

EMS Workforce for the 21st Century: A National Assessment



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Executive Summary

Emergency medical technicians (EMTs) and paramedics are a critical component of any community's Emergency Medical Services (EMS) system. Assuring the continued viability of the prehospital EMS workforce is a key concern for many local, State, Federal, and tribal EMS agencies, as well as national EMS organizations. As a first step in systematically addressing the issue, the National Highway Traffic Safety Administration, in partnership with the Health Resources and Services Administration's (HRSA) Emergency Medical Services for Children program, supported a research project led by the Center for the Health Professions and School of Nursing at the University of California San Francisco with assistance from the Center for Health Workforce Studies at the University of Washington. The intent of this research is to provide guidance to the national EMS community in ensuring a viable EMS workforce for the future.

The major objective of this research has been to address issues relevant to the process of workforce planning. Research questions address the following:

1. Will the EMS workforce be of adequate size and composition to meet the needs of the U.S. population in the future?
2. How can potential workers be attracted to and encouraged to stay in the field of EMS?
3. How can adequate EMS workforce resources be available across all populations and geographic areas?
4. Do we have the data and information needed to address the future demand for and supply of EMTs and paramedics in the United States? What information is lacking and how might it be obtained?

Research Methods

To research these questions, project staff used a variety of qualitative and quantitative approaches, including a critical review of EMS workforce literature, analysis of primary and secondary data, and interviews with experts in the field. Expert guidance for the project was provided by a steering committee and formal meetings with representatives from national EMS stakeholder organizations.

➤ Expert Guidance

The steering committee for the project was composed of experts in EMS workforce issues, providing guidance to the research team throughout all phases of the assessment process. National EMS stakeholder organizations provided guidance for the project by commenting on draft documents and meeting with researchers prior to and at the end of the assessment process. Both the steering committee and the stakeholders provided input on the research questions, information on prior research, and suggested key informants for structured interviews. A complete list of stakeholder organizations and representatives is included in Appendix A.

➤ Literature Review

To assess published research related to the EMS workforce, a comprehensive literature review was conducted on an ongoing basis between June 2004 and March 2006. Several aca-

ademic databases were searched for published papers and reports on topics related to the EMT/paramedic workforce, yielding over 300 articles dated between 1973 and 2006, including both peer reviewed and non-peer reviewed articles. Web searches were also conducted for government publications, private foundation reports, and other EMS or workforce policy reports.

➤ **Qualitative Approaches**

Qualitative approaches were a key component of this assessment. Qualitative methods utilized in this study included structured interviews with key informants and field observation. An online blog at www.emsworkforce.com was an informal method used by researchers to discuss EMS workforce issues with members of the EMS community.

➤ **Quantitative Approaches**

Several quantitative analyses were conducted for this assessment, including analyses of secondary data available from numerous publicly available national data sets. In addition, previously collected data from a longitudinal survey of EMS providers (the Longitudinal EMT Attributes and Demographics Study or LEADS) and data from the National Registry of Emergency Medical Technicians' (NREMT) re-registration process were analyzed. An online survey of State EMS training coordinators was developed and conducted in collaboration with the National Council of State EMS Training Coordinators (NCSEMSTC).

Workforce Planning

Workforce planning is a complex process. Effective workforce planning requires a forecast of the future supply, demand, and need for workers.¹ Workforce planning in the healthcare and public safety sectors is particularly complex because of numerous regulations and policies that impact or control the supply of, or demand for, workers in these sectors.

Findings on EMS Workforce Supply

Workforce supply is generally defined as the size and composition of the available workforce. In the case of healthcare professions and occupations, supply often refers to those individuals who possess the required training and credentials (i.e., license and certification) for a profession and are thus qualified to work. Therefore, data on professional certification and licensure is a critical element of healthcare workforce analysis. The educational pipeline into a profession is another important component of supply; it comprises those individuals who are currently enrolled in education programs and will likely be available to work in the future. Thus, factors such as the capacity of educational programs and the success of recruitment efforts are commonly included in workforce analyses.

We began by looking at estimates of the size of the current workforce. National estimates of the number of employed EMTs/paramedics are available, but are based on data with significant limitations. The Bureau of Labor Statistics Occupational Employment Survey (OES) and the Current Population Survey (CPS) data sets have workforce data at the national level but they have important limitations. These data sets do not distinguish between EMTs and paramedics, and do not include volunteers. In addition, they do not identify firefighters who are cross-trained as EMTs or paramedics. Other sources of data on the number of certified or credentialed

EMTs and paramedics are limited in that they do not denote active workforce status. Thus, the OES estimate of a supply of 196,880 EMTs/paramedics in 2005 is likely an undercount. A 2003 survey of State EMS directors found 669,278 licensed providers in 48 States and 4 territories. However, because this survey counted the number of EMT and paramedic licenses, regardless of work status (i.e., fulltime, part-time, or not employed), it is likely an over count of actual workforce size. In addition, given that it includes 4 U.S. territories, it is not directly comparable to workforce data that represents only the 50 States.

To model the education pipeline into the EMS workforce we looked at several sources of data and talked to key experts on EMS education. The Integrated Post-Secondary Education Data System (IPEDS) is a national source of post-secondary educational data from both accredited and nonaccredited programs. Its limitations for understanding EMT and paramedic education programs are that it does not distinguish between EMT and paramedic programs, and tends not to include data from private proprietary or temporary educational programs. IPEDS data shows growth in the number of EMT/paramedic graduates from 1995 through 2005. In 1995, there were 13,207 graduates, compared to 2005, when there were 19,833. In 2005, 73.4 percent of program completions reported to IPEDS were for certificate programs less than one year in length.

A source of education data on accredited programs is the American Medical Association's (AMA's) Annual Program Survey. This is a survey of accredited paramedic programs only. In 2004, the AMA survey reported 2,991 awards granted by 178 programs. These programs are only a fraction of the total number of paramedic programs in operation. A 2005 survey by the NCSEMSTC found 639 accredited or otherwise State-approved programs among the 42 States responding to the survey.

Changing ethnic demographics suggest a need for a more ethnically diverse workforce. Many key informants interviewed for this study expressed a desire to diversify the workforce by making it more representative of the U.S. population, both to provide more culturally sensitive care and to access largely untapped sources of workforce supply.

Findings on EMS Workforce Demand

To estimate current and future workforce demand we looked at a number of sources of data and talked to key experts in the EMS field. Workforce demand is generally defined as the number of jobs available for various types of personnel and the number of projected jobs available in the future.¹ Vacant positions may reveal a workforce shortage. Workforce demand models estimate growth in an occupation, including the number of workers needed to fill new positions and to replace workers who exit the field. Retention is therefore considered a demand factor because workers who leave a field create vacancies. Worker satisfaction with wages and other working conditions are also considered demand factors. Wage increases may be an indicator of workforce shortages, either due to workforce turnover or growth in the field.

It is generally thought that demand for healthcare workers of all kinds will increase as the average age of the population increases. The percentage of the U.S. population 65 or older is currently about 12.5 percent and is expected to reach 16 percent by 2020 and 21 percent by 2050. The Bureau of Labor Statistics (BLS) projects that an additional 69,000 EMS workers will be needed by the year 2014, taking separation and replacement of workers into account. Given that

BLS data excludes volunteers, it is likely that this is an underestimate of future workforce demand, particularly in rural areas.

Key informants reported difficulties retaining workers. Many expressed frustration over an inability to increase wages for EMTs/paramedics, to provide better benefits or opportunities for advancement, or to increase the quality of EMS management. OES data substantiates that EMTs/paramedics have low wages relative to other public safety and healthcare occupations. In 2005, the median national wage for EMTs/paramedics was \$12.54, compared to \$26.82 for firefighters, \$22.25 for police/patrol officers, and \$16.94 for licensed practical nurses/licensed vocational nurses (L.P.N.s/L.V.N.s), who have similar educational requirements to paramedics. Furthermore, the median wage for EMTs/paramedics has grown very little in recent years, increasing just 29 cents from 2000 through 2005. However, given that OES data does not distinguish between EMTs and paramedics, or identifies EMTs/paramedics who are cross-trained as firefighters, it is possible that subgroups in the EMT/paramedic workforce are experiencing some amount of wage growth that is masked in overall, median wage estimates.

Workforce Need

A need-based approach to health workforce planning requires complex information on the relationship of worker characteristics, such as licensure level and scope of practice, and system characteristics, such as staffing configurations, upon patient outcomes. Such data is typically not collected in studies of EMS systems. In the future, EMS workforce analysis may be based upon population needs models.

Critical Policy Issues

Several critical policy issues emerged from this research that should be considered in the development of an EMS workforce agenda. The research included an analysis of both quantitative and qualitative data. This nonprioritized list of critical policy issues may be useful to the EMS stakeholder community in development and implementation of a national EMS workforce agenda for the future.

1. The lack of consistent definitions for provider levels and workforce terms (e.g., credentialing, registration, certification, licensure) makes national workforce analysis very difficult. Consistent national definitions would be helpful for analyzing and predicting EMS workforce trends. The *EMS Education Agenda for the Future: A Systems Approach* provides some definitions that will be useful if they are widely adopted by States and national EMS data collection efforts.
2. Managing the capacity of the EMS education system is critical to assuring future workforce supply. More complete data on EMS education programs, particularly proprietary and agency-based programs, is necessary to assess the nation's capacity to produce EMTs and paramedics and move towards the goals of the *EMS Education Agenda for the Future: A Systems Approach*.

3. Compared to other health professions, the affiliationⁱ requirement in EMS education, certification, and licensure is unique. However, affiliation is found in other public safety professions, such as law enforcement and firefighting. In EMS, affiliation requirements vary across States. Where it exists it is an additional step in the pathway to becoming an EMT or paramedic. It is difficult to assess the impact of affiliation on supply due to a lack of data.
4. There is no quantitative data indicating a national shortage of EMTs or paramedics. Wages are not increasing at a rate that would suggest a workforce shortage. Qualitative data indicates shortages in certain sectors and geographic areas. Rural informants consistently reported a shortage.
5. Nationally, there is little research or data about the relationship of EMS workforce factors to EMS system effectiveness and patient outcomes. There is a paucity of EMS workforce data and research. This seems to indicate that much EMS workforce demand and planning in the United States is driven, in part, by perceived community needs rather than empirical data. Improvements in clinical research, EMS systems research, and uniform data collection (including workforce data) could result in an improved understanding of the impact of workforce issues upon patient outcomes.
6. Qualitative evidence suggests that retaining workers is a challenge, with poor management practices, low wages and benefits, lack of career ladders, and disability contributing to turnover. Although LEADS data on both paid and volunteer EMTs and paramedics indicates high levels of satisfaction and low intent to leave the profession, more research is needed to assess factors related to the retention of workers.
7. Worker health and safety is an important factor in workforce retention. However, the lack of systematic data on injury and illness makes it difficult to assess the impact of these factors on retention.
8. Analyses of EMS systems tend to omit workforce factors. Information on the EMS workforce, including supply, demand, recruitment, and retention, should be an integral part of EMS system planning and analysis.
9. Volunteers clearly are an important segment of the EMS workforce, particularly in rural areas. EMS workforce planning that focuses on the challenges faced by volunteers may help address the unique challenges of rural EMS systems, yet a lack of data may inhibit such efforts.
10. Healthcare workforce needs are often unmet in rural areas because of a variety of financial and non-financial factors. Transport-based mechanisms of reimbursement present unique challenges for rural areas in meeting their EMS workforce needs. Changes in system financing models could resolve some workforce problems in rural areas. However, major regulatory changes would be required to support new financing structures for EMS.
11. Census data indicates an aging population, which will result in increased demand for services. The pool of younger people, a traditional recruitment pool for EMS, is becoming

ⁱ Affiliation is a requirement to be a member of an EMS agency or providing emergency care in some capacity in order to be eligible for entry into an educational program, to receive a credential or license and/or to remain licensed.

ing more racially and ethnically diverse. Targeted recruitment of racial and ethnic minorities is needed for an EMS workforce that is both large enough and diverse enough to meet the population's needs. Development of models for best practices in EMS recruitment, including recruitment of racial and ethnic minorities, could assist education programs and EMS systems in recruiting effectively.

12. EMTs and paramedics are young compared to other public safety and healthcare professionals. Retention of older or more experienced workers would conserve their talents and experience within the EMS workforce and increase workforce supply. Development of strategies for accommodating older or more experienced workers and increasing successful recruitment and retention of older individuals would provide helpful tools for addressing this important issue.

Conclusion

Research into the EMS workforce in the United States reveals a complicated picture of a workforce that bridges two distinct environments: healthcare and public safety. The EMS workforce comprises both employed and volunteer workers, a feature unique in the healthcare sector although common in fire fighting. Despite their low pay and poor benefits relative to other healthcare and public safety professions, EMTs and paramedics are in many ways devoted to their field. There is a strong desire among leaders in the field to advance the EMS workforce. The data collection infrastructure necessary to do this is largely undeveloped. It is hoped that this assessment will make a viable contribution towards the development of such an infrastructure.

I. Introduction: A Workforce Analysis of EMTs and Paramedics

Emergency Medical Services Workforce for the 21st Century

An adequate Emergency Medical Services workforce is critical to the future of EMS. In 1996, the EMS Agenda for the Future cited human resources as one of 14 key system attributes that national leadership must address to ensure continued EMS system development. The EMS Workforce for the 21st Century project, funded by NHTSA and the Health Resources and Services Administration's Emergency Medical Services for Children program, commenced in the fall of 2004.

The overall goal of this project is to develop a national agenda for the future that helps ensure a viable EMS workforce. The EMS Workforce for the 21st Century project has been guided by a steering committee of EMS experts and has solicited the input of 15 national EMS stakeholder organizations. The project begins with this assessment of the EMS workforce, specifically EMTs and paramedics, which serves to address questions and policy issues that are critical to the future of EMS. The assessment was conducted using various quantitative and qualitative approaches including literature review, data analysis, and key informant interviews. The fundamental research questions for this study, which are listed below, are based on input from the stakeholder organizations who met with the research team in the spring of 2005.

1. Will the EMS workforce supply be of adequate size and composition to meet the needs of the U.S. population in the future?
2. How can potential workers be attracted to and encouraged to stay in the field of EMS?
3. How can adequate EMS workforce resources be available across all populations and geographic areas?
4. Does the EMS community have the data and information needed to address the future demand for and supply of EMTs and paramedics in the U.S? What information is lacking and how might it be obtained?

Models of Workforce Analysis

Workforce planning is a complex process. Workforce planning in the healthcare and public safety sectors is particularly complex because of numerous regulations and policies that impact or control the supply of and demand for workers. The large number of volunteers in the workforce who are not counted in national employment figures makes workforce planning for EMS particularly difficult.

Conducting rational workforce planning requires a forecast of the future supply, demand, and need for workers.¹ It is important to define each of these terms and how they are used in conducting a workforce analysis. While these terms generally relate to the field of economics, other disciplines such as epidemiology, public health, and organizational and human resources management are drawn upon in modeling the healthcare workforce. The workforce supply, demand, and need models in this section of the report adapted models developed by HRSA.²

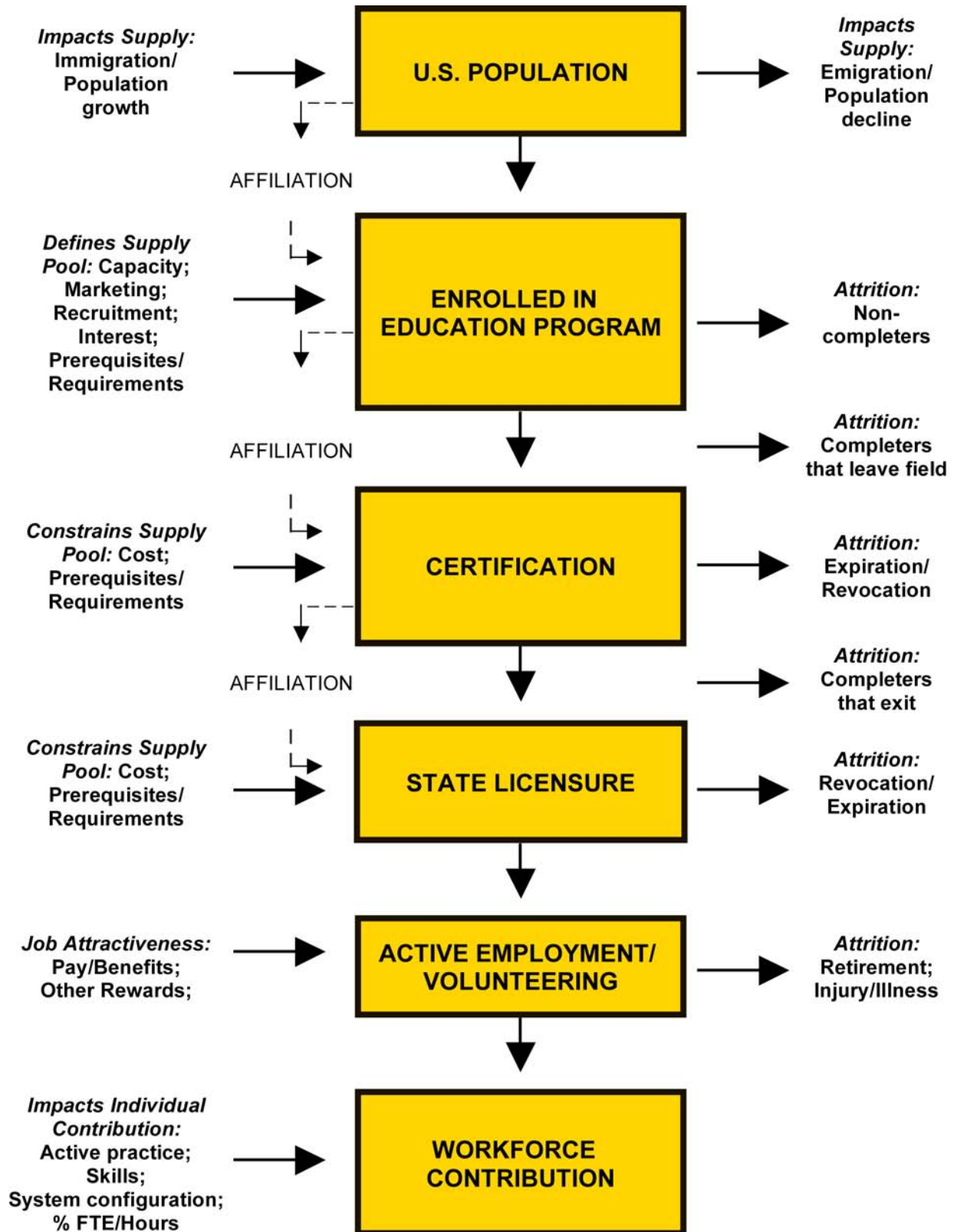
➤ **Workforce Supply**

Supply is generally defined as the size and composition of the available workforce. In the case of healthcare professions and occupations, supply refers to those individuals who possess the required training and credentials (i.e., license and certification) for a profession and are thus qualified to work, including those who are not currently working in the field. It is also important to consider the educational pipeline or those individuals who are currently enrolled in education programs and will likely be available to work in the future. Numerous factors impact supply including the capacity of educational programs and the success of recruitment efforts to make potential new workers aware of and interested in the occupation and opportunities in the field. Affiliation is a unique factor among healthcare profession, though it exists in public safety professions such as law enforcement and firefighting. The effect of affiliation on EMS workforce supply is currently unknown.ⁱⁱ

Issues that impact supply such as recruitment and retention are critical challenges for the EMS workforce. A proposed conceptual model supply is pictured in Figure 1-1. The model illustrates the steps in the development of the EMS workforce, including requirements and factors impacting the movement into and out of the EMS workforce supply.

ⁱⁱ Affiliation is a requirement to be a member of an EMS agency or providing emergency care in some capacity in order to be eligible for entry into an educational program, to receive a credential or license and/or to remain licensed.

Figure 1-1. National EMT and Paramedic Workforce Supply



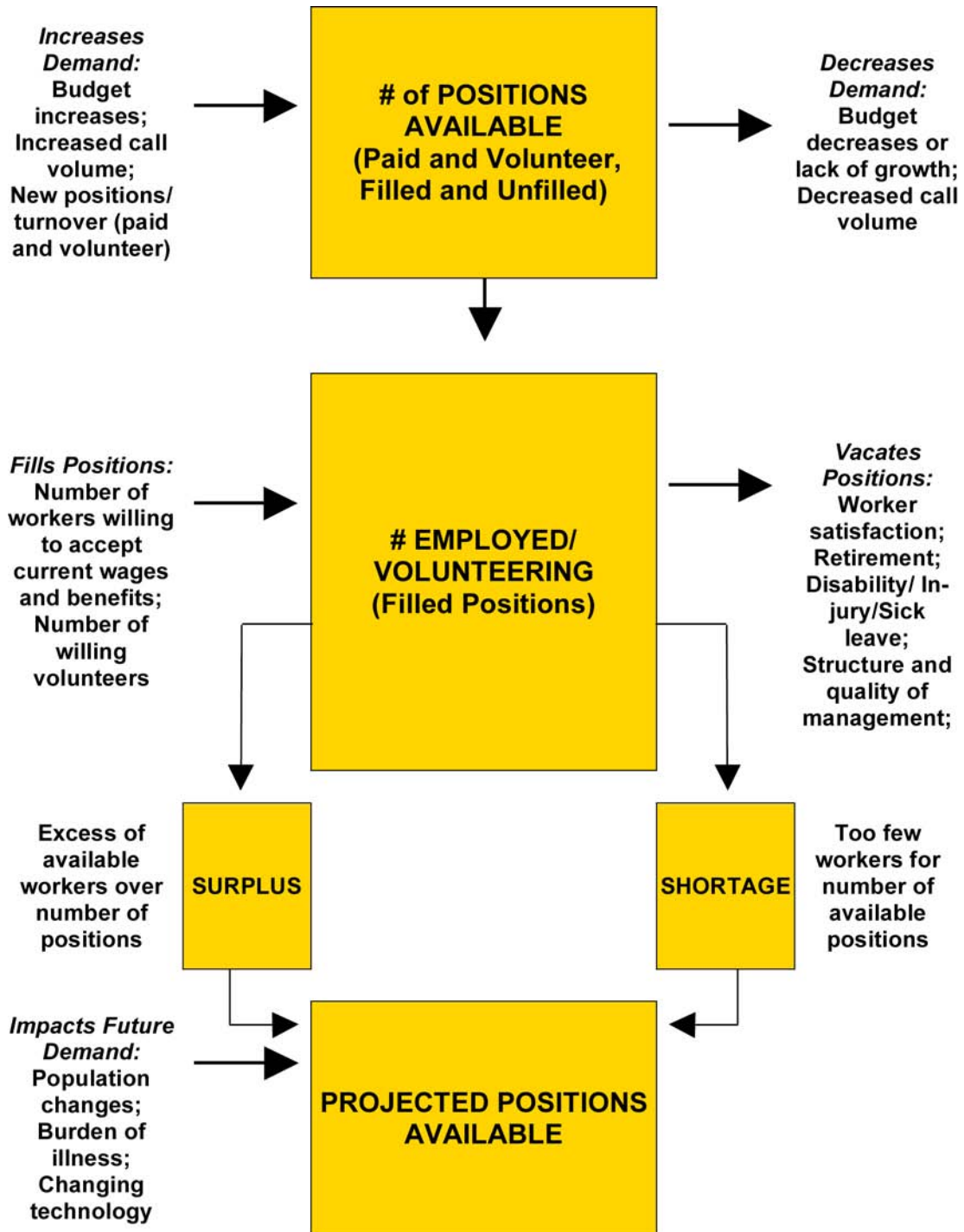
➤ **Workforce Demand**

Demand is generally defined as the number of jobs available for various types of personnel, including both filled and vacant positions.¹ In workforce models, demand may be stated as the size of the current workforce plus projected growth. This is in contrast to supply, which is measured by the number of current workers plus the number of licensed and credentialed individuals who are not currently working in the field. Workforce demand models are used to assess the current demand, including conditions of workforce shortage or surplus. The number of vacant (unfilled but open) positions may indicate a workforce shortage. An excess of available workers relative to the number of open positions is a surplus.

Demand models may also project the future growth of an occupation, including the number of workers needed to fill new positions and to replace workers who leave for retirement or other reasons. As is the case for workforce supply, there has been very little study of the factors that impact the number of EMS positions available and the factors that impact the current and future demand for workers.

A proposed conceptual model of EMS workforce demand is pictured below. The model illustrates the components of EMS workforce demand including factors that impact the number and type of positions both filled and unfilled. As in the supply model, the demand model also includes volunteers, who compose a relatively large proportion of the workforce.

Figure 1-2. National EMT and Paramedic Workforce Demand



➤ **Workforce Need**

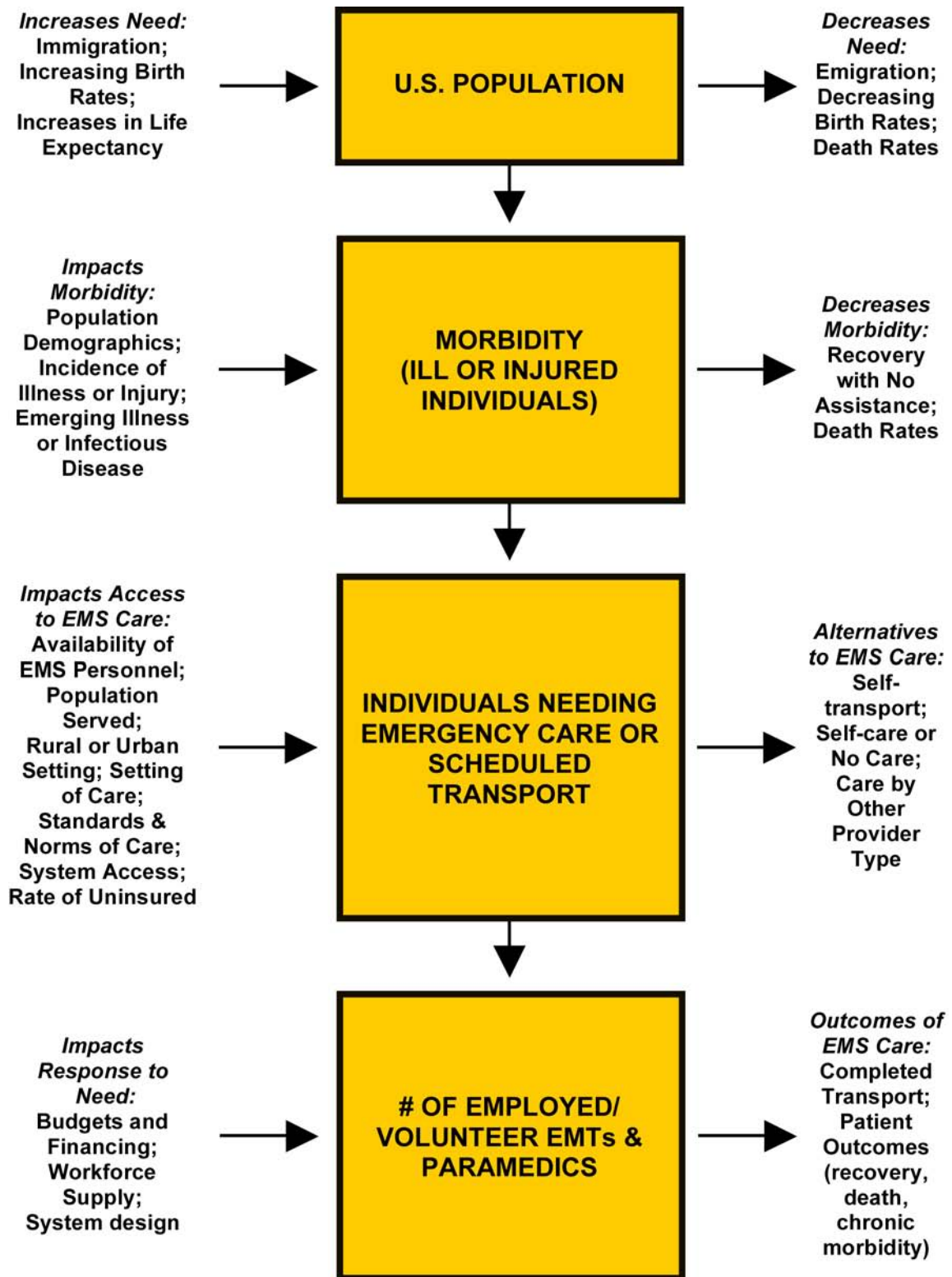
The concept of workforce need is related to workforce demand, and some of the factors that influence demand influence need as well. Population level changes such as increases in size or the burden of illness are examples of these factors.

Despite their similarities, a need-based approach to health workforce planning is complex compared to demand-based planning, and requires a great deal of information about the population to be served. The approach is commonly used by healthcare planners and is built upon the concept of population-based healthcare requirements. Using a need model, healthcare experts can estimate the number and type of services needed by a population or community and the productivity (or unit of service) that each healthcare professional, such as a doctor, dentist, or EMS professional could deliver.³ Using the example of estimating the number of physicians needed, one would divide the number of hours of care that the population is estimated to need by the number of work hours estimated for each physician. To translate this process to EMS, one would estimate the need for EMS providers by first determining the number and type of services desirable for a defined population, and divide that by the number of estimated productive hours for each EMS team member. A need-based workforce planning approach requires detailed information about a population's health status and agreement upon the desired set of services, response times, system configuration, and other factors.

A proposed conceptual model of EMS workforce need is pictured below. The model illustrates the components that impact EMS workforce need, including factors such as population size, demographic characteristics, incidence of injury, personnel skill mix, and technologic advances.

A need-based model requires a complex set of data about the population, which is not readily available for the EMS workforce. We present a need model here primarily as a conceptual picture of need factors that might be used for workforce planning in the future. For purposes of this assessment and the remainder of this report, we will focus on workforce supply and demand. However, keep in mind that some factors overlap the demand and need models. Population size and types and rates of morbidity are examples of factors that influence both demand and need.

Figure 1-3. National EMT and Paramedic Workforce Need



Shortages in the Healthcare Workforce

Workforce shortage can result from workforce attrition (i.e., reduction in supply) or from growth in the number of available positions (i.e., increase in demand). There is no standard definition of workforce shortage. However, there are several measures that commonly indicate a shortage of workers. These include the percent of vacant positions, the use of overtime and temporary personnel, the inability to provide services, or delays in service. Increases in compensation, including wages, bonuses, and benefits, are also indicators of workforce shortage. HRSA has a uniform set of criteria to designate health professional shortage areas for only a few types of health professionals, such as physicians and dentists.⁴ These criteria are used to fund education programs and other grant activities related to improving the supply of those health professionals.

Shortages in the healthcare workforce, particularly in registered nursing, which makes up 15.2 percent of the healthcare workforce,⁵ have received much attention by policy makers in the past few years. The hospital industry has identified shortages in other health professions, particularly in clinical laboratory and radiology.⁶ Identifying a national workforce shortage is a challenging task. It requires a consistent definition of “vacancy.” A survey to determine variation in vacant positions across employment sectors must reach a wide variety of employers. Little data was found to quantify current shortages in the EMS workforce.

Several factors identified as contributing to registered-nurse shortages also apply to other healthcare and public safety workers. These factors include the aging U.S. population, an expected increase in illness and the demand for healthcare, increases in the number and types of services needed, the aging and expected retirement of a significant percent of the current workforce, and regulations such as R.N.-to-patient ratios.^{7,8,9} Other factors that may contribute to healthcare workforce shortages are supply factors, such as competing occupational opportunities, a lack of available training slots in educational programs, and a lack of faculty.¹⁰

Defining the EMS Workforce

One of the key challenges in studying the EMS workforce is defining the workforce. Successful patient outcomes are dependent upon an entire team of emergency care providers including first responders, EMTs, paramedics, physicians, nurses, emergency medical dispatchers and others. However, the focus of this workforce assessment is on prehospital care and is limited to EMTs and paramedics.

There are multiple levels of EMS personnel including five nationally defined levels (First Responder, EMT-Basic, EMT-Intermediate/85, EMT-Intermediate/99, and Paramedic), as well as others recognized by various States. Key informants reported that there may be as many as 48 levels of EMS practitioners. In general EMT-Basics are practitioners who provide basic emergency medical care and transportation for critical and emergent patients who access the emergency medical system. Paramedics provide advanced emergency medical care. In this report, all levels of EMTs, with the exception of paramedics, are generally referred to as “EMTs” unless otherwise indicated. Although paramedics are often referred to as EMT-Paramedics, in this report we use the term “paramedics” to distinguish them from EMTs. Most of the national data sources used in the quantitative analysis for this study combine EMTs and paramedics for data purposes. We refer to EMTs/paramedics when the data source combined these levels and we were therefore unable to separate the data for analysis. A few sources report EMT and paramedic

data separately. When referencing these sources in this report, EMTs and paramedics are identified separately. As stated in the *EMS Education Agenda for the Future: A Systems Approach*, creating clear definitions for the provider levels should foster more consistency nationally.

The organization of EMS systems varies from State to State. Oversight, regulations, and resources for EMS systems may be provided by the State, county, tribe and/or local community, as well as from the Federal government. In addition, differences in local geography or topography and the size and distribution of the population served have an impact on the EMS workforce. These differences may be greatest between urban and rural areas.

Defining the Rural Workforce

The rural United States is confronted by many of the same EMS workforce issues as are found in urban areas, but there are some important differences. The varied communities and terrain outside of urban areas of the country are what we generally lump together as “rural.” Rural areas, which comprise 75 percent of the Nation’s geography, range from geographically isolated and sparsely populated communities to small towns that are within reasonable commutes of major metropolitan areas. Just as there are many different types of rural areas, there are many different types of rural EMS services. They may be financed publicly or through private sources, cover a few square miles or hundreds of square miles, and involve independent volunteer organizations or use paid staff associated with local hospitals, as well as many other models.

In spite of this heterogeneity, some important generalizations can be made about health care in rural areas. Many rural communities struggle to recruit and retain health care providers. Rural populations are older than urban and poverty rates are higher in rural areas. Rural areas are likely to be more dependent on Medicare and Medicaid reimbursement than urban areas.^{11 12 13 14 15} If widely held views of rural EMS are correct, then the EMS workforce faces some of the same challenges affecting rural health care more generally: ambulance services have significant recruitment and retention problems; the increasing retired and aged populations demand levels of emergency services that can be difficult for many rural communities to provide; and funding sources for EMS systems are a continual struggle for most rural communities.

A major confounder to quantifying the rural EMS workforce is the fact that rural EMS services rely heavily on volunteer workers. Volunteers are difficult to count, as they do not have payroll records and are generally not counted in employment surveys. Individuals are not likely to cite volunteer work as primary employment. Consistent information is also hard to acquire, particularly on benefits available to volunteers, such as compensation and education. The reliance of rural systems on volunteers introduces other difficulties in defining and understanding the workforce.

➤ What Is Rural?

The other difficulty in describing the rural EMS workforce is the fact that many different definitions of “rural” are used in research, policy, and legislation. The differing definitions can affect the comparability of data between sources. For example, the U.S. Office of Management and Budget (OMB) uses a county-based metropolitan/non-metropolitan classification, whereas the U.S. Department of Agriculture’s (USDA) Economic Research Service uses a scheme, developed by Butler and Beale,¹⁶ which is based on a different county-based metropolitan/non-metropolitan “urban influence codes” classification. County-based classifications will attribute

urban status to an entire county in which a major urban center is located. In some counties, this method results in coding less densely settled areas of the county as urban, though other taxonomic approaches would designate these same areas as rural. The Census Bureau's census-tract-based taxonomy categorizes "urban clusters" along with urban areas, and the "urban clusters" can include some communities with populations as small as 2,500, which would be considered rural in other classifications.¹⁷ The Rural Urban Commuting Areas (RUCAs) compose a taxonomy developed by the USDA Economic Research Service and the University of Washington Rural Health Research Center that uses categories based on the size of settlements and towns and the functional commuting relationships between areas. RUCAs are delineated at the census tract and ZIP code levels.¹⁸ There are often legitimate policy reasons to use one rural taxonomy over another. However, it can be difficult to make valid comparisons of data that are based on different taxonomic systems.

Simply using the term "rural" can be problematic because the non-urban regions of the country are in fact very heterogeneous. It may be more expedient to consolidate "rural issues" in policy settings, but it can often be more insightful to compare isolated rural areas to other isolated rural areas, and rural areas adjacent to urban areas to other areas of the same type because of similarities in their resources, infrastructures and cultures. Rural EMS systems in the eastern United States may face transport distances of 20 to 30 miles to the nearest hospital, while distances of 60 to 100 miles are not uncommon in the western States.¹⁹

The problems defining rurality and implications for EMS services and funding are outlined in a report by the Rural Health Resource Center (and included in the Rural and Frontier Emergency Medical Services Agenda for the Future) that stresses the problems of county-based urban-rural taxonomies and recommends other, more appropriate ways to define "rural" for EMS.^{20 21}

II. Methods and Data Sources

Project Advisory Groups

Two project advisory groups were used in conducting the EMS workforce assessment: a steering committee and a stakeholder group. The steering committee was composed of EMS workforce research experts. The steering committee provided expert guidance, facilitated access to research resources, and helped identify key informants to be interviewed.

To get a national perspective of EMS workforce issues, representatives from approximately 15 national organizations directly involved with EMS assembled as a stakeholder group. The organizational stakeholders provided input on the research questions and information on prior research, suggested key informants for our interviews, and contributed perspectives from their organizations on critical EMS workforce issues. A complete list of stakeholder organizations and representatives is included in Appendix A.

Literature Review

To assess published research related to the EMS workforce, a comprehensive literature review was conducted on an ongoing basis between June 2004 and March 2006. Limiting search terms to “EMT” and “paramedic” yielded over 300 articles dated between 1973 and 2006, including both peer-reviewed and non-peer-reviewed articles.

Project staff also conducted Web searches for government publications, private foundation reports, and other EMS or workforce policy reports.

Qualitative Approaches

Qualitative approaches were a key component of this assessment. Qualitative methods generally consist of four kinds of data collection: in-depth interviews, focus groups, field observation, and review of written documents.²² In-depth interviewing was an important qualitative method to use in this study. Other qualitative methods used for this study included field observation and the hosting of an online blog, where active providers in the field could respond to various questions about EMS workforce issues.

➤ Key Informant Interviews

The research team conducted 53 key informant interviews. Ninety-four percent of these interviews were conducted by telephone and 6 percent were in-person interviews. Key informants were defined as individuals who are experts in some capacity within the EMS community. Key informants were identified by attendees at the first stakeholder meeting and included the leadership of professional organizations, employers, educators, government agencies, certification and accreditation bodies, unions, EMS media, and industry consultants. Key informants on rural and volunteer issues were also identified at a stakeholder group meeting of the Rural EMS Trauma and Technical Assistance Center. Interview questions were tailored to the type of agency, organization, or institutional background of the informants. Each interview also included questions that addressed the project’s core research issues including public perception of the EMS workforce, recruitment and retention, education and training, workforce supply, de-

mand and utilization, and other major concerns about the EMS workforce. Appendices B1 and B2 contain the question guides for the key informant interviews.

➤ **Field Observation**

Field observation is an important qualitative approach in which the researcher participates in the daily routine in the typical setting of the subject being studied and observes events, activities, and interactions that take place.²³ Project staff used field observation as a means of developing a more in-depth qualitative understanding of the work of EMS field providers, but not as a means for data collection. The field observation consisted of ambulance “ride-alongs” for project team members. The ride-alongs were approved by the institutional review boards at the researchers’ respective institutions and conducted according to rules of the host EMS agency.

➤ **Discussion Blog**

Internet blogs are a common Web-based method of hosting discussions on a variety of topics. Blogs are not commonly used as a research tool, particularly if the discussion is not moderated or directed in any way. In order to solicit candid comments directly from field providers project staff developed a blog. Stakeholder and steering committee members were essential in helping get the word out about the blog. A total of 14 questions were posted by project staff soliciting over 240 responses. Questions were developed by project staff with input from the steering committee. All questions posted to the blog can be found in Appendix C.

Quantitative Approaches

Several quantitative analyses were conducted for this assessment. These included the analysis of secondary data available from numerous publicly available data sets. Previously collected data from a longitudinal survey of practicing EMTs and paramedics (the Longitudinal EMT Attributes and Demographics Study or LEADS) was analyzed. An analysis of survey data collected from practicing EMTs and paramedics during the National Registry of Emergency Medical Technicians’ (NREMT) re-registration process was also conducted. Finally, a brief online survey of State EMS training coordinators was developed and conducted in collaboration with the National Council of State EMS Training Coordinators (NSCEMSTC). A brief description of the major data sources used for primary and secondary analyses follows.

➤ **Sources Used in Secondary Data Analysis**

United States Census Bureau – Population Estimates Program

The United States Census Bureau’s Population Estimates Program is a Federal-State cooperative program allowing for estimates at different levels including national, State, county, city/town, and metropolitan area.^{24 25} The program publishes estimates in July on an annual basis

United States Census Bureau – Population Projections Program

The United States Census Bureau’s Population Projections Program is also a Federal-State cooperative program allowing for estimates at both the national and State level.²⁵ Population projections are based on certain assumptions regarding future births, deaths, and interna-

tional and domestic migration. Projected population values are based on population estimates consistent with the 2000 Census.

Bureau of Labor Statistics – Occupational Employment Statistics Survey

The Occupational Employment Statistics (OES) survey, administered by the Bureau of Labor Statistics, within the U.S. Department of Labor surveys approximately 1.2 million non-farm business establishments over the course of a three year period.²⁶ The total employment and wages data was obtained from the OES survey.

Bureau of Labor Statistics – Current Population Survey

The Current Population Survey is a monthly survey of approximately 60,000 households administered by the Census Bureau on behalf of the Bureau of Labor Statistics.²⁷ It is a source for employment statistics, but the survey also collects data on a variety of demographic topics including occupation, gender, race/ethnicity, age, union status, and educational attainment.

Bureau of Labor Statistics – Occupational Employment Projections

The Occupational Employment Projections come from the Office of Occupational Employment Statistics and Employment Projections, a division of the Bureau of Labor Statistics.²⁸ Employment projections are made for a 10-year period and updated every two years. The projections include the likely size and composition of the labor force (not including volunteers), total economic growth, industry and occupational employment, and other features.

Consumer Price Indexes Program

The Consumer Price Indexes (CPI) program publishes data on a monthly basis that measures changes in the price paid by urban consumers for a “representative basket of goods and services.”²⁹ In other words, it is a measure of inflation. In this report, it is used to adjust wage estimates so that wage trends can be presented in constant values.ⁱⁱⁱ

American Medical Association – Health Professions Career and Education Directory & Data Book

The American Medical Association (AMA) Health Professions Career and Education Directory and its component Data Book are the sources for education data pertaining to accredited EMT/paramedic training programs presented in this report.^{30 31} The AMA surveys health professions education programs accredited by 21 different agencies on an annual basis.

Integrated Postsecondary Education Data System

The Integrated Postsecondary Education Data System (IPEDS) is the core postsecondary education data collection program for the National Center for Education Statistics, which is a division of the U.S. Department of Education.³² IPEDS serves as a comprehensive system meant to capture all institutions in the United States that have post-secondary education as their primary purpose.

ⁱⁱⁱ The All-Urban CPI, which covers approximately 87 percent of the total U.S. population, was used to adjust wage estimates for this report.

Longitudinal EMT Attributes and Demographics Study

The Longitudinal Emergency Medical Technician Attributes and Demographics Study is a longitudinal study of practicing EMTs and paramedics hosted by the National Registry of Emergency Medical Technicians. The study began in 1998 and is led by a team of researchers including State EMS directors, systems managers, training coordinators, emergency physicians, survey researchers, and the staff of the NREMT. Longitudinal and cross-sectional data have been collected annually since 1999. The LEADS Core Survey, as well as the Education and Compensation Snapshot surveys, can be found in Appendix D. The project team received permission from the NREMT to analyze data from the LEADS study.

National Registry of Emergency Medical Technicians

The National Registry of Emergency Medical Technicians is a national certifying body of EMTs and paramedics that began in 1970. The NREMT database includes descriptive data and the registration status of each applicant. In addition, all NREMT re-registration applicants are asked to complete a brief workforce survey each year. The project team received permission from the NREMT to analyze the 2004 and 2005 re-registration surveys (Appendices E1 and E2).

NCSEMSTC Survey of State Training Coordinators

The National Council of State EMS Training Coordinators (NCSEMSTC) was a national association of State EMS training coordinators, including coordinators from the 50 States, the District of Columbia, and three territories.^{iv} The group conducted a survey of its membership in August 2005 using a brief Web-based instrument (Appendix F). This 23 item survey was developed by association staff with input from the UCSF project team and was pre-tested in at least one State.

Matrix of Data Sources

Table 2-1 displays information on the various quantitative data sources used in this assessment, including their strengths and limitations. Further details for the major national data sources are included in Appendix G.

Table 2-1. Data Sources: Uses, Strengths, and Limitations

Data Set	Years	Description and Use	Strengths	Limitations
American Medical Association Health Professions Data Book	1985-2005	Trend in number of accredited paramedic programs and graduates	Trended data; Good response rates; National data	Only includes accredited paramedic programs

^{iv} The NCSEMSTC is now a council within the National Association of State EMS Officials.

Data Set	Years	Description and Use	Strengths	Limitations
BLS (Bureau of Labor Statistics) Current Population Survey	2005	Demographic description of current supply; national survey of individuals who identify their occupation	Robust methodology; representative of Federal and State levels;	No distinction between EMTs and paramedics; no volunteers; no information on firefighters cross-trained as EMTs/Paramedics
BLS Current Population Survey – 2005 Volunteer Supplement	2005	Supplement to the CPS conducted in Sept. 2005	Items related to volunteer activities, number of hours, and organizations	EMS is aggregated with other medical personnel, counselors etc.; no information on firefighters cross-trained as EMTs/Paramedics
BLS Occupational Employment Projections	2004-2014	Employment projections (demand)	Robust methodology; representative of Federal and State levels; Includes 192 industry sectors	No distinction between EMTs and paramedics; no volunteers; no information on firefighters cross-trained as EMTs/Paramedics
BLS Occupational Employment Survey	2000-2005	Supply & Demand (wages)	Robust methodology; representative of Federal and State levels; national survey of large number of employers	No distinction between EMTs and paramedics; no volunteers; no information on firefighters cross-trained as EMTs/paramedics

Data Set	Years	Description and Use	Strengths	Limitations
Integrated Postsecondary Education Data System	1995-2005	Education data collected by program; Supply of programs and number of graduates	Robust national data program for National Center for Education Statistics; trended data	Only schools that receive Title IV funding report to IPEDS; private schools probably underrepresented; does not distinguish between EMT and paramedic programs- only specifies length of program
Longitudinal EMT Attributes and Demographics Study	1999-2005	Demographic description; supply, satisfaction and retention	Distinguishes EMTs from paramedics; Contains level of experience; national, randomized, and longitudinal; over-representative of minorities	Not all States participate in NREMT ^v ; disproportionate representation of new or younger EMTs
2003 Survey of State EMS Directors (Mears, G.)³³	2003	Survey of all State and territorial EMS directors; supply	High response rate (100%)	Does not denote employment status of providers

^v Analysis by R. Levine comparing LEADS 2000 data for nationally registered EMTs with State data for registered EMTs from States that did not require NREMT registration, showed differences in age, experience, gender, and earnings, and similarities in satisfaction, reasons for entering profession, and assessment of training.

Data Set	Years	Description and Use	Strengths	Limitations
National Council of State EMS Training Coordinators Survey of State EMS training coordinators	2005	Data on number of educational programs by type	High response rate (82%)	Brief survey; Lacks specificity around definition of "credentialed"
National Fire Protection Association U.S. Fire Department Profile through 2004	2004	Survey of all U.S. fire departments; supply	Extensive data on fire and EMS calls; trended data; response rate (46%)	Does not identify number and skill level of firefighters involved in providing EMS services
National Registry of Emergency Medical Technicians Re-registration Survey	2004 2005	Registry of certified providers and level of certification (demographic description, supply, and satisfaction)	Distinguishes EMTs from paramedics	Not all States participate in NREMT; respondents more likely from States that require re-registration or individuals motivated to re-register; not linked to individual demographic data; data on volunteer status unavailable in some years;

Source: UCSF Center for the Health Professions

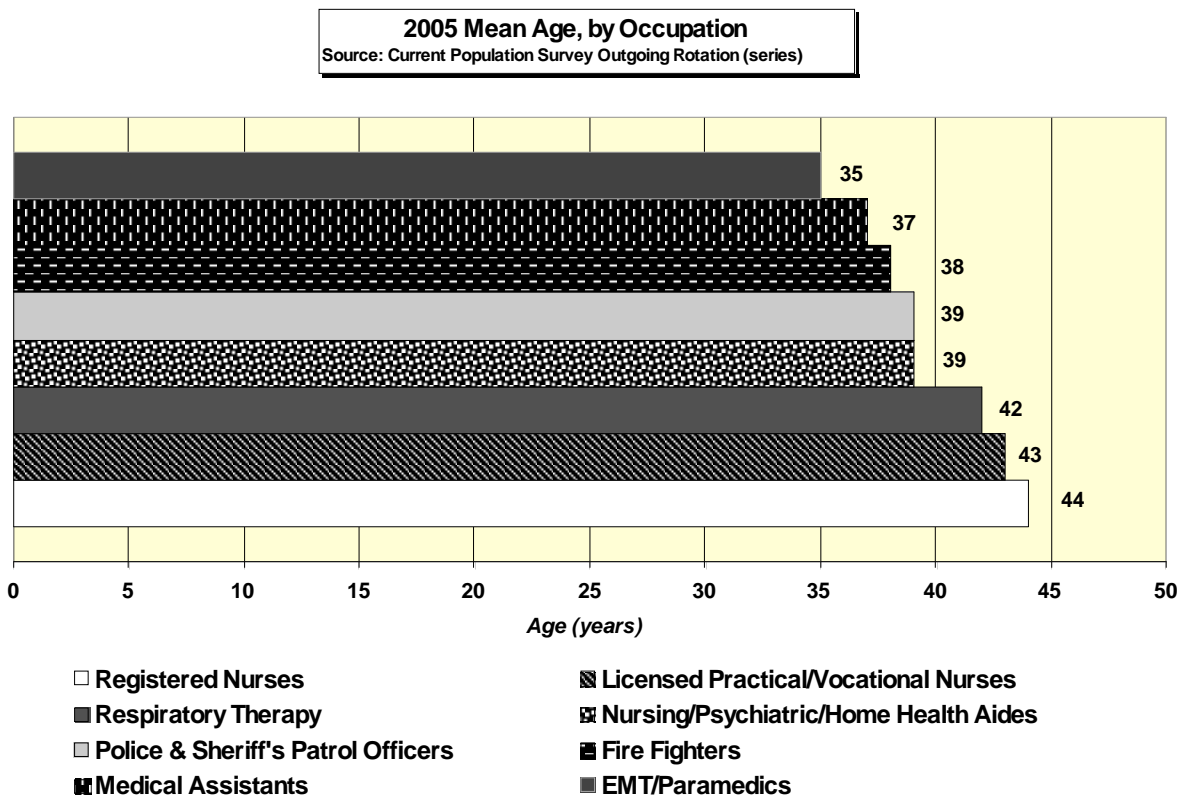
III. The Supply of EMTs and Paramedics

Demographic Characteristics

The CPS is the source for many of the estimates of national demographic characteristics of the EMS workforce and other occupational groups presented in this assessment report. It is a data source used frequently in workforce research. The CPS has three primary shortcomings with regard to the EMT and paramedic workforce. First, there is no distinction drawn between EMTs and paramedics in CPS data. These groups will thus be identified jointly as EMTs/paramedics when discussing CPS data. Second, there is no way to identify firefighters cross-trained as EMTs/paramedics in CPS data, and third, the volunteer workforce is not counted in CPS data.

As indicated by the CPS, employed EMTs/paramedics tend to be younger than other allied health providers. In 2005, the average age of an employed EMT/paramedic was 35. Approximately 57 percent of EMTs/paramedics were 35 or younger and nearly 72 percent were 40 or younger (data not shown). EMTs/paramedics are compared to other healthcare and public safety professions by age in Figure 3-1.

Figure 3-1. Mean Age of Selected Occupations, 2005



Source: Current Population Survey Outgoing Rotation Group File, 2005

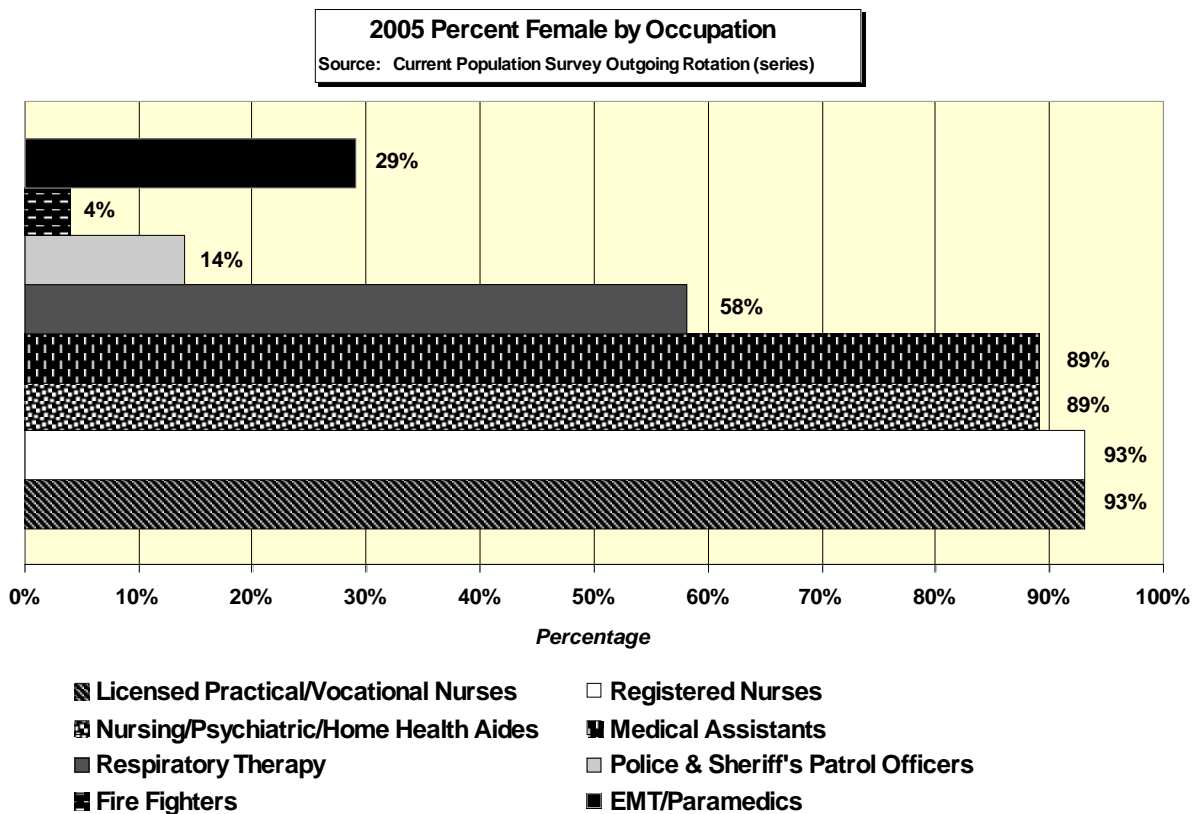
Figure 3-1 indicates that, overall, EMTs/paramedics are among the youngest allied health practitioners and public safety professionals. The 2005 data show that paid EMTs/paramedics, at 35 years old, are nearly a decade younger than registered nurses (R.N.s), who are the oldest of the groups at 44 years old. Medical assistants, at 37 years old, are the closest in age to EMTs/paramedics. As a group, the public safety professions represented in this figure are younger than the allied health professions. The mean age is 38 for firefighters and 39 for patrol officers.

While other allied health professions face the need to replace aging workers, the EMT/paramedic and other public safety professions may need to focus on the perception that their fields are best suited to younger workers. Additionally, these professions may face more competition for a smaller pool of potential workers, due to the current demographic shift in age.

Comparing age data from the CPS with LEADS survey respondents shows similar findings, except for volunteers. The average age of all LEADS survey respondents (data not shown) was 36 in 2005, with an average age of 39 for volunteers and 34 for non-volunteers.

In terms of gender and race/ethnicity, the EMT/paramedic workforce does not closely reflect the general population that it serves. A comparison of the percent female among EMTs/paramedics versus other allied healthcare and public safety professions is presented in Figure 3-2.

Figure 3-2. Percent Female in Selected Occupations, 2005

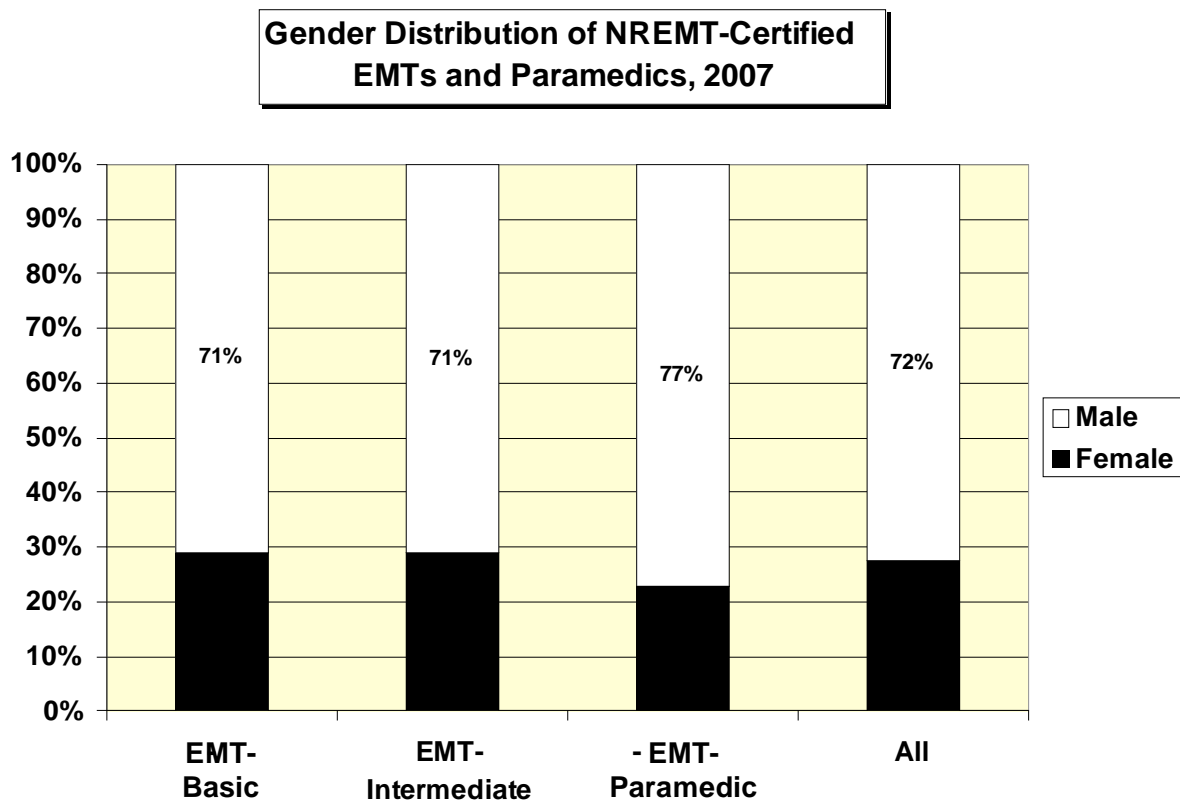


Source: Current Population Survey Outgoing Rotation Group File, 2005

Unlike many allied health professions, EMS is heavily male-dominated. In 2005, about 29 percent of paid EMTs/paramedics were female, compared to about 93 percent for licensed practical/vocational nurses L.P.N.s/L.V.N.s and R.N.s and about 89 percent for nursing/psychiatric/home health aids and medical assistants. However, females are highly represented among paid EMTs/paramedics compared to other public safety professionals. The firefighter workforce is only 4 percent female and the patrol officer workforce is only 14 percent female. Again, no CPS data is available on the gender of volunteer EMTs/paramedics. However, key informants interviewed indicated that the percent of females among volunteers is likely higher than in the paid workforce.

Data from the other data sources also demonstrates that the EMT and paramedic workforce is predominantly male. Figure 3.3 shows the gender distribution of NREMT-certified EMTs and paramedics in 2007.

Figure 3-3. Gender Distribution of NREMT-Certified EMTs and Paramedics, 2007



Source: NREMT Registration Database, 2007.

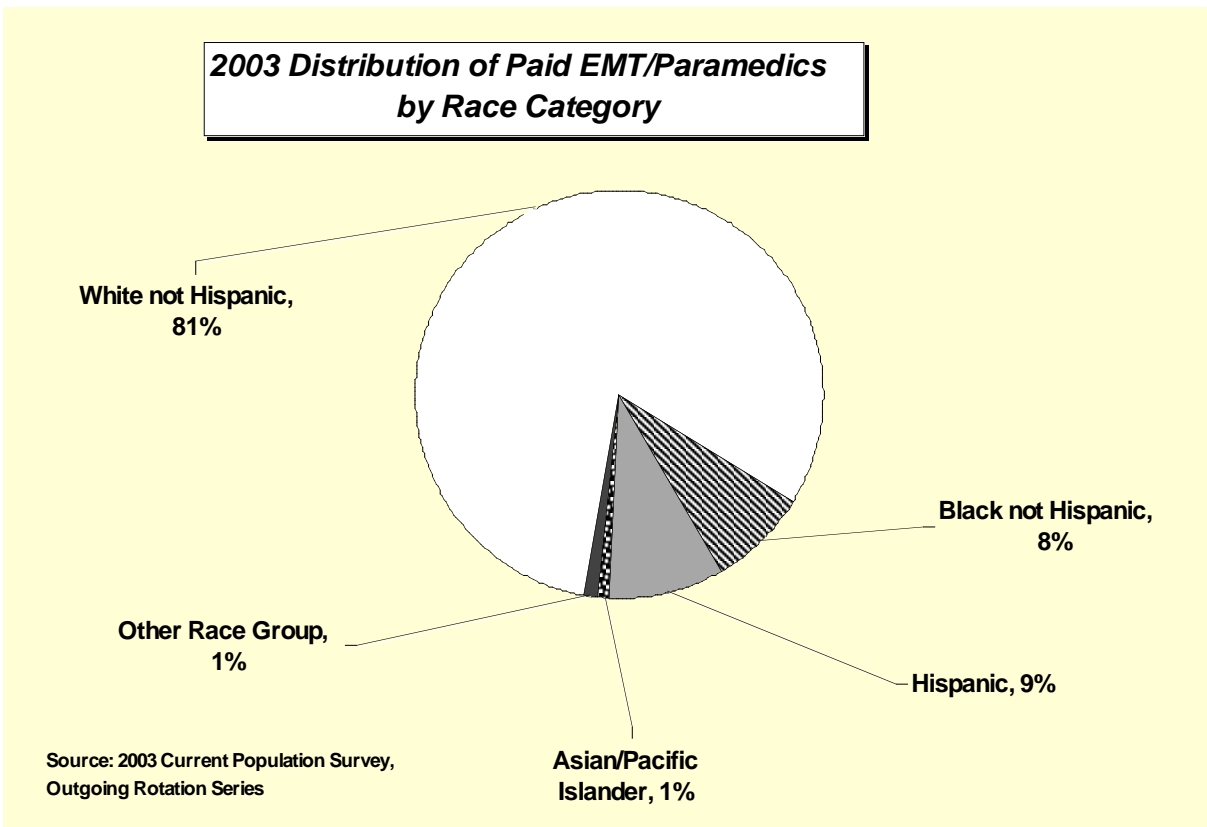
The gender distribution of NREMT-certified EMTs and paramedics also largely mirrors that in the CPS. The 2007 NREMT data show 72 percent male in total as compared to 68 percent male found in the CPS. The gender disparity is greater at higher levels of training.

While NREMT data from the 2007 registration database shows that 28 percent are female of NREMT-certified EMTs and paramedics are female, LEADS data (not shown) for 2005 indi-

cate that 38.4 percent of EMTs and 27.5 percent of paramedics are female. The difference between CPS and LEADS data may be due to the inclusion of volunteers in the LEADS data. According to LEADS data, 58 percent of volunteer EMTs and paramedics are male.

In terms of race/ethnicity, about 81 percent of paid EMTs/paramedics fall into the “White not Hispanic” category. The distribution of the workforce by race/ethnicity is shown in Figure 3-4.

Figure 3-4. 2003 Distribution of Paid EMT/Paramedics by Race Category

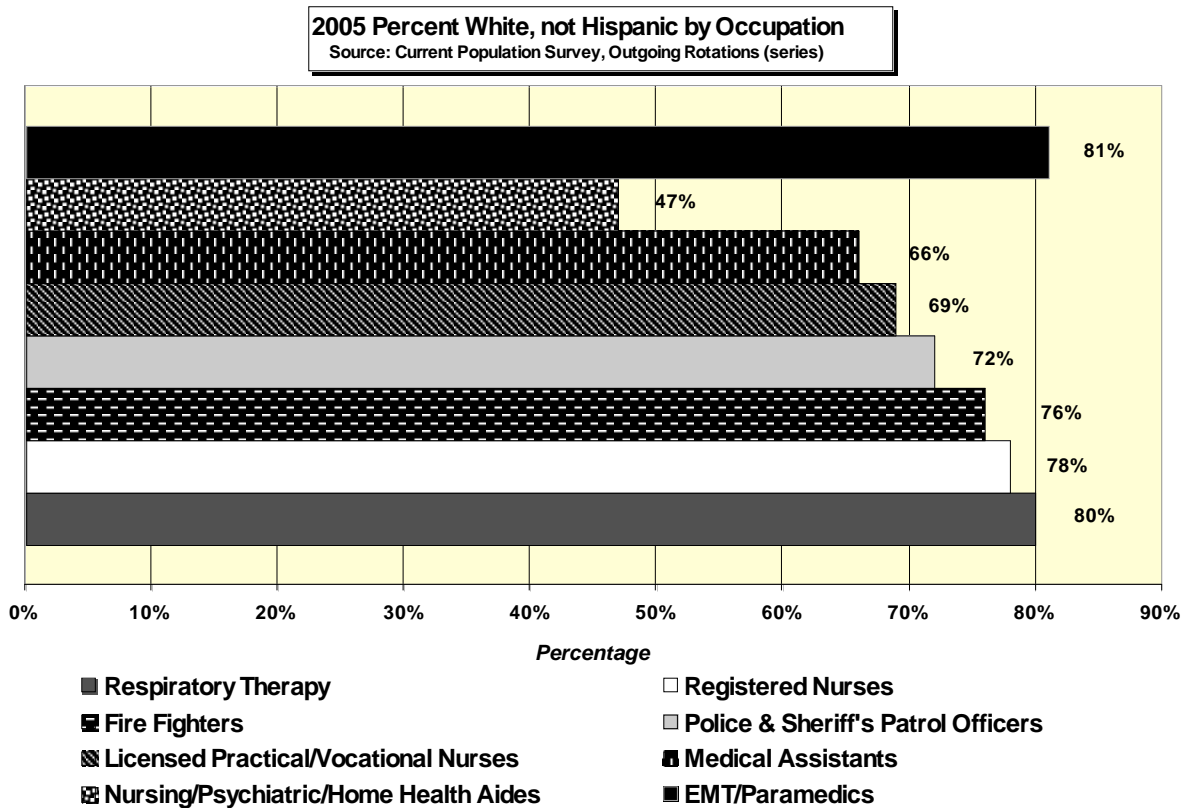


Source: 2003 Current Population Survey, Outgoing Rotation Series

This figure indicates that, while the category “White not Hispanic” is overrepresented in the employed EMT/paramedic workforce, the workforce more closely resembles the general population by race/ethnicity than it does by gender. About 8 percent of EMTs/paramedics were “black not Hispanic,” and approximately 9 percent were Hispanic, with about 2 percent falling into the Asian/Pacific Islander and “other” categories combined. In contrast, data from the Census Bureau shows that about 12.8 percent of the national population was black, about 14 percent was Hispanic or Latino, and about 4 percent was Asian/Pacific Islander in 2004 (data not shown).³⁴

Figure 3-5 compares the percentage of White not Hispanic workers among selected allied health and public safety professions.

Figure 3-5. Percent White Not Hispanic – Selected Occupations, 2005



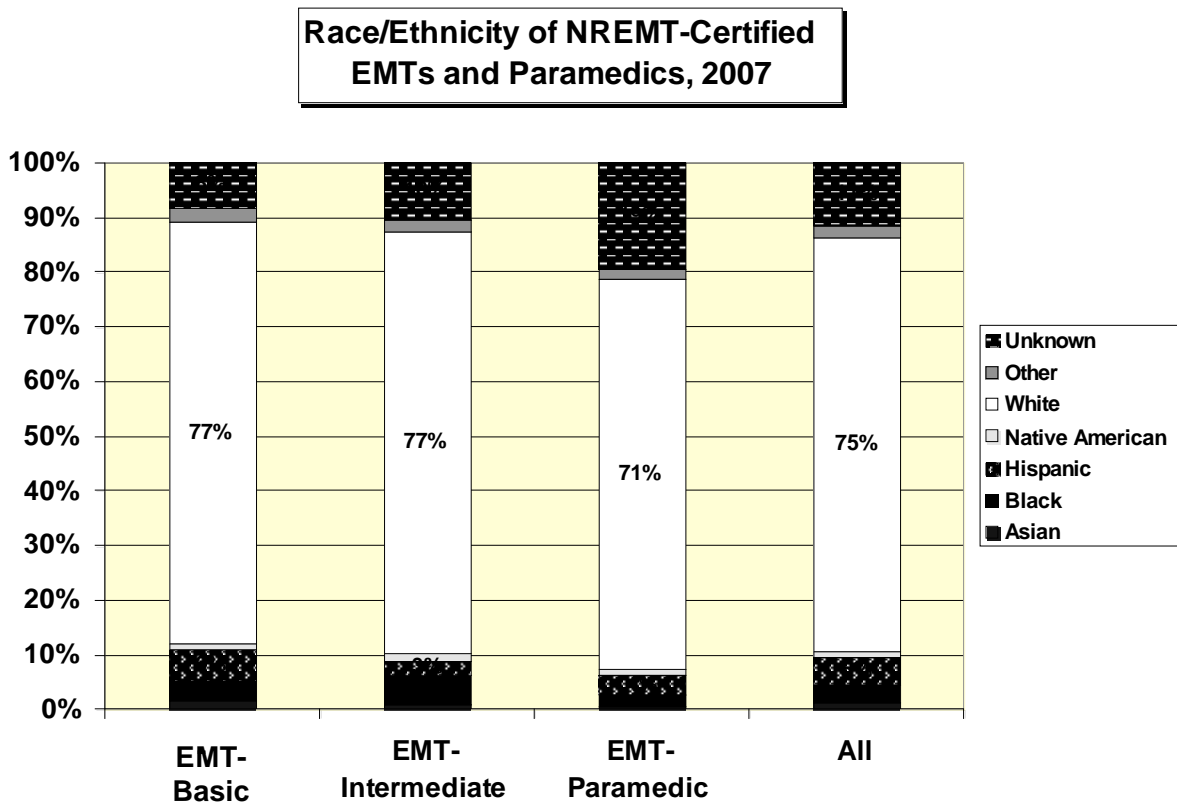
Source: Current Population Survey Outgoing Rotation Group File, 2005

This figure shows that EMTs/paramedics are more likely to be White not Hispanic than similar allied healthcare and public safety professions. In 2005, the paid EMT/paramedic workforce was about 81 percent White not Hispanic, compared to about 47 percent for nursing/psychiatric/home health aids and 66 percent for medical assistants. Respiratory therapists and R.N.s were most similar to EMTs/paramedics on this measure; these groups were about 80 percent and 78 percent White not Hispanic, respectively.

As with age and gender estimates, the other data sources bear out the CPS estimates for race/ethnicity.^{vi} Figure 3-6 displays the racial/ethnic breakdown of NREMT-certified EMTs and paramedics.

^{vi} The difference in the distribution of race/ethnicity may be due to the 11 percent reported as unknown in the NREMT data set.

Figure 3-6. Race/Ethnicity of NREMT-Certified EMTs and Paramedics, 2007



Source: NREMT Registration Database, 2007

The distribution of NREMT-certified EMT-Basics, EMT-Intermediates, and EMT-Paramedics by race/ethnicity largely mirrors the distribution in CPS data, although Whites are more highly represented and minorities less highly represented in the NREMT data. Whites are the majority of the NREMT-certified workforce at about 75 percent, followed by Hispanics at 5 percent, black at about 3 percent, Asian at about 1 percent and Native Americans at about 1 percent. The ‘Other’ category comprises about 2 percent of the workforce. LEADS data show that, in 2005, 82.7 percent of EMTs and 91.3 percent of paramedics were White (data not shown).

Workforce Size

As noted earlier in this assessment report, workforce supply is typically defined as the size of the current workforce. In the case of healthcare professions and occupations, supply is often thought of as those individuals who possess the required training and credentials of a profession and thus are available to work. Additionally, healthcare workforce supply is constantly in a state of flux, with newly educated and credentialed individuals becoming available to work and experienced individuals separating from the available workforce, either by retiring or by entering other professions. Often, it is unclear if workers who leave the workforce actually retain their professional credentials or allow them to lapse. Thus, workforce estimates based on

licensure or credentialing data are likely to overestimate workforce supply to some degree based on incomplete data (i.e., a lack of data on workforce attachment). On the other hand, some EMTs and paramedics might leave the paid workforce, but continue in a volunteer capacity, perhaps on a part-time basis.

Many factors can affect the supply of EMTs and paramedics and the flow of workers into and out of the workforce. While not an exhaustive list, these factors may include the following:

The attractiveness of the occupation;

Awareness/public profile of profession;

Requirements for education and certification by State, including affiliation requirements;

Number of education programs and program capacity;

Access to education programs across States and across geographic regions, including rural areas;

Number of graduates from EMT/paramedic programs;

Faculty availability for education programs;

Certification testing and pass rates;

Licensure requirements by State;

Number of cross-trained firefighters and police officers available to provide EMS services;

Part-time or full-time work status;

Number of EMT/paramedic volunteers available to provide EMS services;

Injury, illness, and disability (worker absence);

Workforce turnover and retirement rates; and

System funding, e.g. reimbursement rates for ambulance services.

One notable aspect of workforce supply and demand analysis is that some factors can be regarded as both supply and demand factors. An example is workforce turnover, which reduces the number of available workers at the same time that it creates vacancies (i.e., increases in demand). An effective workforce model for EMS would address these issues and how they contribute to both supply and demand.

Description of the Current Labor Market

Table 3-1 compares the various sources of data used in this assessment that include information on the number of EMTs and paramedics. As noted in the table, the BLS data combines EMTs and paramedics and does not include volunteers.

Table 3-1. Sources of Data on Number of EMTs and Paramedics (Employed/Affiliated and/or Certified)

Source	Number (95% Confidence Interval, if Applicable)	Year	Provider Type
BLS-CPS	176,221 employed (150,884 – 201,559)	2005	EMT/paramedic combined Does not include volunteers
BLS-OES Survey	196,880 employed (189,792 – 203,968)	2005	EMT/paramedic combined Does not include volunteers Does not identify firefighters cross-trained as EMTs/paramedics.
BLS-Occupational Outlook Handbook	196,880 employed (189,792 – 203,968) This data source uses the OES data to categorize employment by work setting	2004-2005	EMT/paramedic combined Does not include volunteers Does not identify firefighters cross-trained as EMTs/paramedics.
2003 National EMS Survey	EMT-Basic: 485,287 EMT-Intermediate: 41,447 Paramedic: 142,544 TOTAL = 669,278	2003 survey of State EMS directors	All levels of EMT and paramedic Credentialed (State licensed) including volunteers Current employment status not indicated
NREMT database	Basic: 198,200 Intermediate: 15,288 Paramedic: 61,121 TOTAL = 274,549 certified	January 2007	EMT Basic EMT-Intermediate 85/99 Paramedic Includes volunteers Current employment status not indicated Includes military

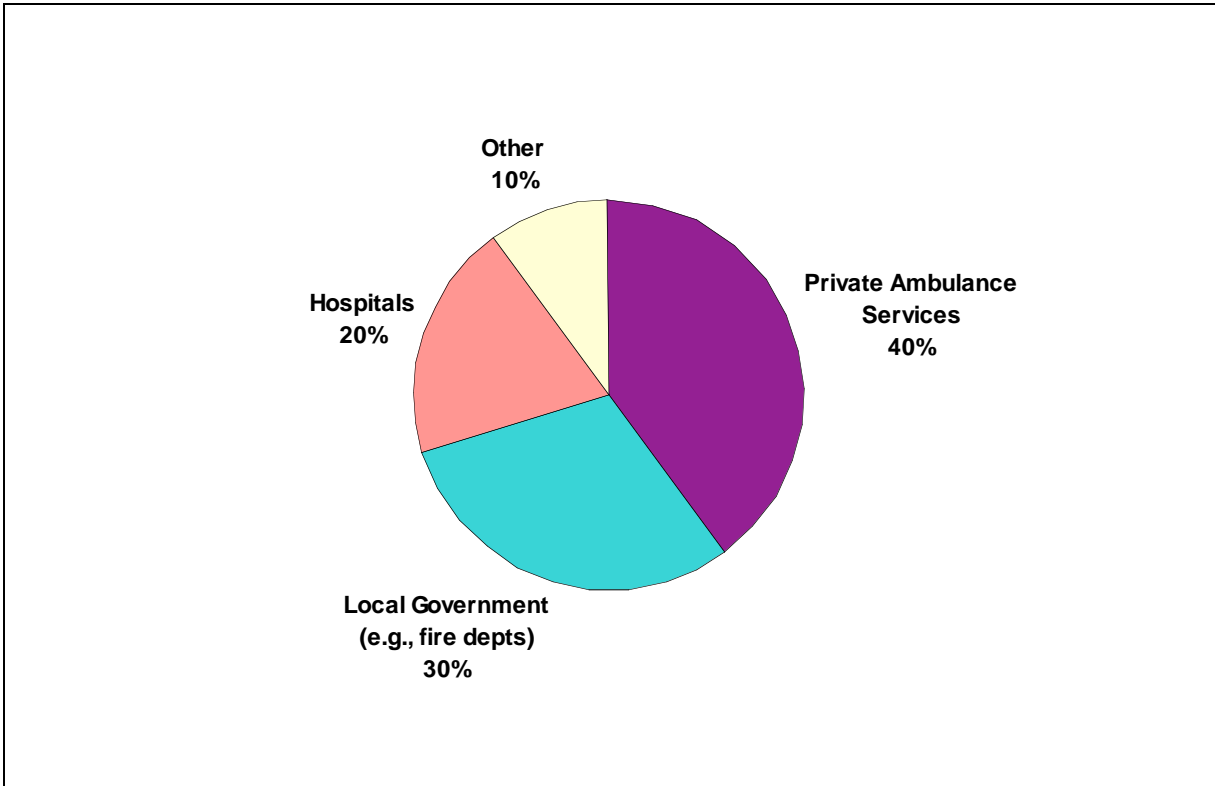
Source: UCSF Center for the Health Professions

The figures that follow depict employment of EMTs/paramedics over the period 2000-2005. The source of data used to create these figures is primarily from the BLS-administered Occupational Employment Statistics (OES) survey. This survey is widely considered the most robust source of employment and wage data available at the level of occupational detail that it provides. Due to changes in survey methodology and data collection procedures, use of OES data in this report is limited to the period of 2000-2005.

Two things are important to keep in mind when looking at these EMT/paramedic employment statistics. First, the data does not capture individuals who are working in a volunteer capacity. Second, there is likely an undercount of EMTs/paramedics because firefighters who principally work as EMTs/paramedics may have been categorized as firefighters.

Figure 3-7 depicts the settings in which paid EMTs/paramedics are employed using data from the Bureau of Labor Statistics, Occupational Outlook Handbook.

Figure 3-7. Work Settings of Paid EMT/Paramedics



Source: Bureau of Labor Statistics Occupational Outlook Handbook, 2004-05 Edition

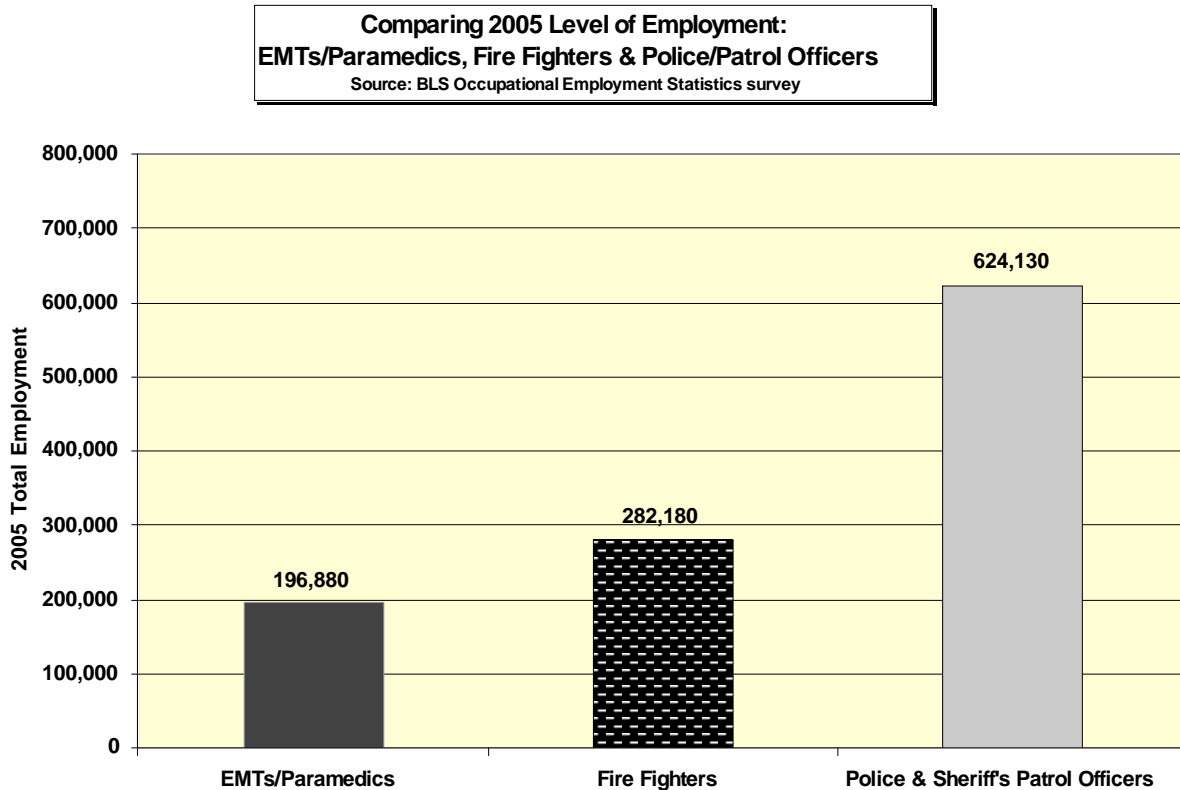
These data show that nationally, most employed EMTs/paramedics are found in the private ambulance industry (40%), followed by local government (30%). However, the data presented in this chart is for primary job. Some EMTs/paramedics may work for more than one type of service, either in a paid or volunteer capacity.

Workforce Supply

To reflect the dual relationship of EMTs/paramedics with the public safety and allied health fields, the current supply and recent growth in the supply of EMTs/paramedics was compared with other selected professions from these fields. Comparisons with public safety professions are shown in Figures 3-8 through 3-10. Those with allied health professions are in Figures 3-11 through 3-13.

Figure 3-8 shows employment estimates for EMTs/paramedics, police/patrol officers, and firefighters.

Figure 3-8. 2005 Total Employment of Selected Public Safety Professionals

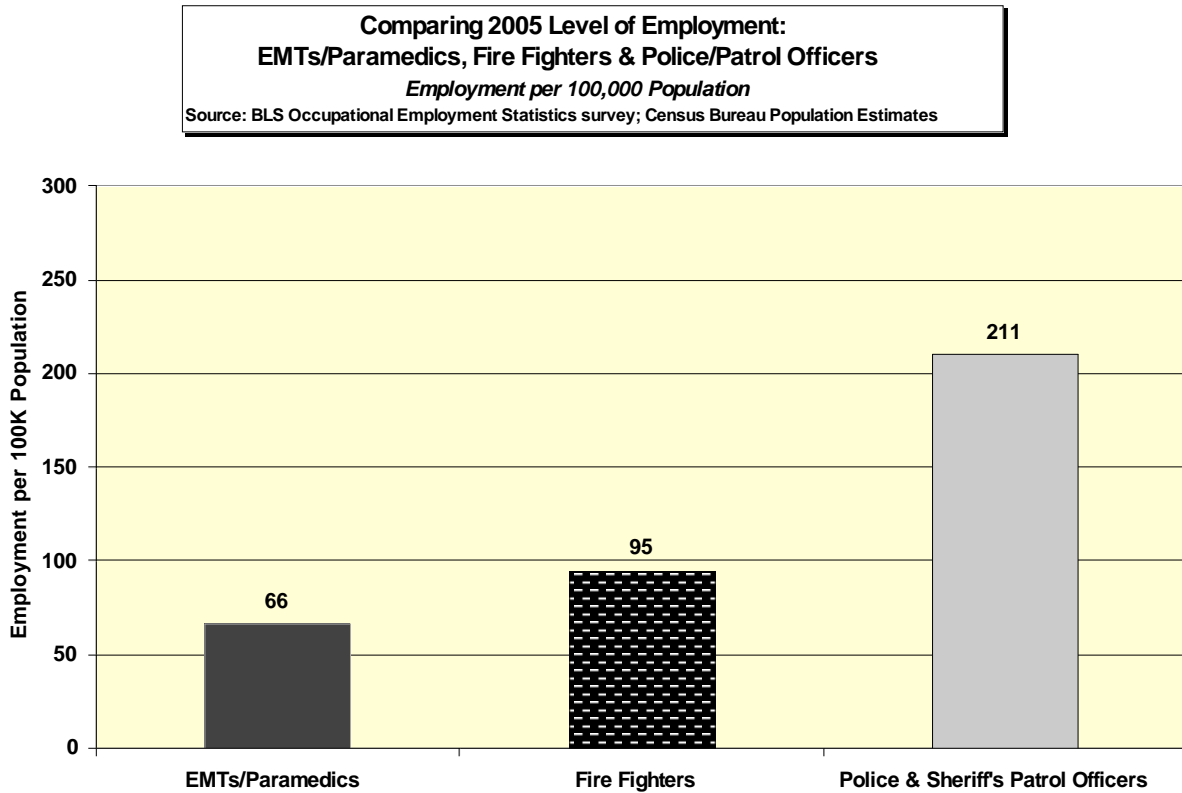


Source: BLS Occupational Employment Statistics Survey; Census Bureau Population Estimates, 2005.

Figure 3-8 shows that employed EMTs/paramedics were the smallest public safety workforce in 2005, compared to firefighters and police/patrol officers. Firefighters outnumbered employed EMTs/paramedics by about 1.4 to 1. Police/patrol officers outnumbered EMTs/paramedics by about 3 to 1, in 2005.

Another way to analyze workforce size is to use worker per population ratios. Per population ratios are a measure of workforce size relative to population size. These ratios are useful because they impart a broad understanding of a population's access to the services supplied by a profession. Per population ratios are also useful in comparing employment levels across professions or States. Figure 3-9 shows per population ratios of EMTs/paramedics and other types of public safety professionals.

Figure 3-9. 2005 Employment per Population of Selected Public Safety Professions

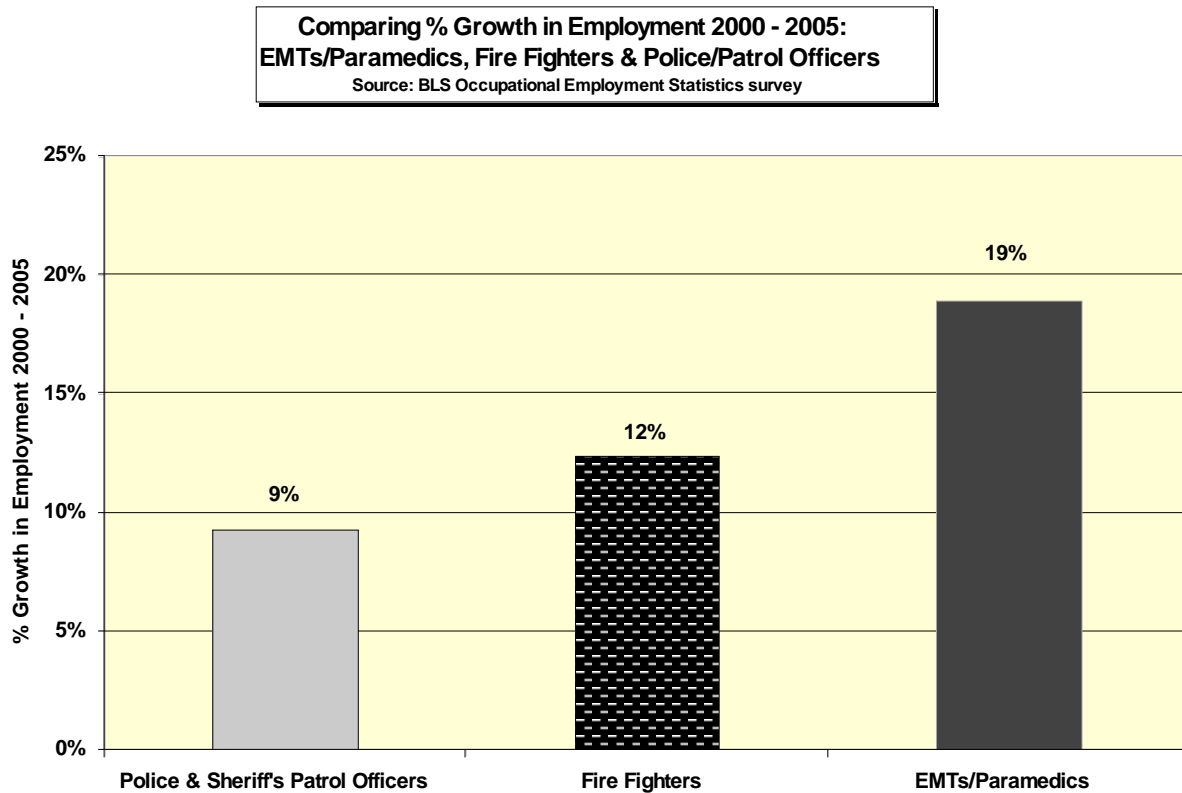


Source: BLS Occupational Employment Statistics Survey; Census Bureau Population Estimates, 2005.

Figure 3-9 shows that in 2005 there were 66 employed EMTs/paramedics for every 100,000 people in the national population. In comparison, there were 95 firefighters and 211 police/patrol officers for every 100,000 people.

Although there are many fewer employed EMTs/paramedics than employed firefighters or police/patrol officers, the employed EMT/paramedic workforce is growing at a faster rate than either of these other two workforces. Figure 3-10 displays the percentage of growth in workforce size for the three professions, from 2000 through 2005.

Figure 3-10. Comparison of Growth in Total Employment, Selected Public Safety Professions

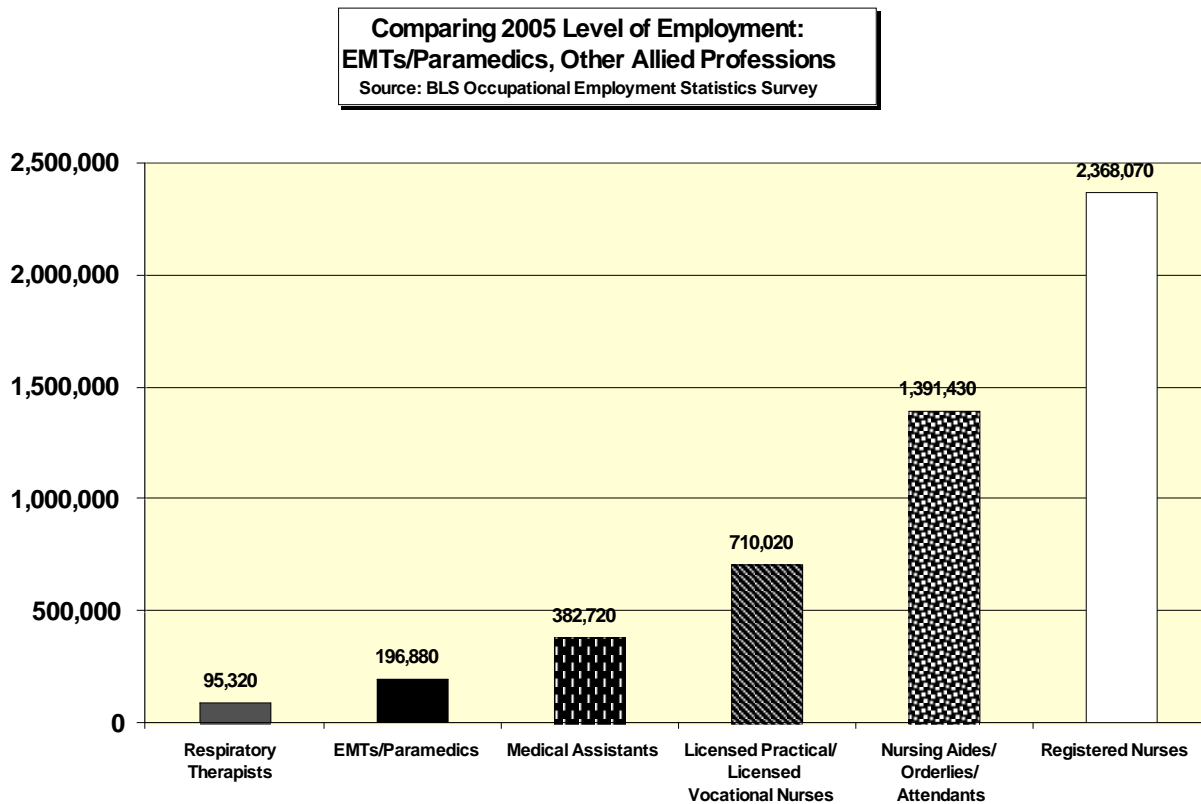


Source: BLS Occupational Employment Statistics Survey; 2000, 2005

Figure 3-10 shows that the paid EMT/paramedic workforce had grown 19 percent in 2005, relative to its size in 2000. By comparison, the police/patrol officer workforce had grown only 9 percent, and the firefighter workforce had grown only 12 percent. However, qualitative data suggest that some of the increase in EMT/paramedic employment could be due to the conversion of some volunteer services to paid services. There are no quantitative data to substantiate this possibility.

The next series of comparisons is between EMT/paramedics and other allied healthcare professions. One comparison group, nursing aides/orderlies/attendants, includes certified nursing assistants who have educational requirements roughly similar to those of EMTs. Others, including medical assistants, respiratory therapists, and L.P.N.s/L.V.N.s, have educational requirements similar to those of paramedics. Registered nurses are also included as a comparison group although generally the educational requirements are higher than for the other professions. Figure 3-11 contains estimated total employment for paid EMTs/paramedics and these comparison groups from 2005.

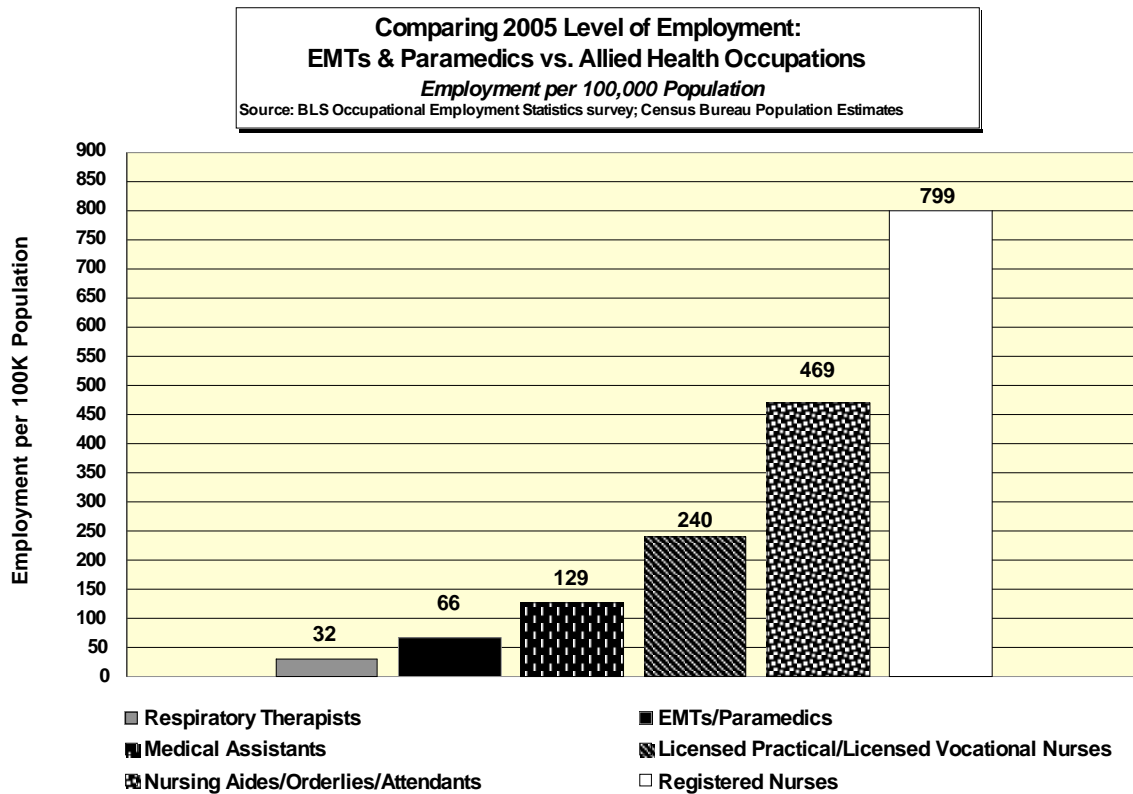
Figure 3-11. 2005 Total Employment of Selected Allied Health Professions



Source: BLS Occupational Employment Statistics Survey, 2005

This figure shows that the employed EMT/paramedic workforce is relatively small compared to several similar allied healthcare professions. In 2005, there were slightly fewer than 200,000 employed EMTs/paramedics. The respiratory therapist workforce was the smallest at about one-half the size of the EMT/paramedic workforce, while the medical assistant workforce was nearly twice the size. Nursing aids, orderlies, and attendants outnumbered EMTs/paramedics by about 7 times, and the largest allied healthcare workforce, R.N.s, is about 12 times the size of the EMT/paramedic workforce.

Figure 3-12. 2005 Employment per Population of Selected Allied Health Professions

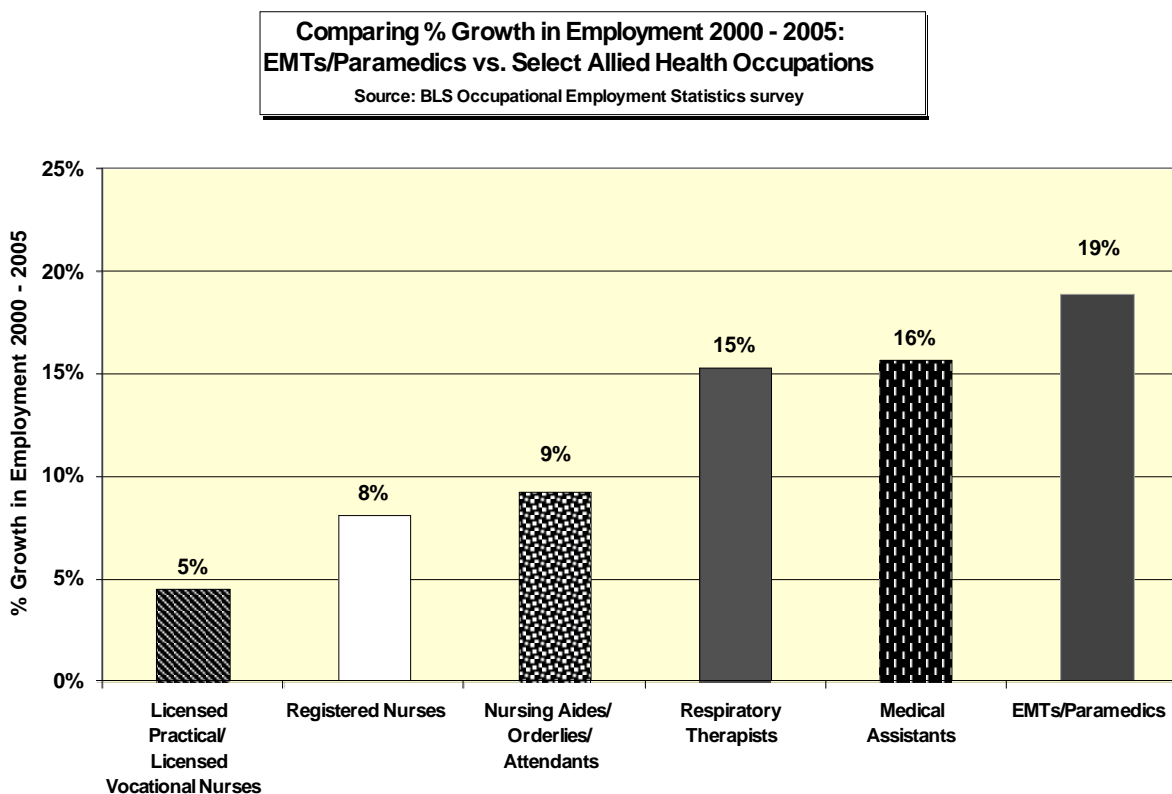


Source: BLS Occupational Employment Statistics Survey, 2005; Census Bureau Population Estimates

Figure 3-12 displays the per population ratios of these workforce groups. This figure shows that there are 799 R.N.s for every 100,000 members of the population of the United States, compared to 66 EMTs/paramedics, 240 L.P.N.s/L.V.N.s, and 32 respiratory therapists.

Although the paid EMT/paramedic workforce is currently small compared to some other allied healthcare professions, there remains the question of relative growth in these professions. Figure 3-13 displays the percent change in sizes of these professions in 2005, relative to their sizes in 2000.

Figure 3-13. Comparison of Growth in Selected Allied Health Professions



Source: BLS Occupational Employment Statistics Survey; 2000, 2005

Figure 3-13 shows that growth in employment of paid EMTs/paramedics is increasing faster than several similar allied healthcare professions. Between 2000 and 2005, the paid EMT/paramedic workforce grew at a rate of 19 percent, compared to only 5 percent for L.P.N.s/L.V.N.s, and 8 percent for R.N.s. The other fastest growing professions among the comparison groups were also relatively small professions; medical assistants grew 16 percent, and respiratory therapists grew 15 percent, during the same period. Growth in employment of EMTs/paramedics, including projected future growth, is discussed further in the workforce demand section of this report.

➤ Rural Workforce Supply

Data on the rural EMS workforce are inconsistent from locale to locale and not systematically collected within locales, making it difficult to get baseline workforce information and understand how the workforce is changing over time.³⁵ Very little data on rural EMS exists because of low call volumes, inadequate data collection systems, and limited resources for research in rural areas.³⁶ Voluntary workers are difficult to count; since they are not reimbursed on full-time or part-time basis, it is difficult to describe what proportion of the workforce they fill. A number of States have conducted analyses of their EMS workforces, but few national-level data exist.

Several policy documents regarding rural EMS have been developed^{21 37 38 39} the most notable and comprehensive being the *Rural and Frontier EMS Agenda for the Future*,³⁶ though there have been several others. These documents paint a highly consistent picture of rural and volunteer EMS workforce trends and concerns, and they form the basis for the following discussion of common understandings and policy issues. The documents are supplemented with information from non-peer-reviewed journal articles and reports. Evidence from peer-reviewed articles and research reports was included wherever possible.

➤ **Tribal Workforce Supply**

A study of tribal EMS programs, which compared their provider-to-population ratios with those of the States within which tribal EMS programs operated, found large disparities between tribal EMS staffing levels and those of the States as a whole.⁴⁰ Disparities were especially pronounced at the EMT-B level, where tribal staffing was lower than in any of the 20 States included in the analysis. Tribal EMS funding through the Indian Health Service had only increased slightly for the 15 years leading up to the 2001 report, while run volumes had more than tripled. The study authors concluded that there was a significant deficit in supply of tribal EMS workers and projected that tribal EMS funding would need to more than double in order to reach parity with the average level of staffing in those States.

➤ **Volunteer Workforce Supply**

Low-volume, rural services are much more likely to rely on volunteer staff (74% of rural low-volume services compared to 23% of other providers).⁴¹ Some States classify a majority of their agencies as volunteer. For example, Virginia reports that a majority of their agencies and workforce are volunteer agencies.^{42 43} In Nebraska, only 14 percent of agencies reported having paid personnel in 2001.⁴⁴ Fifty-nine percent of Minnesota's ambulance personnel in 2002 were volunteers, but the proportion was higher in rural areas, 77 percent, compared to 46 percent in urban areas.⁴⁵ Though rural areas tend to use more volunteers, some of the same issues affect urban volunteers and urban systems that rely heavily on volunteers.

Unfortunately, there is no national source of data on volunteering that identifies EMS volunteers in a distinct category. The CPS has a supplemental survey on volunteering, but it does not identify types of volunteers; rather, it identifies the main type of organization for which respondents volunteer and the main volunteer activity they performed.⁴⁶ In 2006, the BLS survey reported that the main volunteer activity of 2.9 percent of survey respondents was to “provide counseling, medical care, fire/EMS, or protective services.”

Despite the lack of specificity in the CPS volunteer supplement, it is likely that trends in EMS volunteer workforce supply are related to trends in volunteerism rates in general. A recent review of volunteer trends since 1974 found that volunteering is at a 30-year high.⁴⁷ However, this finding does not substantiate the views of many key informants. One factor that may explain this difference is that the largest share of volunteers is currently most likely to volunteer for religious organizations.⁴⁷

Estimating the Size of the Volunteer EMS Workforce

Volunteer EMTs and paramedics are important components of the total supply of the EMS workforce, though their presence is much greater in rural areas than in urban areas.³³ As a healthcare profession, EMS is unique in its use of volunteers. No other healthcare profession rou-

tinely uses volunteers to provide professional services. Among public safety professions, volunteers are heavily relied on by both EMS and firefighting. Estimating the size of the volunteer workforce in EMS is complex because volunteers usually provide variable amounts of part-time service. Estimating their full-time equivalent (FTE) contribution to the overall workforce is even more difficult. Qualitative data suggest that the supply of volunteer EMS workers is declining. There is some evidence that volunteer EMS systems are increasingly converting to partially or fully paid staff.^{42 48}

Table 3-2 includes information on sources of data that can be used to estimate the size of the volunteer EMT and paramedic workforce. These data present, at best, a very limited estimate of the actual volunteer workforce size. However, they illustrate the types of data and sources that could be further developed to provide better information on the contributions of volunteers to the EMS workforce.

Table 3-2. Sources of Data on Number of Volunteer EMTs and Paramedics

Source	Number	Year	Provider Type
CPS Volunteer Supplement	Did not analyze due to data limitations	Sept 2005	EMS services combined with counseling, medical care and protective services Organization categories for volunteer activities not specific to EMS services
LEADS survey	Volunteers EMT-Basic: 49.8% Paramedic: 21.8%	2004	EMT-Basic Paramedic
Survey of State EMS Directors (<i>Mears, G.</i>) ³³	44 States reporting percent of providers who are volunteers Avg (all States): 46.6% Median = 50.5% Range = (0% -90%) Avg: 73% in 12 most rural States	2003	All levels of EMS providers including First Responder, all levels of EMT, and Paramedic
NFPA	305,150 career firefighters 795,600 volunteer firefighters	2004	Firefighters (career and volunteer)

Source: UCSF Center for the Health Professions

Using the above data and extrapolating between sources, one could calculate a rough estimate of the size of the volunteer workforce. Applying the percentage of volunteers from the 2004 LEADS data to the number of providers from the 2003 State EMS director survey yields an estimated 241,672 State-licensed EMT-Bs and 31,074 State-licensed paramedics who are volunteers. This results in a total estimate of 272,746 State-licensed volunteer providers in 2003.^{vii} An alternate approach, which assumes that all employed firefighters are cross-trained as

^{vii} $(0.498 * 485,287) + (0.218 * 142,544) = 272,746$

EMTs/paramedics, adds the estimates of the number of EMTs/paramedics and firefighters from 2003 OES data and subtracts them from the number of EMT and paramedic licenses from the 2003 State survey, yielding an estimate of 244,408 State issued EMS licenses that are likely to be for volunteers.^{viii} These estimates must be viewed with caution. Even if they were an accurate count, it is unknown how much work effort these estimates represent.

National Emergency Medical Services Information System

The National EMS Information System (NEMSIS) has the potential to provide detailed data about EMS system configurations and the current supply and composition of the EMS workforce. This collaborative project has been in development since 2001 and is intended to establish a national EMS database that will collect data from every local EMS system in the country. The NEMSIS data dictionary defines over 400 data elements at the EMS incident level. NEMSIS data may eventually provide more insight into the impact of EMS provider levels, staffing configuration, or other similar factors on workforce issues. However, the level of analysis that can be done will depend upon the data elements collected at the State level. Detailed information on NEMSIS and its standard data set can be found at <http://www.nemsis.org>.

Future Supply - The Educational Pipeline

Several of the key research questions that guided this assessment pertain to education and its role in the production, size, and composition of the EMT and paramedic workforce. Understanding the relationship of EMT and paramedic education to issues of worker recruitment, retention, satisfaction, diversity, and supply of and demand for workers, is fundamental to understanding the Nation's EMS workforce.

More than 30 papers related to the education and training of EMTs and paramedics were reviewed for this report. Most were about specific types of training or components of training programs. Several papers focused on skills and requirements needed to treat pediatric patients, such as detecting and reporting child abuse⁴⁹ and the need for continuing education in order to maintain skills and a comfort level in treating pediatric patients.^{50 51 52} Other papers focused on EMT knowledge of procedures for aspirin use, wound care, intraosseous infusion, infectious disease control, and incidents of domestic violence.^{53 54 55 56 57} Most of these surveys and assessments were conducted on a cross-sectional basis in individual communities, thus findings cannot easily be generalized over time or across communities.

Several other papers focused on predictors of success on certification exams. Dickison and colleagues analyzed data for over 12,000 candidates for the NREMT paramedic exam during 2002.⁵⁸ They found that students who attended an accredited program were approximately 1.5 times more likely to pass the certification exam than those who attended a nonaccredited program. As part of the LEADS study, a snapshot (cross-sectional) survey on education was conducted in 1999 (Appendix D3). Overall, EMTs and paramedics reported that they were satisfied with their education and felt well prepared for clinical activities except in the areas of childbirth and pediatric care.⁵⁹

^{viii} $699,278 - (181,750 + 273,120) = 244,408$

A NHTSA sponsored two-part national study of educators and the education process was connected with the development of the EMS Education Agenda for the Future. In the first phase, a national survey was conducted with a sample of EMS educators.⁶⁰ The 1,691 respondents were considered adequate to generalize to the 15,000 known educators. The survey included 53 items concerning instructional characteristics, infrastructure, and attributes of current didactic practices. In the second phase of the study, an expert panel was used to identify common practices in EMS education derived from the data analysis in phase one.⁶¹ This group identified the most important needs in EMS education, including the following: to enhance the teaching skills of EMS educators by including more educational theory in their initial educator training and continuing education, to improve evaluation procedures for assessment of student performance, and to build alliances with professional accrediting services.⁶¹ These goals, part of the EMS Education Agenda for the Future, are to be addressed by EMS education programs around the country.

➤ **EMS Education in the United States**

Enrollment and completion data from EMS education programs are the best sources of estimates of future workforce supply. In the model of EMS workforce supply presented earlier in this report, enrollments are represented in the second step of the process, and completions are among the outputs of that step.

The state of EMT and paramedic education in the United States is difficult to assess for several reasons, including the variability in training requirements across States and the failure of many of the data sources to distinguish between EMT and paramedic programs. Additionally, many non-accredited or non-reporting programs are not included in the data sources that track programs and graduates. EMS education varies across States, although most education programs are based on the NHTSA National Standard Curricula. The original EMT-Ambulance National Standard Curriculum was funded and developed by NHTSA and completed in 1971. Since then it has been updated periodically, and curricula for the more advanced practitioner levels have also been developed. Currently, there are National Standard EMS Curricula for First Responders, EMT-Basics, EMT-Intermediates/85, EMT-Intermediates/99, and EMT-Paramedics.

As noted above, most States use the National Standard Curricula to some degree. In the NCSEMSTC survey of State training coordinators, 95 percent of respondents (42 States) reported that their State had accepted the National Standard Curricula at both the EMT-Basic and EMT-Paramedic levels. Additionally, one State had accepted the EMT-Basic curriculum only, and another had accepted the EMT-Paramedic curriculum only.

➤ **A Systems Approach to EMS Education**

Although the EMS National Standard Curricula provide a common framework, consistency in EMT/paramedic programs across States is not yet achieved.⁶² Weaknesses in EMT/paramedic education are discussed in detail and a proposal for developing a national system of EMS education is outlined in the *EMS Education Agenda for the Future: A Systems Approach*.⁶² Establishing a systematic EMS educational system is the major objective of the agenda, which includes five components for meeting this goal. Two of these components, a national EMS core content⁶³ describing the entire domain of out-of-hospital care and a draft national scope of practice model^{63 64} defining the levels of out-of-hospital EMS providers, have been completed.

➤ **Accreditation of EMS Education Programs**

EMS education programs at the paramedic level are accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), through its Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP). Some paramedic programs may be State-approved but unaccredited and others may have both State approval and CoAEMSP accreditation. Programs at the EMT level are not accredited by any private organization.

➤ **How Many EMT and Paramedic Programs Are There?**

Enumerating the EMS education programs for both EMT and paramedic education poses some difficulty. One reason is that programs may be highly responsive to local supply and demand dynamics, both from employers and potential students. That is, programs may be subject to closures and re-openings due to local fluctuations in demand for EMTs and paramedics or the availability of students to fill slots. Another reason is that programs having only State approval, but not CoAEMSP accreditation, are less likely to be found in national counts of education programs. Additionally, CoAEMSP only accredits paramedic programs, thus it is more challenging to get an accurate count of EMT programs.

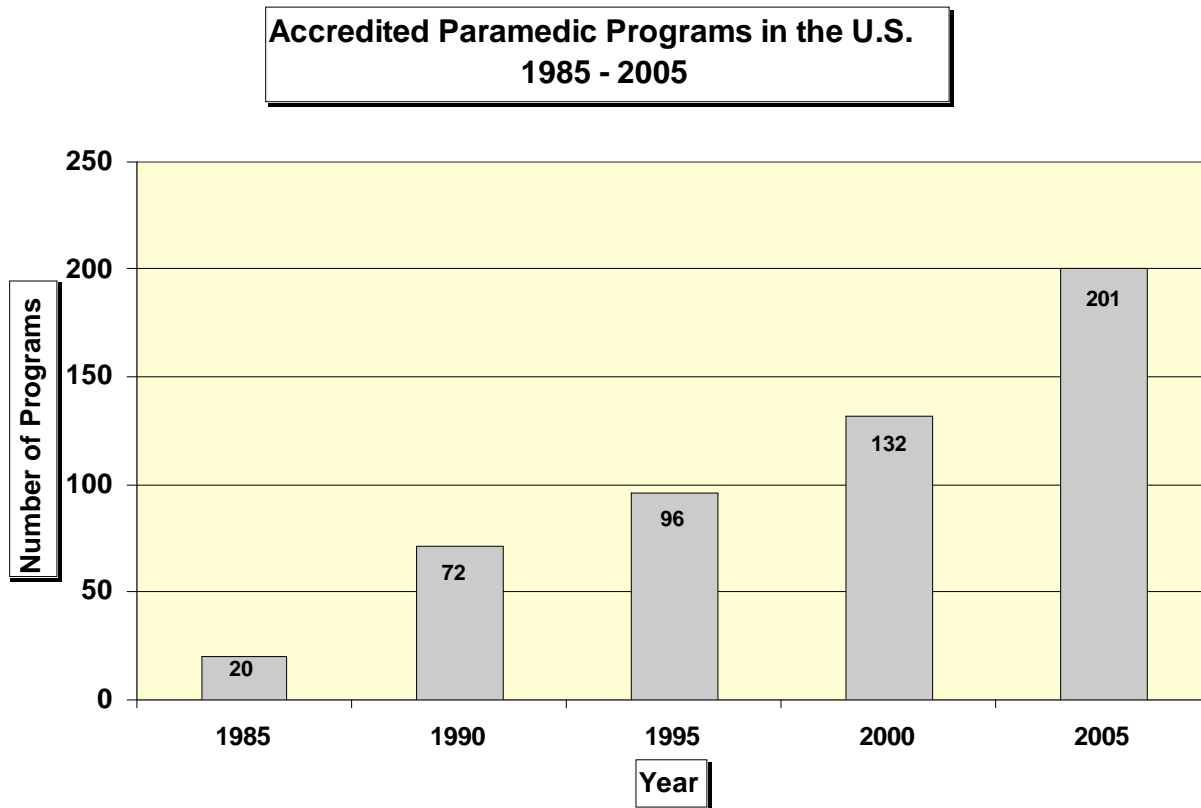
In Figures 3-14 through 3-18, data come from two sources: the Integrated Postsecondary Education Data System (IPEDS) and the American Medical Association (AMA) Health Professions Education Data Book. IPEDS is the core postsecondary education data-collection program at the Federal level. It features a battery of surveys that are administered to all institutions having higher education as their primary purpose. All institutions that participate in Title IV funding programs are required by law to participate in these surveys.

IPEDS is the most comprehensive source of education data available. However, a substantial limitation of IPEDS data with regard to EMS education programs is that most proprietary programs, which represent a large proportion of EMS education programs, are probably not included in the IPEDS database. This is because programs located outside universities and colleges are less likely to report to IPEDS. Another limitation of IPEDS is that programs cannot be identified by level (i.e., as EMT-Basic versus paramedic). Program length can be identified in IPEDS data, but anecdotally many paramedic programs are less than a year in length, so program length cannot reliably distinguish paramedic from EMT programs.

The AMA data for education programs come from a survey of schools and programs that are accredited by CoAEMSP. This data should be considered a subpopulation of the much larger universe of IPEDS. The AMA survey includes data for CoAEMSP accredited paramedic programs only. In the context of paramedic training programs, this is a relatively small number of schools. The AMA data is used here to distinguish accredited from nonaccredited programs. These data also show the importance of the movement towards accreditation of EMT-Paramedic education programs.

It must be noted that some CoAEMSP accredited paramedic programs do not respond to the AMA survey, thus the program list in the AMA's Health Professions Education Data Book does not represent the entire population of accredited paramedic programs. According to CoAEMSP there were 220 accredited paramedic programs in 2005.⁶⁵ Yet, as shown in Figure 3-14 below, only 201 programs responded to the 2005 AMA survey.

Figure 3-14. Accredited Paramedic Programs in the U.S., 1985-2005



Source: AMA Health Professions Education Data Book

This figure illustrates a steady upward trend in accredited paramedic education programs over the past 20 years. Since 1985, the number of accredited programs has grown approximately ten-fold nationally.

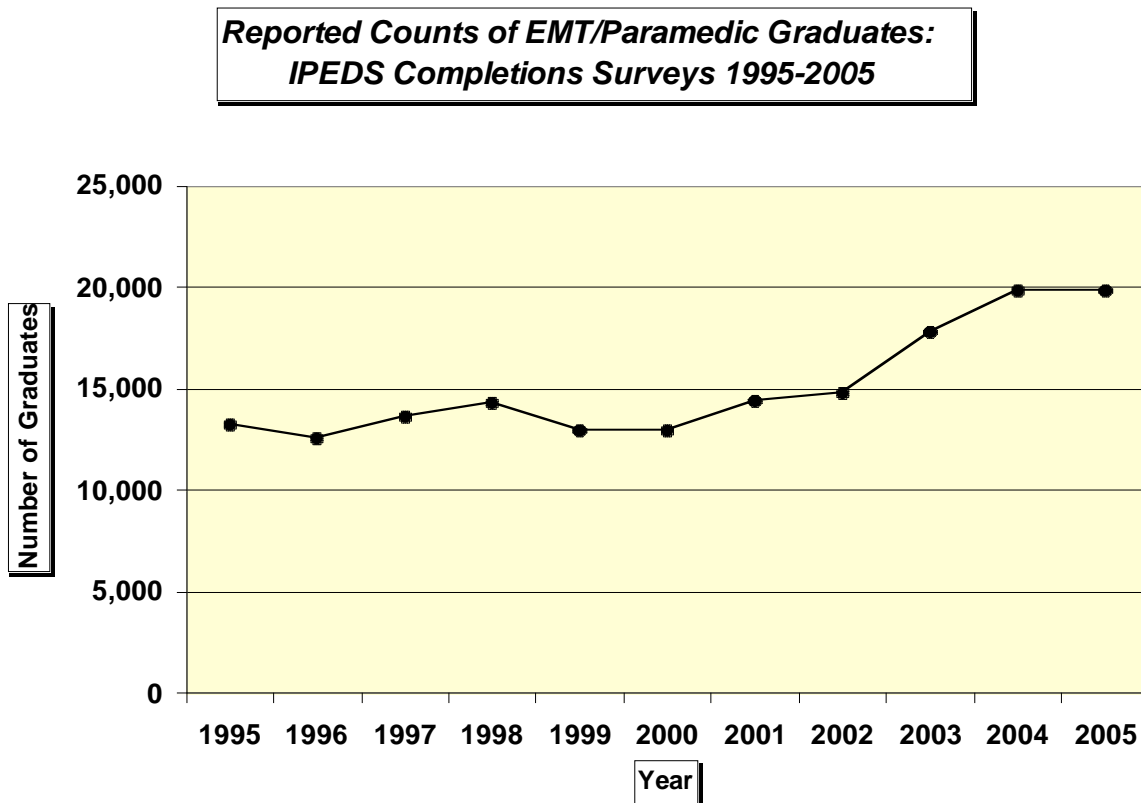
➤ **NCSEMSTC Survey of State Training Coordinators**

As noted, the 220 CoAEMSP accredited programs are only a fraction of the total number of paramedic programs in operation, and counting EMS programs in general is difficult. According to the NCSEMSTC survey of State training coordinators, among the 42 States responding to the survey there were 639 credentialed (i.e., accredited or otherwise State-approved) paramedic programs in 2005. This finding shows that a substantial majority of paramedic programs are not CoAEMSP accredited. It also underscores the difficulty involved in counting the total number of paramedic programs in the nation. As noted above, not all programs report to IPEDS and the number of education programs changes on an ongoing basis. Informal follow-up to the survey with State training coordinators revealed that paramedic programs may vary greatly in size and location. Some programs are located in small, rural provider agencies and have as few as two or three students, while others are located in colleges or universities and have as many as 50 or more students. Even at the State level, it is difficult to track whether smaller programs are active at any given time; on a national level, the number of paramedic education programs is unknown.

➤ **Program Graduates and Awards**

IPEDS completion data includes the total number of certificates awarded by program length or award level. Awards are represented here as a proxy for actual graduates. IPEDS captures programs based in universities and community colleges; proprietary and provider-based programs and their graduates are not included in IPEDS data. Figure 3-15 shows the reported counts from IPEDS of EMT and paramedic graduates from 1995 to 2005.

Figure 3-15. Reported Counts of EMT/Paramedic Graduates, IPEDS Completion Surveys, 1995-2005

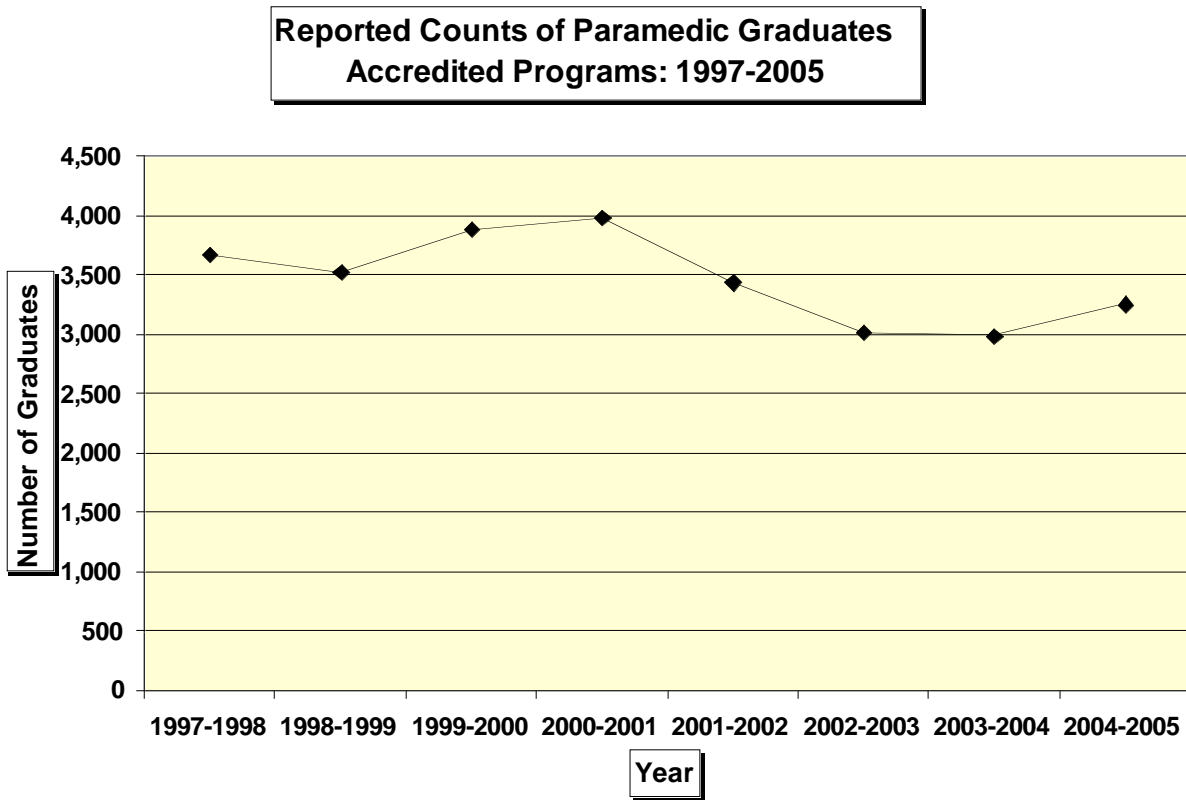


Source: IPEDS Completion Surveys, 1995-2005

This figure shows an increase of about 6,600 in the number of annual paramedic graduates between 1995 and 2005.

Longitudinal counts of paramedic graduates from accredited paramedic programs, using AMA data, are shown in Figure 3-16.

Figure 3-16. Reported Counts of Paramedic Graduates, Accredited Programs 1997-2005



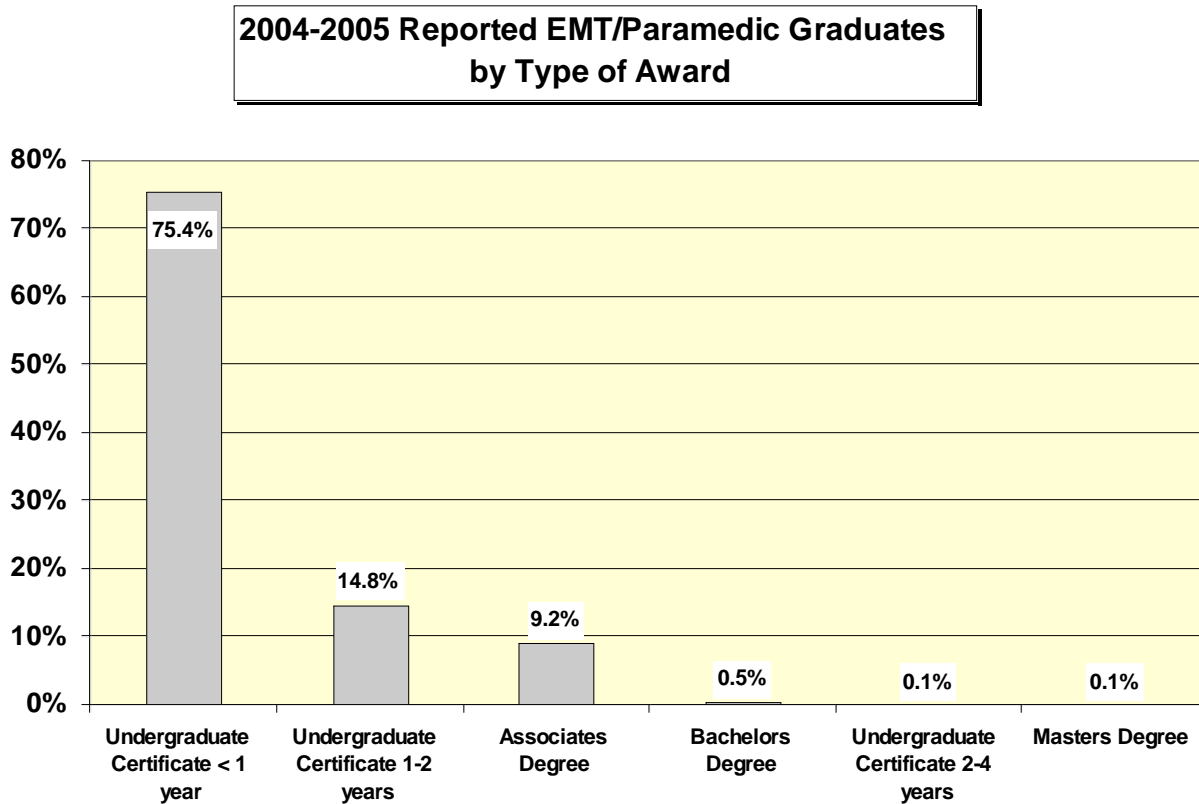
Source: AMA Health Professions Education Data Book

Interestingly, Figure 3-16 indicates that the number of graduates from accredited paramedic training programs trended downward from the 2000-2001 academic year until 2003-2004. This serves as a counterpoint to the Figure 3-14, which shows the upward trend in the number of accredited programs during that period. It may be that while the number of accredited programs was increasing, the size of the programs was decreasing. However, the most recent data shows an increase in the number of graduates, which may continue in the near future.

Graduates by Type of Award

Counts of graduates by type of award are presented in Figure 3-17.

Figure 3-17. Reported EMT and Paramedic Graduates by Type of Award, IPEDS Completion Survey 2004-2005



Source: IPEDS Completion Surveys, 2004-2005

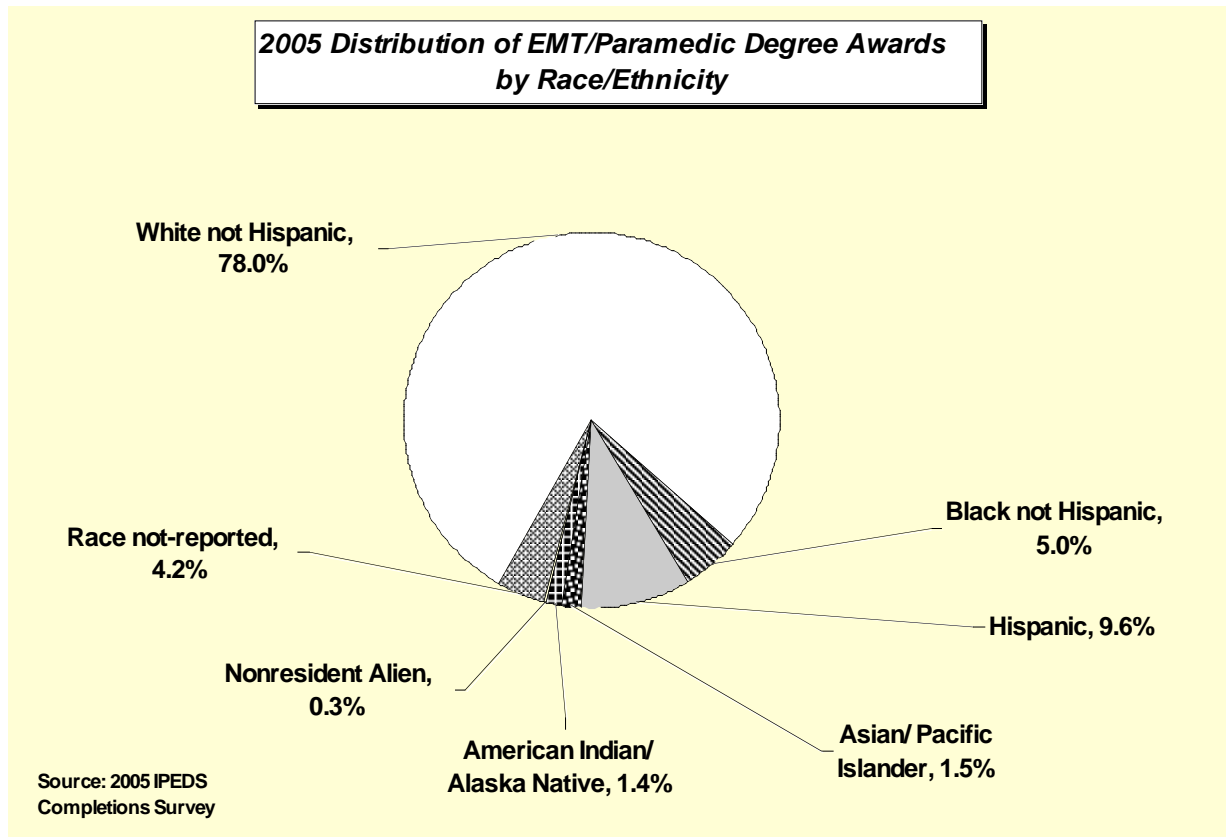
According to IPEDS, EMT and paramedic training programs are concentrated at the level of certificates below the Baccalaureate level and take less than one year to complete. According to the AMA, the approximate number of hours for EMT-Basic programs is 110, the approximate number of hours for paramedic programs is 1,000, and the average length of paramedic programs is 15.4 months.²⁹ However, these averages cannot be reliably translated into years.

Demographic Characteristics of EMT/Paramedic Graduates

IPEDS data can be separated to show demographic distribution according to gender and race/ethnic category. As expected, EMT and paramedic graduates are primarily male. About 30 percent of graduates were female in 2005 IPEDS-reporting programs. The race categories are mutually exclusive and include White non-Hispanic, black non-Hispanic, Hispanic, Asian/Pacific Islander, and American Indian/Alaskan Native. Non-resident alien and unknown

race/ethnicity graduates are also reported. All race/ethnicity data is self-reported by students. Figure 3-18 shows the breakdown of EMT and paramedic graduates by racial/ethnic category.

Figure 3-18. EMT/Paramedic Degree Awards by Race Category, 2005



Source: 2005 IPEDS Completion Survey

The race/ethnicity demographics of recent EMT and paramedic graduates look quite similar to that of the current EMT and paramedic workforce. However, this distribution differs from the general population in many States and the Nation as a whole because minorities are underrepresented. Graduates of EMT and paramedic education programs are mostly White non-Hispanic (78%), a group that makes up 70 percent of the national population.⁶⁶

Credentialing: Certification, Registration, and Licensure

Credentialing is a general term that includes professional certification, licensure, and registration.^{67 ix} These three credentials are common in skilled health occupations and have a significant impact on the supply of healthcare professionals because they place restrictions on entry into the professions. In Figure 1-1 of this assessment report (i.e., the supply model), certification is the second step and licensure is the third.

^{ix} Program accreditation is also regarded as a type of credentialing.

Professional certification verifies that a person has the necessary expertise to perform the functions of their profession, and is granted to individuals who have passed an exam in a particular specialization, after satisfying certain educational and training prerequisites for examination in that field. Certification is distinguished by three criteria: it is voluntary; it is granted by a private (nongovernmental) entity; and it identifies individuals who have demonstrated competence in their field by meeting predetermined, standardized criteria.^{67 68} Certification is often, but not always, time-limited.

The National Organization for Competency Assurance (NOCA) has identified three types of registration.⁶⁷ The first is analogous to certification, except that registration is granted by a governmental agency. The second refers to a registry or list of practitioners in a field, which is maintained by a governmental entity, but does not require practitioners to meet any competency criteria. The third refers to a professional designation that is defined by governmental regulations, such as scope of practice. However, the government entity does not maintain a registry or list of practitioners who meet the regulations.

➤ **Certification: Process and Requirements**

Professional certification typically hinges on successful completion of a competency examination that is designed and administered by the certification agency. Usually the examination involves a substantial written component, but it might also involve a practical or hands-on component. Candidates for certification examinations are usually required to have completed an educational program in the field for which they will be examined, and of these programs virtually all include practical skills requirements, such as completion of a minimum number of work hours in the field through some type of internship.

A certification agency usually also requires that the educational programs from which candidates have graduated be accredited. As noted, CoAEMSP accredits paramedic programs only. An alternate credential for educational programs is approval. Approval is generally granted by a State to educational programs that meet its standards. State approval of education programs is common for EMT and paramedic programs.

➤ **The National Registry of Emergency Medical Technicians (NREMT)**

The NREMT is a national certifying body for EMTs and paramedics. The NREMT currently provides competency evaluation and testing for five levels of emergency medical workers: First Responder, EMT-Basic, EMT-Intermediate/85, EMT-Intermediate/99, and EMT-Paramedic.

NREMT Requirements

Table 3-3 contains NREMT registration requirements by State and provider level.

Table 3-3. NREMT Registration Requirements by State, January 2007 ⁶⁹

State	EMT-B Only	Paramedic Only	Both **	Neither
Alabama			X	
Alaska		X		
Arizona			X	
Arkansas			X	
California			X	
Colorado			X	
Connecticut			X	
Delaware		X		
District of Columbia		X		
Florida	X			
Georgia			X	
Hawaii			X	
Idaho			X	
Illinois				X
Indiana		X		
Iowa			X	
Kansas		X		
Kentucky			X	
Louisiana			X	
Maine	X			
Maryland		X		
Massachusetts				X
Michigan			X	
Minnesota			X	
Mississippi			X	
Missouri			X	
Montana			X	
Nebraska			X	
Nevada			X	
New Hampshire			X	
New Jersey		X		
New Mexico		X		
New York				X
North Carolina				X
North Dakota			X	
Ohio			X	
Oklahoma			X	
Oregon			X	
Pennsylvania		X		

State	EMT-B Only	Paramedic Only	Both **	Neither
Rhode Island			X	
South Carolina			X	
South Dakota			X	
Tennessee			X	
Texas			X	
Utah				X
Vermont			X	
Virginia		X		
Washington		X		
West Virginia			X	
Wisconsin			X	
Wyoming				X
	2	11	32	6

**Includes EMT-Basic and EMT-Paramedic.
Source: NREMT

The table shows that 45 of the States and the District of Columbia require NREMT certification for at least some levels of EMS providers. Thirty-two States require it at both provider levels; two require it only of EMT-Basics, and eleven only of paramedics. The table does not show if States require their EMS providers to re-certify with the NREMT or have other levels of EMS licensure.

Currently, a few States require recertification at the EMT-Basic and/or paramedic levels. These States include the following: Louisiana, Maryland, Mississippi, Montana, and North Dakota.⁷⁰

➤ Definition of Licensure

Licensure is a designation of legal status granted by a State, which permits licensees to practice their profession. Like certification, it regulates entry into professions and therefore affects supply. Some States require provider certification as a prerequisite for licensure. Some States refer to licensure as certification, a practice that has contributed to confusion over the distinction between certification and licensure.

The factor that distinguishes licensure from certification is that licensure legally authorizes individuals to practice a profession and prohibits unlicensed individuals from practicing a profession, regardless of their certification status. From a legal standpoint the critical point is that certification alone does not grant the legal right to practice. According to Thomas G. Abram, legal counsel for the NREMT,

“Regardless of what descriptive title is used by a State agency, if an occupation has a statutorily or regulatorily defined scope of practice and only individuals authorized by the State can perform those functions and activities, the individuals are licensed. It does not

matter if the authorization is called something other than a license; the authorization has the legal effect of a license.”⁶⁸

Thus, NREMT certification is not equivalent to licensure, whether or not it is used by a State as a prerequisite to licensure.

➤ **State Credentialing and Licensure Requirements**

Inconsistent use of terminology and a lack of reliable data sources cause difficulties in delineating EMS credentialing and licensure requirements by State. One commonly used source of State licensing requirements is “CareerOneStop,” which is an “integrated suite of national Web sites” sponsored by the U.S. Department of Labor.⁷¹ This source of information for employers, students, and job seekers includes a career information Web site called “America’s Career InfoNet,” which features a searchable database of licensure requirements by State and occupation.^{72 73} Searching all States on the phrase “emergency medical technicians and paramedics” yields a crosswalk, or comparison of information between States, of licensing requirements for the field of EMS. As of this writing, there are licensure requirements for thirty-9 of the 50 States and the District of Columbia listed in the crosswalk table.⁷⁴

While this licensure database is undoubtedly a valuable tool, it has limitations and inaccuracies. It is unclear why EMS licensure information for some States is incomplete. Possible explanations could include that States do not report to the databases that feed into the crosswalk database, or States that identify their licensure process as certification are less likely to be found in the licensure database.

An informal internet search reveals that most States not listed in the crosswalk do license EMS providers. Missouri, for example, is not found in the crosswalk, but it licenses both EMT-Basics and EMT-Paramedics.⁷⁵ Washington and West Virginia are two States not listed in the crosswalk that have EMS certification that is functionally equivalent to licensure.^{76 77} This is made clear as documents available on their State EMS Web sites state that one cannot work or treat patients without a valid State certification card in one’s possession.^{76 77} In total, ten States not listed in the crosswalk do require licensure of EMS providers. Thus, this licensure database cannot be used as a reliable source on licensure until it has been updated.

Recruitment and Retention of EMTs and Paramedics

In a review of the literature, there were few papers focused solely on factors related to the recruitment and retention of EMTs and paramedics. Several of the papers on recruitment and retention were generated from the LEADS study.

The first LEADS survey, conducted in 1999, included a 43-item core survey and 16-item supplement sent to 5,764 EMTs and paramedics. There were 1,790 respondents, with a response rate of 31 percent. An interim report using 2002 LEADS data describes demographic characteristics of the workforce.⁷⁸ EMTs and paramedics were primarily male (71.2% and 69.0% respectively), with an average age of about 35 years (both), and predominantly White (90.2% and 92.3% respectively). About half, 48.6 percent of EMTs and 54 percent of paramedics, had an associate or higher college degree. Of interest from a recruiting perspective is data on the industry in which EMTs and paramedics were previously employed. Not surprisingly, many were students (11.2% of EMTs and 19.2% of paramedics). The next highest percentage were in

healthcare (14.4% of EMTs and 11.2% of paramedics). The remaining EMTs and paramedics were spread among a wide variety of industries prior to entering EMS. Few were unemployed prior to becoming EMTs and paramedics. Regarding retention, of the respondents, less than 5 percent of EMTs and 7.0 percent of paramedics indicated they would probably or definitely leave the profession within the next 12 months.

A 2003 paper from the LEADS study presents findings from the third snapshot survey conducted in the study (Appendix D2), which focused on compensation, benefits, and satisfaction.⁷⁹ Compensation, benefits and other rewards, such as recognition, are factors that may be associated with worker retention. The authors found that pay and benefits are likely to impact both recruitment and retention in the industry.

A paper by Patterson and colleagues reports on a qualitative focus group study conducted with EMT and paramedic participants at a State conference and suggests several key themes in EMT and paramedic recruitment and retention.⁸⁰ Participants indicated that working in EMS had not been their original career goal. Second, an EMS career provided strong emotional and physical experiences including stress and dissatisfaction on the one hand, and on the other hand, a strong sense of camaraderie and the feeling of making a difference in people's lives. The third theme raised by participants was that the educational process for EMTs and paramedics is "underdeveloped" and could be improved to lead to college credit and increased career opportunities. This study was limited in that it involved a small number of participants in only one State; however, the findings concur with other qualitative findings discussed later in the report.

Chng and colleagues surveyed the EMS workforce in Texas with the goal of creating a profile of workforce diversity, location, tenure, and certification to enable employers to improve recruitment and retention.⁸¹ They found that urban providers were younger, more educated, more likely to be compensated, and reported a lower level of "burnout."^x The authors discussed several implications for recruitment and retention including the need for flexible work schedules, incentives for volunteers to become certified, and a training schedule that accommodates the needs of volunteers.⁸¹

Recruitment and Retention in Rural Areas

Both recruitment and retention of providers are commonly cited as the greatest challenges facing rural EMS.^{48 82} For example, in Nebraska about half of all EMS agencies reported needing assistance with recruitment and retention.⁴⁴ Suggested contributors to this problem include a more general trend of declining volunteerism and the inability of rural agencies to pay competitive wages and offer career advancement opportunities.^{45 83} Truncated career ladders may be related to a perceived lack of integration of EMS into the larger health care system, as State EMS directors indicated in a 2001 survey.⁸⁴

The quality of management has the potential to affect both recruitment and retention. One study of 250 rural EMTs found that supervisory practices encouraging open expression and group problem-solving led to more supportive relationships among EMTs, decreasing occupational stress and depression.⁸⁵ Yet there is a perceived shortage of rural EMS personnel with

^x Burnout was measured using Revicki's Work-Related Strain Inventory, an instrument with tested reliability and validity for the EMS workforce. However, the authors did not provide an operational definition of the concept.

appropriate managerial training to handle organizational needs.⁴³ Smaller rural agency managers in particular may perform multiple roles and have less time to develop management skills.

Occupational stress may contribute to difficulty retaining providers in rural areas. Rural EMS providers appear to face higher stress levels than their urban counterparts. A national study found that several factors which are most often connected with working in a rural environment predicted higher stress: EMT-B level licensure, working in a BLS-only service provider, being a new employee working in a small EMS organization, being a volunteer, and serving a small town.⁸⁶ Chng et al. found higher levels of “burnout” among rural than among urban EMS providers, particularly among older and more experienced providers in terms of years of service.⁸¹ These findings are consistent with a qualitative study of mostly rural EMTs suggesting that EMS job-related stress (self-defined) harms retention.⁸⁰

Initial training requirements and continuing education have also been cited as recruitment and retention issues. Rural areas provide fewer training opportunities: training sites are often distant, patient volume is lower, and distance education and supervision opportunities are limited.^{83 87} These training access barriers may partially account for rural services being less likely to have ALS capabilities.⁴³

➤ **Recruitment and Retention of Volunteers**

Data on the number of volunteer EMS providers is sparse. However, there are data on the number of volunteer firefighters. The National Volunteer Fire Council has reported an overall decline of 97,700 total volunteer firefighters or 11 percent between 1984 and 2003.⁸⁸ According to the NVFC the number of volunteer firefighters per 100,000 U.S. population declined 28 percent from 381 per 100,000 in 1984 to 275 per 100,000 in 2003.

Key Informant Perspectives on Supply

As is common in the arena of allied healthcare, issues of workforce supply – including workforce shortage and recruitment and retention of workers – have a high level of importance in the field of EMS. These issues dominated key informants’ discussion of their major concerns about the EMT and paramedic workforce. Several other major concerns [such as EMS funding, worker burnout (not defined), career ladders, quality management, and mentoring students to improve graduation rates] were related to the issue of finding and retaining workers in the field. One employer identified his major concern as “a chronic undersupply,” a statement that was representative of major concerns of many key informants.

Recruiting concerns centered on accurately portraying the realities of the job, recruiting the appropriate people for the job, and finding ways to tap into populations that currently are underrepresented among EMTs and paramedics, such as women or non-White racial/ethnic groups. Retention concerns tended to involve increasing job satisfaction through higher pay, better benefits, career ladders, and reducing worker burnout and injury.

➤ **Public Perception of EMS**

The general visibility of EMS and the public perception of the field may influence the recruitment and retention of EMTs and paramedics. Most key informants thought that the public has generally favorable, even extremely positive, perceptions of EMS agencies and workers. One statement summarizes this assessment of public perception, “Almost universally, paramedics are seen as reputable individuals at a high level.” However, key informants also saw the public as having a low level of awareness of EMS compared to the fire service, and a low level of knowledge about the skill levels of EMTs and paramedics.

Several informants commented that television has a major impact on public perception of EMS, primarily through news coverage of accidents and disasters and fictional television shows. One informant said that the success of the 9-1-1 system had increased the visibility of the field. Others thought that the role of EMTs and paramedics in emergency situations contributes to a lower public profile of the field compared to those of other public safety workers such as firefighters or police officers. For example, one said, “because we're doing the job right, we're gone by the time the media arrives, but fire is still there.” Another respondent, however, said “we get our picture instantly in the media.” Others said that the smaller numbers of EMS providers compared to firefighters and police officers accounts for their relative lack of visibility; the integration of EMS into fire services was also cited as a reason for a lower public profile for EMS.

➤ **Worker Compensation: Pay and Benefits**

Pay and benefits were among the most frequently cited factors in both the recruitment and retention of EMTs and paramedics. Most informants said that pay in the field is generally too low given the level and types of responsibilities held by EMTs and paramedics, however a few key informants said that pay in the field is good and this factor should be marketed. Several informants noted that municipal and fire-based EMS services have higher pay than hospital-based and private EMS services.

Key informants frequently discussed the relationship between the type of EMS service and job satisfaction. Some pointed out that individuals working in fire-based systems might prefer EMS work and do firefighting only because it is a system requirement, or vice versa. A few commented that some individuals regard EMS work as “paying their dues” while in the process of becoming a firefighter.

➤ **Recruitment Programs**

The majority of key informant comments indicated that coordinated recruitment programs are relatively uncommon. In general, EMS workforce recruitment has been conducted in an unstructured, informal way. Lack of attention to recruitment may be a function of poor management, lack of resources, or both. Some informants involved in recruiting activities described sophisticated strategies that were carefully planned and coordinated, including the use of videos, advertisements, CD-ROMs, and recruitment manuals for service managers. Several key informants report confronting a marketing problem, in that EMS is not the glamorous, high-adrenaline occupation that is portrayed in the popular media.

➤ **Workforce Diversity**

A few key informants at provider agencies discussed specific efforts to target recruiting efforts at women and non-White racial/ethnic groups. These informants tended to describe their efforts as a method of easing workforce shortages by attempting to tap into an underutilized pool of potential workers.

Rural Key Informant Perspectives on Supply

Similarly to non-rural key informants, rural key informants cited recruitment and retention as major concerns. The specific concerns they raised included declining volunteerism, the importance of managing and supporting volunteers effectively, concerns about public image and quality improvement, the lack of a career ladder in EMS, and levels of training or continuing education that are high relative to the requirements of other careers. Lack of funding was a related supply concern cited as impacting the ability of rural EMS agencies to pay workers. Some key informants thought that the trend of conversion from volunteer to paid services in rural areas was putting additional strain on rural EMS resources, and were concerned that this might continue.

➤ **Rural Recruitment Issues**

Many rural key informants reported that recruitment—particularly of volunteers—is becoming more difficult. Rural key informants cited the high level of training required for certification and licensure as a barrier to recruitment. High training and continuing education requirements were regarded as particular problems for volunteers due to time constraints. Rural key informants frequently noted the hardship created by a lack of reciprocity across States. Limits on inter-State license reciprocity may limit workforce supply within a State. Low call volume and the prevalence of routine EMS transports, which are viewed as less exciting, were also cited by key informants as contributing to recruitment difficulties in rural areas.

➤ **Rural Workforce Diversity**

When queried about gender equity issues, rural key informants frequently commented that EMS has achieved relative gender parity, especially in rural areas. Some key informants stated that historically, women constituted a greater proportion of the volunteer EMS workforce when compared to the paid EMS workforce. LEADS data from 2005 showed that 42 percent of volunteers overall were female, but this estimate is not specific to rural volunteers. Data from sources including the CPS, NREMT, and LEADS indicate that EMS has not achieved gender parity throughout the profession. LEADS data, for example, showed that only 38.4 percent of EMTs and 27.5 percent of paramedics were female. According to key informants, the racial and ethnic composition of the rural EMS workforce tends to reflect the racial and ethnic composition of the rural population. This may explain why largely White rural areas have less diverse EMS workforces. It is not clear whether rural communities with more minorities have proportional representation of minorities among their EMS workforce. A tribal EMS informant said that national EMS organizations do not pay enough attention to diversity issues, particularly language barriers, in recruiting and training a diverse workforce to respond to community needs. Some informants noted that minority participation in EMS had remained low in some communities despite an increasingly diverse population.

IV. Demand and Need for EMS Workers

Understanding the demand for EMTs and paramedics is a necessary component of an effective EMS workforce development strategy, yet quantifying the demand for EMTs and paramedics is a challenging task. As noted earlier in this assessment report, workforce demand is typically defined by the number of jobs available at current levels of services that are provided by different types of personnel.¹ Demand thus includes the number of people currently employed in a profession or occupation plus current vacancies and projections of workers needed in the future. Increases in wages or other types of compensation are generally regarded as indications of increasing workforce demand.

Workforce projections of future demand include new positions and replacement of workers who leave for retirement or other reasons. Thus, turnover rates are also indicative of workforce demand. Other factors that are often considered in health workforce projections include population growth, changes in the age structure of the population, economic factors, and changing practices in emergency medicine.

Many factors impact current and future demand for EMTs and paramedics. These factors may include the following; however, this list is not exhaustive:

Number of medical emergencies and 9-1-1 calls;

Type of medical emergencies;

Number of non-emergency transports;

Response time expectations of the community;

Personnel configuration; i.e., EMT and paramedic staffing per vehicle;

Population growth by age sectors and aging of the population;

Uninsured rate in the population; number of calls and ER visits by the uninsured;

Expanded roles of EMS;

Disaster preparedness for natural disasters, bioterrorism or other terrorist attacks, epidemics, etc.;

Opportunities for EMTs/paramedics elsewhere in the health sector (hospitals, public health), which are also a factor in workforce supply;

Advances in technology; i.e., numbers and types of procedures that can be delivered in the field;

Changes in data collection and reporting procedures; e.g., increased reporting requirements, automated data collection;

Turnover and retirement of current workforce;

State and local budgets for EMS; and

Increasing incidence of morbidity related to obesity and diabetes.

Many demand factors are difficult to predict, particularly for unexpected events such as disasters. Population growth by age sector and the number of expected medical emergencies can be estimated somewhat using demographic trend data and historical data on EMS service utilization. Personnel configuration per ambulance and per service is also somewhat predictable using trend data from the EMS industry. However, staffing based on current demand (i.e., the current

level and configuration of personnel) does not critically assess current practice and assumes that the current personnel configuration is optimal.

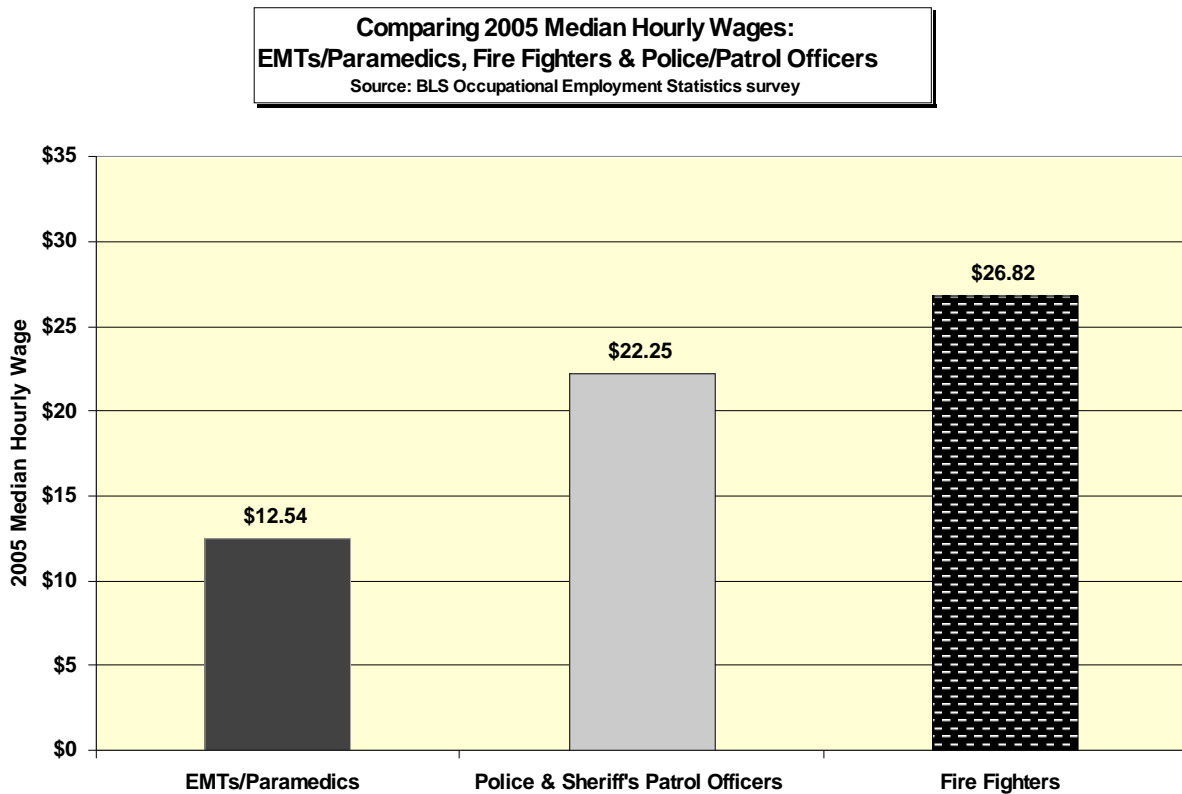
Other demand factors could increase or decrease the demand for EMTs and paramedics. Increased use of electronic medical records and automation in documentation might increase workforce efficiency, yet length of waiting time in the ER and other related factors expected to increase in the future may offset gains in efficiency. However, the potential impact of these factors is unpredictable. Demand for the volunteer EMT and paramedic workforce is particularly difficult to project because there are no reliable data on the workforce contribution of volunteers.

Wages and Compensation

Wages and overall compensation are regarded as major factors in health workforce retention, and EMTs and paramedics present no exception. The theory of supply and demand predicts that when faced with workforce shortages, wages will tend to increase. However, despite a widespread perception that there are shortages of EMTs and paramedics, key informants also perceived that EMTs and paramedics have low wages compared to related occupations in the public safety and healthcare fields. The OES data substantiate this perception.

The following figures display OES data and compare median hourly wages of EMTs/paramedics to those of related occupational categories in both protective services and healthcare. When evaluating data presented in these figures, recall that wage estimates based on OES data do not distinguish EMTs from paramedics. Thus, average wages calculated on OES data somewhat overestimate EMT wages and underestimate paramedic wages. Additionally, OES data do not permit identification of EMTs and paramedics who are cross-trained as firefighters and working in fire-based systems. As a result, the wages of some unknown proportion of EMTs and paramedics are actually included in the average wages of firefighters. The actual number of cross-trained firefighter/EMTs and firefighter/paramedics included in the firefighter data is unknown. Keeping these caveats in mind, Figure 4-1 displays the mean hourly wage of EMTs/paramedics, firefighters, and police/patrol officers.

Figure 4-1. Median Hourly Wages in Public Safety Professions



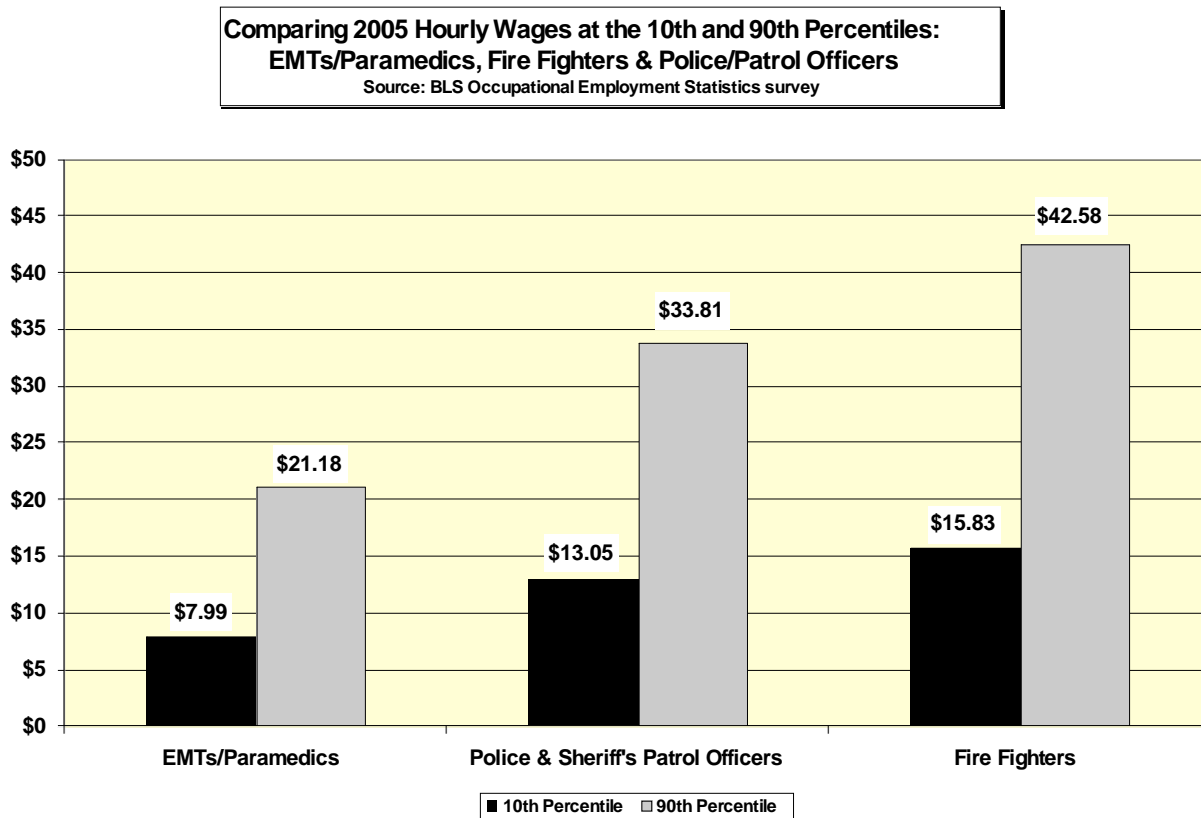
Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey, 2005

Figure 4-1 shows that EMTs/paramedics have lower wages than other public safety professions, including firefighters and patrol police officers. The median hourly wage was \$12.54 for EMTs/paramedics in 2005, compared to \$26.82 for firefighters and \$22.25 for police/patrol officers.

Comparing the mean wages of different groups at specific percentiles along the wage distribution is a useful method of comparing wages across groups. This measure shows what percentage of the people included in the data fall at different points within the overall range of wages. Calculating the measure for different groups shows how wages differ among the higher and lower paid members of each comparison group. It is assumed that the lower percentiles generally represent entry-level or less experienced workers in the field and the higher percentiles represent more experienced workers, though to some extent they are also influenced by the levels at which workers are paid in different labor markets across the Nation.

Figure 4-2 displays a comparison of median hourly wages for public safety professionals at the 10th versus the 90th percentile of wages. The 10th percentile of wages is the point in the wage range at which 10 percent of all people fall at or below. The 90th percentile is the point in the wage range at or above which 10 percent of all people fall.

Figure 4-2. Median Hourly Wages at 10th and 90th Percentiles, Public Safety Professions



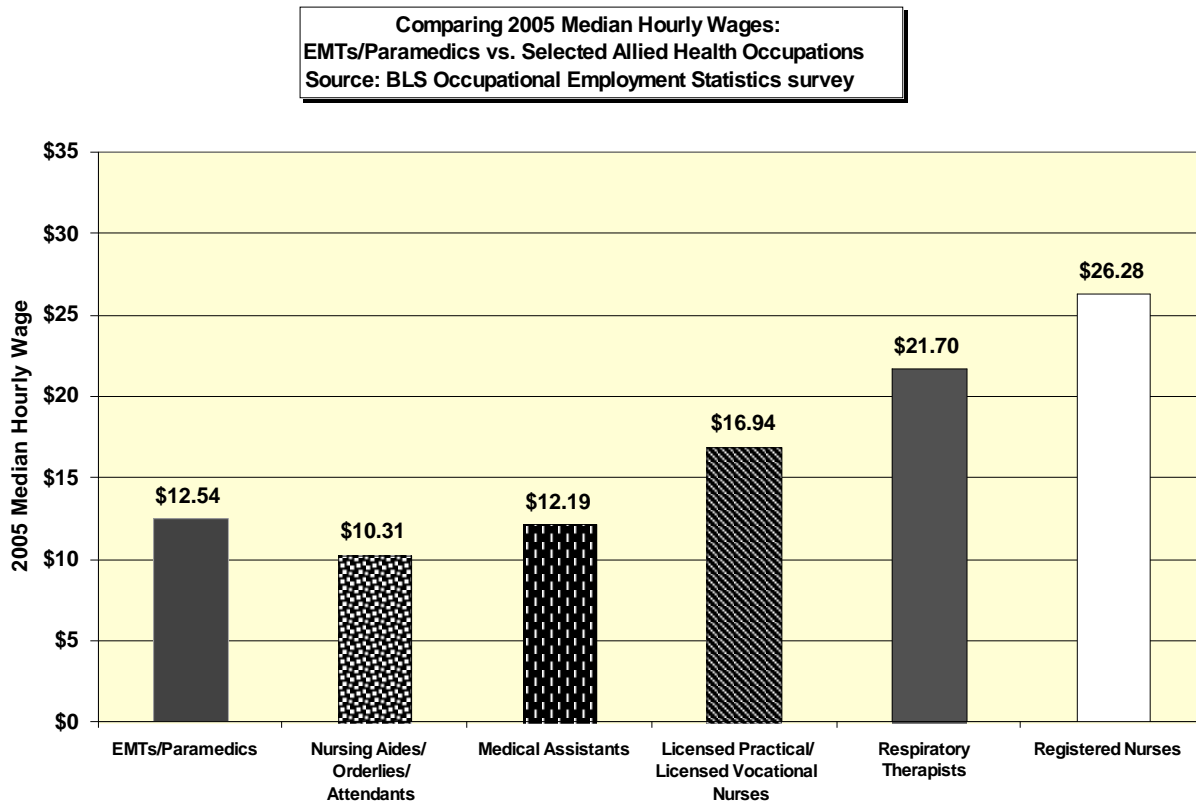
Source: Bureau of Labor Statistics, Occupational Employment Survey, 2005

This figure shows that the 10th percentile of median hourly wage for EMTs/paramedics in 2005 was \$7.99, compared to \$13.05 for police/patrol officers and \$15.83 for firefighters. Thus, EMTs/paramedics at the lowest wage levels made about 39 percent less than police/patrol officers and about 50 percent less than firefighters at the same levels.

Lower wages for EMTs/paramedics, compared to police and sheriff's patrol officers and firefighters, persist at the higher end of the wage range as well. Figure 4-2 shows that the 90th percentile of median hourly wages for EMTs/paramedics was \$21.18 in 2005, compared to \$33.81 for experienced police officers and \$42.58 for experienced firefighters. Thus, at the highest wage levels, EMTs/paramedics made about 37 percent less than police/patrol officers and about 50 percent less than firefighters, a difference of only 2 percentage points compared to workers at the lowest wage levels.

Figure 4-3 displays comparisons of EMTs/paramedics with other allied healthcare professions. The professions are not all directly comparable in scope of practice but were selected either because education requirements are similar or because they are involved in the delivery of direct patient care.

Figure 4-3. Median Hourly Wages, Allied Health Professions

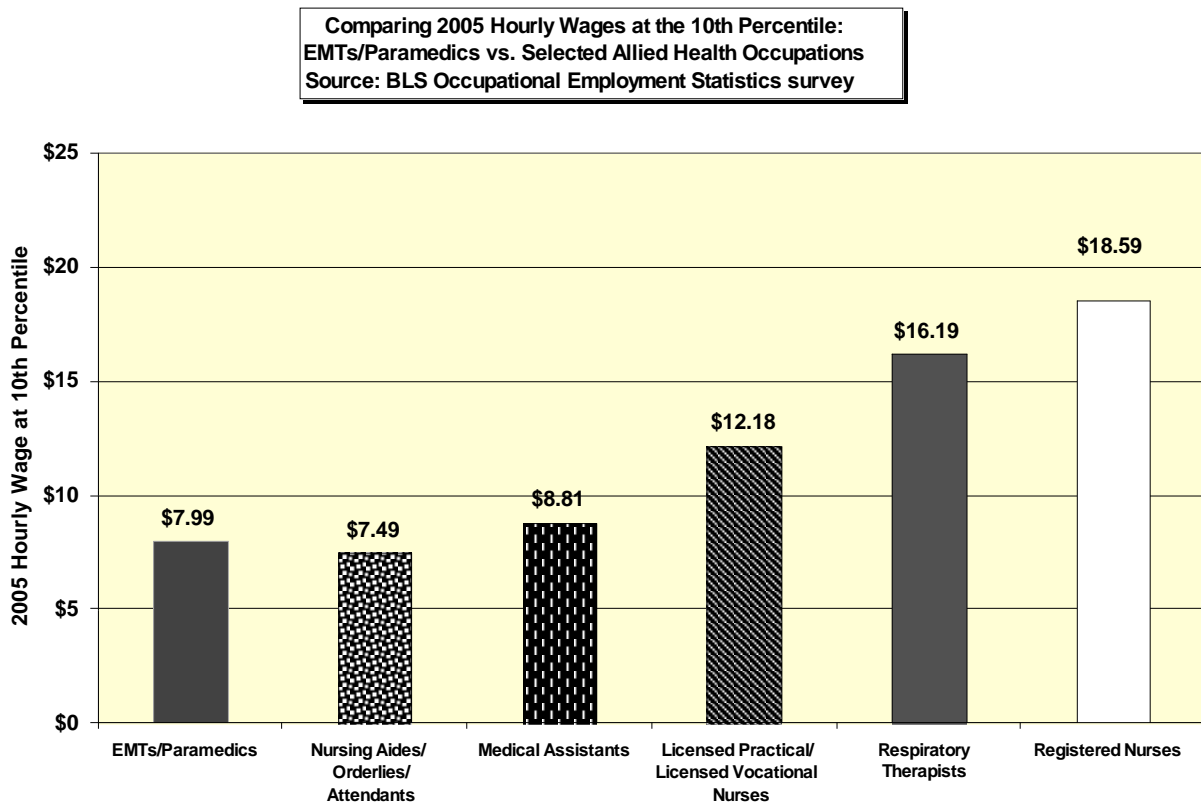


Source: Bureau of Labor Statistics, Occupational Employment Survey, 2005

Figure 4-3 shows that, at \$12.54, EMTs/paramedics are among the lowest paid of several comparable allied healthcare professions. Medical assistants, at \$12.19, make somewhat less than EMTs/paramedics. L.P.N.s/L.V.N.s, at \$16.94, have a median hourly wage of \$4.40 more than that of EMTs/paramedics although the program length for L.P.N.s/L.V.N.s is quite similar to those for paramedics.

Figure 4-4 displays median hourly wages at the 10th percentile for several allied health professions.

Figure 4-4. Median Hourly Wage, 10th Percentile, Allied Health Professions

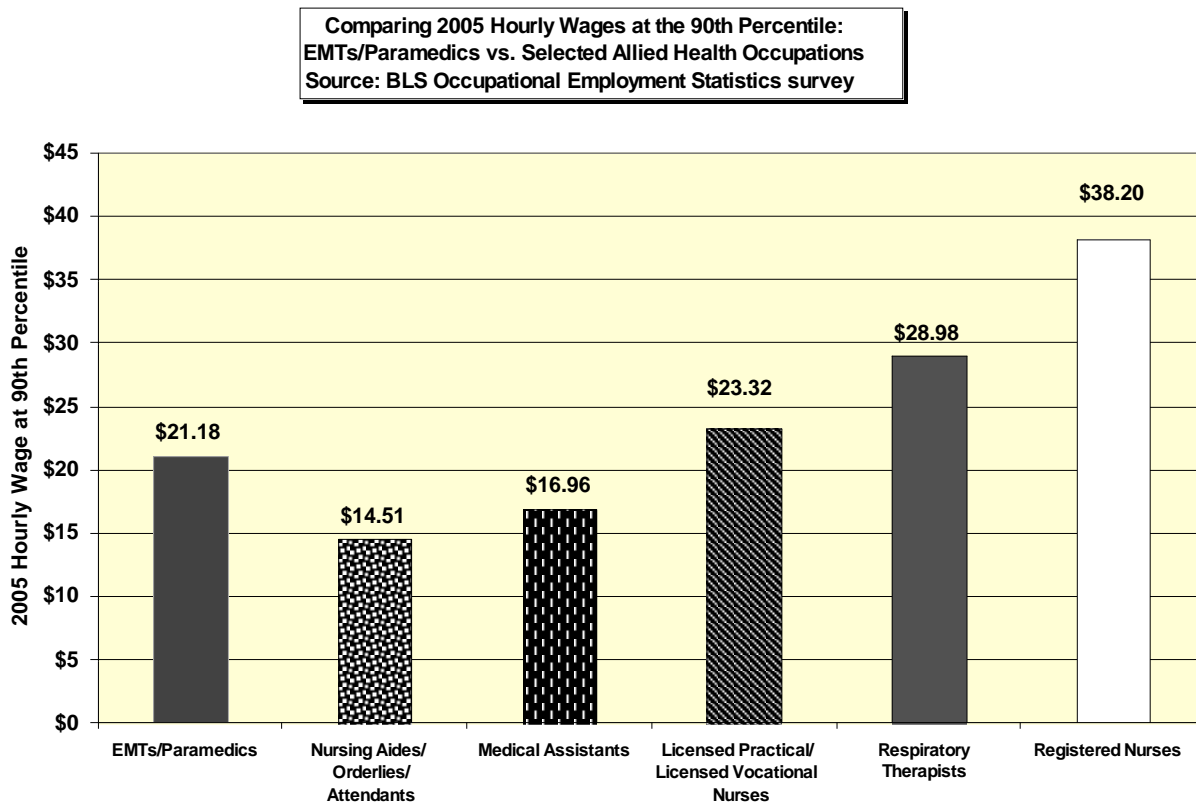


Source: Bureau of Labor Statistics, Occupational Employment Survey, 2005

Figure 4-4 shows that the relationships between these allied healthcare professions are nearly identical at the 10th percentile of wages as for the overall median. EMTs/paramedics are among the bottom three categories in wages, making slightly more than nursing aids/orderlies/attendants, nearly \$1 less per hour than medical assistants, and about \$4 less than L.P.N.s/L.V.N.s.

Figure 4-5 contains wage comparisons at the 90th percentile of the wage range.

Figure 4-5. Median Hourly Wages, 90th Percentile, Allied Health Professions



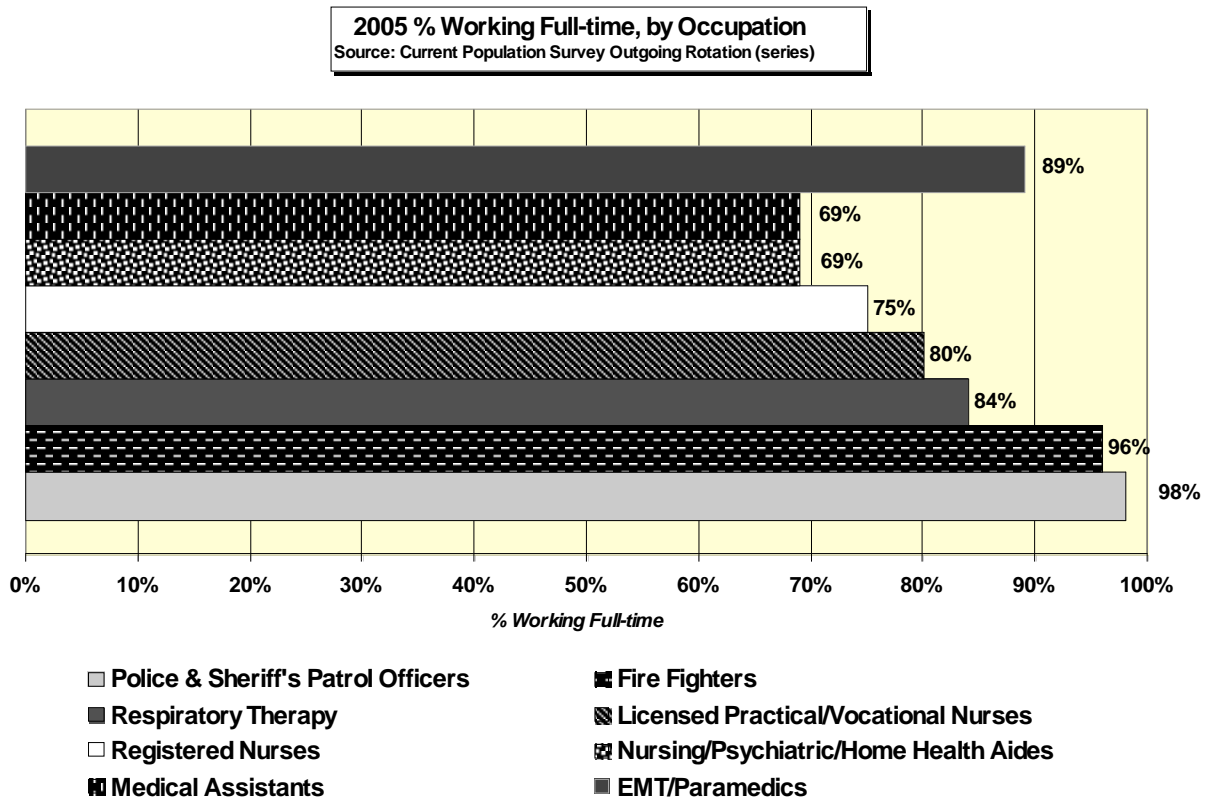
Source: Bureau of Labor Statistics, Occupational Employment Survey, 2005

Figure 4-5 shows that even at the 90th percentile of the wage range the EMT/paramedic workforce has made some gains in comparison to other allied healthcare professions (as compared to the 10th percentile, but not the median). This suggests that EMTs/paramedics experience slightly more wage growth than some of the other lower paid healthcare providers. The higher percentile wages may include more supervisory EMTs/paramedics whereas medical assistants and nursing aides tend to be managed by nurses or physicians rather than others in their own profession.

A comparison of figures 4-3 through 4-5 shows interesting changes in the relationship of EMT/paramedic wages and medical assistant wages. Medical assistants have a broad range of direct patient care responsibilities and work under the supervision of a physician, but have no training, certification, or licensure requirements. Low wage medical assistants (at the 10th percentile) make higher wages than EMTs/paramedics. Their overall median salary is somewhat lower than that of EMTs/paramedics, though they lag particularly far behind at the 90th percentile. Thus, while EMT/paramedic wages are among the lowest at entry level, they make greater gains in wages as they attain presumably more experienced and senior positions.

Compared to many other allied health professions, EMTs/paramedics more frequently work full-time or work multiple jobs. Figure 4-6 displays comparative data for the percentage of workers in allied health fields who work full-time, which is defined as 35 or more hours per week.

Figure 4-6. Percent Working Full-time (35+Hours/Week) – Select Health and Public Safety Occupations, 2005

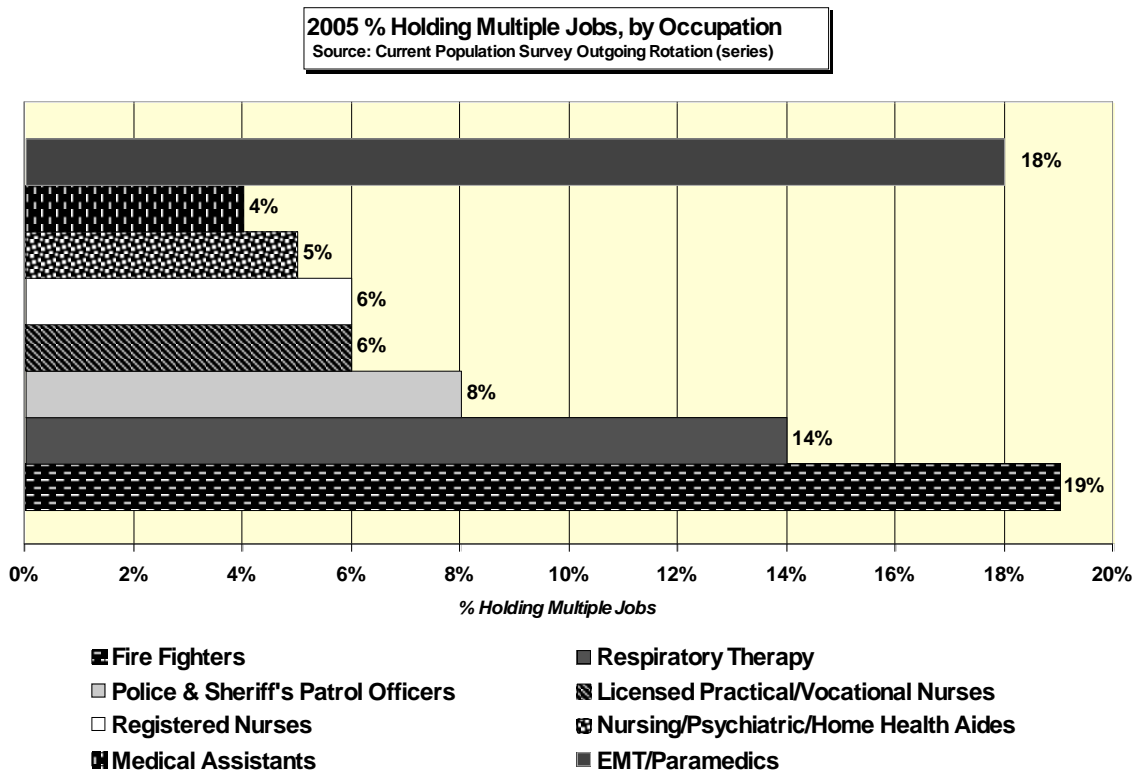


Source: Bureau of Labor Statistics, Current Population Survey, Outgoing Rotation Group File, 2005

These data indicate that EMTs/paramedics work more hours on average than other allied health workers. Nearly all (89%) EMTs/paramedics work 35 or more hours per week. Key informant interviews substantiate that EMTs/paramedics tend to have long work weeks. Many key informants said that 12 and 24 hour shifts are common in the field, often resulting in work weeks of 48 hours and sometimes more.

Figure 4-7 indicates that a higher percentage of EMTs/paramedics work more than one job (18%) compared to other allied health occupations. Among the public safety professions, only firefighters have a greater proportion of their workforce undertaking multiple occupations (19%). Key informants and workers in the field voiced this as well, with two reasons cited most often. One is that many EMS jobs are part-time and thus multiple jobs are needed to compose full-time work. The second is that the pay rates are so low that multiple jobs are necessary to make a livable level of income.

Figure 4-7. Percent of Allied Health and Public Safety Workers With Multiple Jobs



Source: Bureau of Labor Statistics, Current Population Survey, Outgoing Rotation Group File, 2005

Key Informant Perspectives on Demand

Along with worker recruitment, the retention of EMTs and paramedics is a major concern in the EMS field. The extent to which employers can meet their employees' needs and expectations impacts employee retention and has implications for retention of workers in the EMS profession. Key informants discussed various factors impacting worker retention.

➤ Burnout Among EMTs and Paramedics

Key informants described situations in which EMTs and paramedics work overtime and multiple jobs in order to earn an adequate wage, without receiving benefits such as retirement or health insurance. Many spoke of the susceptibility of EMTs and paramedics to burnout. The term was not defined by the interviewers, thus key informants responded according to their particular understanding of burnout. EMTs, who are lower-paid than paramedics, are seen as particularly vulnerable to burnout.

Having multiple jobs was mentioned as leading to worker burnout as well as compromising patient care and safety. One informant described "burned out" workers as "mercenaries who work three jobs, who are overtired and make mistakes, and lose their families and their social lives." Several informants felt that burnout in the field is high because the job is mentally and

physically demanding, while a few others suggested that EMT and paramedic jobs are primarily for young people because of this burnout effect. A medical director cited fatigue and burnout as his major overall workforce concern.

➤ **Quality of Medical Direction and Continuing Education**

The need to increase access to high quality medical direction and continuing education as methods to improve retention was cited by many of the key informants. They stated that providing funds for continuing education would help retention. It was also mentioned that continuing education targeted at the “lowest common denominator,” or frequent retraining in the same content, was an inefficient use of time that could negatively affect retention.

➤ **Personal Safety of EMTs and Paramedics**

Few informants cited personal safety as a problem for retention. More often, informants said that a common attitude among providers is that people who get involved in EMS accept the personal risks as part of the job. However, several mentioned a lack of self-care and not taking appropriate health precautions as safety issues for EMS personnel. Back injuries were one of the most commonly mentioned hazards. Fire-based EMS agencies were believed to tend to have better protective gear than non-fire-based EMS agencies. Key informants stated that avoidable injuries and physical deterioration can cause premature attrition, especially as EMS workers age and are no longer able to perform the lifting and other physical requirements of the job. Many key informants also noted that like the general population, the EMS workforce itself is aging, which means that rates of retirement will increase.

➤ **Career Ladders**

An overwhelming majority felt that EMTs and paramedics lack a well-defined career ladder and opportunities for advancement. Several informants stated that EMS functions as a stepping stone to professions in public safety and healthcare rather than offering its own advancement opportunities. Some saw movement into other healthcare settings or professions as a potential tool for recruitment into the field. Getting an associate’s degree in nursing was thought to take only a relatively small educational investment for a large pay-off in terms of salary and benefits. Other informants noted that educational pathways do not always exist for paramedics to move easily into other fields.

Some key informants saw the movement of paramedics into other healthcare careers as a contributor to turnover and a loss of expertise and talent for the EMS profession. The relative lack of incentives provided by EMS for workforce retention as a contributing factor was often cited for this turnover problem. This point of view was perhaps best expressed by a respondent to a question on the EMS workforce blog, who stated:

Despite a career's worth of efforts, I am unable to provide a meaningful career ladder WITHIN EMS for the medics who work for me. I am appalled when people suggest that an EMS career development program involves leaving EMS for another allied health or public safety profession. At the same time, I can't blame the young men and women who set their sights outside of EMS, for we have precious little to offer them. (EMS Workforce Blog, <http://futurehealth.blogs.com/emsworkforce/>, 2006)

Retention in Rural Areas

As with recruitment, rural key informants reported that retention has also become more challenging in numerous ways. Adequate pay and benefits (e.g., retirement, health insurance) are seen as particularly significant retention issues in rural areas. Rural EMS providers are sensitive to differences in compensation relative to firefighters and other health professions. For volunteers, both rural and urban, recognition and appreciation are important for sustaining motivation, but many services are also using economic or other incentives in an effort to improve retention.

➤ Stress in Rural EMS

Most rural key informants thought that rural EMTs and paramedics face stressors that are different from those in urban environments. Some cited underutilization in low volume areas (referred to by one informant as “rustout”) that creates boredom and frustration. Others pointed out that where rural services are unable to recruit enough providers, workers may suffer from over-utilization and the pressures inherent in maintaining fragile EMS systems, leading to burn-out. Some respondents mentioned that a sense of professional isolation can also lead to stress in rural areas.

There was also a heightened sense that rural providers are more likely than others to find themselves caring for people they know, and cited the need for effective psychological support services in the form of critical incident stress debriefing (CISD), as a way of helping them cope. However, recent studies have found little evidence that CISD is effective.⁸⁹ A review of the literature found that studies on CISD interventions have been conducted at a low level of rigor.⁹⁰ Some research has found that it can be damaging, particularly if it is mandatory.⁹¹ It appears that an international consensus is developing that CISD is no longer recommended. Organizations including the National Institute of Mental Health and the World Health Organization support this position.^{91 92}

➤ Continuing Education

The concerns with continuing education included fewer training opportunities made available for rural providers, with even fewer distance learning opportunities. Some key informants indicated that volunteers, in particular, find the greater investments of time and money required for EMS continuing education burdensome.

➤ Quality of Management

Key informants from rural areas indicated that rural systems in particular lack skilled management and medical direction. Managers are often effective EMS providers who lack management training, yet as they gain seniority they are assigned additional management responsibilities.

➤ EMS financing

A lack of sufficient funding and perceptions of insufficient reimbursement mechanisms were frequently mentioned as a systematic problem for rural EMS. A few informants said that transport-based reimbursement policies that bundle the costs of personnel, equipment, and infra-

structure leave rural EMS under-funded because they do not account sufficiently for the actual costs of operation, particularly in low-volume systems that do not generate enough calls to fund basic system readiness. Also, transport-based reimbursements are viewed to have created incentives to transport rather than treat and release. Another rural EMS funding problem mentioned was that some States may not allow reimbursement if a service is to maintain their volunteer status. Key informant-suggested solutions included enhancements to the rural reimbursement fee schedule (including a better definition of “rural”), “treat-and-release” reimbursement, and more radical system changes, such as transitioning from volunteer to paid services through consolidation. Although some felt that regulations increasing service requirements may make this shift inevitable, at least one informant said that such a transition would not be possible on a wide-spread scale without a large infusion of government funds.

Key Informant Perspectives on Workforce Need

Key informants tended to see workforce demand as the equivalent of need although the models show that need-based planning requires more complex information than demand-based planning. Several stated that workforce need is determined primarily by the size of the population and the current demographic shift associated with the baby boom and bust generations. Population-level changes were regarded as major factors influencing the need for EMTs and paramedics. They stated that these population factors have or will create shortages across healthcare professions. One informant described a scenario in which the baby boom cohort, with its advancing age and historically low birthrate, will increase the demand for health services at a time when the pool of labor is diminishing. It was also noted by informants that advances in medical science and technologies have prolonged the average lifespan, thus increasing the population size as well as the proportion of the population that is likely to have a high need for medical services.

Several informants described an environment in which competition between EMS provider agencies is intense. One director at a municipal EMS provider said that “we brought some [new workers] on early so another jurisdiction wouldn't rob us.” “Job-hopping,” as a few informants referred to, is a practice in which workers move from one job to another in relatively quick succession, receiving higher salaries and sometimes signing bonuses with each job change. A few said that their agencies offer sign-on bonuses, but most felt that they are a poor strategy to be used as a last resort because they can contribute to high turnover.

Worker Satisfaction

Workforce satisfaction may be a good indicator of retention or potential turnover. This report draws on several sources of satisfaction data, including the NREMT re-registration surveys, LEADS, and the key informant interviews.

➤ NREMT Re-Registration Surveys

In the 2004 NREMT re-registration survey (Appendix E2), respondents were asked to rate the effectiveness of various strategies as both recruitment and retention tools. Responses to these items are displayed in Table 4-1. Chi-square analyses show that the differences between EMTs and paramedics displayed in this table are significant at $p < .05$, $DF = 1$.

Table 4-1. Percent Rating Recruitment and Retention Strategies as Effective, 2004

Strategy	Recruitment		Retention	
	EMTs (%)	Paramedics (%)	EMTs (%)	Paramedics (%)
Emphasize Helping People	91	85	82	67
Emphasize Saving Lives	90	82	82	65
Develop Flexible Scheduling	90	91	91	92
Increase Pay & Benefits	89	93	91	94
Increase Advancement Opportunities	89	92	91	94
Improve Environment	88	90	92	93
Increase Status of Profession	85	88	84	86
Emphasize Excitement	75	66	66	49
Decrease Continuing Education	42	30	52	42

Source: NREMT 2004 Re-Registration Survey

The strategies receiving the highest ratings across categories (as recruitment and retention strategies) by both EMTs and paramedics included improvements to the work environment, increases in pay and benefits, flexible scheduling, and increases in advancement opportunities. These strategies received ratings of 88 percent or greater across categories. However, it is also notable that each of these strategies was rated more highly by paramedics, as both recruitment and retention strategies. This difference could be because paramedics have higher “accumulated costs” associated with their jobs and have an expectation of higher returns. That is, they have invested more resources such as time and money in their training and the work itself; therefore they expect to be rewarded more highly than do EMTs.

In the 2005 NREMT survey (Appendix E1), respondents were asked to rate their levels of satisfaction with various aspects of their jobs. The survey responses to questions regarding job satisfaction had three categories: satisfied, neither satisfied nor dissatisfied, and dissatisfied. Table 4-2 presents a comparison between EMT-Basic and paramedic responses for those who reported they were dissatisfied. Chi-square analyses show that the differences between EMTs and paramedics displayed in this table are significant at $p < .05$, $DF = 1$.

Table 4-2. Percent Dissatisfied With Aspects of Their Profession and Jobs, 2005

Job Aspects	EMTs (%)	Paramedics (%)
Compensation (Pay)	20.7	30.4
Compensation (Benefits)	15.9	22.3
Advancement Opportunities	9.5	25.9
Condition of Station House	8.6	16.2
Recognition From Supervisors	7.1	18.7
Recognition From Other Health Professionals	6.7	17.8
Condition of Ambulance	6.4	11.1

Job Aspects	EMTs (%)	Paramedics (%)
Public Perception of EMS	5.3	19.7
Recognition From Peers	4.4	10.1
Recognition From Public	4.4	15.5
Workload	4.2	9.4
Direct Supervisor	4.1	10.2
Quality of Supervision	3.8	11.3
Status of Position	3.4	7.9
Amount of Job Security	3.2	7.6
Medical Director	2.7	6.5
Overall Satisfaction	2.3	5.7
Personal Growth and Development	2.1	6.1
Work Relationship With Peers	1.4	2.8
Feeling of Accomplishment	1.1	3.0

Source: NREMT 2005 Re-Registration Survey

The highest dissatisfaction levels for both groups overall were for compensation, including pay, benefits, and advancement opportunities. These areas were the only job aspects that exceeded 20 percent dissatisfaction ratings among paramedics. Levels of dissatisfaction with pay were highest for both groups, reaching about 30 percent for paramedics and 21 percent for EMTs. Dissatisfaction with benefits followed closely at about 22 percent for paramedics and 16 percent for EMTs. For paramedics, dissatisfaction with advancement opportunities was substantially high, at about 26 percent.

An important caveat to keep in mind regarding the NREMT re-registration survey data is that they are not necessarily representative of the EMT and paramedic population. The survey is sent to all re-registrants with their re-registration materials. Thus, findings based on the data are generalizable only to NREMT-certified EMTs and paramedics who re-register. In addition, we might expect that EMTs and paramedics in those States with mandatory re-registration are more likely to re-register and respond to the survey.

➤ **LEADS Survey Analyses**

Analyses of LEADS data provided an opportunity to look more closely at issues related to workforce demand. The LEADS survey contains questions on employee benefits, the satisfaction of EMTs and paramedics with various aspects of their profession, and intent to leave the field. These factors are all related to workforce retention, as depicted in the demand model shown earlier in this report.

Insurance Coverage

The LEADS 2001 compensation snapshot survey asked respondents whether they had coverage for the following types of health plans and insurance benefits: health, dental, optical, prescription, long-term care, long-term disability, short-term disability and life insurance.

Table 4-3 shows the percentage of EMTs and paramedics who lack various types of health and insurance coverage. Respondents excluded in these estimates are volunteers and

those not currently working in an EMT job. These estimates include only those who report their primary role in their EMS organization as a patient care provider.^{xi} Managers, administrators, educators and field supervisors were excluded because the status of the direct patient care workers is of greater interest in this study.

The first column reports rates of non-coverage for basic level EMTs. The second column reports rates of non-coverage for paramedics. The final column combines these two levels for an overall view of the rates of non-coverage for the profession.

Table 4-3. Percentage of Uninsured EMTs and Paramedics, 2001.

Type of Coverage	EMTs	Paramedics	All
Health	24.5%* (19.2-30.7) n=60	9.6%* (7.2-12.7) n=73	17.5% (14.4-21.1) n=133
Dental	35.8%* (29.6-42.5) n=86	18.9%* (15.4-22.9) n=131	27.9% (24.2-32.0) n=217
Optical	40.5% (34.1-47.2) n=98	36.2% (31.8-40.82) n=268	38.5% (34.5-42.7) n=366
Prescription	26.3%* (20.8-32.6) n=64	13.7%* (10.8-17.3) n=101	20.4% (17.1-24.2) n=165
Long term care	50.3% (43.6-57.0) n=123	55.6% (51.3-60.6) n=415	53.0% (48.8-57.1) n=538
Long term disability	40.5% (34.1-47.2) n=100	41.7% (37.1-46.5) n=305	41.1% (37.0-45.2) n=405
Short term disability	38.3% (32.0-45.0) n=94	35.5% (31.1-40.2) n=272	37.0% (33.0-41.2) n=366
Life Insurance	27.5%* (21.8-34.0) n=64	17.0%* (13.7-20.8) n=137	22.6% (19.1-26.4) n=201

Source: UCSF Center for the Health Professions analysis of LEADS 2001 snapshot survey data.

*Statistically significant difference.

Note: (95% Confidence Interval given in parentheses); n = number of observations used in creating estimate.

Exclusions: volunteers; intermediate level EMTs; those not currently registered; those not currently working in an EMS job; those not working in a patient care provider position.

Generally, EMTs are less likely than paramedics to have insurance coverage for the various plans listed. The differences are statistically significant for health, dental, prescription and life insurance coverage. This may be due to the possibility of EMTs working more part-time hours than paramedics. Another factor that may contribute to the differences is union membership. Higher rates of union membership generally lead to higher rates of benefits coverage. Approximately 24 percent of EMTs belong to a union, while approximately 37 percent of para-

^{xi} This excludes administration/management, educators or field supervisors or others. The criterion for this exclusion comes from responses to question #2 of the compensation snapshot survey.

medics belong to a union.^{xii} A third factor in the rate differences may be time in the profession. The EMTs surveyed reported fewer years of experience than did the paramedics. Over 50 percent^{xiii} of the EMTs responding to the survey reported working 0-2 years in the profession, compared to only 5.6 percent of paramedics.

Another important observation to be made from this analysis is the generally low rates of coverage in many of the health plan and insurance coverage categories. This finding is consistent with reported satisfaction level findings, which show that while many of the survey respondents are satisfied with their profession (80-95% satisfaction rates), they are less so with their pay, benefits, and opportunities for advancement. Thirty-seven percent of EMTs and paramedics combined are either dissatisfied or very dissatisfied with their health and insurance benefits.

Core Survey

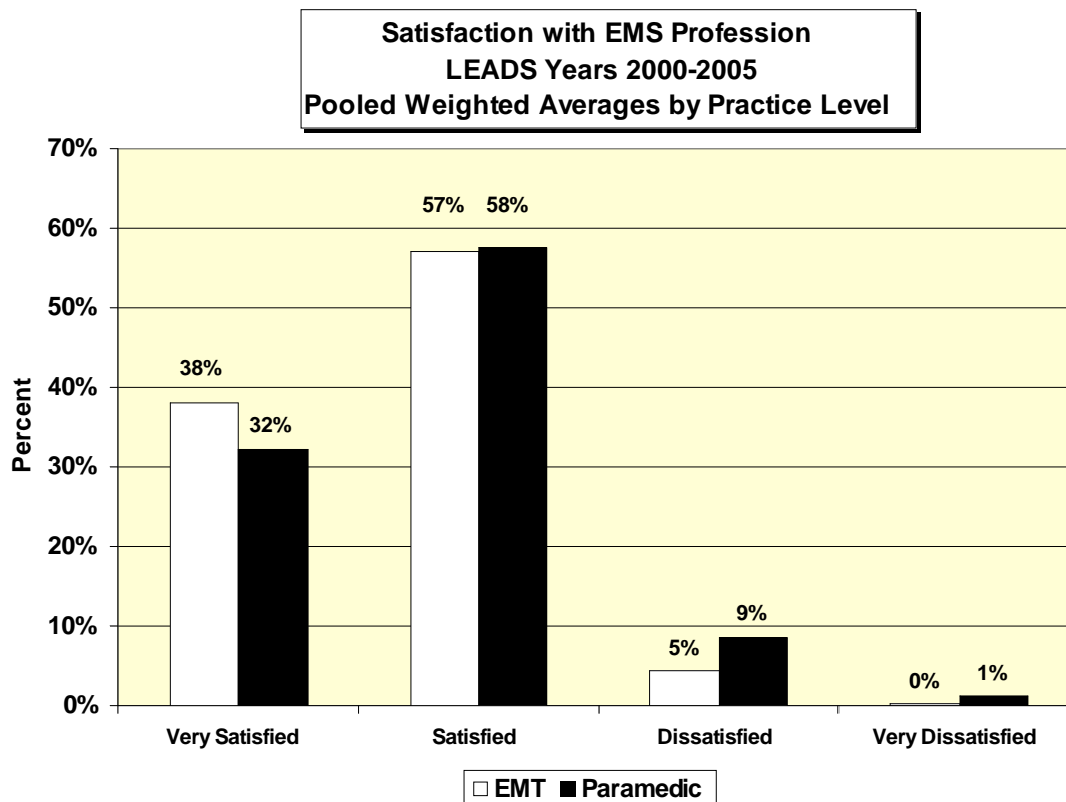
The LEADS core survey (Appendix E1), conducted annually since 1999, asks respondents how satisfied they are with the EMS profession, their current assignment, the pay and benefits they receive and their opportunities for advancement. The following figures show weighted average annual satisfaction rates for respondents by provider service level for these factors. Comparisons between paid providers and volunteers revealed no statistically significant differences. Volunteers are included in these figures unless otherwise noted.

Figure 4-8 depicts satisfaction with the EMS profession overall, averaged over the years 2000 through 2005.

^{xii} LEADS data, years 1999-2005, weighted average, pooled.

^{xiii} The actual value is 54.2 percent. This estimate excludes volunteers and those not currently working in an EMS job.

Figure 4-8. Satisfaction With EMS Profession



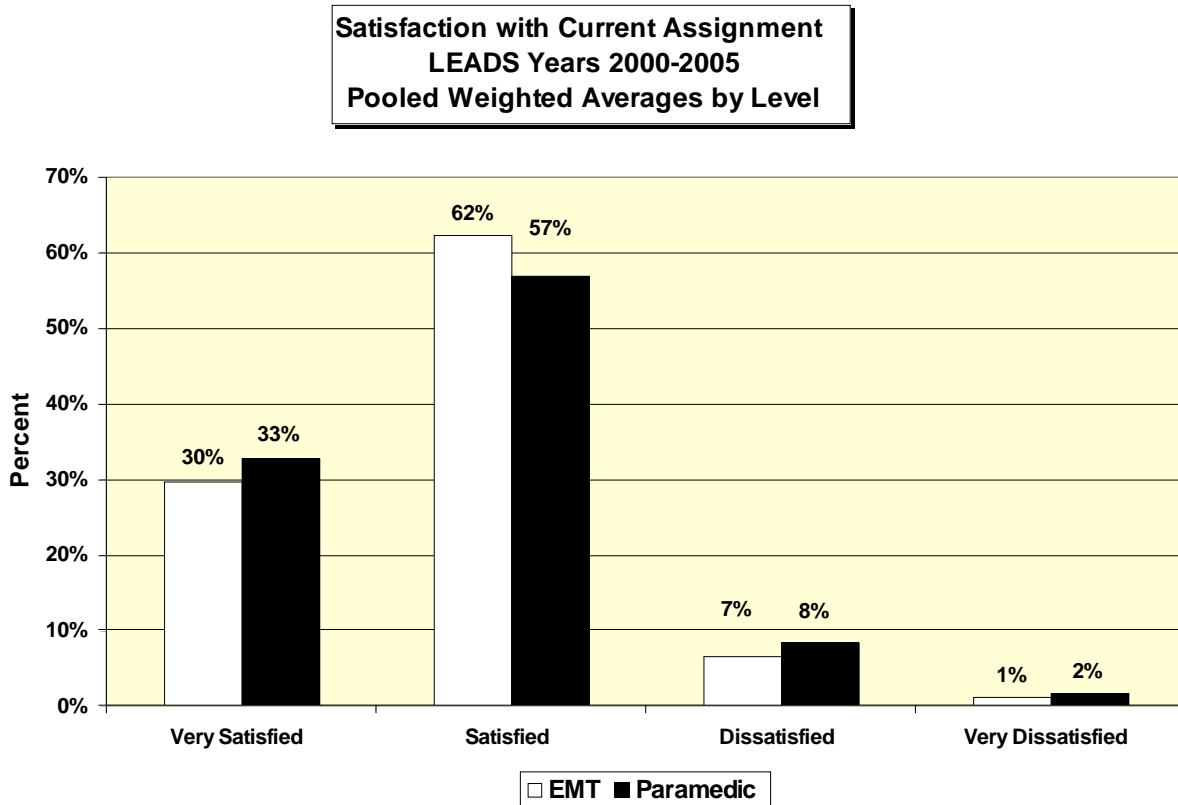
Source: UCSF Center for the Health Professions analysis of LEADS core survey data, 2000-2005.

Overall, satisfaction with the profession based on LEADS data is high. Analysis reveals that there is very little difference in satisfaction levels between EMTs and paramedics over the survey period. Among EMTs, 38.1 percent were very satisfied and 57.1 percent were satisfied with the EMS profession. Satisfaction rates were similarly high for paramedics, 32.2 percent of whom were very satisfied and 57.7 percent of whom were satisfied. Satisfaction rates were stable over the six year period, with both groups reporting high satisfaction rates for all survey years. Significantly more EMTs were very satisfied compared to paramedics. Differences in the estimates are statistically significant at the 95 percent confidence level.

To explore the possibility that younger age might be directly associated with higher satisfaction for EMTs compared to paramedics, analyses of the relationship between age and satisfaction with the EMS profession were conducted for each group. Using LEADS 2005 and 2006 survey data, negative relationships between age and satisfaction with the profession were noted for EMTs. These relationships, controlling for type of employer, gender, and location (rural versus non-rural) were statistically significant ($p < 0.05$) only in 2006. Conversely, positive, non-statistically significant relationships between satisfaction with the profession and age were observed in paramedics. Future research on the relationship of age with job satisfaction might be fruitful.

Figure 4-9 depicts satisfaction with current assignment, averaged over the years 2000 through 2005.

Figure 4-9. Satisfaction With Current Assignment

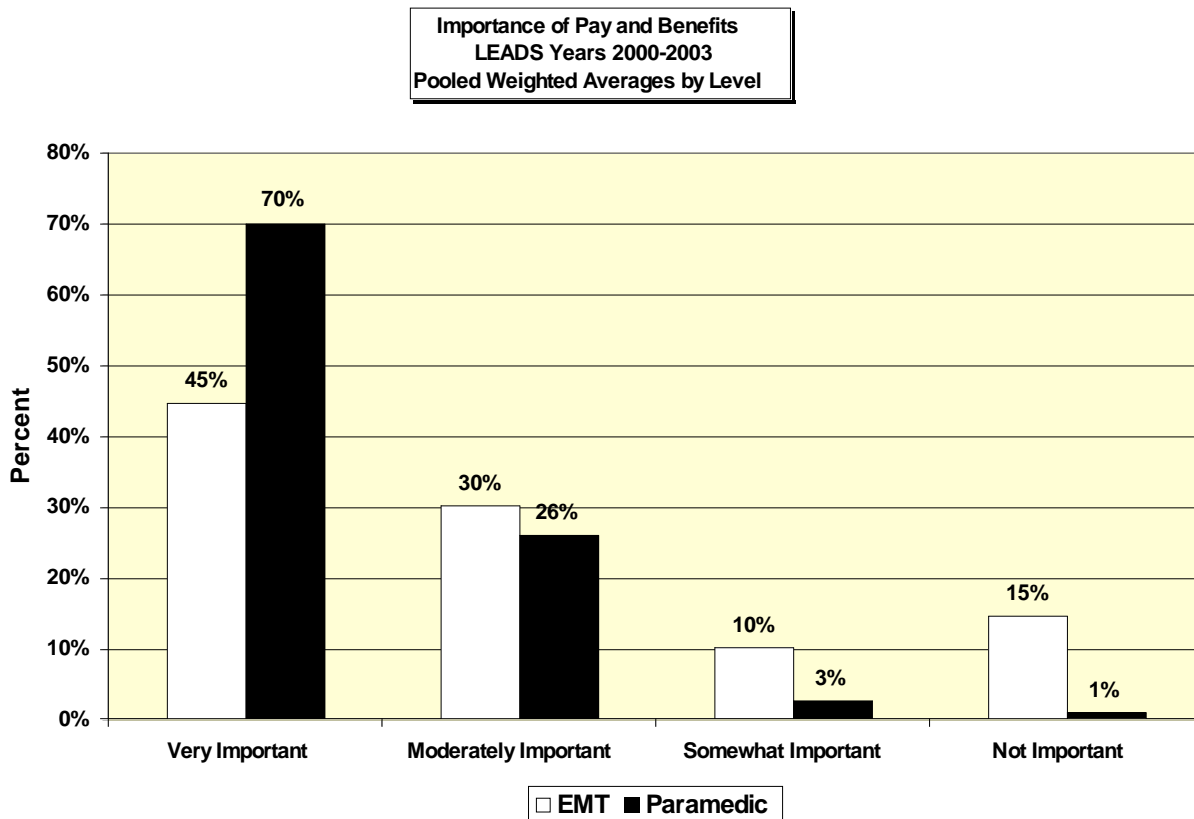


Source: UCSF Center for the Health Professions analysis of LEADS core survey data, 2000-2005.

Satisfaction with current assignment based on LEADS data is also high. Among EMTs, 29.8 percent were very satisfied and 62.3 percent were satisfied with their current assignment. Among paramedics, 32.9 percent were very satisfied and 57.0 percent were satisfied with their current assignment. Differences in the estimates are statistically significant at the 95 percent confidence level.

Until 2003, respondents were also asked about the importance of pay and benefits, and opportunities for advancement. Figure 4-10 shows the rates of importance for pay and benefits, averaged over the years 2000 through 2003.

Figure 4-10. Importance of Pay and Benefits

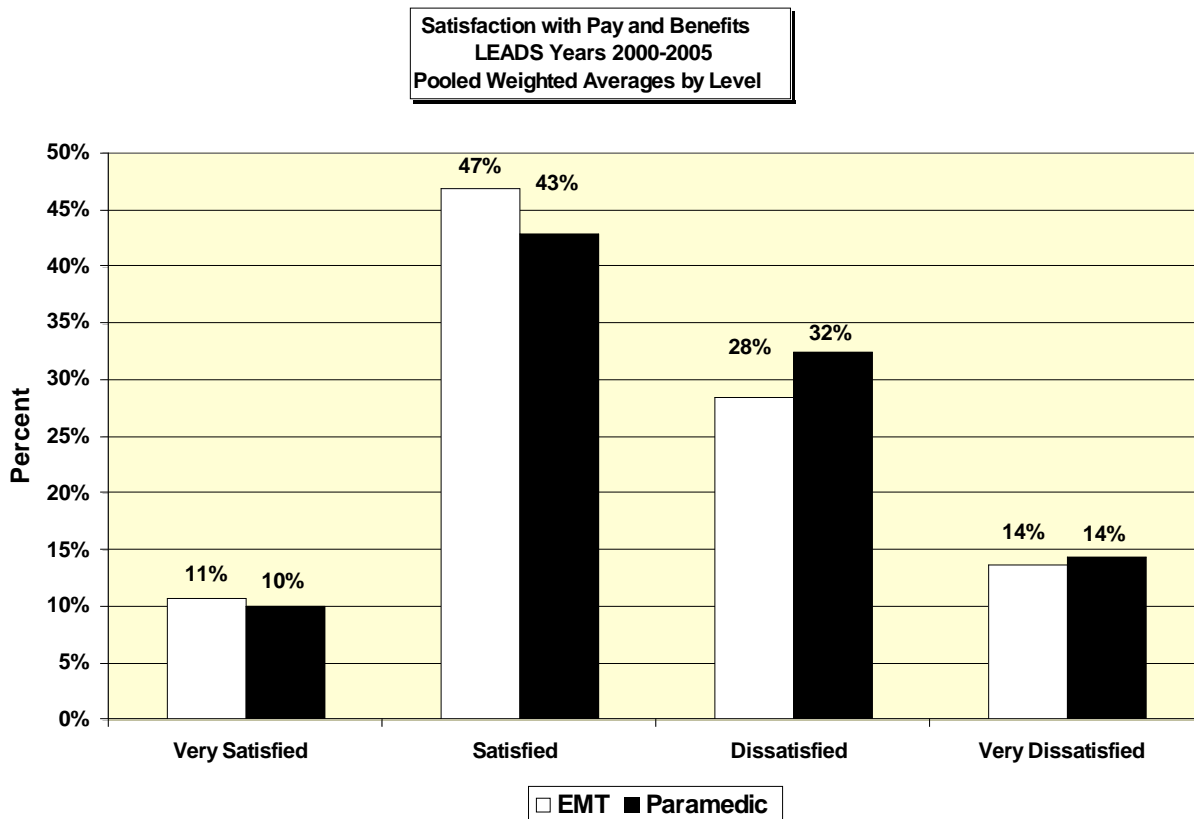


Source: UCSF Center for the Health Professions analysis of LEADS core survey data, 2000-2003.

Figure 4-10 shows that employed respondents place a high level of importance on pay and benefits. Among EMTs, 44.8 percent said that pay and benefits are “very important,” and 30.3 percent said they are “moderately important.” Among paramedics, 70.2 percent said pay and benefits are “very important,” and 26.1 percent said they are “moderately important.” Significantly more paramedics than EMTs responded that pay and benefits are very important. Differences in the estimates are statistically significant at the 95 percent confidence level.

Figure 4-11 shows levels of satisfaction with pay and benefits, averaged over the years 2000 through 2005.

Figure 4-11. Satisfaction With Pay and Benefits



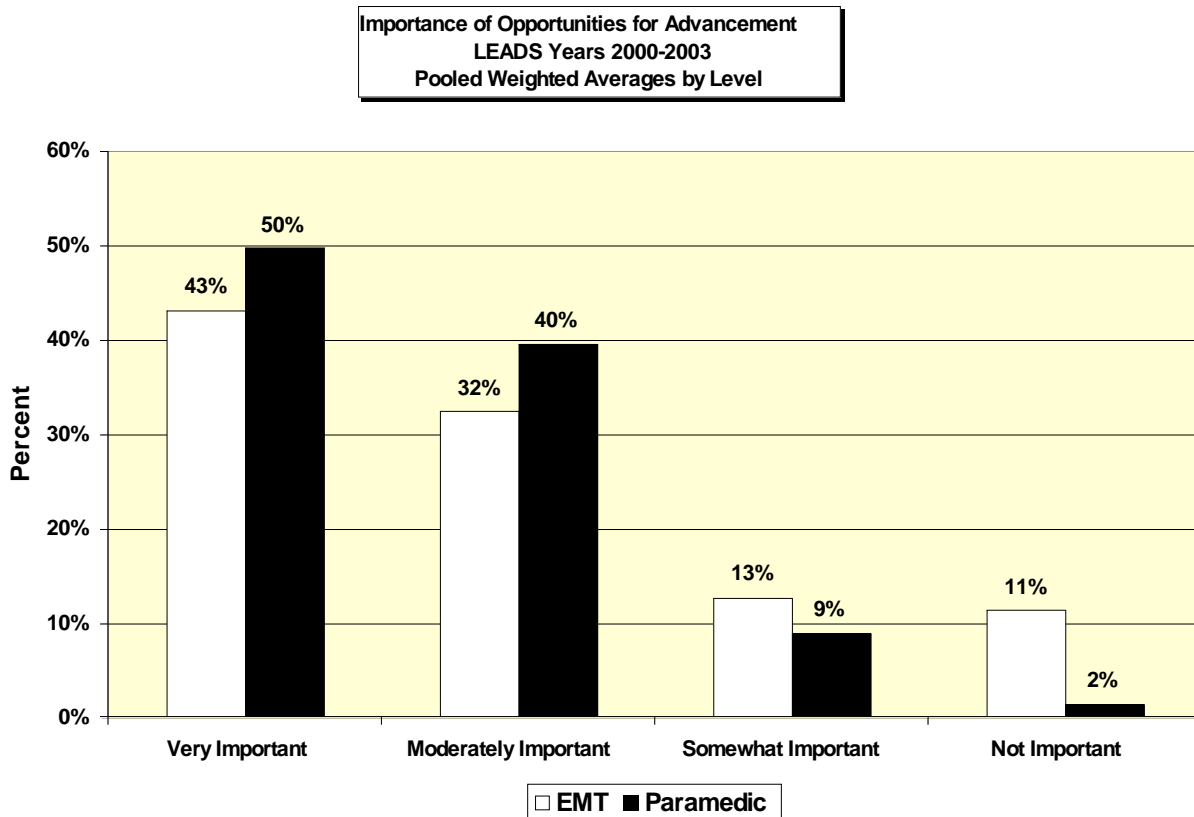
Source: UCSF Center for the Health Professions analysis of LEADS core survey data, 2000-2005.

Respondents were less satisfied with pay and benefits than with the profession overall, with 13.8 percent of EMTs describing themselves as “very dissatisfied” and 28.5 percent describing themselves as “dissatisfied” with pay and benefits. Paramedics were significantly more dissatisfied with pay and benefits. Differences in the estimates are statistically significant at the 95 percent confidence level.

Among paramedics, 14.4 percent described themselves as “very dissatisfied,” and 32.5 percent of paramedics described themselves as “dissatisfied,” which contrasts with satisfaction rates for the profession as a whole.

Figure 4-12 shows the rates of importance for opportunities for advancement, averaged over the years 2000 through 2003.

Figure 4-12. Importance of Opportunities for Advancement

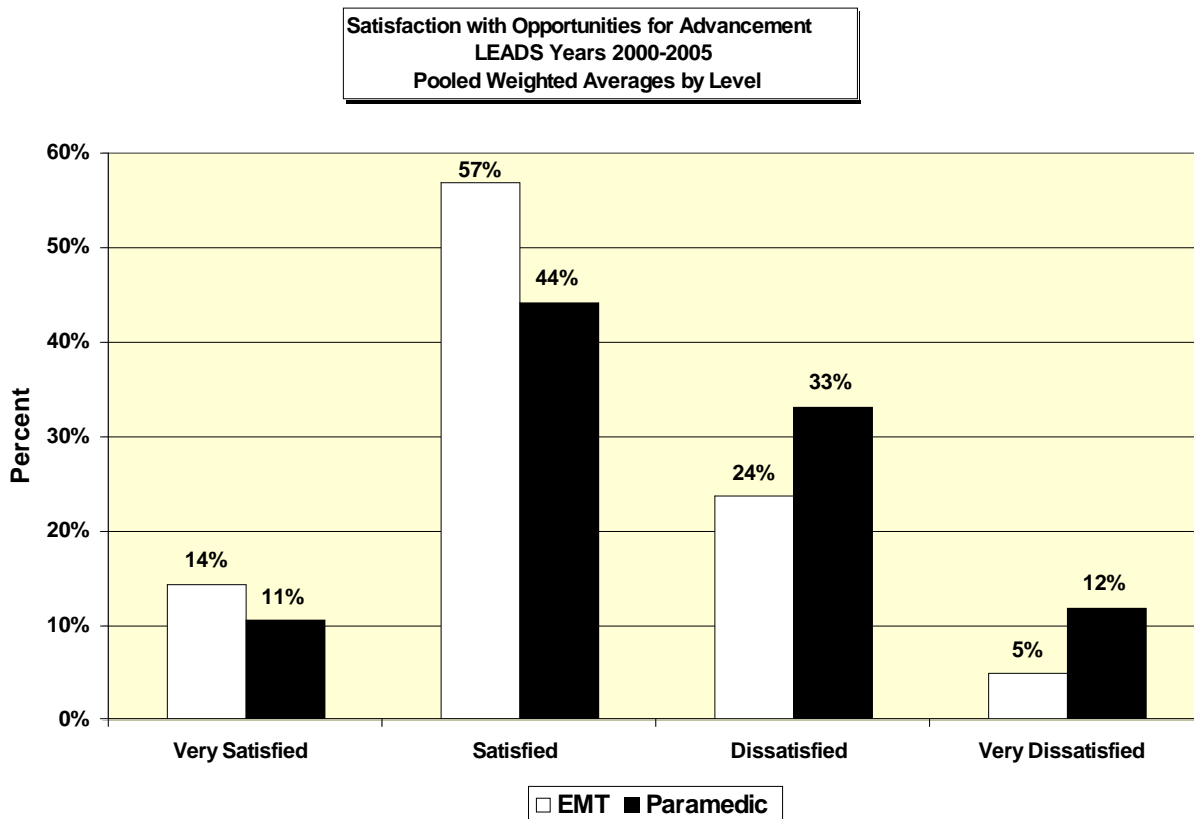


Source: UCSF Center for the Health Professions analysis of LEADS core survey data, 2000-2003.

Overall, respondents rated the importance of advancement opportunities very highly, with 43.3 percent of EMTs reporting such opportunities as “very important,” and 32.4 percent reporting them as “moderately important.” Among paramedics, 49.8 percent rated them as “very important,” and 39.7 percent rated them as “moderately important.” Thus, paramedics rated advancement opportunities as “very important” or “moderately important” significantly more than did EMTs.

Figure 4-13 depicts satisfaction with opportunities for advancement, averaged over the years 2000 through 2005.

Figure 4-13. Satisfaction With Opportunities for Advancement



Source: UCSF Center for the Health Professions analysis of LEADS core survey data, 2000-2005.

Overall, satisfaction levels were fairly high for advancement opportunities. EMTs rated their satisfaction more highly than did paramedics, with 14.4 percent of EMTs indicating they were very satisfied, and 56.9 percent indicating they were moderately satisfied with their advancement opportunities. By contrast, 10.6 percent of paramedics indicated being very satisfied and 44.3 percent indicated being moderately satisfied with their advancement opportunities. The differences between EMTs and paramedics rating themselves as “satisfied” and “dissatisfied” were significant. To explore the possibility that the primary call type EMTs and paramedics respond to has an effect on job satisfaction, the LEADS core survey asks respondents if they primarily respond to emergency calls or scheduled transports. Over the entire survey period, approximately four out of five respondents reported that they primarily respond to emergency calls. Respondents were divided into two groups, those who always or mostly respond to emergency calls and those who always or mostly make scheduled transports. Those who “about equally” respond to emergency calls or make scheduled transports were excluded from the analysis.

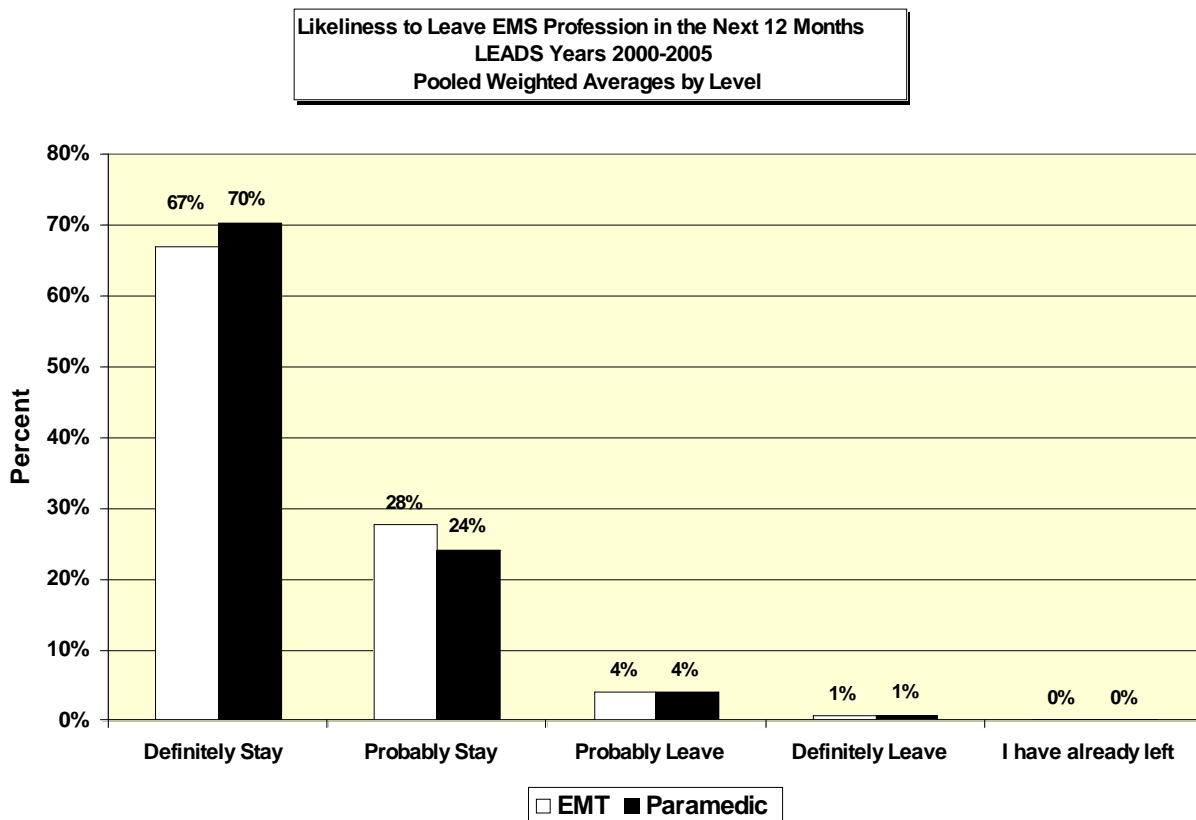
The overall percentage of EMS workers who primarily make scheduled transports and reported that they are “very satisfied” with the EMS profession averaged 35 percent across the survey years (data not shown). Those reporting that they were “satisfied” with the EMS profession averaged 56 percent across the survey years.

The overall percentage of EMS workers who primarily respond to emergency calls and reported they are “very satisfied” with the EMS profession averaged 37 percent across the survey years. Those reporting they were “satisfied” with the EMS profession averaged 57 percent across the survey years.^{xiv}

These results show there is little difference in satisfaction rates by call type.

The LEADS survey asks about the likelihood that respondents will leave EMS in the next 12 months. Given the high levels of overall satisfaction with the EMS profession, it is perhaps not surprising that relatively few respondents expect to leave the profession soon. Figure 4-14 shows respondent likelihood to leave the EMS profession in the next 12 months by provider level. The data are averaged over the years 2000 through 2005.

Figure 4-14. Likelihood to Leave EMS in Next 12 Months



Source: UCSF Center for the Health Professions analysis of LEADS core survey data, 2000-2005.

^{xiv} It is not possible to conclude the two groups to be statistically significantly different from each other, as the cell counts for the “dissatisfied” or “very dissatisfied” EMS workers are too low for the group that primarily makes scheduled transports, and they are also too low for the “very dissatisfied” group of EMS workers who primarily respond to emergency calls.

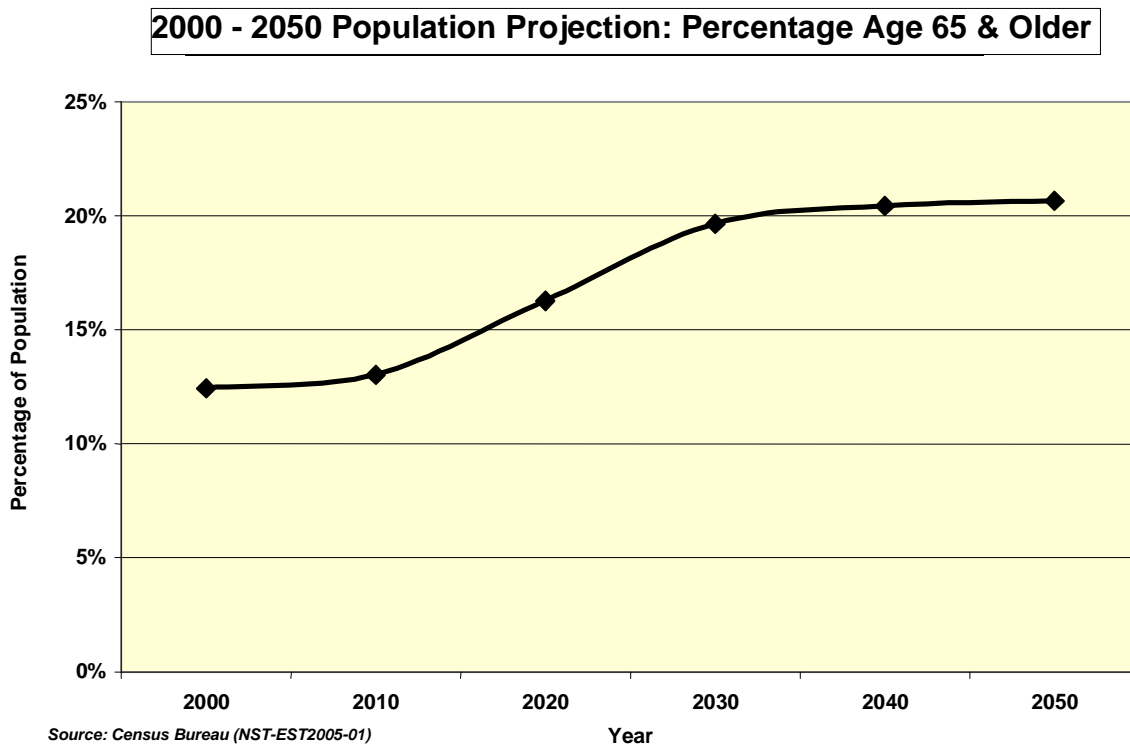
The patterns of responses for EMTs and paramedics are essentially the same. Most interesting is that the vast majority of these respondents indicated that they will definitely stay in the EMS field. Only 4.9 percent of EMTs and 5 percent of paramedics answered that they would “probably” or “definitely” leave the profession, and a negligible percentage in each category had already left.

Future Demand: Workforce Projections

Projections for the future demand for EMTs/paramedics can be obtained from the Office of Occupational Employment Statistics & Projections, a division of the Bureau of Labor Statistics. Employment projections are made for a 10-year period and updated every two years. The projections include several variables including the likely size and composition of the labor force, total economic growth, and industry and occupational employment.

The aging of the baby boom generation is expected to result in an increased demand for healthcare overall. Thus, the population level shift in the age distribution is likely a fundamental indicator of increased demand for EMS services. Figure 4-16 displays the percent of the U.S. population 65 and older through 2050.

Figure 4-15. 2000-2050 Population Projection – Percentage of U.S. Population 65 & Older



Source: Census Bureau, Population Projections Program

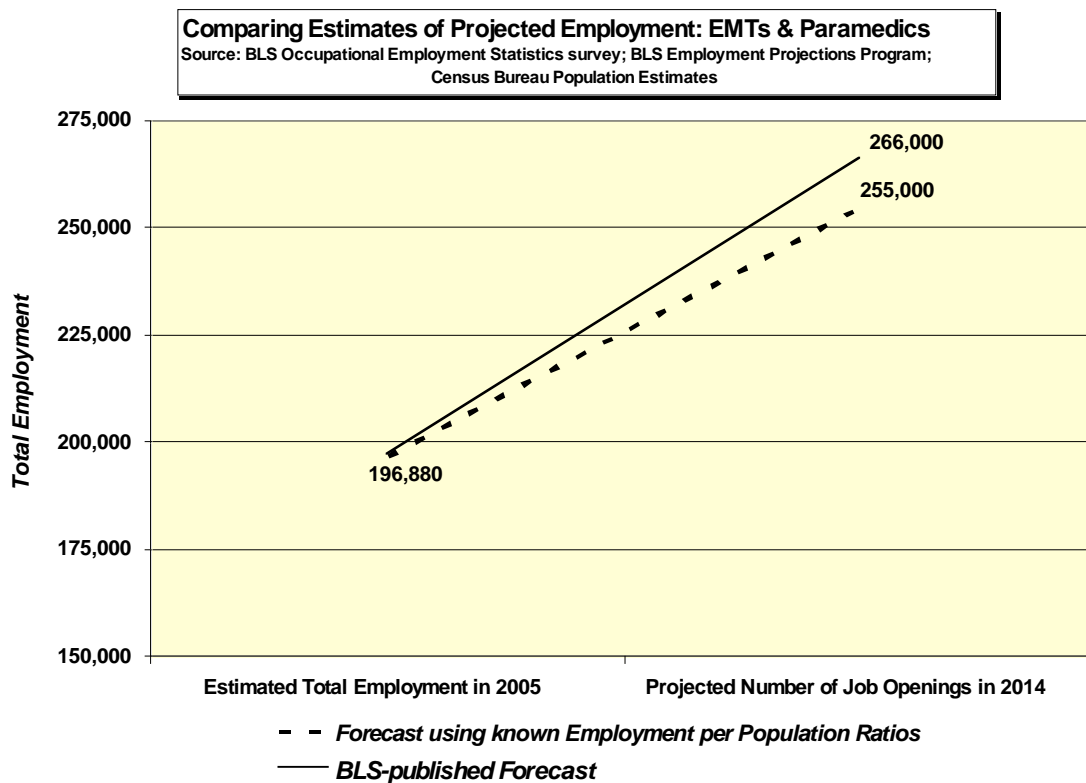
As this figure shows, the percentage of the U.S. population 65 or older is currently about 12.5 percent, and is expected to reach about 16 percent by 2020 and about 21 percent by 2050.

Figure 4-16 contains a comparison of employment projections for EMTs/paramedics. One projection, calculated by the Bureau of Labor Statistics, includes new positions based on population growth, replacement due to turnover, and other factors. For more information about how this estimate was calculated, see:

http://www.bls.gov/emp/empmth01.htm#occupational_employment

The other projection is based on maintaining a constant EMT/paramedic-to-population ratio in the future. The method is somewhat limited in that it assumes that all other factors will remain constant, including workforce demand and need.

Figure 4-16. Projected EMT/Paramedic Employment, 2005 to 2014



Sources: BLS Occupational Employment Projections; BLS Occupational Employment Statistics Survey; Census Bureau Populations Projections Program

These projections predict a need for about 58,000 to 69,000 new workers by the year 2014. The projections are almost certainly an underestimate of the true number of additional workers needed because volunteer workers and firefighters trained as EMTs/paramedics are not included in this calculation. The projections indicate that it is important that the EMS industry focus on being able to attract new entrants to the profession, having the educational capacity to train them, and undertaking efforts to retain workers in the field.

V. Key Findings and Critical Policy Issues

Key Findings

The summary of this assessment report is organized around the research questions and is followed by the critical policy issues that researchers identified over the course of the research phase of this project. The findings of this report are based on analysis of the quantitative and qualitative data gathered during the research phase of the project.

1. Will the EMS workforce be of adequate size and composition to meet the needs of the U.S. population in the future? (Workforce Supply)

This question is not easily answered with the data and findings from this assessment. Demographic characteristics of the current workforce and of students in the educational pipeline, as well as data on earnings and benefits have implications for recruitment, retention, and workforce diversity. Changing national demographics suggest that demand will increase overall due to the shift in the population towards those 65 and older. Changes in the ethnic composition of the population indicate a need for a more ethnically diverse workforce.

However, not enough is known about the number and characteristics of current workers or students in the pipeline. The BLS Occupational Employment Projections for EMS workers have limited utility due to data collection limitations. IPEDS, which is the most complete source of national education data, does not distinguish between EMT and paramedic education programs and does not capture all local and State educational institutions and graduates. In addition, data on certification and licensure requirements present a confusing picture due to differing types and levels of certification and licensure available across the States. A comparison of State and national sources revealed inconsistencies in certification and licensure requirements.

2. How can potential workers be attracted to and encouraged to stay in the field of EMS? (Workforce Recruitment, Retention, Supply and Demand)

The qualitative findings stress the importance of this issue but do not to provide clear answers. There are no national criteria or models for best practices in recruitment of workers. In any case, such models would need to vary by EMS system type and practitioner level. The occupation will likely need to focus on diversity, drawing from new pools of workers and retaining experienced workers in order to meet future demand.

Workforce retention is perhaps even more critical. There is an urgent need to address issues of wages, compensation, employee benefits, career ladders, and other means of promoting employee growth, advancement, and satisfaction. Worker injury and illness and their relationship to retention of experienced workers are also critical factors to be addressed.

3. How can adequate EMS workforce resources be available across all populations and geographic areas? (Workforce Supply)

Qualitative data indicate that access to EMS services is disproportionate across populations and geographic areas. Rural areas, in particular, face challenges in providing adequate coverage and response times due to limited resources and greater travel distances. An ability to

fund EMS in all geographic areas and populations to a level that can provide adequate recruitment and retention of workers is needed. It has been suggested by key informants that transport-based reimbursement models contribute to a lack of adequate staffing coverage. Under transport-based reimbursement, calls not resulting in transport are not reimbursed. Particularly in rural areas with low population density, low call volumes that generate insufficient reimbursement for system readiness may be associated with inadequate system readiness. Changes in system financing and reimbursement models could help resolve some workforce problems in EMS systems.

4. Do we have the data and information needed to address the future demand for and supply of EMTs and paramedics in the U.S? What information is lacking and how might it be obtained? (Workforce Supply and Demand)

This assessment concludes that current data is insufficient and has severe limitations that impede national EMS workforce planning. A few of the key data challenges and limitations are highlighted below.

While national estimates of the number of employed EMTs/paramedics are available, they are based on data with significant limitations. The OES and CPS data sets do not distinguish between EMTs and paramedics, and do not include volunteers. In addition, they do not identify firefighters who are cross-trained as EMTs or paramedics. Other sources for counting the workforce also have limitations, primarily that they do not denote employment or volunteer status.

Due to the fact that EMTs and paramedics are combined in a single category in the OES, and that this category excludes some percentage of firefighters who are cross-trained as EMTs and paramedics, the impact of increased education and licensure levels cannot be analyzed. National data sources such as OES and CPS would be more useful if there were distinct occupational categories for EMTs and paramedics. In general, there is a need for data at both the national and State/local levels that is more accurate and inclusive of the entire EMT/paramedic workforce.

Collecting data on the rural EMS workforce is difficult because there are little or no data to describe the supply of and demand for volunteers, upon whom rural EMS systems are heavily dependent. Estimates of the size of the volunteer workforce are further complicated because there are no uniform definitions of rural service areas. An additional complicating factor is that volunteers sometimes operate in tandem with the paid workforce and are compensated at varying levels. In addition, it is difficult to count the hours worked by volunteers and to calculate how many volunteers equate to one full-time employee.

Critical Policy Issues

Several critical policy issues emerged from this research that should be considered in the development of an EMS workforce agenda. These issues are based on analysis of the quantitative and qualitative data collected for this report, and should be considered in the development of an EMS workforce agenda. This non-prioritized list may be useful to the EMS stakeholder community in development and implementation of a national EMS workforce agenda for the future.

1. The lack of consistent definitions for provider levels and workforce terms (e.g., credentialing, registration, certification, licensure) makes national workforce analysis very difficult. Consistent national definitions would be helpful for analyzing and predicting EMS workforce trends. The EMS Education Agenda for the Future provides some definitions that will be useful if they are widely adopted by States and national EMS data collection efforts.
2. Managing the capacity of the EMS education system is critical to assuring future workforce supply. More complete data on EMS education programs, particularly proprietary and agency-based programs, is necessary to assess the nation's capacity to produce EMTs and paramedics and move towards the goals of the EMS Education Agenda for the Future: A Systems Approach.
3. Compared to other health professions, the affiliation^{xv} requirement in EMS education, certification, and licensure is unique. However, affiliation is found in other public safety professions, such as police and firefighting. In EMS, affiliation requirements vary across States. Where it exists, it is an additional step in the pathway to becoming an EMT or paramedic. It is difficult to assess the impact of affiliation on supply due to a lack of data.
4. There is no quantitative data indicating a national shortage of EMTs or paramedics. Wages are not increasing at a rate that would suggest a workforce shortage. Qualitative data indicate shortages in certain sectors and geographic areas. Rural informants consistently reported a shortage.
5. Nationally, there is little research or data about the relationship of EMS workforce factors to EMS system effectiveness and patient outcomes. There is a paucity of EMS workforce data and research. This seems to indicate that much EMS workforce demand and planning in the U.S. is driven, in part, by perceived community needs rather than empirical data. Improvements in clinical research, EMS systems research, and uniform data collection (including workforce data) could result in an improved understanding of the impact of workforce issues upon patient outcomes.
6. Qualitative evidence suggests that retaining workers is a challenge, with poor management practices, low wages and benefits, lack of career ladders, and disability contributing to turnover. Though LEADS data for both paid and volunteer EMTs and paramedics indicate high levels of satisfaction and low intent to leave the profession, more research is needed to assess factors related to the retention of workers. LEADS and volunteer satisfaction?
7. Worker health and safety is an important factor in workforce retention. However, the lack of systematic data on injury and illness makes it difficult to assess the impact of these factors on retention.
8. Analyses of EMS systems tend to omit workforce factors. Information on the EMS workforce, including supply, demand, recruitment, and retention, should be an integral part of EMS system planning and analysis.

^{xv} Affiliation is a requirement to be a member of an EMS agency or providing emergency care in some capacity in order to be eligible for entry into an educational program, to receive a credential or license and/or to remain licensed.

- 9.** Volunteers clearly are an important segment of the EMS workforce, particularly in rural areas. EMS workforce planning that focuses on the challenges faced by volunteers may help address the unique challenges of rural EMS systems, yet a lack of data may inhibit such efforts.
- 10.** Healthcare workforce needs are often unmet in rural areas because of a variety of financial and non-financial factors. Transport-based mechanisms of reimbursement present unique challenges for rural areas in meeting their EMS workforce needs. Changes in system financing models could resolve some workforce problems in rural areas. However, major regulatory changes would be required to support new financing structures for EMS.
- 11.** Census data indicate an aging population, which will result in increased demand for services. The pool of younger people, a traditional recruitment pool for EMS, is becoming more racially/ethnically diverse. Targeted recruitment of racial/ethnic minorities is needed for an EMS workforce that is both large enough and diverse enough to meet the population's needs. Development of models for best practices in EMS recruitment, including recruitment of racial/ethnic minorities, could assist education programs and EMS systems in recruiting effectively.
- 12.** EMTs and paramedics are young compared to other public safety and healthcare professionals. Retention of older or more experienced workers would conserve their talents and experience within the EMS workforce and increase workforce supply. Development of strategies for accommodating older or more experienced workers and increasing successful recruitment and retention of older individuals would provide helpful tools for addressing this important issue.

VI. Conclusion

Research into the EMS workforce in the United States reveals a complicated picture of a workforce that bridges two distinct environments: healthcare and public safety. This is only one of several reasons why the EMS workforce is a unique group of workers. The EMS workforce comprises both employed and volunteer workers, a feature unique in the healthcare sector although common in fire fighting. Unlike other healthcare providers, EMTs and paramedics are visible and interact with the public primarily outside of healthcare facilities. However, the nature of their work and extent of their skills are often not well understood by public.

Despite their low pay and benefits relative to other healthcare and public safety professions, EMTs and paramedics are in many ways devoted to their field. There is a strong desire among leaders in the field to advance the EMS workforce.

The conclusion of this assessment is that there are currently insufficient data and severe limitations in existing data that impede national EMS workforce planning. The data collection infrastructure necessary to do this is largely undeveloped. It is hoped that this assessment will make a viable contribution towards the development of such an infrastructure.

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Appendix A: Stakeholder Organizations and Official Representatives

Organization / Association	Representatives (2005-2006)
American Academy of Pediatrics (AAP)	Bruce Klein
American Ambulance Association (AAA)	Mike Hall/Bob Garner
American College of Emergency Physicians (ACEP)	Paul R. Hinchey
American College of Surgeons (ACS)	Michael F. Rotondo/Reginald A. Burton
Association of Air Medical Services (AAMS)	Gloria Tavenner Dow/Sandra Kinkade
Emergency Nurses Association (ENA)	Melanie Standon
International Association of Fire Fighters (IAFF)	Jonathan W. Moore/Lori Moore
International Association of Fire Chiefs (IAFC)	Matt Spengler
National Association of Emergency Medical Technicians (NAEMT)	Jerry Johnston
National Association of EMS Educators (NAEMSE)	Joseph Grafft /Judith Ruple
National Association of EMS Physicians (NAEMSP)	David C. Cone/Robert Bass
National Association of State EMS Officials	Kathy Robinson/Tawni J. Newton/Gene Wikle
National Native American EMS Association (NNAEMSA)	Rosalita Whitehair
National Registry of EMTs (NREMT)	Bill Brown
National Rural Health Association (NRHA)	Gary Wingrove/Chris Tilden
National Volunteer Fire Council (NVFC)	Ken Knipper/Shane LaCount
Rural EMS and Trauma Technical Assistance Center (REMSTTAC)	Nels Sanddal
Federal Organizations	Representatives (2005-2006)
CDC/NCIPC/Division of Injury Response (DIR)	<i>(Unable to send representative)</i>
DHS/Office of the Chief Medical Officer (CMO)	Merritt Lake
HHS/HRSA/Division of Trauma and EMS	Cheryl Anderson/Terry Mullins
HHS/HRSA/Office of Rural Health Policy (ORHP)	Jacob Rueda/Blanca Fuertes
EMS for Children National Resource Center	Susan Eads Role/Tina Turgel
Indian Health Service EMS Program	Betty Hastings
DHS/U.S. Fire Administration	Ricky L. Ziebart/John Brasko

Appendix B1: U.C. San Francisco Key Informant Questions

Core Questions

1. What is your job title? How long have you been in this position? Are you or have you ever been an EMT/paramedic?
2. What are your typical job duties?
3. What is the mission or purpose of your agency/organization/institution?
4. To what extent does your agency/organization/institution deal with issues related to the rural workforce? Is there a specific component at your agency/organization/institution that is focused on the rural workforce, either paid or volunteer?
5. Does your agency/organization/institution collect any data on the EMT/paramedic workforce, such as demographic information, or survey data?
6. What do you think is the public/community perception of EMTs/paramedics, in your community or more broadly? What factors do you think drive public perception of EMTs/paramedics?
Service expectations (are the demands of your population being met?) Response time
7. What do you perceive as the major factors influencing the recruitment of EMTs/paramedics?
8. What do you perceive as the major factors influencing the retention of EMTs/paramedics?
9. What do you perceive as the major factors influencing the availability of jobs for EMTs/paramedics?
10. Do you perceive that there is currently a shortage of EMTs/paramedics? If so, what evidence do you think supports this contention?
11. What recommendations do you (or your agency/institution/organization) have to address any shortages of EMTs/paramedics?
12. Do you perceive changes in the utilization of EMTs/paramedics in the next three to five years? In what ways?
13. What additional skills are needed by the current EMT/paramedic workforce to adapt to changes in utilization?
14. What is your agency/institution/organization's major concern about the EMT/paramedic workforce?
15. What is the role of the EMT/paramedic workforce in a natural disaster, public health emergency, or bioterror event?
16. How prepared is the EMT/paramedic workforce to respond in each of these events?

Additional Questions: Educators

1. What are major issues right now for your EMT education program?
2. Has your program made any curricular changes the past year? If so, what were these changes and why did you make them?
3. We'd like to know about enrollment trends over the past five years. Has enrollment increased, decreased, or stayed about the same? Have you had waiting lists at any time over the past five years?
4. Have you made or are you planning to make curricular changes to accommodate expected changes in utilization?

Additional Questions: Employers

1. Can you tell us about current trends in hiring EMTs/paramedics? Have you had difficulty filling positions with qualified workers?
2. Does your organization provide support (paid leave, paid courses) to EMTs/paramedics seeking continuing education credits?
3. Do you provide hiring bonuses, referral bonuses, or other incentives to your EMTs/paramedics?
4. Can you describe the typical career path for EMTs/paramedics? Do you see this career path as appealing and effective for recruiting workers into the field? Do you see it as changing over the next five years?
5. What elements do you think contribute to job satisfaction for EMTs/paramedics? In your perception, what factors are likely to keep them in the field or encourage them to leave the field?
6. What skills do EMTs/paramedics currently need? Do you see a need for new skills emerging over the next three to five years? If so, what are these skills?
7. What are the major health and safety issues for the EMT/paramedic workforce? What are the most common causes of on-the-job injuries and deaths? What about mental health concerns for this workforce?

Appendix B2: University of Washington Rural and Volunteer Key Informant Questions

Core Questions

1. What is your job title? How long have you been in this position? Are you or have you ever been an EMT/paramedic?
2. What are your typical job duties?
3. What is the mission or purpose of your agency/organization/institution?
4. Does your position at your agency/organization/institution give you more of a national, regional, or local perspective on EMT/paramedic workforce issues?
5. To what extent does your agency/organization/institution deal with issues related to the rural workforce? Is there a specific component at your agency/organization/institution that is focused on the rural workforce, either paid or volunteer? [Distinguish between paid and volunteer rural and urban workforce.]
6. Does your agency/organization/institution collect any data on the EMT/paramedic workforce, such as demographic information, membership data, or survey data? Any vacancy data for paid or volunteer positions?
7. What do you think is the public perception of EMT/paramedics, in your community or more broadly? What factors do you think drive public perception of EMT/paramedics? [ask this as an open-ended question, but use the following probes if they aren't mentioned]
 - Service expectations (are the demands of your population being met?)
 - Response time
8. What do you perceive as the major factors influencing the recruitment of EMT/paramedics? [ask this as an open-ended question, but use the following probes if they aren't mentioned]
 - Public perception of the job
 - Expectations about pay
 - Others? Issues affecting volunteers?
9. What do you perceive as the major factors influencing the retention of EMT/paramedics? [ask this as an open-ended question, but use the following probes if they aren't mentioned]
 - Pay and/or benefits
 - Personal safety

- Working conditions (i.e., schedules, work hours, availability of equipment)
 - Others? (i.e., Continuing education, career advancement opportunities) Volunteer issues?
10. What do you perceive as the major factors influencing the availability of jobs for EMT/paramedics? What about factors affecting the need for volunteers? [ask this as an open-ended question, but use the following probes if they aren't mentioned]
- Community demographics
 - Community expectations
 - Regulations/staffing mandates
 - Healthcare systems issues, like reimbursement or trends in emergency care?
 - Others?
11. Do you perceive that there is currently a shortage of EMT/paramedics? If so, what evidence do you think supports this contention? Do you think there is a shortage nationally or does it vary by region? What do you see as the causes for the shortage? [If no, skip to Q13]
12. What recommendations do you (or your agency/institution/organization) have to address any shortages of EMT/paramedics?
13. Do you expect changes in the utilization of EMT/paramedics in the next three to five years? In what ways?
14. What additional skills are needed by the current EMT/paramedic workforce to adapt to any expected changes in utilization?
15. Currently, what is the role of the EMT/paramedic workforce in a natural disaster, public health emergency, or bioterror event? What should be the role of EMT/paramedics in each of these events?
- Natural disaster, Public health emergency, Bioterror event
16. How prepared is the EMT/paramedic workforce to respond in each of these events?
- Natural disaster, Public health emergency, Bioterror event
17. What is your agency/institution/organization's major concern about the EMT/paramedic workforce? This may be something we have already talked about, or it could be some other concern.
- Other comments?

Additional Questions: Educators

1. What are major issues right now for your EMT education program?
 - Recruitment/outreach to students?
 - Quality of applicants? GPA? Other required admissions criteria?
 - Finding faculty to teach the classes?
2. Does your program target or serve rural students? If so, what are the issues in working with this population? Does your program provide or participate in distance learning?
3. Has your program made any curricular changes the past year? If so, what were these changes and why did you make them?
4. We'd like to know about enrollment trends over the past five years. Has enrollment increased, decreased, or stayed about the same? Have you had waiting lists at any time over the past five years?
5. Have you made or are you planning to make curricular changes to accommodate expected changes in utilization?

Additional Questions: Employers/Service Leaders

1. Can you tell us about current trends in hiring or recruiting (volunteer) EMT/paramedics? Have you had difficulty filling positions with qualified personnel?
2. Does your organization provide support (paid leave, paid courses) to EMT/paramedics seeking continuing education credits?
3. Do you provide hiring bonuses, referral bonuses, or other incentives to your EMT/paramedics? Do you provide any compensation for volunteers? If so, what compensation, and how is it funded?
4. Can you describe the typical career path for EMT/paramedics? Do you see this career path as appealing and effective for recruiting personnel into the field? Do you see it as changing over the next five years?
5. What elements do you think contribute to job/volunteer satisfaction for EMT/paramedics? In your perception, what factors are likely to keep them in the field or encourage them to leave the field?
6. What skills do EMT/paramedics currently need? Do you see a need for new skills emerging over the next 10 years? If so, what are these skills?
7. What are the major health and safety issues for the EMT/paramedic workforce? What are the most common causes of on-the-job injuries and deaths? What about mental health concerns for this workforce?

- Back injuries, Joint injuries, Needle-stick injuries, Fractured/Broken bones, Sleep disturbances,
 - Heart problems, Depression, Anxiety disorders, Post-traumatic stress disorder, Driving accidents,
 - Others?
8. How does your agency/institution address the types of injuries and health issues you described? Do you have any additional recommendations for addressing them?

Additional Questions: Regulatory Agencies

1. What is your agency's role in the regulation of the EMT/paramedic workforce? Do you have an individual role in the regulation of the workforce?
2. What are the most important issues regarding the EMT/paramedic workforce from a regulatory standpoint? What are important issues regarding rural/volunteer EMS regulation/credentialing?
3. What difficulties would you anticipate for trying to achieve reciprocity for EMT/paramedic credentialing across States?
4. Is there anyone else we should talk to about the EMS/paramedic workforce from a regulatory standpoint?

Additional Questions: Professional Associations

1. Does your agency collaborate or work with other professional associations around workforce issues? If so, will you give some examples? If not, can you explain why?

Appendix C: EMS Workforce Blog Questions

I. Benefits

1. What types of benefits do you have (medical, dental, retirement, tax incentives, continuing education units, professional development, etc.) and are you satisfied with them? Are you paid or volunteer? Full time or part time?

II. Career Advancement Opportunities

1. What do you think about the availability and types of opportunities for career advancement in the EMS field? Are there ways in which these differ in rural versus urban locations?

III. Challenges & Barriers

1. What are the key challenges regarding the EMT/paramedic workforce at your worksite? To give some context regarding your comments, please identify your job role in your response.

IV. EMS Policy

1. What policy/legislation would you like to see at the local or national level to support EMS?

V. Public Perception

1. How do you think the public perceives EMTs and paramedics?

VI. Shift Length & Patient Care

1. What is your shift length or work schedule and how does it impact the quality of care you are able to deliver? What is ideal for maintaining high levels of patient care?

VII. Training/Education/Roles

1. What are the skills required for management/supervisory roles in EMS and how are they acquired?
2. What role do EMTs and paramedics play in responding to a natural disaster or terrorist event? How prepared is the workforce?
3. Do you see the roles of EMTs or paramedics changing in the next five years? If so, how?

VIII. Volunteer/Rural Issues

1. What is the future of the volunteer EMT/paramedic workforce in rural versus urban areas? Are you paid or volunteer?

IX. Worker Health & Safety

1. Thinking about your workplace, what are the common types of job-related injuries or illnesses, and what specific safety practices and technologies are used to protect EMS workers from these injuries or illnesses?

X. Worker Satisfaction & Retention

1. How long have you worked in EMS and what keeps you in the field?
2. Do you perceive a shortage of EMTs and/or paramedics either nationally or in your local area (please specify)? Is there a difference for rural or urban areas?

XI. Workforce Diversity

1. The job of EMT/paramedic has been referred to as a “macho, White male job.” Has this changed? Is there a difference between rural and urban settings?

Appendix D1: LEADS 2000 Core Survey



Longitudinal EMT Attributes & Demographics Study Core Survey

Marking Instructions



- Use number 2 pencil only.
- Make dark marks that fill the oval completely.

Incorrect Marks



- Erase cleanly any mark you wish to change.
- Make no stray marks.

Correct Mark



General

1. What is your current National Registration level?

- EMT-Basic
- EMT-Intermediate
- EMT-Paramedic
- Not currently registered

2. In addition to your current National Registration, if any, are you also formally certified as an EMT by your state?

- Yes
- No

3. At what level are you currently practicing as an EMT?

- EMT-Basic
- EMT-Intermediate (a level between EMT-Basic and Paramedic)
- EMT-Paramedic
- Temporarily not practicing
- Permanently not practicing

Please answer the following items about your current EMT job.

- If you are a volunteer, mark here and answer the following questions about your volunteer EMT position.
- If you have more than one current EMT job, mark here and answer the following questions about your main EMT job.
- If you do not have a job in which you perform EMT work, mark here and skip to question 25.

4. Which of the following best describes the community in which you do most of your work as an EMT?

- Rural area (less than 2,500 people)
- Small town (2,500 - 24,999 people)
- Medium town (25,000 - 74,999 people)
- Large town (75,000 - 149,000 people)
- Mid-sized city (less than 500,000 people)
- Suburb/fringe of a mid-sized city
- Large city (500,000 or more people)
- Suburb/fringe of a large city

5. What is the zip code of the community in which you do most of your EMT work?

0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

PLEASE DO NOT WRITE IN THIS AREA



Professional

6. Which of the following best describes the type of organization for which you do most of your EMT work?
- US Government (including military) I am not affiliated with any organization
 Other Public (including municipal jobs) Other: (PLEASE SPECIFY) _____
 Private
7. Which of the following describes the type of EMS service for which you do most of your EMT work?
- Hospital based Volunteer Rescue
 Fire based I am not affiliated with any organization
 County or municipal based (i.e., Third Service) Other: (PLEASE SPECIFY) _____
8. Does the EMT service with which you are primarily affiliated transport patients?
- Yes No
9. When you are at work as an EMT, what proportion of your calls are emergency calls and what proportion of your calls are scheduled transports?
- All of my calls are emergency calls Most of my calls are scheduled transports
 Most of my calls are emergency calls All of my calls are scheduled transports
 About equal numbers of emergency calls and scheduled transports
10. About how many calls do you respond to during a typical week?
- 0 5 to 9 20 to 29 40 to 49
 1 10 to 19 30 to 39 50 or more
 2 to 4
11. In a typical week, how many hours are you *available for an EMS response*?
- 0 9 to 16 41 to 60
 1 to 8 17 to 40 more than 60
12. In a typical week, how many hours do you *perform the duties of an EMT*?
- 0 9 to 16 41 to 60
 1 to 8 17 to 40 more than 60
13. At your current EMS job, how satisfied are you with your medical director?
- Very satisfied Dissatisfied I do not know the medical director
 Satisfied Very dissatisfied I do not have a medical director
14. How satisfied are you with your current EMS assignment?
- Very satisfied Satisfied Dissatisfied Very dissatisfied
15. How satisfied are you with the EMS profession?
- Very satisfied Satisfied Dissatisfied Very dissatisfied

16. During the past 12 months, how many times have you been involved (as an EMT) in a serious hazardous material response? Do NOT include gasoline spills.
- None 1 - 2 3 - 4 5 or more
17. Please indicate how strongly you agree or disagree with the following statement. I am very worried about contracting a serious infectious disease because of things that happened in the past 12 months, while I was working in EMS.
- Strongly agree Agree Disagree Strongly disagree
18. During the past 12 months, how many days have you been absent from your EMS job(s) due to an EMS work related illness or injury?
- None 1 day 2 to 4 days 5 to 9 days 10 or more days
19. During the past 12 months, how many days have you been absent from your EMS job(s) due to illness or injury NOT related to your EMS job?
- None 1 day 2 to 4 days 5 to 9 days 10 or more days
20. During the past 12 months, have you been authorized to provide new patient care treatments or procedures?
- Yes No
21. Please indicate how satisfied you are with the following aspects of your EMS position. (PLEASE MARK ONE CIRCLE PER LINE)
- | | Very Satisfied | Satisfied | Dissatisfied | Very Dissatisfied |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Working relationships I have with other EMT's | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The amount of pay and benefits I receive | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Having a job that is exciting | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The technical challenges provided by the job | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Performing a variety of tasks in a variety of different situations | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My work schedule | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Opportunities for advancement at my job | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Being able to work without close supervision | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Being able to help others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
22. Please indicate how important each of the following aspects of your EMS position are to you. (PLEASE MARK ONE CIRCLE PER LINE)
- | | Very Important | Moderately Important | Slightly Important | Not Important |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Having a good working relationship with other EMT's | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Good pay and benefits | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Having a job that is exciting | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Having a job that is challenging | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Performing a variety of tasks in a variety of different situations | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Having a work schedule that does not seriously impair my personal life | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Opportunities for advancement at my job | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Being able to work without close supervision | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Being able to help others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
23. Are you certified as an EMT-Basic, EMT-Intermediate, or EMT-Paramedic because it is a requirement of your job?
- Yes No Not currently registered
24. How likely is it that you will choose to leave the EMS profession in the next 12 months?
- Definitely stay Probably stay Probably leave Definitely leave I have already left

Education

25. What is the highest level of education you have completed?
 Didn't complete high school Associate's degree (A.A., A.S.) Graduate degree (M.A., M.S., Ph.D., etc.)
 High school graduate/GED Bachelor's degree (B.A., B.S.)
26. How many hours of EMS continuing education did you receive in the past twelve months? Continuing education can be obtained in a number of ways, including classroom instruction, conferences, run reviews (or case reviews), journal articles, grand rounds, videos, and computers.
 0 1 to 12 13 to 24 25 to 36 37 to 48 49 to 60 61 or more
27. How useful was this continuing education? I did not receive any continuing education in the past 12 months
 Very useful Useful Slightly useful Useless

Personal

28. In the last 12 months have any of the following happened to you? (PLEASE MARK ONE CIRCLE PER LINE)
- | | | | | |
|---|-----------------------|-----|-----------------------|----|
| My health status has gotten significantly worse | <input type="radio"/> | Yes | <input type="radio"/> | No |
| I was named in an EMS lawsuit | <input type="radio"/> | | <input type="radio"/> | |
| I received stress management assistance | <input type="radio"/> | | <input type="radio"/> | |
29. Within the past 12 months have you experienced any of the following? (PLEASE MARK ONE CIRCLE PER LINE)
- | | | | | |
|---|-----------------------|-----|-----------------------|----|
| Hearing problems | <input type="radio"/> | Yes | <input type="radio"/> | No |
| Sleeping problems (such as insomnia) | <input type="radio"/> | | <input type="radio"/> | |
| Latex allergies | <input type="radio"/> | | <input type="radio"/> | |
| Contracted a serious infectious disease | <input type="radio"/> | | <input type="radio"/> | |
| Back problems | <input type="radio"/> | | <input type="radio"/> | |
30. Are you married, divorced, widowed, separated or have you never been married?
 Married Widowed Never been married
 Divorced Separated A member of an unmarried couple
31. How would you rate your *overall health*? Excellent Good Fair Poor
32. How would you rate your overall *physical fitness*? Excellent Good Fair Poor

Finance

33. For how many different organizations have you *worked or served as an EMT* in the past 12 months? Please include both organizations for whom you performed volunteer services as well as organizations which paid you for your EMT services.
 0 1 2 3 4 5 or more
34. For how many different organizations, if any, did you *work or serve in positions that were not exclusively involved with EMS* in the past 12 months?
 0 1 2 3 4 5 or more
35. About how much money, before taxes, did you earn *from all sources* in the past 12 months?
 \$0 \$10,000 to \$19,999 \$30,000 to \$39,999 \$50,000 to \$59,999
 \$1 to \$9,999 \$20,000 to \$29,999 \$40,000 to \$49,999 \$60,000 or more
36. About how much of this money did you earn from *EMS related jobs* in the past 12 months?
 \$0 \$10,000 to \$19,999 \$30,000 to \$39,999 \$50,000 to \$59,999
 \$1 to \$9,999 \$20,000 to \$29,999 \$40,000 to \$49,999 \$60,000 or more




Demographic and Background Questions

37. In what year were you born? _____ →
38. How many years have you worked as an EMT?
 Less than one year 3 - 4 years 8 - 10 years 16 - 20 years
 1 - 2 years 5 - 7 years 11 - 15 years 21 or more years
39. We are interested in why you decided to enter the EMS profession. Please indicate whether each of the following factors were important in your decision to enter EMS. (PLEASE MARK ONE CIRCLE PER LINE)
- | | Yes | No |
|--|-----------------------|-----------------------|
| Having a friend or family member who worked in EMS or who worked with EMTs | <input type="radio"/> | <input type="radio"/> |
| I felt that I would enjoy being able to provide medical care to people in need of assistance | <input type="radio"/> | <input type="radio"/> |
| I wanted a job with good pay and benefits | <input type="radio"/> | <input type="radio"/> |
| I just kind of fell into it | <input type="radio"/> | <input type="radio"/> |
| There was an accident or other serious medical situation at which I was unable to help | <input type="radio"/> | <input type="radio"/> |
| I wanted a job that is exciting | <input type="radio"/> | <input type="radio"/> |
| It provided me with an opportunity for a new career | <input type="radio"/> | <input type="radio"/> |
| It was a job requirement | <input type="radio"/> | <input type="radio"/> |
| It provided an opportunity to learn if I wanted to pursue other health career opportunities | <input type="radio"/> | <input type="radio"/> |
| My job provided financial incentives for becoming an EMT | <input type="radio"/> | <input type="radio"/> |
| Other (PLEASE DESCRIBE): _____ | <input type="radio"/> | <input type="radio"/> |
40. Which of the following categories describes you? YOU MAY SELECT MORE THAN ONE.
 American Indian or Alaskan Native Asian Black, not of Hispanic origin
 Native Hawaiian or Other Pacific Islander Hispanic White, not of Hispanic origin
41. What is your gender? Male Female
42. Are you currently serving in a military unit in either an active or reserve capacity? Yes No
43. Did you receive all or a substantial amount of your EMS training in the military? Yes No
44. In how many states have you served as an EMS provider since the start of your career?
 1 state 3 states
 2 states 4 or more states
45. During the past 12 months have you applied for EMS licensure/certification in another state?
 Yes No
46. In what industry, if any, were you employed prior to becoming an EMT? PLEASE MARK ONE.
 Agriculture/Farming Manufacturing Transportation/Utilities
 Business Services Military None -- was a student
 Education Other Government None -- was unemployed
 Finance/Insurance/Real Estate Restaurant/Food/Beverage Other (SPECIFY) _____
 Health Care Retail/Distribution

19


0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9


Appendix D2: LEADS 2001 Snapshot Survey - Compensation



Survey : Compensation

Marking Instructions

Incorrect Marks


Correct Mark


- Use number 2 pencil only.
- Make dark marks that fill the circle completely.
- Erase cleanly any mark you wish to change.
- Make no stray marks.

1. How long have you worked for your current EMS employer? *If you work for more than one EMS organization, please answer about the one you work for most often.*

less than one year 3 - 4 years 8 - 10 years 16 - 20 years
 1 - 2 years 5 - 7 years 11 - 15 years 21 or more years

2. Which of the following best describes your primary role in your EMS organization? *Please mark only one circle. If you work for more than one EMS organization, please answer about the one you work for most often.*

Patient care provider Administrator/Manager Other (SPECIFY) _____
 Field supervisor Educator

3. The following types of insurance and health plans are often provided by employers. They may also be purchased by individuals. For each type of insurance or health plan, please indicate:

(1) whether you have the benefit. If you do not have it, please mark the first column ("Do not have").
 (2) If you have the benefit, please indicate who pays for most or all of it. PLEASE MARK ALL THAT APPLY. MARK AT LEAST ONE CIRCLE PER LINE.

Benefit	Do not have	EMS employer(s) pays most or all	I pay some and my EMS employer pays some	I pay all myself	Other employer pays most or all	Don't know
Health plan or health insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dental plan or dental insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Optical (eyeglasses, contact lenses) plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescription plan (including health plans with prescription benefits)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long term care (extended care facility or nursing home) insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long term disability (not work related)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short term disability (not work related)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Life insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

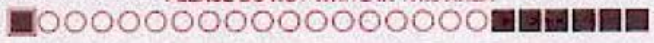
4. How satisfied are you with the health plan/insurance provided by your primary EMS employer?

Very Satisfied Satisfied Dissatisfied Very Dissatisfied

5. Do you receive the following benefits from your primary EMS employer? (PLEASE MARK ONE CIRCLE PER LINE)

	Yes	No	Don't Know
Worker's compensation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paid sick leave	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paid holidays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paid vacation time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Profit sharing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stock options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uniform allowance/free uniforms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Longevity awards (e.g., 10-year bonus)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
College tuition assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PLEASE DO NOT WRITE IN THIS AREA



6. When you retire, from which of the following sources do you anticipate receiving income? (PLEASE MARK ONE CIRCLE PER LINE)

	Yes	No
EMS employer sponsored retirement plan	<input type="radio"/>	<input type="radio"/>
Other employer sponsored retirement plan (including military or government pensions)	<input type="radio"/>	<input type="radio"/>
Social Security	<input type="radio"/>	<input type="radio"/>
Individual retirement plan(s) to which I personally contribute	<input type="radio"/>	<input type="radio"/>
Personal savings or investments	<input type="radio"/>	<input type="radio"/>
Other (SPECIFY) _____	<input type="radio"/>	<input type="radio"/>

7. Please indicate how strongly you agree or disagree with the following statement. *My retirement plan is adequate to meet my financial needs when I reach retirement age.*
 Strongly Agree Agree Disagree Strongly Disagree

8. Are you a member of a collective bargaining unit (union/association) at your primary EMS job?
 Yes No

9. In the past 12 months, did you receive a pay raise (excluding bonuses) from your primary EMS employer?
 Yes → GO TO QUESTION 10 No → SKIP TO QUESTION 13

10. Was the pay raise based upon: (PLEASE MARK ONE CIRCLE PER LINE)

	Yes	No
Merit	<input type="radio"/>	<input type="radio"/>
Cost of living	<input type="radio"/>	<input type="radio"/>
Longevity	<input type="radio"/>	<input type="radio"/>
Additional education	<input type="radio"/>	<input type="radio"/>
Skill pay	<input type="radio"/>	<input type="radio"/>
Employer decision (no reason given)	<input type="radio"/>	<input type="radio"/>
Promotion	<input type="radio"/>	<input type="radio"/>

11. How satisfied were you with this pay raise? Very Satisfied Satisfied Dissatisfied Very Dissatisfied

12. What percentage pay raise did you receive? _____ %

13. Does your primary EMS organization currently make available to you any of the following? (PLEASE MARK ONE CIRCLE PER LINE)

	Yes	No
Free meals while on duty/meal allowance	<input type="radio"/>	<input type="radio"/>
Fitness facility on site/Health club membership	<input type="radio"/>	<input type="radio"/>
Periodic physical examinations or health screenings	<input type="radio"/>	<input type="radio"/>

14. EMT re-registration requires at least 24 hours of continuing education. Does your primary EMS employer provide support for this continuing education (for example, through tuition reimbursement, paid time off to attend further training, or reimbursement for educational travel costs)?
 Yes → GO TO QUESTION 15 No → SKIP TO QUESTION 16

15. How satisfied are you with your primary EMS organization's support of your continuing education?
 Very Satisfied Satisfied Dissatisfied Very Dissatisfied

16. How satisfied are you with the appreciation and recognition you receive from your EMS organization?
 Very Satisfied Satisfied Dissatisfied Very Dissatisfied

17. Overall, how satisfied are you with all of the benefits you receive from your primary EMS employer?
 Very Satisfied Satisfied Dissatisfied Very Dissatisfied

18. Considering the type of work they do and the conditions they work under, do you think EMT's:
 get paid much less than they deserve to be paid
 get paid less than they deserve to be paid
 receive a fair wage for what they do
 get paid more than they deserve to be paid
 get paid much more than they deserve to be paid

Mark, Reflex® forms by NCS Pearson MM227309-3 654321 HC00 Printed in U.S.A.

9. Did you have to personally pay a fee to attend this course? Do not include any fees for which you were reimbursed.

Yes No → How much did you have to pay? \$1 - \$100 \$2,501 - \$5,000
 \$101 - \$500 \$5,001 - \$10,000
 \$501 - \$1,000 \$10,001 - \$15,000
 \$1,001 - \$2,500 \$15,001 or more

10. Do you think the cost of this course was . . .? (PLEASE MARK ONE)

Very expensive About right Very inexpensive
 Expensive Inexpensive

11. About how many classroom, clinical and field internship hours were required for completion of this course?

50 to 109 111 - 149 250 - 499 1,000 - 1,500
 110 only 150 - 249 500 - 999 More than 1,500

12. Where was the classroom training for this course provided? (PLEASE MARK ONE)

Community College Hospital Other (PLEASE DESCRIBE) _____
 Four year College or University Church
 EMS Station Community Hall
 Fire Station Academy (EMS, Fire, Police)

13. Who was responsible for conducting this course?

Community College Public Safety Agency
 Four year College or University Academy (EMS, Fire, Police)
 Hospital Don't know
 EMS Agency Other (PLEASE DESCRIBE) _____

14. Have you heard of the Joint Review Committee on Accreditation for EMT Programs?

Yes No → Was your course accredited by this committee? Yes No Don't know
 No

15. As a result of the training you received in this course, how well were you prepared to perform the following? PLEASE MARK ONE CIRCLE ON EACH LINE.

	Very well Prepared	Adequately Prepared	Poorly Prepared
Trauma patient assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medical patient assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiac arrest management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Airway management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spinal immobilization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fracture management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hemorrhage control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Childbirth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pediatric patient management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. In which of the following ways have you received *continuing EMS education*? PLEASE MARK ONE CIRCLE ON EACH LINE.

	Yes	No
Classroom instruction	<input type="radio"/>	<input type="radio"/>
State conferences	<input type="radio"/>	<input type="radio"/>
National conferences	<input type="radio"/>	<input type="radio"/>
Run reviews or case reviews	<input type="radio"/>	<input type="radio"/>
Internet	<input type="radio"/>	<input type="radio"/>
CD-ROM and interactive computer programs	<input type="radio"/>	<input type="radio"/>
Telemedicine	<input type="radio"/>	<input type="radio"/>
Journal articles	<input type="radio"/>	<input type="radio"/>
Grand rounds	<input type="radio"/>	<input type="radio"/>
Video cassette	<input type="radio"/>	<input type="radio"/>
Satellite TV	<input type="radio"/>	<input type="radio"/>

Appendix E1: NREMT 2005 Re-Registration Survey

NREMT REREGISTRATION SURVEY
USE NO. 2 PENCIL - BUBBLE IN THE SELECTED RESPONSE

Registry Number

P	O						
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<p>What is the highest level of education that you have completed?</p> <p> <input type="radio"/> Didn't complete high school <input type="radio"/> High school graduate/GED <input type="radio"/> Some college <input type="radio"/> Associate Degree (A.A., A.S.) <input type="radio"/> Bachelors Degree (B.S., B.A.) <input type="radio"/> Graduate Degree (M.A., M.S., Ph.D., etc.) </p>	<p>How many years have you worked as an EMT?</p> <p> <input type="radio"/> less than one year <input type="radio"/> 8 - 10 years <input type="radio"/> 1 - 2 years <input type="radio"/> 11 - 15 years <input type="radio"/> 3 - 4 years <input type="radio"/> 16 - 20 years <input type="radio"/> 5 - 7 years <input type="radio"/> 21 years or more </p>																																																																																																																																																																																													
<p>At what level are you currently practicing as an EMT?</p> <p> <input type="radio"/> Basic <input type="radio"/> Intermediate/85 <input type="radio"/> Intermediate/99 <input type="radio"/> Paramedic <input type="radio"/> Not currently practicing </p>	<p>What is the size of the community in which you work as an EMS provider?</p> <p> <input type="radio"/> Rural area (less than 2,500) <input type="radio"/> Mid-sized City (less than 500,000) <input type="radio"/> Small town (2,500-24,999) <input type="radio"/> Suburban/fringe of a mid city <input type="radio"/> Medium town (25,000-74,999) <input type="radio"/> Large City (more than 500,000) <input type="radio"/> Large town (75,000-149,000) <input type="radio"/> Suburban/fringe of a large city </p>																																																																																																																																																																																													
<p>Which of the following best described the type of EMS Service for which you do most of your EMT work?</p> <p> <input type="radio"/> Fire-Based <input type="radio"/> County or Municipal based (for example, 3rd service) <input type="radio"/> Private, for profit <input type="radio"/> Private, not for profit <input type="radio"/> Hospital-Based <input type="radio"/> US Federal Govt. (non-military) <input type="radio"/> Military <input type="radio"/> I am not affiliated with any organization </p>																																																																																																																																																																																														
<p>What do you consider your primary role in your EMS system? (YOU MAY SELECT MORE THAN ONE)</p> <p> <input type="radio"/> Field Provider <input type="radio"/> Medical Director <input type="radio"/> Field Supervisor <input type="radio"/> Educator <input type="radio"/> Upper Management </p>	<p>About how many calls do you respond to during the typical week?</p> <p> <input type="radio"/> 0 <input type="radio"/> 5 to 9 <input type="radio"/> 30 to 39 <input type="radio"/> 1 <input type="radio"/> 10 to 19 <input type="radio"/> 40 to 49 <input type="radio"/> 2 to 4 <input type="radio"/> 20 to 29 <input type="radio"/> 50 or more </p>																																																																																																																																																																																													
<p>For how many different organizations do you currently perform EMS work (paid or volunteer)?</p> <p> <input type="radio"/> 0 If 0, go to end <input type="radio"/> 1 If 1, please answer the questions listed below <input type="radio"/> 2 or more If 2 or more, please answer the questions below referring to your primary EMT job </p>																																																																																																																																																																																														
<p>We are studying areas of job satisfaction and dissatisfaction among EMTs.</p> <p>How satisfied are you with:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 5%;"></th> <th style="width: 10%; text-align: center;">Extremely Satisfied</th> <th style="width: 10%; text-align: center;">Very Satisfied</th> <th style="width: 10%; text-align: center;">Moderately Satisfied</th> <th style="width: 10%; text-align: center;">Neither Satisfied or Dissatisfied</th> <th style="width: 10%; text-align: center;">Moderately Dissatisfied</th> <th style="width: 10%; text-align: center;">Very Dissatisfied</th> <th style="width: 10%; text-align: center;">Extremely Dissatisfied</th> </tr> </thead> <tbody> <tr><td>the amount of job security you have as an EMS Provider</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the working relationship you have with your peers</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the quality of supervision you receive at your job</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>your direct supervisor</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>your medical director</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>your workload</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>your pay</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>your benefits</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the physical condition of your ambulance/rescue</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the physical condition of your station house/base/sub-station</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the status of your position with the EMS profession</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the status of the EMS profession as perceived by the general public</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>your opportunities for advancement</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the recognition you receive from your peers for doing your job</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the recognition you receive from your supervisors for doing your job</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the recognition you receive from other health care professionals for doing your job</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the recognition you receive from the general public for doing your job</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the amount of personal growth and development you experience while doing your job</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>the feeling of accomplishment you get from doing your job</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> <tr><td>All things considered, how satisfied are you with your current position</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr> </tbody> </table> <p>If you had to do it all over again would you:</p> <p> <input type="radio"/> Choose an EMS career <input type="radio"/> Choose a career in a non-health field <input type="radio"/> Choose a career in another health field <input type="radio"/> EMS is not my current career </p>				Extremely Satisfied	Very Satisfied	Moderately Satisfied	Neither Satisfied or Dissatisfied	Moderately Dissatisfied	Very Dissatisfied	Extremely Dissatisfied	the amount of job security you have as an EMS Provider	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	the working relationship you have with your peers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	the quality of supervision you receive at your job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	your direct supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	your medical director	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	your workload	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	your pay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	your benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input 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from the general public for doing your job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	the amount of personal growth and development you experience while doing your job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	the feeling of accomplishment you get from doing your job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	All things considered, how satisfied are you with your current position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
		Extremely Satisfied	Very Satisfied	Moderately Satisfied	Neither Satisfied or Dissatisfied	Moderately Dissatisfied	Very Dissatisfied	Extremely Dissatisfied																																																																																																																																																																																						
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the status of the EMS profession as perceived by the general public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																																																																																																																																																																																						
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Appendix E2: NREMT 2004 Re-Registration Survey

NREMT REREGISTRATION SURVEY
USE NO. 2 PENCIL - BUBBLE IN THE SELECTED RESPONSE

Registry Number

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<p>Please fill in current level</p> <p><input type="radio"/> Basic <input type="radio"/> Intermediate/85 <input type="radio"/> Intermediate/99 <input type="radio"/> Paramedic</p>	<p>Type of Service: (mark only one)</p> <p><input type="radio"/> Fire-Based <input type="radio"/> Private <input type="radio"/> Hospital-Based <input type="radio"/> Military <input type="radio"/> County or Municipal-Based (3rd service) <input type="radio"/> US Govt (nonmilitary) <input type="radio"/> Volunteer</p>	<p>What best describes your reimbursement as an EMS provider?</p> <p><input type="radio"/> Paid, full time <input type="radio"/> Paid, part time <input type="radio"/> Partially paid (stipend, compensated volunteer, etc.) <input type="radio"/> Unpaid Volunteer</p>																																																								
<p>What is the size of the community in which you work as an EMS provider?</p> <p><input type="radio"/> Rural area (less than 2,500) <input type="radio"/> Small town (2,500-24,999) <input type="radio"/> Medium town (25,000-74,999) <input type="radio"/> Large town (75,000-149,000)</p>		<p>Length of time in EMS</p> <p><input type="radio"/> 0-1 years <input type="radio"/> 11-15 years <input type="radio"/> 2-5 years <input type="radio"/> 16-20 years <input type="radio"/> 6-10 years <input type="radio"/> 21 years or more</p>																																																								
<p>1. Do you know the name of your physician medical director? <input type="radio"/> Yes <input type="radio"/> No</p> <p>2. When was the last time your physician medical director personally participated in your continuing education?</p> <p><input type="radio"/> Within the last month <input type="radio"/> Over one year ago <input type="radio"/> 1-6 months ago <input type="radio"/> Never <input type="radio"/> 7-12 months ago</p> <p>3. When was the last time you have met personally with your physician medical director to discuss an EMS issue?</p> <p><input type="radio"/> Within the last month <input type="radio"/> Over one year ago <input type="radio"/> 1-6 months ago <input type="radio"/> Never <input type="radio"/> 7-12 months ago</p>		<p>4. When was the last time you personally saw your physician medical director at the scene of an EMS call?</p> <p><input type="radio"/> Within the last month <input type="radio"/> Over one year ago <input type="radio"/> 1-6 months ago <input type="radio"/> Never <input type="radio"/> 7-12 months ago</p> <p>5. What describes the number of EMT-Basics in your primary EMS agency?</p> <p><input type="radio"/> We have too many EMT-Basics <input type="radio"/> We have the correct amount of EMT-Basics <input type="radio"/> We need more EMT-Basics <input type="radio"/> We don't use EMT-Basics</p> <p>6. Describe the number of EMT-Paramedics in your primary EMS service?</p> <p><input type="radio"/> We have too many Paramedics <input type="radio"/> We have the correct amount of Paramedics <input type="radio"/> We need more Paramedics <input type="radio"/> We don't use Paramedics</p>																																																								
<p>7. How effective do you think each of the following strategies are for <u>recruiting</u> new individuals in EMS? (Choose only one for each statement)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%; text-align: center;">Highly Ineffective</th> <th style="width: 15%; text-align: center;">Ineffective</th> <th style="width: 15%; text-align: center;">Effective</th> <th style="width: 15%; text-align: center;">Highly Effective</th> </tr> </thead> <tbody> <tr><td>Improving the working environment</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Increase pay and benefits</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Decreasing the length of initial training</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Increase the status of the profession</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Emphasize the excitement of the job</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Emphasize the opportunity to help people</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Emphasize the opportunity to save lives</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Develop flexible work schedules</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Increase opportunities for advancement</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> </tbody> </table>					Highly Ineffective	Ineffective	Effective	Highly Effective	Improving the working environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increase pay and benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Decreasing the length of initial training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increase the status of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Emphasize the excitement of the job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Emphasize the opportunity to help people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Emphasize the opportunity to save lives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Develop flexible work schedules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increase opportunities for advancement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
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<p>8. How effective do you think each of the following strategies are for <u>retaining</u> new individuals in EMS? (Choose only one for each statement)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%; text-align: center;">Highly Ineffective</th> <th style="width: 15%; text-align: center;">Ineffective</th> <th style="width: 15%; text-align: center;">Effective</th> <th style="width: 15%; text-align: center;">Highly Effective</th> </tr> </thead> <tbody> <tr><td>Improving the working environment</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Increase pay and benefits</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Decreasing the continuing education</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Increase the status of the profession</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Emphasize the excitement of the job</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Emphasize the opportunity to help people</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Emphasize the opportunity to save lives</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Develop flexible work schedules</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Increase opportunities for advancement</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Increase the appreciation of the work we do</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> </tbody> </table>					Highly Ineffective	Ineffective	Effective	Highly Effective	Improving the working environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increase pay and benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Decreasing the continuing education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increase the status of the profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Emphasize the excitement of the job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Emphasize the opportunity to help people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Emphasize the opportunity to save lives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Develop flexible work schedules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increase opportunities for advancement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increase the appreciation of the work we do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Appendix F: NCSEMSTC 2005 Training Coordinators Survey

Thank you for agreeing to participate in this brief survey of EMS State training coordinators.

1. Does your State require licensure or certification of EMTs/paramedics? **(If yes, answer Q2. If no, skip to Q5)**

Yes No

2. Which of the following does your State require for initial paramedic certification/licensure?
(Check all that apply)

- Registration with the National Registry of Emergency Medical Technicians (NREMT)
- Active affiliation with an EMS agency (i.e., employed or actively volunteering) as a paramedic?
- Criminal History Background Check?
- Successful completion of a State-sponsored competency exam?

3. Does your State require paramedics to maintain their registration with NREMT as a condition of State recertification?

Yes No

4. Does your State require continuing education as a condition of State recertification?

Yes No

5. How many credentialed providers of paramedic education (i.e., training programs) are there in your State?

6. Does your State credential instructors/teachers of paramedic education?
(If yes, please answer Q7. If no, skip to Q8)

Yes No

7. How many credentialed instructors/teachers of paramedic education are there in your State?

8. Is there difficulty finding credentialed instructors/teachers for paramedic education programs in your State?

Yes No

9. Does your State credential administrators/coordinators of paramedic education in your State? **(If yes, please answer Q10. If no, skip to Q11)**

Yes No

10. How many credentialed administrators/coordinators of paramedic education are there in your State?

11. Do you have access to data on programs enrollment in your State? **(If yes, answer Q12. If no, skip to Q14)**

Yes No

12. How many students were **enrolled** at each of the following levels in your State in 2004?

- a) First Responder _____
- b) EMT Basic _____
- c) EMT Intermediate 1985 _____
- d) EMT Intermediate 1999 _____
- e) EMT Intermediate/Other _____
- f) Paramedic _____

13. a. For each of the following years for which you have enrollment data, how many students **graduated** from all paramedic programs combined?
(Please enter responses in box below. Leave blank where no data available)

b. How many students dropped out (i.e., left program prior to **completion for any reason**) out of all paramedic programs combined?
(Please enter responses in box below. Leave blank where no data available)

Year	13a. Number of Graduates	13b. Number of Dropouts
2004		
2003		
2002		
2001		

14. Are there waiting lists for paramedic educational programs in your State?

Yes No

15. Has your State adopted the EMS National Standard Curricula?
(If yes, please answer Q16. If no, skip to Q18)

Yes No

16. In what year did your State adopt the EMS National Standard Curricula?

17. Does your State have any training requirements that go beyond the EMS National Standard Curricula?

Yes No

18. Please tell us anything else you would like us to know about your State with regard to the following: shortages of EMS workers, difficulties with recruitment or retention, and/or programs to increase diversity.

Thank you for completing our survey! Your input is very valuable to us.

Appendix G: Descriptions of National Data Sources

Workforce

Current Population Survey

This is the source for many of the estimates of demographic characteristics of the EMS workforce presented in this report. The CPS is a monthly survey of approximately 60,000 households administered by the Census Bureau on behalf of the Bureau of Labor Statistics. It is the source for unemployment statistics, but also for variety of demographic topics including gender, race/ethnicity, age, union status, and educational attainment. The CPS sample is designed to represent the civilian, non-institutional population of the United States.

Current Population Survey – 2005 Volunteer Supplement

Conducted September 2005 in conjunction with the monthly Current Population Survey, the 2005 Volunteer Supplement surveyed household members 15 years and older on their volunteer activities since September 1, 2004. Respondents were asked about the types of activities they were involved in and with what kinds of organizations, as well as how often they participated. Respondents who did not volunteer were asked to report their main reason.

Occupational Employment Projections

These projections come from the Office of Occupational Employment Statistics & Projections, a division of the Bureau of Labor Statistics. Employment projections are made for a 10 year period and updated every two years. The projections include the *likely* size and composition of the labor force, total economic growth, and industry and occupational employment, among other features. The data on projected employment for the EMT/paramedic workforce presented in this report come from a table first published in the November 2005 issue of *Monthly Labor Review* as “Appendix: Employment by occupation, 2004 and projected 2014.” Employment projections also serve as the background for analysis of future employment opportunities presented in the **Occupational Outlook Handbook**. This publication provides information on the nature of work, conditions of work, training, job outlook and many other pieces of information for more than 250 different occupations. It is published every two years, also by the Office of Occupational Employment Statistics & Projections. It is the source of data on workplace settings and in part, factors driving the demand for EMT/Paramedic employment, presented in this report.

Occupational Employment Statistics Program

This program is administered by the Bureau of Labor Statistics, is the source for the estimates of total employment and wages presented in this report. The OES surveys approximately 1.2 million non-farm business establishments over the course of a three year period. It includes workers who are considered both full and part time, meaning it makes no distinction between the two. Estimates are produced for more than 800 detailed occupations. It does not include self-employed workers. The wage estimates are for gross pay, with no overtime, but they include cost-of-living allowances, hazardous-duty pay, and incentives such as commissions, tips or production bonuses. The OES is a Federal-State cooperative program, allowing estimates at different geographic levels such as the Nation, the States, and metropolitan areas.

Population

United States Census Bureau, Population Estimates Program

This program is the source for all population estimates presented in this report. This is another Federal-State cooperative program allowing for estimates at the different geographic levels including the Nation, the States, counties, cities/towns, and metropolitan areas. The program publishes estimates on an annual basis, with a reference date of July 1.

United States Census Bureau, Population Projections Program

This program is the source for all estimates of projected population presented in this report. Population projections are based on certain assumptions regarding future births, deaths, and international and domestic migration. Projected population values are based on population estimates consistent with the 2000 Census. This is also a Federal-State cooperative program allowing for estimates at the geographic levels of the Nation and the States.

Education

American Medical Association, Health Professions Directory and Education Data Book

These are the sources for education data pertaining to *accredited* EMT/paramedic training programs presented in this report. Accredited programs are a subpopulation of the larger universe of training programs represented by IPEDS. The AMA surveys health professions education programs accredited by 21 different agencies on an annual basis. In the case of EMT/paramedic programs, the agency is the *Commission on Accreditation of Allied Health Education Programs*. Data collected include graduates by gender, race/ethnicity and level of award, tuition costs and enrollment capacity among other items.

Integrated Postsecondary Education Data System

IPEDS is the core postsecondary education data-collection program for the National Center for Education Statistics, itself a division of the Federal Department of Education. It serves as a comprehensive system meant to capture all institutions in the US that have postsecondary education as their primary purpose. The Higher Education Act of 1992 mandates that all institutions which “participate, or are applicants for participation, in any Federal student financial assistance program authorized by Title IV of the Higher Education Act of 1965” complete the surveys administered through IPEDS in a timely manner. In this report, IPEDS serves as the principal source of education data on EMT/Paramedic training programs.

Other

Consumer Price Indexes Program

This program publishes data on a monthly basis that measures changes in the price paid by urban consumers for a “representative basket of good and services.” In other words, it is a measure of inflation. In this report, it is used to adjust wage estimates so that wage trends can be presented in constant values. The All-Urban CPI was used, which covers approximately 87 percent of the total U.S. population.

Longitudinal Emergency Medical Technician Attributes and Demographics Study

This is a longitudinal study of practicing EMTs and paramedics hosted by the National Registry of Emergency Medical Technicians (NREMT). The study began in August 1998 and is led by a team of researchers including State EMS directors, systems managers, training coordinators, emergency physicians, survey researchers, and the staff of the NREMT. Longitudinal and cross-sectional data have been collected annually since 1999 in an effort to describe the attributes and demographic characteristics of the workforce. More information can be found at:
http://www.nremt.org/downloads/About_leads_survey.pdf

Appendix H: Full Bibliography

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