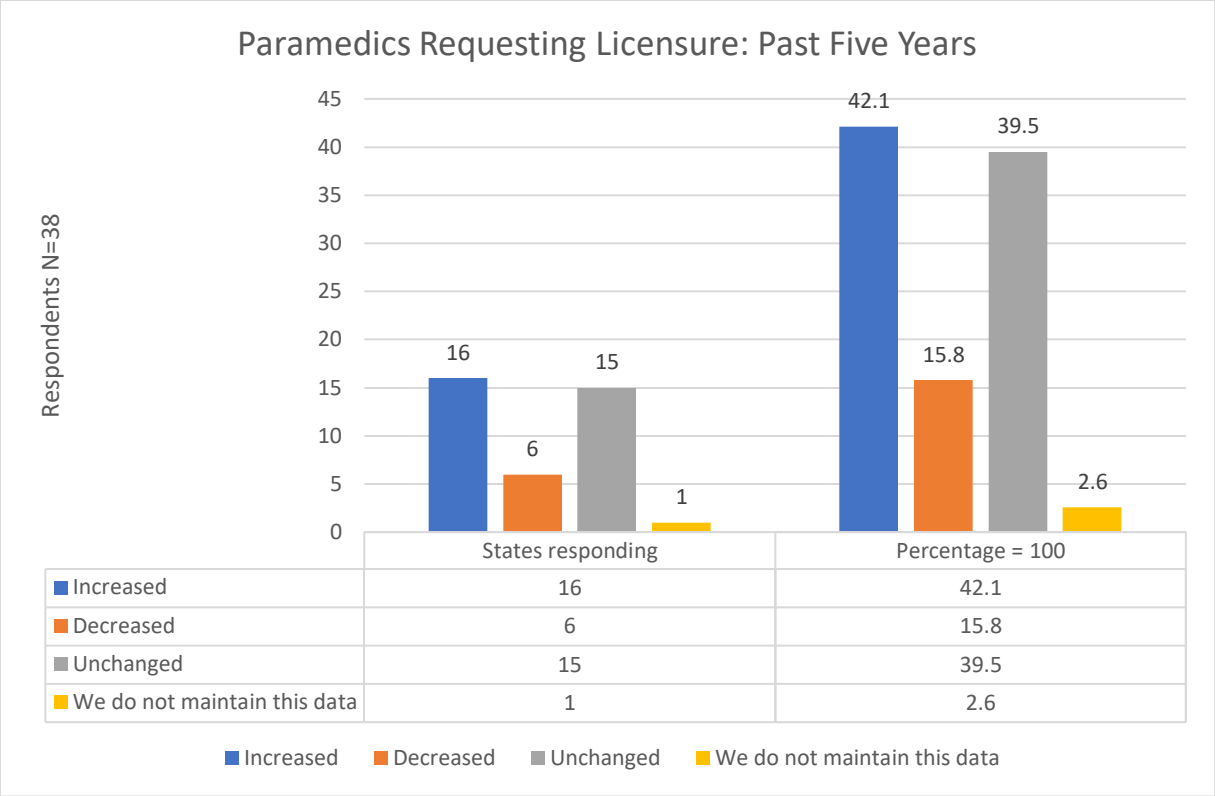


Figure 4.7. Paramedics requesting licensure: Past five years.

When asked if the trend in their state of paramedics requesting licensure had increased, decreased, remained the same or they did not maintain the data, of the original N=38 respondents, 16 (42.1%) indicated they noted an increase in paramedics requesting licensure. Out of the respondents, five themes appeared; an increase in population, increase in demand for paramedics, increased education access, easier reciprocity, and students using paramedic education as a gateway into other careers. (Table 4.1)

Table 4.1

Licensure Increase

Why do you think the numbers of paramedics requesting licensure in you state have increased? N=16 (42.1%)	Examples of Respondent Answers
Increased Demand	"Demand for EMS services" "Demand exceeds supply" "Paramedic shortage; higher pay."
Increased Population	"Population in the state has increased, and the total number of EMS providers has increased."
Career Gateway	"They start out in EMS and then move into a nursing program or working in free standing clinics or emergency departments."
Easier Reciprocity	"Increased licensure of paramedics that also work in other states" "Their companies provide services in two or more states" "Easier reciprocity process."
Increased Education access	"The introduction of a state-based paramedic program"

Out of the original 38 respondents, six (15.8%) indicated they saw a decrease in paramedics requesting licensure within the past five years. Of these respondents, four themes emerged from their responses. They cited low pay and benefits, career transfers to better paying jobs, decreased education opportunities, and an overall decrease in people wanting to enter the EMS field (Table 4.2). When leaders (N=38) were given the question regarding the trend in paramedics requesting licensure within their state in the past five years, 15 (39.5%) states indicated there was not a significant change. These responses led to two themes, a decreased opportunity or need and a stable attrition and retention. (Table 4.3)

Table 4.2

Licensure Decrease

Why do you think the numbers of paramedics requesting licensure in you state have decreased? N=6 (15.8%)	Examples of Respondent Answers
Low wages/ Low Benefits	"Pay and the ability to bridge to nursing in a short period of time to make more money and work less."
Decreased recruits	"Fewer people are choosing EMS as a profession."
Career Transfer	"Moving to other higher paying professions."
Decreased Education Opportunities	"Lack of education programs due to accreditation. The cost of certification programs has drastically increased as a result of the accreditation mandate. In addition to this with and improving economy individuals are much freer to pursue higher-paying positions in other allied health care fields."

Table 4.3

Licensure did not Change

Why do you think the numbers of paramedics requesting licensure in you state remained the same? N=15 (39.5%)	Examples of Respondent Answers
Stable attrition/ retention	"Just the trend. It's been fairly static for several years. We are in the process of surveying to see why people are entering and leaving the profession." "The number of entries is very similar to the number of those leaving the profession." "The proportion of new applicants is remaining constant with those leaving the field."
Decreased opportunity or need	"Lack of new opportunity in our state. This is a very rural state. Not too many job opportunities." "No increase in hiring, therefore no increase in numbers of paramedics."

When leaders were given the question: Are the number of EMS paramedic positions in your state completely staffed by providers? 32 (84.2%) out of the original N=38 indicated they

did not have a full staff of paramedics within their state. Six (15.8%) states said they had full staff. (Figure 4.8)

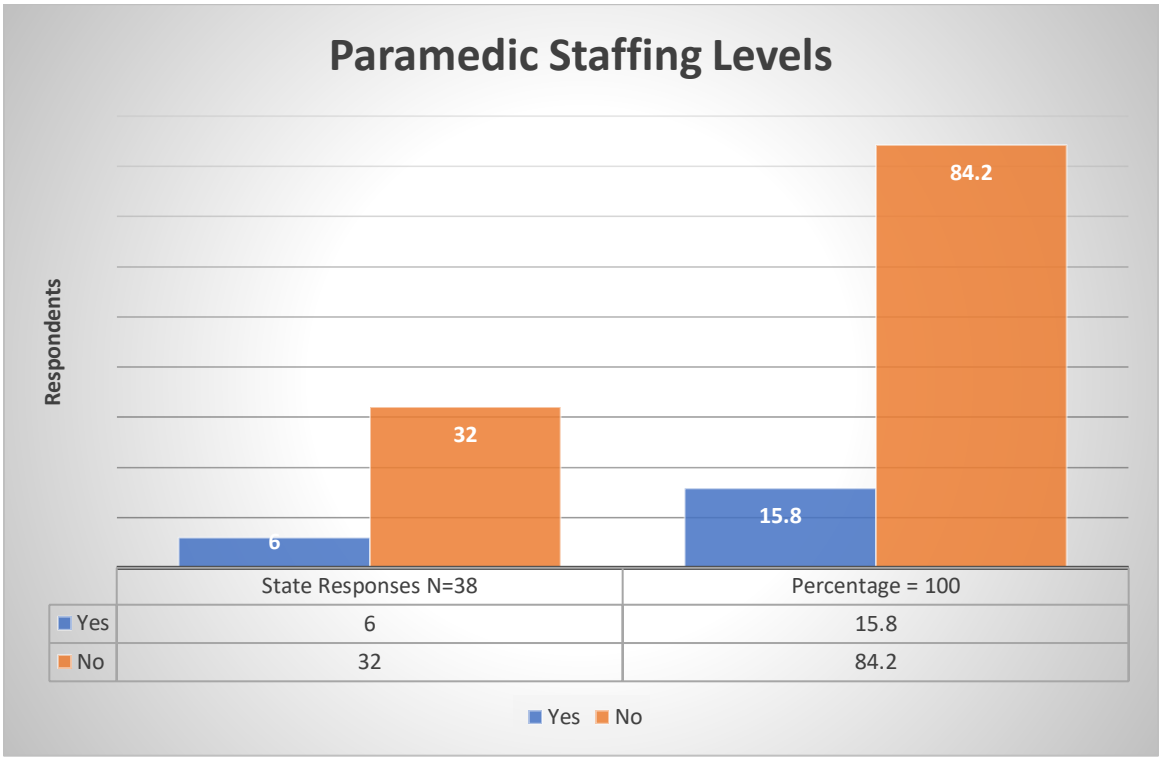


Figure 4.8. Paramedic staffing levels.

The six respondent states that answered yes to the above question received an open text box to explain why they thought the state workforce staffing was full. One state respondent said, "I would say the paramedic positions are filled, but advanced life support spots are often filled by a state-created level called Advanced EMT-Cardiac." Another state respondent indicated they did not track this data. The remaining four stated reasons for lack of vacancies were due to lack of funding, salary or work conditions, low pay, and access to education. These last four responses did not align with the perceived meaning of the question and the types of answers by the other two respondents.

When allowed to explain their perceptions on why there were vacancies within their state, 32 (84.2%) respondent states said they were not fully staffed at the paramedic level. From the 32

responses, four main themes appeared: low wages, a decrease in recruits, misalignment of resources, and career competition. One respondent stated,

> Pay, purely pay. We have a highly-regulated statewide dual-medic, non-transport, all-hospital based system. No paramedic leaves because they don't like the job—they leave because comparable jobs in law enforcement and nursing pay better. EMS has been stuck in the 'fee-for-service' mentality (which is actually impossible to break even on) instead of the 'downstream value' mentality.

Table 4.4

Paramedic Vacancies

What is your perceived cause of these paramedic vacancies within your state. N=32 (84.2%)	Examples of Responses
Wages	Lower wages when looking at an amount per hour. Services have stated that they have even adjusted to make it look more like a salary, but that potential employees have focused upon the amount per hour. Most of our services run on a schedule that includes 16 hours of overtime per week (averages 56-hour work week).
Lack of recruitment	Fewer people interested in Paramedicine and fewer programs available. Lack of new applicants to replace the number of providers leaving for higher paying positions, and burnout. Not enough paramedic students.
Misaligned Resources	Geography, pay. We have areas of the state that are saturated with paramedics and others that remain without.
Career competition	Some paramedics use their experience to provide them with a better chance of getting into other medical career programs such as nursing, PA, or medical school. Working in other areas such as, ED, Cath Labs, or other fields for better pay and hours.

Respondents to the previous question stating there were vacancies then received the next question regarding the area of the vacancies. Out of N=31 respondents (one respondent did not

answer the question due to a technical malfunction), they stated vacancies were rural: five (16%), both rural and urban: 15 (48%) or they did not maintain this data: 11 (35%). No state leader indicated vacancies only in urban areas (Figure 4.9).

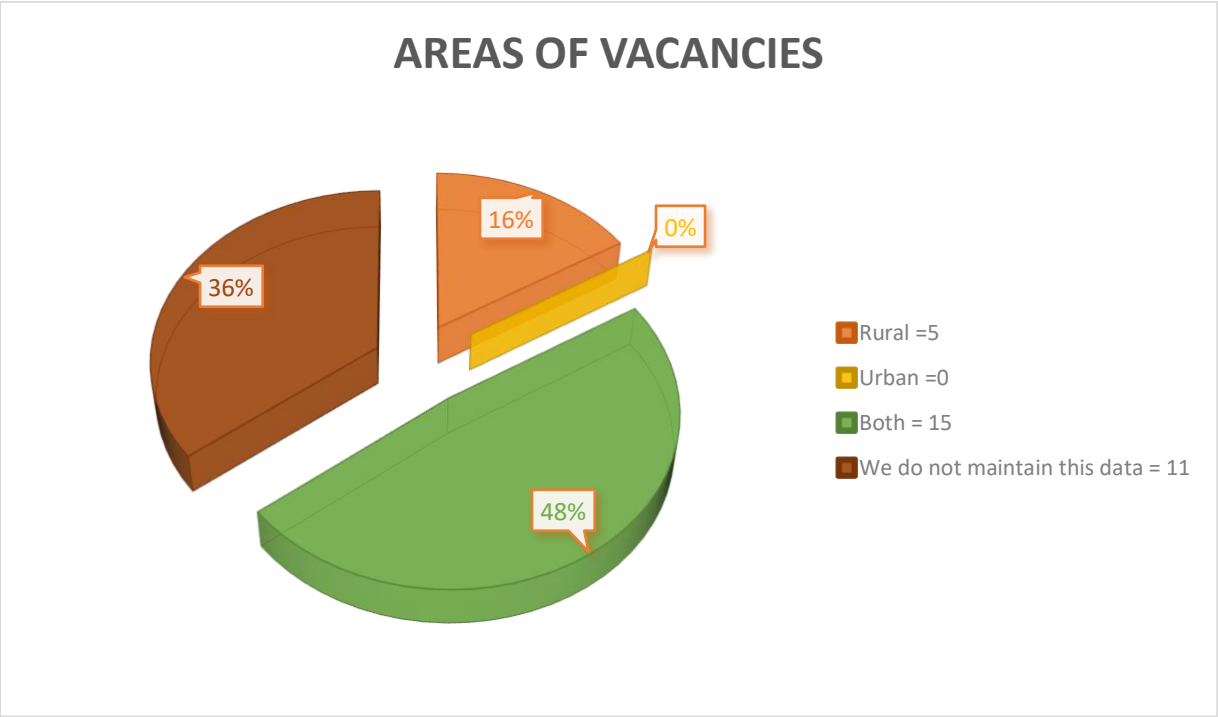


Figure 4.9. Areas of vacancies.

Part Three: Initial Education Availability

The following questions focused on the paramedic programs in a leader's state within the past five years. The first question given was, Are the number of available seats in paramedic programs within your state filled each term? Twenty respondents (52.6%) stated initial education programs were not full, four (10.5%) of states said programs were full and 14 (36.8%) stated they did not know (Figure 4.10).

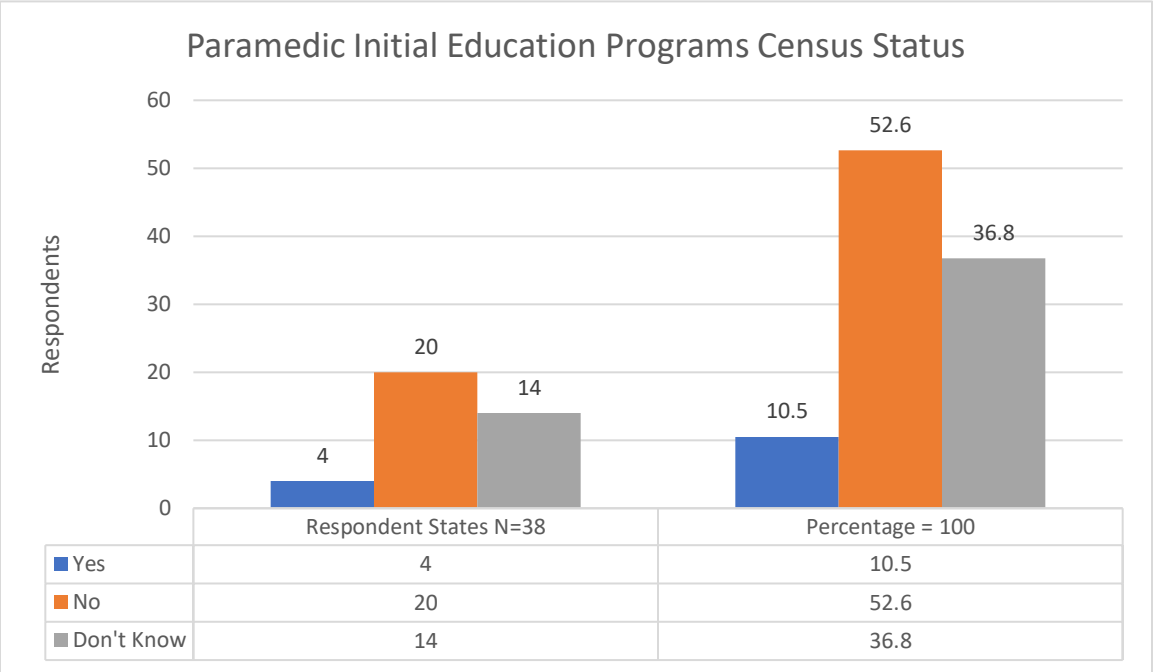


Figure 4.10. Paramedic initial education programs: Census status.

Out of all respondents N=38, four stated all initial education programs were full. Three main themes emerged. First, the available job market was strong, and the EMS profession was still popular within specific demographics; the respondent did not include the specific demographics. Second, it was a job requirement for the students, or students were sitting in class as a gateway to other professions. Finally, there is a lack of available initial education sites which in turn increases the census within those organizations (Table 4.5).

Table 4.5

Paramedic Programs: Full

Why do you think the paramedic programs are full? N=4 (10.50%)	Examples of Respondents' Answers
Available Job Market	"Available jobs and strong interest in increased education and responsibility." "EMS remains a popular vocation with a certain demographic."
Job Requirement/ Education Requirement	"Job requirements" "Students sitting in to fulfill other degree requirements such as physician, etc."
Limited Education Sites/ Limited Seats	"Limited currently to 3 sites in our state for training. Most of our paramedic programs have more applicants than seats." "Class size limitations."

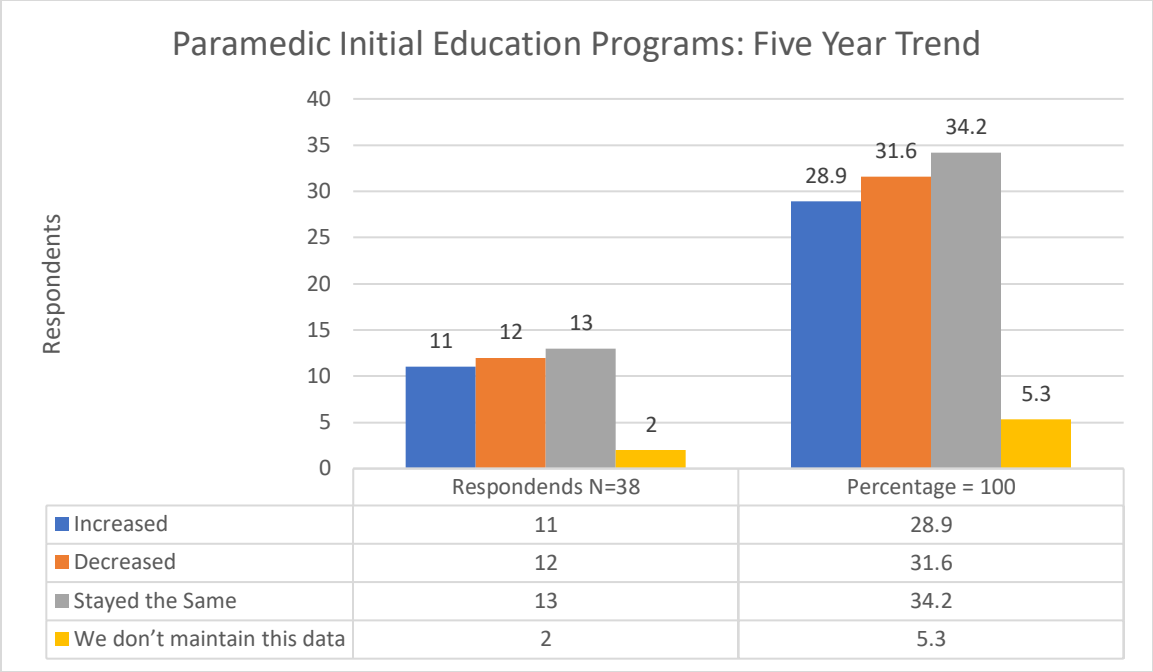
Out of the original 38 respondents, 20 (52.6%) stated that the initial education programs within their state were not full. From these responses, four main themes emerged: a decrease in recruits, low pay and benefits, misalignment of resources, and the cost of the education programs versus time commitment in the program. State leaders showed concern that the number of new recruits entering the field was low. Some reasons given were: it's not an attractive job, and low pay and benefits. The time commitment and cost to complete the paramedic education requirements are overshadowed by other allied health fields that pay more and have less work hours in comparison. Some states say that there are too many initial education programs for their state and this is the reason census in those programs is low. Some states indicated the opposite. There are not enough programs either in the state or in rural areas, so students outnumber seats. Another respondent noted the reason for seats not being filled is the lack of ability of the employers to pay overtime while employees go to school. (Table 4.6)

Table 4.6

Paramedic Programs: Not Full

Why do you think the paramedic programs are not full? N=20 (52.6%)	Examples of Respondent Answers
Decreased recruits	"Not an attractive field to get into." "Fewer people are interested in paramedicine as a career." "Young people do not understand their role of paramedicine."
Low wages/ low benefits	"Pay once completed and the ability to enter into other healthcare related professions in close to the same time and make much more money."
Misaligned education resources	"Too many paramedic programs in the state. Not enough students to fill all seats." "Some programs are in rural areas where seats outnumber demand. In some urban programs, the inverse is true."
Cost of initial education versus time commitment	"Career not financially desirable as compared to length and difficulty of training." "Cost of the program. Cost of tuition, inability to backfill positions on units so EMT can attend class."

Leaders N=38 (100%) were then asked how the number of paramedic education programs in their state changed in the past five years. Eleven (28.9%) indicated an increase in paramedic programs while 13 (34.2%) indicated no change. Twelve (31.6%) stated there had been a decrease and two states (5.3%) do not maintain this data. More than half of the respondent states, 24 (63.1%) saw no change or an increase in initial education programs over the past five years. (Figure 4.11)



	Respondends N=38	Percentage = 100
Increased	11	28.9
Decreased	12	31.6
Stayed the Same	13	34.2
We don't maintain this data	2	5.3

Figure 4.11. Paramedic initial education programs: Five year trend.

Out of the 38 respondents, 11 (28.9%) indicated an increase in initial education programs for paramedics. From the responses of these, three themes emerged: an increased demand for paramedics, an increased demand for accredited programs, and a perceived profitability for the educational institution. As illustrated early in this chapter, there appears to be an increased demand for paramedics in some of the respondent states. This demand increase was noted secondary to a population increase. It was also noted within some states that the community asked for more programs and some programs in other states were added due to lack of availability. Lastly, programs have been added due to a perceived profitability to the education institution. (Table 4.7)

Table 4.7

Paramedic Programs: Increased

What do you believe the cause is in this increase of paramedic education programs? N=11 (28.90%)	Examples of Respondents Answers
Increased Demand for Paramedics	"High demand of paramedics"
Increase in Accredited Programs	"More programs became accredited (since the 2013 deadline)." "Demand from stakeholders for community colleges to open Paramedic programs in their service area." "Community requests." "Limited space in current programs."
Perceived institution profitability	"Perception of profitability." "Perceived market—we have 5 college-based programs and just added a sixth."

Twelve (31.6%) of the original N=38 stated there was a decrease in initial education programs for paramedics. Three themes emerged from this group of respondents. First, there is a decrease in people who want to enter the EMS field. Secondly, mandatory accreditation has led to fewer educational institutions offering paramedic programs. Last, some have stated the cost of accreditation is a deterrent. (Table 4.8)

Table 4.8

Paramedic Programs: Decreased

What do you believe the cause is in this decrease of paramedic education programs? N=12 (31.60%)	Examples of Respondents Answers
Decreased Recruits	"Not an attractive field to enter." "Lack of people taking the courses." "Some programs have no students apply. Lack of interest."
Accreditation- oversight	"Improved oversight, increased responsibilities, rates of passage requirements have increased." "We have required all paramedic programs to be accredited by CoAEMSP. Mandate of committee on accreditation for the emergency medical services profession and CAAHEP accreditation."
Cost of Accreditation	"Other programs being offered within the area eliminated the need." "There was an inability to gather enough students to make it worth the cost to the program." "One was lost because they did not have sufficient need to support the cost of accreditation."

When asked about the stability of the education programs within their state, 13 (34.2%) indicated two influences. The current education availability was enough to meet the need and it was difficult to start up new programs in rural areas (Table 4.9). One respondent noted,

> It was first thought that when the state went to national accreditation of EMTP programs there would be a decrease in programs which was true but the EMTP accredited programs are the same now as they were five years ago. Plus, we are graduating more EMTP than we did five years ago.

Table 4.9

Paramedic Programs: No Change

What do you believe it the cause of the stability of your states' paramedic education programs? N=13 (34.20%)	Examples of Respondent Answers
Institutions meet current needs	"The program number is adequate to fill attrition rate." "The current program layout seems to meet the need." "Additional programs may not be viable. Saturation point achieved"
Difficult start-up	"Rural state. Tough to get these programs going." "Process for program approval in our state is significant. We do not need additional programs."

The last question for all respondents (N=38) was how the accreditation of paramedic programs has affected the provision of care in their state. As seen in table 4.10, five themes emerged from the data gathered by the respondents: positive impacts, negative impacts, no impact, unknown, and no answer. Positive impacts were noted by 20 respondent states and included statements about improved education and oversight, improved competencies and confidence levels of paramedics, and fewer compliance issues. Three states responded negatively and cited a decrease in education programs leading to a decrease in paramedics, and accredited programs cost increase with no return via wages or benefits to the students. Four states noted the lack of change due to accreditation requirements has been a long-standing expectation. Nine states did not know the impact and two states did not answer.

Table 4.10

Accreditation Impact to States

How has the accreditation of paramedic programs effected the provision of care in your state? N=38 (100%)	Examples of Responses
Positive Impact	"Improved education, fewer compliance cases noted as education is better." "It has led to greater confidence in the level of education of Paramedics." "Accreditation has improved competencies."
Negative Impact	"Some would argue that it has had a negative effect, because there are fewer programs and fewer paramedics and it has raised the cost of paramedic education with no ROI in the form of wages."
No Impact	"Our programs had voluntarily obtained accreditation long before it was a requirement, so new programs have just met the requirement."
Unknown	"Don't know yet. Just completing accreditation of all paramedic programs."
No answer	"Not able to answer this question."

Cross tabulations. When asked if their state was at full workforce staffing (N=38), whether the answer was yes or no, seats were not full in education programs or the leader did not know. When asked if the education programs had changed, the results are as follows: Eleven programs indicated an increase but only one state said programs were full, 12 states indicated a decrease and only one state said programs were full, and 13 states indicated no change of staffing with two saying programs were full. Fifteen states did not know.

Summary

This chapter set forth the data from surveys sent to the EMS leader of each of the contiguous states and analysis was provided. Not only did the surveys give us a snapshot of EMS leaders but demonstrated the perceptions of those leaders on staffing levels and availability of initial education programs for paramedics over the past five years or since the mandatory

accreditation of paramedic initial education programs. Overall, participants indicated lack of full staffing in many states for a variety of reasons, but mainly low pay and lack of recruits. Respondents also indicated that most of the education courses for paramedic education were not full or they simply did not know.

CHAPTER 5

DISCUSSION

The purpose of this cross-sectional study was to examine the perceptions of EMS leaders on the workforce staffing and availability of initial education programs within their state over the past five years or since the mandatory accreditation of EMS Paramedic programs. These leaders were chosen due to their knowledge and expertise in the EMS system. The questions for this research study were:

1. What are State Office of EMS Directors' perceptions of work force staffing since implementation of mandatory accreditation of paramedic programs?
2. What are State Office of EMS Directors' perceptions on the availability of paramedic education programs since implementation of mandatory accreditation of paramedic programs?

The survey contained three distinct parts, including the demographics of our current EMS leaders, paramedic workforce staffing, and paramedic initial education availability within their state. The survey's demographics section included: age, gender, highest level of education, years in EMS, and years in their current leadership position. The workforce staffing section included: the number of paramedics currently licensed in the state, the trend of new paramedics requesting licensure in the past five years, whether paramedic staffing levels are full or have vacant positions, and if the vacancies are rural, urban, or both. The paramedic initial education availability section asked: Are seats full in all paramedic programs? What is the trend in availability in the past five years in these programs? and How has the accreditation of these programs affected provision of care in the state? This chapter will summarize the outcomes to

the findings, discuss implications to all stakeholders, and recommend actions as well as potential future studies.

This research study used the conceptual framework of professionalization theory as the foundation of focus with an emphasis on occupation closure. Professionalization theory describes an occupations evolution from a trade to a recognized profession (Jarausch, 1990). The literature review demonstrated the types of professionalization and their foundations, whether the characteristics found in the trait view (Greenwood, 1957; Krogt, 2015; Margolis, 2005), the roles of the job found in the functionalist view (Johnson, 1972; Margolis 2005), or the power/need exerted by the profession in society found in the power view (Freidson, 1989; Krogt, 2015; Margolis, 2005). Regarding the emergency paramedic, Greenwood's trait view has been satisfied by the list of requirements needed to become a professional paramedic: formal education, oversight agency, a code of ethics, and licensure. These requirements are controlled by practitioners who control recruitment, education, regulations, certifications, and job responsibilities, which satisfy Freidson's power view. Johnson's functionalist view is satisfied by the changes in the role of the paramedic over the years that adapt to the needs of the community. Some examples of the functionalist view are seen in credentialing flight paramedics, using paramedics in hospitals, and the newer role of community paramedic.

While this study used professionalization theory as the conceptual framework, the specified purpose was to investigate the occupational closure that results from the professionalization process. Occupational closure limits entry into the profession by creating oversight and limitations, such making education available to only those who qualify (First & Tomlin, 2012). These oversights and limitations create closure to the occupation and decrease the number of graduates entering the workforce, as seen previously in other professionalization

processes including nursing (HRSA, 2002; Klein, 2016; Waddington, 1990). Professionalization can be a process beginning from the bottom, the top, or any combination of the two (*Approaches to Professionalization*, 2013). McCann, Granter, Hyde, and Hassard (2013) stated that successful professionalization comes from a *double closure*, occurring simultaneously from the top and bottom. Currently, professionalization of the paramedic role is demonstrated in a top to bottom approach utilizing accreditation, licensure bodies, and certifying bodies that create increased oversight and education. Without a return for the new recruits or current paramedics in the form of wages, benefits, incentives, et cetera, professionalization will not occur from the bottom up.

Interpretation of Findings

The online surveys were sent in June 2018 and yielded an 80.85% return rate. The survey contained three distinct parts, including the demographics of our current leaders, workforce staffing, and initial education availability within the state. The study led to three main findings.

Finding 1: EMS leaders across the nation are an educated, dedicated and diverse group. Our leaders range in age from 30 to 65 years old, with 10 of them being 60 years old or older. Twenty-six percent of our leaders are women. Most (89.5%) of our leaders have a bachelor's degree or above, 39.5% having a bachelor's degree, 44.7% having a master's degree and 5.3% obtaining their doctorate. Seventy-nine percent of our leaders have been in EMS for more than 20 years, with 25 of the 38 respondents stating they had been in EMS for more than 25 years. Sixty percent of leaders have been in their current position between one and six years. Sixteen percent have been in their position more than 10 years. This snapshot of our leaders gives us the unique ability to quantify their vast knowledge and experience and to determine future recommendations for entering those positions.

Finding 2: Participants (84.2%) indicated a lack of full paramedic staffing in their states. State leaders indicated a variety of reasons: (a) low pay and benefits, (b) a decrease in recruits, (c) misaligned resources, and (d) career competition were all impacting staffing. However, six states stated they were at full staff. Of the six, one state had an alternate advanced level provider that was a state-created level. One state said they did not track this data. The remaining four states noted: (a) lack of funding, (b) low pay and work conditions, and (c) education. These four responses did not align with the perceived meaning of the question and therefore cannot be used. In retrospect, a third option, We do not maintain this data, should have been included in the question. State leaders indicated the location of the vacancies were rural (16%), both rural and urban (48%). The remaining 36% did not know. Of the 38 leaders who took part in the survey, all but one knew generally how many paramedics were licensed in their state. When asked about the trend of paramedics requesting licensure in the past five years, 42.1% stated they noticed an increase, 15.8% noticed a decrease, and 39.5% saw no change. One state did not maintain this data. States that saw the trend increase noted: (a) an increase in demand, (b) higher pay from a paramedic shortage, (c) population increase, (d) career gateways and (e) introduction of a state-based paramedic program. Respondents who noticed a decreasing trend stated potential reasons as: (a) low pay and benefits, (b) fewer recruits, (c) career transfer, and (d) lack of paramedic initial education programs. States responding that there was no change noted a static trend due to: (a) attrition and retention are equal, and (b) lack of opportunities.

Finding 3: Respondents indicated an improvement in education for initial education programs after accreditation but that education courses were not full, or they do not maintain that data. Of the 38 respondents, 11 states saw an increased number of paramedic initial education programs, while 12 states noted a decrease and 13 states stated they had no

change in the number of programs. Two states indicated they did not maintain this data. The 11 states that indicated an increase in programs cited: (a) a high demand for paramedics, (b) community demands for more programs, and (c) the perception of profitability by the educational institution. The 12 states that indicated a decrease in the number of programs noted: (a) a lack of students, (b) increases in accreditation oversight and, (c) the cost of accreditation. These findings represent a five-year trend and do not specifically focus on each year alone. One state leader noted that when the state went to national accreditation that program availability would decrease. This occurred, but the accredited programs are now more in number and graduate even more than before. An example of this is found in the state of Georgia: 2012 had 56 paramedic cohorts across the state. The following year, the date of mandatory accreditation yielded only 17. Five years later Georgia had increased to 43 cohorts for 2017 (Georgia Office of EMS & Trauma, 2017). Some of these cohorts are situated within fire departments that only train their recruits. Finally, the 13 states that saw no change noted: (a) the program numbers are adequate to meet student demand and (b) difficulty starting new programs due to cost, typically in rural states.

Fifty-three percent (20) of respondents stated the initial education courses for paramedics were not full and 37 percent (14) stated they did not know. The 20 leaders that reported initial education programs were not full indicated: (a) fewer people interested in the job, (b) low wages and benefits, (c) too many initial education programs and not enough students and, (d) cost prohibitive in comparison to other health care jobs. Some states noted a misalignment of educational resources. Some states cited too many initial education programs, which decreases census, while other states cited programs in rural areas with not enough seats or no rural educational access. Fourteen states did not know the status of their initial education programs.

Only four leaders said the programs within their state were full. The states with full programs cited: (a) the availability of jobs, (b) a strong interest in EMS and (c) fulfilling job requirements or (d) a career gateway. Two of the four states that indicated the programs were full specified the lack of education sites available and class size limits lead to full programs and waiting lists. These two states demonstrate the lack of educational programs and there is an abundance of students paired with less than full staffing within the state. Therefore occupational closure is occurring.

More than half (52.6%) of the respondent states indicated that the mandatory accreditation of paramedic programs has had a positive educational impact. These positive impacts come in the form of (a) improved education, (b) improved competencies as a result, (c) more confident paramedics, and (d) fewer compliance cases. Three states indicated a negative response with one stating ". . . there are fewer programs and fewer paramedics and it has raised the cost of paramedic education with no return on investment in the form of wages." Wilfong (2009) noted that accreditation requirements may decrease the availability of initial education for the paramedic and thereby decrease the number of graduates entering the workforce, although the findings of this research show that has not been the case in many areas. Nine state respondents did not know the impact of accreditation on the provision of healthcare within their state.

These findings not only reflect the progress EMS has made regarding its improved education but also confirm that the industry still lacks the data to make sound decisions regarding the workforce pipeline. Each state is currently in the same process, but at various levels of progress. Some states have required accreditation for many years and may not be

struggling with some of the impacts seen in other states that are just beginning or in the middle of the process.

Implications

The *EMS Workforce for the 21st Century: A National Assessment* (2008) asked four important questions regarding the future EMS workforce:

1. Will the EMS workforce be adequate for the future population?
2. How can recruitment and retention be increased?
3. How can resources be aligned no matter the geography or population?
4. Do we have the data needed to access supply and demand of the EMS workforce?

Ten years later, these questions have not been answered. No entity or entities together can provide an accurate view of the nation's paramedic workforce. A decade later, this research study demonstrates EMS still lacks the data regarding many portions of the workforce pipeline. This study indicates a large lack of data within this workforce pipeline beginning in recruitment and education programs and ending in licensure trends. Of the 38 respondent states, one state did not maintain data on the number of paramedics currently licensed, one state did not maintain the five-year trend of paramedics requesting licensure, one state did not track data on paramedic staffing levels, 11 states did not maintain data on whether vacancies were rural or urban, two states did not track data on the number of education program five-year trends and 14 states did not know the census status of initial education programs.

Not knowing how many paramedics are in a state or in the nation is problematic when communities are managing patient care and disaster response in a time when the population is aging and depending on EMS more than ever. Likewise, not knowing how many students are in the workforce pipeline could prove catastrophic since most programs run approximately two

years in length, thereby delaying a quick response to any unpredicted shortages (Quaile, 2015). Knowing the staffing level of paramedics across the nation is only half the battle. Each state should know the numbers of licensed paramedics and the number of actively practicing medics. As illustrated in a recent study in Georgia, there were 8,591 paramedics currently licensed through the state office of EMS, but only 5,471 were known to be actively practicing or have signed an agency roster or patient care report in 2017 (Georgia State Office of EMS & Trauma, 2017). The next step of their research is to account for the missing 3,120 paramedics.

The workforce shortages in this study indicate that we have simply not kept up with the growing demand from the population. Data from the NREMT shows first-time certifications for emergency paramedics since 2011 has remained steady (NREMT, 2018). However, the Bureau of Labor Statistics indicates an above-average growth for this field of 33% between 2010 and 2020 (NAEMSO, 2014) and 15% from 2016 to 2026 (BLS, 2018). It may be problematic using data from the Bureau of Labor Statistics as they do not separate EMTs from paramedics and they do not account for volunteers, and it has been estimated that one-third of all EMTs registered in the U.S. are volunteers (Armstrong, 2006; McGinnis & Moore, 2006; NHTSA, 2008).

In supply versus demand, nursing is a good comparison to EMS. Carnevale, Smith, and Gulish (2015) illustrated the lack of the nursing profession to keep up with the pace of supply versus demand (Figure 2.0). One factor cited as the cause of the worsening nurse shortage was the lengthened time of education requirements constraining the supply of new graduates (HRSA, 2002). Abbot (1988) agreed the increase in knowledge needed by the student lengthens the amount of schooling, which delays the graduate's entry into the workforce. While the length of study and return on investment versus other health care careers was noted by several states, this study demonstrated that low wages led to a lack of recruitment into programs.

Decreased recruitment was noted by several states as a challenge in maintaining full paramedic staffing. NHTSA (2008) noted several factors affecting workforce supply of paramedics, including the attractiveness of the occupation, the requirements by education programs, number of education programs, capacity of education programs, and graduation rates. While EMS education and patient care have changed substantially in the past few decades, the wages and benefits afforded EMS personnel has not. The main contributors to lack of recruitment are low wages and benefits and long hours. As indicated by the large population of volunteers in EMS, money is not normally the reason one gets into the industry. However, this generosity has been taken advantage of, with low wages and benefits, and harsh hours as the leading cause of EMS attrition in comparison to other healthcare fields. In the second phase of the Georgia workforce study, 368 paramedics who no longer worked in EMS (41.3%) cited leaving due to pay; however, 53% of the 368 stated they would return if paid better (Georgia Workforce Study, 2017). Without an increase in wages and benefits, recruits will not look towards EMS as a career and the workforce will continue to decrease in comparison with population growth.

Fulfilling two major components of the professionalization process, CoAEMSP and NREMT are meticulously intertwined, one accrediting EMS education and the other regulating certification. Without them both, one cannot become a paramedic in forty-three of the forty-eight contiguous states. As of June 2018, there are 607 fully accredited programs and 80 still going through the process of becoming accredited (CoAEMSP, 2018). The partnership between these two entities is instrumental in monitoring the workforce pipeline. The annual reports CoAEMSP receives from every accredited paramedic program combined with the testing and certification from the NREMT could demonstrate a much more accurate picture of this pipeline. The

information afforded the accrediting body and the information tracked by the NREMT yields valuable information that should be disseminated to all EMS stakeholders.

If the nation's workforce continues to stagnate or even decrease, states will find a way to meet the emergency needs of their communities. Examples may include the reversal of accreditation as seen in nursing and in the de-monopolization of nursing accreditation years later (Wilfong, 2009). States may create personnel levels to accommodate advanced life support needs other than paramedic, as seen in one of the survey respondents in this study. States may change the scopes of practice to allow lower levels to operate in more advanced roles as seen in Ohio allowing AEMTs to administer Ketamine (2017). Finally, states may become a dual pathway state that does not rely on CoAEMSP and NREMT to maintain paramedic workforce numbers.

This cross-sectional survey shows that currently, we are not meeting the paramedic workforce demand in EMS and the resulting consequences impact every stakeholder in the nation, from the top EMS leaders in the field to ultimately the public.

Recommendations for Action

After the data analysis of the online surveys, the following three recommendations are made:

1. **Each state should collect data at every point in the workforce pipeline.** Knowing the number of paramedic programs, the number of students vs. seats in the programs, and graduation rates within the programs serves as a proactive measure to allow leaders the ability to engage in recruitment campaigns and possible incentives for recruits entering the field. This allows for earlier detection in changes of the number of recruits coming into the field. Data should also be collected at the state level that follows the number of paramedics requesting licensure, and the reasons for attrition so leaders can address possible retention projects. Currently, paramedic

programs share annual reports with CoAEMSP. These should be shared with the state that the program resides in. CoAEMSP and NREMT should work together and with each state to give feedback on their knowledge of the workforce pipeline. NHTSA should maintain this annual information and should disseminate it to all stakeholders involved.

2. **Funding should be allocated for rural areas to increase the paramedic population.**

Wages must be increased and benefits provided to emergency services personnel. State pension retirement programs should be put into place and can mirror the law enforcement field and firefighter's pensions. At the federal level, NHTSA should form a working group. This working group should reach out to all states regarding their specific funding challenges. All stakeholders, including the National Association of EMT's (NAEMT), NHTSA, NAEMSO, Homeland Security, and the Center for Medicare and Medicaid Services (CMS), should be actively involved. The NAEMT should be involved with position papers and reach out to the legislators that support EMS. NHTSA has been the lead agency since the inception of EMS and therefore remains the lead in these endeavors. Homeland Security should be part of this group because it depends on EMS in disaster response; however, to date EMS has not been included as part of this agency (Kemp, 2014). NAEMSO, with its membership of state EMS officials, is vital in communication and therefore should have as many members involved as possible. Since CMS is the number one source of funding for EMS, they should be involved regarding reimbursement issues and funding. The reimbursement guidelines used for emergency transport is from the 1960s model and should be updated (NAEMT, 2014). Homeland Security and NHTSA should partner to assess the needs of both organizations regarding EMS responses. The NAEMT should utilize their EMS Workforce committee to partner with the Congressional EMS Caucus to create legislation allocating funding for EMS (NAEMT, 2018). The Congressional EMS Caucus should

be bolstered from the seven politicians in the House of Representatives (Knox, 2018). This group should be duplicated in the Senate and at the state levels. The FIRE ACT and SAFER ACT are examples of how to assist states with alternative funds for EMS (FEMA, 2001). These acts should be altered on the legislative side to include EMS or create a newer version for EMS as needed. In response to the nursing shortage, *The Nursing Reinvestment Act of 2006, Public Law 107-205* appropriated $150 million for nursing education and loan reimbursement programs. However, Congress vetoed funding in 2005 for rural EMS programs that would have gone to EMS education (Patterson & Brice, 2009). At the state level, communication is paramount. Each state should engage with the working group to assess their needs and commit the time and administrative manpower to enhance their EMS communities. At the community level, consideration of a tax increase should be given with those funds going directly into an EMS budget, not a general budget. The EMS budget would ensure that all revenues collected went back into the care of patients. Lastly, EMS organizations and communities should consider regionalization projects to ensure efficiency for all involved. To begin this process, stakeholders should utilize current toolkits to assist in evaluation for cost effectiveness and application to their specific needs (Lerner, et al., 2012).

3. **Recruitment campaigns should be initiated to educate citizens and newly graduated high school students about the benefits of entering the EMS field.** High schools should receive incentives for teaching EMR/EMT courses prior to graduation. This resource would allow for a transition to higher EMS levels right out of school as seen in Gering High School in the state of Nebraska where EMT and EMR courses are offered and include dual enrollment (Flowers, 2018). States should also develop routes for military EMS personnel to transition into civilian jobs as quickly as possible. While military transition has been an ongoing project, no

single entity has taken the lead. *Bridging the Gap: Easing the Transition from Military Medic to Civilian Paramedic* found that in assessing bridge programs there was a lack of program standardization, there were few recruits resulting in program terminations, and that successful programs include distance-learning technology (NAEMSO, 2017). Therefore, the lead agency, CoAEMSP, that has oversight over all paramedic initial education programs, should lead the endeavor to create transition program standardization by implementing transition regulations and standards within those currently held. Once again, we must ask ourselves the same four questions from 2008. These questions fall into alignment with the recommendations for actions for this research. Will the EMS workforce be adequate for the future population? How can recruitment and retention be increased? How can resources be aligned no matter the geography or population? Do we have the data needed to access supply and demand of the EMS workforce? All stakeholders together create more action potential than one stakeholder alone.

Recommendations for Further Study

After the data analysis of the online surveys, the following three recommendations for further study are made:

1. **Each state should study the current number and status of paramedics within its borders**. There may be a false perception that all paramedics that hold a current license work in the field. Some of these paramedics work outside of EMS in hospitals or clinics. Therefore, each state should know the number of actively practicing paramedics. This information should then be shared at the federal level to assist in any future large-scale emergency events. NHTSA and Homeland Security should lead an ongoing evaluation of the paramedic workforce in the United States. Homeland Security should know how many paramedics could be available to respond to large scale disasters and therefore EMS should fall under the umbrella of that agency. Each state

would implement a brief survey that paramedics must complete every two years during recertification. The survey should be the same for all states to allow for consistency of the data gathered. NHTSA should be the federal repository of this data. The survey created would differentiate between actively working and non-practicing paramedics. This survey would then be able to track recommendation 2 below, demonstrating why paramedics are leaving the field or why they are still maintaining their certification but not providing active patient care.

2. **Future studies should investigate the reasons for paramedic attrition.** This would allow for future retention projects at every level. As noted in the previous recommendation, states would track reasons why paramedics leave the field through recertification surveys. A Kentucky EMS Attrition Survey was completed in 2017 for all EMS personnel that did not recertify in 2016, after noticing a significant state attrition rate (KBEMS, 2017). NAEMSO (2014) has already created a document for states to adopt titled The EMS Workforce and Development to assist with recruitment, retention, shortages, and data gathering. The guidelines also educate leaders to the supply and demand and education workforce pipeline. A major consideration of attrition is the cost associated with losing employees. A longitudinal study illustrated that although there was variation among agencies, the annual turnover rate for EMS agencies was 10.8% and the cost associated with losing an employee was $6,871.51 (Patterson et al., 2010). As indicated repeatedly in literature and substantiated by this study, with the main cause of attrition being low wages and poor benefits, one could infer that an increase in the latter would decrease the former.

3. **Further studies should also include the number of initial education programs and the number of students within each state.** Only each state and these organizations can decide if there are too many or not enough schools to keep seats full while also trying to reach

geographically rural sections. Each state should form a paramedic initial education task force to evaluate how many programs/seats are available in comparison to the number of full seats. This task force will then be able to decide if there needs to be outreach for rural areas, expansion of seats in the program, funding accommodations for students, or recruitment campaigns.

Conclusion

This study found that the EMS leaders across the nation are an educated, dedicated, and diverse group. Leaders (84.2%) indicated a lack of full staffing in their states as well as a positive educational change for initial education programs after accreditation but initial education courses were not full, or states did not maintain the data. As demonstrated numerous times over the past few decades, EMS leadership still knows very little about its workforce. As seen in the literature on professionalization of the paramedic, the decision to have paramedic education fall under mandatory accreditation was not a popular one at the time, and remains a passionately debated issue; however, paramedic education in our nation has improved. The improvements seen were the consistency in education, the confidence of the paramedics, and the level of patient care. These successes should be celebrated. However, the fragmentation of the EMS system remains.

The struggle of the emergency paramedic to become a professional is compounded by the numerous states still involved in the process. Each state is its own island, with its own distinct structure, regulations, statutes, geography, and own separate needs. Currently, the number of actively practicing paramedics in our nation is not known. Each state should know exactly what it does and does not have. Leaders must assure that our workforce is adequate by knowing and monitoring all parts of the workforce pipeline. A generalized survey of the United States cannot provide the information within each individual state. Each state must do this separately to find

what their specific challenges are while coordinating with the lead agency. Due to the nation's highly fragmented EMS system, each state must collect the data and determine if occupational closure is occurring.

Without prehospital medical providers, emergencies would go unanswered, leaving the global population vulnerable to accidents, medical emergencies, weather, and human-made events. The most important part of EMS is its workforce and the foundation of that workforce is its education. The job responsibilities of the paramedic are not decreasing with its shortage but increasing to include community paramedicine, and as a fill-in role to other jobs in hospitals and clinics. The result is that not all ambulances will have a paramedic on them. Some areas of the country report long EMS response times or no response due to lack of manpower (Sharp, 2018). Patients might find themselves using alternate transportation to go to the hospital. Moskatel & Slusky (2017) illustrated a 7% drop in ambulance transports in two cities where patients started taking Uber and Lyft to the hospital. In certain communities, the unnecessary use of EMS is as high as 61%. In 2004, criteria were set for dispatch to align EMS crews with the needs of the emergency (Patterson & Brice, 2009). As the role of the emergency paramedic and paramedic education become more professionalized, the challenges and successes of the journey must be watched carefully as to make it easier for other EMS levels to follow and ensure the future workforce.

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APPENDIX A

CONSENT FOR PARTICIPATION IN RESEARCH
UNIVERSITY OF NEW ENGLAND

(For participants 18 years and older)

Project Title: The Mandatory Accreditation of Emergency Medical Services Paramedic Programs in the United States: A Workforce Perspective

Principal Investigator:
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Faculty Advisor: Carey Clark, Ph.D. University of New England
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Introduction:

- Please read this form; you may also request that the form is read to you. The purpose of this form is to provide you with information about this research study, and if you choose to participate, document your decision.
- You are encouraged to ask any questions that you may have about this study, now, during or after the project is complete. You can take as much time as you need to decide whether you want to participate. Your participation is voluntary.

Why is this study being done?

- The purpose of the study is to investigate the perception of State EMS Directors on the workforce vacancies and availability of initial paramedic education programs over the past five years.

Who will be in this study?

- This survey will be sent to the EMS Director or equivalent in each state. These professionals were chosen due to the abundance of knowledge they hold in EMS, EMS accreditation, and the global view of EMS issues within their state regarding accreditation.

What will I be asked to do?

- Complete the 12-question survey
- The survey should take less than 10 minutes.
- There will be no reimbursement for the time commitment to the survey.

What are the possible risks of taking part in this study?

- There are no foreseeable risks to participating in this survey.

What are the possible benefits of taking part in this study?

- There are no direct benefits to you for participating in this study. There may be a benefit to the EMS community and community in general from the data on workforce staffing and initial paramedic education availability gained from this study.

What will it cost me?

- You will incur no cost associated with this survey.

How will my privacy be protected?

- Surveys are anonymous.
- Any identifying information will be removed and given a random numeric identifier.
- The information gathered will be used in a dissertation.
- The information gathered may have the opportunity to be published in the future.

How will my data be kept confidential?

- This study is designed to be anonymous; this means that no one can link the data you provide to you, or identify you as a participant.
- Any identifying information will be removed and given a random numeric identifier.
- Research records will be kept in a locked file in the locked office of the principal investigator.
- Data will be coded.
- No individually identifiable information will be collected.
- Please note that regulatory agencies, and the Institutional Review Board may review the research records.
- A copy of your signed consent form will be maintained by the principal investigator for at least three years after the project is complete before it is destroyed. The consent forms will be stored in a secure location that only members of the research team will have access to and will not be affiliated with any data obtained during the project.
- The online survey will collect data and be downloaded to the researcher's computer through the third-party software encryption and security system. The findings of this research will be published and archived within a doctoral dissertation.

What are my rights as a research participant?

- Your participation is voluntary. Your decision to participate will have no impact on your current or future relations with the University of New England.
- You may skip or refuse to answer any question for any reason.
- If you choose not to participate there is no penalty to you and you will not lose any benefits that you are otherwise entitled to receive. You are free to withdraw from this research study at any time, for any reason. If you choose to withdraw from the research, there will be no penalty to you and you will not lose any benefits that you are otherwise entitled to receive.

What other options do I have?

- You may choose not to participate.

Whom may I contact with questions?

- The researcher conducting this study is Tamantha Anne Cumbie, Doctoral Candidate. If you have any questions regarding her research, you may contact her at 770-616-2052 or tcumbie@une.edu. or her faculty advisor, Carey Clark, Ph.D. at 707-239-6738 or cclark14@une.edu.
- If you choose to participate in this research study and believe you may have suffered a research related injury, please contact Tamantha Anne Cumbie, Doctoral Candidate at 770-616-2052 or tcumbie@une.edu. You may also contact her faculty advisor, Carey Clark, Ph.D. at 707-239-6738 or cclark14@une.edu.
- If you have any questions or concerns about your rights as a research subject, you may call Olgun Guvench, M.D. Ph.D., Chair of the UNE Institutional Review Board at (207) 221-4171 or irb@une.edu.

Will I receive a copy of this consent form?

- You may choose to download this form.
- All study participants will acknowledge personal consent by submitting the electronic survey.

Participant's Statement

I understand the above description of this research and the risks and benefits associated with my participation as a research subject. I agree to take part in the research and do so voluntarily.

_____ _____

Participant's signature or Legally authorized representative — Date

_____

Printed name

Researcher's Statement

The participant named above had sufficient time to consider the information, had an opportunity to ask questions, and voluntarily agreed to be in this study.

_____ _____

Researcher's signature Date

_____Printed name

APPENDIX B

SURVEY INSTRUMENT

Survey

Demographics

The following questions will focus on the specific demographics of EMS state leaders.

1. What is your age? _____

2. What is your gender?
   - Female
   - Male

3. What is your highest level of education completed?
   - High school/GED
   - Some College
   - Associates
   - Bachelors
   - Masters
   - EDD/PHD

The following questions will focus on your work-related experience in the field of EMS.

4. How many years total have you worked in Emergency Services? _____

5. How many years have you been in your current position?
   - Less than one year
   - 1-3 years
   - 4-6 years
   - 7-10 years
   - 11-14 years
   - 15+ years
   - I am an interim director

Workforce

*The following questions will focus on your perception of the paramedic workforce within your state **in the past five years**. The definition of **paramedic** is based on the NREMT certification level of paramedic and does not include any other level.*

6. How many **paramedics** are currently licensed within your state?

- 0-2500
- 2501-5000
- 5001-7500
- 7501-10000
- 10001-12500
- 12501-15000
- 15000+

7. How has the number of new **paramedics** requesting licensure within your state changed in the past five years?

- Increased
- Decreased
- Stayed about the same
- We do not maintain this data

8. Are the number of EMS **paramedic** positions in your state completely staffed by providers? *(Available positions are the number of open positions predetermined by an organization to be considered full staff.)*

- Yes
- No

8A. What is your perceived cause of these paramedic vacancies within your state? TEXT BOX

8B. Are the vacancies:

- Rural
- Urban
- Both

9. What is your perceived cause of the lack of vacancies within your state? TEXT BOX

Education

*The following questions will focus on the **paramedic** programs in your state **within the past five years**.*

10. Are the number of available seats in **paramedic** programs within your state filled each term? *(Available seats are the number of seats predetermined by an organization to fill a cohort.)*

- *Yes*
- *No*
- *I don't know*

11. How has the number of **paramedic** education programs in your state changed in the past five years?

- Increased
- Decreased
- No change
- We do not maintain this data

11A: What do you believe the cause is in this increase? TEXT BOX

11B: What do you believe the cause is in this decrease? TEXT BOX

12. How has the accreditation of paramedic programs effected the provision of care in your state? TEXT BOX

APPENDIX C

IRB APPROVAL LETTER

UNE UNIVERSITY OF NEW ENGLAND

Institutional Review Board
Olgun Guvench, Chair

Biddeford Campus
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Portland Campus
716 Stevens Avenue
Portland, ME 04103

To: Tamantha Cumbie

Cc: Carey Clark, Ph.D.

From: Liiam Harrison, M.A. J.D.

Date: May 25, 2018

Project # & Title: 18.05.25-025 The Mandatory Accreditation of Emergency Medical Services Paramedic Programs in the United States: A Work Force Perspective

The Institutional Review Board (IRB) for the Protection of Human Subjects has reviewed the materials submitted in connection with the above captioned project, and associated clarifications and revisions, and has determined that the proposed work is exempt from IRB review and oversight as defined by 45 CFR 46.101(b)(2).

Additional IRB review and approval is not required for this protocol as submitted. If you wish to change your protocol at any time, you must first submit the changes for review.

Please contact Liiam Harrison at (207) 602-2244 or wharrison@une.edu with any questions.

Sincerely,

William R. Harrison, M.A., J.D.
Director of Research Integrity

IRB#: 18.05.25-025
Submission Date: 05/18/18
Status: Exempt, 45 CFR 46.101(b)(2)
Status Date: 05/25/18