

# National Emergency Medical Services Workforce Data Definitions



U.S. Department of Transportation  
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Administration**



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# Introduction

The National Emergency Medical Services (EMS) Workforce Data Definitions are a tool to improve the quality and consistency of EMS workforce data nationally and to facilitate data-driven EMS workforce planning and research. Their publication is a critical first step to enable effective workforce planning. The widespread adoption and use of the National EMS Workforce Data Definitions by federal, state, and local organizations; by private organizations, associations, and advocacy groups, and by policy makers and researchers is the next logical step in a process of accurately measuring and forecasting both the supply of and need for EMS workers. Widespread adoption of the National EMS Workforce Data Definitions will improve the nation's ability to assess the EMS workforce and allow local, state, and national EMS stakeholders to develop EMS workforce programs and policies that are based on consistent, replicable, and comparable data.

A principal component of any EMS system is its workforce - the ability of an EMS system to deliver high quality prehospital emergency care depends upon a qualified and capable workforce. The *Emergency Medical Services Workforce Agenda for the Future (EMS Workforce Agenda)*, published in May 2011, envisions a future in which all EMS systems have a sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, healthy, and safe. Workforce planning and development is one of four components identified by the *EMS Workforce Agenda* as critical to developing a workforce that will thrive and be a driving force for achieving integrated, community-based EMS systems.

Comprehensive evidence-based local, state, and national EMS workforce planning requires quality EMS data. The purpose of the National EMS Workforce Data Definitions is to facilitate the collection of uniform EMS workforce data to support EMS system planning and prepare the EMS workforce for future demands.

## Background

*EMS Workforce for the 21st Century: A National Assessment* published in 2008, concludes that the data currently available to address the future demand for and supply of EMS workers in the nation are insufficient for national EMS workforce planning. Subsequently, the *EMS Workforce Agenda* states that improving the quality and scope of EMS workforce data requires a national effort to develop and implement a universally shared set of EMS workforce data terms and definitions.

Initiating comprehensive evidence-based nationwide EMS workforce planning requires quality EMS workforce data. In September 2008 the National Highway Traffic Safety Administration (NHTSA) awarded a contract to the American Institutes for Research (AIR) to develop national EMS workforce data definitions to facilitate uniform collection of national EMS workforce data. AIR worked closely with EMS workforce data and research experts and stakeholders to draft these uniform national EMS workforce data definitions.

Development of the National EMS Workforce Data Definitions included the completion of a literature review (see Appendix A), guidance from a project steering committee, comments submitted by the public, and input from national EMS stakeholders. Appendix A provides further details on the process used to develop the National EMS Workforce Data Definitions.

## Nationwide Adoption of the National EMS Workforce Data Definitions

The *EMS Workforce Agenda* states that by the year 2020 basic EMS workforce data will be known and accessible. It further states there will be a source for comprehensive, current, and accurate data on the EMS workforce and its characteristics at the local, state, and national levels. Nationwide adoption of these National EMS Workforce Data Definitions will move the EMS community towards this goal, but will require broad and incremental change. Successful nationwide adoption will depend on organizations and agencies adopting the National EMS Workforce Data Definitions as they revise their existing EMS workforce data definitions. Coordinated interagency action by federal, national, state and local agencies will help facilitate what will likely be a multi-year process.

Summary Table of National EMS Workforce Definitions		
Category	Essential	Desirable but not essential
<b>Employment at Agency</b>	Personnel's service status [1.1.E] EMS practice level [1.2.E] Primary EMS Job Responsibilities [1.3.E] Current staff member [1.4.E] Other Job Responsibilities [1.5.E]	Service status date [1.6.D] Hours on-duty in past 4 weeks [1.7.D] Hours on-call in past 4 weeks [1.8.D] Total length of EMS service at agency [1.9.D] Date length of service documented [1.10.D]
<b>Individual Characteristics</b>	State EMS licensure level [2.1.E] State licensure date (initial) [2.2.E] State EMS licensure end date [2.3.E] National Registry certification level [2.4.E] National Registry certification date [2.5.E] Date of birth [2.6.E] Sex [2.7.E] Ethnicity [2.8.E] Race [2.9.E] Primary Affiliation [2.10.E]	Secondary Affiliation [2.11.D] U.S. Citizenship [2.12.D] Highest earned degree [2.13.D] Major Field of Study [2.14.D] Motor Vehicle Licenses [2.15.D] Foreign language reading ability [2.16.D] Foreign language writing ability [2.17.D] Foreign language speaking ability [2.18.D] Helicopter or Private Pilot's license [2.19.D] Vaccinations: Tetanus, Diphtheria, Pertussis [2.20.D] Vaccinations: Hepatitis A [2.21.D] Vaccinations: Hepatitis B [2.22.D] Vaccinations: Measles, Mumps, Rubella (MMR) [2.23.D] Vaccinations: Influenza [2.24.D] State of Residence [2.25.D] State licensure ID number [2.26.D] Date of agency affiliation [2.27.D] Education Program Accreditation/Approval [2.28.D] Continuing Education Course Completions [2.29.D]
<b>EMS Education Program Characteristics</b>	Education Program Accreditation/Approval, by level [3.1.E] Education Program Completers, by level [3.2.E]	Total Experience [3.3.D] Continuing Education Course Authorization [3.4.D] Enrollment, by level [3.5.D] Education Program Certified Graduates, by level [3.6.D] Continuing Education: Refresher Course Completers, by level [3.7.D] Continuing Education: Other Course Completers, by level [3.8.D]
<b>Agency Characteristics</b>	EMS Organizational Type [4.1.E] EMS Organization Tax Status [4.2.E] Primary Type of Service [4.3.E] Other Types of Service [4.4.E] Level of EMS Service [4.5.E] Organization Status [4.6.E] Typical Staffing Configuration for 911 Ambulance Response [4.7.E] Typical Staffing Configuration for 911 Non-Ambulance Response [4.8.E] Typical Staffing Configuration for Scheduled Patient Transport [4.9.E] Service Area Zip Codes [4.10.E] Agency New Hires, by level [4.11.E] Agency Leavers, by level [4.12.E] Agency Current Staffing, by level [4.13.E] Starting Salary, by level [4.14.E] Starting Volunteer Compensation, by level [4.15.E] Benefits rate [4.16.E] Employee Benefits [4.17.E] Volunteer Benefits [4.18.E] Call Volume: Transports [4.19.E] Call Volume: 911 EMS responses [4.20.E] Call Volume: Advanced Life Support (ALS) Responses [4.21.E] Call Volume: Basic Life Support (BLS) responses [4.22.E] Job Related Illness and Injury (time lost) [4.23.E]	Agency Name [4.24.D] EMS Agency Number [4.25.D] Agency State [4.26.D] Total 911 Emergency Service Area Size [4.27.D] Total 911 Emergency Service Area Population [4.28.D] Major Funding Source [4.29.D] Agency Anticipated Vacancies, by level [4.30.D] Overtime Hours (paid), by level [4.31.D] Work Shift Length, by level [4.32.D] On call hours per shift, by level and employment status [4.33.D] Number of Work Shifts [4.34.D] Agency policy: Annual physical [4.35.D] Agency policy: Tobacco smoking [4.36.D]

# Layout and Format of National EMS Workforce Data Definitions

This document is organized into two main sections:

(1) Definitions of EMS workforce data elements whose collection is essential for workforce planning and reporting at both a national and local level are listed on pages 2 - 19.

(2) Definitions of EMS workforce data elements whose collection is desirable but not essential for workforce planning and reporting are listed on pages 20 - 35.

Within each of the two main sections are four categories of definitions:

- (1) Employment at Agency
- (2) Individual Characteristics
- (3) EMS Education Program Characteristics
- (4) Agency Characteristics

*The probable provider(s) of the data elements follow each of these categories.*

Within each category, every data element and its definition are enclosed in a text box. The following format is used:

Data element name followed by an alphanumeric identifier in brackets

Definition of Data Element

*Allowed Responses*

Extended definition (when needed)

**EMS workforce data elements whose collection is essential for workforce planning and reporting at both a national and local level.**

**Category: Employment at Agency**

*Probable Information Source: Individual or Agency*

**Personnel's service status [1.1.E]**

Personnel's service status for this agency:

*Full Time Paid Employee, Part Time Paid Employee, Volunteer*

Full Time is 35 hours per week or more.

Part Time is fewer than 35 hours per week.

Volunteers are licensed EMS workers who receive nominal or no compensation for their provision of EMS services at the agency.

NOTES: The Bureau of Labor Statistics (BLS) defines full-time as 35 hours per week or more.

Recent court opinion provides guidance on the definition of a volunteer EMS worker. This guidance states:

- (1) A volunteer can be paid expenses, reasonable benefits or a nominal fee to perform such services.
- (2) The volunteer must offer these services freely and without pressure or coercion
- (3) The volunteer can NOT be employed by the same public agency to perform the same type of services as those for which the individual proposes to volunteer.

In addition, there is guidance about the definition of "nominal": 20 percent or less than what a public agency would otherwise pay to hire a full-time person for the same services. However, some states have their own definition of nominal. In Indiana, "nominal" means an annual payment of not more than \$20,000. (Szymanski, B. (2007). *New Labor Department Guidelines*. EMS Professionals, January-February 2007, 40-42). See also, FLSA 2006-28 on the U.S. Department of Labor website.

**EMS practice level [1.2.E]**

The EMS level at which an individual is providing services for your organization:

*None, Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate\*, Advanced Emergency Medical Technician, and Paramedic.*

If your state categorizes EMS licensure levels differently, select the level corresponding to the highest level of practice in the *National EMS Scope of Practice Model* at which the individual is providing services for your agency.

In general, "first responders" can be considered to be Emergency Medical Responders.

\* The Emergency Medical Technician - Intermediate level should only be used in states in which individuals are licensed at this level. As states transition to the *National EMS Scope of Practice Model*, it is anticipated that there will be no new Emergency Medical Technician – Intermediate licenses granted. .



**Primary EMS Job Responsibilities [1.3.E]**

The individual's primary EMS role at this agency or organization. (Select only one):

*Educator/Preceptor, Administrator/Manager, First-line Supervisor, Patient Care Provider, Other*

Educator/Preceptor - A person whose primary role is training individuals enrolled in an approved or accredited EMS training course or providing continuing education required for maintenance of licensure.

Administrator/Manager - A person whose primary role is the management and direction of an organization providing EMS services.

First-line Supervisor - A person whose primary role is the direct supervision of individuals providing EMS services.

Patient Care Provider - A licensed health worker whose main role is the provision of EMS services to patients.

Other – A person whose primary EMS role at this agency is not listed above.

**Current staff member [1.4.E]**

A person with a valid license to provide EMS services, who is expected to provide EMS services for the agency during the next 90 days:

*Yes, No, Don't know*

**Other Job Responsibilities [1.5.E]**

The individual's other job responsibilities at this agency or organization. These may include EMS and non-EMS responsibilities.

*Educator/Preceptor: Yes, No.*

*Patient Care Provider: Yes, No*

*Law Enforcement (Police): Yes, No.*

*Fire Suppression: Yes, No.*

*First-line Supervisor: Yes, No*

*Educator/Preceptor* - A person whose responsibilities at this organization include direct involvement in the training of individuals enrolled in an approved or accredited EMS training course or providing continuing education required for maintenance of licensure.

*Patient Care Provider* - A person who is trained and licensed to provide EMS services to patients and whose responsibilities at this agency include the provision of these services.

*Law Enforcement (Police)* - A person who is trained and credentialed to perform law enforcement (police) services and whose responsibilities at this agency include the performance of these services.

*Fire Suppression* - A person who is trained and credentialed to perform fire suppression services and whose responsibilities at this agency include the performance of these services.

*First-line Supervisor* - A person who directly supervises individuals providing EMS services.

NOTE: More than one "other job responsibility" may be selected.

**Category: Individual Characteristics**

*Probable Information Source: Individual*

**State EMS licensure level [2.1.E]**

The highest EMS level at which an individual can legally perform EMS services in the state:

*None, Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate\*, Advanced Emergency Medical Technician, and Paramedic.*

If your state categorizes EMS licensure levels differently, select the level corresponding to the highest level of practice in the *National EMS Scope of Practice Model* at which the individual can practice in your state.

In general, “first responders” can be considered to be Emergency Medical Responders.

\* The Emergency Medical Technician – Intermediate level should only be used in states in which individuals are licensed at this level. As states transition to the *National EMS Scope of Practice Model*, it is anticipated that there will be no new Emergency Medical Technician – Intermediate licenses granted.

**State licensure date (initial) [2.2.E]**

The initial licensure date of an individual’s highest current level of State EMS licensure:

*Date*

**State EMS licensure end date [2.3.E]**

The date on which the individual’s (highest) State EMS license expires:

*Date*

**National Registry certification level [2.4.E]**

Level of most recent National Registry of Emergency Medical Technicians (NREMT) certification:

*None, Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic.*

NREMT certified first responders can be considered to be Emergency Medical Responders. EMT-I(85) and EMT-I(99) can be considered as Emergency Medical Technicians - Intermediate.

**National Registry certification date [2.5.E]**

The date of the individual's most recent National Registry of Emergency Medical Technicians certification:

*Date*

**Date of birth [2.6.E]**

The individual's date of birth:

*Date*

**Sex [2.7.E]**

The individual's sex:

*Male, Female*

**Ethnicity [2.8.E]**

The individual's ethnicity:

*Hispanic, Latino, or Spanish origin*

*Not of Hispanic, Latino, or Spanish origin*

Hispanic, Latino, or Spanish origin refers to a person of Cuban, Mexican, Puerto Rican, South or Central American or other Spanish culture or origin regardless of race.

**Race [2.9.E]**

The individual's race using definitions mandated by the US Office of Management and Budget (OMB): *(Check all that apply)*

*American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White.*

American Indian and Alaska Native - A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.

Asian - A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American - A person having origins in any of the Black racial groups of Africa.

Native Hawaiian and Other Pacific Islander - A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White - A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

**Primary Affiliation [2.10.E]**

Agency for which individual spent the greatest number of hours in a position that involved providing EMS services, in the past 30 days:

*Agency name*

**Category: EMS Education Program Characteristics**

*Probable Information Source: Education Program staff*

**Education Program Accreditation/Approval, by level [3.1.E]**

The organization's authorization for providing education, for each certification level (Emergency Medical Responder, Emergency Medical Technician, Advanced Emergency Medical Technician, and Paramedic):

*Accreditation by the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP);*

*State or local approval;*

*Both CoAEMSP accreditation AND state or local approval;*

*None.*

**Education Program Completers, by level [3.2.E]**

The number of students successfully completing program, in the past 12 months, for each certification level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder: \_\_\_\_\_*

*Emergency Medical Technician: \_\_\_\_\_*

*Emergency Medical Technician - Intermediate: \_\_\_\_\_*

*Advanced Emergency Medical Technician: \_\_\_\_\_*

*Paramedic: \_\_\_\_\_*

*Number*

If there were no successful program completers at a level in the past 12 months, enter zero.

**Category: Agency Characteristics**

*Probable Information Source: Agency staff*

**EMS Organizational Type [4.1.E]**

The type of organization from which EMS services are delivered:

*Hospital; Fire Department; Government, Non-Fire Department; Tribal; Private*

Hospital - refers to EMS agencies that are under the direct control of a hospital, regardless of the type of organization that runs the hospital.

Fire Department - an organization from which fire and EMS services are provided, regardless of the type of organization that runs the Fire Department. Volunteer fire departments should be considered as a fire department.

Government, Non-Fire Department - are operated directly by a federal, state, county, or local government entity.

Tribal - are operated by a Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village or community that the Secretary of the Interior acknowledges as an Indian tribe under the Federally Recognized Tribe List Act of 1994, 25 U.S.C. 479a.

Private - are operated under the direct control of a for-profit or not-for-profit organization other than a hospital. Volunteer rescue squads that are operated independently of a fire department should be included here.

**EMS Organization Tax Status [4.2.E]**

The business model describing how the organization is chartered or registered to operate:

*For profit;*

*Not-for-profit;*

*Neither (Government)*

For profit organizations distribute their surplus funds to owners or shareholders.

Not-for-profits do not distribute their surplus funds to owners or shareholders. They exist solely to provide programs or services that benefit the public.

Neither (Government) refers to organizations that are run by a governmental entity (local, state, federal, or tribal).

**Primary Type of Service [4.3.E]**

The primary service provided by the agency. If more than one type of service is provided, select the service with the greatest number of calls in the past 12 months:

*911 Response with transport capability, 911 response without transport capability, Air Medical, Hazmat, Medical Transport (Convalescent), Paramedic Intercept, Rescue, Specialty Care Transport*

911 Response with transport capability - Emergent or immediate response to an incident location, regardless of method of notification (for example, 911, direct dial, walk-in, flagging down), with the ability to transport patients

911 response without transport capability - Emergent or immediate response to an incident location, regardless of method of notification (for example, 911, direct dial, walk-in, flagging down), without the ability to transport patients

Air Medical - Fixed Wing (FW) or Rotary Wing (RW) transportation by a vehicle that is certified by the Federal Aviation Agency (FAA) as an air ambulance, including the provision of medically necessary supplies and services

Hazmat - Response to situations in which hazardous materials are present or are believed to be present

Medical Transport (Convalescent) - Transport of a patient from one health care facility to another

Paramedic Intercept - Advanced Life Support Services provided by Paramedics in response to a request for emergency services by Basic Life Support responders

Rescue - Services involving the extrication of individuals, most typically from vehicles

Specialty Care Transport - Interfacility transportation of a critically injured or ill beneficiary by a ground ambulance vehicle, including the provision of medically necessary supplies and services, at a level of service beyond the scope of the Paramedic

Other (SPECIFY)



#### **Other Types of Service [4.4.E]**

The other service type(s) provided by the agency in the past 12 months:

*911 Response with transport capability: Yes, No*

*911 response without transport capability: Yes, No*

*Air Medical: Yes, No*

*Hazmat: Yes, No*

*Medical Transport (Convalescent) : Yes, No*

*Paramedic Intercept: Yes, No*

*Rescue: Yes, No*

*Specialty Care Transport: Yes, No*

*None: Yes, No*

911 Response with transport capability - Emergent or immediate response to an incident location, regardless of method of notification (for example, 911, direct dial, walk-in, flagging down), with the ability to transport patients

911 response without transport capability - Emergent or immediate response to an incident location, regardless of method of notification (for example, 911, direct dial, walk-in, flagging down), without the ability to transport patients

Air Medical - Fixed Wing (FW) or Rotary Wing (RW) transportation by a vehicle that is certified by the Federal Aviation Agency (FAA) as an air ambulance, including the provision of medically necessary supplies and services

Hazmat - Response to situations in which hazardous materials are present or are believed to be present

Medical Transport (Convalescent) - Transport of a patient from one health care facility to another

Paramedic Intercept - Advanced Life Support Services provided by Paramedics in response to a request for emergency services by Basic Life Support responders

Rescue - Services involving the extrication of individuals, most typically from vehicles

Specialty Care Transport - Interfacility transportation of a critically injured or ill beneficiary by a ground ambulance vehicle, including the provision of medically necessary supplies and services, at a level of service beyond the scope of the Paramedic

Other (SPECIFY)

None - Only the primary type of service was provided in the past 12 months.

**Level of EMS Service [4.5.E]**

The highest possible level of EMS service (of the options listed below) which the agency can provide for any call:

*Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, Paramedic*

**Organization Status [4.6.E]**

The type(s) of emergency medical personnel providing services for the agency:

*Volunteer; Non-volunteer; Combination (both volunteer and non-volunteer).*

Volunteers are licensed Emergency Medical Responders, Emergency Medical Technicians, Advanced Emergency Medical Technicians, or Paramedics who receive nominal or no compensation for their provision of EMS services at the agency.

**Typical Staffing Configuration for 911 Ambulance Response [4.7.E]**

The most common EMS staffing configuration for your agency's 911 ambulance response in the past 12 months, indicating the number of staff at each of the following levels that comprise the most common response team: Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, Paramedic, and Other (SPECIFY)

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Other (SPECIFY \_\_\_\_\_):* \_\_\_\_\_

*Number*

If none, enter zero.

If your agency does not have an ambulance, indicate "Not applicable."

**Typical Staffing Configuration for 911 Non-Ambulance Response [4.8.E]**

The most common EMS staffing configuration for your agency's 911 non-ambulance response in the past 12 months, indicating the number of staff at each of the following levels that comprise the most common response team: Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, Paramedic, and Other (SPECIFY)

*Emergency Medical Responder:* \_\_\_\_\_  
*Emergency Medical Technician:* \_\_\_\_\_  
*Emergency Medical Technician - Intermediate:* \_\_\_\_\_  
*Advanced Emergency Medical Technician:* \_\_\_\_\_  
*Paramedic:* \_\_\_\_\_  
*Other (SPECIFY \_\_\_\_\_):* \_\_\_\_\_

*Number*

If your agency only uses ambulances to respond to 911 calls, indicate "Not applicable."  
If none, enter zero.

**Typical Staffing Configuration for Scheduled Patient Transport [4.9.E]**

The most common EMS staffing configuration for scheduled patient transport in the past 12 months, indicating the number of staff at each of the following levels: Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, Paramedic, and Other (SPECIFY)

*Emergency Medical Responder:* \_\_\_\_\_  
*Emergency Medical Technician:* \_\_\_\_\_  
*Emergency Medical Technician - Intermediate:* \_\_\_\_\_  
*Advanced Emergency Medical Technician:* \_\_\_\_\_  
*Paramedic:* \_\_\_\_\_  
*Other (SPECIFY \_\_\_\_\_):* \_\_\_\_\_

*Number*

If your agency does not do scheduled patient transports, indicate "Not applicable."  
If none, enter zero.

**Service Area Zip codes [4.10.E]**

The five-digit zip codes in which the agency has provided service in the past 12 months, with the percentage of service runs associated with each zip code:

*5 digit (zip codes) followed by percentage (rounded to nearest integer)*

**Agency New Hires, by level [4.11.E]**

The number of individuals hired in the past 12 months to fill positions for which a current EMS license is a job requirement, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

NOTE: New volunteers should be considered as "new hires".

If none, enter zero.

**Agency Leavers, by level [4.12.E]**

The number of individuals who left the agency in the past 12 months, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

Individuals on extended leave for a period of 3 months or longer should be counted as leavers.

If none, enter zero.

**Agency Current Staffing, by level [4.13.E]**

The number of individuals filling positions for which a current EMS license is a job requirement, expressed as full-time equivalents (FTEs), by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

If none, enter zero.

**Starting Salary, by level [4.14.E]**

The starting salary for a new, non-volunteer EMS worker at your agency, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Emergency Medical Technician:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Emergency Medical Technician - Intermediate:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Advanced Emergency Medical Technician:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Paramedic:* \$ \_\_\_\_\_ per \_\_\_\_\_

*Number per unit*

Indicate gross (pre-tax) pay, per unit (hour, day, week, month, or year). If the EMS worker is paid on a per call basis, indicate that "call" is the unit.

Fire service agencies should indicate the starting salary for new fire fighters for positions that require EMS licensure, at the required EMS worker level(s). For example, a new Fire Fighter EMT's starting salary should be reported at the Emergency Medical Technician level and a new Fire Fighter Paramedic's starting salary should be reported at the Paramedic level.

Police (public safety) agencies should similarly indicate the starting salary for new police for positions that require EMS licensure by the level(s) of licensure required.

If your agency is a volunteer agency, indicate "not applicable".

If your agency does not have staff at a level, "Not applicable" should be entered.

**Starting Volunteer Compensation, by level [4.15.E]**

The starting financial compensation for a new, volunteer EMS worker at your agency, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Emergency Medical Technician:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Emergency Medical Technician - Intermediate:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Advanced Emergency Medical Technician:* \$ \_\_\_\_\_ per \_\_\_\_\_  
*Paramedic:* \$ \_\_\_\_\_ per \_\_\_\_\_

*Number per unit*

Indicate gross (pre-tax) pay, per unit (hour, day, week, month, or year). If the EMS worker is paid on a per call basis, indicate that “call” is the unit.

Fire service agencies should indicate the starting financial compensation for new volunteer fire fighters for positions that require EMS licensure, at the required EMS worker level(s). For example, a new volunteer Fire Fighter EMT’s starting salary should be reported at the Emergency Medical Technician level and a new volunteer Fire Fighter Paramedic’s starting salary should be reported at the Paramedic level.

Police (public safety) agencies should similarly indicate the starting salary for new volunteer police for positions that require EMS licensure by the level(s) of licensure required.

If your agency does not have volunteers, indicate “not applicable”.

If your agency does not have volunteers at a level, “Not applicable” should be entered.

**Benefits rate [4.16.E]**

The benefits rate for a new, full-time EMS worker at your agency, as a percentage of the employee’s gross salary, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_ %  
*Emergency Medical Technician:* \_\_\_\_\_ %  
*Emergency Medical Technician - Intermediate:* \_\_\_\_\_ %  
*Advanced Emergency Medical Technician:* \_\_\_\_\_ %  
*Paramedic:* \_\_\_\_\_ %

*Percentage*

Benefits typically include paid leave (vacations, holidays, sick leave), retirement (defined benefit and defined contribution plans), health insurance, other health benefits (dental plans and vision plans), other insurance (life insurance, short-term disability, and long-term disability insurance), education benefits (tuition reimbursement, educational incentive pay), and legally required benefits (Social Security and Medicare, Federal and State unemployment insurance taxes, and workers’ compensation).

If your agency does not have staff at a level, “Not applicable” should be entered.

**Employee Benefits [4.17.E]**

The benefits provided for a new, full-time EMS worker at your agency, by level (Emergency Medical Responder, Emergency Medical Technician, Advanced Emergency Medical Technician, and Paramedic):

*Paid leave: Yes/No*

*Retirement: Yes/No*

*Health insurance: Yes/No*

*Other health benefits: Yes/No*

*Line of duty death and injury benefits: Yes/No*

*Other insurance: Yes/No*

*Education benefits: Yes/No.*

Paid leave includes vacations, holidays, and sick leave.

Retirement benefits include defined benefit and defined contribution plans.

Health insurance benefits include those requiring employee contributions for some or all of the costs of health insurance coverage.

Other health benefits include dental insurance and vision plans.

Line of duty death and injury benefits include compensation for work-related accident or illness that are independent of regular life insurance, workers' compensation, short-term disability compensation, and long-term disability compensation.

Other insurance includes life insurance, short-term disability insurance, and long-term disability insurance.

Education benefits include tuition reimbursement, educational incentive pay, and reimbursement for testing and maintenance of certification costs.

**Volunteer Benefits [4.18.E]**

The benefits provided for a volunteer EMS worker at your agency, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Retirement: Yes/No*

*Health insurance: Yes/No*

*Other health benefits: Yes/No*

*Line of duty death and injury benefits: Yes/No*

*Other insurance: Yes/No*

*Education benefits: Yes/No.*

Retirement benefits include defined benefit and defined contribution plans.

Health insurance benefits include those requiring employee contributions for some or all of the costs of health insurance coverage.

Other health benefits include dental insurance and vision plans.

Line of duty death and injury benefits include compensation for work-related accident or illness that are independent of regular life insurance, workers' compensation, short-term disability compensation, and long-term disability compensation.

Other insurance includes life insurance, short-term disability insurance, and long-term disability insurance.

Education benefits include tuition reimbursement, educational incentive pay, and reimbursement for testing and maintenance of certification costs.

NOTE: If benefits are provided to only some volunteers, such as those who work a minimum number of shifts, please report about the volunteers receiving these benefits.

**Call Volume: Transports [4.19.E]**

The number of EMS transports in the past 12 months:

*Number*

This includes both scheduled and non-scheduled (emergency) transports.

If none, enter zero.

**Call Volume: 911 EMS responses [4.20.E]**

The number of responses to 911 EMS calls in the past 12 months:

*Number*

This includes responses to 911 EMS calls for which no services were provided.

If none, enter zero.



**Call Volume: Advanced Life Support (ALS) responses [4.21.E]**

The number of calls, including transports, in which a currently licensed Advanced Emergency Medical Technician and/or a Paramedic were dispatched in the past 12 months:

*Number*

If none, enter zero.

**Call Volume: Basic Life Support (BLS) responses [4.22.E]**

The number of calls, including transports, in which a currently licensed Emergency Medical Technician but NO currently licensed Advanced Emergency Medical Technicians or currently licensed Paramedics were dispatched in the past 12 months:

*Number*

If none, enter zero.

**Job Related Illness and Injury (time lost) [4.23.E]**

The number of hours lost due to job-related illness or injury in the past 12 months, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

This refers to work time lost as a result of illnesses or injuries that are reported to the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA).

If your agency does not have staff at a level, "Not applicable" should be entered.

If no hours were lost in the past 12 months by staff at a level, enter zero.

**EMS workforce data elements whose collection is desirable but not essential for workforce planning and reporting at both a national and local level.**

**Category: Employment at Agency**

*Probable Information Source: Individual or Agency*

**Service status date [1.6.D]**

The date that the individual's current service status at this agency was assigned:

*Date*

A person's service status can be either full time (35 hours per week or more) paid employee, part time (fewer than 35 hours per week) paid employee, or volunteer (licensed EMS workers who receive nominal or no compensation for their provision of EMS services at this agency).

**Hours on-duty in past 4 weeks [1.7.D]**

Number of hours the individual spent providing services for this agency in the past 4 weeks:

*Number*

On-duty hours include time spent waiting for calls/runs at a work site which provides EMS services. Time spent waiting for calls/runs at home or at a location that does not provide EMS services should be excluded.

If none, enter zero.

**Hours on-call in past 4 weeks [1.8.D]**

Number of hours the individual was expected to be available for emergency response activities, excluding on-duty hours, for this agency in the past 4 weeks:

*Number*

On-call hours do not include time spent waiting for calls/runs at a work site which provides EMS services. It only includes time spent waiting for calls/runs at home or at a location that does not provide EMS services.

If none, enter zero.

**Total length of EMS service at agency [1.9.D]**

The individual's total length of service as a licensed provider of EMS services at this agency at all levels, in years:

*Number*

NOTE: If an employee had breaks in service, include the total of all service intervals.

**Date length of service documented [1.10.D]**

The date on which the total length of EMS service at the agency item (above) was answered:

*Date*

**Category: Individual Characteristics**

*Probable Information Source: Individual*

**Secondary Affiliation [2.11.D]**

Other (non-primary) agencies for which individual provided EMS services in the past 30 days:

*Name of agencies*

**U.S. Citizenship [2.12.D]**

A person who is a citizen of the United States:

*Yes, No, Don't know*

**Highest earned degree [2.13.D]**

Highest post-secondary degree individual has earned:

*None, Associate's degree, Bachelor's degree, Master's degree, Doctoral degree (including M.D., Ph.D, J.D., DDS)*

**Major Field of Study [2.14.D]**

The post-secondary academic field(s) in which individual has earned a degree:  
(Check all that apply.)

*Agriculture and natural resources*

*Architecture and related services*

*Area, ethnic, cultural, and gender studies*

*Biological and biomedical sciences*

*Business*

*Communication, journalism, and related programs*

*Communications technologies*

*Computer and information sciences*

*Education*

*Emergency medical services*

*Engineering*

*Engineering technologies*

*English language and literature/letters*

*Family and consumer sciences/human sciences*

*Fire science*

*Foreign languages, literatures, and linguistics*

*Health professions and related clinical sciences, not including emergency medical services*

*Legal professions and studies*

*Liberal arts and sciences, general studies, and humanities*

*Library science*

*Mathematics and statistics*

*Military technologies*

*Multi/interdisciplinary studies*

*Parks, recreation, leisure and fitness studies*

*Philosophy and religious studies*

*Physical sciences and science technologies*

*Precision production*

*Psychology*

*Public administration and social services*

*Security and protective services, not including fire science*

*Social sciences and history*

*Theology and religious vocations*

*Transportation and materials moving*

*Visual and performing arts*

*Not classified by field of study*

*None*

**Motor Vehicle Licenses [2.15.D]**

Current, valid motor vehicle licenses: Check all that apply:

***Commercial Class A (for operation of a commercial motor vehicle: Any automobile, bus, or truck)***

***Commercial Class B (for operation of a commercial motor vehicle: Any single vehicle; vehicles towing a trailer with a weight rating of 10,000 pounds or less),***

***Commercial Class C (for operation of a commercial vehicle: Any single vehicle under 26,001 pounds or a vehicle towing a vehicle less than 10,000 pounds),***

***Operator Class D (for operation of an automobile or buses and trucks under 26,000 pounds),***

***Taxi and Livery Class E (for operation of an automobile or buses and trucks under 26,000 pounds; for hire vehicles with a capacity of up to 14 persons),***

***Class M (for operation of motorcycles);***

***Snowmobile license;***

***All-Terrain Vehicle (ATV) license;***

***None.***

**Foreign language reading ability [2.16.D]**

Foreign languages in which individual has at least elementary reading proficiency and the individual's level of proficiency:

***NAME OF LANGUAGE*** and

***Excellent, Very Good, Good, or Fair.***

Proficiency may be self-assessed, assessed by an individual fluent in the language, or assessed through test scores.

**Foreign language writing ability [2.17.D]**

Foreign languages in which individual has at least elementary writing proficiency and the individual's level of proficiency:

***NAME OF LANGUAGE*** and

***Excellent, Very Good, Good, or Fair.***

Proficiency may be self-assessed, assessed by an individual fluent in the language, or assessed through test scores.

**Foreign language speaking ability [2.18.D]**

Foreign languages in which individual has at least elementary oral proficiency and the individual's level of proficiency:

**NAME OF LANGUAGE** and

*Excellent, Very Good, Good, or Fair.*

Proficiency may be self-assessed, assessed by an individual fluent in the language, or assessed through test scores.

**Helicopter or Private Pilot's license [2.19.D]**

Current, valid pilot licenses: Check all that apply:

*Airplane, helicopter, none*

**Vaccinations: Tetanus, Diphtheria, Pertussis [2.20.D]**

A vaccination for Tetanus, Diphtheria, Pertussis in the past 10 years:

*Yes, No, Don't know.*

**Vaccinations: Hepatitis A [2.21.D]**

A vaccination for Hepatitis A at any time:

*Yes, No, Don't know.*

**Vaccinations: Hepatitis B [2.22.D]**

A vaccination for Hepatitis B at any time:

*Yes, No, Don't know.*

**Vaccinations: Measles, Mumps, Rubella (MMR) [2.23.D]**

A vaccination for Measles, Mumps, Rubella (MMR) at any time:

*Yes, No, Don't know.*

**Vaccinations: Influenza [2.24.D]**

A vaccination for Influenza in the past 12 months:

*Yes, No, Don't know.*

NOTE: All of the vaccination periods reflect CDC vaccination guidelines.

**State of Residence [2.25.D]**

State of individual's mailing address:

*Alphabetic*

Use United States Postal Service (USPS) state abbreviations.

**State licensure ID number [2.26.D]**

The state licensure ID number assigned to the individual:

*Alphanumeric*

**Date of agency affiliation [2.27.D]**

The date on which the individual was accepted by the agency:

*Date.*

**Education Program Accreditation/Approval [2.28.D]**

A characteristic of the program at which education was provided, for each certification held by the individual (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic). This specifically describes the program or institution's authorization(s) for providing the education required for each certification:

*Accreditation by the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP);*

*State or local approval;*

*Both CoAEMSP accreditation AND state or local approval;*

*None;*

*Not applicable (individual is not certified at the level);*

*Don't know.*



**Continuing Education Course Completions [2.29.D]**

Continuing education courses successfully completed by individual and year completed. (Check all that apply):

*Advanced Burn Life Support (ABLS);*

*Advanced Cardiac Life Support (ACLS);*

*Advanced Medical Life Support (AMLS);*

*Advanced Pediatric Life Support (APLS);*

*Advanced Pediatric Trauma Life Support (APTLS);*

*Advanced Practice Paramedic;*

*Advanced Trauma Life Support (ATLS);*

*Basic Trauma Life Support (BTLS);*

*Cardiac training;*

*Critical Care certification;*

*Defibrillation Training;*

*Emergency Medical Dispatcher;*

*International Trauma Life Support (ITLS);*

*IV Therapy Training;*

*Neonatal Advanced Life Support (NALS);*

*Pediatric Advanced Life Support (PALS);*

*Pediatric Emergency Care; Pediatric Education for Pre-Hospital Providers/Professionals (PEPP);*

*Pediatric Pre-Hospital Care (PPC);*

*Pre-Hospital Trauma Life Support (PTLS);*

*Wilderness Emergency certification;*

*Other (SPECIFY)*

*and Year.*

**Category: EMS Education Program Characteristics**

*Probable Information Source: Education Program staff*

**Total Experience [3.3.D]**

Number of person years providing EMS services, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic), for all organizations:

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

A person year is one year of full-time service. A year of half-time service is one-half of a person year.

If no experience at a level, enter zero.

**Continuing Education Course Authorization [3.4.D]**

The organization's authorization for providing education, for each type of certification offered:

*Advanced Burn Life Support (ABLS);*

*Advanced Cardiac Life Support (ACLS);*

*Advanced Medical Life Support (AMLS);*

*Advanced Pediatric Life Support (APLS);*

*Advanced Pediatric Trauma Life Support (APTLS);*

*Advanced Practice Paramedic;*

*Advanced Trauma Life Support (ATLS);*

*Basic Trauma Life Support (BTLS);*

*Cardiac training;*

*Critical Care certification;*

*Defibrillation Training;*

*Emergency Medical Dispatcher;*

*International Trauma Life Support (ITLS);*

*IV Therapy Training;*

*Neonatal Advanced Life Support (NALS);*

*Pediatric Advanced Life Support (PALS);*

*Pediatric Emergency Care; Pediatric Education for Pre-Hospital Providers/Professionals (PEPP);*

*Pediatric Pre-Hospital Care (PPC);*

*Pre-Hospital Trauma Life Support (PTLS);*

*Wilderness Emergency certification;*

*Other (SPECIFY)*

*Approval by Continuing Education Coordinating Board for Emergency Medical Services (CECBEMS);*

*State or local approval;*

*Both CECBEMS AND state or local approval;*

*Certification in area is not offered;*

*None.*

**Enrollment, by level [3.5.D]**

The number of students enrolled in the past 12 months, for each certification level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

If no students were enrolled at a certification level in the past 12 months, enter zero.

**Education Program Certified Graduates, by level [3.6.D]**

The number of students who became Nationally Registered or State Registered, in the past 12 months, by level, for each certification level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

If no students became Nationally Registered or State Registered at a certification level in the past 12 months, enter zero.

**Continuing Education: Refresher Course Completers, by level [3.7.D]**

The number of students successfully completing a refresher course which is eligible for credit for maintenance of certification, in the past 12 months, by certification level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

If no students were successfully completed a refresher course at a certification level in the past 12 months, enter zero.

**Continuing Education: Other Course Completers, by level [3.8.D]**

The number of students receiving continuing education which is eligible for credit for maintenance of certification requirements in the past 12 months, by certification level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

If no students received continuing education at a certification level in the past 12 months, enter zero.

**Category: Agency Characteristics**

*Probable Information Source: Agency staff*

**Agency Name [4.24.D]**

The formal name of the agency:

*Name*

**EMS Agency Number [4.25.D]**

The state-assigned provider number of the responding agency:

*Alphanumeric*

**Agency State [4.26.D]**

State of agency's mailing address:

*Alphabetic*

Use United States Postal Service (USPS) state abbreviations

**Total 911 Emergency Service Area Size [4.27.D]**

The agency's 911 emergency service area, in square miles:

*Number*

NOTE: Zip code information can be used to determine service area size.

**Total 911 Emergency Service Area Population [4.28.D]**

The total population in the agency's 911 emergency service area, based on most recently available census data:

*Number*

NOTE: Zip code information can be used to determine 911 emergency service area population.

**Major Funding Source [4.29.D]**

The source of the majority of the agency's funding for providing EMS services:

*Federal Government (Medicare);*

*Federal Government (Other);*

*State Government;*

*Local Government;*

*Hospital;*

*Private insurance (including Health Maintenance Organizations [HMOs] and Preferred Provider Organizations [PPOs]);*

*Patient;*

*Charitable Organization;*

*Public donations;*

*Tax District/Special District;*

*Telephone Surcharge;*

*Other (SPECIFY).*

**Agency Anticipated Vacancies, by level [4.30.D]**

The number of EMS positions that the agency anticipates to fill in the next 12 months, expressed as full-time equivalents (FTEs), by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number*

Both fully compensated and volunteer positions should be included.

If none, enter zero.

**Overtime Hours (paid), by level [4.31.D]**

The number of paid, overtime hours worked by EMS staff in the past 4 weeks, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number; Not applicable*

Overtime hours include both scheduled and unscheduled overtime.

If your agency does not have staff at a level, “Not applicable” should be entered.

If no overtime was worked in the past 4 weeks by staff at a level, enter zero.

**Work Shift Length, by level [4.32.D]**

The number of hours in a work shift for the typical provider of EMS services at your agency, by level (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic):

*Emergency Medical Responder:* \_\_\_\_\_

*Emergency Medical Technician:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate:* \_\_\_\_\_

*Advanced Emergency Medical Technician:* \_\_\_\_\_

*Paramedic:* \_\_\_\_\_

*Number; Not applicable*

If the typical EMS staff does not work shifts, “Not applicable” should be entered.

If your agency does not have staff at a level, “Not applicable” should be entered.



**On call hours per shift, by level and employment status [4.33.D]**

The number of hours in a work shift for which the typical provider of EMS services is on call (that is, expected to respond) but is NOT required to be physically present at a work station, by level and employment status (Emergency Medical Responder [Paid], Emergency Medical Responder [Volunteer], Emergency Medical Technician [Paid], Emergency Medical Technician [Volunteer], Emergency Medical Technician – Intermediate [Paid], Emergency Medical Technician – Intermediate [Volunteer], Advanced Emergency Medical Technician [Paid], Advanced Emergency Medical Technician [Volunteer], Paramedic [Paid], and Paramedic [Volunteer]):

*Emergency Medical Responder [Paid]:* \_\_\_\_\_

*Emergency Medical Responder [Volunteer]:* \_\_\_\_\_

*Emergency Medical Technician [Paid]:* \_\_\_\_\_

*Emergency Medical Technician [Volunteer]:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate [Paid]:* \_\_\_\_\_

*Emergency Medical Technician - Intermediate [Volunteer]:* \_\_\_\_\_

*Advanced Emergency Medical Technician [Paid]:* \_\_\_\_\_

*Advanced Emergency Medical Technician [Volunteer]:* \_\_\_\_\_

*Paramedic [Paid]:* \_\_\_\_\_

*Paramedic [Volunteer]:* \_\_\_\_\_

*Number; Not applicable*

If the typical EMS staff does not work shifts, “Not applicable” should be entered.

If your agency does not have staff at a level/employment status, “Not applicable” should be entered.

If none, enter zero.

**Number of Work Shifts [4.34.D]**

The number of work shifts per month for the typical full-time provider of EMS services at your agency:

*Number; Not applicable.*

If the typical EMS staff does not work shifts, “Not applicable” should be entered.

**Agency policy: Annual physical [4.35.D]**

Agency’s policy about annual physicals for EMS workers:

*Required, Not required.*

**Agency policy: Tobacco smoking [4.36.D]**

Agency's policy about tobacco smoking by EMS workers:

*Not allowed (both on-duty and off-duty); Not allowed (on-duty); No tobacco smoking policy.*

# **Appendix A: Process Used to Develop the National EMS Workforce Data Definitions**

## **Procedures**

The following activities were employed in the development of the National EMS Workforce Data Definitions:

- (1) A research and literature review, updating the EMS research literature review conducted as part of the development of *EMS Workforce for the 21st Century: A National Assessment* was conducted to inform the development of draft data definitions.
- (2) A Project Steering Committee, comprised of EMS workers, researchers, and EMS data users was recruited and assembled to oversee the development of draft definitions and their refinement at a Technical Expert Panel meeting. The Project Steering Committee met a total of eight times in the course of their activities.
- (3) A Technical Expert Panel (TEP), comprised of 16 individuals representing seven organizations and seven federal agencies was recruited and met in Washington, D.C. to help refine a set of proposed EMS workforce definition and provide insights into the feasibility of implementing these definitions. The TEP also evaluated these definitions with respect to their adequacy in meeting the organization's needs and identified other important EMS work force concepts in need of further definition.
- (4) Public comment was solicited on the draft definitions through the creation of a web site, on which the draft definitions were posted. Information about the posting was sent to 13 organizations and 17 federal agencies. Comments received were reviewed by the Project Steering Committee and used to inform further revisions of the data definitions.

## **Research and Literature Review**

As part of the process of preparing *EMS Workforce for the 21st Century: A National Assessment*, a comprehensive literature review was conducted between June 2004 and March 2006. This review served as the starting point for the National EMS Workforce Data Definitions' literature review. Relevant literature reflecting publications subsequent to March 2006 were scanned to identify and add new EMS workforce articles.

The literature review that was prepared was reviewed, revised, and then shared with the Project Steering Committee and the Technical Expert Panel. The literature review is attached as Appendix F: Literature Review for EMS Workforce Data Definitions Project.

## **Project Steering Committee**

To provide overall direction and advice to the National EMS Workforce Data Definitions project, a Project Steering Committee was assembled. Formal invitations were sent out to Project Steering Committee candidates on February 1, 2009 (See Appendix B). The following individuals served on the Project Steering Committee:

Richard Patrick, M.S., EMT-P  
Michele Shaffer  
David James Harden, JD  
Greg Mears, M.D.  
Antonio Fernandez, EMT-P  
Dan Patterson, Ph.D.  
John Becknell, EMT-P

The Project Steering Committee members reviewed draft National EMS Workforce Data Definitions, helped plan the Technical Expert Panel (TEP) meeting agenda, facilitated activities at the TEP meeting, reviewed revised data definitions, prioritized the data definitions, reviewed responses to comments, and assisted with further revisions of several additional draft data definitions. The activities are discussed in greater detail below.

*Preparation for Technical Expert Panel (TEP) meeting.* Draft National EMS Workforce Data Definitions were prepared, based on definitions being used by the National Emergency Medical Services Information System (NEMSIS) and transmitted to Project Steering Committee members for discussion at the March 31, 2009 teleconference. These draft definitions underwent revisions and refinements and were informed by a review of existing definitions of EMS terms. These draft definitions presented at the TEP meeting were intended to identify potential terms and constructs in need of clear and consistent definition, to enable effective work force planning. They provided a model for creating definitions and served as a stimulus for the identification of other constructs and terms that would be important for EMS workforce planning.

The Project Steering Committee also reviewed draft agendas and planned TEP meeting activities, with the objective of maximizing the amount and quality of input that could be obtained from TEP participants. Final decisions about the agenda and draft definitions were made during an April 10, 2009 teleconference.

## **Technical Expert Panel**

Representatives of several major professional organizations representing EMS workers, EMS educators, the EMS registration/certification organization, and federal agencies involved in enumerating EMS providers, EMS training programs, and delivering EMS services were invited to participate as members of the project's Technical Expert Panel (TEP). The invitation letter sent out, on February 26, 2009 is attached as Appendix C. The national organizations invited to participate included:

- American Academy of Pediatrics (AAP)
- American Ambulance Association (AAA)
- American College of Emergency Physicians (ACEP)
- International Association of Fire Chiefs (IAFC)
- International Association of Fire Fighters (IAFF)
- National Association of Emergency Medical Services Educators (NAEMSE)
- National Association of Emergency Medical Services Physicians (NAEMSP)
- National Association of Emergency Medical Technicians (NAEMT)
- National Association of State Emergency Medical Services Officials (NASEMSO)
- National Emergency Medical Services Management Association (NEMSMA)
- National Registry of Emergency Medical Technicians (NREMT)
- National Volunteer Fire Council (NVFC)

In addition to NHTSA, the sponsor of this project, representatives from the following federal agencies were present at the TEP meeting:

Federal Communications Commission (FCC)

Department of Commerce (DOC)  
Bureau of the Census

Department of Education (Ed)  
National Center for Education Statistics (NCES)

Department of Defense (DoD)  
Office of the Assistant Secretary of Defense for Health Affairs

Department of Health and Human Service (HHS)  
Centers for Disease Control and Prevention (CDC)  
- National Institute for Occupational Safety and Health (NIOSH)  
Centers for Medicare and Medicaid Services (CMS)  
Health Resources and Services Administration (HRSA)  
Indian Health Service (IHS)  
Office of the Assistant Secretary for Preparedness and Response (ASPR)

Department of Homeland Security (DHS)  
Federal Emergency Management Agency (FEMA)  
- United States Fire Administration (USFA)  
Office of Health Affairs

Department of the Interior  
National Park Service

Department of Labor  
Bureau of Labor Statistics

*Technical Expert Panel Meeting.* On April 16-17, 2009, the Technical Expert Panel (TEP ) met at Department of Transportation Headquarters in Washington, D.C. A list of attendees is included as Appendix D.

On the first day, after introductory remarks, background presentations about federal workforce statistics by the Bureau of Labor Statistics and the Census Bureau, and an overview of the National EMS Workforce Data Definitions project by AIR's principal investigator, TEP members broke up into small groups to identify the data needs of local EMS workers, State EMS program managers, EMS professional organizations, and federal agencies to enable workforce planning, evaluation, and reporting. The small groups reconvened and reported out their data needs. These were combined into a listing of data elements, with special emphasis on elements identified by more than one group.

The second day's activities began with additional small group sessions. Each group was provided with a draft list of EMS workforce data definitions, prepared by the Project Steering Committee. They reviewed and critiqued the definitions, suggested new constructs to measure, and reconvened in a large group setting to report the results of their deliberations. At the end of the meeting, the next steps of the process were discussed. TEP members were told that they would be provided with a copy of a revised set of EMS workforce data definitions for review and comment. After receipt of their comments, the definitions would undergo further revisions and then be posted on a website for public comment. Participants were thanked for their efforts.

The meeting agenda is attached as Appendix E.

*Revision of EMS workforce data definitions.* Meeting notes and materials were reviewed and used by the Principal Investigators and Project Officer to inform the revision of the draft EMS workforce data definitions. Revised EMS workforce data definitions were sent to Project Steering Committee members and discussed during the May 20 Project Steering Committee teleconference.

Based on this teleconference, the draft EMS workforce data definitions underwent further revisions and modifications. This revised version was sent to Project Steering Committee members and discussed during the June 4, 2009 Project Steering Committee teleconference. During this teleconference, concerns about the number of terms being defined were raised. These concerns dealt with the providing guidance to the TEP members to enable them to focus their post-meeting review and comments on the revised EMS workforce data definitions on the more important definitions.

To prioritize the definitions, the Project Steering Committee evaluated each of the definitions with respect to its importance for EMS workforce planning and reporting. A four-point scale was used (0=None; 1=Low; 2 =Medium; 3=High). All terms that were rated as being of “high” importance by at least half of the Project Steering Committee members became definitions that were labeled as “Essential for workforce planning and reporting at both a national and local level.” The remaining definitions were labeled as “Desirable but not essential for workforce planning and reporting at both a national and local level”.

During the Project Steering Committee teleconference on June 17, 2009, results of this prioritization exercise were discussed. Revised and reformatted draft EMS workforce data definitions, along with draft instructions for soliciting feedback on these definitions from the TEP members were prepared and sent to the Project Steering Committee on June 25, 2009, for review and comment.

After receipt of comments, these materials were reviewed by the Principal Investigators and Project Officer, to enable the creation of data definitions and instructions that were sent to TEP members on July 4, 2009. Comments were requested by August 4, 2009. Comments received were summarized and discussed by the co-Principal Investigators and the Project Officer and staff in teleconferences on August 5 and 7. Comments were sent to Project Steering Committee members and discussed in a teleconference on August 20, 2009, in preparation for posting of the draft EMS workforce data definitions for public comment.

## **Public comment**

A web site was created to allow posting of the revised draft data definitions for public comment during the first week of September, 2009. The domain name, [www.emsdatadefinitions.org](http://www.emsdatadefinitions.org), was obtained for this purpose. On September 4, 2009, the web site went live. An e-mail describing the site was sent to all TEP members and representatives of all known organizations with interests in EMS, with an invitation to visit the site and to comment on the draft definitions. A deadline of October 7, 2009 was specified.

In response to this request, comments were received from ten individuals, representing nine organizations. Comments were summarized and transmitted to Steering Committee members on October 12, 2009. These comments included proposed changes as well as highlighting outstanding issues. A Steering Committee teleconference was held on October 20, 2009. Selected definitions were revised in response to these comments. Changes in the data definitions resulting from this meeting were documented and highlighted in a set of draft definitions distributed electronically to Steering Committee members on October 26, 2009 for final review and approval.

Issues were raised about appropriate definitions of emergency medical technicians intermediates (EMT-Intermediates), reflecting changes in the EMS Scope of Practice. In February and March, 2010, the co-Principal Investigators, NHTSA Project Officers, and NHTSA staff met to discuss changes in the data definitions for EMT - Intermediates. Revised data definitions, reflecting changes in the definition of EMT-Intermediates were prepared. The new definition indicated that the EMT– Intermediate level should only be used in states in which there are individuals licensed at this level, since this level had been eliminated in the new *National EMS Scope of Practice Model* and it was anticipated that there will be no new EMT – Intermediate licenses granted in the future.

The final version of these data definitions appears as Exhibit 1.

## Appendix B: Invitation Letter to Prospective Steering Committee Members

Dear [NAME]:

The recently published *EMS Workforce for the 21st Century: A National Assessment* concluded that the data currently available to estimate the supply and demand for EMTs and paramedics were insufficient for national emergency medical services (EMS) workforce planning. Improved data collection is essential to laying a solid foundation for the future sustainability of the EMS workforce in the United States.

As a first step in improving the quality of EMS workforce data nationally, the National Highway Traffic Safety Administration's (NHTSA's) Office of EMS (OEMS) is funding an effort by the American Institutes for Research (AIR) to develop uniform national EMS workforce data definitions.

This effort will involve close coordination with national experts and organizations, and will be guided by a project steering committee. You have been identified as a person uniquely qualified to serve on the Steering Committee. We would like to take advantage of your EMS knowledge and experience by having you serve as a member of the Steering Committee to oversee the development of our draft definitions and their refinement at a Technical Expert Panel meeting (to be held in April, 2009). We envision that Steering Committee members would review documents and materials and participate in approximately four teleconferences. Although AIR will reimburse your travel expenses, your participation in the Steering Committee will not be compensated.

AIR's Principal Investigator (PI) for this project is Dr. Roger Levine with Dr. Susan Chapman of the University of California at San Francisco's (UCSF) Center for the Health Professions serving as a co-investigator. Mr. Gamunu Wijetunge (202-493-2793) is the NHTSA project officer.

Please let us know about your willingness and availability to serve on the Steering Committee by e-mailing Dr. Levine on or before **February 13, 2009**.

We would also like to know your availability to attend an in-person meeting in Washington, DC. Please let us know which of the following date blocks works best for you:

April 16 – 17

April 23 – 24

April 30 – May 1

We anticipate the meeting will end by noon on the second day.

In the interim, if you have any questions, feel free to contact Dr. Roger Levine (650-843-8160).

Sincerely yours,

Roger Levine, Ph.D.  
Managing Research Scientist  
American Institutes for Research  
1070 Arastradero Road, Suite 200  
Palo Alto, California 94304



## Appendix C: Invitation Letter to Prospective Technical Expert Panel Members

Dear [NAME]

The recently published *EMS Workforce for the 21st Century: A National Assessment* concluded that the data currently available to estimate the supply and demand for emergency medical technicians (EMTs) and paramedics were insufficient for national emergency medical services (EMS) workforce planning. Improved data collection is essential to laying a solid foundation for the future sustainability of the EMS workforce in the United States.

As a first step in improving the quality of EMS workforce data nationally, the National Highway Traffic Safety Administration's (NHTSA's) Office of Emergency Medical Services (OEMS) is funding an effort by the American Institutes for Research (AIR) to develop uniform national EMS workforce data definitions.

This effort will involve close coordination with national experts and organizations. You have been identified as a person uniquely qualified to serve on the Technical Expert Panel. In this role, you would help refine a set of proposed EMS workforce definitions. You would provide your insights into the feasibility of implementing these definitions and evaluate these definitions with respect to their adequacy in meeting your needs.

Participation would entail attendance at the Technical Expert Panel meeting on April 16 – 17, 2009 in Washington, D.C. We anticipate the meeting will end by noon on the April 17. Although AIR will reimburse your travel expenses, your participation as a Technical Expert Panel member will not be compensated.

AIR's Principal Investigator (PI) for this project is Dr. Roger Levine with Dr. Susan Chapman of the University of California at San Francisco's (UCSF) Center for the Health Professions serving as a co-investigator. Mr. Gamunu Wijetunge (202-493-2793) is the NHTSA project officer.

Please let us know about your willingness and availability to serve on the Steering Committee by e-mailing Dr. Levine on or before **March 10, 2009**.

In the interim, if you have any questions, feel free to contact Dr. Roger Levine (650-843-8160).

Sincerely yours,

Roger Levine, Ph.D.  
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## **Appendix D: Technical Expert Panel Meeting Attendees**

### **EMS Workforce Data Definitions Expert Panel Meeting April 16-17, 2009 Washington, DC**

## Participant List

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Robert Kingon (moderator)

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## Appendix E: Technical Expert Panel Meeting Agenda

### EMS Workforce Data Definitions

#### Expert Panel Meeting

April 16<sup>th</sup>-17<sup>th</sup>, 2009

Washington, DC

Thursday, April 16<sup>th</sup>, 2009

Location: NHTSA Headquarters, 1200 New Jersey Avenue, SE, West Building

▪ **Meeting Room:** Conference Room 8

8:00 am – 9:00 am      Clearance through building security. Breakfast can be purchased in the DOT cafeteria.

9:00 am – 9:15 am      Welcome and opening remarks      *Drew Dawson*

9:15 am – 10:30 am      General Introductions      *Gam Wijetunge*  
*Susan Chapman*  
*Roger Levine*

10:30 am – 10:45 am      Break

10:45 am – 11:00 am      Background presentations

- Bureau of Labor Statistics
- Census Bureau

11:00 am – 11:30 am      Data Definitions Project

- Project purpose and goals      *Roger Levine*
- Meeting goals and objectives
- Agenda and process      *Bob Kingon*
- Small group assignments

11:30 am – 12:30 pm      Lunch

12:30 pm – 2:30 pm      Small groups meet

2:30 pm – 4:00 pm	Small group presentations and discussion
4:00 pm – 5:00 pm	Small groups meet
5:00 pm	Meeting adjourns

### Friday, April 17<sup>th</sup>, 2008

Location: NHTSA Headquarters, 1200 New Jersey Avenue, SE, West Building

▪ **Meeting Room:** Conference Room 8

8:00 am – 8:30 am	Clearance through building security. Breakfast can be purchased in the DOT cafeteria.	
8:30 am – 8:45 am	Review progress	
8:45 am – 9:45 am	Small groups meet (continue)	
9:45 am – 10:00 am	Break	
10:00 am – 11:30 am	Small group presentations and discussion	
11:30 am – 11:45 am <i>Bob</i>	Challenges in achieving adoption of definitions	
11:45 am – 12:00 pm <i>Susan</i>	Closing Remarks	<i>Gam, Roger &amp;</i>
	▪ Next steps	
12:00 pm	Meeting Adjourns	



## Small Group Process

First session:

Small Groups – 2 hours

Four equally divided groups 1 – 4

Each group will assume a role related to EMS workforce planning, evaluation, and reporting. They will determine what data they need to fulfill their role, for example, to be able to make decisions regarding recruitment, education/training, retention, and overall workforce improvements. What information do they need to report to their legislative bodies and other organizations/agencies? The product of each group will be a listing of data elements that they determine are critical to fulfilling their roles related to workforce concerns.

Different Roles, by Group

Group 1 - Local EMS provider/director

Group 2 - State EMS program manager

Group 3 - National professional organization's official(include multiple organizations)

Group 4 - Federal agencies' official (include multiple agencies)

Large group – 1½ hours

Small group reports (10 minutes each)

Discussion following each small group report (10 - 15 minutes each)

General agreement on four lists of data elements

*After the afternoon session, we (staff) will collapse lists into a single list shared by all four groups, a list of elements common to 2 or 3 groups, and lists of elements unique to each role. We will select the elements we wish the groups to work on during Friday morning.*

Second session:

Small Groups 2 hours

The 4 small groups will remain the same, but will discontinue role-playing. On Thursday afternoon, each group will be given a list of draft data definitions (about 40 definitions) prepared by AIR. Each group will be asked to review and critique the draft definitions (we will provide criteria.) Each group will begin with a quarter of the elements, e.g., Group 1 (1-10), Group 2 (11-20), etc. They will also be asked to review as many of the full set as possible within the 60 minutes they have available Thursday afternoon. Friday morning, the groups will be given additional data elements selected by the staff Thursday evening. They will be asked to draft definitions or critique draft definitions if included. And they will be asked to finish the draft definitions provided Thursday. They will also be asked if there are any other data elements which should be included.

Large group – 1½ hours

Small group reports (10 minutes each)

Discussion following each small group report (10 - 15 minutes each)

List of data definitions for which there is general agreement

List of data elements for which there is little disagreement

List of data elements for which there is considerable disagreement

## Appendix F: Literature Review for Emergency Medical Services (EMS) Workforce Data Definitions Project



AMERICAN INSTITUTES FOR RESEARCH®

*Submitted by:*

Roger Levine, Ph.D., American Institutes for Research  
Susan Chapman, Ph.D., University of California San Francisco

*Submitted to:*

Mr. Gamunu Wijetunge  
Office of Emergency Medical Services  
U.S. Department of Transportation  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue, S.E., WW-44-238  
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March 3, 2009

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## Background

With the publication of the *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment* in June 2008, the need for EMS workforce data for the profession and industry has become salient (Moore, 2009). The severity of this problem has led to several concrete actions. The National Association of Emergency Medical Technicians (NAEMT), with assistance from the Prehospital Care Research Forum, is funding annual \$5,000 grants to support EMS workforce research. The National Highway Traffic Safety Administration's Office of Emergency Medical Services, through its support of the EMS Data Definitions project, is laying the groundwork for the development and implementation of EMS data collections that can provide states and the nation the critical information needed for workforce planning.

This literature review is being conducted as part of the EMS Data Definitions project. It updates and builds upon a literature review conducted for the EMS workforce assessment project. It focuses on journal publications, reports, and data sources that are relevant to the EMS data definitions project.

## Methodology

In 2006, a literature search in Pub Med using the broad term “emergency medical services” yielded more than 32,000 citations. Using PubMed and a variety of MeSh search terms yielded various numbers of published studies. Table 1 displays the PubMed keyword search terms and number of citations found with each group of key words.

**Table 1. PubMed Search Results**

Search Term	Limiters	Number of results	Number of results using MESH*
“emergency medical services”		21,101	54,988
	injury	3,960	11,144
	personnel	3,018	6,592
	paramedic	2,529	2,746
	ambulance	2,455	5,442
	workers	1,237	2,942
	illness	579	2,182
	EMT	230	182
	staffing	156	772
	“job satisfaction”	51	137
	“patient outcomes”	47	172
	“human resources”	18	39
	projections	7	19
EMT or paramedic		33,393	
paramedic		32,381	

Search Term	Limiters	Number of results	Number of results using MESH*
EMT		1,314	
"prehospital care"		708	
EMT and paramedic		302	
"ambulance staff"		70	
"EMS workers"		16	
"ambulance workers"		8	

\*MeSH is NLM's controlled vocabulary used for indexing papers for MEDLINE/PubMed. MeSH terminology provides a consistent way to retrieve information that may use different terminology for the same concepts. For example, when searching for "emergency medical services," the following MeSH terms appear: Emergency medical services; Emergency medical service; Services, emergency medical; Medical services, emergency; Service, emergency medical; etc.

In addition, other academic databases, including CINAHL (allied health literature), PsychInfo, Google Scholar, were searched. These yielded a few additional references and many that duplicated results from the above search.

To focus the literature search on the EMT and paramedic workforce, we narrowed the search terms to EMT and paramedic. This search yielded 302 references between 1973 and March 2006, including both refereed and non-refereed journals. This search was updated in January 2009, focusing on articles published after 2006. This additional search led to the identification of 197 additional references. All of these references were reviewed, leading to the identification of 19 articles, which were obtained and reviewed in their entirety.

## Summary of Relevant Literature and Data Sources

Most of the refereed papers were in emergency medical journals. The two refereed journals with the greatest number of papers relevant to EMT and paramedic workforce issues were *Prehospital Emergency Care* and *Prehospital Disaster Medicine*. The papers fell into several broad topic areas, including recruitment and retention; education and training; job satisfaction; rural and volunteer EMS workforce; worker illness, injury, and stress; patient outcomes; disaster preparedness; new roles; and EMS policy. There were very few papers on EMTs or paramedics in health policy, health services research, or allied health profession journals.

There are several sources of national estimates of the size of the EMS workforce. These are discussed below. It should be noted that none of these estimates can be reliably disaggregated into EMT levels, nor do they provide counts of volunteers.

The **Occupational Employment Statistics (OES)** survey, administered by the Bureau of Labor Statistics, surveys approximately 1.2 million non-farm business establishments over the course of a 3-year period.<sup>1</sup> It includes workers who are considered both full and part time, and makes no distinction between the two. Estimates are produced for more than 800 detailed occupations. It does not include self-employed workers, nor does it include volunteers. The wage estimates are considered straight time (no overtime), gross pay, but do include cost-of-living allowances and hazardous-duty and incentive pay such as commissions, tips, and 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. The most recent estimates available are for 2007.

In 1999, the OES survey began using the Office of Management and Budget (OMB) Standard Occupational Classification (SOC) system. The SOC system is the first OMB-required

occupational classification system for federal agencies. It consists of 821 detailed occupations, grouped into 449 broad occupations, 96 minor groups, and 23 major groups. The OES survey uses 22 of the 23 major occupational groups (excluding military-specific occupations) from the SOC to categorize workers into 801 detailed occupations. The 1999 transition to the SOC system made previous estimates not directly comparable with previous years' OES estimates, which were based on a classification system having seven major occupational groups and 770 detailed occupations. Approximately half of the detailed occupations were unchanged under the new SOC system, with the other half being new SOC occupations or occupations that are slightly different from similar occupations in the old OES classification system.

The SOC has recently been revised. On January 21, 2009, the Office of Management and Budget (OMB) published a Federal Register notice detailing the final decisions for the 2010 SOC. This revision created a new category for firefighters (33-2011). The previous category for emergency medical technicians and paramedics (29-2041) remains unchanged. The May 2007 estimate for this category was 201,200, which excludes volunteers and an unknown number of the 289,710 firefighters who are cross-trained.

The **Current Population Survey (CPS)** is a monthly survey of approximately 60,000 households administered by the Census Bureau on behalf of the Bureau of Labor Statistics.<sup>ii</sup> It is the source for unemployment statistics, but it also collects data on a 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.

Individual members of a household are classified according to the industry in which they are employed, using the North American Industry Classification System (NAICS). The relevant industry codes for EMT include "Hospital" (622) and "Community Food and Housing, and Emergency Services." Unfortunately, industry codes are too broad to permit disaggregation. Household members' occupations are classified using the SOC, which raises concerns previously discussed.

In September 2007, the CPS administered a special volunteer supplement. Volunteers were classified in a number of ways, including the type of organization for which they did volunteer work. Unfortunately, the 17 categories used are too broad to permit estimates of the number of EMS volunteers.

The **American Community Survey** is analogous to the long form of the U.S. census that is conducted every 10 years. In 2006, over 2 million dwelling units were interviewed, providing information about a variety of resident characteristics. Included were industry and occupation data, which are derived from answers to several different questions. For employed people, the data refer to the person's job during the previous week. For those who worked two or more jobs, the data refer to the job where the person worked the greatest number of hours. Data on volunteer jobs are not collected.

The industry and occupation statistics are compiled from data that are coded based on the detailed classification systems developed for the 2000 census and modified in 2002. Clerical staff convert the written responses to codes by comparing these descriptions to entries in the *Alphabetical Index of Industries and Occupations*.

The data on industry are coded using the industry classification system developed for the 2000 census and modified in 2002. This system consists of 270 categories for employed people, including military categories, classified into 20 sectors. The modified 2002 census industry classification was developed from the 2002 NAICS. Because of confidentiality issues, ACS data cannot be released in great detail, and the industry classification system, while defined in NAICS terms, cannot reflect the full detail for all categories.

The data on occupation are coded using the occupational classification system developed for the 2000 census and modified in 2002. This classification is based on the *Standard Occupational Classification (SOC) Manual: 2000*. If a new set of industry and occupation definitions can be developed, substantial progress towards meeting EMS workforce data needs can be made.

## Licensure and Credentialing Data

The National Registry of Emergency Medical Technicians (NREMT) offers national certification based on the NHTSA standard curriculum for the five levels of EMS providers for which NHTSA has developed curricula: First Responder, EMT–Basic, EMT–Intermediate (1985 edition), EMT–Intermediate (1999 edition), and EMT–Paramedic.

First Responders are individuals who receive 40–60 hours of training and can perform CPR, bleeding control, and ventilation. EMT–Basic is generally considered to be the entry level for EMS. EMT–Basics typically receive 110–140 hours of training and perform predominantly non-invasive procedures. The intermediate levels require between 60–400 hours beyond the EMT–Basic level, and can perform a few additional non-invasive procedures (such as IV therapy). EMT–Paramedic is the highest level of EMT (although some states have advanced paramedic levels). EMT–Paramedics can provide advanced procedures and assessments, to enable them to deal with a wide range of emergencies. Paramedic training typically requires between 800 and 1,200 hours.

In 2006, 39 states used the NREMT exam for EMT–Basic certification and 44 states used the NREMT exam for EMT–Paramedic certification. As of January, 2007, the vast majority (90%) of nationally certified EMTs were either EMT–Basics or EMT–Paramedics. See Table 2.

**Table 2. Nationally Registered EMTs, by Level: January, 2007**

Level	Number	Percent
First Responder	13,510	4.7%
EMT – Basic	198,200	68.7%
EMT – Intermediate 85	12,701	4.4%
EMT – Intermediate 99	2,527	0.9%
EMT – Paramedic	61,121	21.2%

Note: Percentages do not add to 100 percent because of rounding.

These five levels are a gross simplification of the reality of EMS licensure and certification. Margolis cites a National Council of State EMS Training Coordinators survey that identified 39 different levels of EMS providers in 29 states. This plethora of levels is a reflection of the fact that each state has the authority to create EMS licensure and certification levels.<sup>iii</sup> The number of EMT levels ranges from two in Delaware (EMT–Basic and EMT–Paramedic) to eight separate and distinct levels in Washington. Washington’s levels include:

- First Responder
- EMT–Basic
- Intravenous Therapy Technician
- Airway Management Technician
- IV/Airway Technician

- Intermediate Life Support (ILS) Technician
- ILS and Airway Technician
- Paramedic

The state of Montana has four levels (EMT–First Responder, EMT–Basic, EMT–Intermediate, and EMT–Paramedic), but has anywhere from three to six optional endorsements within each level. In some states, levels exist for historical reasons. That is, individuals certified at a specific level may keep and maintain their certification, but no new certifications at the level are being granted. And, some states, such as Tennessee, have certifications above the paramedic level (Advanced Practice or Critical Care Paramedic). The concept of specialty certifications could serve to help extend an EMT career ladder and define new roles for paramedics.<sup>iv</sup>

It is likely that, in the process of developing data definitions, states will wish to use their current definitions. To the extent that these definitions can be aggregated upwards to a core set of levels, the more likely state endorsement of our definitions will be.

## **Recruitment and Retention**

While surveys and qualitative research techniques remain important tools to be employed in the investigation of recruitment and retention issues, quantitative data about the numbers of individuals entering and leaving the profession cannot be determined with precision. Obtaining such data presents challenges, reflecting a lack of standardization in recordkeeping and reporting. Definitional issues associated with these data include:

- Career ladder issues. EMT–Basics who become EMT–Paramedics can be considered as “leavers” from the perspective of the EMT–Basic workforce and new recruits from the perspective of the EMT–Paramedic workforce. But, they are not leavers from the overall EMS workforce perspective.

In an analogous fashion, EMTs who become managers are no longer involved with the direct provision of EMS services and might be considered leavers. But, they too are still involved with EMS.

- EMS Educators. As with EMS managers, EMTs who become EMS educators are no longer involved with the direct provision of EMS services and might be considered leavers. However, they are still required to maintain their provider licensure.
- Multiple employers. Many EMTs work for more than one organization. It is not uncommon for an EMT to work as a volunteer in addition to his or her main job. Accordingly, a given individual may be employed full time as an EMT, but may also be labeled as a leaver if he or she leaves a part time or volunteer position.
- Volunteers. There are no clear definitions of volunteer EMS providers and little data on the number of volunteer providers or the number of hours they work. In addition, the large national employment data files regularly collected by the U.S. Department of Labor’s Bureau of Labor Statistics do not include information about volunteer providers. Although the 2007 CPS Supplement focused on volunteer issues, their system for classifying volunteers was too broad to permit estimates of the number of EMS volunteers.
- Dual training in fire and EMS. The lack of clear definitions for classifying individuals with dual roles in public safety and in EMS limit our ability to study and identify sector differences in recruitment and retention.



There were few refereed papers focused solely on factors related to the recruitment and retention of EMTs and paramedics. Several of the relevant papers were generated from the Longitudinal Emergency Medical Technician Attribute and Demographic Study (LEADS) study. These papers illustrate that having clear definitions of EMS providers in national data sets have important implications for workforce studies, including those dealing with recruitment and retention.

Two papers published in *Prehospital Emergency Care* (2002, 2003) and based on findings from the LEADS study have findings relevant to recruitment and retention. This LEADS interim report describes demographic characteristics of the workforce.<sup>v</sup> The retention factor measured in this study was likelihood of leaving the profession. Less than 5% of EMT and 7% of paramedic respondents indicated they would probably or definitely leave the profession within the next 12 months.

Compensation, benefits, and other rewards such as recognition are factors that may be associated with worker retention. A paper from the LEADS study presents finding from the third cross-sectional (snapshot) survey conducted in the LEADS study, focused on compensation, benefits, and satisfaction.<sup>vi</sup> Most EMTs (62%) and paramedics (57%) stated that their retirement incomes were not adequate to meet their financial needs. About one-third of the respondents were not satisfied with their employee benefits (35% EMT and 30% paramedics). Many EMTs (36%) and paramedics (46%) were also dissatisfied with the level of recognition from their employer.<sup>vii</sup>

Chng and colleagues found that urban providers were younger, more educated, and more likely to be compensated, and reported a lower level of burnout. They also found that the rural EMS workforce in Texas was more likely to be female and volunteer.<sup>viii</sup>

Recruitment and retention of providers is commonly cited as the greatest challenge facing rural EMS.<sup>ix</sup> In Nebraska about half of all EMS agencies reported needing programs to assist them with recruitment and retention.<sup>x</sup> 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.<sup>xi</sup> 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 the 2001 survey.<sup>xii</sup>

Poor management has been identified as a problem for both recruitment and retention. There is a perceived shortage of rural EMS personnel with appropriate managerial training to handle organizational needs.<sup>xiii</sup> High-quality EMS management has been identified as a significant component of effective recruitment and retention, but this relationship has rarely been tested empirically.

Recent National Association of EMTs (NAEMT) surveys verify that recruitment and retention remain among their members' top concerns<sup>xiv</sup>. This is consistent with data provided by the annual Journal of Emergency Medical Services (JEMS) Salary and Workplace Survey. The 2007 JEMS Survey indicated a 15 percent turnover rate for full-time staff and 23 percent for part-time staff. Volunteer turnover was 19 percent. JEMS reports that the major reasons for leaving were higher pay and benefits (provided by 51 percent of leavers), leaving the industry (39%), and a desire to return to school (34%). It is noteworthy that half of the leavers went to another EMS organization, most commonly a fire department (32%) or another EMS service (16%).

## **Education and Training**

For these studies emphasizing the education and training of EMS providers, it is important to have clear definitions of the educational pathways of EMS providers as well as a more accurate count of the number of individuals completing EMS education programs each year. We reviewed more than 30 papers related to the education and training of EMTs and paramedics. There were

several types of education and training papers reviewed. Most were about specific types of training or components of training programs. Several papers focused on skills needed to treat pediatric patients, such as reporting child abuse,<sup>xv</sup> and the need for continuing education to maintain skills and a comfort level in treating pediatric patients.<sup>xvi,xvii,xviii</sup> Other papers focused on EMTs' knowledge of procedures such as aspirin use,<sup>xix,xx,xxi,xxii,xxiii</sup> wound care, intraosseous infusion, infectious disease, and domestic violence.

Rural areas provide fewer training opportunities than other areas: training sites are often distant, patient volume is lower, and distance education and supervision opportunities are limited.<sup>xxiv</sup> These training access barriers partially account for the fact that rural services are less likely to have advanced life support (ALS) capabilities.<sup>xxv</sup> Rural education program data are less likely to be reported in national data sets because the programs are mostly offered by local providers who do not report this information to the data sources discussed below.

The Integrated Postsecondary Education Data System (IPEDS), a data collection program sponsored by the U.S. Department of Education's National Center for Education Statistics, collects data on all institutions that receive Title IV funding.<sup>1</sup> IPEDS focuses on those institutions that (1) have been certified eligible to participate in Title IV programs, (2) grant associate's or higher degrees, and (3) are within the 50 states and the District of Columbia. Although most of the community college programs are Title IV eligible, few of the programs in non-academic settings will be captured in the IPEDS data set.

In addition, IPEDS does not distinguish between EMT–Basic and EMT–Paramedic programs. IPEDS classifies programs using the *Classification of Instructional Programs* (CIP). The CIP codes of relevance are:

**43.02 Fire Protection.** Instructional content for this group of programs is defined in codes 43.0201–43.0299.

**43.0201 Fire Protection and Safety Technology/Technician.** A program that prepares individuals to apply a knowledge of fire prevention and control skills to problems of reducing fire risk, loss limitation, supervising substance removal, conducting fire investigations, and advising on matters of safety procedures and fire prevention policy.

**43.0202 Fire Services Administration.** A program that prepares individuals to structure, manage, direct, and control fire departments, fire prevention services, fire inspection and investigation offices, and ancillary rescue services.

**43.0203 Fire Science/Fire-fighting.** A program that prepares individuals to perform the duties of firefighters. Includes instruction in fire-fighting equipment operation and maintenance, principles of fire science and combustible substances, methods of controlling different types of fires, hazardous material handling and control, fire rescue procedures, public relations, and applicable laws and regulations.

----- **Emergency Medical Technology/Technician (Paramedic).** (Report under 51.0904)

**43.0299 Fire Protection, Other.** Any instructional program in fire protection not listed above.

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<sup>1</sup> Title IV of the Higher Education Act of 1965 (amended) establishes federal financial aid programs (e.g., Pell Grants, Stafford Loans, etc) to students attending postsecondary institutions.

In the newly revised CIP, the fire program codes will be modified through the addition of codes for:

- Fire System Technology
- Fire Arson Investigation
- Wild Land Forest Fire Fighting and Investigation

CIP was developed by NCES and is the federally accepted standard for collecting, reporting, and interpreting education program data. The CIP codes have undergone a revision process. The new codes will be released in 2009 and their use will commence with the fall 2010 data collection. The next updates will occur in 5–10 years (Coon, 2009, personal communication). The new CIP codes will include a category for “EMT Ambulance” (see below). Unfortunately, as previously mentioned, the “EMT Paramedic” code does not distinguish between EMT levels.

**51.0810 Emergency Care Attendant (EMT Ambulance). (NEW)** A program that prepares individuals to assist licensed EMTs, under the supervision of a physician, to prepare and transport ill or injured patients, and to operate emergency vehicles and equipment such as life support units. Includes instruction in first aid and emergency medicine field techniques; patient stabilization and care; medical field communications; equipment operation and maintenance; emergency vehicle operation; and applicable standards and regulations.

**51.0904 Emergency Medical Technology/Technician (EMT Paramedic).** A program that prepares individuals, under the remote supervision of physicians, to recognize, assess, and manage medical emergencies in prehospital settings and to supervise ambulance personnel. Includes instruction in basic, intermediate, and advanced EMT procedures; emergency surgical procedures; medical triage; rescue operations; crisis scene management and personnel supervision; equipment operation and maintenance; patient stabilization, monitoring, and care; drug administration; identification and preliminary diagnosis of diseases and injuries; communication and computer operations; basic anatomy, physiology, pathology, and toxicology; and professional standards and regulations.

In 2007, 880 completers were emergency care attendants and 21,055 were “EMT paramedics”. However, “EMT Paramedics” almost certainly include EMT-Basics. In 2007, the National Registry of Emergency Medical Technicians (NREMT) reported that only 8,471 individuals successfully completed the requirements for registration.

### **Educational Program Accreditation**

An alternative source of information about EMT training programs is the American Medical Association’s (AMA) Health Professions Education Data Book. This is a limited set of programs and is restricted to paramedic programs that are accredited by the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP) and which choose to respond to an AMA survey.

Dickison and colleagues analyzed data for over 12,000 candidates for the NREMT paramedic exam during 2002.<sup>xxvi</sup> They found that students who attended an accredited program were about 1.5 times more likely to pass the certification exam.

A 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 survey was conducted on a nationwide sample of EMS educators, as part of the State of EMS Education Research Project (SEERP).<sup>xxvii</sup> The pool of 1,691 respondents was considered adequate to generalize to 15,000 known educators. 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.<sup>xxviii</sup> This group identified the most important concepts in EMS. Among those identified were the need to increase theory, to enhance teaching skills, to improve evaluation procedures to assess student performance, and to build alliances with professional accrediting services.<sup>xxix</sup> These goals are part of *EMS Education Agenda for the Future*, which advocates for the goals to be addressed by EMS education programs around the country.

Most EMS educational programs (61 percent) occur in non-academic settings. Of the 39 percent that are offered in academic settings, the most prevalent setting is the community college. Community colleges house 22 percent of the EMT–Basic and 42 percent of the EMT– Paramedic programs.<sup>xxx</sup> Less than 5 percent of the EMS educator respondents teach at four-year colleges or universities.<sup>xxxi</sup> This diversity of training locations creates challenges in estimating the numbers of EMTs enrolled in training programs, hindering the ability of the EMS industry to accurately assess the future supply of workers.

Most (79%), but not all, EMS educators report that they have to have state EMS educator certification to teach. Nearly all also report they also have to maintain their health care provider certification. However, continuing education concerned with pedagogy is not a requirement. Their pedagogy is heavily based on the U.S. Department of Transportation – National Standard Curriculum (DOT NSC). Nearly all (98%) use the NSC either on a “word for word” or “as needed” basis (Ruple et al., 2006).

The use of EMS training data as an indicator of EMS supply poses further challenges. Completion of an EMT education program, with subsequent national registration, is not an infallible indicator that an individual is interested in a job as an EMT. A survey of 203 EMT students in the Chicago area indicated that 5 percent of the students did not plan to use their licenses, and 65 percent said they wanted to work for fire departments.<sup>xxxii</sup> (Many fire departments require licensure as a precondition for employment.) Fernandez and Studnek<sup>xxxiii</sup> similarly noted that, immediately after program completion, about 5 percent of EMT–Basic students said they did not intend to practice. However, about two-thirds of the program graduates were not working in EMS three months after graduation, and 20 percent of these graduates indicated they were not looking for a job in EMS.

## **Workforce Stress**

We reviewed more than a dozen papers on stress in the EMT and paramedic workforce. A two-part paper from 1996 reviewed studies and literature on EMT and paramedic stress, concluding that the issue of stress is important to the EMS workforce and should be studied with more rigorous methods.<sup>xxxiv, xxxv</sup> Another study in 2006 was a literature review of 292 papers on interventions for stress disorder in emergency ambulance personnel.<sup>xxxvi</sup> The authors concluded that there was limited evidence to support the use of critical incident stress debriefings (CISD) with the group and that previous studies evaluating CISD have had methodological shortcomings.<sup>xxxvii</sup>

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 that are most often connected with working in a rural environment predicted higher stress: EMT-B level licensure, working for a basic life support (BLS)-only service

provider, being a new employee working in a small EMS organization, being a volunteer, and serving a small town.<sup>xxxviii</sup> A Texas study also 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.<sup>xxxix</sup> These findings are consistent with a qualitative study of mostly rural EMTs suggesting that EMS job-related stress harms retention.<sup>xl</sup> The findings also provide insight into some of the types of demographic data that would be useful for workforce projections.

## **Satisfaction**

Job satisfaction or the lack of it has been shown to be an important predictor in turnover in many health professions. We reviewed about 10 papers on job satisfaction of EMTs and paramedics. The LEADS study is the only national sample of EMTs and paramedics to survey EMTs and paramedics about satisfaction with a variety of job elements. Both the survey and most of the supplements included measures of overall satisfaction as well as satisfaction with compensation, benefits, training, and current assignment. One of the LEADS snapshots assessed EMT and paramedic peer evaluation of the professional behavior of their coworkers. Those findings indicated a statistically significant relationship between satisfaction with one's current assignment and a high rating of peer competence and professional behavior.<sup>xli</sup> EMTs rated their peers' integrity and personal appearance very highly.

Most of the other studies are from the past decade and usually included a convenience sample from only one community. A 1993 study in Oregon sought to document specific factors in paramedic job satisfaction and attitudes regarding job performance.<sup>xlii</sup> Findings suggested that type of employer and gender affected job satisfaction. Male employees of public agencies were most satisfied and female employees of private agencies were least satisfied. Another study conducted in Louisiana focused on gender issues and partner preferences in EMTs.<sup>xliii</sup> These authors found that gender made no difference in partner choice but concluded that there was still a ways to go in achieving equality between genders in EMS, suggesting the value of gender information in EMS workforce data collections.

## **Outcomes**

Much has been written and studied on outcomes of prehospital care. We reviewed nearly 35 papers on various aspects of outcomes. Like other EMS literature, many of the studies included small sample sizes and were conducted in only one setting or community. For outcomes research, it is especially important to collect data that will permit linkage of outcomes with provider training, certification, and other characteristics.

One of the major efforts, begun in 1994, to look at prehospital outcomes on a national level was supported by NHTSA – the Emergency Medical Services Outcomes Project (EMSOP). The EMSOP sought to identify and prioritize a list of conditions for children and adults and identify severity and outcome measures that could be used to study those conditions.<sup>xliv</sup> This project took place over five years and included four phases. The study's expert panel rated relief of discomfort as the most relevant outcome indicator for both adult and pediatric patients.

By far, the bulk of published studies on outcomes have to do with patient survival and the effectiveness of EMT and paramedic interventions, such as intubation, on patient survival or other outcomes. We reviewed over 20 selected papers on the outcomes of paramedic interventions, and there are likely many more in the literature. One theme seems to be whether more or less complex technology and intervention should occur at the scene or whether it is better to transport immediately. Some studies looked at response time as a predictor of survival while others compared EMT–Basic performance with that of paramedics. Such comparisons

highlight the importance of clear definitions to enable the systematic conduct of research of this type.

Wang and colleagues studied outcomes of intubations performed by paramedics for 42 EMS service providers in Pennsylvania.<sup>xlv</sup> Findings indicated that endotracheal intubation (ETI) errors of any type occurred in an average of 22 percent of attempts, ranging from 0–40 percent within different EMS services. The data were not analyzed for variability of paramedic characteristics such as training or frequency of performing.

A few outcome studies compared mode of transport (ground or air) or the type of patient (adult or child). These studies are important to the workforce since helicopter EMS transport is potentially more risky for the EMS provider. A study in North Carolina found that the Trauma Score was an important factor in comparing outcomes based on mode of transport.<sup>xlvi</sup>

Another set of outcome studies relevant to the EMS workforce has to do with dispatch protocols and decision-making by EMTs and paramedics at the scene. A study by Key and colleagues assessed dispatching first responders without transport capability to low-risk 9-1-1 calls.<sup>xlvii</sup> This practice could have a significant impact on the need for EMTs and paramedics. The study had a pre/post design and was conducted in one large urban city. First responder firefighters with AEDs were dispatched to a defined type of low-risk calls. The authors concluded that it is feasible to send a first responder crew alone to low-risk calls, thus allowing BLS and ALS units to be available for more critical patients.

A study conducted by Ely and colleagues at the University of Utah included a survey of 50 states, the District of Columbia, and five territories to capture information about state EMS data system capabilities and compliance with data standards.<sup>xlviii</sup> The impetus for this study was a concern about a lack of data at all levels of the EMS system. The authors found that while 76 percent of states had data collection systems, most states were not capturing data on all EMS incidents and less than half included most of the nationally recommended EMS data elements. This study likely contributed to the development of the National EMS Information System (NEMSIS) now being implemented nationwide.

## **NEMSIS**

NEMSIS is a system for collecting EMS performance measures associated with patient encounters that are either time sensitive, treatment sensitive, or both. Their measures address acute myocardial infarction (AMI), ST-segment elevation myocardial infarction (STEMI), acute stroke, and severe trauma, with the expectation that collection of these data will promote the development and standardization of performance measurement.<sup>xlix</sup> In conjunction with other data collected by NEMSIS about service delivery, this system will enable EMS outcomes research with precision and on a scale not previously possible. An important component of NEMSIS development is the availability of technical assistance to states as they implement these new systems and reporting standards. Technical assistance is being provided by the National EMSC Data Analysis Resource Center (NEDARC); NEDARC is located in Utah and has been in operation for more than 10 years.<sup>1</sup>

The NEMSIS dataset will have implications for workforce data and the availability of data to assess workforce issues, although the number of data elements that would allow in-depth analysis of workforce issues is somewhat limited in the current set of required elements. NEMSIS' Data Dictionary, Version 2.2.1, includes several data definitions of relevance to the EMS Data Definitions Project. They are presented in Table 3 (below). The number preceded by a "D" is the NEMSIS variable name. This is followed by the variable label. On the second line is the definition of the variable, along with the categories for which a field value has been assigned.

It should be noted that these data are intended to be obtained from the agency employing the EMS worker. It should also be noted that none of these elements are considered to be mandatory, nor are they intended to be part of the national NEMSIS data set.

**Table 3. Selected NEMSIS Data Definitions**

D07_02	State/Licensure ID number	The state certification/licensure ID number assigned to the crew member
D07_03	Personnel's employment status	Personnel's Employment Status for this Agency: Full Time Paid Employee, Full Time Unpaid Employee, Part Time Paid and Part Time Unpaid Employee, Part Time Paid Employee, Part Time Unpaid Employee
D07_04	Employment status date	The date that the employee status was assigned
D07_05	Personnel's level of certification/licensure for agency	Personnel's level of certification in this agency in the associated year: EMT-Basic, EMT-Intermediate, EMT-Paramedic, Nurse, Physician, First Responder
D07_06	Date of personnel's certification or licensure for agency	The date that the certification was achieved
D08_11	EMS personnel's date of birth	The EMS personnel's date of birth
D08_12	EMS personnel's gender	The EMS personnel's gender: Not applicable, Not recorded, Not reporting, Not known, Not available, Male, Female
D08_13	EMS personnel's race	The EMS personnel's race as defined by the OMB (US Office of Management and Budget): American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White, Other Race
D08_14	EMS personnel's ethnicity	The EMS personnel's ethnicity as defined by the OMB (US Office of Management and Budget): Hispanic or Latino, Not Hispanic or Latino
D08_15	State EMS certification licensure level	The personnel's State EMS Certification level: EMT EMT-Basic, EMT-Intermediate, EMT-Paramedic, Nurse, Physician, First Responder
D08_16	National Registry credentialed	Indication of National Registry Credential for the level of Certification/Licensure in D08_15: Not applicable, Not recorded, Not reporting, Not known, Not available, No, Yes
D08_17	State EMS current certification date	The date of the personnel's current certification
D08_18	Initial state certification date	The certification date of personnel's current (sic) certification
D08_19	Total length of service	The personnel's total length of active EMS service at any level in years. Please do not include time periods not working in EMS
D08_20	Date length of service documented	The date which the length of EMS service was documented

## Illness and Injury

Injury and illness are a major concern for the EMT and paramedic workforce, as with several other health occupations that require lifting and moving patients or being exposed to blood-borne pathogens. EMTs and paramedics are also at risk for injury or death due to their work in fast-moving vehicles, often under conditions which preclude the use of appropriate physical restraints.

We reviewed 13 studies and two major reports on EMT and paramedic illness and injury. The studies covered the major types of illnesses and injuries: musculoskeletal conditions, needlestick injuries, emotional illness, and crash-related injuries or death. Maguire and colleagues conducted a retrospective review of injury records for two urban EMS agencies in two time periods between 1998 and 2002.<sup>li</sup> They found an overall injury rate of 34.6 per 100 full-time workers per year. These rates were higher than any other occupation reported by the Department of Labor in 2000.

In another study based on the LEADS study, Pirrallo and colleagues studied behavioral risk factors of EMTs and paramedics.<sup>lii</sup> A 19-item behavioral risk survey was a snapshot included in the LEADS survey in 2002. Findings indicated that EMTs and paramedics engaged in more risky behaviors than the U.S. population as a whole. They were more likely to drive fast, less likely to wear seatbelts, and less likely to engage in moderate exercise. Pirrallo and colleagues have also determined that sleep problems and excessive sleepiness are more prevalent among currently employed EMTs than among a comparison group of individuals who are nationally registered EMTs but not currently employed as EMTs.<sup>liii</sup>

Obesity is also an issue. In the 2007 JEMS survey,<sup>liv</sup> one third of the respondents indicated that a high number of their employees were either obese or overweight. Back problems are also prevalent among EMTs.

NHTSA's Office of Emergency Medical Services funded Bedford Research and the Pacific Institute for Research and Evaluation to conduct a study of illness and injury data availability as well as the potential to create a system for tracking injury and illness.<sup>lv</sup> The final report, *Feasibility for an EMS Workforce Safety and Health Surveillance System*, highlighted the challenges in conducting national surveillance of EMS workers' injuries and illnesses. They noted that, despite the high on-the-job injury and death rates, occupational illness surveillance in this group "is still largely limited to infectious disease report analyses mandated by law and the respiratory illness plaguing World Trade Center rescuers." The high prevalence of musculoskeletal injuries, due to lifting overexertion, in the EMS workforce was noted.

As part of the above project, a consensus panel of EMS stakeholder organizations in the United States, data collecting or data managing groups, and academic experts in EMS and occupational injury developed a conceptual model for EMS workforce illness and injury surveillance. The panel concluded that no single U.S. data system satisfied the requirements of a comprehensive surveillance data source for EMS workforce illness and injury. There are some existing systems (e.g., CFOI, FARS, and NEISS-Work) that can help enhance our understanding of EMS workers' illnesses and injuries. The panel decided that the best approach is an integration of data systems rather than the creation of new systems.<sup>lvi</sup> The EMS data definitions employed by these systems must be considered in our EMS Data Definitions project, to maximize comparability and utility of the data being collected.



## New and Expanded Roles

While there is a great deal of discussion in the EMS community about new or expanded roles for EMTs and paramedics, there is little in the literature exploring this idea. We found fewer than 10 papers relevant to this topic. A few papers discussed expanded roles in other countries, such as in the UK, where paramedics participate in treating some patients at home rather than transporting them. A pilot program in the early 1990's in one community in New Mexico trained EMTs and paramedics to treat minor acute care problems and provide community health services such as education and disease surveillance.<sup>lvii</sup> After a few years the program was discontinued. An editorial cited several problems with the expanded role concept, including lack of reimbursement, lack of support from some primary care providers, and lack of external quality control.

In another paper, the American College of Emergency Physicians issued a policy statement on expanded roles of EMS personnel that cautiously endorsed the idea with two caveats: evidence of patient benefit and close oversight by physicians.<sup>lviii</sup> And, as noted elsewhere, the roles and responsibilities of EMTs working in hospitals are evolving and undergoing refinement. Clear and uniform definitions of EMT and paramedic education and scope of practice will be critical for any effort to develop new or expanded roles for EMTs, paramedics, or both.

## Disaster Preparedness

Disaster preparedness is now a common topic in the EMS and health policy literature, as well as in industry journals, newsletters, and websites. EMTs and paramedics played a critical role in responding to emergency services needs and other needs created by Hurricane Katrina in the summer of 2005. There is a great deal written in the EMS industry journals on what did and did not work well from the perspective of field EMS staff responding to, or trying to respond to, assist victims of the hurricane. The lack of a national credentialing system was highlighted as one of the problems with the national response to Katrina.

In 2004, Milbank Memorial Fund published an extensive report by Markowitz and Rosner, two historians, on emergency preparedness in the states.<sup>lix</sup> While this report does not focus specifically on the EMS workforce, the highlights of the report have important workforce implications. Most notably, the overall thrust of the report is that in the early period following the September 11 attacks, there was a focus nationally and in the states to enhance overall preparedness and public health in the country.

In a similar paper published in *Health Affairs*, the authors describe the state of preparedness in 12 nationally representative communities in the U.S.<sup>lx</sup> In each community, the director of the local emergency management agency was one of several individuals interviewed. Although this paper covers a number of preparedness issues, workforce training and education were identified as a challenge in several of the communities.

Disaster preparedness is a key consideration in the development of workforce need projections. A recent research study, entitled "Will First-Responders Show Up for Work During a Pandemic? Lessons from a Smallpox Vaccination Survey of Paramedics," asked paramedics about the likelihood of their remaining on duty under a number of conditions relating to the availability of vaccinations for themselves (and for their families) and the availability of protective gear.<sup>lxi</sup> They concluded that, in a pandemic, a significant number of paramedics would not be willing to remain on duty. Although useful insights were gained about the importance of various factors in the paramedic's decisions, emergency preparedness workforce projections must also consider workforce motivational factors and concerns, as well as EMT demographic characteristics related to propensity to report to work during times of crisis.

The National Incident Management System (NIMS) is a comprehensive, national approach to incident management. It is applicable at all jurisdictional levels and across functional disciplines. It is intended to accomplish the following:

- Apply across all potential incidents, hazards, and impacts, regardless of size, location, or complexity.
- Improve coordination and cooperation between public and private entities in incident management activities.
- Provide a standard for overall incident management.

NIMS is intended to enable government at all levels (federal, state, tribal, and local), the private sector, and nongovernmental organizations (NGOs) to work together to prepare for, prevent, respond to, recover from, and mitigate the effects of incidents regardless of the type of incident. Its application provides a framework for efficient and effective responses, from a single-agency fire response to a multiagency, multijurisdictional natural disaster or terrorism response. Agencies and organizations that have integrated NIMS into their incident management structure can arrive at an incident with little notice and still understand the procedures and protocols governing the response, as well as the expectations for equipment and personnel. NIMS provides commonality in preparedness and response efforts that allow diverse entities to readily integrate and, if necessary, establish unified command during an incident.

The development of a nationwide credentialing system is a fundamental component of NIMS. This system can document minimum professional qualifications, certifications, training, and education requirements that define baseline criteria expected of emergency response professionals and volunteers for deployment as mutual aid to disasters. It also can help prevent unauthorized (i.e., self-dispatched or unqualified personnel) access to an incident site. To support this credentialing initiative, the NIMS National Integration Center (NIC) uses working groups to identify positions that should be credentialed and the minimum qualification, certification, training, and education requirements for each position.<sup>lxii</sup> Common data definitions are clearly important for this.

## Work Sites

EMS employment in multiple sectors creates a challenge in collecting workforce data. A variety of public and private agencies are engaged in the provision of EMS service delivery. Many EMTs are fire-based and are engaged in the provision of both EMT and fire suppression services. Other public safety workers, such as police, include individuals who are trained and certified EMT providers who perform EMS services in the conduct of their duties. A growing trend involves EMTs providing services in hospitals and primary health care clinic settings.<sup>lxiii, lxiv</sup> The role of the EMT in hospitals needs to be clearly defined. Although some see the EMT–Paramedic filling the role of the nurse, others believe that a team approach should be taken, with nurses focusing on care requiring higher-level skills (consistent with their training) and paramedics focusing on care requiring mid-level skills.<sup>lxv</sup>

Ambulance services, and other EMS services, may be operated by private for-profit, private non-profit and government agencies. All operate under a highly regulated environment. Government owned EMS services may be operated by local governments, regional governments, or state governments. They may be operated independently or they can be organized as a branch of another municipal department, such as a public health department. Or, as previously noted, the services may be provided by the fire service or by other public safety services. Integration with these services can range from partial (where EMS staff might share space, administrative services, and command and control with the other services) to complete (with cross-training to

perform the basic functions of the other service). In rural areas, EMS services may be staffed predominantly by volunteers. And, on college and university campuses, students may provide emergency medical responses. The National Collegiate Emergency Medical Services Foundation's main goal is to support, promote, and advocate emergency medical services (EMS) on college and university campuses. They have information concerning approximately 300 college-based EMS services.

Currently, the private for-profit EMS industry is dominated by a small number of private companies. The largest of these are American Medical Response (AMR), based in Greenwood Village, Colorado, and Rural/Metro Corporation, based in Scottsdale, Arizona.

The military is also involved with the provision of EMS. U.S. Army medics (MOS 91B) receive training similar to that of EMT-Basics. The Army reengineered its combat medic program in 2001. The 91W program now requires all 30,000 Army medics to obtain and maintain NREMT registration. This requires at least 48 hours of continuing education every two years.<sup>lxvi</sup>

EMTs often work at more than one work site, and often work for more than one employer. Volunteer work, either as an individual's main EMT job, or in addition to an individual's main EMT job, creates problems in counting and classifying individuals. Similarly, the variety of different types of work sites and employers presents challenges in the identification of data sources and the collection of workforce data from these diverse sources.

## **Demand for Paramedics**

For years, EMS managers have discussed their "paramedic shortage." The widespread use of this term is based on the subjective experience of many managers. The 2007 JEMS Salary and Workplace Survey indicated that somewhat over half (58%) of the agencies surveyed felt there was a shortage of certified paramedics.<sup>lxvii</sup> This indicates that a substantial proportion of agencies do not feel there is such a shortage. There are likely to be certain regions in which there are shortages, but there are almost as many other regions in which no such shortages are apparent. EMS workforce demand data come principally from vacancy surveys in a few states. In Nebraska, 58 percent of services reported needing additional personnel in 2001.<sup>lxviii</sup> Seventy percent of rural Minnesota ambulance services in 2002 reported adding staff in the previous year while 75 percent reported needing more staff.<sup>lxix</sup>

There are numerous factors that shape demand for EMS providers in rural areas, from patterns of injury and illness to EMS and health care organizational characteristics. A basic factor in rural EMS service delivery is lower population density, requiring rural ambulance providers to travel longer distances on average than their urban providers.<sup>lxx</sup> The greater distance to definitive care means that ALS skills are most needed where they are least available because of difficulty attaining and maintaining these skills in rural areas.

Declining rural health care infrastructure may be putting pressure on EMS workers to fill some health service delivery gaps. The Project HOPE Walsh Center for Rural Analysis (referred to hereafter as Project HOPE) conducted a nationally representative study of firms that bill Medicare for ground ambulance transport. The study found that 77 percent of low-volume rural providers (providing fewer than three transports per day, on average) were based in a county classified as a health professional shortage area (HPSA).<sup>lxxi</sup> Rural hospital capacity and specialty care limitations can require transfer of patients to ever more distant locations, increasing person-hours for transport.

In addition, some rural communities have higher proportions of elderly and poor residents, two factors that have been shown to be related to higher EMS demand.<sup>lxxii</sup> A 1989 report by the U.S.

Congress Office of Technology Assessment reported that injuries in rural areas tend to be more severe than those in urban areas.<sup>lxxiii</sup>

## **Volunteer EMS Workforce Issues**

Although EMS volunteers and volunteer services characterize both urban and rural areas, rural low-volume services are much more likely to rely on volunteer staff (74 percent of rural low-volume services compared to 23 percent of other providers).<sup>lxxiv</sup> Some states, such as Virginia, classify a majority of their agencies as volunteer, and a majority of providers are volunteers.<sup>lxxv</sup> In Nebraska, only 14 percent of agencies reported having paid personnel in 2001.<sup>lxxvi</sup> 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.<sup>lxxvii</sup> Though rural areas tend to use more volunteers, some of the same issues affect urban volunteers and urban systems that rely heavily on volunteers. One sign that volunteer systems are struggling is that there is some evidence that volunteer EMS systems are increasingly converting to partially or fully paid staff.<sup>lxxviii</sup>

## **Supply of Volunteers**

In Virginia, 85 percent of volunteer agencies reported recruitment and retention of providers as a top priority, compared to 58 percent of agencies with paid staff.<sup>lxxix</sup> Volunteer recruitment and retention are reportedly getting more difficult because of various disincentives:<sup>lxxx</sup> increasing time people spend in paid employment, increasing exposure to danger, concerns about personal liability, an aging population, limited funds for training and equipment, and a trend toward routine transfer and nursing home calls that make volunteering less exciting.

Higher expectations and educational demands associated with the professionalization of EMS, as well as training that is too frequent or repetitive, also discourage volunteerism.<sup>lxxxi</sup> The most desired change for current retired EMS providers in a 2004 Nebraska survey was fewer requirements to maintain credentials. That same survey also found that insufficient numbers of local EMS providers was one of the top sources of dissatisfaction.<sup>lxxxii</sup>

## **Size of the Volunteer EMS Workforce**

There are few sources of data on the number of volunteer EMT-Basics and EMT-Paramedics. The Current Population Survey (CPS) captured information on volunteers in a September 2007 Supplemental Survey, but aggregated EMS services with counseling, medical care, and protective services in the survey item describing the type of volunteer work. The LEADS Survey enables estimates of the numbers of uncompensated volunteers and compensated volunteers (that is, volunteers who are either employed in EMS and also do volunteer EMS work or volunteers whose compensation exceeds a specified amount). However, these estimates are only for individuals who maintain their national registration. The National Fire Protection Association provides excellent estimates of the numbers of career and volunteer firefighters, but lacks a way to translate these data into EMT levels.

Enumeration of the numbers of volunteer EMS providers presents other challenges, which include:

- Many volunteers are also employed, either full- or part-time as EMTs.
- Individuals may volunteer for more than one organization.

- Determination of the number of full-time equivalent (FTE) volunteers is hampered by the fact that volunteers typically volunteer for a specified number of shifts. The length of these shifts can vary across organizations.

## Demand for Volunteers

EMS demand is difficult to measure because many services are provided by volunteers. It has been argued that billing is less consistent for EMS in rural areas and in volunteer services,<sup>lxxxiii</sup> such that billing records may not give a complete picture of the true utilization of rural EMS. Among critical access hospital (CAH)-affiliated EMS providers, volunteer systems do not have collection rates that are significantly lower than paid or mixed systems.<sup>lxxxiv</sup> It is unclear, however, whether these EMS providers, which may be part of more robust health care systems by virtue of their affiliation with CAHs, are representative of volunteer systems more generally. In Nebraska, for example, about 40 percent of agencies did not bill for services in 2001.<sup>lxxxv</sup> There is wide variability in billing for volunteer services, making demand measurement and forecasting especially problematic in smaller geographic areas.

Reports of a volunteer shortage focus particularly on daytime shifts, when full staffing is often not possible, leading to delays in response times.<sup>lxxxvi</sup> Minnesota EMS agencies reported more difficulty than urban services covering day shifts, most likely because of their greater reliance on volunteers.<sup>lxxxvii</sup> More than a third of Nebraska EMS volunteers surveyed in 2004 had difficulty being released from work to respond to EMS calls, and this concern was also expressed in a study of Minnesota ambulance services.<sup>lxxxviii</sup>

Little is known about the workforce data systems that are employed by volunteer agencies for record-keeping and reporting purposes. They are likely to have evolved to meet idiosyncratic needs and may not be able to provide detailed workforce staffing and other workforce data. Accordingly, the use of “new” data definitions by volunteer agencies for reporting purposes (particularly the smaller agencies) may result in logistical barriers that do not characterize other systems.

## EMS Policy

We reviewed more than 25 papers related to EMS policy with direct or indirect implications for the EMT and paramedic workforce. These papers tended to be in two major categories: the general structure and role of EMS systems (sometimes with suggestions for reform or new models), and the role and practice of EMTs and paramedics (also suggesting changes or reporting on research).

EMS service configuration, ambulance staffing, and the role of dispatch is an important policy issue. Each of these factors influences the number and type of EMS workers needed and may be related to a shortage of either EMTs or paramedics in a particular service area. Stout and colleagues described this issue in a 2000 paper in *Prehospital Emergency Care*.<sup>lxxxix</sup> The paper described an all-ALS configuration in which all ambulances are staffed with paramedics and a tiered system in which some ambulances are ALS and some are BLS (staffed with EMT-Basics). The authors did not conclude that one system is better than another—rather that each community may be better suited to one type or another based on budget, service area, population, local statutes, and medical concerns. This essentially leaves decision-making and planning to the local community. However, if one configuration or another becomes (or already is) predominant in the industry, this can shift workforce demand and create shortages. For EMS policy research, including issues such as staffing configurations, it is critical to have clear and consistent workforce definitions of levels of provider.

## Major Reports on the EMS Workforce

We reviewed several major reports on the EMS workforce prepared by government agencies, state entities, private think tanks, and other academic research centers. We highlight a few of those reports and their contribution to our understanding of the EMS workforce.

- *IOM: Future of Emergency Care, Subcommittee on Prehospital EMS*: The IOM launched a multi-year study to examine the emergency care system in the U.S., explore future challenges, describe a vision of the emergency care system, and recommend strategies required to achieve that vision. The project includes an 11-member subcommittee that will address the same issues with a focus on prehospital emergency medical services.<sup>xc</sup> Workforce recommendations included the following:
  - State governments should adopt a common scope of practice for EMS personnel, with state licensing reciprocity
  - States should require national accreditation of paramedic programs
  - States should accept national certification as a prerequisite for state licensure and local credentialing of EMS providers
  - The American Board of Emergency Medicine should create a subspecialty certification in EMS<sup>xc<sup>i</sup></sup>
- *American College of Emergency Physicians: The National Report Card on the State of Emergency Medicine*: This report, prepared in 2006, is an assessment of the support that each state provides its EMS system. An ACEP task force developed 50 objective and quantifiable criteria to measure the performance of each state and the District of Columbia. Each state received an overall grade. While this report did not measure the number of prehospital personnel, it included several measures that have EMT and paramedic workforce implications.<sup>xc<sup>ii</sup></sup>
- *GAO: Emergency Medical Services, Reported Needs are Wide-Ranging, with a Focus on Lack of Data*: This report included a description of the EMS structure in the country and was prepared per Congressional request. The report included a synthesis of the various agencies involved in EMS and the issues that are highlighted throughout this workforce report. Of note, the report concludes that the lack of data is an overriding problem in addressing the day-to-day challenges of EMS systems.<sup>xc<sup>iii</sup></sup>
- *RAND: Emergency Responder Injuries and Fatalities, An Analysis of Surveillance Data*: The RAND Corporation conducted an analysis of available data on occupational injuries and fatalities of firefighters, first responders, and EMTs and paramedics. The report acknowledges that this group experiences some of the highest rates of illness and injury of all occupations. RAND researchers found gaps in the data, with the best data coming from the NFIRS database. Data on EMS personnel were found to be less available and less definitive. The RAND report claims that coding changes currently underway by the federal government will allow EMS responders to be broken out of public health databases.<sup>xc<sup>iv</sup></sup>
- *National Fire Protection Association (NFPA): U.S. Fire Department Profile*. The National Fire Protection Association (NFPA) also collects and summarizes data on EMS activities. The NFPA has data from 1980 forward that summarizes the total number of fire calls and categories those calls as fire, medical aid, false alarm, mutual aid, and other types of calls.

- *University of North Carolina: 2003 National Emergency Medical Services (EMS) Survey:* In 2003 DHHS, HRSA, and UNC-CH conducted a survey of the directors of EMS state and territorial agencies. This comprehensive 111-item survey included numerous elements related to the EMS workforce, including counts of each type of responder, training requirements, and certifications. The results provide a rich array of data, although they should be used cautiously when referring to the workforce. The data reported suggest that all certified levels of responders are included whether they are currently working in the field or not.<sup>xcv</sup>

## **Conclusion**

This comprehensive review of the literature related to the EMS workforce illustrates why it is important to have clear, consistent, and quantifiable definitions of the workforce used across systems. It summarizes the present approaches that are employed in the production of EMS workforce data, uses of these data, and their limitations. Its ultimate objective is to help inform the development of a set of workforce data definitions that can be adopted by key stakeholders and used by both the stakeholders and by the federal government to produce valid EMS workforce estimates and projections.

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