

The Emergency Care Workforce in the U.S.

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EXECUTIVE SUMMARY

Emergency care systems in the United States include pre-hospital emergency services, emergency departments (EDs) in hospitals, freestanding urgent care centers, and teams dispatched by local, state, or federal governments or volunteer organizations such as the Red Cross in response to widespread emergency or disaster. Volunteers are used in pre-hospital settings as well, which contributes to the difficulty of estimating the number of providers. These systems employ physicians, registered nurses (RNs), physician assistants (PAs), advanced practice nurses (APNs), emergency medical technicians (EMTs) and paramedics, and emergency medical dispatchers.

The total number of workers in the emergency medical care workforce is difficult to estimate due to the limitations of existing data, but some figures that are available are presented below:

- In 2002, there were 25,500 self-identified emergency medicine physicians in the U.S.¹, although not all work in EDs. Many additional physicians are employed in EDs practicing a specialty other than emergency medicine.
- Approximately 95,000 RNs and 4,500 APNs (primarily nurse practitioners and clinical nurse specialists) worked in EDs nationwide in 2000.²
- There were an estimated 2,325 PAs in the emergency care workforce in 2003³;
- In 2003, State Offices of Emergency Medical Services reported approximately 757,000 individuals throughout the country licensed as EMTs or paramedics;⁴
- There were approximately 90,000 emergency medical dispatchers in the U.S. in 2003.⁵

The composition of the emergency medical care workforce varies dramatically by geography, particularly in terms of urban/rural location. The ten most rural⁶ states had fewer emergency medicine physicians per 100,000 than the most urban states (an average of 7.7 versus 9.3 in 2002), but had more ED RNs (41.3 versus 28.0 in 2000) and more PAs in the emergency medicine workforce (1.3 versus 0.6 in 2003).

¹ American Medical Association, 2004.

² National Nurse Sample Survey, 2000.

³ AAPA. Does not include PAs working in a non-urgent setting who reported family practice with urgent care as a specialty.

⁴ Emergency Medical Services Magazine. Includes licensed EMTs not actively working as EMTs.

⁵ BLS, 2004.

⁶ In this context, “rural” refers to the percent of the state’s population living in nonmetropolitan areas.

**Average Emergency Care Personnel Per 100,000,
Ten Most Rural and Ten Most Urban States**

	EM Physicians, 2002	ED RNs, 2000	EMPAs, 2003	EMTs (registered), 2003	EMTs (licensed), 2003	EMDs, 2002
Ten Most Rural States	7.7	41.3	1.3	191.4	317.3	42.8
Ten Most Urban States	9.3	28.0	0.6	61.0	246.0	28.0

Given the increases in projected demand for emergency medical care services in the United States resulting from a variety of factors, several professions could potentially face shortages.

- Emergency care services are impacted by the current shortage of RNs. Some studies indicate that emergency departments are one of the most common locations of RN openings in hospitals.
- There are concerns that the supply of board-certified emergency physicians may not be adequate to meet demand. An annual survey of residents completing training in New York indicates a strong job market, with emergency medicine residents consistently reporting high levels of demand relative to other specialties between 1998 and 2002, although demand for emergency medicine graduates appears to be declining relative to other specialties.
- While EMTs are not generally seen as being in short supply, a 2004 survey of EMS directors in rural areas indicates that high rates of turnover make recruitment and retention of EMTs a continuing concern.

Physicians in the Emergency Care Workforce

Physicians providing emergency care may be either emergency medicine (EM) specialists or may be practicing other specialties in an emergency setting such as a hospital emergency department (ED) or an urgent care clinic. Some physicians work as medical directors in emergency medical services such as ambulance or rescue squads.

- Between 1990 and 2002, the number of EM physicians in the U.S. increased by 79%, while the number of EM medical residents increased 116% between 1989-90 and 2002-03. The number of certificates in emergency medicine issued by the American Board of Medical Specialties increased by 41% between 1997 and 2000.
- More physicians in EDs worked on a contract basis compared with physicians in other specialties in 2002. Nearly 20% of physicians reporting their specialty as EM worked as independent contractors, compared to 4% of all physicians. The practicing of hiring contract physicians for EDs is especially prevalent in rural areas.

- Emergency medicine physicians are less likely to be female than other physicians (20% versus 25%), despite being younger on average. There are significant differences in the racial/ethnic composition of emergency physicians and the patients they treat. In 2002, emergency medicine physicians in the U.S. were 4% Black/African-American and 4% Hispanic/Latino, compared to a general population that was 12% Black/African-American and 13% Hispanic/Latino.

Registered Nurses in the Emergency Care Workforce

Emergency department (ED) nurses are registered nurses (RNs) who work in hospital emergency departments. Some RNs also provide emergency care in urgent care centers or in the pre-hospital environment as transport nurses.

- The estimated number of RNs working in EDs as a primary work setting nationwide increased by 41%, from 67,249 to 94,912 between 1988 and 2000.
- RNs in EDs tended to be younger on average than other RNs (with a median age of 40 versus 43). The majority of ED RNs in the country (89%) was non-Hispanic White in 2000; 3% were Hispanic/Latino and 4% were Black/African-American, lower than the percentages in the general population. RNs in EDs were also more likely to be men than other RNs, although the percentage of men was still low (14%).

Physician Assistants and Advanced Practice Nurses in the Emergency Care Workforce

Physician assistants (PAs) and advanced practice nurses (APNs) provide medical care to patients under the supervision of a physician. The specialty of the PA reflects the specialty of their supervising physician.

- The vast majority of PAs in emergency departments in 2003 reported a specialty in emergency medicine (94%), followed by surgical specialties (2%). There is no formal PA certification program for EM at this time, and only one or two residency programs for PAs in EM. For most, specialty training is based on practice and experience. APNs in emergency settings in 2001 were most likely to report certifications as a family nurse practitioner (NP) (43%), acute care NP (13%), adult care NP (12%), critical care clinical nurse specialist (9%), or pediatric NP (7%). There is currently no option of certification for NPs in EM, although it is desired by those who complete the few training programs of this type.
- Approximately one-third of EDs in the U.S. employed physician assistants in 1999, while nurse practitioners worked in approximately 17% of EDs.
- Emergency care PAs were more likely than other PAs to be male in 2003, but were older on average than other PAs. The majority of PAs in the country were non-Hispanic White; 4% were Hispanic/Latino and 3% were Black/African-American, lower than their percentages in the general population. Very large numbers of emergency care PAs had a background in the Armed Forces.

Emergency Medical Technicians and Paramedics

Emergency medical technicians (EMTs) and paramedics are often the first providers of direct medical care to patients needing emergency treatment, although first responders, such as police and firefighters, may provide some basic care at the scene. EMTs may practice at various levels, from EMT-Basic to Paramedic. A substantial number of EMTs serve in a volunteer capacity; in 2003, it was estimated that more than one-third of registered EMTs in the U.S. were volunteers.

- The vast majority of EMTs in 2003 were non-Hispanic White, well above their percentage in the general population, while Blacks/African-Americans and Hispanics/Latinos were underrepresented relative to their percentage in the population.
- The number of EMTs grew between 1996 and 2003, and the Bureau of Labor Statistics projects that employment of EMTs and Paramedics will grow an additional 33.1% between 2002 and 2012, or by 59,000 new jobs. Total job openings for the period, including replacement positions, are estimated at 80,000.

There are several issues with potential to substantially affect future demand for emergency care services and workers, including:

- A growing concern about the potential for mass casualty incidents or bioterrorism threats, leading to more focused efforts in emergency preparedness planning;
- The aging of America, leading to a growing cohort of the population placing new demands on the emergency care system;
- The increasing racial and ethnic diversity of the nation, leading to greater concern about the cultural competence and diversity of the emergency care workforce;
- The lack of access to medical insurance, with higher rates of underinsurance and uninsurance leading to increasing use of emergency departments for non-emergency care;
- Current health workforce shortages and maldistribution of health care workers, which may worsen;
- The closings of hospital emergency departments; and
- The development and use of new health care technologies, which may potentially increase the efficiency and effectiveness of emergency medical care but which may also require new skills of emergency care personnel.

THE EMERGENCY CARE WORKFORCE AND CARE SYSTEMS IN THE U.S.

Emergency care systems in the United States include pre-hospital emergency services, emergency departments in hospitals, freestanding urgent care centers, and teams dispatched by local, state or federal governments or by volunteer organizations such as the Red Cross in response to widespread emergency or disaster. Pre-hospital emergency medical services and hospital emergency departments (EDs) are traditionally viewed as the backbone of this system – receiving the largest numbers of patients and those with the most severe injuries. Walk-in clinics for minor emergencies have become increasingly prevalent and popular, while the recent attention given to threats of terrorism (including possible chemical and biological attacks) have increased the focus on disaster preparedness. Other components of an emergency care system may include fire departments, rescue squads, and law enforcement agencies, which receive support from emergency medical services (EMS) planning agencies, educational programs, EMS professional associations, and federal EMS funding agencies.

Freestanding urgent care centers (UCCs) provide care for minor illnesses and injuries that require immediate medical attention but do not require the more intensive services available at hospital emergency departments. They differ from regular physician offices in that they typically have extended office hours (evenings and weekends), and do not require an appointment. Furthermore, they may have laboratory and radiology equipment onsite that are not typically available at a physicians' office. Urgent care centers treat some conditions that would often be treated in hospital emergency departments if an urgent care center were not available (e.g., broken bones, lacerations, high fevers), thereby relieving some of the pressure on hospital emergency departments. These are largely for-profit entities that usually accept only insurance or cash, and are not required to provide care to those who are unable to pay.

Hospital emergency departments (EDs) provide some of the same services as urgent care centers, but are also able to treat more serious, life-threatening illnesses and injuries. Hospital EDs also function as the primary source of care for many uninsured and indigent patients, who by law, cannot be turned away from these facilities regardless of the patient's ability to pay. The use of hospital EDs as a source of primary care is a continuing problem that diverts resources from emergency cases, but this is symptomatic of dysfunctions elsewhere in the health care system (e.g., uninsured or underinsured populations, a limited number of physicians who accept Medicaid). Emergency departments are generally classified as ambulatory care, and the majority of patients (88% US average) are treated and released, although these departments are also a major avenue of admission to the hospital, accounting for 40-50% of all inpatient admissions nationwide.

The majority of ED patients (78%) are “walk-in” patients who have arrived using their own transportation rather than an ambulance service or rescue squad (14%)⁷. Clearly, however, those with the most serious illnesses and injuries may be unable to reach a hospital on their own, or may need immediate care that cannot wait until their arrival at a hospital. These patients typically

⁷ McCaig and Ly, cited in GAO report.

receive pre-hospital care through EMS systems at the scene of an illness or injury and en route to the hospital.

EMS systems typically transport patients to local hospitals (usually community hospitals) for treatment. Serious cases, however, may require the more specialized services of a tertiary care center: a large medical center that has a certified trauma unit, and perhaps a burn care unit. These facilities may not be available in the local community, and may require transport by ambulance or helicopter to another area. Not surprisingly, EMS response and transport times are longer in rural than urban areas.⁸

The staffing required by each of these components of the emergency care system differs markedly. Urgent care centers may be staffed by physicians (who may or may not be emergency medicine specialists), nurse practitioners, physician assistants, registered nurses, licensed practical nurses, and medical assistants.

Hospital EDs may be staffed by a mix of physicians, nurses, physician assistants (PAs), and nurse practitioners (NPs). In large urban hospitals and tertiary care centers, the physicians on staff are likely to be emergency medicine physicians, but smaller rural hospitals may be staffed by physicians who are not certified in emergency medicine, or physician assistants who may or may not specialize in emergency medicine.⁹

EMS systems are staffed primarily by emergency medical technicians (EMTs) including paramedics, and by emergency medical dispatchers (EMDs). Sometimes RNs participate in pre-hospital care, but may be required by state law to qualify and practice as an EMT or paramedic rather than as an RN. U.S. emergency physicians may also participate in EMS systems, but in contrast to many EMS systems in Europe, their work is primarily the provision of medical direction rather than direct patient care. Firefighters and police (who may also be certified as EMTs) may work closely with EMS systems, and in some localities most of the EMT staff is volunteer. Teams dispatched to disaster scenes may include yet a different mix of emergency care professionals.

Additionally, some emergency planning organizations are developing interdisciplinary special operations teams to be dispatched in case of disaster. One example of this is the Emergency Department Special Operations Team created by the Robert Wood Johnson University Hospital in central New Jersey. This team includes RNs, pharmacists, technicians, EMS personnel, and security officers who can be mobilized in the event of a mass casualty incident, hazardous materials incident, or attack by weapons of mass destruction. Federal “Disaster Medical Assistance Teams” (DMATs) are another example.

Rural EMS systems staff differently than urban ones, tending to use more volunteer personnel and fewer personnel who have completed advanced EMT training. EMS systems in rural areas also face particular challenges in regard to personnel. In a 2004 survey of rural EMS directors,

⁸ Grossman, Kim, Macdonald, Klein, Copass, & Maier, 1997.

⁹ Moorhead et al., 2002

recruitment and retention of EMS personnel were listed as one of the most significant issues in the provision of EMS services.¹⁰

This paper will primarily describe the workforce in EDs and pre-hospital emergency care systems, because these are the emergency care areas for which the most data are available. In particular, information will be presented on EMTs (including paramedics), emergency medical dispatchers (EMDs), EM physicians, EM PAs, and ED nurses. Urgent care clinics will be included when data are available, but there are currently little data on the workforce in these clinics. Basic medical staff (e.g., licensed practical nurses, medical assistants) will also receive limited discussion, as information on their roles in emergency health care services is not available. Finally, an effort will be made to discuss the increasingly important role of health care providers in disaster management plans. Such plans, however, tend to be formulated at the local or state level, and there is little consistency in terms of what types of providers will be mobilized for what types of functions in the event of a disaster or mass casualty incident.

Hospital Emergency Departments (EDs)

In 2001, there were nearly 110 million visits to hospital emergency departments nationwide. Seventeen percent of these visits were to hospitals with less than 100 beds, while 66% were to hospitals between 100 and 500 beds, and 17% were to hospitals with 500 or more beds. Ninety-six percent of ED visits were to community hospital EDs. Between 1997 and 2001, community hospital EDs experienced a 14% increase in number of visits. Twenty-one percent of ED visits were to hospitals in rural¹¹ areas¹², where only 17% of the U.S. population lives¹³.

In 2001, 85.6% of hospitals in the U.S. (93.3% of community hospitals) had an emergency department. Seventeen percent operated an ambulance service, 34% offered psychiatric emergency services, 3.1% operated a burn care unit, 29% operated a certified trauma center, and 25% operated an urgent care center¹⁴. There were more emergency departments per 100,000 population in less urban states, but this obscures the fact that the hospitals may not be located within easy access of rural areas. This is particularly true of tertiary care centers with trauma units, which are nearly always in urban areas. Trauma patients and others with severe life-threatening conditions may need to be airlifted to a tertiary care center by helicopter, increasing the importance of EMS services in these areas.

There are few differences in utilization by urban/rural status in 2001, with 19% of those living in urban areas and 21% of those living in rural areas visiting the ED at least once per year. In the ten states that are most heavily urbanized, visits per 100 people averaged 36.9, versus 42.3 in the ten states that are least heavily urbanized. Problems of access may restrict utilization by certain

¹⁰ National Association of State Emergency Medical Services Directors, 2000.

¹¹ Unless otherwise specified, “rural” refers to counties that are not part of a metropolitan statistical area (MSA) while “urban” refers to counties that are part of a MSA. According to the Census Bureau: “The general concept of a MSA is that of a core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration with that core. Currently defined metropolitan and micropolitan statistical areas are based on application of 2000 standards (which appeared in the *Federal Register* on December 27, 2000) to 2000 decennial census data.” <http://www.census.gov/population/www/estimates/aboutmetro.html>

¹² U.S. Department of Health and Human Services, 2003.

¹³ Economic Research Service, 2004.

¹⁴ American Hospital Association

groups in remote areas, however. The elderly in remote areas, for example, are 13% less likely to visit the ED than those in urban areas.¹⁵ Planning emergency care in rural areas may be made more difficult, however, by the fact that there is not a steady, predictable flow of seriously ill and injured patients as there is in large urban hospitals. Consequently, rural areas must also develop dependable triage and transfer networks to get patients to appropriate facilities that may not exist in the local community.

Emergency Medical Personnel

Emergency medicine (EM) physicians are those physicians certified by the American Board of Medical Specialties (ABMS) as EM specialists. Physicians complete a residency program in EM before beginning practice. EM physicians evaluate the presenting problem, make a diagnosis, and initiate treatment. Some EM physicians opt to subspecialize in pediatric emergency medicine, sports medicine, or medical toxicology. Although many EM physicians work in EDs, others work in broader EMS systems where they provide medical direction to EMTs and other emergency personnel. Some physicians working in some EDs, particularly those located in rural areas, are not necessarily trained or board certified in EM. Both generalists (e.g., family practitioners and internists) and specialists (e.g., cardiologists, trauma surgeons, neurosurgeons) may be found in emergency environments.

Emergency department (ED) nurses are registered nurses who work in hospital emergency departments. Most ED nurses are not certified as emergency nurses, although a voluntary certification in emergency nursing is available.

Emergency medicine physician assistants (EM PAs) and APNs provide medical care to patients under the supervision of a physician. The scope of practice for EM PAs is based upon the specialty of their supervising physician. EM PAs must be granted clinical privileges at the hospital in which they work, and can prescribe medication in most states. There are three EM PA educational programs in the U.S., although PAs do not need to graduate from such a program to practice in EDs. There are 4 NP training programs in EM in the country. Because presently there is no path for certification for nurse practitioners who are specifically trained in emergency medicine, most seek certification in another pathway, such as critical care or family medicine.

Emergency medical technicians (EMTs) and paramedics are the backbone of pre-hospital emergency care in the United States. They usually are the first providers of direct medical care to patients with emergency conditions, although first responders such as police and firefighters may provide some basic care at the scene. EMTs may practice at a number of different levels, from basic EMT to Paramedic.

Emergency medical dispatchers (EMDs) monitor the location of emergency services personnel from any one or all of the jurisdiction's emergency services departments. These workers dispatch the appropriate type and number of units in response to calls for assistance. Dispatchers often are the first people the public contacts when emergency assistance is required. If medically trained, the dispatcher may provide medical instruction to those on the scene of the emergency until the medical staff arrives.

¹⁵ Lishner, Rosenblatt, Baldwin, and Hart, 2000.

Emergency Medicine Physicians

The Profession. Emergency department physicians evaluate the presenting problems of patients, make diagnoses, and initiate treatment. These physicians must be prepared for a wide variety of medical emergencies, and must be well versed in such diverse subjects as anesthesia, cardiology, critical care, environmental illness, neurosciences, obstetrics/gynecology, ophthalmology, pediatrics, psychiatry, resuscitation, toxicology, trauma, and wound management, and may subspecialize in pediatric emergency medicine, sports medicine, or medical toxicology. In addition, they often represent one of the few sources of primary care to uninsured patients whose only access to care is through EDs. There were approximately 31,797 physicians working in EDs in 1999, with an average of 7.85 physicians per ED.¹⁶

Emergency medicine (EM) physicians are those physicians certified by the American Board of Medical Specialties (ABMS) or the American College of Osteopathic Emergency Physicians as EM specialists, or those who have completed a 3- or 4-year residency program in EM before beginning practice. In addition, active members of the American College of Emergency Physicians (ACEP) must complete 150 hours of continuing medical education every three years, at least 60 of which must be approved as relevant to emergency physicians.

Since 1992, physicians who are board certified in emergency medicine or pediatrics have had the option of subspecializing in pediatric emergency medicine. Because most of the existing Pediatric EM fellowship programs grew out of academic departments of Pediatrics, most physicians who have completed this subspecialty are pediatricians rather than emergency medicine physicians.

Another subspecialty of particular relevance to emergency care is the surgical subspecialty of trauma/critical care surgery. Trauma surgeons perform urgent surgical procedures, usually on emergency department patients. They typically are trained in 2-year fellowships in Trauma Surgery and Surgical Critical Care, open only to graduates of 5-year general surgery residency programs.

Not all emergency medicine physicians, however, necessarily work in hospital emergency departments, and not all emergency department physicians are necessarily certified or trained in emergency medicine. It was estimated that about 32,000 physicians were employed in U.S. EDs as of 1999.¹⁷ ED physicians may be either allopathic (MDs), or osteopathic (DOs), with the proportion of ED physicians who are osteopaths highest in rural hospitals (14%) and lowest in academic medical centers (2%).¹⁸ Nationwide, about 38% of physicians in EDs were neither residency trained nor board certified in EM and 38% are both residency trained and board certified. Most of the remainder of EM physicians were those who were “grandfathered” into certification, without completing a residency. There was great disparity between rural, suburban, and urban areas, however. In rural areas, the percent of ED physicians with no EM credentials was 67%, compared to only 28% in urban areas. The percent of ED physicians who were both residency-trained and board certified rose to 46% in urban areas, compared to only 16% in rural.

¹⁶ Moorhead et al., 2002

¹⁷ Ibid

¹⁸ Ibid

Suburban hospitals much more closely resembled rural than urban hospitals in the credentials of their ED physicians, with 19% both residency trained and board certified.

Both generalists (e.g., family practitioners and internists) and specialists (e.g., cardiologists, trauma surgeons, neurosurgeons) may be found in emergency environments. Many specialists provide emergency department coverage on an on-call basis, although a 2004 study of ED medical directors revealed that two-thirds of respondents reported inadequate on-call specialist coverage. This appeared to be a larger problem in urban hospitals (where 71% of respondents reported a problem) than in rural hospitals (where 57% of respondents reported a problem)¹⁹.

Approximately 43% of hospitals used locum tenens or contract physicians to provide ED coverage, and this was a particularly important source of coverage in rural areas. These physicians were not permanent hospital staff, but worked on a contract basis, often rotating between hospitals. Such physicians may contract independently or through emergency medicine management companies. There were also reports of residents “moonlighting” in EDs, typically in rural areas, despite the fact that this practice is discouraged by organizations such as ACEP and SAEM²⁰.

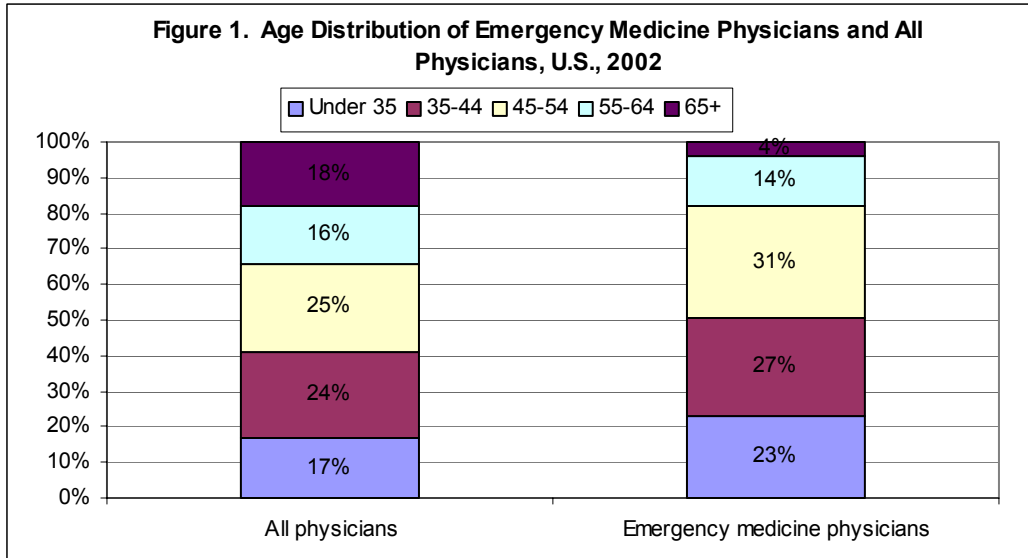
Demographics. Women were underrepresented among emergency medicine physicians relative to their representation among physicians as a whole. Slightly more than 25% of physicians in 2002 were women, but only 20% of emergency medicine physicians were women.

Emergency medicine physicians were also younger as a group than all physicians [Figure 1]. Nearly one-quarter were younger than age 35 in 2002, and fully half were younger than age 45. This compared to an overall physician population in which 59% of physicians were age 45 and older.

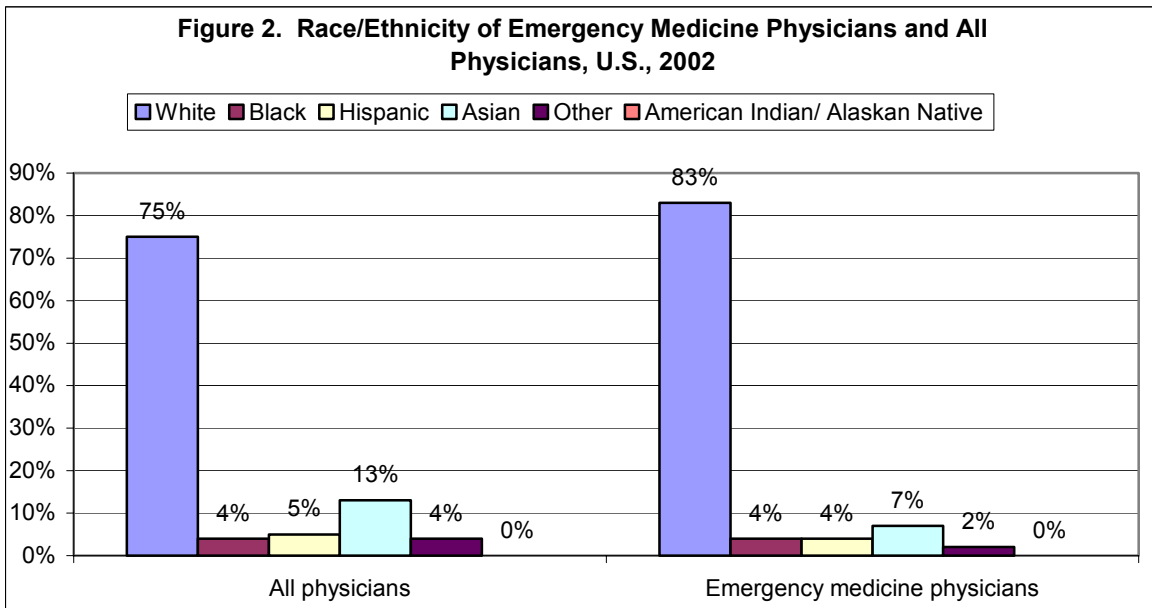
Emergency medicine physicians were less racially and ethnically diverse than physicians overall, with 83% non-Hispanic White compared to 75% of all physicians. The primary difference, however, seemed to be in the lower number of Asians in emergency medicine. While 13% of all physicians in 2002 were Asian, only 7% of emergency medicine physicians were Asian. The proportion of Black/African-American and Hispanic/Latino EM physicians was not substantially different from that of all physicians, although these groups were substantially underrepresented relative to the U.S. population [Figure 2].

¹⁹ American College of Emergency Physicians, 2004.

²⁰ Kaji and Stevens, 2002.



Source: AMA, 2004.



Note: Does not include physicians whose race/ethnicity was not known.
Source: AMA, 2004.

As seen in Table 1, the distribution of EM physicians by urban and rural area in 2002 differed from the distribution of all physicians. In both urban and rural areas, EM physicians were more likely than all physicians to practice patient care, more likely to be office-based and more likely to be physician staff. EM physicians were also more likely to be physician staff in rural than in urban areas (20.5% in rural, but 13.2% in urban), and much less likely to be residents or fellows (6.6% in rural and 15.5% in urban).

Table 1. Distribution of physicians by urban area, U.S., 2002

	Urban area		Rural area	
	All physicians	EM physicians	All physicians	EM physicians
Total nonfederal physicians	720,651	21,643	110,315	3,427
Total patient care	79.3%	95.9%	78.4%	96.4%
Office based	60.1%	67.1%	65.8%	69.4%
Resident/fellows	12.3%	15.5%	7.2%	6.6%
Physician staff	5.4%	13.2%	5.6%	20.5%
Administration	1.8%	2.6%	1.6%	2.2%
Medical teaching	1.2%	1.1%	1.0%	1.0%
Research	1.6%	0.2%	1.5%	0.2%
Other	0.5%	0.2%	0.4%	0.1%

Source: AMA, 2004.

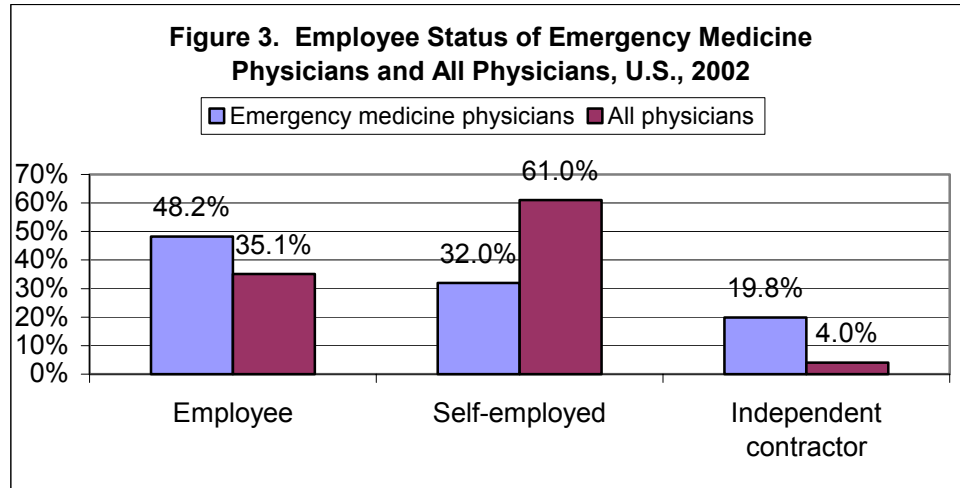
Employment Characteristics. Although many EM physicians worked in EDs, others worked in broader EMS systems where they provide medical direction. This may include establishing or modifying dispatch training protocols, implementing continuous quality improvement (CQI) programs, providing on-scene medical direction, and engaging in liaison activities, EMS budgetary planning, and public education²¹.

Emergency department physicians (regardless of specialty) also performed duties beyond their scheduled clinical time, logging an average of 3.2 hours per week on unscheduled clinical duties, and 4.5 hours per week on administrative work, teaching, or research. The average weekly hours of on-call backup for all emergency department physicians was 6.0 hours, while those in rural areas spent an average of 9.2 hours on call.²²

EM physicians (those who reported a specialty in EM regardless of whether they worked in an ED), were more likely to report being an employee or an independent contractor than all physicians (48.2% versus 35.1% and 19.8% versus 4.0%, respectively), and were less likely to be self-employed (32.0% versus 61.0%).

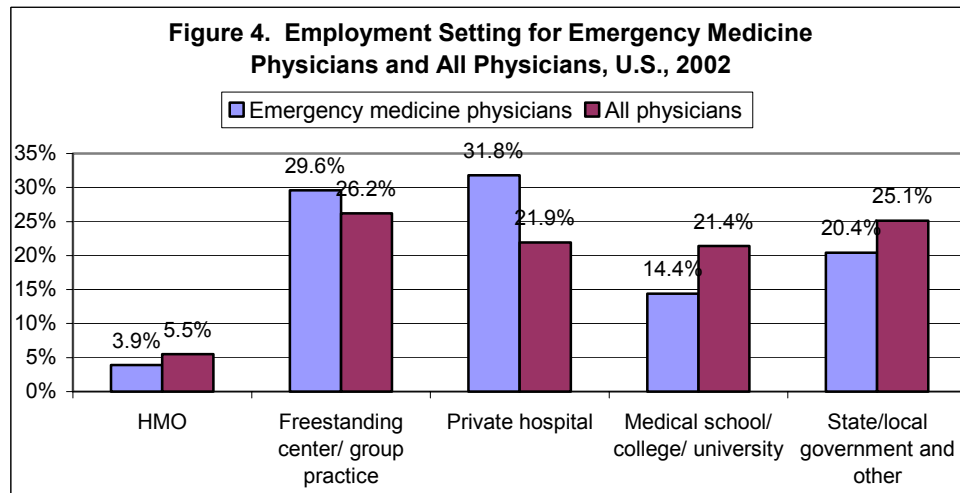
²¹ Alonso-Serra, Blanton, and O'Connor, 1997.

²² Op. cit.



Source: AMA, 2004.

EM physicians were more likely to work in either private hospitals or freestanding centers/group practice than all physicians (31.8% versus 21.9% and 29.6% versus 26.2%, respectively). They were less likely to work in health maintenance organizations, medical schools or colleges, and in state/local government and other settings.

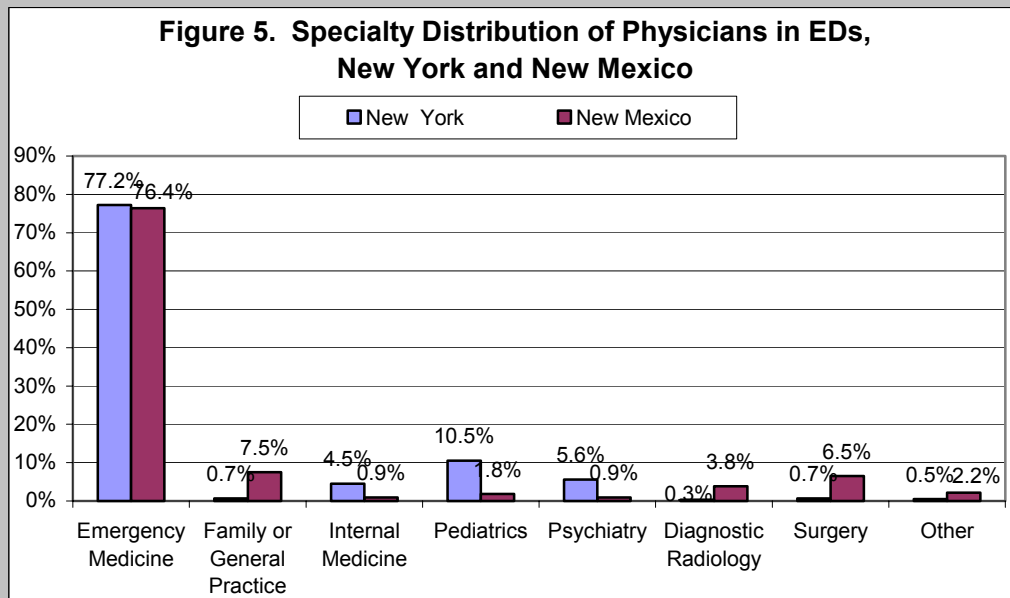


Source: AMA, 2004.

A Snapshot of ED Physicians in New York and New Mexico: Specialties and Geographic Distribution

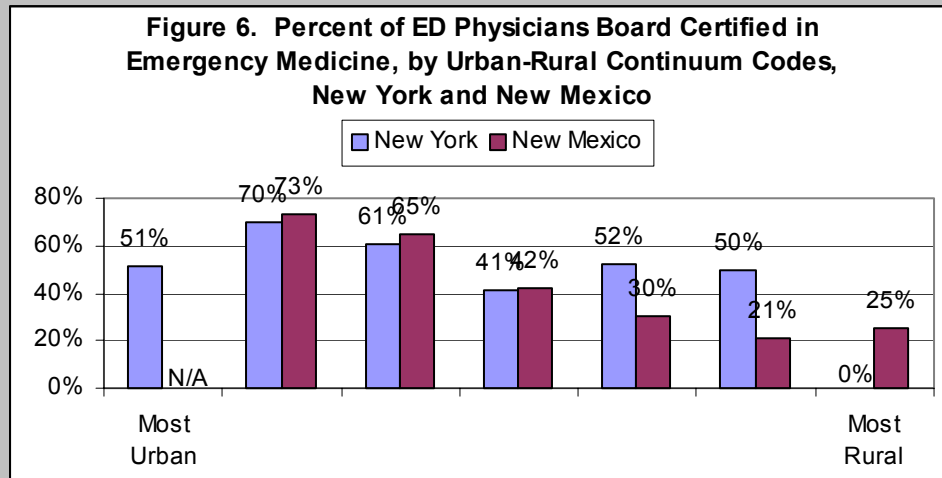
National data examining the specialty composition and geographic distribution of physicians in hospital emergency departments are not available, but surveys collected in 2001-2003 in New York and 2001 in New Mexico allowed a snapshot of emergency department physicians in these two states. To some degree, New Mexico's distribution may be more typical of rural areas, while New York's distribution may be more typical of urban areas, but the generalizations that can be made on this basis are limited. It should also be noted that the small number of physicians working in New Mexico EDs (106) makes estimates based on New Mexico data less reliable than those based on New York data (which included 1,128 physicians in EDs).

In both states, the primary specialty of ED physicians was Emergency Medicine (77.2% in New York and 76.4% in New Mexico). In New York, this was followed by pediatricians (both generalists and subspecialists) at 10.5%, although pediatricians only constituted 1.8% of ED physicians in New Mexico. Family and general practice was the second most common ED specialty in New Mexico at 7.5%, followed by surgery (both general and subspecialty) at 6.5%, compared to only 0.7% for each in New York EDs. Psychiatry was well represented among ED specialties in New York (at 5.7%), but less so in New Mexico (0.9%).



Source: Center for Health Workforce Studies, 2001-2003; Center for Health Workforce Studies, 2001.

As shown in Figure 6, the percentage of ED physicians who were board certified in emergency medicine tended to decline in more rural communities, although this pattern was more pronounced in the New Mexico than in the New York data.



Source: Center for Health Workforce Studies, 2001-2003; Center for Health Workforce Studies, 2001.

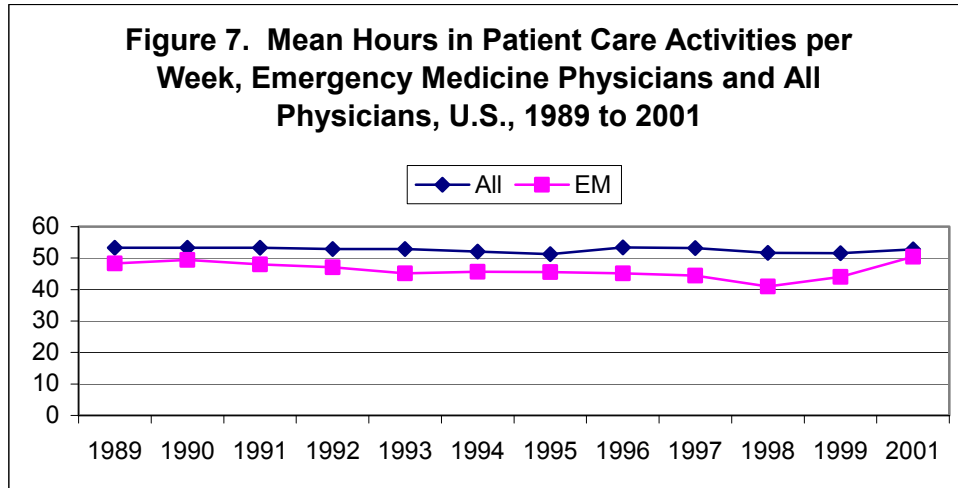
EM physicians in 2002 spent slightly fewer hours per week on professional activities than physicians overall (55.7 versus 57.6). They did, however, report slightly more total patient visit hours (45.8 versus 43.0) and had more patient visits per week (118.4 versus 107.2). It should be noted that EM physicians reported spending almost as much time on primary care as physicians overall (30% of their time versus 32.8%). Provision of emergency care, however, involves a high degree of intensity and stress due to the unscheduled nature of emergency visits, high clinical acuity, “new patient” context, high medico-legal risk of missed diagnoses and complications of care, and physiologically stressful hours. This implies that EM physicians who worked similar total hours to office-based practitioners were more highly prone to burnout.

Table 2. Mean Hours, Weeks, and Patient Visits, Emergency Medicine Physicians and All Physicians, 2002

	EM physicians	All physicians
Weeks of practice	47.4	47.1
Mean hours in professional activities	55.7	57.6
Mean hours in patient care activities	50.4	52.8
Mean patient visit hours	45.8	43
Mean office hours	4.9	27.8
Mean hours on hospital rounds	0.1	7.2
Mean hours in outpatient clinics and emergency rooms	40.6	7.3
Mean hours in other settings	0	1.1
Mean hours in surgery	0	5.5
Mean hours providing indirect patient care	5.3	4.8
Mean hours in non-patient care activities	5.3	6
Patient visits per week	118.4	107.2

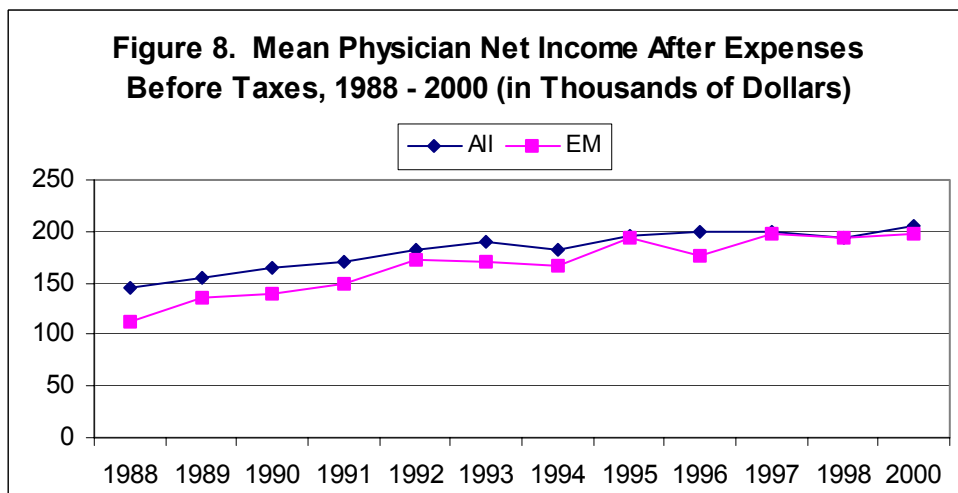
Source: AMA.

Since at least 1989, mean patient care hours for emergency medicine physicians have been somewhat lower than for all physicians [Figure 7]. Between 1989 and 2001, however, mean patient care hours worked by EM physicians increased by more than 4%, while those worked by all physicians decreased by slightly less than 1%. In 2001, EM physicians worked almost as many patient care hours as physicians overall (50.4 compared to 52.8).



Source: AMA.

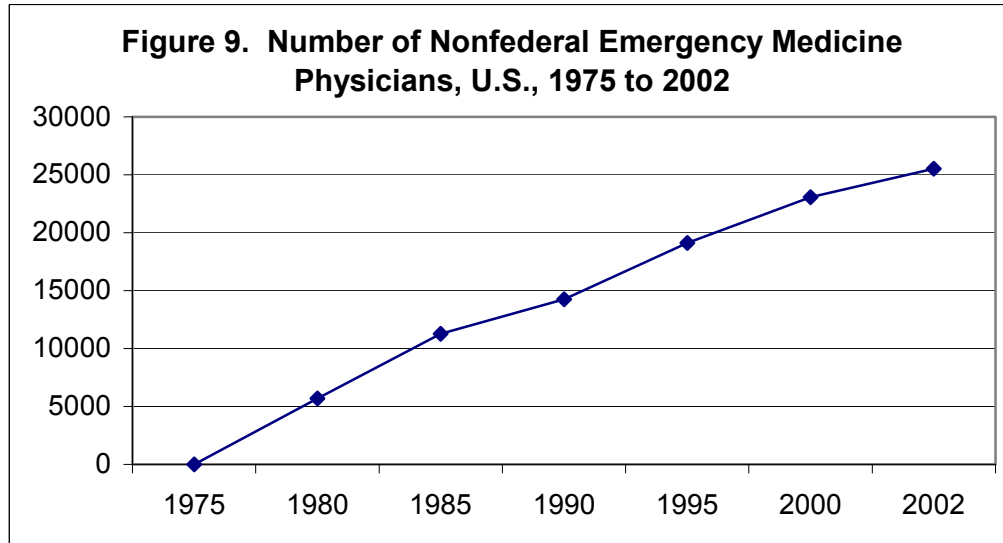
Net income for EM physicians after expenses and before taxes was slightly lower than that for physicians overall (\$197,100 versus \$205,700). This represents a departure from the previous pattern of substantially lower earnings among EM physician than among physicians overall (in 1988, for example, EM physicians earned a mean net income of \$112,800 compared to \$144,700 among all physicians). Since approximately 1995, mean income for EM physicians has closely approximated that of all physicians. Mean income increased by 42% between 1989 and 2001 for all physicians, but increased by 75% for EM physicians during the same period [Figure 8].



Source: AMA.

Supply. The number of self-identified EM physicians in the U.S. has increased substantially since 1979, when EM was first recognized as a specialty. By 2002, there were more than 25,500

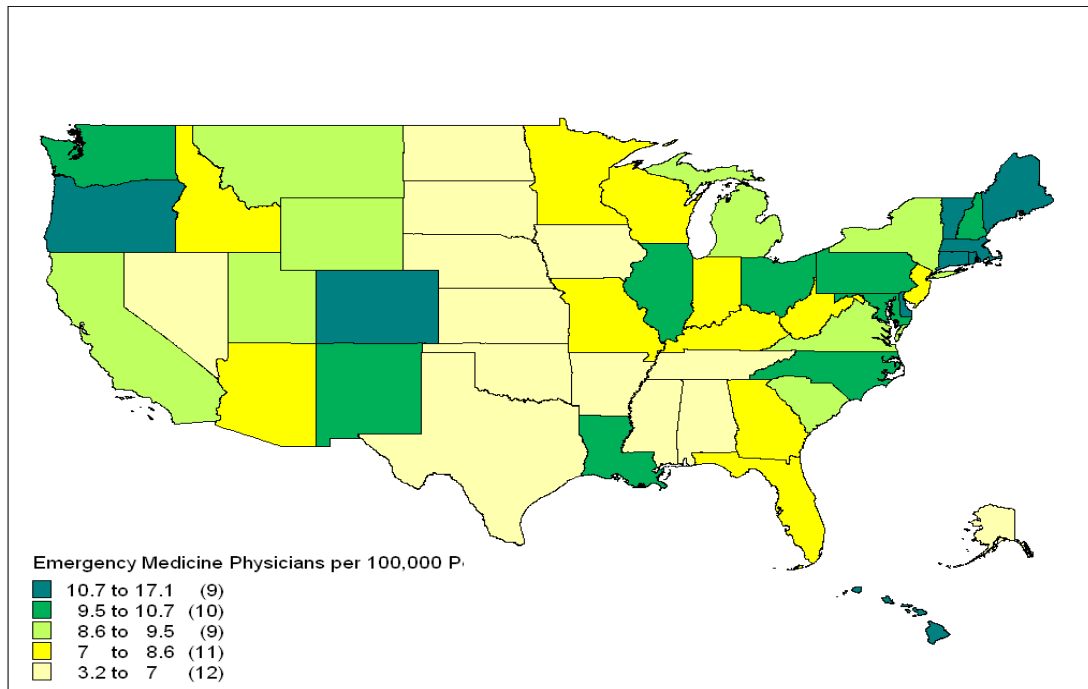
physicians reporting an EM specialty. Growth in EM has been much stronger than growth in medicine overall. Since 1990, the number of EM physicians in the U.S. increased from 14,000 to more than 25,500 (an increase of 79%). During the same period, the number of all physicians increased by 39%.



Source: AMA, 2004.

In 2002, there was a clear pattern of more EM physicians per capita on the East and West Coasts, while the Midwest and Southeast had the lowest rates of EM physicians per capita in the U.S.

Figure 10. Emergency Medicine Physicians per 100,000 Population, U.S., 2002



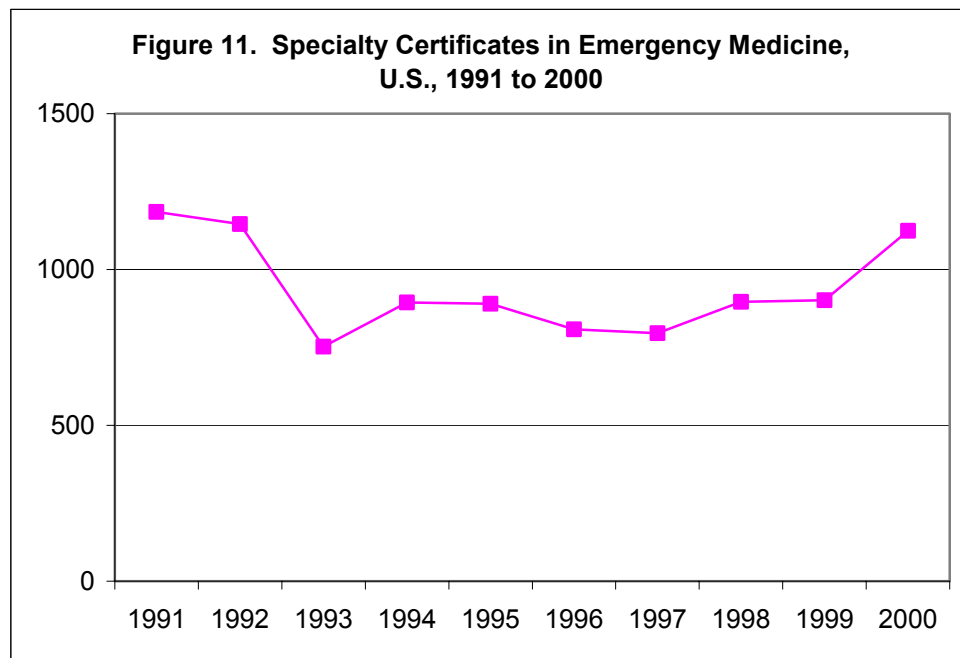
Source: AMA, 2004.

In the 2002-03 academic year, there were 127 emergency medicine residency programs nationwide. There were 3,846 residents enrolled in these programs, (4% of all medical residents), and 1,261 were first-year residents. This was an increase of 11% in the number of EM residents, and a 3.6% increase in the number of first-year EM residents since 1990. This compared to an increase of less than 1% in the total number of medical residents in all specialties and a decrease of 6% in the total number of first-year residents during the same time period.

The primary reason for the growth in EM residency programs was that hospitals and academic medical centers found these programs quite useful to staff their own EDs. The “fill rate” of these positions is quite high, reflecting the fact that EM is a popular career choice for U.S. medical students, many of whom are from the top 5-10 percent of their class.

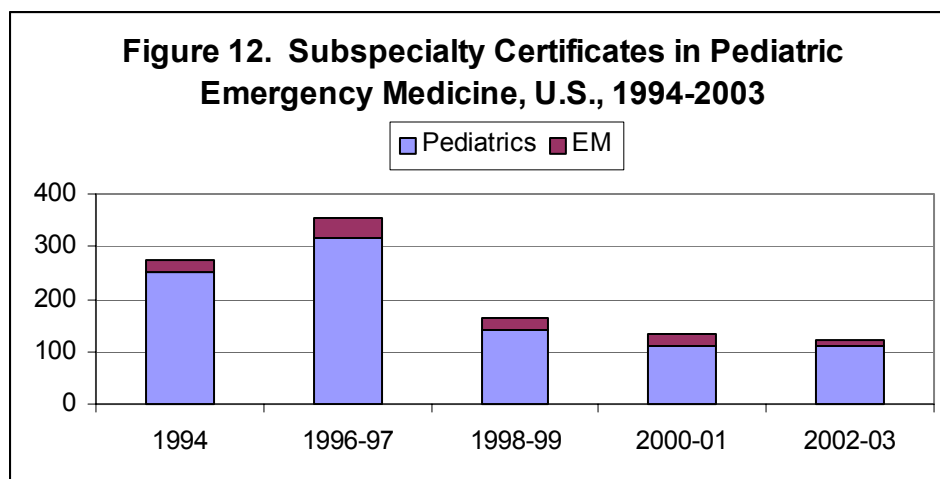
The number of certificates in emergency medicine issued by the American Board of Medical Specialties has also increased in recent years, from 796 in 1997 to 1,124 in 2000 (an increase of 41%). This increase followed a decline in the number of EM certificates from a high of 1,185 in 1991.

EM physicians may also subspecialize in pediatric emergency medicine (also a subspecialty available to pediatricians), medical toxicology, or sports medicine. Pediatric emergency medicine was the largest of these subspecialties.



Source: American Board of Medical Specialties (ABMS).

The number of EM physicians and pediatricians subspecializing in pediatric emergency medicine declined from a high of 355 in 1996-97 to a low of 121 in 2002-03. As shown in Figure 12, the vast majority of pediatric EM subspecialists (89% of the total between 1994 and 2003) were certified in pediatrics rather than emergency medicine.



Source: American Board of Medical Specialties (ABMS).

Demand. At least one study suggests that the supply of board-certified emergency physicians will not be adequate to meet demand over the long-term. Even if market demand for emergency physicians declines due to emergency department closings and greater use of midlevel providers such as PAs and NPs, the supply will not be sufficient to meet expected demand.²³ Although exit data on medical residents in New York indicates that demand (as defined by reported availability of positions) for emergency medicine specialists relative to physicians in other specialties has waned in recent years, emergency medicine was still among the top ten specialties in highest demand in 2003, when it ranked 9th (Center for Health Workforce Studies, 2004).

There is also some concern about whether the characteristics and training of emergency physicians are appropriate for the increasing diversity of the U.S. population. Emergency physicians, like physicians overall, tend to be predominantly non-Hispanic White, while the population they serve tends to disproportionately consist of disadvantaged minorities relative to practice in other settings. This raises issues of cultural competence, or the extent to which non-Hispanic White professionals are able to effectively relate to, communicate with, and ultimately serve their minority patients.^{24, 25, 26} Cultural competence can be cultivated in non-minority providers through training, education, and experience, but it is not clear how well cultural competence is incorporated into the training of emergency medical professionals. Racial and ethnic diversity also introduces potential language barriers to the patient-provider relationship, increasing the demand for providers who are bilingual or multilingual, especially in urban areas. The low percentage of EM physicians who are female may also be cause for concern, given that many ED patients are women who may have been victims of domestic violence or sexual assault.

²³ Holliman, et al., 1997.

²⁴ Cone et al., 2003.

²⁵ Sullivan Commission, 2004

²⁶ Heron and Haley, 2001.

Emergency Department Registered Nurses

The profession. Emergency department (ED) nurses are registered nurses (RNs) who work in hospital emergency departments. ED nurses may become Certified Emergency Nurses (CENs) through a voluntary credential awarded on the basis of a qualifying examination by the Board of Certification in Emergency Nursing (BCEN). BCEN also offers a credential for Certified Registered Flight Nurse (CRFN). Although credentialing is available, most nurses working in EDs are not certified as CENs.

Courses mandated at the basic level include hazardous materials awareness, fire and safety, CPR and infection control. Requirements for more advanced coursework vary from hospital to hospital, although almost all require Advanced Cardiac Life Support for ED nurses working in resuscitation areas or doing IV conscious sedation. Some hospitals require new ED hires to take a critical care course, depending upon their previous experience.

Some ED nurses specialize in caring for children and may work in pediatric EDs, but there is no certification available in pediatric emergency nursing, and very little data available regarding these nurses. State boards of nursing may require Pediatric Advanced Life Support for nurses providing conscious sedation. Pediatric EDs are likely to require advanced pediatric courses, and may even require advanced training in neonatal resuscitation.

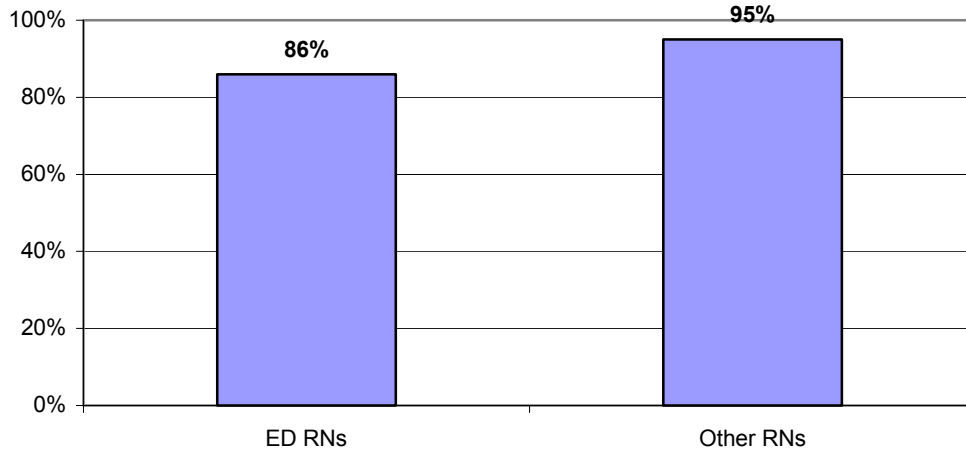
According to the Emergency Nurses Association (ENA), emergency RNs perform the following tasks²⁷:

- Assessment
- Analysis
- Nursing diagnosis
- Planning
- Implementation of interventions
- Outcome identification
- Evaluation of responses
- Triage and prioritization
- Emergency operations preparedness
- Stabilization and resuscitation
- Crisis intervention for unique patient populations (e.g., sexual assault survivors)

Demographic Characteristics. RNs in emergency departments in 2000, like all RNs, were predominantly female (86%). They were, however, less likely to be female than RNs in other departments, who were 95% female.

²⁷ Emergency Nurses Association, 1999a.

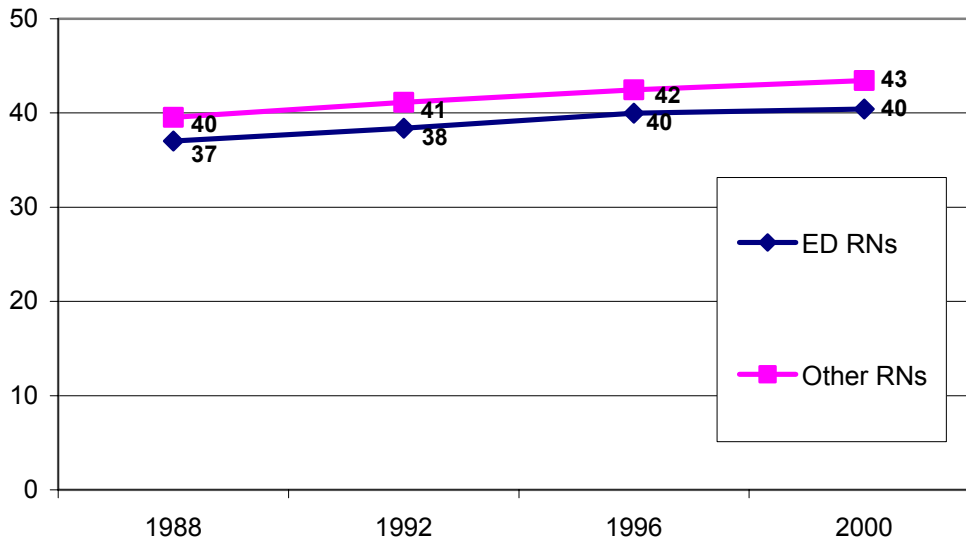
Figure 13. Percent Female of RNs by Work Setting, U.S., 2000



Source: 2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services.

RNs in emergency departments were younger on average than other RNs, with a median age of 40 versus 43 for other nurses. RNs in EDs were aging at approximately the same rate as other RNs, with the median age increasing by 3 years (from 37 to 40) between 1988 and 2000.

Figure 14. Age Trend of RNs by Primary Work Setting, U.S., 1988 to 2000



Source: 1988-2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services.

RNs in EDs in 2000 were more likely than nurses working in other hospital and non-hospital settings to be non-Hispanic White (88.5% versus 86.3%), and less likely to be Black/African-American or Asian, although they were slightly more likely to be Hispanic/Latino. All of these racial/ethnic groups were substantially underrepresented relative to the U.S. population, as shown in Table 3. This racial/ethnic imbalance has potentially serious implications for cultural competency, as discussed above, given the growing diversity of the U.S. population.

Table 3. Race/Ethnicity of RNs and the U.S. Population by Primary Work Setting, U.S., 2000

Race/Ethnicity	Emergency Department	Other RNs	U.S. Population
White (Non-Hispanic)	88.5%	86.3%	69.1%
Black/African-American (Non-Hispanic)	3.8%	5.3%	12.5%
Asian & Pacific Islander	2.0%	4.1%	12.1%
Native American/Alaskan Native	0.6%	0.5%	3.7%
Hispanic/Latino	3.2%	2.1%	0.7%
Other	2.0%	1.6%	1.8%

Notes: RNs working full time/part time in US

Source: 2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services.

Table 4 shows that RNs in EDs were more likely than other RNs to report an associate's degree as their highest level of education (45.6% versus 36.6%), but were less likely to have attained a master's degree (5.8% versus 10.6%)²⁸. Attainment of a bachelor's degree was comparable between ED RNs and other RNs (32.7% versus 33.3%).

Table 4. Highest Educational Attainment of RNs by Primary Unit, U.S., 2000

Degree	Emergency Department	Other Department
Diploma	15.9%	19.5%
Associate Degree	45.6%	36.6%
Baccalaureate	32.7%	33.3%
Masters or Doctorate	5.8%	10.6%

Notes: RNs working full time/part time in US

Source: 2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services.

Employment Characteristics. Most available data about emergency nurses relate to those employed in emergency departments. Not all emergency nurses are, however, necessarily ED nurses. Some RNs, for example, work in urgent care centers. RNs may also work in the pre-hospital²⁹ environment as transport nurses (e.g., serving on medical helicopter teams), although in many states they are required to become certified EMTs and practice under an EMT scope of practice rather than a nursing scope of practice.

Full-time RNs in EDs worked an average of 39.2 hours per week in 2000 (comparable to the 39.5 worked by other nurses)³⁰. A survey of RNs in New York in 2002, however, revealed that ED RNs were slightly more likely to be working full-time than other nurses (76.6% versus 74.0%), and were more likely to report they worked overtime hours (55.7% versus 37.8%).

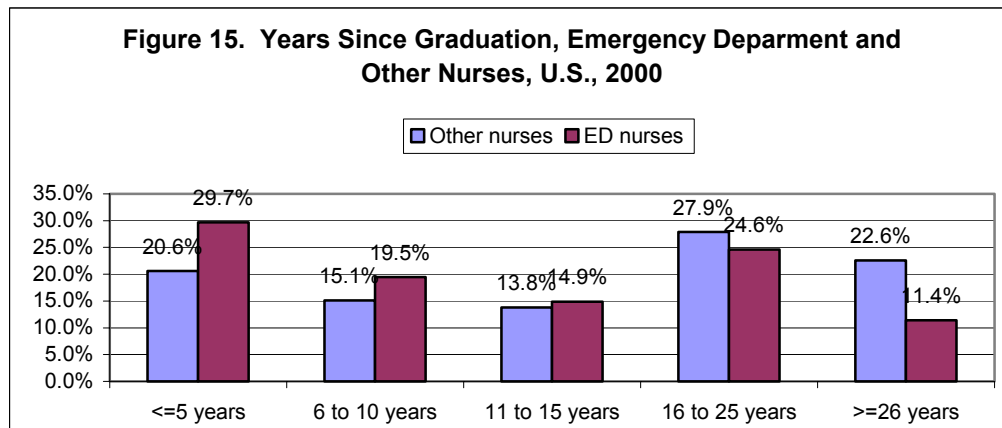
ED nurses in the U.S. generally have worked in nursing for less time than other nurses, with 29.7% having graduated in the last five years (compared to 20.6% of other nurses) and only 11.4% having graduated 26 or more years ago (compared to 22.6% of all nurses). ED nurses in

²⁸ Most RNs reporting a master's degree probably practice as advanced practice nurses (APNs) rather than RNs.

²⁹ Emergency Nurses Association and National Flight Nurses Association, 1987.

³⁰ National Registered Nurse Sample Survey, 2000.

New York, however, reported having worked longer in their *current* primary job than other nurses: a median of 8 years compared to 6 for non-ED nurses.



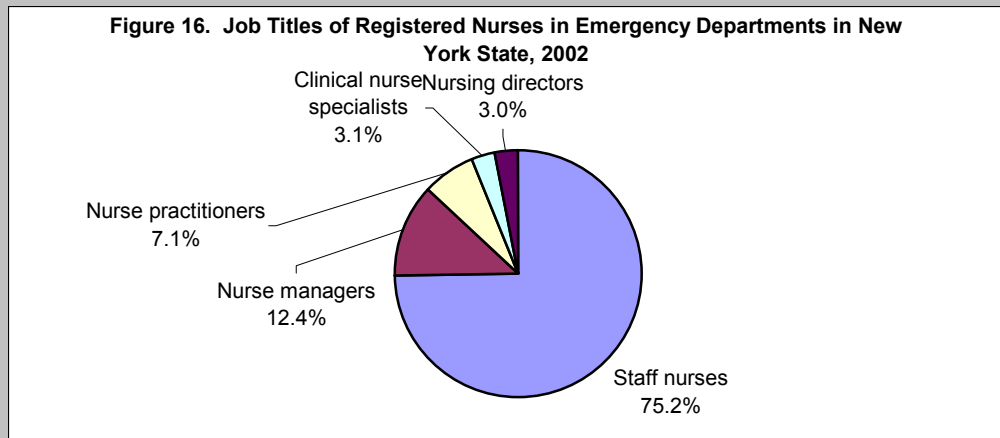
Source: 2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services

RNs in EDs in 2000 overwhelmingly reported that their dominant function was direct patient care, although fewer reported that this was their dominant function compared to nurses in other settings (83% versus 92%). Smaller numbers of ED nurses reported supervision (3.5%) or administration (2.5%) as their dominant function.

Emergency Department Nurses in New York: A Snapshot of Working Conditions, Job Titles, and Perceived Nursing Shortages

The New York State Education Department, which licenses registered nurses in New York, surveyed the state's registered nurses in 2002. Many questions related to the respondents' experiences of the work environment, including work climate, promotional opportunities, feelings about work setting, communication on the job, and job satisfaction. The sample included 182 nurses working in emergency departments who represented 2,604 ED nurses in New York. A little more than 1% of New York RNs were ED nurses. Using these data, comparisons can be made between the experiences of RNs working in emergency departments and all other active RNs.

ED RNs in New York in 2002 were most likely to work as staff nurses (75.2%), although some worked as nurse managers (12.4%), nurse practitioners (7.1%), clinical nurse specialists (3.1%), or nursing directors (3.0%).



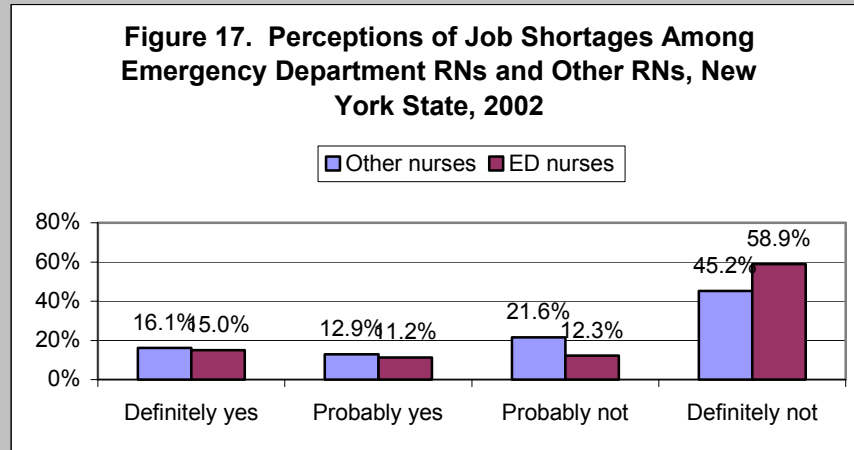
Source: NY State Education Department

Stress. RNs in emergency departments reported feeling that they are under great stress significantly more often than RNs in other settings. Thirty-seven percent of ED RNs reported feeling under great stress “almost every day” (compared to 30% of other RNs), while only 10% said they felt great stress less than once a week (compared to 19%) and none said that they “never” felt great stress (compared to 3% of other RNs).

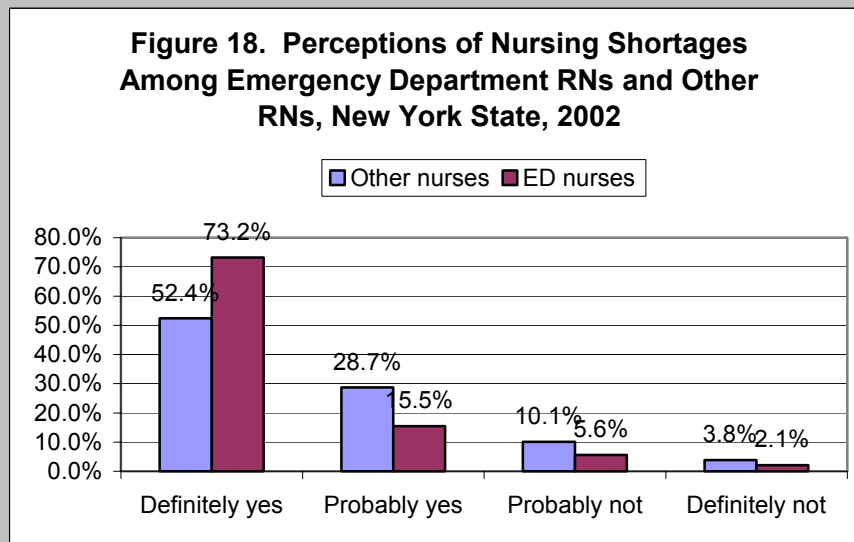
Workload. RNs in EDs reported that they didn’t have enough time to get everything done in their job, that the workload was heavy, and that they didn’t have adequate equipment to do their job. They were more likely to report working very hard and very fast in their job. Forty-eight percent of ED RNs strongly agreed with the statement that they had to work very hard (compared to 36% of other RNs), 45% strongly disagreed with the statement that their workload was not heavy (compared to 31% of all other RNs), and 48% strongly agreed with the statement that they had to work very fast (compared to 24% of all other active RNs).

Work Climate. Emergency department nurses did not significantly differ from other active RNs in terms of their reported work climate. They were, however, substantially more likely to indicate that there was a lot of teamwork between nurses and doctors in their immediate work unit (23% versus 10%) and that physicians generally understood and appreciated what the nursing staff did (10% versus 6%).

Shortages. The majority of RNs in New York perceived that there was “definitely” no shortage of nursing jobs for people with their experience, training, and skills [Figure 17], but rather that there was “definitely” a shortage of qualified nurses with their experience, training, and skills [Figure 18]. This trend was more pronounced, however, among emergency department nurses. Almost 59% of ED nurses reported no shortage of jobs (compared to 45.2% of other nurses), while 73.2% reported a shortage of qualified nurses (compared to 52.4% of other nurses).



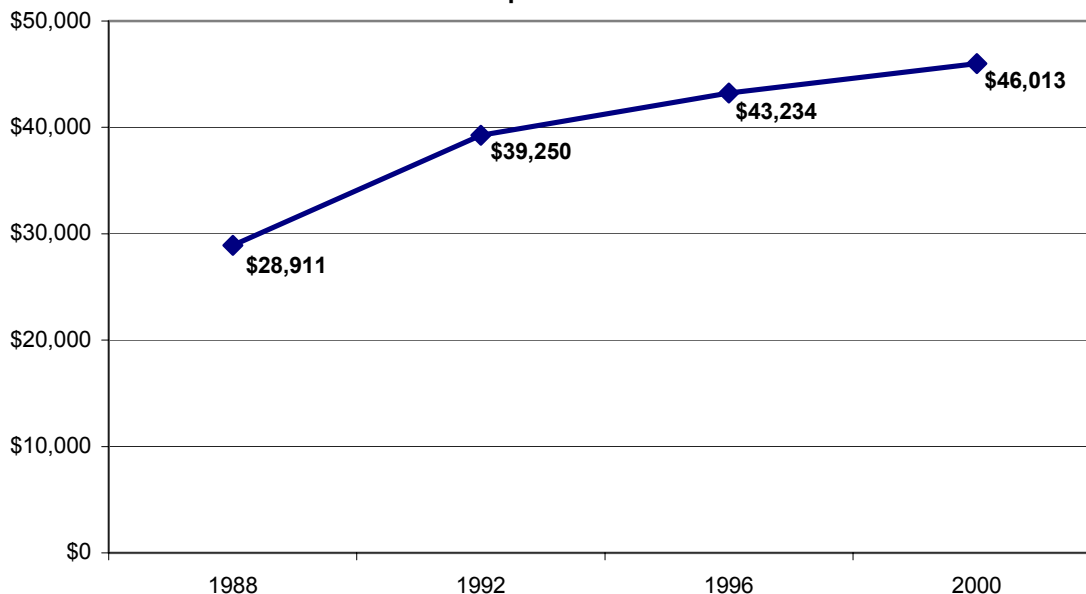
Source: NY State Education Department



Source: NY State Education Department

In the year 2000, ED nurses in the U.S. earned a mean salary of \$46,013 per year, comparable to that earned by other nurses. Salary for ED nurses increased by 59% between 1988 and 2000, from \$28,911 [Figure 19], but this compares to an increase of 65% among RNs in all other settings.

Figure 19. Salary Trend of RNs Who Work Primarily in Emergency Departments



Source: 1988-2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services.

Emergency department nursing has the potential to be both very stressful and very rewarding. The task performance of emergency nurses is complicated by limited access to past medical history, the episodic nature of the care being provided, and the uncontrolled or unpredictable environments in which they must provide care.³¹ ED nurses are also at substantial risk of assault, either physical or verbal³². The patients they see are typically not yet diagnosed, may be under psychological stress, or may be under the influence of intoxicants.³³ Yet in the snapshot of ED nurses in New York [above], RNs in EDs reported greater teamwork and greater appreciation by physicians. They did not differ from other nurses in their reported desire to leave their job, and they reported having worked at their current job for longer than other nurses.

Supply. An overall shortage of nurses has led to problems for hospitals and medical centers in all units, as well as in non-hospital settings³⁴. This shortage can only be expected to worsen as the nursing workforce continues to age and as demand for nursing services increases with the aging of the population.

The estimated number of RNs working in EDs as a primary work setting nationwide increased by 41%, from 67,249 to 94,912 between 1988 and 2000 (Figure 20). Between 1992 and 2000, growth in the employment of ED nurses outstripped that of other nurses, as shown in Figure 21 – 16.9% compared to 14.1% between 1992 and 1996, and 6.3% compared to 4% between 1996 and 2000.

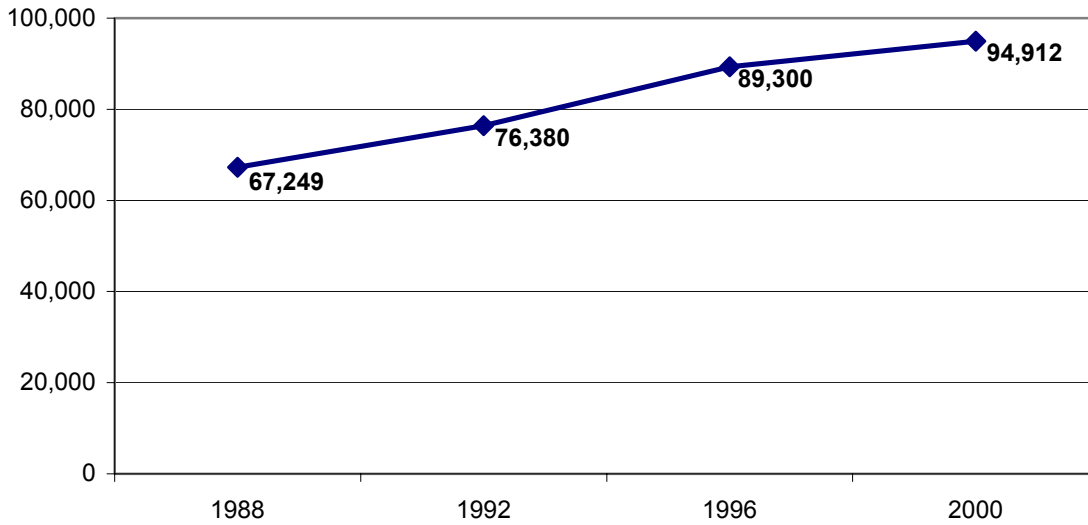
³¹ Emergency Nurses Association, 1999.

³² Ibid

³³ Ibid

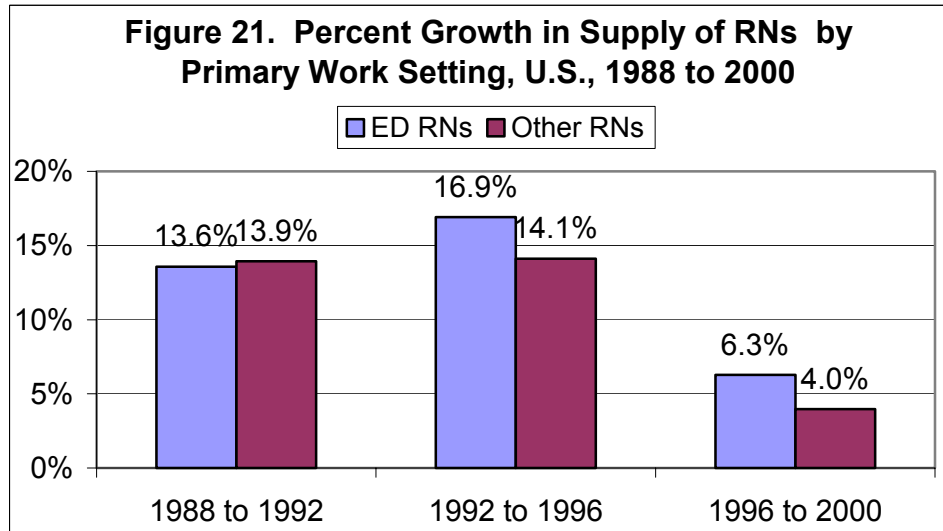
³⁴ USDHHS, 2001.

Figure 20. Supply Trend of Full-Time RNs who Primarily Work in Emergency Departments



Source: 1988-2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services.

Figure 21. Percent Growth in Supply of RNs by Primary Work Setting, U.S., 1988 to 2000



Source: 1988-2000 Registered Nurse Sample Survey, U.S. Department of Health and Human Services.

In 2004, 13,115 RNs nationwide were credentialed as Certified Emergency Nurses (CENs), while another 843 were credentialed as Certified Registered Flight Nurse (CRFNs).

Demand. As of 2002, only one state – California – had introduced specific nurse-to-patient ratios in emergency departments. Other states may follow. The ratios used by the California Department of Health are one nurse to four general ED patients, one nurse to two critical care ED patients, and one nurse to one ED trauma patient. The Emergency Nurses Association (ENA) has identified six key factors that they suggest should be used in the calculation of staffing requirements: patient census, patient acuity, patient length of stay, nursing time for nursing interventions and activities by patient acuity, skill mix for providing patient care based on

nursing interventions that can be delegated to a non-registered nurse, and an adjustment factor for the non-patient care time included in each FTE.³⁵

Nationwide, it is estimated that 12% of RN positions for which hospitals are actively recruiting are in emergency departments. This makes the emergency department the third most common source of RN openings in hospitals (following general medical/surgical and critical care units). Eighty-three percent of a 2004 sample of hospitals in New York City reported that they were actively recruiting for nurses in their emergency department.³⁶ This finding is not surprising given the well-documented shortage of registered nurses in the U.S. overall³⁷.

³⁵ Emergency Nurses Association, 2003b.

³⁶ GNYHA, 2004.

³⁷ USDHHS, 2001.

Physician Assistants and Advanced Practice Nurses

The Professions. Physician assistants (PAs) provide medical care to patients under the supervision of a physician, and the specialty of PAs is the same as the specialty of their supervising physician. PAs must be granted clinical privileges at the hospital in which they work, and can prescribe medication in most states. There are three PA educational programs in the U.S. offering specializations in emergency medicine, although PAs do not need to graduate from such a program to practice in EDs.

The American Association of Physician Assistants (AAPA) reports that 1,775 PAs (9.8%) worked in emergency departments in 2003, while another 502 PAs (2.8%) worked in freestanding urgent care clinics. More than 1,800 PAs reported a primary specialty in emergency medicine (10%), while another 3,515 (19.5%) reported a specialty in family practice with urgent care. Together, those PAs with emergency/urgent care specialties and those who worked in either emergency departments or urgent care clinics comprised the national PA emergency workforce.

Table 5. PAs by Emergency Care Specialty and Setting, U.S., 2003

Emergency department	EM specialty	1,616
	FP w/ urgent care	27
	Other specialty	82
Urgent care center	EM specialty	55
	FP w/ urgent care	339
	Other specialty	99
Other setting	EM specialty	107
	FP w/ urgent care	3,083
	Other specialty	12,302

Source: AAPA Masterfile, 2003.

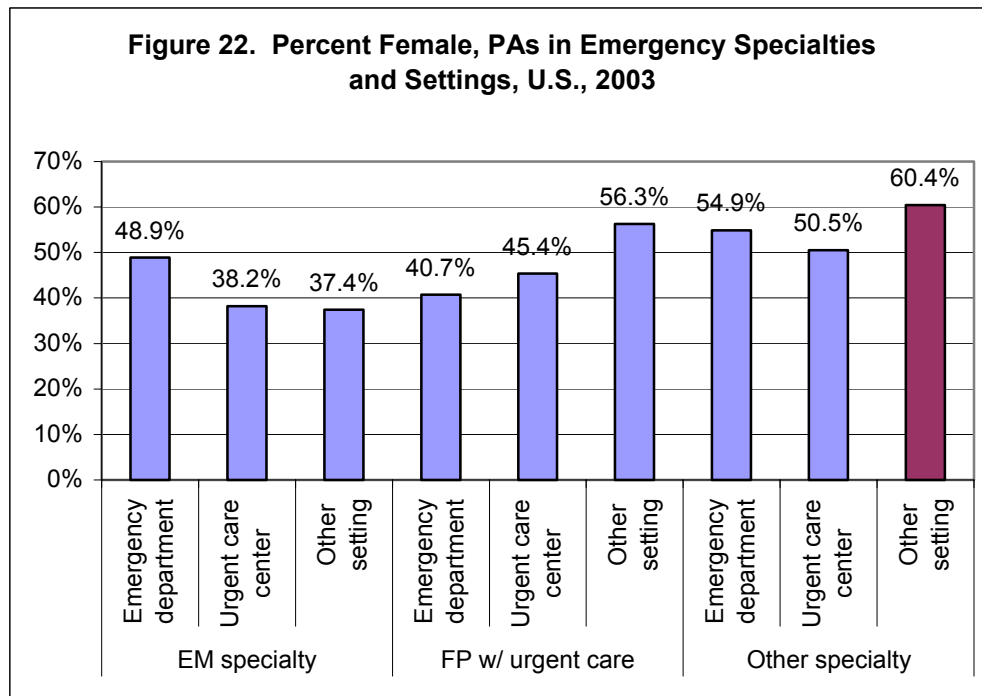
Advanced practice nurses (APNs) are master's prepared registered nurses who provide significant medical care to patients under the supervision of a physician. APNs include nurse practitioners (NPs), clinical nurse specialists (CNSs), certified registered nurse anesthetists (CRNAs), and certified nurse midwives (CNMs). The largest group is NPs, who are used in both primary care and specialty care settings and are also the APNs most commonly employed in emergency departments.

There is no national certification for APNs in emergency care, but NPs and other APNs may obtain training in emergency care skills through university-based programs, continuing education, and work experiences.³⁸ APNs in emergency settings were most likely to report certifications as a family NP (43%), acute care NP (13%), adult care NP (12%), critical care CNS (9%), or pediatric NP (7%)³⁹. A study of New York NPs found that 91% of those working in emergency departments as a primary practice site worked under the supervision of an emergency medicine physician.

³⁸ Cole et al., 1999.

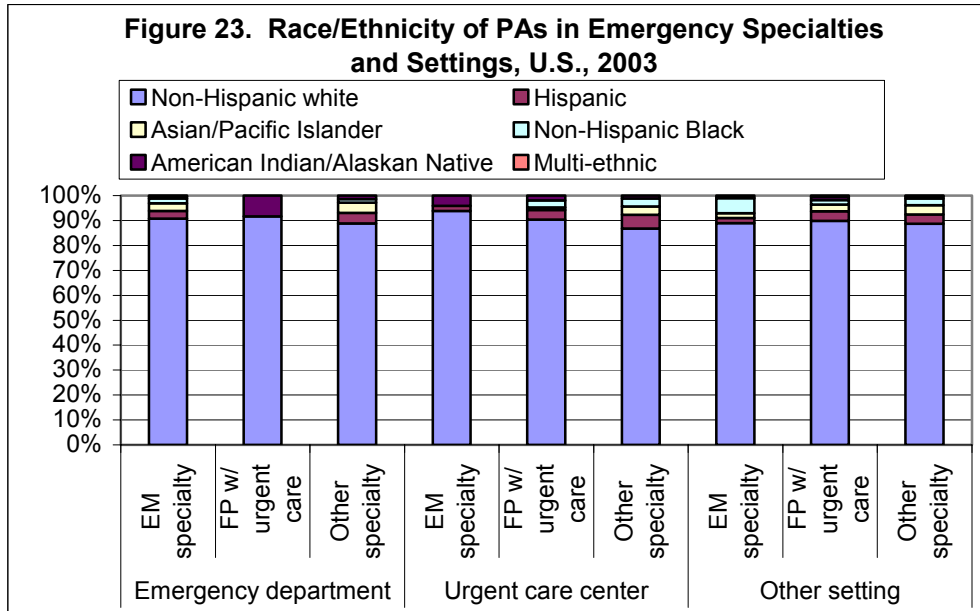
³⁹ Emergency Nurses Association, 2003b.

Demographic Characteristics. PAs in positions related to emergency care are clearly more likely to be men than PAs overall. In 2003, more than 60% of PAs who worked in neither a specialty nor a setting related to emergency care were women. Among PAs who reported family practice specialties with urgent care in a setting other than an ED or urgent care center, the percentage of women was 56.3% (the highest for any group of emergency care PAs), while among EM specialists practicing in a setting other than an ED or urgent care center only 37.4% were women (the lowest for any group of emergency care PAs).



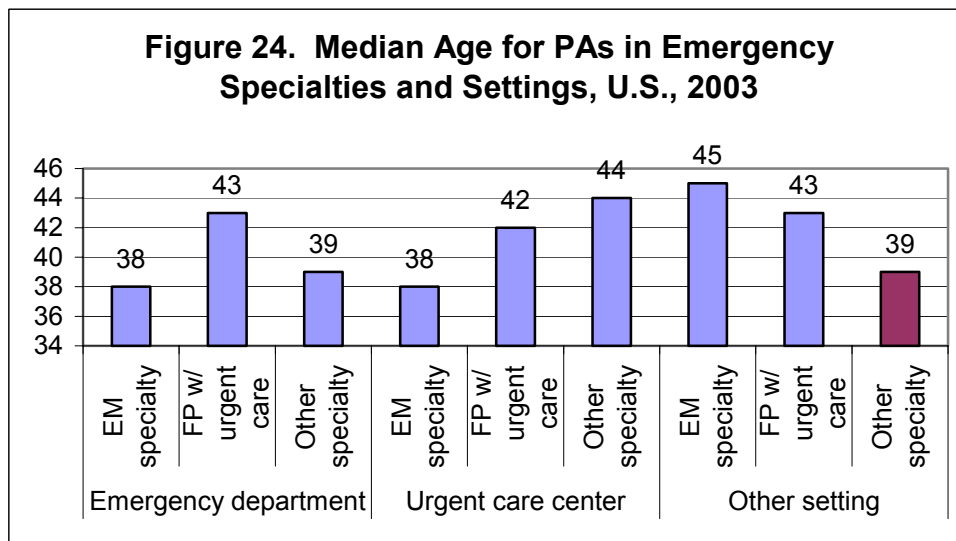
Source: AAPA Masterfile, 2003

Racial and ethnic diversity was low among PAs as a whole in 2003, and there was no clear pattern in relation to emergency care. Some groups of PAs who worked in emergency care were more diverse than others. The least diverse group of emergency care PAs was those who practiced emergency medicine in emergency departments; this group was 90.8% non-Hispanic White. The most diverse group was those who worked in urgent care centers practicing a specialty other than emergency medicine or family practice with urgent care; this group was 86.8% White. Non-Hispanic Blacks/African-Americans were most likely to be found among those PAs practicing EM, but not in an ED or urgent care center (6.0%), while Hispanics/Latinos were best represented among those working in an urgent care center but in a specialty other than EM or family practice with urgent care (5.5%). Overall, Asians appeared to be poorly represented in emergency care specialties and settings compared to PAs in other specialties and settings. The very small number of Asians in any single group of emergency care PAs, however, makes patterns difficult to discuss with confidence.



Source: AAPA Masterfile, 2003.

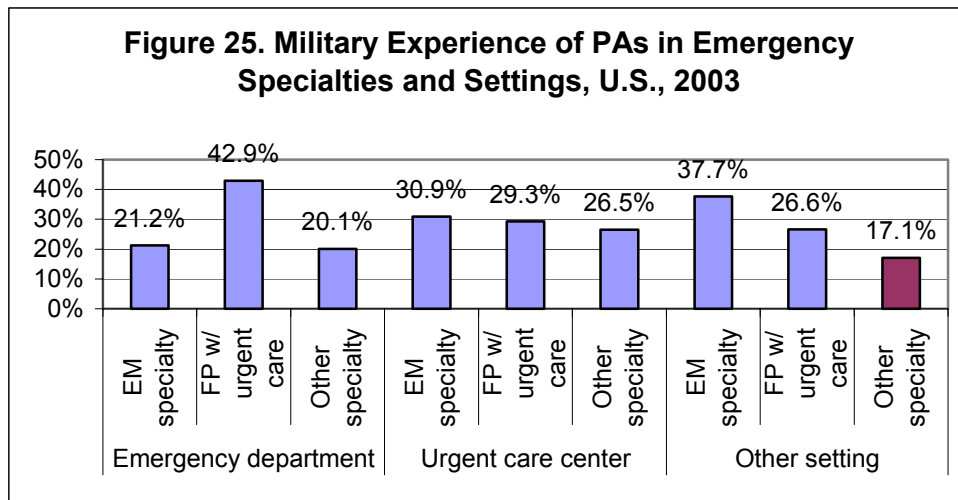
PAs in emergency care specialties or settings tended generally to be older than PAs overall, in direct contrast to the patterns found among other emergency care personnel. PAs in non-emergency specialties and settings had a median age of 39 in 2003, but many groups of emergency care PAs had median ages in the 40s, as shown in Figure 24.



Source: AAPA Masterfile, 2003.

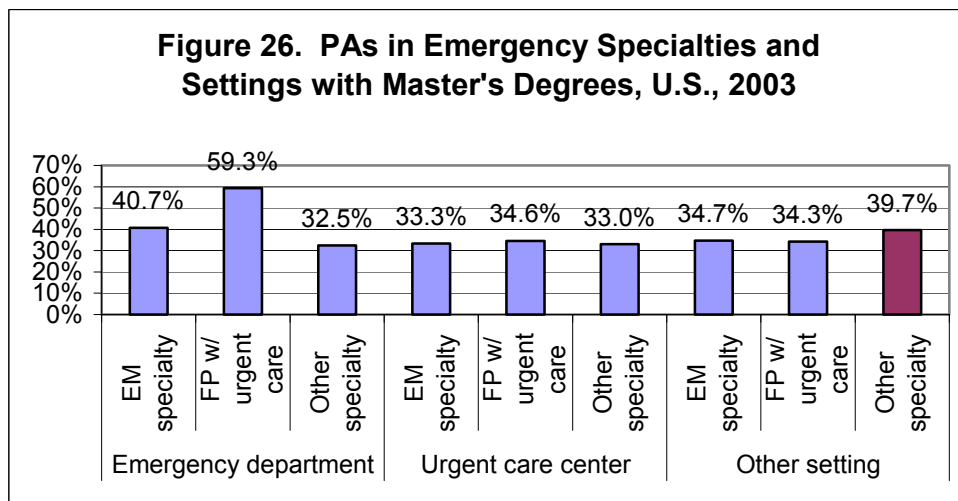
PAs in emergency care specialties or settings in 2003 were substantially more likely to have had experience in the Armed Forces than other PAs (including veterans, retired military personnel, those in the Reserves or National Guard, and those on active duty). While only 17.1% of other PAs had a military background, the number among emergency care PAs ranged from 20.1% for those in EDs who did not specialize in either EM or family practice with urgent care to 42.9% for those specializing in family practice with urgent care and working in EDs. Traditionally, the

PA profession has been an avenue for Armed Forces medics to transition into civilian life, and the training of these medics may make them especially apt candidates for emergency or urgent care.



Source: AAPA Masterfile, 2003.

There is not a clear relationship between educational attainment and the practice of emergency care. Most groups of emergency care PAs in 2003 were slightly less likely than other PAs to have a master's degree, but the differences were not dramatic. Furthermore, those working in EDs with either an EM or a family practice with urgent care specialty were more likely to have a master's than other PAs.



Source: AAPA Masterfile, 2003.

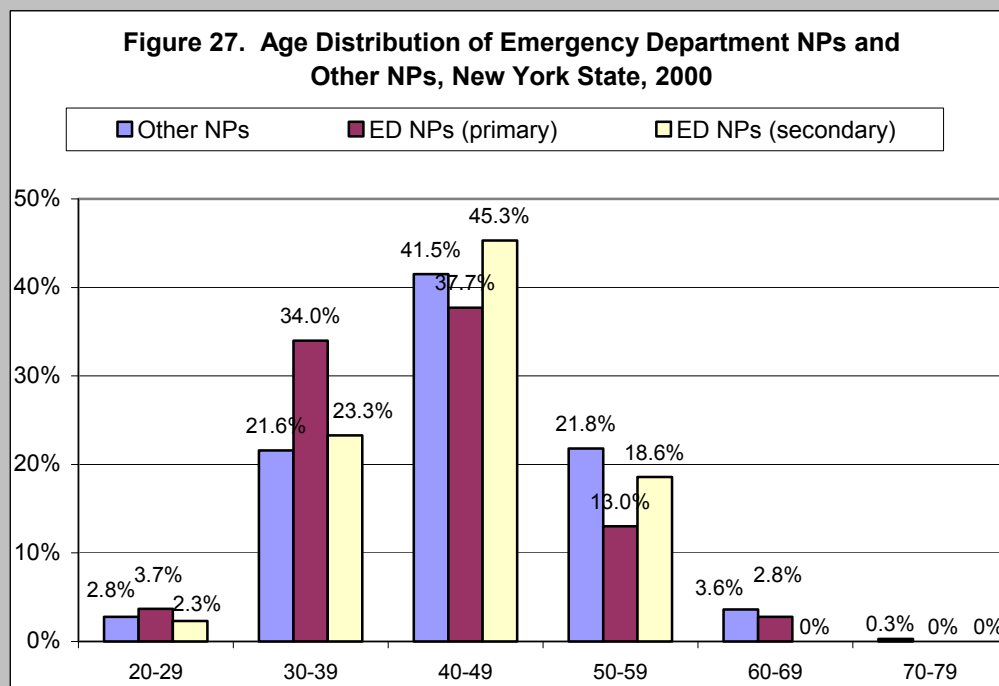
Emergency Department NPs in New York: A Snapshot of Demographic Characteristics, Employment Characteristics, and Geographic Variation

National data are not available on many characteristics of NPs or other APNs in emergency departments. Data collected on licensed NPs in New York in 2000 allow examination of some of these characteristics in this one diverse state. The survey collected basic data from 4,653 NPs, and more detailed data from 1,100 NPs. The sample included basic data on 149 NPs working in emergency departments as a primary or secondary practice site, and detailed data on 27 ED NPs.

Table 6. Percent Female and Median Age, Emergency Department NPs and Other NPs, New York, 2000

	ED NPs (primary setting)	ED NPs (secondary setting only)	Other NPs
Female	93.6%	81.3%	95.2%
Median age	42	45	45

NPs in emergency departments were slightly less likely to be female than other NPs, but this difference was especially substantial among those working in the ED only as a second practice site (who were only 81.3% female, compared to 93.6% of those working there as a primary practice site and to 95.2% of other NPs).



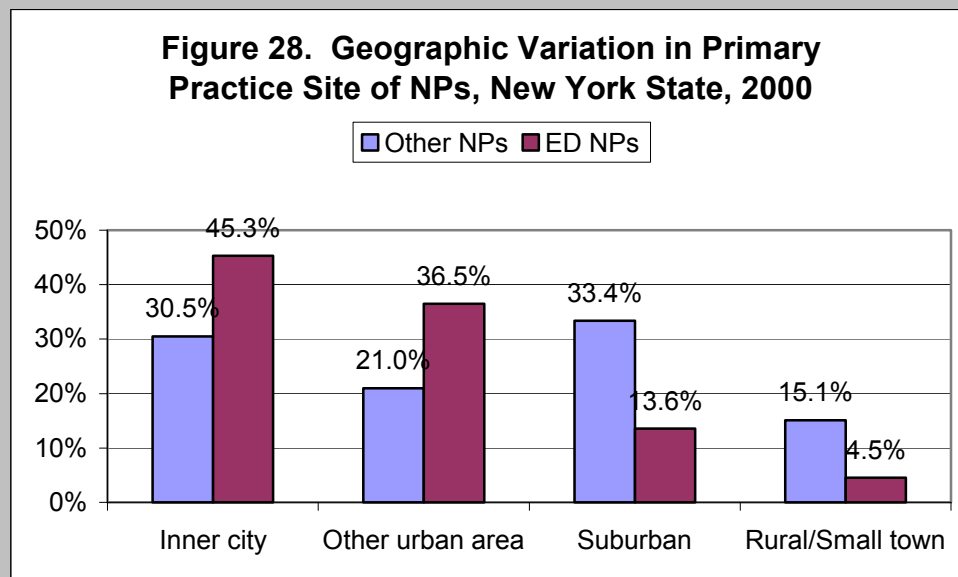
Source: Center for Health Workforce Studies, 2000

Despite being younger, ED NPs in 2000 had spent slightly more years on average as an NP than other NPs (5.5 versus 5), and had also been in their current position for a longer period of time (3 years versus 2 for other NPs).

In New York in 2000, NPs in emergency departments were more likely to hold a DEA certification to prescribe controlled substances than other NPs (86.3% versus 66.3%), although they were less likely than other NPs to have hospital admission privileges (4.5% versus 7.3%). All ED NPs reported that they performed histories and physical exams and ordered lab tests, while almost all (95.5%) reported that they made direct referrals to specialists. Some ED NPs provided on call services (13.6%), but this was less common than among other NPs (34.0%).

NPs in emergency departments as their primary practice site earned more money on average than other NPs in New York in 2003: \$65,000 versus \$60,000. (It should be noted that many NPs in New York worked in New York City, where salaries were significantly higher than the national average).

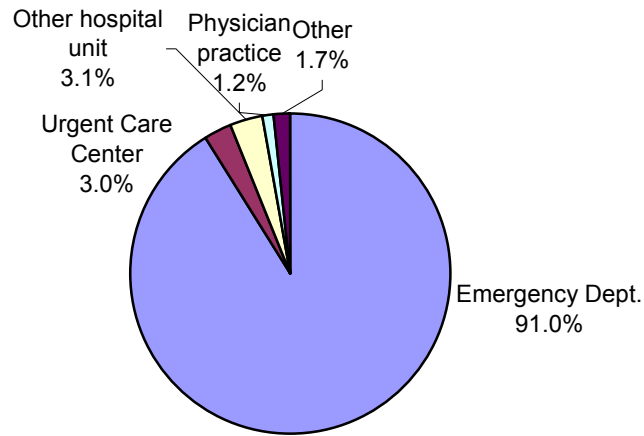
A much higher percentage of ED NPs practiced in inner cities or other urban areas relative to other NPs (45.3% versus 30.5% and 36.5% versus 21.0%, respectively). Only 4.5% of ED NPs worked in rural areas in New York, compared to 15.1% of other NPs.



Source: Center for Health Workforce Studies, 2000

Employment Characteristics. The majority of PAs reporting a specialty in emergency medicine in 2003 worked in emergency departments (91.0%), while 3.1% worked in another hospital unit, 3.0% worked in urgent care centers, and 1.2% worked in a physician practice (Figure 29).

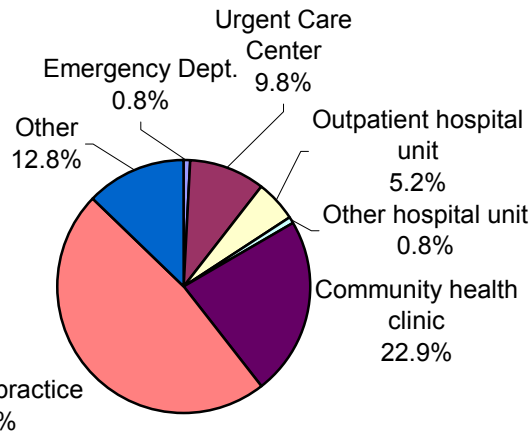
Figure 29. Employment Settings for PAs Practicing Emergency Medicine, U.S., 2003



Source: AAPA Masterfile, 2003.

Employment settings for PAs in family practice with urgent care were more diverse (Figure 30). Nearly 48% worked in a physician practice, but 22.9% worked in a community health clinic, and 9.8% worked in an urgent care center. A small percentage worked in emergency departments (0.8%) or other hospital outpatient units (5.2%).

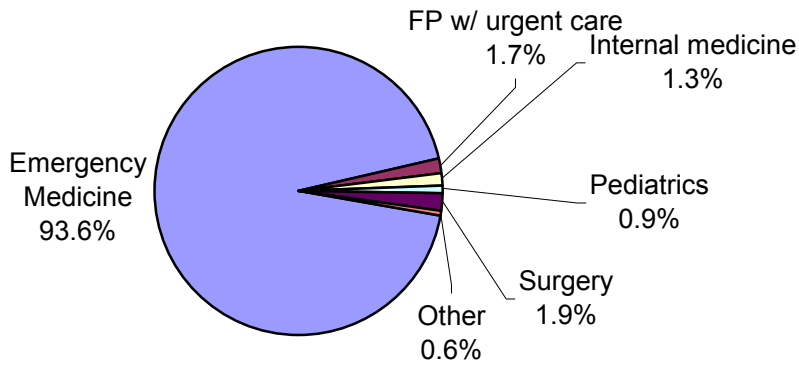
Figure 30. Employment Settings for PAs in Family Practice with Urgent Care, U.S., 2000



Source: AAPA Masterfile, 2003.

Figure 31 shows that, just as the majority of EM specialists worked in EDs, the majority of ED PAs were EM specialists (93.6%). PAs in the surgical specialties were also represented in EDs (at 1.9%), as were family practice PAs with urgent care (1.7%). Those in general internal medicine and internal medicine specialties were 1.3% of ED PAs, while most of the remainder (0.9%) were pediatric specialists.

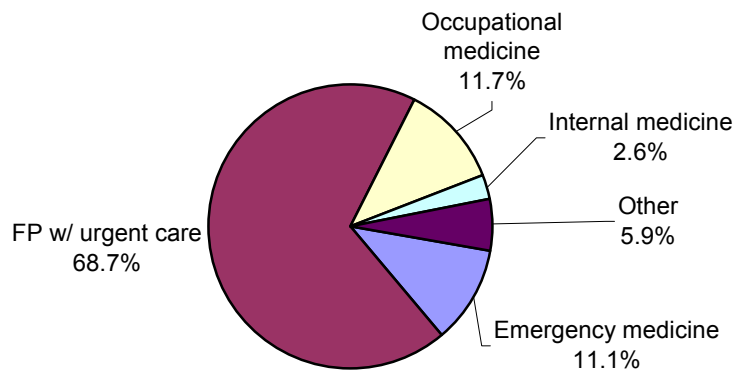
Figure 31. Specialty of PAs in Emergency Departments, U.S., 2003



Source: AAPA Masterfile, 2003.

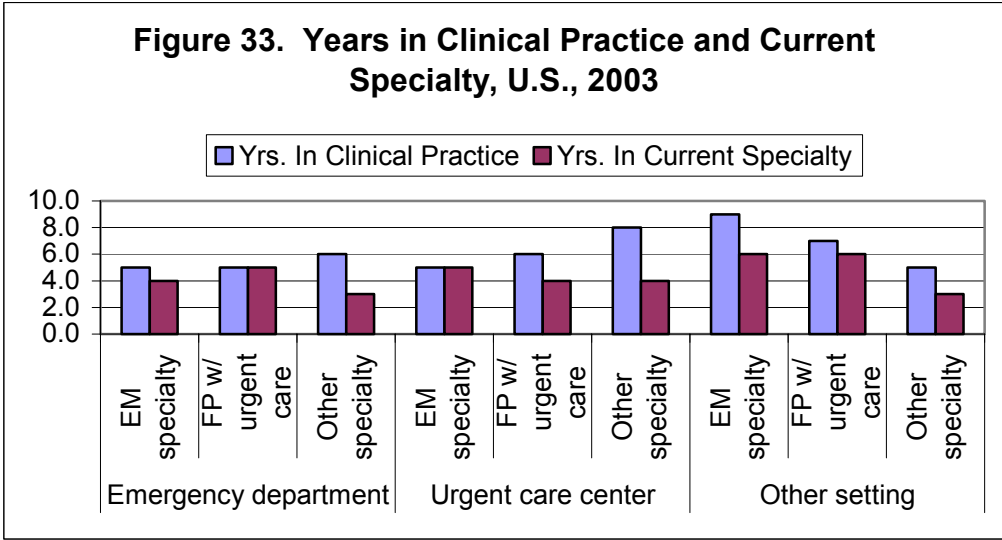
The majority of PAs in urgent care centers in 2003 (68.7%) reported specializing in family practice with urgent care. PAs with specializations in occupational medicine were the second most common in urgent care settings, at 11.7%, while emergency medicine PAs constituted 11.1% of the urgent care center PA workforce. The remainder of urgent care center PAs practiced an internal medicine specialty or one of various other specialties.

Figure 32. Specialty of PAs in Urgent Care Centers, U.S., 2003



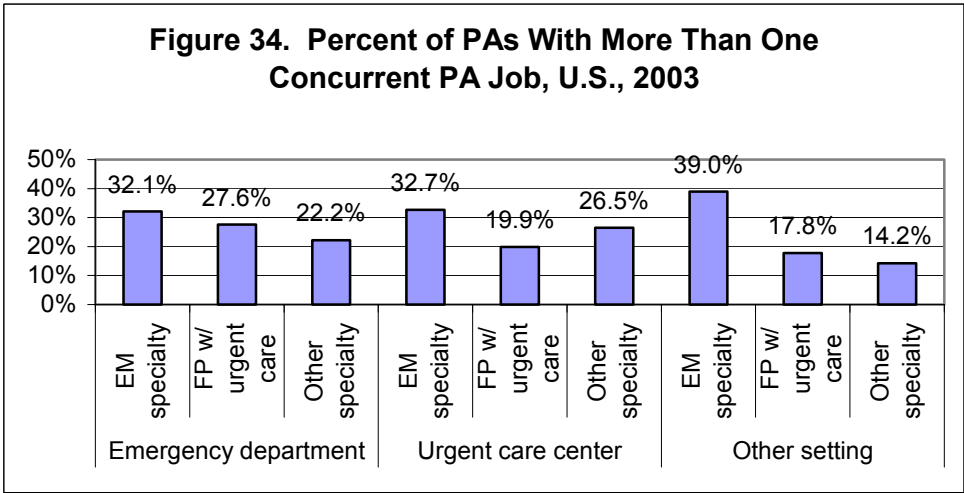
Source: AAPA Masterfile, 2003.

As shown in Figure 33, PAs in all types of emergency care services in 2003 had at least as many years of clinical practice on average as other PAs, and also averaged more years in their current specialty than other PAs.



Source: AAPA Masterfile, 2003.

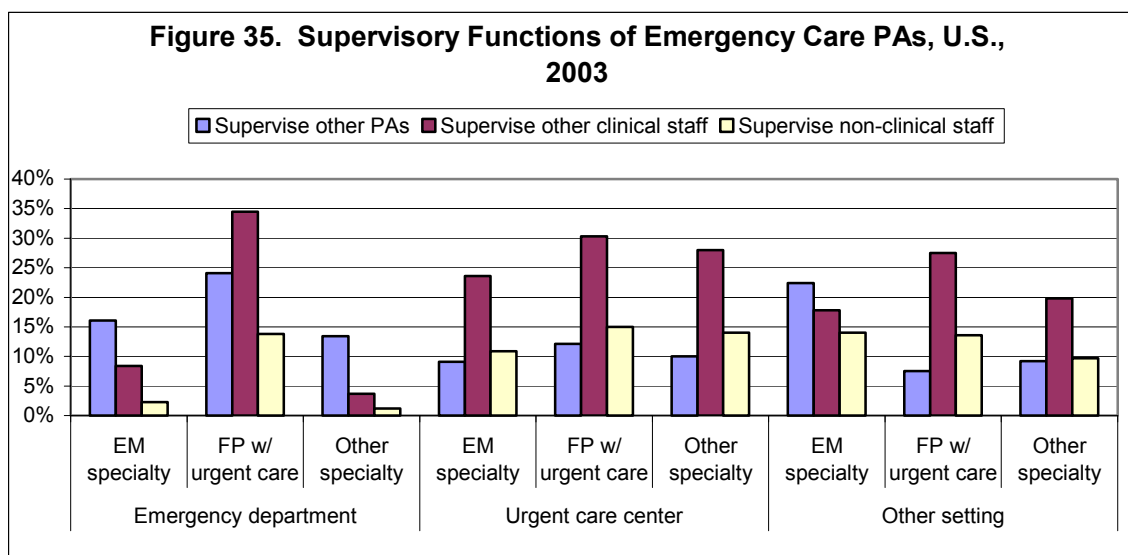
Emergency care PAs were more likely than other PAs to work more than one PA job concurrently. While only 14.2% of other PAs worked more than one job, the numbers for those providing emergency or urgent care ranged from 17.8% for those specializing in family practice with urgent care in a non-urgent setting to 39.0% for those practicing emergency medicine in a non-urgent setting.⁴⁰



Source: AAPA Masterfile, 2003.

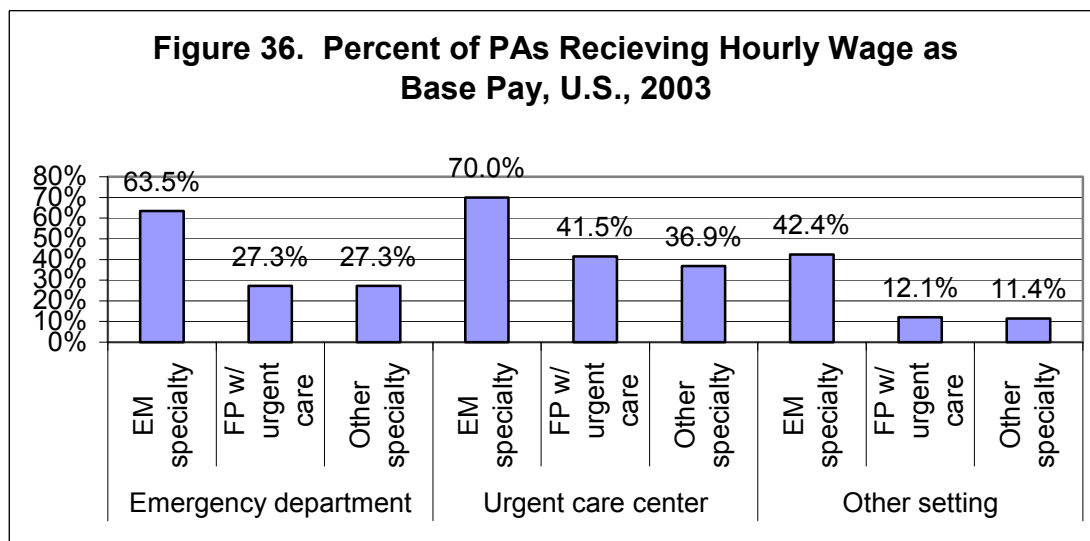
PAs in emergency care were generally more likely to supervise other PAs and other clinical staff than PAs in other specialties and settings. PAs in urgent care settings and other settings were more likely to supervise non-clinical staff, as well, but very few PAs working in the ED in emergency medicine or specialties other than family practice with urgent care supervised non-clinical staff.

⁴⁰ Note: PAs are classified as emergency care according to their primary job. Data are not available on the nature of secondary or tertiary jobs held by PAs.



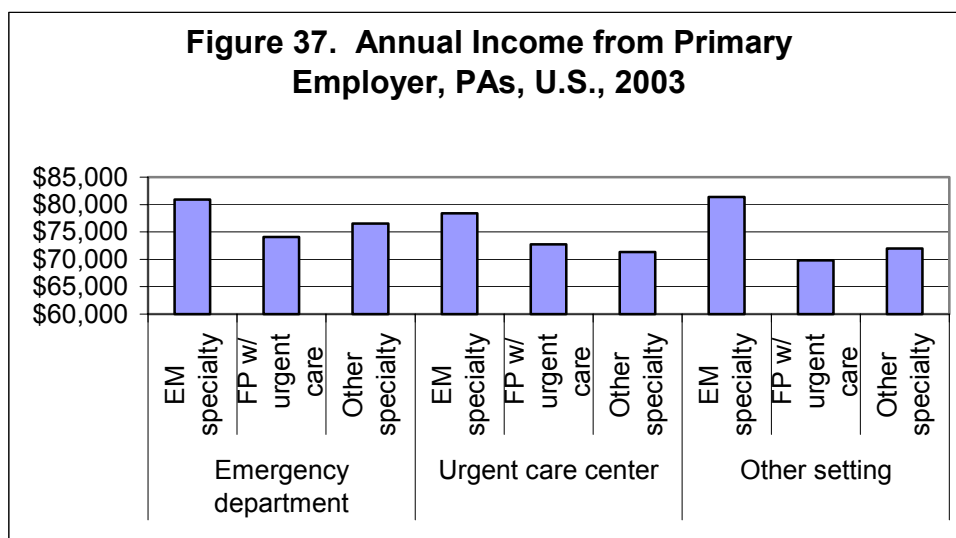
Source: AAPA Masterfile, 2003.

Emergency medicine PAs were more likely than other PAs in 2003 to work on an hourly wage basis rather than a salary basis. The numbers for emergency care PAs ranged from 27.3% for non-emergency medicine specialists in emergency departments to 70% for emergency medicine specialists in urgent care centers, while only 11.4% of PAs in non-EM specialties outside of EDs and urgent care centers were paid on an hourly basis.



Source: AAPA Masterfile, 2003.

Many groups of emergency care PAs, however, averaged higher salaries than other PAs in 2003. Other PAs averaged \$71,959, while emergency medicine specialists earned between \$78,390 and \$81,350, depending upon setting. Those in family practice with urgent care in either emergency departments or urgent care centers also earned slightly more than other PAs (\$74,065 and \$72,719, respectively), as did other specialists in the emergency department (\$76,513).



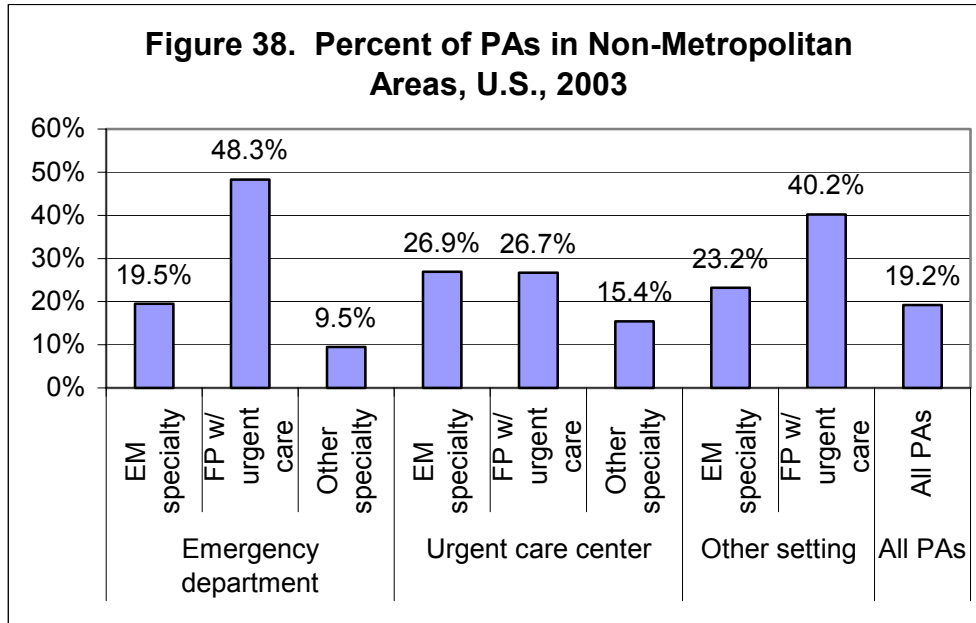
Source: AAPA Masterfile, 2003.

Supply. The American Association of Physician Assistants (AAPA) reports that 1,805 (10%) of their members reported a specialty in emergency medicine in 2003, while another 3,515 (19.5%) of their members reported a specialty in family practice with urgent care. Nearly 1,800 (9.8%) of their members worked in an emergency department as their primary employment setting, and 502 (2.8%) of their members worked in a freestanding urgent care clinic as their primary employment setting.

The only national source of data on APNs in emergency departments comes from the National Registered Nurse Sample Study data, collected every four years. In 2000, weighted estimates from the study indicated that there were nearly 3,000 nurse practitioners employed in EDs nationwide, as well as 922 clinical nurse specialists, 424 NP/CNSs, and 131 nurse anesthetists⁴¹.

Certain types of emergency care PAs were more likely to be found in non-metropolitan areas than other PAs in 2003. PAs in family practice with urgent care were more likely to be found in non-metropolitan areas than PAs overall, although this depended upon practice setting. Slightly more than 19% of all PAs practiced in non-metropolitan areas, compared to 48.3% of those in family practice with urgent care in emergency departments, 26.7% of those in family practice with urgent care in urgent care centers, and 40.2% of those in family practice with urgent care in non-urgent settings. Emergency medicine PAs were comparable to all PAs in their metropolitan/non-metropolitan distribution, although they were slightly more likely to be found in non-metropolitan areas if they were working in urgent care centers (26.9% of these EM PAs were non-metropolitan). Very few of the other specialists working in EDs were found in non-metropolitan areas (only 9.5%).

⁴¹ Unweighted sample sizes for the latter two groups are, however, too small to provide reliable estimates.



Source: AAPA Masterfile, 2003.

Demand. Approximately one-third of EDs employ physician assistants, while nurse practitioners work in approximately 17% of emergency departments⁴². According to data from the National Hospital Ambulatory Medical Care Survey (NHAMCS), 1.6% of ED patients were seen by NPs in 2002, and 4.9% were seen by PAs. Forty-one percent of those seen by NPs and 32% of those seen by PAs did not see a physician or resident/intern. The likelihood of seeing a NP or PA was higher in metropolitan than non-metropolitan hospitals (1.7% versus 1.2% for NPs and 5.6% versus 1.6% for PAs).

PAs make an important contribution to the efficiency of EDs, especially in rural areas where physician staff may be limited. Studies have identified several positive outcomes resulting from the use of NPs in EDs, including increased quality and cost effectiveness of care, decreased malpractice costs, increased corporate profitability, reduced physician contact time for non-urgent patients, and increased patient satisfaction.⁴³

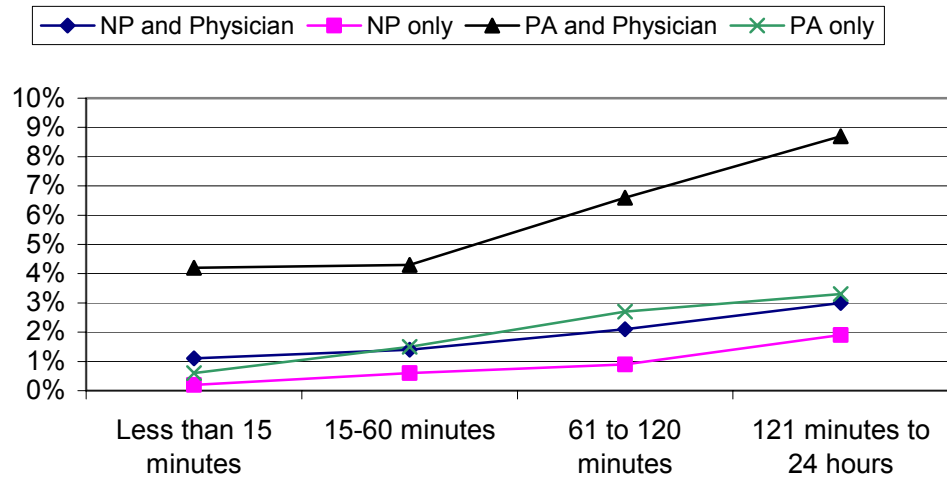
In particular, PAs and APNs midlevel providers in the emergency department seem to fulfill an important function in treating less critical patients, thereby freeing up physician resources for patients with conditions that are immediately life threatening. NHAMCS data show that patients who were determined in triage to need care in less than 15 minutes were relatively unlikely to see an NP (1.1%) or a PA (4.2%), and were particularly unlikely to see *only* an NP or PA (0.2% and 0.6% respectively). In contrast, patients who needed care within 2 to 24 hours were much more likely to see a midlevel practitioner. Three percent of these non-critical patients saw a NP (1.9% saw a NP only), while 8.7% saw a PA (3.3% saw a PA only). As an increasing proportion of ED patients are seeking primary care through the ED because they lack health insurance⁴⁴, demand for midlevel providers in the ED may dramatically increase.

⁴² Moorhead, et al.

⁴³ Dowling and Dudley, 1995, cited in Cole et al., 1999.

⁴⁴ National Association of Community Health Centers, 2004.

Figure 39. Percent of ED Patients Seeing an NP or PA by Immediacy of Need for Care, U.S., 2002



Source: NHAMCS, 2002.

Emergency Medical Technicians (EMTs) and Paramedics

The profession. Emergency medical technicians (EMTs) and paramedics are the backbone of pre-hospital emergency care in the United States. They usually are the first providers of direct medical care to patients needing emergency treatment, although first responders such as police and firefighters may provide some basic care at the scene. EMTs may practice at various levels, from EMT-Basic to Paramedic.

Basic EMTs are those EMTs trained to provide basic, non-invasive pre-hospital care, although scope of practice varies by state and may include some invasive procedures in some states. They provide care to patients at the scene of a medical emergency (e.g., car crash) and on transport to the hospital. Basic EMTs:

- examine victims to determine the nature and scope of injury or illness;
- administer basic life support (including the provision of oxygen or performing cardiopulmonary resuscitation); and,
- upon arrival at the hospital or medical center, help the staff provide pre-admittance treatment and obtain patient medical histories (BLS, 2003a; California Employment Development Department, 2002).

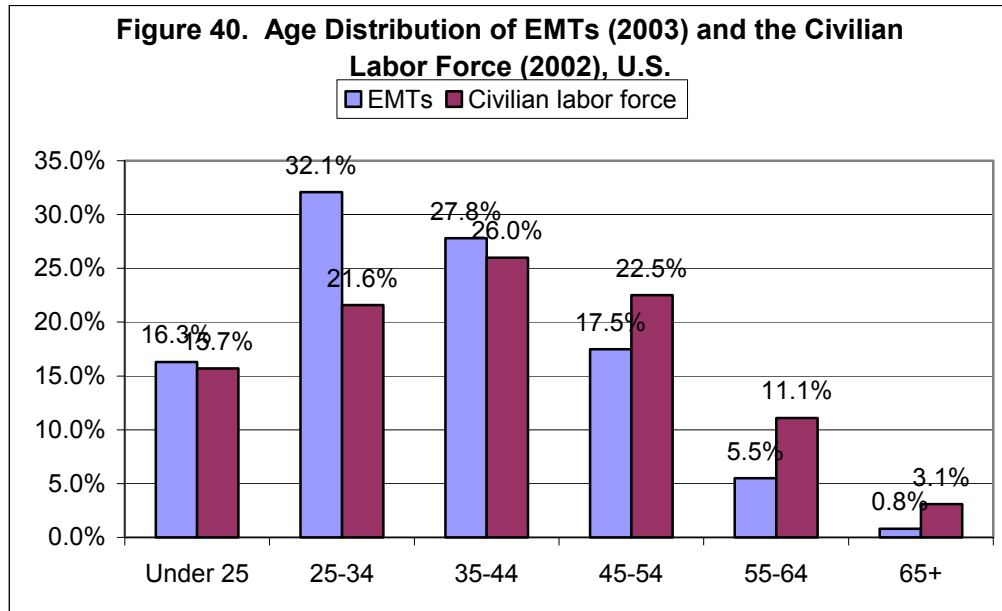
Paramedics are the most highly skilled emergency medical workers and they provide the most extensive care. Paramedics are trained in all phases of emergency, pre-hospital care, including advanced life support treatment. In addition to the tasks performed by Basic EMTs, paramedics may also:

- administer drugs (usually intravenous);
- administer intravenous fluids;
- use manual defibrillators to perform lifesaving shocks to a stopped heart;
- use advanced airway techniques and equipment to assist those patients experiencing a respiratory emergency;
- perform endotracheal intubations; and,
- interpret the results of heart-monitoring equipment (BLS, 2003a; California Employment Development Department, 2002).

Most states recognize levels of practice between those of Basic EMTs and Paramedics. These EMTs, sometimes known as Intermediate EMTs, perform all the tasks of a Basic EMT, but also may perform some of the tasks of a Paramedic. Scope of practice for these Intermediate EMTs varies by state, but is always broader than the scope of practice for a Basic EMT in the same state and narrower than the scope of practice for a Paramedic.

Demographics. Emergency medical technology is a profession dominated by young, White males. Sixty-five percent of EMTs nationwide in 2003 were men, and 35% were women. This varied by employment characteristics and location, however. Basic EMTs were more likely to be women than were Paramedics (37.6% compared to 27.6%), volunteer EMTs were more likely to be women than were paid EMTs (44.7% versus 29.4%), and EMTs in rural communities were more likely to be women than EMTs in large cities (52.9% versus 28.8%). EMTs working for volunteer rescue services were most likely to be female (48.7%), while those working for fire-based services were least likely (20.4%).

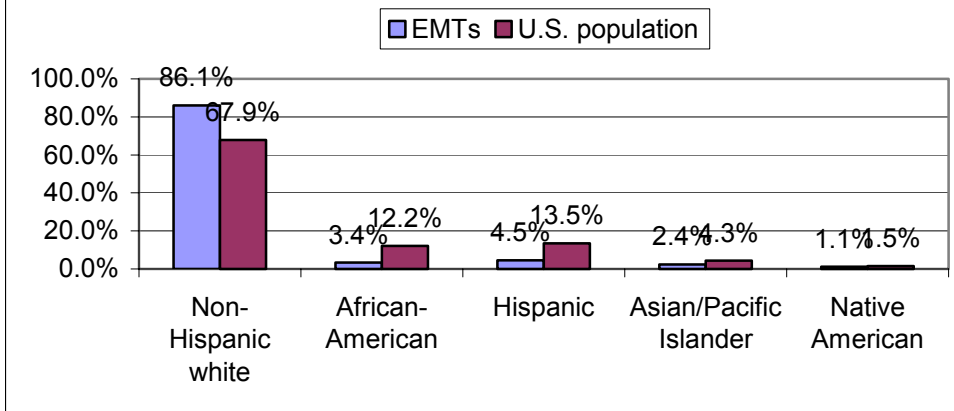
EMTs were also substantially younger than the U.S. civilian labor force as a whole. More than 76% were younger than age 45 in 2003, with 17.5% aged 45 to 54, only 5.5% ages 55 to 64, and 0.8% age 65 and older. This also varied by employment characteristics and location, with rural EMTs being younger on average than their urban counterparts. Basic EMTs were younger (20.7% younger than age 25) than Paramedics (8.2% younger than age 25). The youngest group of EMTs was those working for hospital-based services, 19.4% of whom were younger than age 25. Nearly 11% of rural EMTs were younger than age 25, while only 1.7% of their counterparts in large cities fell into this age group.



Source: LEADS data, NREMT 2003a; BLS, 2002.

Finally, the vast majority of EMTs were non-Hispanic White – 86.1%, compared to only 67.9% of the U.S. population. Blacks/African-Americans, Hispanics/Latinos, and Asian/Pacific Islanders were also substantially underrepresented relative to their percentage of the population. Racial/ethnic distribution was also subject to urban/rural variation: while only 2.1% of EMTs in rural areas were Black/African-American, and only 1.2% were Hispanic/Latino, the numbers in large cities were greater: 7.8% and 12.4%, respectively.

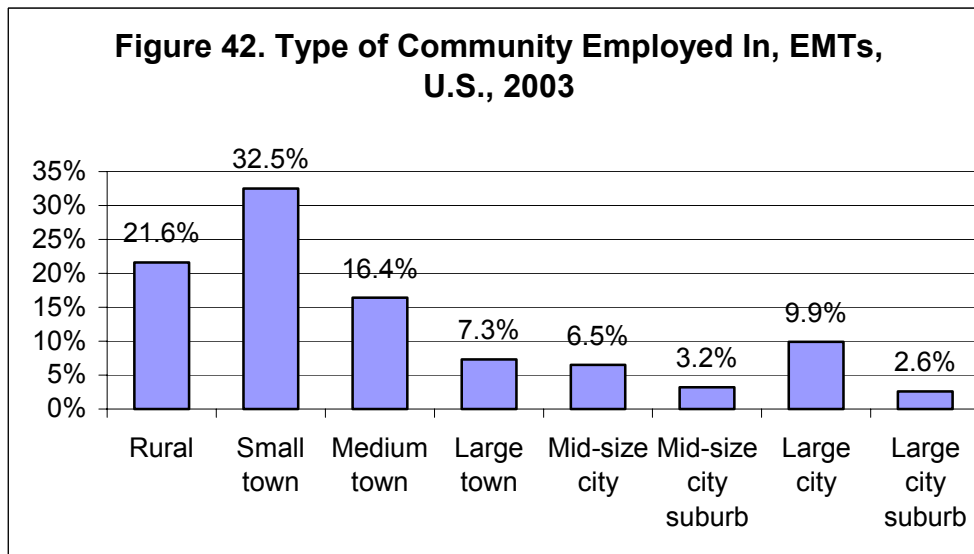
Figure 41. Race/Ethnicity of EMTs and the U.S. Population, 2003



Source LEADS data, NREMT 2003a; U.S. Census, 2004

EMT is a primarily rural occupation; with 21.6% of EMTs in 2003 reporting that they were employed in a rural community, 32.5% reporting that they were employed in a small town, and 16.4% reporting that they were employed in a medium-sized town. Only 9.9% of EMTs reported employment in a large city.

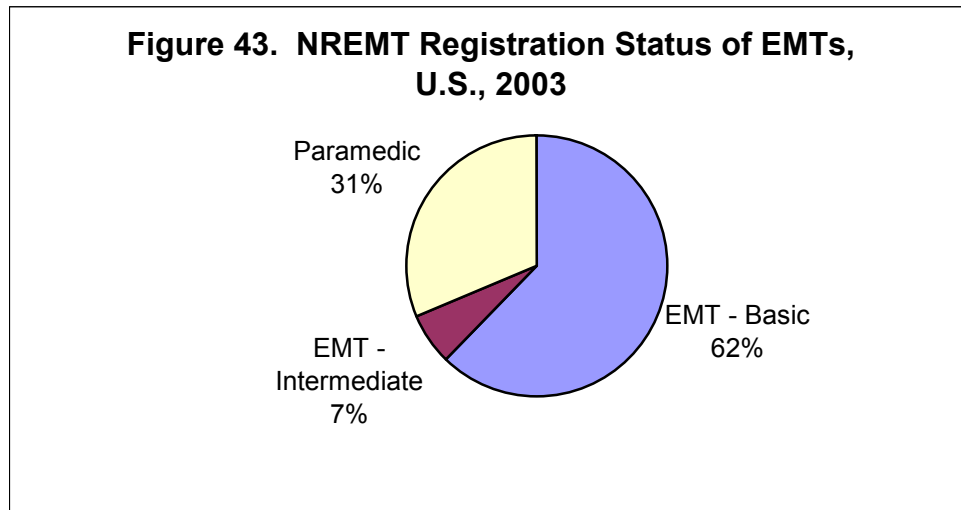
Figure 42. Type of Community Employed In, EMTs, U.S., 2003



Source LEADS data, NREMT 2003a.

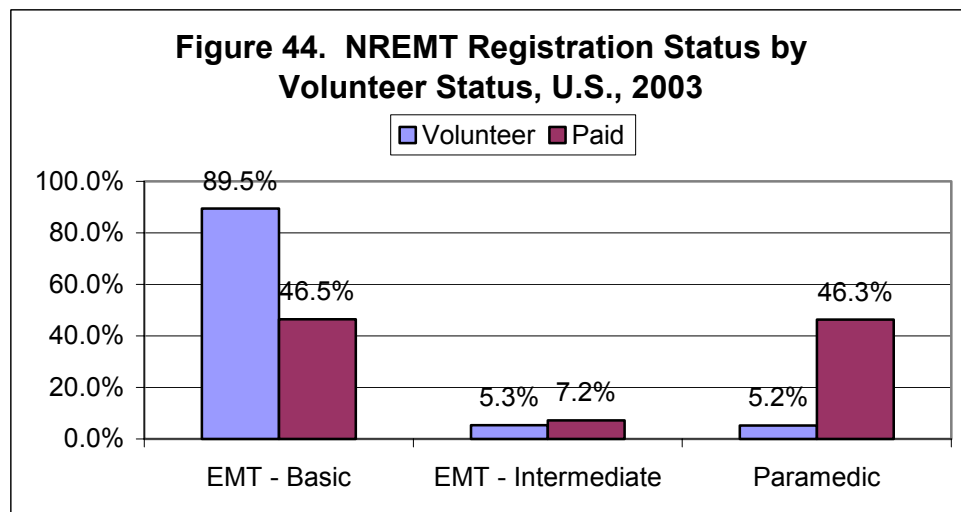
EMTs in 2003 were most likely to have a high school education (45.7%), but large numbers held associate degrees (25.1%) or bachelor's degrees (22.2%). Nearly 7% of EMTs held graduate degrees. Very few EMTs (0.35%) had less than a high school education. Interestingly, volunteer EMTs were more likely than paid EMTs to have a bachelor's degree or higher (32.7% versus 26.7%).

Employment Characteristics. The largest group of EMTs by far is Basic EMTs, who constituted 62.2% of all EMTs in 2003. Paramedics comprised another 31.3%, while only 6.5% were registered at a level higher than Basic but below Paramedic.



Source LEADS data, NREMT 2003a

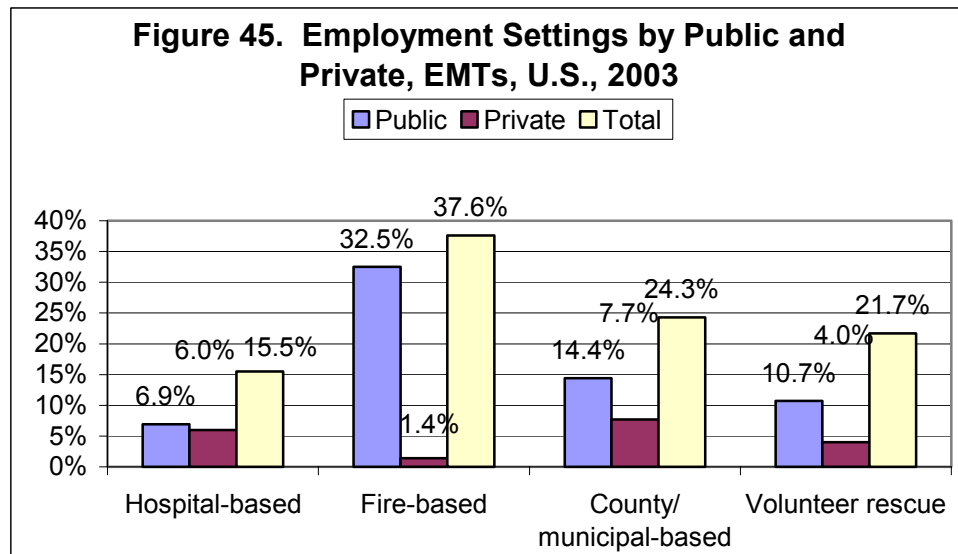
EMT is different from most occupations in that a substantial number of workers serve in a volunteer capacity. According to data gathered from a sample of National Registry of Emergency Medicine Technicians (NREMT) members in 2003, 36.5% of registered EMTs were volunteers. The vast majority of volunteer EMTs were Basic EMTs (89.5%), while paid EMTs were much more likely to be registered as Paramedics (46.3%).



Source: LEADS data, NREMT 2003a.

In urban areas, there has been an increasing trend for emergency medical/ambulance services to be taken over by municipal fire departments. In 2003, EMTs were most likely to be employed by fire-based services (36.8%), followed by county or municipal-based services (24.3%) and

volunteer rescue services (22.4%). A smaller number of EMTs worked for hospital-based services (15.5%), including private ambulance companies.

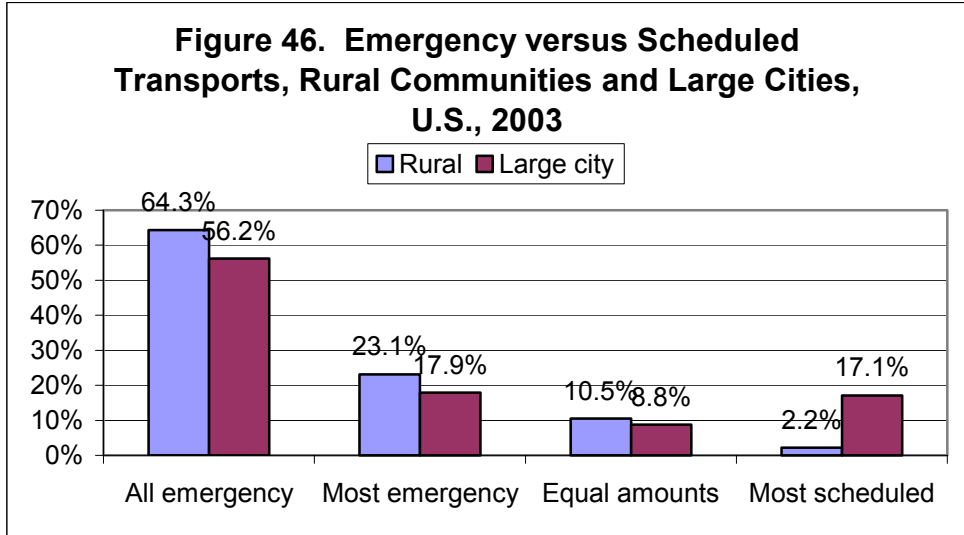


Source LEADS data, NREMT 2003a.

In addition to pre-hospital care, some EMTs now work as technicians in hospital emergency departments.⁴⁵ These EMT-trained technicians are able to perform basic emergency care in the ED setting, allowing nurses and physicians more time to treat complex cases and perform more intensive procedures. The scope of practice for such personnel is limited, but has increased in some EDs to include intravenous infusions, splinting, and phlebotomy.

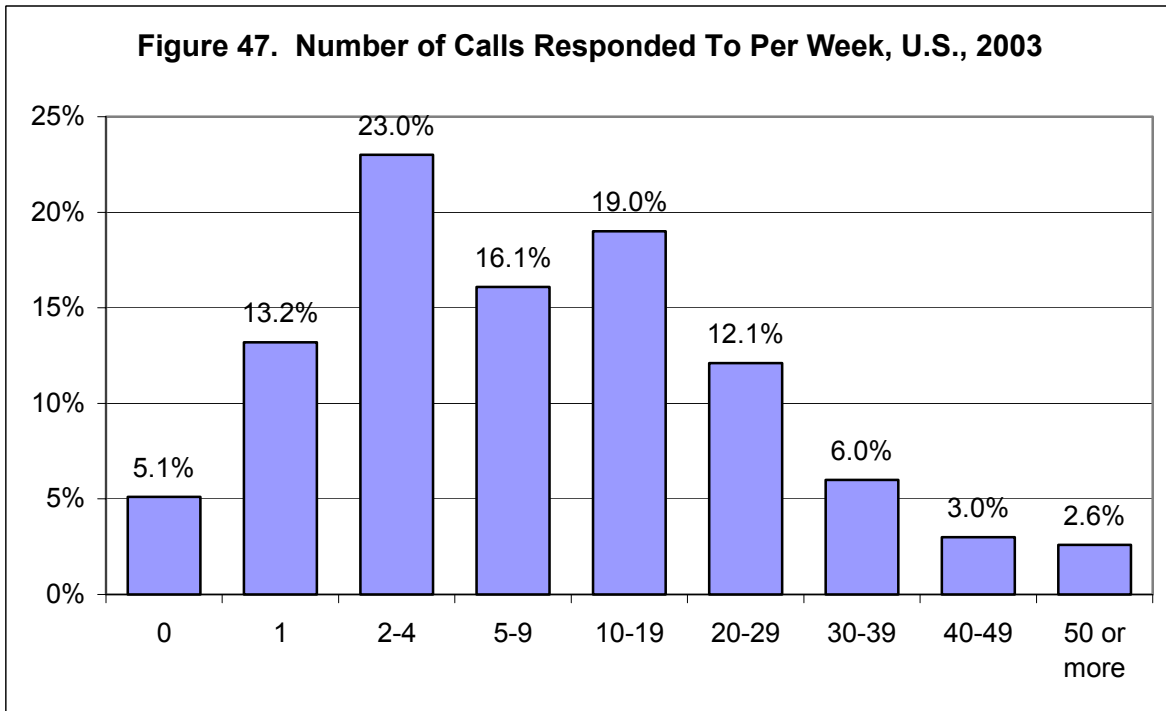
Although EMTs may perform scheduled transports as a part of their job, most EMTs work primarily with emergency patients. In 2003, nearly 56% of EMTs reported that all of their transports were emergency patients, while another 27.5% reported serving mostly emergency patients. Fewer than 6% of EMTs reported that most or all of their transports were scheduled. Scheduled transports were more common, however, in large cities than in rural areas. Only 2.2% of rural EMTs reported that most or all of their transports were scheduled, compared to 17.1% of EMTs in large cities. EMTs working for fire-based and volunteer rescue services were most likely to report that all of their transports were emergencies (81.4% and 70.7% respectively), while only 24.2% of EMTs in hospital-based services performed emergency transports exclusively.

⁴⁵ Franks, Kocher, and Chapman, 2004.



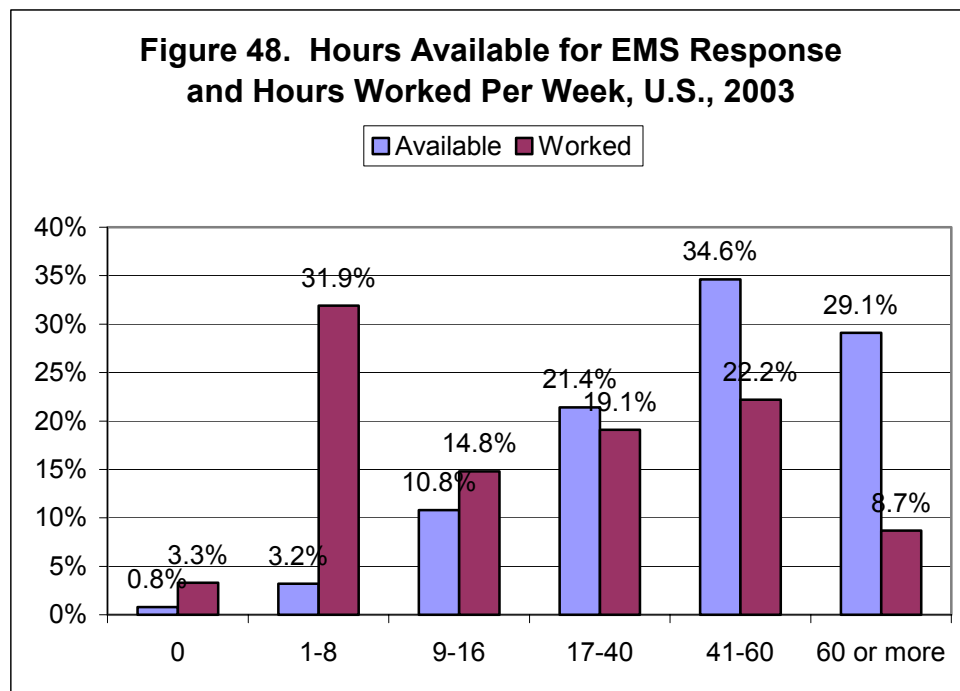
Source: LEADS data, NREMT 2003a

The majority of EMTs (57.4%) responded to fewer than 10 calls per week, while less than 6% reported responding to forty or more. Among EMTs in rural communities, only 9.1% responded to 10 or more calls per week, while in large cities 80.7% of EMTs responded to 10 or more calls and 11.1% responded to 50 or more calls. Paramedics responded to more calls per week than Basic EMTs, with 75.1% responding to 10 or more calls per week compared to 26.0% of Basic EMTs.



Source: LEADS data, NREMT 2003a

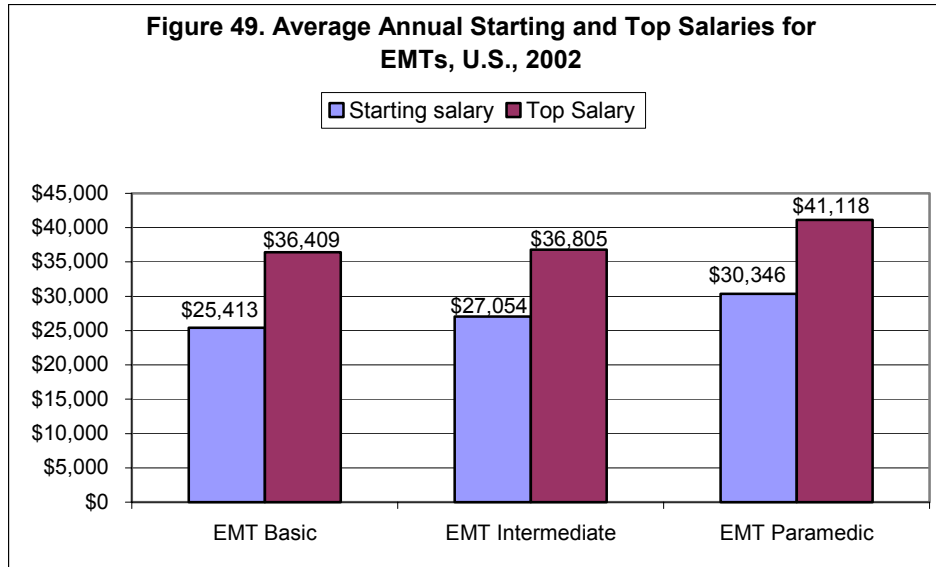
Most EMTs are on call for far more hours than they actually work. In 2003, more than 29% of EMTs reported being available for EMT response 60 or more hours per week, while only 8.7% actually worked this many hours as an EMT. EMTs in large cities were less likely to spend 60+ hours on call than their rural counterparts (22.6% versus 34.9%), but were far more likely to work this many hours (12.7% versus 2.2%). Although volunteer EMTs worked fewer hours per week, with only 3.4% logging more than 40 hours (compared to 47.5% of paid EMTs), they were just as likely to spend 60+ hours per week on call (28.1% compared to 29.7% of paid EMTs).



Source: LEADS data, NREMT 2003a.

Salaries for EMTs in 2002 averaged between \$25,413 (starting) and \$36,409 (top) for Basic EMTs, between \$27,054 and \$36,805 for Intermediate EMTs, and between \$30,346 and \$41,118 for Paramedics nationwide. EMT salaries have been increasing, although they are still lower than those for other health care professionals, and there has been an increased focus on nonmonetary benefits (e.g., paid time off) and workplace protections (e.g., screenings and drug testing) in many agencies.⁴⁶

⁴⁶ Monosky, 2002



Source: JEMS 2002 EMS Salary & Workplace Survey.

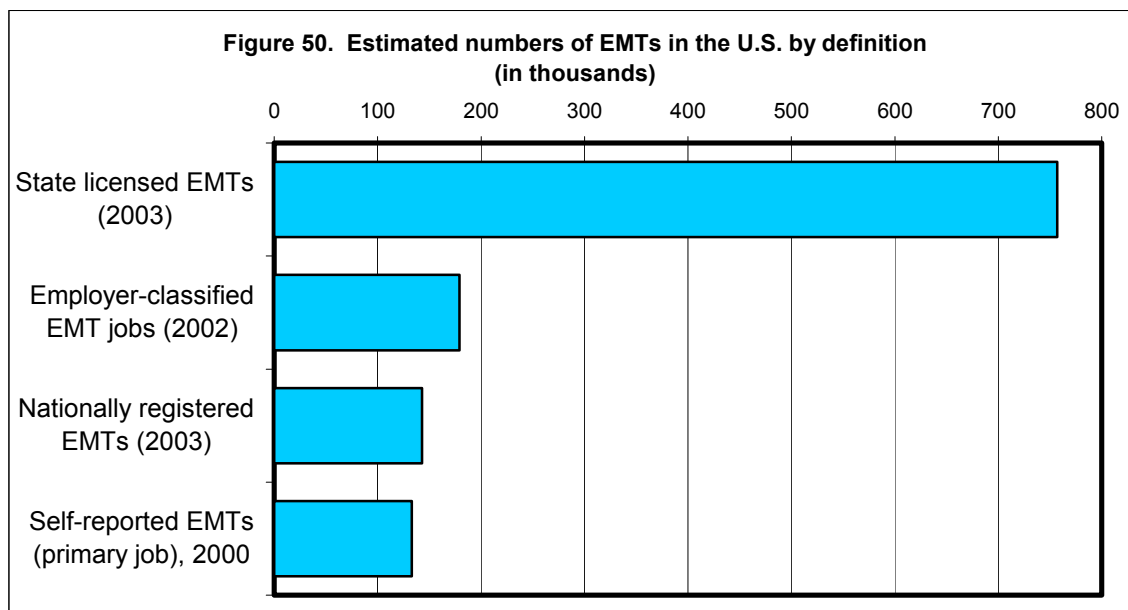
Supply. It is difficult to know how many EMTs are currently employed in the U.S. Because registration requirements vary across states and because so many EMTs are volunteers, it is difficult to measure their numbers. There were 142,900 EMTs in the national registry in 2003, but while many states require initial national registration for their EMTs, not all states require that active EMTs *maintain* their national registration. Bureau of Labor Statistics employment data show 178,700 EMTs employed nationwide in 2002. These data are, however, employer-reported and do not include volunteer EMTs. The 2000 Census Public Use Microdata Sample (PUMS) shows 132,398 EMTs employed as a primary job, but again, many EMT positions are only part time or on a volunteer basis. More than 757,000 EMTs held state licenses in 2003, but this does not necessarily reflect active EMTs and is almost certainly an overcount.

Working conditions for EMTs tend to be very challenging, leading to high rates of turnover. EMTs may experience burnout, or even post-traumatic stress disorder, as a result of the emotional and psychological stressors of their job. Some EMTs must work irregular hours, and some are not well compensated in salary or retirement benefits. The work of EMTs is also occasionally dangerous, as they must respond to unpredictable and uncontrolled situations and are exposed to threat of violence or infectious disease.⁴⁷ There is not generally a well defined career ladder for EMTs, and EMTs in fire-based services sometimes must leave EMS work for other duties in order to advance within their organization. Many individuals work as EMTs as a step in becoming a physician assistant or an RN.

⁴⁷ Franks, Kocher, and Chapman, 2004.

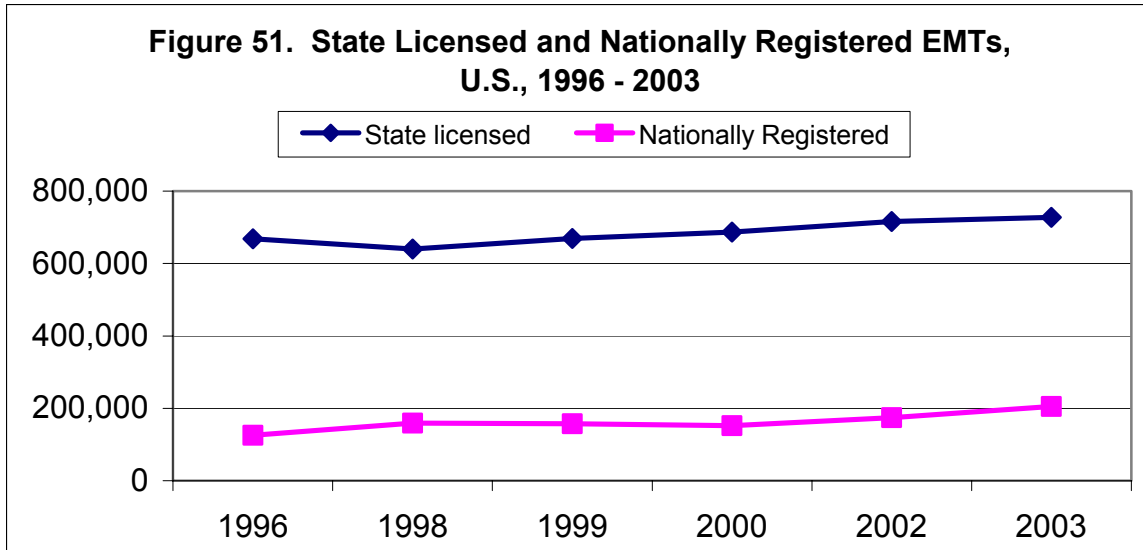
State licensed EMTs	Individuals who, regardless of their employment status, are state-licensed as EMTs	757,000	State licensure lists, 2003
Employer-classified EMT jobs	Paid jobs classified by employers, regardless of training or licensure requirements, as "EMT"	179,000	Bureau of Labor Statistics (OES), 2002
Nationally registered EMTs	Individuals who, regardless of their employment status, are nationally registered as EMTs	143,000	National registry of EMTs (NREMT), 2003
Self-reported EMTs as primary paid job	Individuals who, regardless of training or licensure, self-report EMT as their primary paid employment	133,000	2000 Census Public Use Microdata Sample (PUMS)

Source: Emergency Medical Services magazine, 2003; NREMT, 2003b; BLS, 2002; U.S. Census, 2000.



Source: Emergency Medical Services magazine, 2003; NREMT, 2003b; BLS, 2002; U.S. Census, 2000.

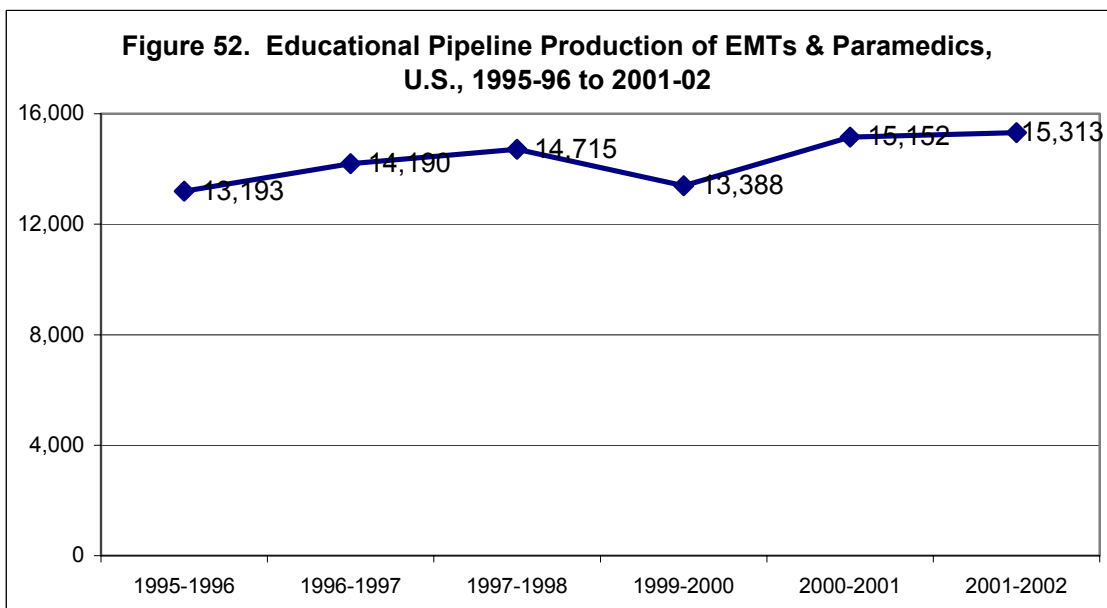
The number of EMTs clearly grew between 1996 and 2003, but the extent of growth depends upon the definition of EMTs used. State licensed EMTs have increased from a reported 667,962 in 1996 to a reported 727,086 in 2003 (an increase of 8.9%), while nationally registered EMTs have increased from 125,575 in 1996 to 205,356 in 2003 (an increase of 63.5%).



Source: Emergency Medical Services magazine; NREMT, 2003

The majority of EMTs and paramedics receive their training in programs offered by EMS agencies, junior colleges, universities, hospitals and medical centers, or private training programs. Although there is a standard curriculum for all levels of EMT training, EMT scope of practice varies by state.

For the most part, graduations from EMT educational programs increased steadily from the 1995-96 through the 2001-02 academic years, with a single notable drop in the 1999-00 academic year. In the 1995-96 year, 13,193 students completed EMT educational programs, but by 2001-02 this had risen to 15,313 (an increase of 16%).

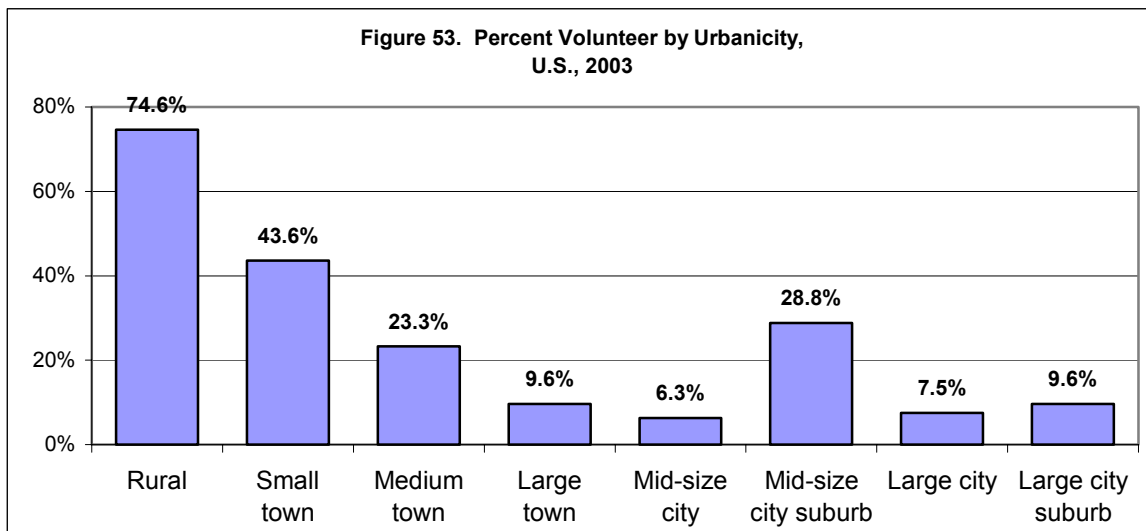


Source: NCES, 2000

Demand. The Bureau of Labor Statistics projects that employment of EMTs and Paramedics will grow 33.1% between 2002 and 2012, or by 59,000 new jobs. One factor fueling this projected growth is population growth and urbanization. The aging of the population will further stimulate demand, as older Americans will be more likely to have medical emergencies.

Replacement needs for EMTs will also be high due to retirement and attrition. There are relatively few EMTs who are middle-aged or older. Attrition from the profession is also high due to the stressful working conditions, limited potential for career advancement, and modest pay and benefits experienced by EMTs and paramedics. Total job openings for the period, including replacement positions, are estimated at 80,000.

Demand for EMTs and Paramedics will also continue to be strong in rural and smaller metropolitan areas (BLS, 2003a), but this is more difficult to estimate as rural areas rely much more heavily on volunteer EMTs than do urban areas. In 2003, 75% of EMTs in rural areas were volunteer, compared to 7.5% in large cities. Almost 86% of rural EMTs were Basic EMTs, compared to 48.1% in large cities, where almost half of EMTs (47.7%) were Paramedics. As a result, rural Americans frequently do not have access to the same level of pre-hospital care as urban Americans.



Source: LEADS, 2003

States may recognize various levels of EMT, and the legal scope of practice for a given level is not generally consistent by state. This may cause some difficulty for EMTs who are trained in one state but want to practice in another, and also presents some serious problems for emergency management plans that call for mobilizing EMTs across state boundaries to deal with a disaster or mass casualty incident. Efforts are underway to standardize training and scope of practice across states, but it is still challenging for EMTs to move from one state to another.

Emergency Medical Dispatchers (EMDs)

The profession. Emergency medical dispatchers (EMDs) monitor the location of emergency services personnel from any one or all of the jurisdiction's emergency services departments. These workers dispatch the appropriate type and number of units in response to calls for assistance. Dispatchers often are the first people contacted by the public when emergency assistance is required. If certified for emergency medical services, the dispatcher may provide medical instruction to those on the scene of the emergency until the medical staff arrives.⁴⁸

When handling calls, dispatchers question each caller carefully to determine the type, seriousness, and location of the emergency. In a medical emergency, dispatchers keep in close touch not only with the dispatched units, but also with the caller. They may give extensive first-aid instructions before the emergency personnel arrive, while the caller is waiting for the ambulance. Dispatchers continuously give updates on the patient's condition to the ambulance personnel who are en route to the patient⁴⁹.

Not all emergency dispatchers are trained EMDs. EMDs must have some basic medical knowledge in order to evaluate medical emergencies, prioritize responses, and give medical instructions in basic emergency care to callers. Voluntary certifications are available through multiple organizations, but many dispatchers serving EMD functions do not have this specialized training.

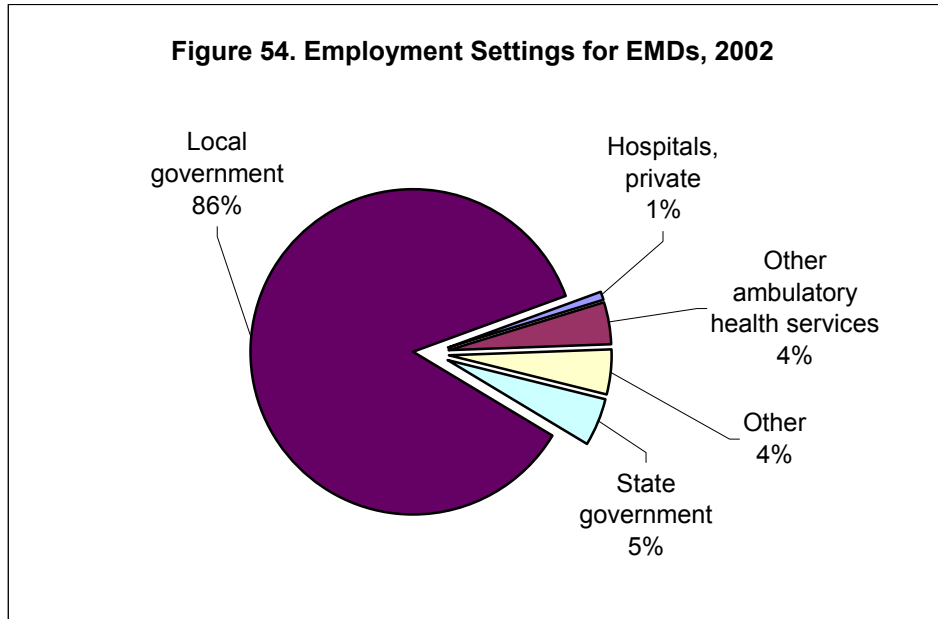
Demographics. There are no data available on the demographic characteristics of EMDs.

Employment characteristics. The majority of EMDs (85.9%) work for local government (excluding local government hospitals). A smaller number of EMDs (4.7%) work for state government (excluding state government hospitals). Some EMDs (4.1%) work for ambulatory health care services not elsewhere specified, in most cases likely meaning ambulance services. Only 0.9% work for private hospitals⁵⁰.

⁴⁸ BLS, 2004

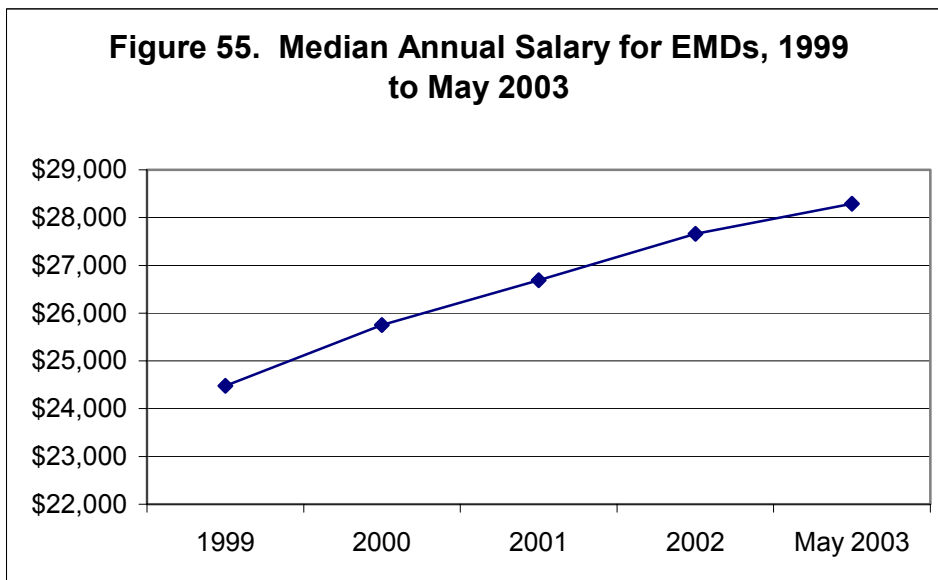
⁴⁹ BLS, 2004

⁵⁰ BLS, 2004



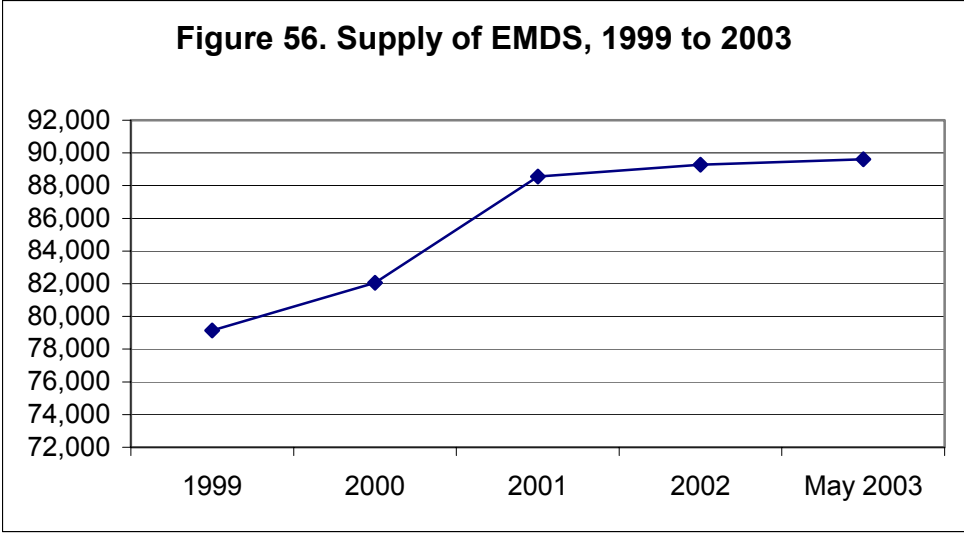
Source: BLS, 2002.

Median annual salaries for EMDs increased by 15.6% between 1999 and 2003.

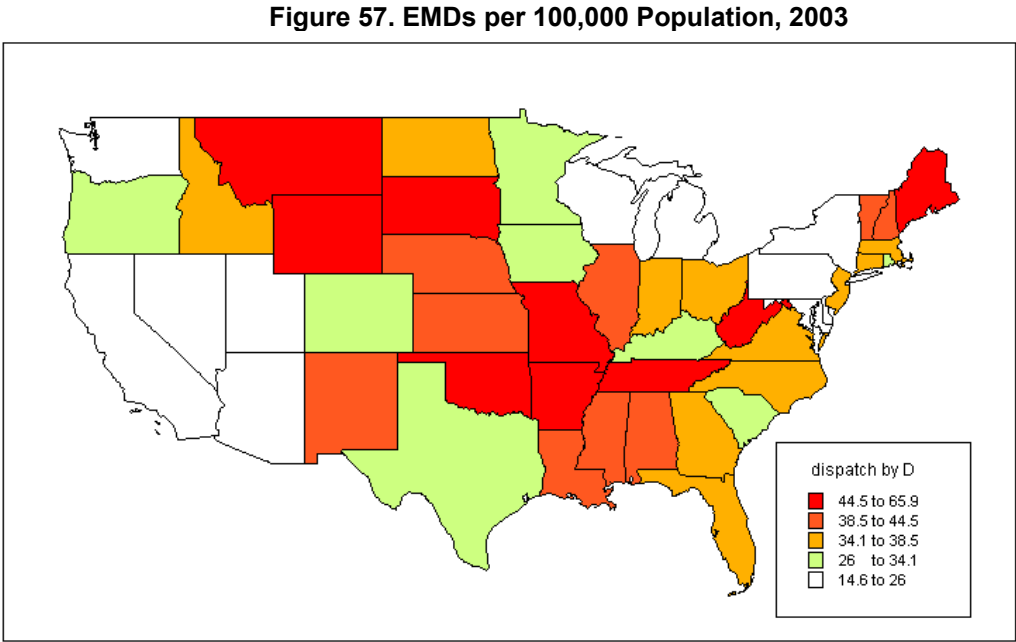


Source: BLS, 2003.

Supply. Between 1999 and May 2003, the number of EMDs grew by 13%, with the September 11th terror attacks likely providing much impetus for improving emergency services infrastructure. The largest increase occurred between 2000 and 2001, with growth slowing in recent years.



Source: BLS, 2003.



Source: BLS, 2003.

Demand. It is estimated that the occupation will need to grow 12.7% between 2002 and 2012 in order to meet projected demand (BLS, 2004).

Behavioral Health Emergency Personnel

Emergency behavioral health services tend to be provided in two contexts: the provision of emergency services to those with psychiatric conditions (typically in an ED setting), and the provision of services to people without preexisting mental health conditions following a disaster (rarely in a clinical setting). The two types of emergency behavioral health services vary dramatically from one another, and also vary from non-emergency psychiatric services.

Emergency Services to Those with Mental Health Conditions. Non-emergency psychiatric services typically are provided in clinical settings that specialize in behavioral health such as a psychiatrist, psychologist, or social worker's office or a psychiatric ward or facility. Such services are typically ongoing, and the treating practitioner is able to build a steady rapport with the patient. The patient's progress can be evaluated over the long-term, and the same provider may evaluate the patient's presenting condition, diagnose, provide treatment, and decide when and how treatment should be terminated and if any follow-up services are necessary.

Emergency treatment of people with psychiatric conditions, however, may follow a precipitating crisis or event. The patient may not wish to receive treatment, or may already be working with another provider with whom he or she is more comfortable. Emergency department personnel may be able to do little to assist the patient with their presenting complaint (unless there are physical injuries related to the patient's mental condition), and may assume a primarily custodial role until appropriate placement has been secured for the patient (e.g., a psychiatric bed). The practice of holding patients in an emergency room until more appropriate placement can be found is known as "boarding," and this is common with psychiatric patients who present at the emergency room both because the emergency staff has limited treatment options and because psychiatric beds are more limited in many communities than general inpatient beds.

Some communities also have interdisciplinary mobile crisis teams, consisting of nurses, social workers, psychiatrists, psychologists, mental health technicians, and other counselors, who respond to psychological crises typically in the patient's home or some other non-medical location.

Mobile crisis teams can provide the following services:

- Assessment
- Crisis intervention
- Supportive counseling
- Information and referrals
- Follow-up
- Transportation to emergency departments (if necessary)
- Disaster response.

Psychiatric patients in EDs are most likely to be diagnosed with schizophrenic psychoses, affective psychoses, neurotic disorders, nondependent abuse of drugs, or depressive disorders. This varies somewhat between urban and rural EDs, however.

Relatively little is known about what kinds of personnel treat patients presenting at EDs with a psychiatric emergency. The 2002 National Hospital Ambulatory Care Survey (NHAMCS) shows that 91% of psychiatric emergency patients in the sample saw a staff physician during their ED visit, while 14% saw a resident or intern. Twelve percent saw an “other physician,” which is likely to be a psychiatrist who was on call. Eighty-five percent saw an RN at some point during their visit. Only 1% of the psychiatric emergency patients saw an NP at any time during their visit, while 2% saw a PA. There was no data available on how many saw a psychologist or social worker during their ED visit.

Disaster Mental Health Services. Disaster mental health services also follow a precipitating crisis or event, but this event is external to the patient and affects large numbers of others in the community. The patients are predominantly, “‘normal’ people responding to an abnormal situation”⁵¹, although some patients may have preexisting mental health conditions that exacerbate their response to the disaster. Services may be provided at shelters or disaster centers, and tends to be a one-time service: the provider may have as little as ten minutes to work with the patient, and will probably never treat the patient again. Rather than clinical services, disaster mental health providers provide services such as stress management education and problem-solving skills, although they may also make referrals for more intensive care.

Disaster mental health workers generally spend long hours working and on call. The nature of their work is primarily crisis intervention, but does not follow the same patterns seen in other crisis intervention settings such as crisis hotlines, where hours may pass between one crisis event and the next. Disaster mental health workers must also be sensitive to the fact that “turf and organizational politics are pervasive and volatile at disaster service sites”⁵².

Disaster mental health services may be provided by volunteers as well as by behavioral health professionals, through agencies like the American Red Cross.

⁵¹ Young, et al.,

⁵² Young et al.

ISSUES AFFECTING SUPPLY AND DEMAND FOR EMERGENCY HEALTH PROFESSIONALS

Bioterrorism and Mass Casualty Incidents. Disaster preparedness has always been a primary focus of emergency services. In events of fire, flood, earthquake and environmental disaster, emergency health care personnel are mobilized to provide necessary services when and where they are needed. The problems providing emergency care following Hurricane Katrina in 2005 highlight, however, that preparedness for natural disasters continues to need improvement.

Since September 2001, much disaster planning has shifted toward organizing resources for response to potential terrorist activities that could take the form of a chemical, nuclear, or biological attack or a conventional attack using firearms or explosives. Such attacks may be as unpredictable as the natural or environmental disasters for which emergency personnel have traditionally prepared, but have the potential to cause higher numbers of casualties and a greater degree of panic in the population.

Correspondingly, an effective response to such a bioterrorism attack or mass casualty incident may require more personnel and different strategies for providing care. These personnel also need training in new and different skills to prepare them for scenarios that they may never have encountered in training or in practice. Because it is impossible to predict where such incidents may occur, planning an adequate emergency response depends as much upon being able to mobilize emergency personnel nationally as it does upon having sufficient resources locally.

There is little doubt that recent events both in the U.S. and worldwide have motivated emergency planners to strive for increased capacity for emergency medical services and hospital emergency departments throughout the nation. Increased capacity clearly demands increased numbers of personnel.

It is not clear how the new types of emergency threats have affected the supply of emergency medical personnel, if at all. Certainly emergency medical services have a higher profile now than five years ago, and an untold number of individuals may be inspired by recent events to choose a career in emergency services. At the same time, however, emergency medical personnel may be increasingly at the forefront of dangerous situations with possible exposure to chemical and biological toxins, and have to treat patients at disaster scenes that may contain explosives or other dangers. These harsh realities may also deter some people from careers in emergency medical services.

Demographic Changes. The potential causes of medical emergencies are not the only thing that is changing in emergency services. The demographics of the American population are changing in two very important ways, both with implications for the provision of emergency medical care. The U.S. population is becoming both markedly older and markedly more diverse – trends that are only projected to accelerate over the next few decades.

The large numbers of children born between 1946 and 1964 (the so-called baby boom generation) will reach their 65th birthdays between 2011 and 2029. Between 2000 and 2020, the

U.S. population will add 19 million elderly people. Overall, the numbers of elderly people in this country will grow 138% in the next fifty years. By the year 2050, one of every five Americans will be age 65 or older.

Due to increasingly longevity as a result of better nutrition, safety, and medical care, the numbers of people who are age 85 and above will grow even more dramatically. The population of the “oldest old” is expected to grow by 377% by the year 2050. These people use significantly more health care services than younger people.

Older adults need different types of emergency services than young adults and children. They are much more likely to need emergency care as a result of chronic conditions such as diabetes, hypertension, heart disease, and cancer, and are more likely to suffer from co-occurring conditions. They may be less prone to suffer accidental injuries as a result of a less active lifestyle, but are more prone to complications when they do. They may be unable to communicate information effectively to emergency medical personnel due to age-related cognitive conditions or simply because they have extremely complex medical histories and medication regimens. But perhaps most importantly, older adults use more emergency services than younger adults: 50 emergency visits per 100 persons for those 65 and older, compared to 42 visits for those ages 18 through 44 in 2000⁵³. Clearly, the aging of the population will require more emergency medical personnel, and emergency medical personnel who are adequately trained in providing services to elderly patients.

At the same time that the patient population is aging, resulting in increased demand, the supply of care providers is aging as well. Large numbers of emergency medical personnel may retire from their jobs in the next ten to twenty years, or may simply change to less demanding work environments. This is a concern in professions such as nursing, where the median age is higher than that of the labor force as a whole and large numbers of retirements are anticipated, but is also a concern in some “young” professions such as EMT where career trajectories are shorter and age-related attrition occurs much younger than in other fields.

The changing racial and ethnic composition of the U.S. population may not have the same effects upon the number of professionals demanded by the labor market, but still has important consequences for the provision of emergency medical care. The racial/ethnic distribution of emergency care providers is not well matched to the racial/ethnic distribution of the population, and even less well matched to the population that uses emergency services. This disparity can only be expected to increase as the U.S. population continues to diversify at a much faster rate than most health professions and occupations. Some concerns have been raised about “cultural competence,” or the extent to which non-Hispanic White professionals are able to effectively relate to, communicate with, and ultimately serve their minority patients. Cultural competence can be cultivated in non-minority providers through training, education, and experience, but it is not clear how well cultural competence is incorporated into the training of emergency medical professionals. Racial and ethnic diversity also introduces potential language barriers to the patient-provider relationship, increasing the demand for providers who are bilingual or multilingual, especially in urban areas. There may also be increasing demand for medical translators in ED environments.

⁵³ USDHHS, 2003.

Changing Morbidity. Chronic problems are becoming more prevalent in the U.S. population, especially among children, who are experiencing unprecedented rates of morbidity from asthma, allergies, diabetes, and obesity. Violence against children and high rates of uninsurance contribute to use of EDs for treatment of these problems.

Insurance Coverage. Use of emergency services, especially hospital emergency departments, is closely linked to the percentage of the population that is uninsured. By federal law, hospital emergency departments must provide care to all patients, regardless of ability to pay. As a result, many uninsured patients use the emergency department as their primary source of medical care, even if their condition does not constitute a medical emergency. Furthermore, the uninsured sometimes avoid seeking medical care that they cannot afford until their conditions truly become emergency conditions, bringing them to the hospital with serious conditions that could have been treated more effectively and for less money in a physician's office. Inappropriate use of emergency departments is a primary cause of emergency department crowding and economic loss to hospitals⁵⁴. It is not clear what percentage of emergency department resources are consumed by patients who have allowed routine conditions to become serious due to an inability to afford routine care, but such cases undoubtedly strain the emergency medical system as well.

National health care policy is therefore a critical determinant of how much emergency care is consumed in the U.S. Factors that increase the affordability of health care and access to health insurance coverage will reduce the demand for emergency personnel, while factors that limit sources of care for the uninsured will increase demand for emergency personnel. It is deemed unlikely that the U.S. will adopt a system of universal health coverage in the near future, but such a system would dramatically reduce demand for emergency services and the professionals that provide them.

Health Care Technology. New technology in emergency services may produce gains in efficiency that can mitigate some of the effects of population aging and expanded disaster preparedness. Such technologies include electronic medical records that allow easy access to patient medical histories in the ED or even the ambulance (especially important for older patients who have co-occurring conditions and take large numbers of medications); practice management systems for the ED; intra-hospital computer networks that allow communication between EDs, laboratories and pharmacies; and clinical software that aids patient triage. The applications of technology for ambulance services may be less far-reaching, but more clinical and diagnostic tools can be expected to become available in portable versions for use in ambulances and EMS helicopters, while advanced computer systems can increase the efficiency and accuracy of emergency dispatching. The extent to which these technologies are being adopted and used to their fullest potential varies widely by the technology and the characteristics of the hospitals, but rapid growth in this area can be expected in the next ten to twenty years.

While technology in emergency medical care may relieve demand for emergency medical personnel, it will increase demand for personnel trained to use such technology.

⁵⁴ National Association of Community Health Centers, 2004.

Scope of Practice/Education. Given the changing demographics discussed above, which will result in increased need for services at the same time as increased retirements of health care professionals, there is a strong possibility that the scope of practice for various professions may change. An increasing emphasis on chronic disease management in the emergency department setting may also change the roles and expectations of emergency health care professionals. Specifically, lower-level workers may take on an increasing number of tasks for professionals in short supply, such as registered nurses. Clearly, however, developments such as health care technology may affect the extent to which such scope of practice changes occur.

BIBLIOGRAPHY

Alonso-Serra, H, D Blanton and RE O'Connor, 1997. *Physician Medical Direction in EMS*. National Association of EMS Physicians.

American Association of Physician Assistants, 2003. *AAPA Masterfile Data*.

American Board of Medical Specialties, 2003. *ABMS Annual Report and Reference Handbook*.

American College of Emergency Physicians, 2004. *On-Call Specialist Coverage in U.S. Emergency Departments: ACEP Survey of Emergency Department Directors*. Irving, TX: ACEP.

American Hospital Association, 2003. *Hospital Statistics*. Health Forum LLC.

American Medical Association, 2004. *Physician characteristics and distribution in the US*. AMA Press.

Bureau of Labor Statistics, 2004. *2002 National, State, Metropolitan Area, and Industry-Specific Occupational Employment and Wage Estimates*.

Bureau of Labor Statistics, 2002. *Current Population Survey data*.

Center for Health Workforce Studies, 2003. *2003 NYS Resident Exit Survey*. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany.

Center for Health Workforce Studies, 2001-2003. *New York State Physician Re-Registration Survey, 2001-2003*. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany.

Center for Health Workforce Studies, 2001. *2001 New Mexico Physician Workforce Survey*. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany.

Center for Health Workforce Studies, 2000. *2000 Survey of Nurse Practitioners Licensed in New York State*. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany.

Cole, FL, E Ramirez, and H Luna-Gonzales, 1999. *Scope of practice for the nurse practitioner in the emergency care setting*. Des Plaines, IL: Emergency Nurses Association.

Cone, DC, LD Richardson, KH Todd, JR Betancourt, and RA Lowe. 2003. "Health care disparities in emergency medicine." *Academic Emergency Medicine*, 10(11): 1176-1183.

Dowling, D and W Dudley, 1995. "Nurse practitioners: Meeting the ED's needs," *Nursing Management*, 26, 48C-48J.

- Economic Research Service, 2004. <http://www.ers.usda.gov/topics/view.asp?T=104000>
- Emergency Medical Services magazine, 2004. *2004 Emergency Medical Services State and Province Survey*. <http://www.emsmagazine.com/SURVEY/index.html>
- Emergency Nurses Association, 1999. *Scope of Emergency Nursing Practice*.
- Emergency Nurses Association, 2003a. *Advanced Practice in Emergency Nursing*.
- Emergency Nurses Association, 2003b. *Staffing and Productivity in the Emergency Care Setting*.
- Emergency Nurses Association and National Flight Nurses Association, 1987. *Role of the Registered Nurse in the Prehospital Environment*.
- Emergency Nursing World, 2004. *The Emergency Nursing FAQ and Emergency Nursing World! FAQ*. <http://ENW.org/FAQ.htm>. Accessed on 7/2/2004.
- Franks, PE, N Kocher, and S Chapman, 2004. *Emergency Medical Technicians and Paramedics in California*. UCSF Center for the Health Professions: San Francisco.
- Ganapathy, S and FL Zwemer, 2003. "Coping with a crowded ED: an expanded unique role for midlevel providers." *American Journal of Emergency Medicine*, 21(2): 125-8.
- Grossman, DC, A Kim, SC Macdonald, P Klein, MK Copass, and RV Maier, 1997. "Urban-rural differences in prehospital care of major trauma." *Journal of Trauma*, 42(4): 723-9.
- Heron, S and L Haley, 2001. "Diversity in emergency medicine: a model program." *Academic Emergency Medicine*, 8(2): 192-5.
- Holliman, CJ, RC Wuerz, DM Chapman, AJ Hirshberg, 1997. "Workforce projections for emergency medicine: how many emergency physicians does the United States need?" *Academic Emergency Medicine*. 4(7): 725-30.
- Kaji, A and C Stevens, 2002. "Moonlighting and the emergency medicine resident," *Annals of Emergency Medicine*, 40(1): 63-6.
- Lishner, DM, RA Rosenblatt, LM Baldwin, and LG Hart, 2000. "Emergency department use by the rural elderly." *Journal of Emergency Medicine* 18(3): 289-97.
- McCaig and Ly, cited in General Accounting Office, 2003. *Hospital Emergency Departments: Crowded Conditions Vary among Hospitals and Communities*. Washington, DC: General Accounting Office.
- Monosky, KA. 2003. *JEMS 2002: EMS Salary and Workplace Survey*. <http://www.jems.com/jems/salariesurv.html#top>

Moorhead, JC, M.E. Gallery, C Hirshkorn, DP Barnaby, WG Barsan, LC Conrad, WC Dalsey, M Fried, SH Herman, P Hogan, TE Mannie, DC Packard, DG Perina, CV Pollack, MT Rapp, CC Rorrie, and RW Schafermeyer, 2002. "A study of the workforce in emergency medicine." *Annals of Emergency Medicine* 40(1).

National Association of Community Health Centers, 2004. *A Nation at Risk: A National and State Report on America's 36 Million People without a Regular Health Care Provider*. Washington, DC: NACHC.

National Association of State Emergency Medical Services Directors, 2000. *Challenges of Rural Emergency Medical Services: Opinion Survey of State EMS Directors*.

http://www.nasemsd.org/rural_emergency_medical_servic.html

National Center for Education Statistics, 2000. *Integrated Postsecondary Education Data System (IPEDS)*.

National Center for Health Statistics, 2002. *National Hospital Ambulatory Medical Care (NHAMCS) survey*. Hyattsville, MD: Centers for Disease Control.

National Registry of Emergency Medical Technicians, 2003a. *Longitudinal Emergency Medical Technician Attributes and Demographics Survey (LEADS) data*.

National Registry of Emergency Medical Technicians, 2003b. Registration data.

New York State Education Department, 2003. *Registered Nurses in New York State, 2002*, survey data. Albany, NY: USNY State Education Department.

Sullivan Commission, 2004. *Missing Persons: Minorities in the Health Professions*. Sullivan Commission.

U.S. Bureau of the Census, 2004. *Annual Estimates of the Population by Sex, Race and Hispanic or Latino Origin for the United States: April 1, 2000 to July 1, 2003*.

<http://www.census.gov/popest/national/asrh/NC-EST2003-srh.html>

U.S. Department of Health and Human Services, 2003. Freid, VM, K Prager, AP MacKay, and H Xia. *Chartbook on Trends in the Health of Americans. Health, United States, 2003*. Hyattsville, MD: National Center for Health Statistics.

U.S. Department of Health and Human Services, 2002. *Projected Supply, Demand, and Shortages of Registered Nurses, 2000 – 2020*. Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis: Rockville, MD.

U.S. Department of Health and Human Services. 2000. *National Sample Survey of Registered Nurses*. Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis: Rockville, MD.

Young, BH, JD Ford, JI Ruzek, MJ Friedman, and FD Gusman. ND. *Disaster Mental Health Services: A Guidebook for Clinicians and Administrators*. Department of Veterans Affairs, The National Center for Post-Traumatic Stress Disorder.