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THESIS

**CAREER PARAMEDIC-FIREFIGHTER STAFFING
PROBLEMS: IS RECRUITING WOMEN PART
OF THE SOLUTION?**

by

Juan Byron

December 2018

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**CAREER PARAMEDIC-FIREFIGHTER STAFFING PROBLEMS: IS
RECRUITING WOMEN PART OF THE SOLUTION?**

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ABSTRACT

Fire departments are the largest employer of emergency medical services workers, but many face a shortage of paramedic-firefighter applicants. These applicants typically work as single-role paramedics, an occupation facing an even greater shortage. Although women are almost 47 percent of the general labor force, few apply to be paramedic-firefighters, suggesting an untapped labor pool that could resolve some of the shortage. This thesis explores whether fire departments can mitigate the shortage of paramedic-firefighter applicants by examining the issues that prevent people from applying and by recruiting more women.

In a comparative analysis of four departments that employ an above-average percentage of females, the research found that: 1) low ambulance-bill reimbursements restrict paramedic wages, and thus paramedic supply; 2) economic and other challenges that limit the supply of paramedics are increasing; 3) fire departments appear not to be aware of, or have implemented, published recruiting recommendations; and 4) strong staffing performance requires consistent human resources proficiency. This research recommends that fire departments address issues that appear to deter potential applicants, especially women. Doing this can mitigate staffing shortages and foster community trust.

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TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	PROBLEM STATEMENT	1
B.	RESEARCH QUESTIONS.....	4
C.	LITERATURE REVIEW	4
	1. Best Practices for Integrating the Employment Pipeline	9
	2. Recruiting Constraints and Concerns.....	13
	3. Discrimination and Consent Decrees	15
D.	RESEARCH METHODOLOGY	16
E.	CHAPTER OVERVIEW	21
II.	BACKGROUND ON APPLICANT SHORTAGE	23
A.	THE EMERGENCY MEDICAL SERVICES SYSTEM.....	24
B.	SINGLE-ROLE PARAMEDICS.....	28
	1. The Single-Role Paramedic Workforce	29
	2. Single-Role Paramedic Employers and Employment Pipeline.....	38
C.	DUAL-ROLE PARAMEDIC-FIREFIGHTERS	43
	1. The Dual-Role Paramedic-Firefighter Workforce	44
	2. Dual-Role Paramedic Employers and Employment Pipeline.....	48
	3. Factors that Restrict the Employment Pipeline	52
D.	ANALYSIS	54
III.	STAFFING SUCCESS WITHOUT A CONSENT DECREE	57
A.	ORANGE COUNTY FIRE RESCUE, FLORIDA	57
	1. Measures of Staffing Performance	58
	2. Entry Points.....	59
	3. Hiring Process	63
	4. Outreach and Recruiting.....	64
	5. Retention and Advancement.....	67
B.	MADISON, WISCONSIN.....	69
	1. Measures of Staffing Performance	71
	2. Entry Points.....	72
	3. Hiring Process	73
	4. Outreach and Recruiting.....	75
	5. Retention and Advancement.....	77
C.	ANALYSIS	79

IV.	STAFFING SUCCESS ABOVE AND BEYOND A CONSENT DECREE	81
A.	PHILADELPHIA, PENNSYLVANIA	81
	1. Measures of Staffing Performance	83
	2. Entry Points.....	86
	3. Hiring Process	86
	4. Outreach and Recruiting.....	88
	5. Retention and Advancement.....	90
B.	SAN FRANCISCO, CALIFORNIA	91
	1. Measures of Staffing Performance	92
	2. Entry Points.....	93
	3. Hiring Process	97
	4. Outreach and Recruiting.....	100
	5. Retention and Advancement.....	103
C.	ANALYSIS	104
V.	CONCLUSION	107
A.	IMPORTANCE.....	107
B.	LIMITATIONS.....	108
C.	FINDINGS AND RECOMMENDATIONS	109
D.	SUGGESTIONS FOR FUTURE RESEARCH.....	113
	LIST OF REFERENCES	117
	INITIAL DISTRIBUTION LIST	153

LIST OF FIGURES

Figure 1.	U.S. EMT and Paramedic Employment.....	39
Figure 2.	OCFR Career Firefighter-Paramedic Entry Points	60

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LIST OF TABLES

Table 1.	Philadelphia and PFD Demographic Summary	85
Table 2.	Philadelphia Workforce and PFD Group Ratios by Gender	86
Table 3.	Staffing Measures of Performance.....	110

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LIST OF ACRONYMS AND ABBREVIATIONS

AAA	American Ambulance Association
ALS	advanced life support
AMR	American Medical Response
BLS	Bureau of Labor Statistics
CFFJAC	California Fire Fighter Joint Apprenticeship Committee
CGI	compelling government interest
CMS	Centers for Medicare and Medicaid Services
CPAT	Candidate Physical Ability Test
DOL	Department of Labor
DOT	Department of Transportation
EMR	emergency medical responder
EMS	emergency medical services
EMT	emergency medical technician
FCTC	Firefighter Candidate Testing Center
GSS	general social survey
IAFC	International Association of Fire Chiefs
IAFF	International Association of Fire Fighters
IPEDS	Integrated Postsecondary Education Data System
KSAs	knowledge, skills, and abilities
LEADS	Longitudinal EMT Attributes and Demographic Study
MFD	Madison Fire Department
NFPA	National Fire Protection Association
NHTSA	National Highway Traffic Safety Administration
NREMT	National Registry of Emergency Medical Technicians
OCFR	Orange County Fire Rescue
PFD	Philadelphia Fire Department
PMO	paramedic only
SCBA	self-contained breathing apparatus
SFFD	San Francisco Fire Department
SHRM	Society for Human Resource Management

SOC	standard occupational classification
UAS	unmanned aerial systems
USFA	United States Fire Administration

EXECUTIVE SUMMARY

This case study analyzes the shortage of applicants for career paramedic-firefighter positions and its relationship to the paucity of female firefighters. The research explores causes of the shortage, examines four case fire departments, and suggests how fire departments and communities can address these staffing challenges by including women and girls in recruitment efforts. The focus is on a comprehensive understanding of the employment pipeline from initial job interest through recruiting, hiring, and retention. Fire departments and potential employees make decisions at various points in the process of career exploration, recruiting, and hiring. Analyzing these decisions in demographic, economic, social, and legal contexts uncovers solutions that may be relevant for other occupations and for the volunteer fire and emergency medical services (EMS).

Nationally, the supply of working paramedics is not keeping up with demand for paramedic service. Due to this shortage, career fire departments experience increasing difficulties in hiring paramedic-firefighters, also sometimes locally known as firefighter-paramedics. This staffing challenge is a growing problem for public safety because the fire service is the largest employer of EMS workers.¹ The most common EMS workers are basic emergency medical technicians (EMTs).² Advanced providers, termed paramedics, number about half as many as basic EMTs.³ In 2011, the *Emergency Medical Services Workforce Agenda for the Future* identified workforce shortages as EMS employers' largest concern.⁴ Pointing to a growing concern, in 2007, the State Senate Committee on

¹ Melissa A. Bentley, Abigail Shoben, and Roger Levine, "The Demographics and Education of Emergency Medical Services (EMS) Professionals: A National Longitudinal Investigation," *Prehospital and Disaster Medicine* 31, no. Supplement 1 (December 2016): s19, <https://doi.org/10.1017/S1049023X16001060>.

² National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis* (Columbus, OH: National Registry of Emergency Medical Technicians, 2015), 10.

³ National Registry of Emergency Medical Technicians, 10.

⁴ Susan A. Chapman, Vanessa Lindler, and Jennifer A. Kaiser, *The Emergency Medical Services Workforce Agenda for the Future* (Washington, DC: National Highway Traffic Safety Administration, 2011), 26, https://www.ems.gov/pdf/2011/EMS_Workforce_Agenda_052011.pdf.

EMS Recruitment, Retention, and Training in Georgia also reported that changes in population demographics have created a shortage of EMS employees.⁵

Research demonstrates that women can successfully fill more firefighter jobs than they currently do. As of January 2018, the Bureau of Labor Statistics (BLS) reports that only about 3.5 percent of career firefighters are female.⁶ This underrepresentation is the case even though women account for almost 47 percent of the nation’s workforce, over 30 percent of EMTs, 21 percent of paramedics, 17 percent of persons doing work physically similar to firefighting, 15.9 percent of active duty military, and 9 percent of volunteer firefighters.⁷

The misperception that women lack the physical ability or interest to be paramedic-firefighters likely exacerbates the shortage of applicants for these jobs. The reality is that gender is not the determining factor in whether an applicant can develop proficiency in a skilled occupation, even one requiring physical ability. For example, law enforcement is physically demanding, yet the BLS reports that 13.6 percent of police and sheriff’s patrol officers are women.⁸ The BLS also reports that 36.4 percent of career athletes, coaches, umpires, and related workers are women.⁹ Professional athletes, like paramedic-

⁵ Senate Committee on EMS Recruitment, Retention, and Training in Georgia, *Final Report of the Senate Committee on EMS Recruitment, Retention, and Training in Georgia* (Atlanta, GA: Senate Research Office, 2007), 5–6, <http://www.senate.ga.gov/sro/Documents/StudyCommRpts/07EmsRetainRecruitRpt.pdf>.

⁶ “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” Bureau of Labor Statistics, January 19, 2018, <https://www.bls.gov/cps/cpsaat11.htm>.

⁷ “Women’s Bureau (WB)—Quick Facts on Women in the Labor Force in 2010,” Bureau of Labor Statistics, 2010, <https://www.dol.gov/wb/factsheets/qf-laborforce-10.htm>; National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis*, 19, 25; Denise M. Hulett et al., “Enhancing Women’s Inclusion in Firefighting in the USA,” *International Journal of Diversity in Organisations, Communities & Nations* 8, no. 2 (May 2008): 191, <http://libproxy.nps.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sih&AN=33979752&site=ehost-live&scope=site>; Department of Defense, *2016 Demographics: Profile of the Military Community* (Washington, DC: Department of Defense, 2016), iii, <download.militaryonesource.mil/12038/MOS/Reports/2016-Demographics-Report.pdf>; Hylton J. G. Haynes and Gary P. Stein, *U.S. Fire Department Profile—2015*, NFPA Research (Quincy, MA: National Fire Protection Association, 2017), 7, <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf>.

⁸ “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” Bureau of Labor Statistics, 2015, <https://www.bls.gov/cps/tables.htm>.

⁹ “Athletes and Sports Competitors: Occupational Outlook Handbook,” Bureau of Labor Statistics, April 13, 2018, <https://www.bls.gov/ooh/entertainment-and-sports/athletes-and-sports-competitors.htm>.

firefighters, work outside and must be physically strong.¹⁰ Paramedic-firefighters' medical duties are likely of interest to women, given that 83 percent of U.S. nurses and 35 percent of U.S. physicians are female.¹¹ These findings suggest that one solution to the paramedic-firefighter shortage may be to target women for recruitment.¹² As preferential treatment of one class may be seen as discrimination against another class, this thesis distinguishes between targeted recruiting and preferential hiring.¹³ The former does not violate anti-discrimination laws, but the latter does unless approved by a court in narrow and temporary circumstances.¹⁴

In 2006, the largest fire-service labor organization made well-researched recommendations on how to integrate the approximately 4,500 career or mostly-career fire departments.¹⁵ These recommendations included using inclusive language and information about job requirements and compensation to target potential applicants and their families, requiring only necessary education, employing advertising and recruiters

¹⁰ Bureau of Labor Statistics, "Athletes and Sports Competitors: Occupational Outlook Handbook"; Todd J. LeDuc, "Are You a Tactical Athlete?," March 15, 2018, <https://www.fireengineering.com/articles/2018/03/tactical-athlete.html>; Stacy L. Gnacinski, Barbara B. Meyer, and David J. Cornell, "Tactical Athletes: An Integrated Approach to Understanding and Enhancing the Health and Performance of Firefighters-In-Training," *International Journal of Exercise Science* 8, no. 4 (2015): 341–57, digital commons.wku.edu/cgi/viewcontent.cgi?article=1721&context=ijes; John Hofman, "Tactical Facilitators in Firefighting," NSCA, 2018, https://www.nasca.com/education/articles/tactical_facilitators_in_firefighting.

¹¹ Henry J. Kaiser Family Foundation, "Total Number of Professionally Active Nurses, by Gender," *Henry J. Kaiser Family Foundation* (blog), October 17, 2018, <https://www.kff.org/other/state-indicator/total-number-of-professionally-active-nurses-by-gender/>; "Professionally Active Physicians by Gender," *The Henry J. Kaiser Family Foundation* (blog), October 17, 2018, <https://www.kff.org/other/state-indicator/physicians-by-gender/>.

¹² Hulett et al., "Enhancing Women's Inclusion in Firefighting in the USA," 191–92, 197.

¹³ Jennifer L. Thompson and Scott B. Morris, "What Factors Influence Judges' Rulings about the Legality of Affirmative Action Plans?" *Journal of Business & Psychology* 28, no. 4 (December 2013): 412, <https://doi.org/10.1007/s10869-013-9292-y>.

¹⁴ Thompson and Morris, "What Factors Influence Judges' Rulings about the Legality of Affirmative Action Plans?" 414–15.

¹⁵ Kathryn A. Fox, Chris W. Hornick, and Erin Hardin, *IAFF Diversity Initiative: Achieving and Retaining a Diverse Fire Service Workforce* (Washington, DC: International Association of Fire Fighters, 2006), 8–28, 35–61, www.iaff.org/HR/Media/IAFF_Diversity_Report.pdf; Haynes and Stein, *U.S. Fire Department Profile—2015*, v.

from non-traditional backgrounds, using a fair hiring process, to providing mentoring, and conveying in all messages—not just in recruiting—that the department values diversity.¹⁶

This thesis found that deep commitment to inclusive recruiting and lawful hiring likely increases staffing performance as long as these processes are efficient.¹⁷ Departments that arrive at these characteristics on their own appear to have less resentment toward female employees than departments that come to these practices after discrimination lawsuits.¹⁸ The underrepresentation of women among paramedic-firefighters even in the context of a paramedic-firefighter shortage, low unemployment, and concern over the gender wage gap, indicates that the fire service should go beyond the stated recommendations and support increased ambulance reimbursement and greater access to paramedic and firefighter education for women and students from other underrepresented classes. Fire service organizations should partner with others—as case departments do—to provide pre-service camps, cadet programs, explorer programs, reserve programs, internships, and EMS education so that women and other potential applicants have an uninterrupted set of opportunities to develop paramedic-firefighter knowledge, skills, and abilities. At the same time, employment decisions must remain based strictly on ability rather than on gender, race, or other class. Lastly, firefighters and

¹⁶ Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 8–12; Reginald E. Jones et al., *Best EEO Practices Task Force Report* (Washington, DC: Equal Opportunity Employment Commission, 1997), 262, https://www.eeoc.gov/eeoc/task_reports/best_practices.cfm; Bill Leonard, “Diverse Workforce Tends to Attract More Female and Minority Job Applicants,” *HR Magazine*, April 2001, 27, <http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=1&sid=52a4de85-28d9-4148-bd8b-c827f9200b05%40sessionmgr4006>; Ellen A. Fagenson, “The Mentor Advantage: Perceived Career/Job Experiences of Proteges Versus Non-Proteges,” *Journal of Organizational Behavior* 10, no. 4 (October 1989): 309–20, <https://doi.org/10.1002/job.4030100403>.

¹⁷ Michelle Schmitt and Katie Martin, *Hiring and Employment in Philadelphia City Government* (Philadelphia: Pew Charitable Trusts, 2018), 1–2, https://www.dol.gov/asp/evaluation/completed-studies/FirstResponders_Full_Report.pdf; Denise M. Hulett et al., *National Report Card on Women in Firefighting* (Washington, DC: International Association of Women in Fire and Emergency Services, 2008), 4–51, <https://www.i-women.org/wp-content/uploads/2014/07/35827WSP.pdf>; Abby Miller et al., *Promising Practices for Increasing Diversity among First Responders* (Bethesda, MD: Department of Labor, Chief Evaluation Office, 2016), 9–11, https://www.dol.gov/asp/evaluation/completed-studies/FirstResponders_Full_Report.pdf.

¹⁸ Aisha Krieger, *Beyond the Consent Decree* (Emmitsburg, MD: National Fire Academy, 2012), 91–93, <https://usfa.kohalibrary.com/app/work/175707>; Iulia Filip, “Racism Decried in Philly Fire Department,” Courthouse News Service, November 15, 2011, <https://www.courthousenews.com/racism-decried-in-philly-fire-department/>.

the communities that they serve must accept and mentor applicants hired on their merits, regardless of gender to sustain staffing gains.

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I. INTRODUCTION

This study discusses the shortage of applicants for career paramedic-firefighter positions. The research explores causes of the shortage, examines four case fire departments, and suggests how fire departments and communities may address these staffing challenges. The main focus is on understanding the employment pipeline from initial job interest through recruiting, hiring, retention, and advancement. Fire departments and potential employees each make decisions at various points in the process of career exploration, recruiting, and hiring. Analyzing these decisions in demographic, economic, social, and legal contexts points to solutions.

A. PROBLEM STATEMENT

Nationally, the supply of working paramedics is not keeping up with the demand for paramedic service. As a result of this shortage, career fire departments increasingly experience difficulties in hiring paramedic-firefighters, also sometimes locally known as firefighter-paramedics. This staffing challenge is a problem for public safety because the fire service is the largest employer of emergency medical services (EMS) workers.¹ The most common of these workers are basic emergency medical technicians (EMTs).² Advanced providers, termed paramedics, number about half as many.³ In 2011, the *Emergency Medical Services Workforce Agenda for the Future* identified workforce shortages as EMS employers' largest concern.⁴ In 2007, the State Senate Committee on EMS Recruitment, Retention, and Training in Georgia also reported that changes in

¹ Melissa A. Bentley, Abigail Shoben, and Roger Levine, "The Demographics and Education of Emergency Medical Services (EMS) Professionals: A National Longitudinal Investigation," *Prehospital and Disaster Medicine* 31, no. Supplement 1 (December 2016): s19, <https://doi.org/10.1017/S1049023X16001060>.

² National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis* (Columbus, OH: National Registry of Emergency Medical Technicians, 2015), 10.

³ National Registry of Emergency Medical Technicians, 10.

⁴ Susan A. Chapman, Vanessa Lindler, and Jennifer A. Kaiser, *The Emergency Medical Services Workforce Agenda for the Future* (Washington, DC: National Highway Traffic Safety Administration, 2011), 26, https://www.ems.gov/pdf/2011/EMS_Workforce_Agenda_052011.pdf.

population demographics have created a shortage of EMS employees, which points to a growing concern.⁵

Most career firefighters are EMTs or paramedics, who thus serve in the dual roles of EMS and fire protection, yet no national data is available on how many firefighters hold either EMS licensure. Good national data on EMS education or employment are also unavailable. For example, the Integrated Postsecondary Education Data System (IPEDS) comingles EMT and paramedic training programs, while the Bureau of Labor Statistic (BLS) aggregates EMS occupations.⁶ This lack of data makes it difficult to measure and analyze the talent pool available for fire department staffing, although no doubt remains of a shortage of paramedics as the departments continue to struggle to find more. Meanwhile, low wages in the EMS industry discourage many talented individuals from obtaining the paramedic licensure and clinical experience contributing to both paramedic and paramedic-firefighter staffing challenges.

Examining the data for firefighters, EMTs, and paramedics illustrates variations in employee characteristics.⁷ For example, data from the BLS show that the percentage of female firefighters increased from 1.8 percent in 1996 to 5.9 percent in 2015 but then decreased to 3.5 percent in 2017.⁸ Based on a triannual survey of only local fire departments, the National Fire Protection Association (NFPA) estimated that, in 2015, women accounted for 3.56 to 3.72 percent of career firefighters and 9 percent of volunteer

⁵ Senate Committee on EMS Recruitment, Retention, and Training in Georgia, *Final Report of the Senate Committee on EMS Recruitment, Retention, and Training in Georgia* (Atlanta, GA: Senate Research Office, 2007), 5–6, <http://www.senate.ga.gov/sro/Documents/StudyCommRpts/07EmsRetainRecruitRpt.pdf>.

⁶ Susan A. Chapman et al., *EMS Workforce for the 21st Century: A National Assessment* (Washington, DC: National Highway Traffic Safety Administration, 2008), 9–12, <https://www.ems.gov/pdf/810943.pdf>; “EMTs and Paramedics: How to Become an EMT or Paramedic,” Bureau of Labor Statistics, April 13, 2018, <https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm#tab-4>.

⁷ “Firefighter/Paramedic,” Society for Human Resource Management, August 22, 2017, https://www.shrm.org/resourcesandtools/tools-and-samples/job-descriptions/pages/cms_001277.aspx.

⁸ “Labor Force Statistics from the Current Population Survey,” Bureau of Labor Statistics, January 19, 2018, <https://www.bls.gov/cps/tables.htm>; National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis*, 19, 25.

firefighters.⁹ Since most EMS providers have registered with a national certifying body, somewhat better data shows that 34 percent of EMTs and 21 percent of paramedics are female.¹⁰ While the data variation from year to year and the differences between BLS and other estimates of the number of female firefighters may be a result of reporting errors, overall, the data shows nearly static female employment in firefighting over the last 20 years.¹¹

Research demonstrates that women can successfully fill more of these jobs, which suggests that one solution to the shortage problem lies in increasing female recruitment.¹² Women make up more than 50 percent of the population, and therefore, are an important pool of talent to recruit. In 2006, the largest fire service labor organization made well-researched recommendations about how to integrate the approximately 4,500 career or mostly-career fire departments.¹³ In 2008, *A National Report Card on Women in Firefighting* used contemporary research to focus recommendations on how to remove barriers to greater participation by females in the fire service.¹⁴ In 2016, the Department

⁹ Hylton J. G. Haynes and Gary P. Stein, *U.S. Fire Department Profile—2015*, NFPA Research (Quincy, MA: National Fire Protection Association, 2017), 2–7, <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf>.

¹⁰ National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis*.

¹¹ Anna L. Schermerhorn-Collins, “The Challenges to Gender Integration in the Career Fire Services: A Comparative Case Study of Men in Nursing” (master’s thesis, Naval Postgraduate School, 2017), 74, <http://calhoun.nps.edu/handle/10945/53044>.

¹² Denise M. Hulett et al., “Enhancing Women’s Inclusion in Firefighting in the USA,” *International Journal of Diversity in Organisations, Communities & Nations* 8, no. 2 (May 2008): 191–92. <http://libproxy.nps.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sih&AN=33979752&site=ehost-live&scope=site>.

¹³ Kathryn A. Fox, Chris W. Hornick, and Erin Hardin, *IAFF Diversity Initiative: Achieving and Retaining a Diverse Fire Service Workforce* (Washington, DC: International Association of Fire Fighters, 2006), 8–28, 35–61, www.iaff.org/HR/Media/IAFF_Diversity_Report.pdf; Haynes and Stein, *U.S. Fire Department Profile—2015*, v.

¹⁴ Denise M. Hulett et al., *National Report Card on Women in Firefighting* (Washington, DC: International Association of Women in Fire and Emergency Services, 2008), 1–12, <https://www.i-women.org/wp-content/uploads/2014/07/35827WSP.pdf>.

of Labor (DOL) weighed in by recommending promising practices to increase first responder diversity.¹⁵

B. RESEARCH QUESTIONS

Can career fire departments mitigate the shortage of competitive paramedic-firefighter applicants by recruiting more women, and if so, how?

C. LITERATURE REVIEW

A 1999 U.S. Fire Administration report noted that fire service leaders who do not manage workforce changes may instead find the workforce managing them.¹⁶ For example, the U.S. labor pool is aging because of declining fertility and population growth, but few people older than 55 want to be paramedic-firefighters.¹⁷ After peaking about 1990, overall labor force participation has declined.¹⁸ The BLS expects women’s share of the labor force to grow from 46.8 percent in 2014 to 47.2 percent in 2024.¹⁹ Lingering gender-specific assumptions and socialization help perpetuate occupational segregation.²⁰ The same is true of some educational programs that prepare students for segregated occupations. For example, in their 2017 article, Rouleau et al. reported that even women enrolled in forestry and natural resources degree programs—in which nationally most students are white males—expressed hesitancy about their selection of such college majors

¹⁵ Abby Miller et al., *Promising Practices for Increasing Diversity among First Responders* (Bethesda, MD: Department of Labor, Chief Evaluation Office, 2016), 2–12, 22–49, 53–63, https://www.dol.gov/asp/evaluation/completed-studies/FirstResponders_Full_Report.pdf.

¹⁶ Brenda Berkman, Terese M. Floren, and Linda F. Willing, *Many Faces, One Purpose: A Manager’s Handbook on Women in Firefighting* (Emmitsburg, MD: U.S. Fire Administration, 1999), i.

¹⁷ Mitra Toossi, “Labor Force Projections to 2024: The Labor Force Is Growing, but Slowly: Monthly Labor Review,” Bureau of Labor Statistics, December 2015, <https://www.bls.gov/opub/mlr/2015/article/labor-force-projections-to-2024.htm>.

¹⁸ David Burk and Joshua Montes, *Factors Affecting the Labor Force Participation of People Ages 25 to 54* (Washington, DC: Congressional Budget Office, 2018), 6, <https://www.cbo.gov/system/files?file=115th-congress-2017-2018/reports/53452-lfpr.pdf>.

¹⁹ Toossi, “Labor Force Projections to 2024.”

²⁰ Kim A. Weeden, Mary Newhart, and Dafna Gelbgiser, “Occupational Segregation,” *Pathways: A Magazine on Poverty, Inequality, and Social Policy*, 2018, 32, <https://inequality.stanford.edu/>.

because of their gender.²¹ These workforce changes and other factors combine to threaten emergency response system staffing. The report foreshadowed later recommendations, arguing that, because of the role of identity in employment, equal opportunity follows as much from valuing diversity as from policies.²² The report also reviewed test validity, policy issues, and the Equal Employment Opportunity Commission’s four-fifths rule for determining adverse impact.²³ Not an actual rule, this guideline states the possibility of adverse impact on any applicant pool group selected for employment at less than 80 percent of the applicant pool group with the greatest selection rate, where the number of people hired is not very small.²⁴

Other literature recognizes that employment practices intended to foster diversity may promote better outcomes through cultural competencies or market forces associated with diversity.²⁵ Evidence for the impact of workplace diversity is complex, with potential negative effects at the individual level, mixed effects on work groups, and inconclusive results at the organizational level.²⁶ Some argue that increased demographic diversity initially worsens inter-group relations.²⁷ Others suggest that inclusion—a culture in which

²¹ Mark Rouleau et al., “Enrollment Decision-Making in U.S. Forestry and Related Natural Resource Degree Programs,” *Natural Sciences Education* 46, no. 1 (2017): 1–7, <https://doi.org/10.4195/nse2017.05.0007>. Survey respondents were selected at a national Society of American Foresters convention, and included an oversampling of 70 females and an undersampling of 49 males. On a 5-point scale, females ranked their gender as a cause of hesitancy to enroll in the program at a mean of 0.98, as compared to the male ranking of 0.24 mean hesitancy. Although EMS and fire service careers require less education, it is a proxy for gender-based hesitancy among such students.

²² Berkman, Floren, and Willing, *Many Faces, One Purpose*, 92–93.

²³ Berkman, Floren, and Willing, i, iii.

²⁴ This guideline applies to applicant groups that are not less than 2 percent of the applicable workforce, and is not by itself a finding of unlawful discrimination. See “Adoption of Questions and Answers to Clarify and Provide a Common Interpretation of the Uniform Guidelines on Employee Selection Procedures,” Equal Employment Opportunity Commission, April 24, 2008, https://www.eeoc.gov/policy/docs/qanda_clarify_procedures.html.

²⁵ Military Leadership Diversity Commission, *Business-Case Arguments for Diversity and Diversity Programs and Their Impact in the Workplace* (Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010), 1–2, <https://www.hsdl.org/?abstract&did=716065>.

²⁶ Military Leadership Diversity Commission, 3–4.

²⁷ Hulett et al., *National Report Card on Women in Firefighting*, 11.

people feel accepted—must precede diversity.²⁸ Some evidence states that mixed-gender business teams outperform all-male teams.²⁹ Various researchers posit that effectively acculturating and managing workplace diversity, including building communication, cooperation, and constructive conflict skills, are required to reduce negative effects and optimize diversity within organizations.³⁰

Numerous authors have applied novel approaches to analyze gender relations at work. Ely and Meyerson found that workplace social practices and organizational procedures have been created by men, and therefore, generally buttress men’s lives.³¹ Their conclusion suggests that failure to consider the needs of the almost 47 percent of the workforce who are women may hinder their recruitment.³² It follows that this failure may limit an employer’s ability to meet its mission. Shapiro, Ingols, and Blake-Beard posit that women are leading a shift from the traditionally male “work is primary” model to one that

²⁸ Ella Washington and Camille Patrick, “3 Requirements for a Diverse and Inclusive Culture,” Gallup, September 17, 2018, <https://www.gallup.com/workplace/242138/requirements-diverse-inclusive-culture.aspx>; Susan Tamme, “I Stands for Inclusion,” On Scene, November 2, 2018, https://www.iafc.org/on-scene/on-scene-article/i-stands-for-inclusion?utm_source=informz&utm_medium=email&utm_campaign=onscene. Teams made up of people who feel accepted are said to outperform teams in which some feel excluded or discriminated against. Thinking about how even teams of people who share the same race and gender can be diverse—for example with respect to economic background, education, and experiences—gives insight into the importance of not assuming individual work strengths based on appearance.

²⁹ Sander Hoogendoorn, Hessel Oosterbeek, and Mirjam van Praag, “The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment,” *Management Science* 59, no. 7 (March 2013): 1526, <https://doi.org/10.1287/mnsc.1120.1674>.

³⁰ Military Leadership Diversity Commission, *Business-Case Arguments for Diversity and Diversity Programs and Their Impact in the Workplace*, 4–5; Jennifer A. Chatman and Sandra E. Spataro, “Using Self-Categorization Theory to Understand Relational Demography-Based Variations in People’s Responsiveness to Organizational Culture,” *The Academy of Management Journal* 48, no. 2 (April 2005): 11, <http://www.jstor.org.libproxy.nps.edu/stable/20159658>; Thomas Kochan et al., “The Effects of Diversity on Business Performance: Report of the Diversity Research Network,” *Human Resource Management* 42, no. 1 (March 2003): 16–17, <https://doi.org/10.1002/hrm.10061>.

³¹ Robin J. Ely and Debra E. Meyerson, *Theories of Gender in Organizations: A New Approach to Organizational Analysis and Change* (Boston, MA Center for Gender in Organizations, 2000), 10, 32, <http://www.simmons.edu/~media/Simmons/About/CGO/Documents/Working-Papers/CGO-Working-Paper-08-DNC.ashx?la=en>.

³² “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” Bureau of Labor Statistics, January 19, 2018, <https://www.bls.gov/cps/cpsaat11.htm>.

values results over long hours.³³ They argue that women are pioneering the use of technology and flexible work arrangements to work full time.³⁴ Schermerhorn-Collins extended the discussion by examining the role of entitlement, belonging, pride, indoctrination, and tradition in firefighting and nursing.³⁵ She found that “the sense of belonging in the gendered professions of firefighting and nursing is facilitated through the establishment of mutual trust, the use of gender-neutral language, and the provision of equal workplace accommodation.”³⁶ Since potential applicants value a sense of belonging in the workplace and will attempt to ascertain the degree to which these prerequisites for belonging exist at each potential employer, the implications of Schermerhorn-Collins’ research are that both fire departments and firefighters must foster such conditions to attract female applicants.

Literature from outside the fire service illuminates opportunities for fire service inclusivity. The fact that female police officers and active-duty enlisted military members comprise more than three times the percentage of female firefighters suggests that something other than job requirements prevents women from becoming firefighters.³⁷ Policing is just as challenging as firefighting in terms of training, physicality, and dangers. In comparing police applicants and high school juniors, Lord and Friday found only minor gender differences in applicants’ perceptions of barriers to selecting a police career, interest in police work, or belief in their ability to do the job.³⁸ Their research found that convincing

³³ Mary Shapiro, Cynthia Ingols, and Stacy Blake-Beard, “Optioning in versus ‘Opting Out’: Women Using Flexible Work Arrangements for Career Success” (working paper, Center for Gender in Organizations, 2007), 1–3, <http://www.simmons.edu/~media/Simmons/About/CGO/Documents/INsights/Insights-25.ashx?la=en>.

³⁴ Shapiro, Ingols, and Blake-Beard, 1–3.

³⁵ Schermerhorn-Collins, “The Challenges to Gender Integration in the Career Fire Services,” 11–74.

³⁶ Schermerhorn-Collins, xii.

³⁷ Bureau of Labor Statistics, “Labor Force Statistics from the Current Population Survey”; Kim Parker, Anthony Cilluffo, and Renee Stepler, “6 Facts about the U.S. Military and Its Changing Demographics,” *Pew Research Center* (blog), April 13, 2017, <http://www.pewresearch.org/fact-tank/2017/04/13/6-facts-about-the-u-s-military-and-its-changing-demographics/>.

³⁸ Vivian B. Lord and Paul C. Friday, “Choosing a Career in Police Work: A Comparative Study between Applicants for Employment with a Large Police Department and Public High School Students,” *Police Practice and Research: An International Journal* 4, no. 1 (2003): 63–78, <https://nps.illiad.oclc.org.libproxy.nps.edu/illiad/illiad.dll?Action=10&Form=64>.

potential police recruits' families of the suitability of policing for females is important.³⁹ A 2017 Brookings Institute paper recommends increasing vacation time and workplace flexibility to increase women's labor force participation.⁴⁰ Other authors note that flexible work practices are generally attractive to employees.⁴¹ The implication of these types of literature is that employers may attract more women to fire service careers.

In 2008, Hulett et al. published research based in part on interviewing 175 female firefighters.⁴² These firefighters rated the career highly—on average 3.8 on a scale with 1 as the worst and 5 as the best—for other women to consider, despite half also reporting that they had experienced shunning or other harassment because of their gender.⁴³ In terms of the workplace sexual harassment these firefighters reported, mealtime-related incidents most negatively impacted how they rated their jobs, perhaps because sharing meals is a frequent and important team activity among workers assigned to 24-hour shifts.⁴⁴ The authors reported that fire department leaders question women's interest in firefighting and ability to do the work.⁴⁵ In their study, however, Hulett et al. determined that women made up 17 percent of persons working in 184 occupations that require strength, dexterity, and danger similar to firefighting.⁴⁶ These researchers also found that females constitute a substantial percentage of firefighters in dozens of large U.S. fire departments and represented more than 17 percent of firefighters in four such departments.⁴⁷ Hulett et al.

³⁹ Lord and Friday, 76–77.

⁴⁰ Alan B. Krueger, "Where Have All the Workers Gone?: An Inquiry into the Decline of the U.S. Labor Force Participation Rate," *Brookings Papers on Economic Activity*, no. 2 (Fall 2017): 55, <https://doi.org/10.1353/eca.2017.0012>.

⁴¹ Karin Proost and Dieter Verhaest, "Should We Tell the Recruiter that We Value a Good Work–Life Balance?," *Journal of Personnel Psychology* 17, no. 3 (July 2018): 120. <https://doi.org/10.1027/1866-5888/a000214>.

⁴² Hulett et al., *National Report Card on Women in Firefighting*, 1.

⁴³ Hulett et al., 3, 11.

⁴⁴ Hulett et al., 11.

⁴⁵ Hulett et al., 1.

⁴⁶ Hulett et al., 1.

⁴⁷ In 2008, fire departments in which women constituted more than 17 percent of firefighters included 23.7 percent in Kalamazoo, Michigan, and 24 percent in Tuscaloosa, Alabama. Hulett et al., 2.

argue that women are generally underrepresented in firefighting because of an “exclusionary workplace culture” rather than because they are incapable of the work.⁴⁸

1. Best Practices for Integrating the Employment Pipeline

The literature on fire service and law enforcement recruitment, hiring, and retention reflects more agreement than controversy. This coherence suggests value in exploring these methods, to what extent career fire departments are aware of and implement them, and what roadblocks may stand in their way. Taylor et al. explore perceived law enforcement recruitment challenges and recommended dedicating personnel time and funds to recruiting, targeting women at gyms and women’s events for recruiting, and speeding up the selection process.⁴⁹

The 2006 International Association of Fire Fighters (IAFF) diversity initiative offers a contemporary scientific review of diversity recruitment, hiring, and retention specific to the entry-level career fire service. Through a detailed literature review, the report observes that the focus of most diversity research has been in the private sector, especially on recruiting top management.⁵⁰ This report derives its recommendations from interviewing more than 80 fire departments potentially using best practices, using surveys and analysis to identify 40 departments for further study, and then comparing more than 25 recruitment methods and attributes like application requirements and diversity values.⁵¹ The IAFF study also provides comparative national percentage numbers for women and ethnic minorities in the population to their percentage of firefighters to calculate how well each demographic was represented in the occupation.⁵² The authors show that fire service representation of women is substantially lower than for Asians, Blacks, and Hispanics.⁵³

⁴⁸ Hulett et al., 6, 11.

⁴⁹ Bruce Taylor et al., *Cop Crunch: Identifying Strategies for Dealing with the Recruiting and Hiring Crisis in Law Enforcement* (Washington, DC: Police Executive Research Forum, 2005), 4, 7, <https://www.ncjrs.gov/pdffiles1/nij/grants/213800.pdf>.

⁵⁰ Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 7.

⁵¹ Fox, Hornick, and Hardin, 1–2.

⁵² Fox, Hornick, and Hardin, 29.

⁵³ Fox, Hornick, and Hardin, 29.

While the disparate impact on ethnic groups remains a problem, the literature demonstrates it is a greater problem for women. This report advises fire departments to:

- “Specifically target the group you want to reach and recruit.”⁵⁴
- “When targeting particular groups and when doing recruiting in general, use language to promote a message of inclusiveness.”⁵⁵
- “Use some ‘formal’ methods of recruiting such as advertising.”⁵⁶
- “Give specific and detailed information about the job, entry-level skills needed, work requirements, salary, and benefits.”⁵⁷
- “In developing recruiting information and in advertising, remember to target the candidate’s family as well.”⁵⁸
- “Use minority and women recruiters.”⁵⁹
- “Communicate the value of Diversity in all your messages.”⁶⁰
- “Use a fair and valid selection process that measures what is really required for the job.”⁶¹

⁵⁴ Fox, Hornick, and Hardin, 8–9; Reginald E. Jones et al., *Best EEO Practices Task Force Report* (Washington, DC: Equal Opportunity Employment Commission, 1997), 262, https://www.eeoc.gov/eeoc/task_reports/best_practices.cfm.

⁵⁵ Fox, Hornick, and Hardin, 9.

⁵⁶ Fox, Hornick, and Hardin, 9; Jean Powell Kirnan, John A. Farley, and Kurt F. Geisinger, “The Relationship between Recruiting Source, Applicant Quality, and Hire Performance: An Analysis by Sex, Ethnicity, and Age,” *Personnel Psychology* 42, no. 2 (June 1989): 305–7, <https://doi.org/10.1111/j.1744-6570.1989.tb00659.x>.

⁵⁷ Fox, Hornick, and Hardin, 10.

⁵⁸ Fox, Hornick, and Hardin, 10.

⁵⁹ Fox, Hornick, and Hardin, 10–11; Bill Leonard, “Diverse Workforce Tends to Attract More Female and Minority Job Applicants,” *HR Magazine*, 27, April 2001, <http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=1&sid=52a4de85-28d9-4148-bd8b-c827f9200b05%40sessionmgr4006>.

⁶⁰ Fox, Hornick, and Hardin, 11.

⁶¹ Fox, Hornick, and Hardin, 11.

- “Only require the education needed to perform the job.”⁶²
- “For retention and job satisfaction, provide a mentoring program for newly hired firefighters.”⁶³

This advice emphasizes the primacy of the audience, the law, and of recruiting goals.

The IAFF recommendations are duplicated, to some extent, in much of the literature, which indicates that effective recruiting is well understood. For example, Hulett et al. recommend investing in recruiting—even when a department already receives many applications—because women are underrepresented among applicants.⁶⁴ Other pre-hire recommendations in *A National Report Card on Women in Firefighting* include recruiting at gyms and sporting events, offering cadet programs and physical conditioning to prospective employees, and recruiting through personal networks including those of current department members and retirees.⁶⁵ The authors further suggest that fire departments proactively provide equal fire station facilities, assignments, and promotional opportunities for each gender, and be alert to the need to include all members in training and mealtime interactions.⁶⁶

In their 2016 DOL report, Miller et al. assess the employment pipeline of career exploration, recruitment, hiring, training, retention, and promotion, then recommend

⁶² Fox, Hornick, and Hardin, 11.

⁶³ Fox, Hornick, and Hardin, 12; Ellen A. Fagenson, “The Mentor Advantage: Perceived Career/Job Experiences of Proteges versus Non-Proteges,” *Journal of Organizational Behavior* 10, no. 4 (October 1989): 309–20, <https://doi.org/10.1002/job.4030100403>.

⁶⁴ Hulett et al., *National Report Card on Women in Firefighting*, 4.

⁶⁵ Hulett et al., 4–6.

⁶⁶ Hulett et al., 8–12. Hulett et al. and others report that shunning, isolation, and denial of training have been common forms of discrimination. Many fire stations have been used for over 50 years without separate bathrooms for each gender; some are in use after more than 100 years. See “About Us,” Taunton Fire Department, last accessed October 28, 2018, <https://tauntonfd.com/about-us/>. For a nuanced discussion of facility challenges, see Linda Willing, “Firehouse Bedrooms and Bathrooms: The Ongoing Debate,” *FireRescue1*, July 5, 2018, <https://www.firerescue1.com/fire-chief/articles/386232018-Firehouse-bedrooms-and-bathrooms-The-ongoing-debate/>. Employees disagree on firehouse improvements, which may include portable toilets. See Katy Sword, “Vancouver Fire Dept. Reviews Efforts to Address Gender Bias,” *Columbian*, May 27, 2018, <https://www.columbian.com/news/2018/may/27/vancouver-fire-dept-reviews-efforts-to-address-gender-bias/>.

creating a culture of diversity that is seen as central to the agency’s mission.⁶⁷ The DOL recommends strong community outreach, youth programs, and truly prioritizing recruiting to the point of sending recruiters to parts of the country with high unemployment rates and offering convenient testing to out-of-state applicants.⁶⁸ Additional DOL recommendations include using recruiters that underrepresented populations and millennials identify with, and offering financial incentives, such as tuition reimbursement, housing assistance, and foreign language pay.⁶⁹

The authors of two applied research papers from the National Fire Academy used different methods to arrive at similar recommendations for recruiting women. One, titled “Gender Diversity Recruitment and Retention for the Scottsdale Fire Department,” used a thorough literature review and surveys of more than 900 female firefighters to understand when female firefighter applicants decided to pursue the career, what traits they had in common, and what fire service characteristics attracted and discouraged them.⁷⁰ This author recommends targeting female firefighter candidates from other careers, those who are drawn to the physical challenges of the job, and girls who may aspire to the career when they learn that it is open to women.⁷¹ He also proffered thoughtful strategies for retaining female firefighters, including addressing work-life balance, facilities, career-planning, and organizational culture.⁷² In the other paper, the author used a three-round Delphi research method to elicit nine experienced female firefighters’ beliefs regarding why women do or do not choose firefighting careers, what barriers they face in becoming firefighters and how to recruit women.⁷³ Delphi research and the author’s substantial research helped him

⁶⁷ Miller et al., *Promising Practices for Increasing Diversity among First Responders*, 13, 32–33.

⁶⁸ Miller et al., 35–39.

⁶⁹ Miller et al., 40.

⁷⁰ Garret M. Olson, “Gender Diversity Recruitment and Retention for the Scottsdale Fire Department” (applied research paper, National Fire Academy, 2006), 15–35, <https://www.hsdl.org/?abstract&did=682347>.

⁷¹ Olson, 63–65.

⁷² Olson, 65–68.

⁷³ Kevin Kupietz, “Tale of Disparity: A Delphi Study of Gender Diversity in the U. S. Fire Service” (applied research paper, National Fire Academy, 2010), 28–33, <https://www.hsdl.org/?abstract&did=695207>.

enumerate and amplify recommendations similar to those of the 2008 *National Report Card on Women in Firefighting*, including to focus on fire service culture, control harassment, provide gear that fits, promote the career to young children, recruit inclusively in high schools, and offer pre-test training.⁷⁴ These two reports show that some fire officers understand parts of the recruiting challenge, but it is unclear whether most fire departments share this awareness.

2. Recruiting Constraints and Concerns

Several 2010 Military Leadership Diversity Commission reports concisely describe the legal requirements that public employer diversity programs must satisfy.⁷⁵ Such programs that involve hiring decisions must show the courts they are narrowly tailored to meet compelling government interests (CGIs).⁷⁶ The commission notes that the law is unclear and offers guidelines for designing lawful policies, including that the employer legitimately attempts to satisfy its CGIs without having different standards based on categories, such as gender.⁷⁷ Other sources suggest that gender is a quasi-suspect

⁷⁴ Hulett et al., *National Report Card on Women in Firefighting*, 4–12; Kupietz, “Tale of Disparity,” 48–50. Each firefighter’s self-contained breathing apparatus (SCBA) includes an air bottle on a backpack frame. SCBA bottles range in height and diameter. Tall bottles may interact with the back of a helmet when crawling during firefighting. Hulett et al. note that a common complaint from women is that SCBA bottles push their helmets forward, blocking vision.

⁷⁵ Military Leadership Diversity Commission, *Introduction to Laws Governing Diversity Policies [Version 2]* (Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010), <https://www.hsd.org/?abstract&did=716173>; Military Leadership Diversity Commission, *Compelling Government Interests and Diversity Policy [Version 2]* (Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010), <https://www.hsd.org/?abstract&did=716174>; Military Leadership Diversity Commission, *Narrow Tailoring and Diversity Policy [Version 2]* (Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010), <https://www.hsd.org/?abstract&did=716177>.

⁷⁶ Military Leadership Diversity Commission, *Compelling Government Interests and Diversity Policy [Version 2]*; Military Leadership Diversity Commission, *Narrow Tailoring and Diversity Policy [Version 2]*.

⁷⁷ Military Leadership Diversity Commission, *Introduction to Laws Governing Diversity Policies [Version 2]*; Military Leadership Diversity Commission, *Narrow Tailoring and Diversity Policy [Version 2]*.

classification that the courts subject to the test of whether the practice is “substantially related to achieving an important government objective.”⁷⁸

In response to public criticism that its hiring practices have a disparate impact on women and arbitrarily screen candidates, the city of Los Angeles, California commissioned the RAND Corporation to suggest improvements to its fire department’s hiring process.⁷⁹ The city asked RAND to provide a study on equal opportunity for qualified applicants, achieving demographic diversity, discerning applicants most likely to succeed as firefighters, and minimizing costs to all parties.⁸⁰ The study’s authors put forward numerous recommendations specifically for Los Angeles that apply generally to other agencies. Some strengths of this report are its recommendations to leverage the internet as part of an outreach strategy, to give clear selection criteria, and to determine how potential applicants discovered the job opportunity.⁸¹

Elite fire service leaders at the 2016 decennial Wingspread conference noted that the fire service needs to improve its human resources knowledge, skills, and abilities (KSAs).⁸² At Wingspread conferences as far back as 1966, these and past leaders have called for increased professional development and education in the occupation.⁸³ Other literature describes the many human resources-specific KSAs and some of the professional certifications that help build these KSAs in human resources managers.⁸⁴ That fire service

⁷⁸ Doug Linder, “Levels of Scrutiny under the Equal Protection Clause,” 2017, <http://law2.umkc.edu/faculty/projects/ftrials/conlaw/epscrutiny.htm>; Jody Feder, *Sex Discrimination and the United States Supreme Court: Developments in the Law*, CRS Report No. RL30253 (Washington, DC: Congressional Research Service, 2015), <https://fas.org/sgp/crs/misc/RL30253.pdf>.

⁷⁹ Chaitra Hardison et al., *Recommendations for Improving the Recruiting and Hiring of Los Angeles Firefighters* (Santa Monica, CA: RAND, 2015), iii, https://www.rand.org/pubs/research_reports/RR687.html.

⁸⁰ Hardison et al., iii.

⁸¹ Hardison et al., 54–55.

⁸² Fire-Rescue Wingspread Conference, *Wingspread VI: Statements of National Significance to the United States Fire and Emergency Services* (Racine, WI: Fire-Rescue Wingspread Conference, 2016), 12–13, <http://wingspreadvi.org/home.html>.

⁸³ Fire-Rescue Wingspread Conference, 28–31, 33.

⁸⁴ Robert N. Lussier and John R. Hendon, *Fundamentals of Human Resource Management* (Los Angeles: SAGE Publications, Inc., 2017), 22–23.

leadership feels that their occupation needs to become more professional may help explain why the fire service struggles to recruit paramedic-firefighters.

3. Discrimination and Consent Decrees

The law gives employers, employees, and the courts standards by which to measure employment actions, and remedies when these standards are violated. The Fifth Amendment prohibits federal discrimination and the Fourteenth Amendment bars discrimination by state entities.⁸⁵ The Equal Employment Opportunity Act of 1972, in part, amended Title VII of the Civil Rights Act of 1964 to extend to government the prohibition against employment discrimination.⁸⁶ Lawsuits alleging bias in hiring or promotion may result in consent decrees.⁸⁷ Such decrees are voluntary agreements between plaintiffs who feel discriminated against on the basis of membership in one or more protected classes—such as gender or race—and an employer is uncertain that it will prevail in court.⁸⁸ Consent decrees and adverse impact on females and minorities in employment are important discussions on their own, but are examined in this thesis in the context of the paramedic-firefighter shortage.

Consent decrees are one option to reduce discrimination and open up the employment pipeline to non-traditional applicants. Courts may approve only limited duration consent decrees that are narrowly tailored to a compelling government interest not otherwise achievable.⁸⁹ Consent decrees often impose hiring or promotional obligations to

⁸⁵ Feder, *Sex Discrimination and the United States Supreme Court*, 1. Feder, like the Military Leadership Diversity Commission, clearly explains relevant legal concepts.

⁸⁶ “The Law,” U.S. Equal Employment Opportunity Commission, accessed July 14, 2018, <https://www.eeoc.gov/eeoc/history/35th/thelaw/index.html>.

⁸⁷ *Patel, United States v. City and County of San Francisco*, 696 F. Supp. 1287 (N.D. Cal. 1988), Justia; *Timothy Rice, Commonwealth of Pennsylvania et al., Michael Kirby et al. vs. Joseph Rizzo, et al.*, No. 2:74-cv-00258-TR (United States District Court for the Eastern District of Pennsylvania October 27, 2011).

⁸⁸ Jennifer L. Thompson and Scott B. Morris, “What Factors Influence Judges’ Rulings about the Legality of Affirmative Action Plans?” *Journal of Business & Psychology* 28, no. 4 (December 2013): 414, <https://doi.org/10.1007/s10869-013-9292-y>.

⁸⁹ Henry Findley, Robert Wheatley, and Earl Ingram, “Affirmative Action: The Law,” *Journal of Individual Employment Rights* 11, no. 1 (January 1, 2003): 5–10, <https://doi.org/10.2190/KE8X-J7E8-RWD5-XMVQ>.

remedy alleged violations of Title VII of the 1964 Civil Rights Act, as amended.⁹⁰ Except where endorsed by a court in narrow and temporary circumstances, preferential treatment in employment violates Title VII and the Equal Protection clause of the Fourteenth Amendment.⁹¹

D. RESEARCH METHODOLOGY

To analyze the impact of recruiting that includes women on the paramedic-firefighter shortage, this thesis uses a case study design to compare four fire departments that each employs an above-average percentage of females. The four case departments are convenience samples that all offer paramedic service. For geographic diversity, one fire department from each of the four Census Bureau regions is studied. Because large fire departments offer the majority of firefighter positions, this research uses large departments. Case departments were selected for their solutions to the paramedic-firefighter shortage. The data are departmental recruitment motivations, methods, and results as inferred from department websites, job announcements, reports, budgets, and consent decrees. Cases are paired by their experience with consent decrees.

To deduce which staffing is possible without litigation, this study compares two fire departments that have never been party to a consent decree to two fire departments that have each used the experience of discrimination lawsuits and a consent decree to increase the gender diversity of their uniformed ranks more than the courts required. Regardless of whether it hires paramedic-firefighters, firefighters, or both, the average department

⁹⁰ *Timothy R. Rice, Commonwealth of Pennsylvania, et al., Michael Kirby, et al. vs. Joseph Rizzo et al.; Davis v. City and County of San Francisco*, David R. Thompson Circuit Judge, 890 F2d 1438 F2d OpenJurist.org 1438 (United States Court of Appeals, Ninth Circuit 1989).

⁹¹ Thompson and Morris, “What Factors Influence Judges’ Rulings about the Legality of Affirmative Action Plans?” 414–15.

employs almost no female firefighters. Such underrepresentation is disproportionate to the almost 47 percent of the labor force that is female—and has been a source of litigation.⁹²

The public often perceives uniformed fire personnel as firefighters regardless of their classification. Fire departments often require paramedic-firefighter candidates to have a paramedic license, so they are in short supply relative to firefighter candidates, who face fewer requirements while still meeting high standards. Thus, examining fire departments that employ an above-average percentage of females illustrates how recruiting females mitigates the paramedic-firefighter shortage. This mitigation is present even if the department does not have a paramedic-firefighter classification, as in Chapter IV's discussion of Philadelphia.

Staffing requires understanding the employee life cycle as phases that attract, develop, and retain appropriate human resources.⁹³ The research examines staffing practices including outreach, candidate preparation, testing, selection, retention, and advancement. This thesis uses the terms recruiting and staffing generally for the aforementioned human resources activities but differentiates such activities when necessary. Recruiting is interpreted broadly to include school visits, community risk reduction, and candidate development activities like camps. Retention activities include mentoring and advancement opportunities and working conditions, for example providing fire station bathrooms, dorms, and locker rooms for each gender.

All fire department ranks from entry level to chiefs are firefighters in the sense that they are public employees in a common occupation for which data is more readily available than for each specific classification of firefighter. Ranks and deployment models—for example, how many paramedic-firefighters respond in each vehicle and with what other

⁹² Bureau of Labor Statistics, “Women’s Bureau (WB)—Quick Facts on Women in the Labor Force in 2010”; *Patel, United States v. City and County of San Francisco*. It follows that men account for just over 53 percent of the general labor force. Nationally, women’s participation in the labor force peaked at 60.0 percent in 1999. In 2016, 56.8 percent of women and 69.2 percent of men worked for pay. See “Women in the Labor Force: A Databook: BLS Reports,” Bureau of Labor Statistics, November 2017, <https://www.bls.gov/opub/reports/womens-databook/2017/home.htm>.

⁹³ Keri L. Heitner, Amy E. Kahn, and Kenneth C. Sherman, “Building Consensus on Defining Success of Diversity Work in Organizations,” *Consulting Psychology Journal: Practice and Research* 65, no. 1 (March 2013): 67, <http://dx.doi.org/10.1037/a0032593>.

ranks—vary across fire departments. While some members of the public distinguish firefighter ranks, many children and young adults—the next generation of firefighters—see firefighters as all of one kind. There may be wisdom in this view.

While the title of this thesis suggests the question of whether recruiting more women can help mitigate the paramedic-firefighter shortage, several related points are worth bearing in mind. First, this thesis distinguishes between diversity initiatives—advertising, recruiting, training, and building inclusive cultures—that do not involve employment decisions—and preferential treatment in hiring and promotions.⁹⁴ The former do not violate anti-discrimination laws, but the latter do unless approved by a court.⁹⁵ Preferential treatment of one class may be seen as discrimination against another class. Evolving case law, including the 2014 U.S. Supreme Court ruling in *Schuette v. BAMN*, has upheld a state constitutional amendment barring, in part, racial preferences in public university admissions.⁹⁶ The point is worth restating; a crucial difference exists between

⁹⁴ Thompson and Morris, “What Factors Influence Judges’ Rulings about the Legality of Affirmative Action Plans?” 412.

⁹⁵ Thompson and Morris, 412–15.

⁹⁶ “*Schuette v. Coalition to Defend Affirmative Action*,” Oyez, accessed September 15, 2018, <https://www.oyez.org/cases/2013/12-682>; *Justice Kennedy, Schuette, Attorney General of Michigan v. Coalition to Defend Affirmative Action, Integration and Immigration Rights and Fight for Equality by Any Means Necessary (BAMN) et al.*, No. 12-682 (2013); “Article I § 26,” Michigan Legislature, accessed September 15, 2018, [http://www.legislature.mi.gov/\(S\(nrznorcvid5xvssykgedqw3\)\)/mileg.aspx?page=GetObject&objectname=mcl-Article-I-26](http://www.legislature.mi.gov/(S(nrznorcvid5xvssykgedqw3))/mileg.aspx?page=GetObject&objectname=mcl-Article-I-26). The term affirmative action has become politically charged with various meanings since President Kennedy’s 1961 use, in which he called for fair employment practices by federal contractors. See John F. Kennedy, “Executive Order 10925: Establishing the President’s Committee on Equal Employment Opportunity,” (1961), <https://www.eeoc.gov/eeoc/history/35th/thelaw/eo-10925.html>; Thompson and Morris, “What Factors Influence Judges’ Rulings about the Legality of Affirmative Action Plans?” for a detailed discussion.

recruiting and hiring.⁹⁷ Employers may target groups for recruitment but must make employment decisions based only on job-related qualifications.

Second, although women are the least-represented class of firefighters, they are not the only underrepresented class worth of study to address both staffing challenges and issues of community representation. Using Office of Management and Budget terminology and U.S. Census Bureau data, a 2006 IAFF study found that women, Asians, Hispanics, and Blacks are all underrepresented in the career fire service.⁹⁸ Due to length and time limitations, this thesis only considers women as an underutilized hiring pool. As this thesis develops, readers are invited to consider whether it is sufficient to hire those who apply without efforts to attract and develop underrepresented members of the potential paramedic firefighter workforce.

Third, with respect to the question of increased gender integration as one possible remedy for the paramedic-firefighter shortage, the ideal measures of performance may appear to be the percentage of uniformed paramedic-firefighter positions filled overall, and by gender. Instead, this thesis uses the percentage of uniformed firefighter positions filled overall, and by gender, as performance measures, and combines all ranks. This is done for

⁹⁷ This assertion may be overstated now that technology allows very specific targeting of online job postings. See Margot da Cunha, “11 Unbelievably Specific Facebook Audiences You Can Target,” *Wordstream* (blog), March 31, 2018, <https://www.wordstream.com/blog/ws/2015/10/20/facebook-audience>; Christopher Carbone, “Facebook Accused of Allowing Gender Bias in Job Ads,” Interactive Resource, Fox News, September 18, 2018, <https://www.foxnews.com/tech/facebook-accused-of-allowing-gender-bias-in-job-ads>; Kathy Gurchiek, “Is It Discriminatory to Show Job Ads to Only Young Social Media Users?,” SHRM, August 17, 2018, <https://www.shrm.org/resourcesandtools/hr-topics/behavioral-competencies/global-and-cultural-effectiveness/pages/is-it-discriminatory-to-only-show-job-ads-to-young-social-media-users.aspx>. The outcome of these cases is not yet known. For a related question, see Alfred G. Rava and Mara Elliott, “Re: No-Boys-Allowed Empowerment Camp: March 3 and 4, 2018” (letter, private attorney to San Diego City Attorney, February 22, 2018), <https://timesofsandiego.com/wp-content/uploads/2018/02/rava-letter.pdf>; Ken Stone, “‘Girls Empowerment’ Fire Camp Canceled After Civil Rights Lawyer Complains,” *Times of San Diego*, February 24, 2018, <https://timesofsandiego.com/life/2018/02/23/sandiego-cancels-girls-empowerment-fire-camp-after-lawyer-complains-for-dad-seeking-sons-entry/>; Mara Elliott and Alfred G. Rava, “Dear Mr. Rava” (letter, San Diego City Attorney to private attorney, February 23, 2018), <https://timesofsandiego.com/wp-content/uploads/2018/02/mara-letter.pdf>; Karen Kuchner, “A Week after It Was Canceled, Girls’ Empowerment Camp Reinstated, Expanded,” *San Diego Union-Tribune*, March 6, 2017, <http://www.sandiegouniontribune.com/news/public-safety/sd-me-camp-reinstated-20180306-story.html>, as cited in the latter part of Chapter IV.

⁹⁸ Office of Management and Budget, “Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity,” White House, accessed August 26, 2018, <https://obamawhitehouse.archives.gov/node/15626>; Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 29–30.

several reasons. Fire departments hold entry-level and promotional exams asynchronously compared to other fire departments, sometimes several times per year and sometimes only every several years. This asynchronicity, combined with irregular recruitment and retirement patterns, creates a situation in which one must use caution comparing the percentage of a given position that is staffed, or staffed by women, at a given time. A further caution is that, because they are mathematically a small fraction of most fire departments, the hiring, promotion, or retirement of relatively few females can skew rank-specific staffing performance measures. The last reason for the selected measures of performance in this study is that it is only possible to compare data available from all case departments, and paramedic-firefighter employment data by gender is not readily available for all four cases. For these reasons, using aggregate uniformed firefighter positions of all ranks as a proxy for uniformed paramedic-firefighter positions reasonably describes recruiting performance for fire departments that all provide paramedic services.

Another potential measure of performance is the number of applications received per position. This measure is not used because modern technology and the removal of local residence restrictions for public employees make it very easy for applicants to apply to many different fire departments at the same time. This ease benefits applicants and competitive employers but also means that better candidates will have low commitment to many of the departments to which they apply. For example, although those applying for entry-level jobs 30 years ago dutifully participated in most interviews they were offered, it is not uncommon now for fire departments hiring paramedic-firefighter candidates to have up to half the candidates not show up for scheduled interviews—and not call to cancel. This ghosting dynamic is also reported in other industries and detracts from the utility of applications received as a performance measure.⁹⁹

This research assumes that (a) administrative authorities, human resources departments, and fire departments establish recruitment goals and methods, (b) case fire departments articulate these goals and methods; (c) case fire departments employing a

⁹⁹ Paul Davidson, “‘Ghosting’ Creeps into Workplace,” USA Today, July 20, 2018, <https://www.usatoday.com/story/money/2018/07/19/strong-job-market-candidates-ghosting-interviews-offers/794264002/>.

higher percentage of women consciously choose to be inclusive; (d) these departments do not tolerate discrimination, and (e) a positive correlation—but not causation—occurs between the increased fire department recruitment of women and increased fire department employment of women.

E. CHAPTER OVERVIEW

Chapter II examines labor supply and demand components of the EMS system to establish the scope and causes of the paramedic shortage. Low reimbursement for emergency ambulance transportation limits the employment pipeline by fostering low paramedic wages. These wages likely discourage entry into the occupation and definitely cause many paramedics to change employers—and sometimes even their occupation—in search of a living wage. Paramedics are an important source of aspiring paramedic-firefighters. Complex factors artificially limit the number of capable females applying for paramedic-firefighter positions.

Chapter III explores how two fire departments with very different entry points for new employees achieved similar measures of staffing success. Each department demonstrates historically intrinsic motivations for inclusive recruiting and hiring. Potential applicants can predict their work environment with some accuracy, which offers a recruiting advantage to departments committed to an inclusive workplace. New firefighters often take the first job available to them, then leave for greater compensation or job satisfaction when they have the opportunity. While inclusive fire departments can attract women and other non-traditional employees as an increasing percentage of their staffing, they can best retain all employees by demonstrating their value through compensation and opportunities for increased responsibility.

Chapter IV analyzes the lessons of two fire departments that became motivated to recruit and hire minorities and women only after lawsuits alleging unlawful discrimination based on race or gender. Notwithstanding allegations of bias years ago, each now is a national leader in inclusive employment. One of the two struggles to fill empty positions due to a sluggish citywide hiring process, while the other has successfully transitioned to continuous recruitment. This chapter shows that the legal system can be more effective at

integrating a workplace than at fostering shared identity and trust between traditionally included and excluded employee populations, and that the hiring process still matters.

Chapter V assesses the research's six lessons in the context of action items for department heads, recruiters, and hiring managers who wish to earn or maintain their community's trust. This chapter suggests research into how so few fire departments make use of legitimate and readily available recruiting best practices, and to what extent young people may filter their career aspirations through outdated gender biases.

II. BACKGROUND ON APPLICANT SHORTAGE

This chapter explains EMS system organization, EMS worker roles, and the factors constricting the relative supply of paramedics through the employment pipeline. The main findings are that most paramedic-firefighters first invest substantial amounts of their own time and resources to become paramedics, many aspiring paramedic-firefighters are privately employed as paramedics, and privately employed paramedics are often poorly paid due to low reimbursement for ambulance transportation. These dynamics combine to limit the number of qualified paramedic-firefighter applicants.

Abundant evidence, both anecdotal and quantitative, states that a paramedic shortage exists. Reports and surveys show that 37 percent to 75 percent of paramedic employers in some areas experience a shortage, and less than half of providers are fully staffed.¹⁰⁰ In a 2008 survey of 1,425 local medical directors from 47 states, recruiting was a constant problem reported by 37 percent of respondents.¹⁰¹ Additionally, retention was sometimes a problem in 55 percent of these EMS systems.¹⁰² To say that EMS employee retention is low is to say that turnover is high. Paramedic supply reflects the balance of employee recruitment, development, and retention. The primary cause of the paramedic shortage is that private ambulance providers—usually paramedics’ first employers—often do not see the fees available to them as consistent with compensating employees well

¹⁰⁰ David B. Palmer, “Developing Alternative Components for Improvement of EMS System Paramedic Workforce Resources in Marion County, Florida” (applied research paper, National Fire Academy, 2007), 5, <https://www.hSDL.org/?abstract&did=682706>; Kaitlyn Lioni, “Rural/Metro Responds to Staffing Shortage with EMT Training,” Spectrum News, February 2, 2016, <http://spectrumlocalnews.com/nys/buffalo/news/2016/02/2/rural-metro-emt-training->; National Association of State Emergency Medical Services Officials, *EMS Workforce Planning and Development: Guidelines for State Adoption* (Falls Church, VA: National Association of State Emergency Medical Services Officials, 2014), 40, <https://www.nasemso.org/EMSWorkforcePlanningandDevelopmentGuidelines.asp>; Victoria A. Freeman, Daniel Patterson, and Rebecca T. Slifkin, “Issues in Staffing Emergency Medical Services: A National Survey of Local Rural and Urban EMS Directors” *Journal of Public Health Management and Practice*, 15 no. 3 (May 2008): 4, 10; “Paramedic Shortage Limiting Choices for Fire Departments,” *EMS World*, March 13, 2007, <https://www.emsworld.com/article/10322019/paramedic-shortage-limiting-choices-fire-departments>; Chapman, Lindler, and Kaiser, *The Emergency Medical Services Workforce Agenda for the Future* 2, 26.

¹⁰¹ Freeman, Patterson, and Slifkin, 4.

¹⁰² Freeman, Patterson, and Slifkin, 4.

enough to retain them.¹⁰³ Modest compensation by private companies thus limits the EMS industry's ability to attract, educate, and certify enough employees. Dissecting both recruiting and turnover is essential to understand the paramedic shortage, and in turn, the paramedic-firefighter shortage. This chapter analyzes the paramedic-firefighter shortage by examining paramedic supply, demand, and the employment pipeline connecting them. Significant gaps in available data make it difficult even for those within the industry to appraise it.

A. THE EMERGENCY MEDICAL SERVICES SYSTEM

This section examines how single-role paramedic employment patterns, industry growth, and turnover lead to shortages substantially rooted in the emergency ambulance business model. This thesis' brief treatment of the business model belies its complexity and the uncertainties involved in designing EMS systems. Although it is wrong to assume that reimbursement models, provider levels, and educational requirements will remain static, one can predict an increasing need for communities to recruit EMS workers and increasing challenges in compensating them.

Transporting patients in ambulances is essential to the industry because patients typically pay the EMS provider nothing until they are taken to a hospital emergency department. Single-role paramedics are unlikely to see a large compensation increase due to low rates of ambulance fee collections and low federal reimbursement rates for Medicare and Medicaid beneficiaries. Dissatisfaction with compensation, supervision, advancement opportunities, stress, burnout, and injuries contributes to a voluntary turnover rate among privately employed paramedics that is higher than that of the general workforce. Paramedics who leave single-role employment often return to school and move into allied healthcare fields, education, or other public safety employment, including as paramedic-

¹⁰³ Rod Brouhard, "Why Is an Ambulance so Expensive and Does Insurance Pay the Bill?," *Verywell Health*, November 2, 2017, <https://www.verywellhealth.com/why-an-ambulance-costs-so-much-4093846>; Brian C. Rittmeyer, "Ambulance Services Warn that Money Woes Threaten Their Existence—and Patient Lives," Trib Total Media, LLC., Valley News Dispatch edition, April 3, 2018, <https://triblive.com/local/valleynewsdispatch/13421312-74/ambulance-services-warn-that-money-woes-threaten-their-existence-and-patient>. Public ambulance providers often invest in their employees beyond these same fees.

firefighters. This turnover combines with industry growth to create a shortage that also impacts those fire departments that employ dual-role paramedic-firefighters.

The EMS system is the part of the U.S. healthcare system that responds to medical emergencies and transports patients to hospitals for definitive care.¹⁰⁴ The modern EMS system emerged in 1966 when the U.S. Congress established the Department of Transportation (DOT) in response to a white paper by the National Academy of Sciences titled *Accidental Death and Disability: The Neglected Disease of Modern Society*.¹⁰⁵ The paper recommended prevention efforts, research, and improvements in ambulance and emergency medical care systems to reduce the high rates of death, disability, and injury from unintentional trauma, much of which resulted from vehicle crashes.¹⁰⁶ In passing the National Traffic and Motor Vehicle Safety Act of 1966, the Highway Safety Act of 1966, and the Department of Transportation Act in 1966, the U.S. Congress created the agency that would become the National Highway Traffic Safety Administration (NHTSA) under the new DOT.¹⁰⁷ NHTSA’s EMS role has expanded from the injury prevention vision of its first administrator to setting standards for EMS agency data.¹⁰⁸ Although transportation has always been a core service of EMS, some EMS providers—including some fire

¹⁰⁴ Institute of Medicine, *Emergency Medical Services: At the Crossroads* (Washington, DC: National Academies Press, 2006), 1, <https://doi.org/10.17226/11629>.

¹⁰⁵ Joshua Bucher and Hashim Q. Zaidi, “A Brief History of Emergency Medical Services in the United States,” EMRA, 2018, <http://www.emra.org/about-emra/history/ems-history/>.

¹⁰⁶ National Academy of Sciences and National Research Council, *Accidental Death and Disability: The Neglected Disease of Modern Society* (Washington, DC: National Academies Press, 1966), 5–16, 30–37, <http://www.ncbi.nlm.nih.gov/books/NBK222962/>.

¹⁰⁷ Highway Safety Act of 1966, Public Law 89–564, *U.S. Statutes at Large* 80 (1966): 731–737, <https://www.gpo.gov/fdsys/pkg/STATUTE-80/pdf/STATUTE-80-Pg731.pdf>; National Traffic and Motor Vehicle Safety Act of 1966, Public Law 89–563, *U.S. Statutes at Large* 80 (1966): 718–730, <http://legislink.org/us/pl-89-563>; Department of Transportation Act, Public Law No. 89–671, *U.S. Statutes at Large* 80 (1966): 931–950, <https://www.gpo.gov/fdsys/pkg/STATUTE-80/pdf/STATUTE-80-Pg931.pdf>; Matthew C. Sielski, *Implementing the 1966 Highway Safety Acts* (Washington, DC: National Highway Safety Agency, 1967), 79, http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=3150&context=road_school; “Creation of Department of Transportation—Summary,” Department of Transportation, February 3, 2016, <https://www.transportation.gov/50/creation-department-transportation-summary>.

¹⁰⁸ Sielski, 84; “NEMESIS—National EMS Information System,” NHTSA Office of EMS, September 25, 2018, <https://nemsis.org/>.

departments—seek cost recovery fees for non-transport services.¹⁰⁹ In sum, EMS roles and services are well established yet evolving in an attempt to meet patient needs and fund operations.

The United States has several levels of EMS providers, each with successively higher education and training requirements established by the DOT.¹¹⁰ The four EMS provider levels are emergency medical responder (EMR), EMT, advanced EMT, and paramedic.¹¹¹ Of these four, EMR is the only level not trained or permitted to work in ambulances. Rather, EMRs respond to medical emergencies in non-transport vehicles, such as fire engines. A 2014 report on nationally registered EMS providers found that four percent of total emergency responders were EMRs, 64 percent were EMTs, three percent were advanced EMTs, and 29 percent were paramedics.¹¹²

It takes roughly 124 hours of education to be eligible for EMT certification testing and at least 1,200 additional hours to qualify for paramedic certification testing.¹¹³ EMTs must complete a state-approved EMT course and pass the National Registry of Emergency Medical Technicians (NREMT)'s EMT-level cognitive and psychomotor exams.¹¹⁴ Paramedics must meet EMT requirements, as well as pass an accredited paramedic education program and paramedic-level NREMT cognitive and psychomotor exams.¹¹⁵ NREMT certification verifies competency in required training and educational requirements but does not credential one to practice EMS. Providers must also be licensed

¹⁰⁹ John Todaro, “The Transformation of Education,” *EMS World*, Supplement (October 2016): 12–13, <https://search.proquest.com/docview/1822358045/citation/CE0F198A8D2F4FA1PQ/1>.

¹¹⁰ Charles N. Pozner et al., “International EMS Systems: The United States: Past, Present, and Future,” *Resuscitation* 60, no. 3 (March 2004): 240, <https://doi.org/10.1016/j.resuscitation.2003.11.004>.

¹¹¹ National Highway Traffic Safety Administration, *National EMS Scope of Practice Model* (Washington, DC: Department of Transportation, 2007), 19–21, https://www.ems.gov/education/EMS_Scope.pdf.

¹¹² National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis*, 10.

¹¹³ “What’s the Difference Between an EMT and a Paramedic?,” UCLA Center for Prehospital Care, accessed September 1, 2017, <https://www.cpc.mednet.ucla.edu/node/27>.

¹¹⁴ “Emergency Medical Technicians (EMT),” National Registry of Emergency Medical Technicians, accessed June 8, 2018, <http://www.nremt.org/rwd/public/>.

¹¹⁵ “Paramedic Certification,” National Registry of Emergency Medical Technicians, accessed July 22, 2018, <https://www.nremt.org/rwd/public/document/paramedic>.

or certified by their state, typically after a criminal background check.¹¹⁶ A certified paramedic must invest 10 times as much time and tuition as a certified EMT, which contributes to the paramedic shortage.

In all EMS systems, whether as volunteers or as employees, EMS workers practice under a physician medical director. State laws typically authorize and regulate the practice of EMS. A minority of EMTs and paramedics—for example, those in the military or who work for a federal agency—serve under a national medical director. EMTs and paramedics must often satisfy local EMS agency and employer accreditation standards, including the ability to follow protocols established by their medical director. As EMTs and paramedics can practice in any state in which they are authorized, they enjoy lateral mobility opportunities that likely contribute to high turnover in less desirable workplaces. Within a weak federal EMS framework, state autonomy, and sometimes local EMS agency oversight, creates a challenging environment for data collection, research, and regulation.

In addition to the industry’s multi-layer training complexities, several data issues obscure a detailed understanding of the EMS system. First, the BLS comingles information about EMTs and paramedics.¹¹⁷ Second, the IPEDS neither captures all EMS training programs nor separates those that train EMTs from those that train paramedics.¹¹⁸ Third, accurately characterizing the EMS system is also difficult because EMTs and paramedics commonly hold more than one EMS job or volunteer position, often in both EMS and firefighting.¹¹⁹ These and other factors complicate the study of paramedic shortages.

¹¹⁶ “Criminal Conviction Policy,” National Registry of Emergency Medical Technicians, accessed September 24, 2018, <http://www.nremt.org/rwd/public/>; “Criminal or Enforcement History,” Virginia Administrative Code § 12VAC5-31-910 (2018), Virginia Law, <https://law.lis.virginia.gov/admincode/title12/agency5/chapter31/section910/>. Felons and others convicted of possession of controlled substances may not be employable as paramedics. Regardless of arrests or convictions, employers reject some applicants and employees because of positive drug or alcohol tests. This rejection is reasonable given that paramedics are responsible for driving and administering controlled substances.

¹¹⁷ Bureau of Labor Statistics, “EMTs and Paramedics: Occupational Outlook Handbook.”

¹¹⁸ Chapman et al., *EMS Workforce for the 21st Century*, 9; National Association of State Emergency Medical Services Officials, *EMS Workforce Planning and Development*, 28.

¹¹⁹ National Association of State Emergency Medical Services Officials, 2, 14, 22–23.

Federal agencies broadly classify EMS workers into only one occupation per the Standard Occupational Classification (SOC) system.¹²⁰ In 2018, the SOC began separating EMT and paramedic occupational data for the first time.¹²¹ Distinguishing EMT and paramedic workforce data in the SOC system will help current and future EMS workers, researchers, and policy-makers to understand the single-role career EMS labor pool better. This increased understanding comes from being able to assess EMTs' and paramedics' age, education, pay, and job growth separately. This SOC improvement, however, is only a half-measure as it fails to recognize the occupation of paramedic-firefighter, also called firefighter-paramedic, which has existed since the late 1960s.¹²² The BLS continues to count paramedic-firefighters only as firefighters or only as paramedics.¹²³

B. SINGLE-ROLE PARAMEDICS

This section begins by analyzing the value proposition of becoming a paramedic and its effect on paramedic turnover and the paramedic shortage. The section continues with an examination of the paramedic employment pipeline, its gender skew, additional causes of the paramedic shortage, and some possible solutions. It is important to understand the experiences of single-role paramedics because they inform the discussion of paramedic-firefighters. Some paramedics serve in a single-role capacity and therefore do not perform

¹²⁰ Executive Office of the President, *Standard Occupational Classification Manual* (Washington, DC: Office of Management and Budget, 2018), 1, https://www.bls.gov/soc/2018/soc_2018_manual.pdf.

¹²¹ Office of Management and Budget, "Standard Occupational Classification (SOC) System—Revision for 2018," 6–7.

¹²² Robert O. Bauer, "Emergency Airway, Ventilation, and Cardiac Resuscitation," *Anesthesia Progress* 14, no. 9 (November 1967): 236, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2235452/>.

¹²³ National Association of Emergency Medical Technicians, "How Does the U.S. Count EMTs and Paramedics? Not Very Well, Actually," *NAEMT News*, Spring 2018, 6–7, https://www.naemt.org/docs/default-source/member-resources-documents/naemt-news/2018/naemt-news-spring-2018-low-res-03-13-2018.pdf?sfvrsn=b1b3cb92_0. The BLS directs that employees who can be counted in two or more occupations be counted only in the most skilled occupation. Where occupations cannot be distinguished by skill level, as is the case for paramedics and firefighters, the BLS counts employees in the occupation that accounts for most of the employee's time. Since paramedic-firefighters spend most of their response time on paramedic duties and most of their non-response time preparing for firefighter duties, it is unclear how paramedic-firefighters should be classified under the 2018 SOC system. Bureau of Labor Statistics, *2018 SOC User Guide Classification Principles and Coding Guidelines* (Washington, DC: Office of Management and Budget, 2017), 2, https://www.bls.gov/soc/2018/soc_2018_class_prin_cod_guide.pdf.

fire suppression duties, even when employed by a fire department. Many enjoy this job and are unlikely to remedy the paramedic-firefighter shortage by taking such a dual-role job.

Most single-role paramedics are responsible for emergency medical care and transportation of the ill and injured although some work in other settings including education, management, and non-transport clinical care and safety.¹²⁴ Regardless of who paramedics work for, they are commonly the highest-level EMS providers and an essential component of the nation's ability to prevent, mitigate, respond to, and recover from disasters and terrorism.¹²⁵ As the most qualified healthcare provider, the paramedic attending to a patient is responsible for patient care and coordinates the tasks of other EMS responders. Paramedics develop clinical judgement from the time they begin as EMTs and continue throughout their caregiving careers.

1. The Single-Role Paramedic Workforce

The cost of paramedic education can be a factor in limiting the supply of paramedics. The upfront cost of required training can exceed \$16,000, with no guarantee that the student will complete the program, national registry exam, state licensure, accreditation process, and probationary employment period.¹²⁶ The NREMT reports that even after three attempts, the national average passing rate for the paramedic exam is only 77 percent.¹²⁷ Most aspiring paramedics must cover tuition, national registry, licensing, and credentialing costs from their EMT wages. In a 2016 survey, EMTs reported an annual

¹²⁴ "Paramedic Offshore International Jobs, Employment in United States," Indeed, 2018, <https://www.indeed.com/q-Paramedic-Offshore-or-International-l-United-States-jobs.html>.

¹²⁵ "Emergency Services Sector," Department of Homeland Security, March 22, 2018, <https://www.dhs.gov/emergency-services-sector>; Mac Kemp, "EMS and Homeland Security," *Homeland Security Affairs* 10 (June 2014), <https://www.hsaj.org/articles/262>.

¹²⁶ "Costs and Budgeting," UCLA Center for Prehospital Care, accessed June 9, 2018, <https://www.cpc.mednet.ucla.edu/paramedic-planningforcosts>; Center for Allied Health Education, "Paramedic Tuition and Fees," New York Health Education Training Program Certification, accessed June 9, 2018, <https://www.cahe.edu/school-paramedic/section-tuition-and-fees>; National Highway Traffic Safety Administration, *National EMS Scope of Practice Model*, 16.

¹²⁷ "National Registry of EMTs," National Registry of Emergency Medical Technicians, February 5, 2018, <https://www.nremt.org/rwd/public/>.

wage range of \$33, 587 to \$48,296 for an unknown number of hours worked.¹²⁸ While 24 percent of EMTs reported receiving fully paid medical insurance for themselves, 58 percent reported that employers partially paid for their medical insurance.¹²⁹ Eight percent of EMTs reported that their employers fully paid for family members' medical insurance, and 61 percent reported that employers partially paid such insurance.¹³⁰ Several authors describe medical insurance and healthcare costs as a substantial and increasing burden, even for working Americans.¹³¹ These low wages and high healthcare costs likely reduce the number of EMTs who can afford paramedic education. Some employers pay paramedic tuition based on certain conditions.¹³² A common condition is that employees receiving free tuition must agree to repay it if they do not work as paramedics for that employer for a given time.¹³³ This strategy's impact on the paramedic shortage is limited because few employers take advantage of it.

Single-role paramedics often feel poorly compensated¹³⁴ Paramedic perception of a lack of desirable advancement opportunities, quality supervision, and retirement plans causes many to seek other careers, which contributes to the paramedic shortage.¹³⁵ In 2003, Brown et al. explained that high EMT and paramedic turnover was due to the desire

¹²⁸ Jonathan Washko and Michael Ragone, "2016 JEMS Salary Survey," *Journal of Emergency Medical Services* 42, no. 11 (November 2017), <https://www.jems.com/articles/print/volume-42/issue-11/features/2016-jems-salary-survey.html>.

¹²⁹ Washko and Ragone.

¹³⁰ Washko and Ragone.

¹³¹ Sara R. Collins, "The Slowdown in Employer Insurance Cost Growth," *Medical Benefits; New York* 34, no. 1 (January 2017): 9, <https://search-proquest-com.libproxy.nps.edu/docview/1875717111/abstract/424B3B22E13044F9PQ/1>; Ester Bloom, "Here's How Much the Average American Spends on Health Care," June 23, 2017, <https://www.cnbc.com/2017/06/23/heres-how-much-the-average-american-spends-on-health-care.html>.

¹³² Jennie McKeon, "EMTs on the Decline," Northwest Florida Daily News, October 18, 2016, <https://www.nwfdailynews.com/news/20161018/emts-on-decline>.

¹³³ McKeon.

¹³⁴ Susan A. Chapman et al., "Correlates of Intent to Leave Job and Profession for Emergency Medical Technicians and Paramedics," *Career Development International* 14, no. 5 (September 18, 2009): 496, <https://doi.org/10.1108/13620430910989861>.

¹³⁵ Chapman et al., 494–500; William E. Brown, Drew Dawson, and Roger Levine, "Compensation, Benefits, and Satisfaction: The Longitudinal Emergency Medical Technician Demographic Study (LEADS) Project," *Prehospital Emergency Care* 7, no. 3 (September 2003): 357–62, <https://search.proquest.com/docview/221167569/citation/9B9B6421E1C44EA5PQ/1>.

for greater pay, healthcare benefits, and an improved retirement plan.¹³⁶ The reality is that many are underpaid. The DOL reports that only 16.2 percent of EMTs and paramedics have a bachelor's degree, a lower percentage than among firefighters and about half the percentage of police officers.¹³⁷ EMTs and paramedics account for a disproportionately large part of U.S. below-median hourly wage employment among persons without a bachelor's degree.¹³⁸

One way to understand their compensation is that EMTs and paramedics as a class are one of only two occupations that account for 80 percent of the nation's below median hourly wage employment.¹³⁹ The other occupation is general maintenance and repair.¹⁴⁰ The fact that maintenance and repair workers are better paid than EMTs and paramedics underscores how low EMS wages are.¹⁴¹ Many private paramedics leave for better-compensated public employment, including local government EMS, which pays more than private EMS.¹⁴² Low wages likely discourage new entrants into the occupation, thus contributing to the shortage of both paramedics and paramedic-firefighters. In 2009, Patterson et al. reported that 6.3 percent of paramedics intended to leave EMS employment in the next 12 months, compared to 5.5 percent of EMTs; pay was the greatest

¹³⁶ Brown, Dawson, and Levine, 357–62.

¹³⁷ Kristina Schafer, Ryan Sutter, and Scott Gibbons, *Characteristics of Individuals and Employment among First Responders* (Washington, DC: Department of Labor, Chief Evaluation Office, 2015), 5, <https://www.dol.gov/asp/evaluation/analytics-reports/CharacteristicsOfIndividualsAndEmploymentAmongFirstResponders.pdf>; “CAAHEP—Find an Accredited Program,” Commission on Accreditation of Allied Healthcare Programs, accessed June 9, 2018, <https://caahep.org/Students/Find-a-Program.aspx>. Of over 600 accredited U.S. paramedic education programs, only 11 offer a baccalaureate degree.

¹³⁸ Matias D. Scaglione, *Skilled Non-College Occupations in the U.S.* (Madison, WI: Wisconsin Center for Education Research, 2018), 5, https://www.researchgate.net/profile/Matias_Scaglione/publication/325550469_Skilled_Non-College_Occupations_in_the_US/links/5b1545d74585150a0a675222/Skilled-Non-College-Occupations-in-the-US.pdf; Vernon Brundage, “Profile of the Labor Force by Educational Attainment,” August 2017, <https://www.bls.gov/spotlight/2017/educational-attainment-of-the-labor-force/home.htm>; “May 2017 National Occupational Employment and Wage Estimates,” Bureau of Labor Statistics, March 30, 2018, https://www.bls.gov/oes/current/oes_nat.htm#00-0000.

¹³⁹ Scaglione, 28.

¹⁴⁰ Scaglione, 28.

¹⁴¹ Bureau of Labor Statistics, “May 2017 National Occupational Employment and Wage Estimates”; Chapman et al., *EMS Workforce for the 21st Century*, 10.

¹⁴² Chapman et al., 61; Ken Jacobs et al., *Emergency Medical Services in California: Wages, Working Conditions, and Industry Profile* (Berkeley, CA: University of California, 2017), 9–10, <http://laborcenter.berkeley.edu/emergency-medical-services-in-california-wages-working-conditions-and-industry-profile/>.

dissatisfaction for both.¹⁴³ These authors determined rates of intent to leave by employer type.¹⁴⁴ The authors' finding that 8.9 percent of privately employed EMS workers intended to leave, compared to 3.3 percent of fire-based EMS workers, affirms that public EMS compensation generally exceeds private EMS compensation.¹⁴⁵

DOL wage data suggest that wage growth does not offer a near-term solution to the paramedic shortage. In 2017 the DOL reported, "Growth in the average hourly real wage has been negative for EMTs" from 2009 to 2013.¹⁴⁶ Since the *SOC User Guide Classification Principles and Coding Guidelines* combined EMTs and paramedics in 2017, this DOL statement also asserts that paramedics' real wage growth was negative from 2009 to 2013. In short, the low wages of single-role paramedics are a significant factor in shortages in the profession.¹⁴⁷

One possible reason single-role paramedic wages are low is that many are employed in the ambulance industry, which struggles with low reimbursement rates from the Centers for Medicare and Medicaid Services (CMS) and low collections rates overall.¹⁴⁸ U.S. ambulance providers generally collect fees only for transporting patients,

¹⁴³ Daniel P. Patterson et al., "Characterizing Job Satisfaction and Intent to Leave among Nationally Registered Emergency Medical Technicians: An Analysis of the 2005 LEADS Survey," *Journal of Allied Health* 38, no. 3 (2009): e-87.

¹⁴⁴ Patterson et al., e-86–e-87. The greatest intent to leave, at nine percent, was for military or federal EMS workers, who accounted for less than five percent of the 1,452 survey respondents.

¹⁴⁵ Patterson et al., e-86–e-87.

¹⁴⁶ Schafer, Sutter, and Gibbons, *Characteristics of Individuals and Employment among First Responders*, 11.

¹⁴⁷ Chapman et al., "Correlates of Intent to Leave Job and Profession for Emergency Medical Technicians and Paramedics," 496–500.

¹⁴⁸ Brouhard, "Why Is an Ambulance so Expensive and Does Insurance Pay the Bill?"; Rittmeyer, "Ambulance Services Warn that Money Woes Threaten Their Existence—and Patient Lives."

yet more than one-third of ambulance responses do not result in transport.¹⁴⁹ The industry consists of emergency ambulance services, which is what most people think ambulances are for, and non-emergency ambulance services. Emergency ambulance services, often staffed by paramedics, are commonly operated by fire departments and have the same low reimbursement model. Non-emergency ambulance services are usually provided by EMTs and are often not dispatched until payment is guaranteed. The CMS's ambulance transport billing rates are sometimes less than 30 percent of a provider's costs.¹⁵⁰ Since the CMS account for more than half of the ambulance payer mix, this rate is a significant challenge to the industry.¹⁵¹ Given these factors—and that personnel costs represent the majority of total ambulance service costs—the reluctance of some providers to provide attractive compensation is not surprising.¹⁵² While private insurance pays more toward ambulance bills than do the CMS, many patients with no insurance pay nothing. Low ambulance collections and reimbursement rates depress paramedic compensation, which contributes to high paramedic attrition rates.

Despite inconsistency in data and reporting, turnover for single-role paramedics is high. Annual voluntary turnover for career single-role paramedics is reported to be between

¹⁴⁹ “Ambulance Fee Schedule Public Use Files,” Centers for Medicare and Medicaid Services, February 21, 2018, <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AmbulanceFeeSchedule/afspuf.html>; Brouhard, “Why Is an Ambulance so Expensive and Does Insurance Pay the Bill?”; Marc Eckstein, “The Ambulance Industry Struggles to go the Distance,” *Health Affairs* 32, no. 12 (December 2013): 2067, <https://search.proquest.com/docview/1467750135/abstract/197F92B80CAA4391PQ/1>; Christopher B. Colwell, Peter T. Pons, and Randy Pi, “Complaints against an EMS System,” *The Journal of Emergency Medicine* 25, no. 4 (November 2003): 403, <https://doi.org/10.1016/j.jemermed.2003.02.004>; Alex J. Fraess-Phillips, “Can Paramedics Safely Refuse Transport of Non-Urgent Patients?,” *Prehospital and Disaster Medicine* 31, no. 6 (December 2016): 670, <http://dx.doi.org/10.1017/S1049023X16000935>.

¹⁵⁰ Brouhard, “Why Is an Ambulance so Expensive and Does Insurance Pay the Bill?”; Centers for Medicare and Medicaid Services, “Ambulance Fee Schedule Public Use Files”; Rick Martin, “January 2014 CMS Fee Schedule Update,” January 2014, https://comstarbilling.com/wp-content/uploads/2015/01/newsletter_01_2015.pdf.

¹⁵¹ Finance Committee, *EMS Funding and Reimbursement* (Washington, DC: National EMS Advisory Council, 2016), 14, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=13&cad=rja&uact=8&ved=2ahUKewjTOI64w93cAhUC26wKHZI0DHIQFjAMegQIAhAC&url=https%3A%2F%2Fwww.ems.gov%2Fpdf%2Fnemsac%2FNEMSAC_Advisory_EMS_System_Funding_Reimbursement.pdf&usg=AOvVaw0xXI8VztSzIef84pgj1Pl6.

¹⁵² James C. Cosgrove, *Ambulance Providers: Costs and Medicare Margins Varied Widely; and Transports of Beneficiaries Have Increased*, GAO-13-6 (Washington, DC: Government Accountability Office, 2012), 15, <http://www.gao.gov/assets/650/649018.pdf>.

10 and 24 percent.¹⁵³ The average attrition rate among a sample of 404 EMS organizations in 2005 was 12.6 percent, but this data did not distinguish between EMTs and paramedics.¹⁵⁴ Friese reports that an American Ambulance Association (AAA) study found a 21-percent voluntary unweighted mean turnover rate in 2017 for full-time paramedics at about 100 agencies surveyed.¹⁵⁵ The 21-percent annual voluntary paramedic turnover that Friese and AAA/Avesta report for 2017 is much higher than the 13-percent general workforce turnover that the Society for Human Resource Management (SHRM) report for 2016.¹⁵⁶ Friese interprets the report as documenting that EMS turnover is higher than in other occupations, and that because the industry cannot significantly increase compensation, it will have to retain personnel through schedule, policy, and program changes that improve employees' health, safety, and work-life balance.¹⁵⁷

Voluntary turnover varies by whether single-role paramedics are publicly or privately employed. It is useful to consider the reported 2005 turnover between the two most common EMS employers, fire departments—the subject of a later section on dual-role paramedic-firefighters—at five percent, and private ambulance services, at 17.1 percent.¹⁵⁸ Compensation consultant Ann Bares wrote that voluntary turnover for the general workforce decreased from 2008 to 2010 but then, in 2011, began climbing steadily

¹⁵³ P. Daniel Patterson et al., “The Longitudinal Study of Turnover and the Cost of Turnover in EMS,” *Prehospital Emergency Care*, 14, no. 2 (April 6, 2010): 209, <https://doi.org/10.3109/10903120903564514>; David M. Williams, “2005 JEMS Salary & Workplace Survey: What You Earn, Where You Work & What It All Means,” *JEMS: A Journal of Emergency Medical Services* 30, no. 10 (October 2005): 53–54.

¹⁵⁴ Williams, 53.

¹⁵⁵ Greg Friese, “AAA Study Sets a Benchmark for Turnover in the EMS Industry,” EMS1, July 18, 2018, <https://www.ems1.com/ems-advocacy/articles/387159048-AAA-study-sets-a-benchmark-for-turnover-in-the-EMS-industry/>; Avesta Systems Inc. and American Ambulance Association, “AAA/Avesta 2018 Ambulance Industry Employee Turnover Study” (confidential report, Washington, DC, Avesta Systems Inc. and American Ambulance Association, 2018), 16.

¹⁵⁶ Friese; Avesta Systems Inc. and American Ambulance Association, “AAA/Avesta 2018 Ambulance Industry Employee Turnover Study”; Society for Human Resource Management, *2017 Human Capital Benchmarking Report* (Alexandria, VA: Society for Human Resource Management, 2017), 13, <https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/2017-Human-Capital-Benchmarking.pdf>.

¹⁵⁷ Friese; Avesta Systems Inc. and American Ambulance Association, “AAA/Avesta 2018 Ambulance Industry Employee Turnover Study.”

¹⁵⁸ Williams, “2005 JEMS Salary & Workplace Survey,” 40, 53–54.

to the 12.8 percent that CompData Surveys reported for 2016.¹⁵⁹ Her observation that 2016 voluntary turnover in the healthcare industry was 15.3 percent, second only to the hospitality industry, supports other authors' observations of relatively high paramedic turnover as a leading factor in the current paramedic shortage.¹⁶⁰ The 2017 Fitch and Associates *EMS Trend Report* found that median annual turnover varied across six types of EMS organizations, including 12 percent for fire-based EMS providers and 21 percent for public utility-based organizations.¹⁶¹ The relatively higher turnover rates for privately employed paramedics support those who argue that the cost of providing timely paramedic ambulance services and associated readiness components like administration and surge capacity exceeds available revenue.¹⁶² The relatively lower turnover for publicly employed paramedics reflects their generally higher compensation.

The generally higher compensation for publicly employed paramedics reflects the different missions of private versus public EMS employers. Private employers seek to profit, yet government seeks to provide essential services. These motivations can overlap, for example, with companies having a service mission and government collecting fees for services. Paramedic ambulance services often exist in a setting of high public expectation for the service and low public expectation to pay for the service, especially in rural areas.¹⁶³ The lack of reliable ambulance funding or reimbursement depresses paramedic compensation and increases turnover. Even some public employers are unable to pay paramedics adequately. Turnover contributes to the shortage of paramedics, especially when compensation and opportunities for advancement are not equal to paramedic expectations.

¹⁵⁹ Ann Bares, "2016 Turnover Rates by Industry," *Compensation Force* (blog), April 21, 2017, <http://www.compensationforce.com/2017/04/2016-turnover-rates-by-industry.html>.

¹⁶⁰ Bares.

¹⁶¹ Fitch and Associates, *2017 EMS Trend Report* (Platte City, MO: Fitch and Associates, 2017), 10, <https://www.emsl.com/ems-trend-report-2017/articles/294703048-2017-EMS-Trend-Report-The-forces-shaping-the-future-of-EMS/>. Public utility-based EMS organizations are private for-profit agencies contracted by public entities, such as county health departments.

¹⁶² Finance Committee, *EMS Funding and Reimbursement*, 15–16.

¹⁶³ Finance Committee, 14, 16.

Voluntary turnover in EMS has various causes. Several large investigations using data from the Longitudinal Emergency Medical Technician Attributes and Demographic Study (LEADS) of EMS employment determined that voluntary turnover among career single-role paramedics is due primarily to compensation and paramedics' unmet expectations for advancement opportunities and supervision.¹⁶⁴ The AAA study found that compensation concerns were the leading cause of turnover.¹⁶⁵ The next most common reasons for turnover, according to the AAA study, were for a career change, school attendance, discontent with advancement opportunities, a geographic move, or unhappiness with the employer.¹⁶⁶ Stress, burnout, and injuries are additional reasons for EMS workers to leave the occupation.¹⁶⁷

Despite continued findings that paramedics believe they should receive better pay and benefits, private employers often handle turnover both by augmenting recruitment and by reinforcing retention strategies, such as supervisor training, which do not increase compensation.¹⁶⁸ This approach leverages the occupation's camaraderie, excitement,

¹⁶⁴ Chapman et al., "Correlates of Intent to Leave Job and Profession for Emergency Medical Technicians and Paramedics," 494–500; Gary Blau and Susan A. Chapman, "Why Do Emergency Medical Services (EMS) Professionals Leave EMS?," *Prehospital and Disaster Medicine* 31, no. S1 (December 2016): s107–110, <https://doi.org/10.1017/S1049023X16001114>.

¹⁶⁵ Avesta Systems Inc. and American Ambulance Association, "AAA/Avesta 2018 Ambulance Industry Employee Turnover Study," 17.

¹⁶⁶ Avesta Systems Inc. and American Ambulance Association, 17.

¹⁶⁷ Gary Blau and Susan Chapman, "Retrospectively Exploring the Importance of Items in the Decision to Leave the Emergency Medical Services (EMS) Profession and Their Relationships to Life Satisfaction After Leaving EMS and Likelihood of Returning to EMS," *Journal of Allied Health; Washington* 40, no. 2 (Summer 2011): e-30, <https://search.proquest.com/docview/887255408/abstract/27B267217B114DF0PQ/16>; Blau and Chapman, "Why Do Emergency Medical Services (EMS) Professionals Leave EMS?," s-109.

¹⁶⁸ Blau et al., "Exploring the Importance of Different Items as Reasons for Leaving Emergency Medical Services between Fully Compensated, Partially Compensated, and Non-Compensated/Volunteer Samples," *Journal of Allied Health; Washington* 40, no. 3 (Fall 2011): e33–7, <https://search.proquest.com/docview/918119361/abstract/E556992441864387PQ/18>; Fitch and Associates, *2017 EMS Trend Report*, 10.

respect, and teamwork as free forces for recruitment and retention.¹⁶⁹ A 2010 longitudinal study of EMS found the total turnover cost per position as \$86,452.05 including direct and indirect pre-hire and post-hire costs.¹⁷⁰ The persistence of low compensation, high-turnover rates, and very successful companies may suggest that such turnover costs are acceptable to the largest private employers.¹⁷¹

Several SHRM reports reveal employee priorities that lead to the paramedic shortage. In a 2016 SHRM survey, 600 U.S. employees in various professions ranked respectful employee treatment as the most important aspect of job satisfaction; compensation was the next most important.¹⁷² This difference of one place in the ranking of compensation between paramedics and the general workforce is not significant. The SHRM noted that almost 20 percent more employees describe career advancement as very important to them in 2015 than they did in 2007.¹⁷³ This conclusion is consistent with the LEADS finding that the lack of career advancement opportunities is the sixth leading reason that paramedics leave EMS, behind pay, a desire for more education, family relocation, management dissatisfaction, and family issues, such as childcare or marital problems.¹⁷⁴ Some paramedics leave EMS and return to school to qualify for higher wages

¹⁶⁹ P. Daniel Patterson et al., “Recruitment and Retention of Emergency Medical Technicians: A Qualitative Study,” *Journal of Allied Health; Washington* 34, no. 3 (Fall 2005): 158, <https://search.proquest.com.libproxy.nps.edu/docview/210973437/abstract/125DB7D51BDE4A8APQ/1>; Society for Human Resource Management, *Employee Job Satisfaction and Engagement: Revitalizing a Changing Workforce* (Alexandria, VA: Society for Human Resource Management, 2016), 33, <https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/2016-Employee-Job-Satisfaction-and-Engagement-Report.pdf>.

¹⁷⁰ Patterson et al., “The Longitudinal Study of Turnover and the Cost of Turnover in EMS,” 209, 211–212, 214, 220–224.

¹⁷¹ Envision Healthcare Holdings, Inc., *Pioneering the Delivery of Care: 2015 Annual Report* (Greenwood Village, CO: Envision Healthcare Holdings, Inc., 2016), http://investor.evhc.net/sites/emsc.investorhq.businesswire.com/files/doc_library/file/Envision_Healthcare_Holdings_Inc.—2015_Annual_Report_and_Proxy_0.pdf; S. A. Transcripts, “Envision Healthcare (EVHC) Q4 2017 Results—Earnings Call Transcript,” Seeking Alpha, February 28, 2018, <https://seekingalpha.com/article/4151775-envision-healthcare-evhc-q4-2017-results-earnings-call-transcript>.

¹⁷² Society for Human Resource Management, *Employee Job Satisfaction and Engagement*, 6.

¹⁷³ Society for Human Resource Management, 17.

¹⁷⁴ Blau and Chapman, “Why Do Emergency Medical Services (EMS) Professionals Leave EMS?,” s109.

within the broader the health care system.¹⁷⁵ Paramedics who leave EMS before retirement age add to the problem of single-role paramedic shortage.

2. Single-Role Paramedic Employers and Employment Pipeline

The overall supply of EMS workers is linked to increasing demand and changing employment patterns that affect the paramedic-firefighter shortage. Since an individual must be an EMT before enrolling in paramedic education, growth in the number of paramedics is limited by growth in the number of EMTs. Demand for paramedics is growing at more than twice the mean for all occupations.¹⁷⁶ The DOT and the BLS both suggest that the EMS industry will grow with the nation's increase in senior citizens because older people, especially those over age 85, use ambulances more than younger people.¹⁷⁷ The BLS projects a 15 percent increase in EMT and paramedic employment from 2016 to 2026 overall and a 6.8 percent increase specifically in local government EMS employment.¹⁷⁸ That is, non-governmental EMS employment is expected to increase more than governmental EMS employment.¹⁷⁹ This expectation suggests that although just more than half of EMTs and paramedics work for the government, usually for fire departments, this percentage will shrink.¹⁸⁰ If current compensation trends hold, turnover will increase as privately employed paramedics become a greater share of the paramedic workforce. This increased turnover, in turn, will aggravate the paramedic shortage. As Figure 1 illustrates,

¹⁷⁵ Institute of Medicine, *Emergency Medical Services: At the Crossroads*, 42, 119, 136; "Home: Occupational Outlook Handbook," Bureau of Labor Statistics, April 13, 2018, <https://www.bls.gov/ooh/home.htm>.

¹⁷⁶ "EMTs and Paramedics," Bureau of Labor Statistics, April 13, 2018, <https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm>.

¹⁷⁷ Chapman et al., *EMS Workforce for the 21st Century*, 9; "EMTs and Paramedics: Job Outlook," Bureau of Labor Statistics, April 13, 2018, <https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm#tab-6>; Judy A. Lowthian et al., "The Challenges of Population Ageing: Accelerating Demand for Emergency Ambulance Services by Older Patients, 1995–2015," *The Medical Journal of Australia* 194, no. 11 (June 6, 2011): 574–76, https://www.mja.com.au/system/files/issues/194_11_060611/low11437_fm.pdf.

¹⁷⁸ Bureau of Labor Statistics, "EMTs and Paramedics: Job Outlook"; Schafer, Sutter, and Gibbons, *Characteristics of Individuals and Employment among First Responders*, 2.

¹⁷⁹ Schafer, Sutter, and Gibbons, ii.

¹⁸⁰ National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis*, 17, 23.

BLS employment data for EMTs and paramedics vary from year to year but reflects an overall growth trend.¹⁸¹

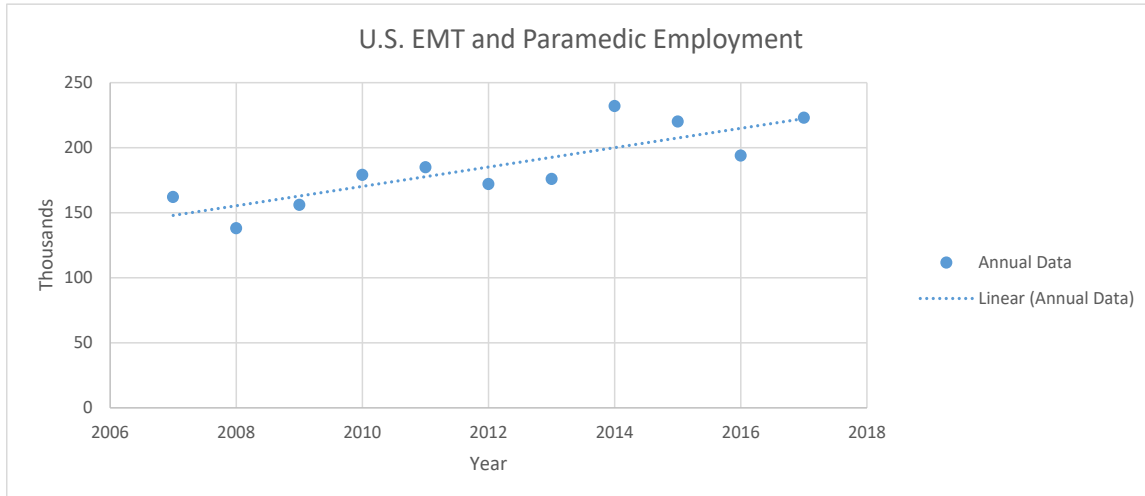


Figure 1. U.S. EMT and Paramedic Employment¹⁸²

Various organizations that have studied EMS employment growth worry about the paramedic supply. In its 2014 workforce planning guide, the National Association of State EMS Officials noted that shortages may stem from a reduced supply of workers or increased demand for them.¹⁸³ Since turnover reduces worker supply, both factors contribute to the paramedic shortage. In 2011, the *EMS Workforce Agenda for the Future* noted that EMS primary problem of managers is an insufficient number of EMTs and paramedics.¹⁸⁴ This concern predominates in other studies as well. In 2007, the State Senate Committee on EMS Recruitment, Retention, and Training in Georgia reported that inadequate numbers of young EMS personnel to replace old workers had created a shortage

¹⁸¹ “Household Data Annual Averages 11. Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” Bureau of Labor Statistics, 2016, <https://www.bls.gov/cps/cpsaat11.pdf>.

¹⁸² Source: Bureau of Labor Statistics, “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” January 19, 2018.

¹⁸³ National Association of State Emergency Medical Services Officials, *EMS Workforce Planning and Development*, 14.

¹⁸⁴ Chapman, Lindler, and Kaiser, *The Emergency Medical Services Workforce Agenda for the Future*, 26.

of EMS employees.¹⁸⁵ The committee also found that the paramedic shortage caused Georgia's second most populous county to increase recruitment from out of state.¹⁸⁶ Due to this increased recruitment, the percentage of Gwinnett County Fire and Emergency Services paramedics hired from other states increased from 29 percent in 2002 to 63 percent in 2007.¹⁸⁷ Gwinnett County established incentives including free on-duty paramedic education and a \$10,000 bonus for employees who achieve paramedic certification, and a requirement that employees be a paramedic before promotion to lieutenant.¹⁸⁸ While these incentives help Georgia, they likely crimp the paramedic pipeline in nearby states where paramedics are paid less.

Several publications characterize the EMT and paramedic employment pipeline. The 2015 DOL *Characteristics of Individuals and Employment among First Responders* study reports that EMTs, paramedics, police officers, and firefighters are younger on average compared to the remaining total employed workers.¹⁸⁹ Compared to other first responders and the total employed, EMTs and paramedics have the highest proportion of workers ages 25 to 34 years and the lowest proportion of all older age brackets.¹⁹⁰ This age skew likely results from the many who leave their private-sector EMS employer after as little as four years due to the issues surrounding compensation, advancement, burnout, and injuries cited in the previous section.¹⁹¹

In addition to the age skew, there is also a gender skew in the paramedic pipeline. In 2005, women accounted for 42 percent of EMS volunteers.¹⁹² Still, in the 45-plus years that EMS has been a career, the percentage of female EMTs who advance their education

¹⁸⁵ Senate Committee on EMS Recruitment, Retention, and Training in Georgia, *Final Report of the Senate Committee on EMS Recruitment, Retention, and Training in Georgia*, 5–6.

¹⁸⁶ Senate Committee on EMS Recruitment, Retention, and Training in Georgia, 9–10.

¹⁸⁷ Senate Committee on EMS Recruitment, Retention, and Training in Georgia, 10.

¹⁸⁸ Senate Committee on EMS Recruitment, Retention, and Training in Georgia, 10.

¹⁸⁹ Schafer, Sutter, and Gibbons, *Characteristics of Individuals and Employment among First Responders*, 4.

¹⁹⁰ Schafer, Sutter, and Gibbons, 4.

¹⁹¹ Schafer, Sutter, and Gibbons, 14–15.

¹⁹² Chapman et al., *EMS Workforce for the 21st Century*, 62.

to become paramedics has always been smaller than the percentage of male EMTs who do so. In 2014, women accounted for up to 34 percent of EMTs but only 21 percent of paramedics, a decrease from LEADS data from the previous decade that showed 38.4 percent of EMTs and 27.5 percent of paramedics were female.¹⁹³ In contrast to their low and declining numbers in EMS, women hold 75 percent of healthcare jobs, which accounts for the majority in all but five of 24 healthcare occupations.¹⁹⁴ The occupations for which women are the minority are chiropractors, dentists, physicians, EMTs, and paramedics, and “other healthcare practitioners and technical occupations.”¹⁹⁵ A 2014 study asserts that, although the majority of actively licensed U.S. physicians are male, almost two thirds of those under age 40 are female.¹⁹⁶ From this study and the BLS data, it can be inferred that some women interested in a healthcare occupation have better options than to become or remain a single-role paramedic.

The degree to which more women becoming paramedics might alleviate the shortage depends on how many more women would choose this occupation and how long they would stay in it. Regardless of gender, some people enjoy the variety, responsibility for clinical care, excitement of working in public safety, and ability to work—within wide bounds—as few or as many hours as they want. Some in the field are motivated by their clinical experiences to develop professionally within or beyond the occupation. One emerging opportunity within the occupation is that of a community paramedic.¹⁹⁷ Community paramedics receive an additional month or more of training as health educators

¹⁹³ National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis*, 19, 25; Chapman et al., *EMS Workforce for the 21st Century*, 62.

¹⁹⁴ Bureau of Labor Statistics, “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” 2015.

¹⁹⁵ Bureau of Labor Statistics.

¹⁹⁶ Aaron Young et al., “A Census of Actively Licensed Physicians in the United States, 2014,” *Journal of Medical Regulation* 101, no. 2 (2015): 15, <http://jmronline.org/doi/pdf/10.30770/2572-1852-101.2.7>.

¹⁹⁷ Joseph DeLucia, “Innovations: What Is Community Paramedicine?,” *Urgent Matters*, March 1, 2013, <https://smhs.gwu.edu/urgentmatters/news/innovations-what-community-paramedicine>.

and care navigators, and then make home care visits.¹⁹⁸ The impetus for creating community paramedicine programs is to limit the overuse of ambulances and EDs for issues that can be better treated outside the ED.¹⁹⁹ The success of the community paramedicine business model, as for traditional ambulance services, depends on the extent to which these services generate revenue, and its attractiveness to paramedics may depend in part on their compensation. Other revenue-generating opportunities are available outside the paramedic occupation. Those who return to school may qualify as physician assistants, nurses, physicians, or other healthcare providers.

Recruitment practices contribute to the employment pipeline, so they must also receive attention to address the shortage. In 2008, Chapman et al. reported that EMS employers generally recruited haphazardly although a few used organized methods.²⁰⁰ Managing EMS educational system capacity and targeting women and ethnic minorities are both essential to developing and recruiting enough EMTs and paramedics.²⁰¹ Other strategies include targeting underrepresented groups like women and minorities for EMS training, while at times offering partial EMT and paramedic scholarships.²⁰² American Medical Response (AMR), the nation's largest employer of paramedics, owns its EMT and paramedic training centers.²⁰³ AMR and its affiliate Rural/Metro Corporation promote

¹⁹⁸ DeLucia; Steven Ross Johnson, "Paramedics Deployed as Care Navigators," *Modern Healthcare*, December 21, 2015, https://search-proquest-com.libproxy.nps.edu/docview.docviewtoolssection_0.toolssectionotherformatlinks.saveaspdf.saveaspdfevent?t:ac=1751584222.

¹⁹⁹ National Highway Traffic Safety Administration, Office of the Assistant Secretary for Preparedness and Response, and Health Resources and Services Administration, *Innovation Opportunities for Emergency Medical Services: A Draft White Paper* (Washington, DC, Rockville, MD: 2013), 3–4, 8, https://www.ems.gov/pdf/2013/EMS_Innovation_White_Paper-draft.pdf; Lisa I. Lezzoni, Stephen C. Dorner, and Toyin Ajayi, "Community Paramedicine—Addressing Questions as Programs Expand," *New England Journal of Medicine* 374, no. 12 (March 24, 2016): 1108, <https://doi.org/10.1056/NEJMp1516100>.

²⁰⁰ Chapman et al., *EMS Workforce for the 21st Century*, 61.

²⁰¹ Chapman et al., 10–12, 35–36, 62.

²⁰² Mike Nugent, "Analysis of Minority Student Recruiting within the Denver Health Paramedic School" (unpublished paper, Regis University, Summer 2006), 21–22, 30–31, 40, <https://epublications.regis.edu/theses/326/>; Denver Health Paramedic Division, *Denver Health Paramedic Division EMS Diversity Scholarship* (Denver, CO: Denver Health Paramedic Division, 2017), 1–3.

²⁰³ "American Medical Response—AMR Career Development," AMR, accessed June 10, 2018, <https://www.amr.net/careers-training/career-development-training>; "Welcome to NCTI—The Nation's Largest EMS Training Facility," NCTI, accessed June 11, 2018, <https://ncti.edu/>.

diversity and inclusion but generally charge fees for training.²⁰⁴ At least one rural/metro location offered free EMT training in 2015 to students who met basic pre-employment screening and indicated an interest in working for the company.²⁰⁵ Acadian Ambulance offers to refund tuition at its paramedic school for employees who succeed at the National Registry paramedic exams and agree to work for the company for a year.²⁰⁶ These strategies address the paramedic shortage by providing companies with a constant supply of new EMS workers. Some public employers of single-role paramedics also offer free or compensated EMS training programs for minority and female residents in the hopes of employing them in career EMS positions.²⁰⁷ On balance, private employers of single-role paramedics appear to do a better job with recruitment than with retention, probably because the industry's business model precludes the financial commitments that increase retention.

C. DUAL-ROLE PARAMEDIC-FIREFIGHTERS

This section compares paramedic-firefighters to paramedics and then assesses their employment pipeline. Like single-role paramedics, firefighter-paramedics and the larger fire service are also important for local homeland security and are deployed in various manners.²⁰⁸ In addition to EMS duties, dual-role paramedic-firefighters are responsible for

²⁰⁴ AMR, "American Medical Response—AMR Career Development"; National College of Technical Instruction, *BPPE Annual Report for 2016—Institution* (Roseville, CA: California Department of Consumer Affairs, Bureau for Private Postsecondary Education, 2017), https://ncti.edu/wp-content/uploads/2018/03/BPPE_Annual_Report_for_2016.pdf; "Ambulance Services, Emergency Ambulance, Fire Services, Community Fire, Wildland Fire," Rural/Metro Corporation, 2015, <https://www.ruralmetro.com/>.

²⁰⁵ "Rural/Metro Ambulance Looking for EMTs, Offering Free Training," WDRB Media, August 18, 2015, <http://www.wdrb.com/story/29825373/rural-metro-ambulance-looking-for-emts-offering-free-training>.

²⁰⁶ "National EMS Academy Announces Tuition Refund Program," Acadian, accessed June 10, 2018, <http://nationalemssacademy.com/national-ems-academy-announces-tuition-refund-program>.

²⁰⁷ Mara H. Gottfried, "St. Paul Ex-Firehouse Rechristened 'Freedom House'; It Trains EMTs," Twin Cities, April 15, 2012, <https://www.twincities.com/2012/04/15/st-paul-ex-firehouse-rechristened-freedom-house-it-trains-emts/>; "EMS Academy," Saint Paul, Minnesota, accessed June 10, 2018, <https://www.stpaul.gov/departments/fire-paramedics/ems-academy>; "Paramedic Recruitment," City of Pittsburgh, accessed June 11, 2018, <http://pittsburghpa.gov/humanresources/public-safety-recruitment/ems-recruit.html>.

²⁰⁸ Department of Homeland Security, "Emergency Services Sector"; Fire-Rescue Wingspread Conference, *Wingspread VI: Statements of National Significance to the United States Fire and Emergency Services*, 2–3; "Fire Service Role in Emergency Management and Homeland Security," International City/County Management Association, September 17, 2012, <https://icma.org/articles/fire-service-role-emergency-management-and-homeland-security>.

fire suppression, community risk reduction, rescue, and responses to hazardous material incidents and flooding. Dual-role paramedic-firefighters usually work in more hierarchical organizations than single-role paramedics.

Unlike the flat structure that most single-role paramedics work in, the fire service's organizational structure provides promotional opportunities that aid retention in the profession but create some turnover within each rank. Below the rank of battalion chief, fire service personnel work in companies of two to six persons who are described by the type of apparatus they use; for example, an engine company or truck company. Each company includes a company officer, which is a promotion from paramedic-firefighter. Some paramedic-firefighters rotate between assignments on ambulances, fire engines, and ladder trucks, while others work primarily in one of these assignments. Many fire departments allow their dual-role personnel to continue offering advanced EMS care even as they promote to fire apparatus engineers and company officers. Paramedic-firefighters in the chief officer ranks typically serve in a management function and rarely provide direct patient care. A few fire departments offer community paramedicine programs, often using paramedic-firefighters.²⁰⁹

1. The Dual-Role Paramedic-Firefighter Workforce

Like with single-role paramedics, the process to apply as a paramedic-firefighter varies from agency to agency, but the compensation and advancement opportunities are greater. Experienced paramedics are the preferred candidate pool for paramedic-firefighter positions because the fire department gains their clinical knowledge without having to pay for their paramedic education and early clinical experiences.²¹⁰ At a minimum, paramedic-firefighters must meet the same educational standards as single-role paramedics. The minimum cost of becoming a paramedic-firefighter is the same as becoming a paramedic

²⁰⁹ David Wahlberg, "Community Paramedics Catching on in Madison Area," TCA Regional News, July 12, 2015, <https://search-proquest-com.libproxy.nps.edu/docview/1695440312/D9A00D0AF2E1423DPQ/9?accountid=12702>.

²¹⁰ Not all privately employed paramedics want to or are able to become dual-role paramedic-firefighters. Even those who do make the change often spend several years serving shareholders before they can serve the public. For these reasons, low compensation for private EMS employees probably limits the paramedic-firefighter employment pipeline.

plus any fire service testing costs. Some fire agencies ask applicants to pay about \$200 total to take standardized written and physical agility tests.²¹¹ Fee waivers are often available to those who cannot afford testing.²¹² Reducing cost barriers to employment is important to maximize qualified candidates and reap the benefits of diverse life experiences that come with economic diversity.

Particular fire departments require applicants to have taken classes toward an associate's degree in fire science, which modestly increases the cost of qualifying for the job. Some employers require paramedic-firefighter applicants to have completed a fire academy on their own, which costs about \$3,000–\$4,000.²¹³ These investments have a reasonable payoff for those hired because the median annual firefighter salary is \$49,080 and because almost all fire departments pay at least part of the medical insurance for employees and their families.²¹⁴ Paramedic-firefighter salaries are about 10 percent higher than firefighter salaries and compare favorably with median single-role paramedic compensation. Paramedic-firefighter compensation that exceeds private paramedic compensation may explain why paramedic-firefighter turnover is lower than single-role paramedic turnover.

Opportunities for advancement of paramedic-firefighters throughout the ranks improves contentment and decreases turnover by providing a stream of supervisors and managers familiar with the challenges of paramedic care and who foster working

²¹¹ “National Testing Network Candidate FAQs: Test Pricing,” National Testing Network, accessed June 17, 2018, <https://nationaltestingnetwork.com/publicsafetyjobs/test-pricing.cfm>; “Frequently Asked Questions,” Firefighter Candidate Testing Center, 2016, https://www.fctconline.org/media/uploads/faq_written_test_update_march_2016.pdf.

²¹² “Financial Hardship,” Firefighter Candidate Testing Center, accessed October 30, 2018, <https://www.fctconline.org/candidates/financial-hardship/>.

²¹³ “Firefighter Certification,” Austin Community College District, May 5, 2016, <http://www.austincc.edu/fireprot/fta.dwt.php>; “Fire Academy Costs,” Oxnard College, accessed June 17, 2018, <http://www.oxnardcollege.edu/departments/academic/fire-technology/fire-academy/fire-academy-costs>; “Fire Training Academy Course Announcement,” Washington State Patrol, accessed June 17, 2018, <http://smhttp.72879.nexcesscdn.net/807B2B0/wsp/wp-content/uploads/2018/05/2018-Weekday-RA-Announcement-NSP.pdf>; “St. Louis County Fire Academy: Self-Sponsored Students,” St. Louis County Fire Academy, accessed June 17, 2018, <https://stlcofireacademy.com/>.

²¹⁴ “Occupational Outlook Handbook: How to Become a Firefighter,” Bureau of Labor Statistics, April 24, 2018, <https://www.bls.gov/ooh/protective-service/firefighters.htm#tab-4>.

conditions that support paramedic-firefighters. Paramedic-firefighters may advance to many other positions including fire apparatus engineer, lieutenant, captain, fire marshal, battalion chief, deputy chief, or fire chief.²¹⁵ These positions offer new professional challenges and higher wages than those of paramedic-firefighters, which likely increases job satisfaction relative to single-role paramedics. Career advancement opportunities correlate with increased job satisfaction in fire service and human resources research.²¹⁶ Increased job satisfaction, in turn, correlates with decreased turnover, which is an important factor in the paramedic-firefighter shortage.

Unlike for single-role paramedics, increased education increases the retention of paramedic-firefighters within their occupations.²¹⁷ Almost 22 percent of paramedic-firefighters have a bachelor's degree.²¹⁸ Slightly more paramedic-firefighters have an associate's degree, and almost all have some community college education.²¹⁹ The U.S. Fire Administration (USFA) Fire and Emergency Services Higher Education's recognition program lists nine accredited university programs that offer a bachelor's degree and meet criteria for standardized professional development.²²⁰ The IAFF, the NFPA, and the USFA all recommend college education for firefighters who promote.²²¹ Paramedic-firefighters, by nature of their additional education and duties, have communication, delegation, and

²¹⁵ International Association of Fire Fighters, *The Professional Firefighter* (Washington, DC: International Association of Fire Fighters, 1997), www.iaff.org/library/pdfs/LICB_ProfessionalFF.pdf.

²¹⁶ Steven G. Knight, "Retention versus Satisfaction: An Empirical Analysis of Firefighter Paramedic Retention and Job Satisfaction in St. Petersburg Fire & Rescue, Florida" (applied research paper, National Fire Academy, 2008), 81, <https://www.hSDL.org/?abstract&did=692642>; Society for Human Resource Management, *Employee Job Satisfaction and Engagement*, 6.

²¹⁷ Melissa Alexander et al., "The Relationship between Paramedics' Level of Education and Degree of Commitment," *The American Journal of Emergency Medicine* 27, no. 7 (2009): 832, 835, <http://dx.doi.org.libproxy.nps.edu/10.1016/j.ajem.2008.06.039>.

²¹⁸ Schafer, Sutter, and Gibbons, *Characteristics of Individuals and Employment among First Responders*, 5.

²¹⁹ Schafer, Sutter, and Gibbons, 5.

²²⁰ "Fire and Emergency Services Higher Education Recognition Program," U.S. Fire Administration, August 1, 2018, https://www.usfa.fema.gov/training/prodev/feshe_recognition.html.

²²¹ International Association of Fire Fighters, *The Professional Firefighter*, 57; "About the Fire and Emergency Services Higher Education Initiative," U.S. Fire Administration, February 12, 2018, https://www.usfa.fema.gov/training/prodev/about_feshe.html; "NFPA 1021: Standard for Fire Officer Professional Qualifications," National Fire Protection Association, 2014, <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1021>.

supervision skills that transfer well to supervisory and management promotional examinations.

The BLS anticipates the number of firefighter jobs to grow seven percent in the next decade, the same rate at which it anticipates growth in the general workforce.²²² About one in three new fire service jobs will be for supervisor positions, some of which paramedic-firefighters will fill, which then creates more paramedic-firefighter job openings. As more fire departments begin to use paramedic-firefighters to offer advanced life support (ALS), growth in these positions should be small but steady. Promotions, the paramedic shortage, and to a lesser extent turnover and industry growth, make it increasingly difficult to hire quality paramedic-firefighters.

Unlike for single-role paramedics, several measures indicate that dual-role paramedic-firefighters are satisfied with their jobs. The General Social Survey (GSS) found in 2006 that 80.1 percent of firefighters were very satisfied with their jobs.²²³ This occupation was the third most satisfying after clergy and physical therapists.²²⁴ By 2011, the GSS reported that firefighters had risen to the second most satisfied occupation, just behind clergy.²²⁵ As discussed in Section A of this chapter, voluntary turnover in fire departments is about one-third that of private ambulance employers.²²⁶ Paramedic-firefighters identify with both parts of their occupation but generally think of themselves as firefighters in terms of compensation and contentment, both of which are generally higher than for single-role paramedics. This fulfillment also likely stems from doing the people's work within a more financially stable business model than that of the private ambulance industry.

²²² "Firefighters: Occupational Employment and Wages," Bureau of Labor Statistics, May 2017, <https://www.bls.gov/oes/current/oes332011.htm>.

²²³ "Top/Bottom Occupations," National Opinion Research Center, no. 21 (July 2007): 3, http://gss.norc.org/Documents/newsletter/GSSNEWS2007_V2_GSSNews.pdf.

²²⁴ National Opinion Research Center, 3.

²²⁵ Steve Denning, "The Ten Happiest Jobs," *Forbes*, accessed August 14, 2018, <https://www.forbes.com/sites/stevedenning/2011/09/12/the-ten-happiest-jobs/>.

²²⁶ Williams, "2005 JEMS Salary & Workplace Survey," 53.

2. Dual-Role Paramedic Employers and Employment Pipeline

Public expectations for paramedic service are higher in urban than in rural areas, as are expectations that the fire department will provide EMS services. Almost half of fire departments serving populations of 25,000 to 49,000 provide paramedic services, typically through dual-role paramedic-firefighters.²²⁷ The percentage of departments offering ALS increases with population size.²²⁸ At the extremes, only six percent of departments with a population under 2,500 provide ALS while 100 percent of fire departments serving populations of at least 1,000,000 residents provide such services.²²⁹ The 10 U.S. cities with populations of at least 1,000,000 receive ALS through various models of paramedic-firefighters, single-role fire department paramedics, single-role third-service paramedics, and single-role private paramedics.

Growth of paramedic-firefighter jobs drives recruitment needs in patterns somewhat distinct from firefighter jobs. Considering that the BLS counts paramedic-firefighters as firefighters, it expects firefighter employment to grow at seven percent per year, the average for all jobs, and thereby driving the need for increased recruitment in the current setting of a paramedic-firefighter applicant shortage.²³⁰ Growth for paramedic-firefighter jobs is likely to exceed seven percent as additional fire departments begin offering paramedic services. Fire departments tailor their recruiting efforts to their minimum entry-level requirements. Fire departments that do not require a paramedic license to apply often do not need to recruit because they receive many applications per opening; large cities may hire one percent or less of those who apply.²³¹ In some of these

²²⁷ Haynes and Stein, *U.S. Fire Department Profile—2015*, 33.

²²⁸ Haynes and Stein, 33–34.

²²⁹ Haynes and Stein, 34.

²³⁰ Bureau of Labor Statistics, “Firefighters.”

²³¹ Hulett et al., “Enhancing Women’s Inclusion in Firefighting in the USA,” 191; “Fire Commissioner Daniel A. Nigro Announces Results of Recent Firefighter Exam,” City of New York, November 13, 2017, <https://www1.nyc.gov/site/fdny/news/fa6517/fire-commissioner-daniel-a-nigro-results-recent-firefighter-exam/#/0>; Hardison et al., *Recommendations for Improving the Recruiting and Hiring of Los Angeles Firefighters*, xvii, 1, 5.

departments, recruiting is targeted at underrepresented applicants to balance out the word-of-mouth recruiting that occurs among over-represented legacy applicants.

In contrast, fire departments for whom the minimum requirement is paramedic licensure receive far fewer applications per position. Since applicants often apply to more than one fire department, the best applicants will likely be hired by other departments. This dynamic results in so few good applicants that fire departments sometimes leave paramedic-firefighter positions unfilled rather than filling them with marginal hires. Especially in suburban fire departments, fewer people apply for each paramedic-firefighter job than for each firefighter job. This decrease is plausible because applicants for firefighter jobs require no EMS certification or basic EMT certification while applicants for paramedic-firefighter jobs require a paramedic license.²³² The relative shortage of paramedic-firefighter applicants is because they must meet more requirements than firefighter applicants must.

Fire departments have many ways to acquire paramedic-firefighters. A common practice, especially among fire departments with constrained budgets, is to hire paramedics and then train them as firefighters in a fire academy of several months' duration. Some departments hire EMTs, train them as firefighters, and then send them to paramedic school for a year in the hope that they will achieve paramedic licensure.²³³ A few fire departments hire recruits with no medical qualifications and pay for more than a year of full-time education for them to qualify first as EMTs and then as paramedic-firefighters.²³⁴ These last two strategies are expensive because selected employees miss a year's work and have about a 58 to 88 percent chance of earning paramedic licensure.²³⁵ That they continue to

²³² "Qualifications," City of San Jose, accessed September 2, 2018, <http://ca-sanjose.civicplus.com/index.aspx?nid=2348>.

²³³ Rick Rouan, "Columbus Fire Overtime Surges despite New Paramedic Plan," *Columbus Dispatch*, June 18, 2017, <http://www.dispatch.com/news/20170617/columbus-fire-overtime-surges-despite-new-paramedic-plan>.

²³⁴ McKeon, "EMTs on the Decline."

²³⁵ Antonio R. Fernandez, Jonathan R. Studnek, and Gregg S. Margolis, "Estimating the Probability of Passing the National Paramedic Certification Examination," *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine* 15, no. 3 (March 2008): 263, <https://doi.org/10.1111/j.1553-2712.2008.00062.x>; "Paramedic Program," UCLA Center for Prehospital Care, accessed November 11, 2018, <https://www.cpc.mednet.ucla.edu/paramedic>.

reassign employees to a year of paramedic training shows the shortage of good paramedic-firefighter candidates, because fire departments would not gamble with sending people to such lengthy training if less expensive options worked for them.²³⁶ Alternatively, EMTs may agree to repay employers for prorated paramedic tuition if they do not work as paramedics for the sponsoring employer for a given number of years.²³⁷

Others besides the government have a role to play in aligning the work force with paramedic-firefighter staffing needs and vice versa. Families, educators, guidance counselors, and non-governmental organizations share responsibility for reducing any limiting gender role beliefs or other artificial restrictions to the paramedic-firefighter candidate employment pipeline. Few people encourage girls and women to consider fire service careers, possibly because traditional recruiting targets men.²³⁸ More women may yet be interested in firefighting careers for the same reasons that some men are, that of appealing work, livable wages, and good job security relative to alternative jobs not

²³⁶ William Perez, “Increasing Paramedic Retention in the East Hartford Fire Department” (applied research paper, National Fire Academy, 2010), 28, <https://www.hsdl.org/?abstract&did=692615>; Kathryn Varn, “Largo, Joining Other Cities, Looks for Ways to Deal with Paramedic Shortage,” *Tampa Bay Times*, December 29, 2016, <http://www.tampabay.com/news/publicsafety/fire/largo-joining-other-cities-looks-for-ways-to-deal-with-paramedic-shortage/2307572>.

²³⁷ McKeon, “EMTs on the Decline.” Tuition claw back provisions were held legal under *Posco v. Case*, but are controversial with employees. See *J. Banke, P. J. Humes and J. Dondero, USS Posco Industries v. Case*, FindLaw (California 1st District Court of Appeal 2016). It may be better policy for states to follow Michigan’s example and fund skilled trades training that pays residents to become EMTs and paramedics. See “Paramedic Shortage Leads to ‘Grow Your Own’ Partnership,” Michigan Works!, accessed November 10, 2018, <https://www.michiganworks.com/paramedic-shortage-leads-to-grow-your-own-partnership/>. The advantages of state grant programs are that states can tolerate grant-trained employees changing to other employers better than an equivalent local program would, as states already have employment development programs to build upon, and these programs are less likely to be cut than federal programs like Perkins Loans. Some aspiring EMTs and paramedics may qualify for scholarships. See “College and Continuing Education Scholarships for EMS and Paramedics,” College scholarships, accessed November 10, 2018, <http://www.collegescholarships.org/scholarships/health/ems.htm>; “EMT Scholarship—Medical Education Grant,” ZOLL, accessed November 10, 2018, <https://www.zoll.com/medical-markets/ems/emt-scholarship>. Local loan forgiveness and tuition assistance programs may also be needed to reduce the applicant shortage.

²³⁸ Hulett et al., 191–92; Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 3–4, 8–10.

requiring a degree.²³⁹ In a 2008 study, both female and male firefighters rated the occupation positively.²⁴⁰

Organizations like the California Fire Fighter Joint Apprenticeship Committee (CFFJAC) add well-qualified people, including women and other non-traditional applicants, to the paramedic-firefighter employment pipeline.²⁴¹ The CFFJAC prepares candidates in part through recruiting and by hosting a free EMT academy and mentoring program for firefighter candidates with financial need.²⁴² Sponsored by the CFFJAC, California's Firefighter Candidate Testing Center (FCTC) lets candidates create a profile on a statewide eligibility list from which more than 90 departments hire.²⁴³ The FCTC attracts candidates by various means including through community groups, career expos, and a social media campaign branded as "Becoming a Firefighter."²⁴⁴ By providing candidates' vetted qualifications and test results to participating fire departments, the FCTC streamlines firefighter candidates' application process as compared to the alternative of candidates having to test at each individual fire department.²⁴⁵

²³⁹ Hulett et al., "Enhancing Women's Inclusion in Firefighting in the USA," 190–91; "Fire Science Degree Programs in California," Fire Science, accessed November 3, 2018, <https://www.firescience.org/fire-science-degrees-and-programs/california/>. According to the latter source, almost 10 percent of the nation's firefighters work in California, where the 50th percentile wage is about \$70,000 per year.

²⁴⁰ Hulett et al., "Enhancing Women's Inclusion in Firefighting in the USA," 195, 205.

²⁴¹ "CA Fire Fighter Joint Apprenticeship Committee," California Firefighter Joint Apprenticeship Committee, accessed October 30, 2018, <http://www.cffjac.org/go/jac/about-jac/>.

²⁴² California Firefighter Joint Apprenticeship Committee, "CA Fire Fighter Joint Apprenticeship Committee; "About," Cal-JAC Academy, accessed October 30, 2018, <https://www.caljacacademy.org/about/>.

²⁴³ "FCTC Statewide Eligibility List," Firefighter Candidate Testing Center, accessed October 30, 2018, <https://www.fctconline.org/find-a-job/fctc-statewide-list/>; "Hiring Agreements," Firefighter Candidate Testing Center, accessed October 30, 2018, <https://www.fctconline.org/find-a-job/hiring-agreements/>; "CFFJAC to Begin Written Testing," California Fire Fighter Joint Apprenticeship Committee, 2007, <http://www.cffjac.org/go/jac/media-center/news-and-events/news-and-events/cffjac-to-begin-written-testing/>.

²⁴⁴ La Sauna Pakeman, "2017 Firefighter Career Expos," California Firefighter Joint Apprenticeship Committee, 3–18, May 2, 2017, <http://www.cffjac.org/go/jac/?LinkServID=F4D0CB08-1CC4-C201-3E8F229BD2EE80FD>; Kelley Trujillo, "Candidate Outreach Social Media," California Firefighter Joint Apprenticeship Committee, 3–21, May 2, 2017, <http://www.cffjac.org/go/jac/?LinkServID=F472BAD5-1CC4-C201-3E373461CAF06504>.

²⁴⁵ "What We Offer," Firefighter Candidate Testing Center, accessed October 30, 2018, <https://www.fctconline.org/candidates/what-we-offer/>.

Increasing traditional recruiting and offering employer-paid paramedic education are, at best, partial solutions to the paramedic-firefighter shortage because these approaches fail to consider broader factors limiting the pool of persons who aspire to be paramedic-firefighters. These limiting factors can be categorized as natural and artificial. Natural limitations include the inability to perform necessary duties, for example, because of physical or intellectual capacity. Artificial limitations include real and perceived barriers to paramedic-firefighter education and employment not related to the ability to perform job duties. Such artificial limitations include paramedic-firefighter recruitment practices that fail to proportionately employ the almost 47 percent of the civilian work force who are women or even the 17 percent who work in similar occupations or types of physical work.²⁴⁶ Other important artificial limitations include gender discrimination and bias—conscious or unrecognized—in childrearing, education, and employment.

3. Factors that Restrict the Employment Pipeline

Understanding the paramedic-firefighter employment pipeline is a prerequisite for understanding the degree to which artificial gender barriers may create a paramedic-firefighter shortage. The paramedic-firefighter pipeline is largely that subset of paramedics considering a fire service career. While 21 percent of paramedics are women, women account for only 3.5 percent of career firefighters according to the BLS and 4.5 percent according to the Census Bureau.²⁴⁷ The discrepancy between BLS and Census Bureau figures for career female firefighters is not surprising given that the percentage is so low as to be affected disproportionately by reporting errors. Whatever the true number of female paramedic-firefighters, it is likely low enough to discourage girls and women from

²⁴⁶ Hulett et al., “Enhancing Women’s Inclusion in Firefighting in the USA,” 205.

²⁴⁷ Bureau of Labor Statistics, “Labor Force Statistics from the Current Population Survey”; National Registry of Emergency Medical Technicians, *2014 National EMS Practice Analysis*, 25; Bureau of Labor Statistics, “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” January 19, 2018; “Full-Time, Year-Round Workers and Median Earnings: 2000 and 2013–2016,” United States Census Bureau, February 15, 2018, <https://www.census.gov/data/tables/time-series/demo/industry-occupation/median-earnings.html>.

identifying with and aspiring to the career, which thus adds to the shortage of skilled paramedic-firefighter applicants.²⁴⁸

The misperception that women lack the physical ability or interest to be paramedic-firefighters likely exacerbates the shortage of good applicants for these positions. Examining similar arduous occupations suggests that women's physical abilities do not naturally limit them to 3.5 percent of career firefighters.²⁴⁹ For example, law enforcement is physically demanding, yet the BLS reports that 13.6 percent of police and sheriff's patrol officers are women.²⁵⁰ The BLS also reports that 36.4 percent of career athletes, coaches, umpires, and related workers are women.²⁵¹ Professional athletes, like paramedic-firefighters, work outside and must be physically strong.²⁵² Paramedic-firefighters' medical duties are likely of interest to women, given that 83 percent of nurses and 35 percent of physicians in the United States are female.²⁵³ In addition, women make up 15.9

²⁴⁸ Hulett et al., "Enhancing Women's Inclusion in Firefighting in the USA," 197; CBC/Radio-Canada, "You Can't Be What You Can't See: 25 Years Later, Female Firefighters Still Few Among Men," CBC News, October 22, 2017, <http://www.cbc.ca/news/canada/british-columbia/you-cant-be-what-you-cant-see-25-years-later-female-firefighters-still-few-among-men-1.4366234>; Claire Topalian, "You Can't Be What You Can't See: Carving Paths for Female Entrepreneurs," *Huffington Post* (blog), May 28, 2014, https://www.huffingtonpost.com/claire-topalian/you-cant-be-what-you-cant-see-carving-paths-for-female-entrepreneurs_b_5386321.html; "You Can't Be What You Can't See: How to Get More Women in Tech," Muse, March 23, 2012, <https://www.themuse.com/advice/you-cant-be-what-you-cant-see-how-to-get-more-women-in-tech>.

²⁴⁹ Bureau of Labor Statistics, "Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity," January 19, 2018.

²⁵⁰ Bureau of Labor Statistics, "Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity," 2015.

²⁵¹ Bureau of Labor Statistics, "Athletes and Sports Competitors."

²⁵² Bureau of Labor Statistics; Todd J. LeDuc, "Are You a Tactical Athlete?," March 15, 2018, <https://www.fireengineering.com/articles/2018/03/tactical-athlete.html>; Stacy L. Gnacinski, Barbara B. Meyer, and David J. Cornell, "Tactical Athletes: An Integrated Approach to Understanding and Enhancing the Health and Performance of Firefighters-In-Training," *International Journal of Exercise Science* 8, no. 4 (2015): 341–57, digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1721&context=ijes; John Hofman, "Tactical Facilitators in Firefighting," NSCA, 2018, https://www.nasca.com/education/articles/tactical_facilitators_in_firefighting.

²⁵³ Henry J. Kaiser Family Foundation, "Total Number of Professionally Active Nurses, by Gender," *Henry J. Kaiser Family Foundation* (blog), October 17, 2018, <https://www.kff.org/other/state-indicator/total-number-of-professionally-active-nurses-by-gender/>; "Professionally Active Physicians by Gender," *The Henry J. Kaiser Family Foundation* (blog), October 17, 2018, <https://www.kff.org/other/state-indicator/physicians-by-gender/>.

percent of active duty military personnel, with wide-ranging military occupational specialties but consistent fitness requirements.²⁵⁴

Historically, one artificial barrier to employment of women and minorities has been discrimination. Not unique to fire departments, this discrimination included various combinations of accepting applications only from white men, selecting new hire and promotional applicants with tests that were not job-related, shunning non-traditional hires, treating them differently for training and advancement opportunities, or creating hostile environments in which few would continue working.²⁵⁵ Job applicants and employees sometimes seek to remedy discrimination through the courts. Rather than risking lawsuits and a consent decree, skilled fire chiefs follow the guidance of human resources professionals, academics, attorneys, industry associations, and knowledgeable peers to avoid preferential treatment in the first place.²⁵⁶

D. ANALYSIS

Many challenges combine to create a shortage of paramedic-firefighter candidates. Low ambulance collections and private EMS wages combine with moderately high

²⁵⁴ Department of Defense, *2016 Demographics: Profile of the Military Community* (Washington, DC: Department of Defense, 2016), iii, download.militaryonesource.mil/12038/MOS/Reports/2016-Demographics-Report.pdf.

²⁵⁵ Patel, *United States v. City and County of San Francisco*; Hulett et al., “Enhancing Women’s Inclusion in Firefighting in the USA,” 198–201; Daniel C. Vock, “Fire Departments Struggle to Meet New Demands,” *Governing*, September 2018, <http://www.governing.com/topics/public-justice-safety/gov-firefighters-firehouse.html>; Sue Lewis, *Gender and Firefighter Training: Research Paper Two: MFB Gender Equity Research Project* (Melbourne, Victoria, Australia: Swinburne University of Technology, 2004), 19–21, <https://www.google.com/search?q=Gender+and+firefighter+training+%3A+Research+Paper+Two+%3A+MFB+Gender+Equity+Research+Project&ie=utf-8&oe=utf-8>. Notwithstanding maltreatment of people based on their class, discrimination and harassment are not fire service values. See “Human Relations,” IAFF Fire Fighters, accessed November 5, 2018, <http://client.prod.iaff.org/#page=HumanRelations>; Fire-Rescue Wingspread Conference, “Wingspread VI: Statements of National Significance to the United States Fire and Emergency Services,” 4–5, 12–13; “Human Dignity,” IAFC Board of Directors, 2013, <https://www.iafc.org/about-iafc/positions/position/iafc-position-human-dignity>.

²⁵⁶ Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 8–12; Hulett et al., “Enhancing Women’s Inclusion in Firefighting in the USA,” 197–205; Miller et al., *Promising Practices for Increasing Diversity among First Responders*, 32–49, 69–80; Hardison et al., *Recommendations for Improving the Recruiting and Hiring of Los Angeles Firefighters*, xv–xix; David R. Hollenbach III, “Women in the Fire Service: A Diverse Culture Leads to a Successful Culture,” *Fire Engineering*, April 25, 2014, <http://www.fireengineering.com/articles/print/volume-167/issue-4/features/women-in-the-fire-service-a-diverse-culture-leads-to-a-successful-culture.html>.

licensing and skill requirements to discourage potential paramedics during career exploration. Low compensation and advancement opportunities for privately employed paramedics sustain the shortage by contributing to high turnover among those not yet employed by fire departments. The expanding need for paramedics and paramedic-firefighters is outpacing the ability of the nation's educational system to provide them. The vast underrepresentation of females among firefighters, and to a lesser extent among paramedics, fosters inaccurate assumptions on the part of many that girls and women should not prepare and compete for well-compensated paramedic-firefighter jobs. Responsibility for updating public perceptions about who can become a paramedic-firefighter—and why and how—is diffused among educators, students, parents, employers, and potential employees.

Understanding the EMS industry and paramedic-firefighter employment pipeline allows people to see points at which it is possible to increase the number of quality job candidates, especially from among underrepresented and under-employed persons. The next chapters illustrate how four fire departments achieve strong staffing performance through various recruitment and retention strategies, rather than by limiting themselves to the view that hiring is a zero-sum game with which departments will continually struggle to find adequate numbers of well-qualified paramedic-firefighters.

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III. STAFFING SUCCESS WITHOUT A CONSENT DECREE

Some fire departments have managed to hire organically and retain an above-average percentage of female firefighters and to insulate themselves mostly from the national shortage of paramedic-firefighter applicants. This chapter compares staffing in two departments that have never needed court supervision of their hiring. Both of these departments employ paramedic-firefighters, also known as firefighter-paramedics. Each department also assigns paramedic-firefighters both to fire crews and to ambulances. Although they differ in entry-level firefighter positions, each department uses recruitment approaches grounded in a commitment to equal employment opportunity, inclusion, and the maintenance of high standards for hiring.

A. ORANGE COUNTY FIRE RESCUE, FLORIDA

Orange County Fire Rescue (OCFR) is notable in many respects, including its commitment to staffing paramedic-firefighters, termed firefighter-paramedics locally.²⁵⁷ As the biggest fire department in Central Florida, it is one of only 259 U.S. fire departments to be accredited through the Commission on Fire Accreditation International.²⁵⁸ OCFR has 44 stations and serves a population of one million residents.²⁵⁹ Since Orange County, Florida, is “America’s most-visited destination,” OCFR also protects 72 million annual

²⁵⁷ Teresa Jacobs, *Orange County Florida Budget Highlights Fiscal Year 2018–2019* (Orlando, FL: Orange County Government, Florida, 2018), 9–4, <http://www.orangecountyfl.net/Portals/0/resource%20library/open%20government/FY-2019%20Proposed%20Budget%20web.pdf>; Ajit Lalchandani and Andre Perez, *Agreement between Orange County, Florida and Orange County Fire Fighters Association I.A.F.F., Local 2057* (Orlando, FL: Orange County Government, Florida), 8, <http://www.orangecountyfl.net/Portals/0/resource%20library/employment%20-%20volunteerism/IAFF%20Local%202057%20Contract.pdf>.

²⁵⁸ “About Fire Rescue,” Orange County Government, Florida, accessed March 2, 2018, <http://www.orangecountyfl.net/EmergencySafety/AboutFireRescue.aspx#.Wplt7udG0vg>; “Accredited Agencies,” Center for Public Safety Excellence, accessed August 27, 2018, <https://cpse.org/accreditation/accredited-agencies/>.

²⁵⁹ “Fire Station Locations,” Orange County Government, Florida, accessed October 3, 2018, <https://apps.ocfl.net/ocfrd/locations/default.asp>; “Orange County, FL,” World Media Group, LLC, accessed July 16, 2018, <http://www.usa.com/orange-county-fl-population-and-races.htm>.

visitors.²⁶⁰ Founded in 1981 from the consolidation of 14 fire districts under the control of the Board of County Commissioners, OCFR hired its first female firefighter that same year.²⁶¹ OCFR takes an interesting approach to developing firefighter-paramedics. All entry-level firefighters who are not already Florida licensed paramedics must earn such licensure and serve OCFR as paramedics within three years of their date of hire and for the duration of their employment in the firefighter classification.²⁶² OCFR's hiring strategy provides opportunities for those without a paramedic license to attend paramedic school on their own time, and then to earn paramedic incentive pay equal to an almost 19 percent pay raise and permanent employment in a growing agency with a well-defined career ladder.²⁶³

1. Measures of Staffing Performance

OCFR works hard to maximize its staffing performance measures. As of July 2018, OCFR has 96.3 percent of its 1,325 sworn positions filled.²⁶⁴ Additionally, as of July 2018, women account for 8.6 percent of these positions who holds ranks from entry-level to chief officers.²⁶⁵ Beyond hiring practices, other ways in which Orange County shows its commitment to diversity and equal opportunity employment are through policy and

²⁶⁰ Orange County Government, Florida, "Orange County and Orlando Remain America's Most-Visited Destination with 72 Million Visitors in 2017," OCFL Newsroom, May 10, 2018, <https://newsroom.ocfl.net/2018/05/orange-county-orlando-remain-americas-visited-destination-72-million-visitors-2017/>.

²⁶¹ Wikipedia, s.v. "Orange County Fire Rescue," July 13, 2018, https://en.wikipedia.org/w/index.php?title=Orange_County_Fire_Rescue&oldid=850141342; Bianca Prieto, "Bessie Hudson Named First Black Female Battalion Chief of Orange County Fire Rescue," *Orlando Sentinel*, May 15, 2010, http://articles.orlandosentinel.com/2010-05-15/news/os-bessie-hudson-20100515_1_teen-mother-hudson-last-week-sherman-hudson.

²⁶² "Orange County Fire Rescue Job Information," National Testing Network, July 11, 2018, <https://www.nationaltestingnetwork.com/publicsafetyjobs/fullJobDetails.cfm?agentid=586&jobid=2&agencyjobid=930>.

²⁶³ "Orange County Fire Rescue Job Details," National Testing Network, July 11, 2018, <https://www.nationaltestingnetwork.com/publicsafetyjobs/fullJobDetails.cfm?agentid=586&jobid=2&agencyjobid=930>; Lalchandani and Perez, *Agreement between Orange County, Florida and Orange County Fire Fighters Association I.A.F.F., Local 2057*, 8, 83, 124.

²⁶⁴ Jacobs, *Orange County Florida Budget Highlights Fiscal Year 2018–2019*, 9–4; Mike Wajda, email message to author, July 13, 2018.

²⁶⁵ Wajda.

doctrine.²⁶⁶ OCFR also lets potential applicants and their families feel like the fire service may be a fit for them—regardless of gender or other employment class—by including images of women and racial minorities in department media, which showcases a commitment to diversity.²⁶⁷ The cumulative effect of OCFR’s staffing efforts are very respectable given that the agency added 47 new positions in fiscal year 2017–2018—including 36 new firefighter-paramedics—despite a national paramedic shortage, a 3.9 percent national unemployment rate, and a 3.1 percent local unemployment rate.²⁶⁸

2. Entry Points

OCFR’s recruiting and hiring choices offer several points at which people may be hired, rather than only hiring fully certified firefighter-paramedics (see Figure 2). Each entry point leads to the position of firefighter-paramedic, which is the position that OCFR needs the most. Hiring recruits who are already credentialed as Florida firefighters and paramedics is the fastest way to obtain working paramedic-firefighters because they only

²⁶⁶ Orange County Government, Florida, *Orange County Policy Manual and Operational Regulation* (Orlando, FL: Orange County Government, Florida, 2004), 6, <http://www.orangecountyfl.net/Portals/0/resource%20library/employment%20-%20volunteerism/Policy%20Manual.pdf>; Teresa Jacobs, *Orange County Florida Annual Budget Fiscal Year 2017–2018* (Orlando, FL: Orange County Government, Florida, 2017), 3–6, http://www.orangecountyfl.net/Portals/0/resource%20library/open%20government/FY2018_Adopted_Budget.pdf; Otto Drozd III, “Orange County Fire Rescue Organizational Assessment” (PowerPoint presentation, May 14, 2013), 7, <http://otv.ocfl.net/otv/bcc2013/bcc051413/Default.html>.

²⁶⁷ Orange County Fire Rescue Department Recruitment Bureau, *Orange County Government: Firefighting* (Winter Park, FL: Orange County Fire Rescue Department Recruitment Bureau, n.d.), accessed August 26, 2018, <http://www.orangecountyfl.net/Portals/0/Library/Employment-Volunteerism/docs/Certified%20Firefighter%20Brochure.pdf>; Orange County Fire Rescue, *Orange County Fire Rescue 2015–2016 Annual Report* (Winter Park, FL: Orange County Fire Rescue, 2016), https://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/AnnualReport2016_FINAL_compressed.pdf; Orange County Fire Rescue, *Orange County Fire Rescue 2016–2017 Annual Report* (Winter Park, FL: Orange County Fire Rescue, 2017), <https://www.ocfl.net/Portals/0/Library/.../FY%2016-17%20Annual%20Report.pdf>; “Orange County Fire Rescue #LipSyncChallenge: Whatever It Takes,” YouTube video, 2:17, posted by OrangeTV, July 27, 2018, <https://www.youtube.com/watch?v=m8iS8wdYMqY>; “Fire Rescue Careers, Reserve and Youth Programs,” Orange County Government, Florida, 2018, <http://www.orangecountyfl.net/EmergencySafety/FireRescue/Careers.aspx#.W44PyrgnYig>.

²⁶⁸ Jacobs, *Orange County Florida Budget Highlights Fiscal Year 2018–2019*, 9–9; “Bureau of Labor Statistics Data, Unemployment Rate,” Bureau of Labor Statistics, August 25, 2018, <https://data.bls.gov/timeseries/LNS14000000>; Larry Krause, “Central Florida’s Unemployment Rate at 3.1 Percent for May 2018,” Career Source Central Florida, June 15, 2018, <http://careersourcecentralflorida.com/blog/2018/06/15/central-floridas-unemployment-rate-at-3-1-percent-for-may-2018/>; Paul Brinkman, “Orange and Seminole Unemployment Rates Among the Lowest in the State,” *Orlando Sentinel*, March 12, 2018, <http://www.orlandosentinel.com/business/brinkmann-on-business/os-bz-orange-december-unemployment-2018-0312-story.html>.

need to attend the OCFR recruit academy to learn OCFR equipment and procedures. Applicants who possess Florida firefighter and paramedic credentials are a very small hiring pool, so the OCFR also hires those with just a Florida paramedic license, sends them to 10 weeks' of training to qualify for state firefighter standards, and then to a recruit academy.²⁶⁹

YEAR	Year One												Year Two												Year Three																	
MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37					
Florida Certified Firefighter & Florida Certified Paramedic	Academy				Firefighter-Paramedic Working Shifts																																					
Florida Certified Paramedic	Firefighter Standards		Academy		Firefighter-Paramedic Working Shifts																																					
Paramedic Only (pass CPAT first)	Paramedic Working on Medic Unit Only If Meet Firefighter Standards < =3 Yrs, Hired as Florida Certified Firefighter & Florida Certified Paramedic If Fail to Meet Florida Firefighter Standards < =3 Yrs, Will Be Terminated Individual Timing																																				FF Standards, or Terminated					
Florida Certified Firefighter & Florida Certified EMT	Academy			Firefighter-EMT Working Shifts & Attending Paramedic School off-shift (possible completion in 9 to 36 months, depending on start date & aptitude)																																				Paramedic, or Terminated		
Non-certified (Standards may precede EMT)	EMT Training	Firefighter Standards		Academy		Firefighter-EMT Working Shifts & Attending Paramedic School off-shift (possible completion in 9 to 36 months, depending on start date & aptitude)																																				Paramedic, or Terminated

Figure 2. OCFR Career Firefighter-Paramedic Entry Points

²⁶⁹ “Fire Fighter Minimum Standards Course,” Valencia College, 2018, <http://valenciacollege.edu/public-safety/fire-rescue-institute/academy-fire-fighter-minimum-standards-course.cfm>.

Yet another entry point is OCFR’s paramedic only (PMO) program, which employs single-role paramedics in a pre-firefighter role. PMO applicants must have a Florida paramedic certification, a Florida driver’s license, and proof of CPAT completion.²⁷⁰ These OCFR paramedics work on eight ambulances—termed medic units—staffed only during peak activity periods, rather than around the clock.²⁷¹ PMO paramedics have three years to meet firefighter-paramedic hiring requirements by completing their Florida firefighter standards training and firefighter certification.²⁷² Most PMOs become permanent firefighter-paramedics because the PMO program lets them gain clinical experience and exposure to the fire department while continuing the several hundred hours of education, training, and testing required to become a certified Florida firefighter on their own time.²⁷³ These experiences make PMO paramedics better firefighter-paramedic candidates, and therefore, help to alleviate the shortage.

As discussed in Chapter II, the shortage makes the paramedic pool inadequate to meet the needs of all employers. By hiring certified firefighters not yet trained as paramedics and providing training opportunities, OCFR improves the pool overall. They begin their firefighter careers under a three-year deadline to earn a paramedic license on their own time to become firefighter-paramedics.²⁷⁴ After more than 800 hours of didactic education, skills training, and hospital clinical internships, each paramedic student spends about six weeks in a field internship, providing supervised care from an ambulance.²⁷⁵ To assist its firefighters who are paramedic students, OCFR provides these field internships

²⁷⁰ “Compensation and Job Descriptions: Paramedic 8 Hour,” Orange County Government, Florida, January 13, 2015, <http://www.orangecountyfl.net/EmploymentVolunteerism/CompensationandJobDescriptions.aspx>; “Compensation and Job Descriptions: Paramedic 12 Hour,” Orange County Government, Florida, January 13, 2015, <http://www.orangecountyfl.net/EmploymentVolunteerism/CompensationandJobDescriptions.aspx>.

²⁷¹ Lalchandani and Perez, *Agreement between Orange County, Florida and Orange County Fire Fighters Association I.A.F.F., Local 2057*, 113.

²⁷² Lalchandani and Perez, 119.

²⁷³ Florida State Fire Marshal, *A Review of the Minimum Standards Program* (Tallahassee, FL, January 13, 2014), 8, https://www.myfloridacfo.com/division/sfm/bfst/Documents/MIN_STD_Report_JAN_2014.pdf.

²⁷⁴ National Testing Network, “Orange County Fire Rescue Job Information.”

²⁷⁵ Orlando Medical Institute, “Paramedic,” *OMI/Orlando Medical Institute* (blog), accessed October 7, 2018, <https://omi.edu/paramedic/>.

on its “rescues,” the local term for ambulances staffed by firefighter-paramedics.²⁷⁶ OCFR firefighters who earn Florida paramedic certification within three years of hire are promoted to firefighter-paramedics.²⁷⁷ OCFR, like many fire departments, mentors new firefighter-paramedics by assigning them to work on an ambulance for several more months with a senior paramedic partner. Even for those firefighter-paramedics with previous paramedic experience, an initial ambulance assignment increases the quality of their clinical care and compliance with agency policies.

A non-certified firefighter recruitment, for those without either credential, takes the longest both to get the firefighter working and to get the firefighter through the Valencia College paramedic program. Non-certified recruitments require about eight months just to get a certified firefighter working on shift, and then up to another 28 months for the firefighter to qualify as a paramedic.²⁷⁸ Due to the expense of having non-certified firefighter recruits on the payroll for several months longer than certified firefighter recruits before they even start shift work, Orange County holds non-certified firefighter recruitments infrequently.²⁷⁹ Nevertheless, including this option in OCFR’s combination of entry points into the occupation captures the largest possible pool of entry-level candidates without lowering firefighter-paramedic standards, and therefore, likely does the most to reduce the firefighter-paramedic shortage.

²⁷⁶ Orange County Fire Rescue, *Orange County Fire Rescue 2016–2017 Annual Report*, 19.

²⁷⁷ National Testing Network, “Orange County Fire Rescue Job Information.”

²⁷⁸ “Home,” First Response Training Group, accessed October 8, 2018, <http://www.firstresponsegroup.com/>; Valencia College, “Fire Fighter Minimum Standards Course”; Orlando Medical Institute, “Paramedic”; Valencia College, *Program Guide for the Technical Certificate in Paramedic Technology and Associate in Science Degree in Emergency Medical Services Technology* (Orlando, FL: Valencia College, 2018), 12, <http://valenciacollege.edu/west/health/documents/18-19-Program-Guide-Paramedic-Technology-TC-and-EMS-AS.pdf>.

²⁷⁹ “Wayback Machine,” Interactive Archive, accessed November 7, 2018, https://web.archive.org/web/*/http://www.orangecountyfl.net/EmploymentVolunteerism/JobOpenings.aspx#.W-KAvuJRcvg. This internet archive has five certified firefighter job announcements going back to 2012 but no non-certified firefighter job announcements within this time frame, when the search term is <http://www.orangecountyfl.net/EmploymentVolunteerism/JobOpenings.aspx#.W-KC-uJRcvg>.

3. Hiring Process

OCFR's firefighter hiring process reflects some of the best industry practices, including that it is announced, defined, and initiated online, and uses a fair selection process.²⁸⁰ In Step 1, Orange County posts the recruitment on its website.²⁸¹ OCFR also conducts formal year-round recruitment activities and makes job information available on its website even without an active job posting.²⁸² The 2006 *IAFF Diversity Initiative report* commends the use of such recruiting combinations to get the word out.²⁸³ After the online application and submission of an application packet with copies of vital documents, the next step in OCFR's hiring process is the National Testing Network FireTEAM entry-level test.²⁸⁴ Copious online information describes this video-based test of human relations, mechanical reasoning, reading, and math.²⁸⁵

OCFR invites candidates who pass the video-based test to Candidate Physical Ability Test (CPAT) mentoring and testing.²⁸⁶ The IAFF and International Association of Fire Chiefs (IAFC) designed the CPAT as a tool for departments to select capable people for firefighting training.²⁸⁷ It is a continuous timed test, scored as pass or fail, for which candidates must be offered an orientation and practice session.²⁸⁸ Although some are

²⁸⁰ Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 10–11, 47; Hulett et al., *National Report Card on Women in Firefighting*, 6; Orange County Fire Rescue Department Recruitment Bureau, *Orange County Government: Firefighting*; National Testing Network, "Orange County Fire Rescue Job Details"; Fire Rescue Careers, Reserve and Youth Programs; Orange County Government, Florida, *Orange County Certified Firefighter Hiring Process* (Orlando, FL: Orange County Government, Florida, n.d.), accessed March 5, 2018, <http://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/Certified%20Firefighter%20Hiring%20Process.pdf>.

²⁸¹ Orange County Government, Florida, 1.

²⁸² Orange County Government, Florida, "Fire Rescue Careers, Reserve and Youth Programs."

²⁸³ Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 9.

²⁸⁴ Orange County Government, Florida, *Orange County Certified Firefighter Hiring Process*, 1.

²⁸⁵ "Ergometrics FireTEAM Testing System for Firefighters," Ergometrics and Applied Personnel Research, Inc., 2013, <https://www.ergometrics.org/>.

²⁸⁶ Orange County Government, Florida, *Orange County Certified Firefighter Hiring Process*, 2.

²⁸⁷ Fire Service Joint Labor Management Wellness-Fitness Initiative, *Candidate Physical Ability Test*, 2nd ed. (Washington, DC: International Association of Firefighters, 2007), 4, www.iaff.org/library/pdfs/hs/IAFF%20Manuals/CPAT%202nd%20Edition.pdf.

²⁸⁸ Fire Service Joint Labor Management Wellness-Fitness Initiative, 5, 16.

critical of the CPAT because it is validated as job-related content rather than as predictive of job performance, it continues to be widely used after changes outlined in a 2006 conciliation agreement involving the Equal Opportunity Employment Commission after a claim of disparate impact on female candidates.²⁸⁹ The OCFR's *CPAT Orientation Guide and CPAT Test Preparation Guide* are available online.²⁹⁰ Next, candidates undergo fingerprinting, a polygraph, and an interview with the fire chief.²⁹¹ Those candidates selected for a conditional job offer are given a medical examination and drug screening prior to a final job offer.²⁹² OCFR's hiring process minimizes any disparate impact, which thereby maximizes the hiring pool of qualified candidates. This approach is prudent given their shortage.

4. Outreach and Recruiting

OCFR's school visits and Explorer and Reserve Firefighter programs are outreach examples that synergistically complement its hiring process by creating more community knowledge of firefighting careers and more affiliation options for potential applicants. Visiting elementary schools to teach fire safety is very common in the U.S. fire service. OCFR is exceptional in that its fire crews go beyond just safety training by using school visits as an opportunity to interest children in firefighting careers.²⁹³ Non-smoking youth ages 14 to 20 years old who maintain at least a "C" average in school and pass a medical

²⁸⁹ Hulett et al., "Enhancing Women's Inclusion in Firefighting in the USA," 197–99; Fire Service Joint Labor Management Wellness-Fitness Initiative, *Candidate Physical Ability Test*, 90–94.

²⁹⁰ Orange County Fire Rescue Department—Safety and Wellness Bureau, *Candidate Physical Ability Test: Orientation Guide* (Orlando, FL: Orange County Government, Florida, n.d.), accessed September 3, 2018, <http://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/CPATOrientationGuide.pdf>; Orange County Fire Rescue Department, *CPAT Test Preparation Guide* (Orlando, FL: Orange County Government, Florida, n.d.), <http://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/CPAT%20Test%20Prep%20Guide.pdf>.

²⁹¹ Orange County Government, Florida, *Orange County Certified Firefighter Hiring Process*, 3.

²⁹² Orange County Government, Florida, 3.

²⁹³ "Fire Safety Public Education," Orange County Government, Florida, 2018, <http://www.orangecountyfl.net/EmergencySafety/FireSafetyPublicEducation.aspx#.W5MFNrgnY3U>.

exam can be OCFR Explorers.²⁹⁴ Through its emphasis on character education, fitness, leadership, life skills, and responsibility to society, the Explorer program prepares participants for fire service careers.²⁹⁵ Explorers schedule ride-alongs on OCFR fire engines and rescues, during which time they participate in a range of firefighter duties including training, cleaning chores, and emergency responses.²⁹⁶ Especially for someone who does not have a family member in the fire service, the OCFR Explorer program is a unique way to learn about firefighting teamwork, culture, and fire station life, potentially opening up a career that for many may otherwise seem out of reach or mysterious. For many, the Explorer experience likely builds understanding of and interest in the firefighter-paramedic job and thus puts some on the path to reducing shortages in this employment pipeline.

Orange County, Florida, also provides opportunities for community members to volunteer as reserve firefighters either in their choice of positions that may lead to firefighter careers or in positions for which community service is the end goal. Specifically, people can donate their time as reserve certified firefighters, as reserve non-certified firefighters, or in support roles.²⁹⁷ One common use of Reserves is to augment OCFR staffing for events like college football games when the presence of more than 45,000 fans may increase service demands.²⁹⁸ As volunteers, Reserves do not directly reduce the

²⁹⁴ Orange County Fire Rescue Department, *Explorer Program Brochure* (Winter Park, FL: Orange County Fire Rescue Department, n.d.), 1, accessed September 8, 2018, <http://www.orangecountyfl.net/Portals/0/Library/Employment-Volunteerism/docs/Explorer%20Program%20Brochure.pdf>.

²⁹⁵ Orange County Fire Rescue Department, 2.

²⁹⁶ Orange County Fire Rescue Department, 1.

²⁹⁷ Orange County Government, Florida, “Fire Rescue Careers, Reserve and Youth Programs”; “OCFL Serves Volunteer Portal: Orange County Fire Rescue Department,” Orange County Government, Florida, 2018, <https://netapps.ocfl.net/ocservices/Organization.aspx?oid=14>; “Reserve Firefighter Application Packet,” Orange County Fire Rescue Department, March 27, 2013, <http://www.orangecountyfl.net/Portals/0/Library/Employment-Volunteerism/docs/Reserve%20Firefighter%20Application.pdf>; “Orange County Fire Rescue Recruitment Interest Form: Reserve Firefighter (Volunteer),” Orange County Fire Rescue Department, September 25, 2014, <https://netapps.ocfl.net/ocservices/Org/14/Forms/Recruitment%20Interest%20Form%20Reserves.pdf>.

²⁹⁸ “OCFL Serves Volunteer Portal: By Organization—UCF Football Game,” Orange County Government, Florida, September 8, 2018, <https://netapps.ocfl.net/ocservices/Events.aspx?sby=organization&sfor=14>; UCF Athletics, “Spectrum Stadium,” UCFKnights, July 25, 2018, http://UCFKnights.com/ViewArticle.dbml?ATCLID=211735275&DB_OEM_ID=34100.

paramedic shortage, but some help by reducing peak demand for career firefighter-paramedics; all can help as ambassadors for fire service careers. That is, those who serve OCFR in any capacity likely identify with the department and are likely to expose their wider social network to information about the firefighter-paramedic career and career path.

Recruiting is most effective when the fire service champions its non-traditional workforce opportunities both internally and externally. In his comprehensive 2014 article, “Women in the Fire Service: A Diverse Culture Leads to a Successful Culture,” OCFR Battalion Chief David R. Hollenbach III explains that, because most firefighter candidates hear about jobs from family or friends, and rely on career encouragement from family and friends, the natural consequence of a mostly male fire service is mostly male word-of-mouth recruiting.²⁹⁹ He suggests that fire departments actively recruit women to increase the quantity of qualified applicants, and by inference, begin to re-balance recruiting.³⁰⁰ Hollenbach further cites evidence from the 2008 journal article “Enhancing Women’s Inclusion in Firefighting in the USA” that women have the fitness and desire to become firefighters in far greater numbers than they are currently employed, and that fire service leadership and training are needed to overcome the history of discrimination and harassment that are a barrier to women feeling as supported and valued in the occupation as men.³⁰¹ Hollenbach unofficially affirms official Orange County policy and practice of being an equal opportunity employer with a strong commitment to diversity.³⁰² Demonstration and public messaging of this commitment are crucial for recruitment and retention.

²⁹⁹ Hollenbach III, “Women in the Fire Service.”

³⁰⁰ Hollenbach III.

³⁰¹ Hollenbach III; Hulett et al., “Enhancing Women’s Inclusion in Firefighting in the USA.”

³⁰² Orange County Government, Florida, *Orange County Government Employee Handbook* (Orlando, FL: Orange County Government, Florida, 2016), 1–4, 8, 16, <http://www.orangecountyfl.net/Portals/0/resource%20library/employment%20-%20volunteerism/Employee%20Handbook.pdf>; Orange County Government, Florida, *Orange County Policy Manual and Operational Regulation*, 7, 17; Equal Opportunity Employment Commission and Office of Federal Contract Compliance Programs, *Equal Opportunity Employment Is the Law* (Washington, DC: U.S. Government Publishing Office, 2009), <https://www.dol.gov/ofccp/regs/compliance/posters/pdf/eeopost.pdf>; Caitlin Doornbos, “Orange County’s First Transgender Deputy: ‘I’m Becoming Who I Want to Be,’” *Orlando Sentinel*, June 23, 2017, <http://www.orlandosentinel.com/news/crime/os-first-transgender-deputy-20170609-story.html>.

5. Retention and Advancement

Beyond information about OCFR's firefighter-paramedic career path and commitment to diversity, the department's investments in facilities, equipment, and personnel signal potential applicants and their families about how desirable it is to work specifically at OCFR. In this regard, OCFR appears to do very well on staffing within its allotted budget, which is among the lowest per capita of Florida's large fire departments.³⁰³ OCFR is spending \$30 million to open three new fire stations through early 2019 and spends millions of dollars annually on new fire apparatus and equipment.³⁰⁴ Orange County and third parties expect continued economic growth, including in wages.³⁰⁵ Government growth or decline typically follows that of the private sector by a year or two. Wages typically increase only in response to a decreasing labor supply. Both of these dynamics suggest that OCFR salaries need to grow and will do so because Orange County firefighter wages are about 20 percent lower than those of the Orlando and Tampa Fire Departments.³⁰⁶ This salary difference may harm retention because OCFR firefighters work eight more hours per week than Orlando and Tampa firefighters do and for less pay.³⁰⁷ As with any industry, retention improves when salaries become competitive, all things being equal.

Since it is a big organization, the OCFR is able to field several specialty programs, which, in turn, also attract a wide pool of talent. For example, the OCFR staffs nine fire

³⁰³ Drozd III, "Orange County Fire Rescue Organizational Assessment," 4.

³⁰⁴ Orange County Fire Rescue, *Orange County Fire Rescue 2015–2016 Annual Report*, 3; Orange County Fire Rescue, *Orange County Fire Rescue 2016–2017 Annual Report*, 3.

³⁰⁵ "Economic Outlook," Orange County Florida Economic Development, accessed September 19, 2018, <http://www.orangecountyfl.net/EconomicDevelopment/EconomicOutlook.aspx#.W6HgZfZRc3U>; Scott Powers, "Wage Growth, Growing Pains, Projected for Central Florida Economy," Orlando Rising, January 19, 2018, <http://orlando-rising.com/wage-growth-growing-pains-projected-central-florida-economy/>; Jessica Jackson et al., *Best-Performing Cities 2017: Where America's Jobs Are Created and Sustained* (Santa Monica, CA: Milken Institute, 2018), 17, <https://www.milkeninstitute.org/publications/view/897>.

³⁰⁶ City of Orlando, "Impasse Hearing—Fire Main and District Chiefs: City Presentation" (presentation, Orlando, Florida, September 24, 2017), 10, docplayer.net/58484379-Impasse-hearing-fire-main-and-district-chiefs.html; National Testing Network, "Orange County Fire Rescue Job Information."

³⁰⁷ City of Orlando, 10; National Testing Network.

stations with at least one firefighter trained as a rescue diver.³⁰⁸ By the spring of 2019, Orange County’s Dive Rescue Program will expand to 13 fire stations and have more than 200 cross-trained firefighter divers.³⁰⁹ Another attraction to working at the OCFR is its Special Operations Rescue Climber Program, which prepares firefighters to rescue people from amusement park rides up to 450 feet tall.³¹⁰ Additionally, unmanned aerial systems (UAS)—drones—are often helpful for managing searches, rescues, fires, and other emergencies, and the OCFR has one of the nation’s largest fire rescue UAS programs.³¹¹ Also, knowing that long emergencies tax firefighters’ physiological needs, the OCFR rehab unit meets these needs by providing mobile bathrooms and showers at about 100 of the longest-duration incidents each year.³¹² This type of investment likely helps recruitment and retention by showing concern for firefighters.

The OCFR demonstrates commitment to firefighter health and wellness in other ways that likely aid retention. For example, OCFR crews follow best practices by equipping firefighters to wash toxic products of combustion off their gear, to shower within an hour of exiting a fire, and to use a clean set of firefighting protective clothing while they

³⁰⁸ Orange County Fire Rescue Department, *2015–2016 Annual Report* (Winter Park, FL: Orange County Government, Florida, n.d.), 9, https://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/AnnualReport2016_FINAL_compressed.pdf; Joe Mario Pedersen, “Orange County Fire Rescue Dive Team Growing Quickly,” *Orlando Sentinel*, September 12, 2018, <https://www.orlandosentinel.com/news/breaking-news/os-orange-county-fire-rescue-dive-team-growing-20180910-story.html>.

³⁰⁹ Pedersen, “Orange County Fire Rescue Dive Team Growing Quickly.”

³¹⁰ Orange County Fire Rescue, *Orange County Fire Rescue 2016–2017 Annual Report*, 9; Caitlin Dineen, “Orange County Fire Rescue Special Operations Members Train on the Orlando Eye,” *Orlando Sentinel*, April 8, 2015, <https://www.orlandosentinel.com/business/tourism/os-orlando-eye-training-day-20150408-story.html>; “Orlando StarFlyer Now Open at ICON Orlando 360,” Visit Orlando, accessed October 8, 2018, <https://www.visitorlando.com/blog/index.cfm/2018/6/1/Orlando-StarFlyer-Now-Open-at-ICON-Orlando-360>.

³¹¹ Caitlin Doornbos, “Orange County Fire Rescue Aims to Use Drones to Save Lives,” *Orlando Sentinel*, April 29, 2017, <https://www.orlandosentinel.com/news/breaking-news/os-fire-drones-orange-county-20170427-story.html>; Mike Holfeld, “Orange County Fire Rescue: Drone Technology Delivers ‘Beyond Expectations,’” WKMG, December 19, 2017, <https://www.clickorlando.com/news/orange-county-fire-rescue-drone-technology-delivers-beyond-expectations>; “How Central Florida Firefighters Are Using Drones to Save Lives,” WESH, May 3, 2018, <https://www.wesh.com/article/how-central-florida-firefighters-are-using-drones-to-save-lives/20135413>; Orange County Fire Rescue, *Orange County Fire Rescue 2016–2017 Annual Report*, 6, 8.

³¹² “Fire Station 72—Orange County Government, Florida,” Orange County Government, Florida, 2016, <http://apps.ocfl.net/ocfrd/locations/StationDetails.asp?StationMapNumber=1053>; Orange County Fire Rescue, *Orange County Fire Rescue 2016–2017 Annual Report*, 19.

launder their soiled gear.³¹³ Orange County also provides 27 of its fire stations with systems to divert diesel exhaust away from personnel and equipment.³¹⁴ In addition, Orange County provides firefighters with annual physical exams, coaching to pass the CPAT and annual incumbent physical ability test, safety training, mentoring, behavioral health guidance, and support for participation in professional associations including the IAFC and i-Women.³¹⁵ Together with steady growth and promotional opportunities, these OCFR initiatives are likely responsible for the department obtaining and keeping a fair share of the firefighter-paramedic labor pool and achieving strong staffing performance measures.

B. MADISON, WISCONSIN

The Madison Fire Department (MFD), in Wisconsin, the smallest metropolitan department selected as a case for this thesis, has much of which to be proud. In the 1970s, the MFD was an early adopter of paramedic service, journeyman firefighter training, and black and female firefighters.³¹⁶ Begun under a 2015 Wisconsin Department of Health Services pilot program to reduce healthcare costs and unnecessary emergency calls, the MFD was among the first in the state to offer a mobile integrated health program staffed with community paramedics.³¹⁷ Chief officers must reside in the city of more than 255,000

³¹³ Stephen Hudak, “Fla. Firefighters Get Decontamination Kits to Fight Cancer Risk,” *FireRescue1*, August 24, 2018, <https://www.firerescue1.com/fire-products/Personal-protective-equipment-ppe/articles/389876018-Fla-firefighters-get-decontamination-kits-to-fight-cancer-risk/>.

³¹⁴ Hudak.

³¹⁵ Orange County Fire Rescue Department, *2015–2016 Annual Report*, 8, 15; J. Brian Morrow, “Orange County, FL, Applies Recent Fire Research to Live Fire Training,” *ModernFireBehavior*, June 14, 2016, <https://modernfirebehavior.com/orange-county-fl-applies-recent-fire-research-to-live-fire-training/>.

³¹⁶ “Notable Department Milestones,” City of Madison Fire Department, 2017, <https://www.cityofmadison.com/fire/about/history/notable-department-milestones>.

³¹⁷ Wahlberg, “Community Paramedics Catching on in Madison Area”; “Mobile Integrated Health (Community Paramedicine),” City of Madison, accessed September 15, 2018, </fire/emergency-medical-services/mobile-integrated-health-community-paramedicine>.

residents, currently rated as the 7th best place to live in the United States.³¹⁸ In 2006, the *IAFF Diversity Initiative* report noted that the MFD “has never been under a consent decree. They have over-representation of Blacks, community representation of Hispanics, and very good representation of women. This department is ranked #1 in our sample for excellent diversity for all groups.”³¹⁹

The story of how Madison earned this praise includes relevant legislation at all levels. Wisconsin laws going back to at least the 1970s provided for state equal opportunity employment, and where allowable and necessary, to gain a workforce representative of the qualified state labor force, for affirmative action.³²⁰ The same chapter of Wisconsin Law that defines affirmative action both in terms of equal opportunity and “eliminating the present effects of past discrimination” also specifies that state personnel actions be based on ability and not color, sex, ancestry, etc.³²¹ Like Wisconsin laws, Madison codes treat affirmative action as consistent with equal opportunity.³²² The Madison Code of Ordinances dates to at least the 1984 ban on employment discrimination based on race, gender, or other non-work related characteristics.³²³ Madison’s affirmative action and equal opportunity employment codes establish city and departmental expectations and practices that demonstrate commitment to fair hiring.³²⁴ Setting expectations that public

³¹⁸ “Join MFD,” City of Madison Fire Department, 2018, <https://www.cityofmadison.com/fire/join-mfd>; Census Bureau, “QuickFacts: Madison City, Wisconsin,” July 1, 2017, <https://www.census.gov/quickfacts/fact/table/madisoncitywisconsin/PST045217>; “#7 of 2018 Top 100 Best Places to Live: Madison, WI,” Livability—Journal Communications, Inc., 2018, <https://livability.com/best-places/top-100-best-places-to-live/2018/wi/madison>.

³¹⁹ Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 23.

³²⁰ Wisconsin State Legislature, “Chapter 196, Laws of 1977” (1977), 1038, 1044, 1055–57, <https://docs.legis.wisconsin.gov/document/acts/1977/196>; “Wisconsin Legislature: 230.03(2)(B),” Wisconsin State Legislature, accessed September 15, 2018, <https://docs.legis.wisconsin.gov/statutes/statutes/230/I/03/2/b>.

³²¹ Wisconsin State Legislature, “Chapter 196, Laws of 1977,” 5055–56.

³²² The extent to which affirmative action and equal opportunity employment are consistent changes with how one defines each and with evolving statutory and case law.

³²³ City of Madison, “Chapter 39—Department of Civil Rights,” Code of Ordinances § (2006), https://library.municode.com/wi/madison/codes/code_of_ordinances?nodeId=COORMAWIVOIVCH32--45_CH39DECIRI.

³²⁴ City of Madison. Notwithstanding that the Madison Code of Ordinances Chapter 39 includes Section 39.02, titled “Affirmative Action Ordinance,” its essence is to create a structure making equal opportunity in contracting, service, employment, and promotions a reality.

employees be representative of residents, as Madison does in Chapter 39, aids such goals by increasing applicant pool depth and diversity.

1. Measures of Staffing Performance

By including workforce demographics back to 1989, the 2017 MFD annual report substantiates and expands on the IAFF claim about the MFD's gender integration.³²⁵ The MFD annual report provides figures showing that women accounted for 8.3 percent of sworn MFD members in 1989, 15.3 percent in 1998 and 2008, and 10.49 percent in 2018.³²⁶ The ultimate measure is how many positions are filled. The MFD has 392 of 384 sworn positions filled as of January 22, 2018, which gives a staffing measure of performance of 102 percent.³²⁷ Staffing more than 100 percent of authorized positions is very rare in the career fire service. The MFD's unusually excellent staffing percentage is partially due to their intention to staff an additional fire station anticipated to open in December 2018.³²⁸

Madison achieves this admirable staffing performance in part through transparency about its commitment to diversity and inclusion. This commitment is institutionalized citywide through the Department of Civil Rights and the Women's Initiatives Committee.³²⁹ Since the Madison Code of Ordinances Chapter 39.02 mandates that the Madison Division of Affirmative Action report at least annually to the mayor and council on progress toward city and departmental affirmative action goals, each department has an

³²⁵ City of Madison Fire Department, *City of Madison Fire Department 2017 Annual Report* (Madison, WI: City of Madison, 2018), 4, <https://www.cityofmadison.com/fire/documents/MFD%202017%20Annual%20Report.pdf>.

³²⁶ City of Madison Fire Department, 4.

³²⁷ Paul R. Soglin, *2018 Adopted Budget: City of Madison* (Madison, WI: City of Madison, 2018), 191; Lance Langer, email message to author, August 7, 2018.

³²⁸ "Fire Station 14," City of Madison Engineering, accessed September 15, 2018, <https://www.cityofmadison.com/engineering/projects/fire-station-14>; City of Madison, Wisconsin, *Madison 2018 Adopted Operating Budget: Fire* (Madison, WI: City of Madison, n.d.), accessed September 9, 2018, <https://www.cityofmadison.com/budget/documents/2018/operating/adopted/Fire.pdf>.

³²⁹ "Department of Civil Rights: City of Madison, Wisconsin," City of Madison, Wisconsin, 2018, <https://www.cityofmadison.com/dcr/aaFAQ.cfm>; "Women's Initiatives Committee," City of Madison City Clerk's Office, July 27, 2017, [/clerk/meeting-schedule/womens-initiatives-committee-8](https://www.cityofmadison.com/clerk/meeting-schedule/womens-initiatives-committee-8).

incentive to strive for staffing that represents Madison.³³⁰ The city’s *Equitable Workforce Plan* describes department heads’ equal opportunity employment and affirmative action responsibilities, including the expectation to report annually on how they identify and overcome barriers that discriminate against women, racial minorities, and persons with disabilities.³³¹ Madison’s legislated workforce integration goals likely keep it supplied with greater numbers of qualified candidates than it would have in the absence of these goals. The effect is to help improve staffing performance even when other agencies have difficulty recruiting paramedic-firefighters.

2. Entry Points

The single entry point for MFD firefighters is to attend the 16-week recruit academy and complete 18 months of probationary employment as a firefighter.³³² This sole entry point is true even for paramedics and those with previous firefighting experience that may qualify them as lateral firefighters in a smaller fire department.³³³ Academy graduates with at least EMT certification are immediately assigned to a fire station and serve with an engine/ladder company.³³⁴ The MFD’s website indicates that it sends even experienced recruits to the fire academy to help them become successful members of the MFD team.³³⁵ The same rationale applies to the MFD’s practice of selecting paramedic-firefighters from the firefighter classification.³³⁶ Although the Madison Police Department has an Explorer post, the MFD has no Explorers, cadets, or reserves.³³⁷ That the MFD has a single entry

³³⁰ City of Madison, “Chapter 39—Department of Civil Rights.”

³³¹ City of Madison Department of Civil Rights, *Equitable Workforce (Affirmative Action) Plan 2017 Report* (Madison, WI: City of Madison Department of Civil Rights, 2017), 1–2, <https://www.cityofmadison.com/dcr/documents/EWplan2017.pdf>.

³³² City of Madison, Wisconsin, “Join MFD.”

³³³ City of Madison, Wisconsin.

³³⁴ City of Madison, Wisconsin.

³³⁵ “Academy: Recruit Training,” City of Madison Fire Department, accessed September 17, 2018, <https://www.cityofmadison.com/fire/join-mfd/academy>.

³³⁶ City of Madison, Wisconsin, “Join MFD.”

³³⁷ “Explorer Post 911,” City of Madison Police Department, accessed September 16, 2018, <https://www.cityofmadison.com/police/community/explorer/>.

point for those interested in a firefighting career suggests that the agency is in a much stronger recruiting position than many others are.

3. Hiring Process

The MFD’s hiring process is transparent, inclusive, and gives applicants with any initiative plenty of resources and time to prepare for each step. The Police and Fire Commission has overall supervision of the process, certifies the eligibility list, and approves hires.³³⁸ The hiring process’s transparency comes from the wealth of specific information on MFD web pages, including that the MFD takes applications about every two years.³³⁹ To illustrate how much time applicants have to prepare, the 2017–2018 hiring timeline included the following gaps between the first day of the online application period and each subsequent step:

- Close of October 1–November 30, 2017 application period: 2 months
- FireTEAM Test on January 3, 2018: 3 months
- Community Oral Board Interview in February 2018: 4 months
- Department Oral Board Interview in April 2018: 6 months
- Fire Chief’s Interview in May 2018: 7 months
- Physical Ability Test in July 2018: 9 months
- Background checks and medical evaluations: at least 9 months

³³⁸ Committee Information—Legislative Information Center, “Police and Fire Commission,” City of Madison, Wisconsin, June 29, 2018, <https://www.cityofmadison.com/cityhall/legislativeinformation/roster/104500.cfm>.

³³⁹ City of Madison, Wisconsin, “Join MFD.”

- Recruit Academy in September or October (for those hired): 11 to 12 months³⁴⁰

This timeline and Madison’s online information detail the application process and job requirements, as well as how to prepare for success in the hiring process, which provides candidates with transparent and abundant information.³⁴¹

In addition to their value for test preparation, savvy applicants will note that these resources strongly suggest that they prepare to explain in the three early interviews how they demonstrate concern for the people of Madison. The MFD’s hiring process values traits like communication skills, compassion, and a service orientation over firefighting knowledge.³⁴² Since the MFD fire academy trains recruits as firefighters, EMTs, and hazardous materials technicians, prerequisites are only U.S. citizenship, being at least 18 years old, be a high school graduate or equivalent, have a driver’s license, and be in good health.³⁴³ After completing the fire academy, new firefighters finish a 3.5-year apprenticeship.³⁴⁴ This approach to hiring embraces the common wisdom of employers

³⁴⁰ “Hiring Timeline: An Overview of the 2017–2018 Application Process,” City of Madison Fire Department, November 10, 2017, <https://www.cityofmadison.com/fire/blog/hiring-timeline-an-overview-of-the-2017-2018-application-process>.

³⁴¹ “Navigating the City of Madison’s Hiring Process,” City of Madison Human Resources, July 2017, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjOnteN76HcAhWT14MKHYP_A_gQFgg6MAE&url=https%3A%2F%2Fwww.cityofmadison.com%2Fsites%2Fdefault%2Ffiles%2Fcity-of-madison%2Fhuman-resources%2Fdocuments%2F navigatingCityHiringProcess.pdf&usq=AOvVaw26I3crv-bbpBGioiQAS7BL; “What We Look For: Firefighter Prerequisites,” City of Madison Fire Department, accessed September 16, 2018, <http://www.cityofmadison.com/fire/join-mfd/what-we-look-for>; “Application Process: Fire,” City of Madison Fire Department, 2018, <https://www.cityofmadison.com/fire/join-mfd/application-process>; Ergometrics & Applied Personnel Research, Inc., *Madison Fire Department Candidate Orientation Handout* (Madison, WI: City of Madison Fire Department, 2015), http://www.cityofmadison.com/fire/documents/Madison%20Candidate%20Study%20Guide_2016-2017_Final.pdf; Aaron Zamzow, *FRF Introduction to Firefighter Fitness* (Madison, WI: Madison Wisconsin Fire Department, 2016), <http://www.cityofmadison.com/fire/documents/frf-intro-to-firefighter-fitness.pdf>; “2016 Madison Fire Department PAT Training,” 2016, City of Madison, Wisconsin, <https://media.cityofmadison.com/Mediasite/Play/100464acc2124c179e06c0fca51bab2e1d>.

³⁴² City of Madison, Wisconsin, “Join MFD”; City of Madison Fire Department, “What We Look For: Firefighter Prerequisites.”

³⁴³ City of Madison Fire Department, “Academy: Recruit Training”; “What We Look For,” City of Madison Fire Department, accessed September 17, 2018, <https://www.cityofmadison.com/fire/join-mfd/what-we-look-for>.

³⁴⁴ “Why MFD,” City of Madison Fire Department, accessed September 17, 2018, <https://www.cityofmadison.com/fire/join-mfd/why-mfd>.

that they can teach technical skills like firefighting more easily than they can teach a good attitude. This emphasis on personal characteristics over technical skills broadens the pool of potential applicants far beyond those already trained as paramedics and probably stands as the core reason as to why the MFD is in such a strong recruiting position.

4. Outreach and Recruiting

The MFD does not need to recruit to attract many well-qualified applicants to its competitive hiring process, but it recruits anyway, as the IAFF pointed out, and leverages the diversity of its current employees by including them in the recruiting team to reinforce future diversity.³⁴⁵ On its “Ask a Recruiter” page, the MFD includes short biographies and photos of a dozen members of all ranks and encourages those considering a MFD career to click a link to email questions to any of these members.³⁴⁶ While some of these recruiters had previous firefighting and EMS experience, others came to the MFD with experiences in banking, dispatching, trucking, the military, non-profits, and one even as a utility line technician.³⁴⁷ The gender, generational, prior-occupational, and racial diversity of these recruiters likely expands the pool of potential MFD applicants because applicants are more likely to see themselves as MFD firefighters than without such a web page.³⁴⁸

Another recruiting web page, “Join MFD,” likely appeals to applicants because it displays a photo of a diverse recruit academy graduating and lists information about recruitment open houses, a Women in Fire/EMS Workshop, and the application process.³⁴⁹ Several MFD blogs, including one by Fire Chief Steven Davis, give potential applicants a

³⁴⁵ City of Madison, Wisconsin, “Join MFD”; Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 23; “Ask a Recruiter: Fire,” City of Madison, Wisconsin, 2018, <https://www.cityofmadison.com/fire/join-mfd/ask-a-recruiter>.

³⁴⁶ City of Madison, Wisconsin, “Ask a Recruiter: Fire.”

³⁴⁷ City of Madison, Wisconsin.

³⁴⁸ Sue Lewis, *Gender and Firefighter Selection and Recruitment: Research Paper Three: MFB Gender Equity Research Project 2004* (Melbourne, Victoria, Australia: Swinburne University of Technology, 2004), 17, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.491.1719&rep=rep1&type=pdf>; Scott F. Neal, “Millennials in the Fire Service: The Effectiveness of Fire Service Recruiting, Testing, and Retention” (master’s thesis, Naval Postgraduate School, 2017), 16, <https://www.hsd1.org/?abstract&did=808276>.

³⁴⁹ City of Madison, Wisconsin, “Join MFD.”

feel for what the organization values.³⁵⁰ One blog post celebrates a MFD captain’s national award for her volunteer work with CampHERO, a summer camp that introduces girls to fire, EMS, and law enforcement careers.³⁵¹ Although correlation is not causation, it is reasonable to suppose that MFD’s outreach has a positive impact on its staffing successes because many agencies that lack similar outreach efforts struggle with firefighter staffing.

In addition to its comprehensive online recruiting information, the MFD also recruits in the community. Besides the aforementioned open houses and workshop, the MFD starts recruiting potential applicants in elementary school by including career information when crews visit to teach fire safety. The department’s recruiting team includes the dozen recruiters listed on the aforementioned web page and at least as many unlisted others. That is, all MFD members may participate in recruiting, with oversight from the Division Chief of Health and Wellness and the Assistant Chief assigned to personnel.³⁵² Recruiters visit junior high schools, high schools, and the local university to do their part to help the MFD live up to Madison’s *Equitable Workforce Plan*.

Consistent with Madison law and policy direction, the MFD is serious about eliminating barriers to employing the best firefighters to serve Madison. An important partner in this effort, Madison Human Resources has provided all departments with resources including training, a supervisory manual, external partnerships, internships, reports, and a Racial Equity and Social Justice Initiative, all aimed at fostering employee equity.³⁵³ While racial equity is not this thesis’s focus, many of the same strategies for eliminating race-based hiring barriers are effective for eliminating gender-based hiring

³⁵⁰ Steven Davis, “Chief’s Blog,” *City of Madison Fire Department* (blog), July 11, 2018, <https://www.cityofmadison.com/fire/blog/chief>.

³⁵¹ “Captain Jen Román Receives National Honor for Work with CampHERO,” City of Madison Fire Department, August 9, 2018, <https://www.cityofmadison.com/fire/blog/captain-jen-roman-receives-national-honor-for-work-with-camphero>.

³⁵² “Leadership Team,” City of Madison Fire Department, accessed June 1, 2018, <https://www.cityofmadison.com/fire/about/leadership-team>; “City of Madison Fire Department Organizational Chart,” City of Madison Fire Department, 2018, <https://www.cityofmadison.com/fire/documents/MFDOrgChart.pdf>.

³⁵³ Mike Lipski et al., *Equity in Hiring and Employee Development* (Madison, WI: City of Madison Human Resources, 2015), 1–3, <https://www.cityofmadison.com/human-resources/documents/EquityReport2015.pdf>.

barriers. Since firefighting is a nontraditional occupation for women; in other words, they represent typically 25 percent or less of the occupation, the MFD makes extra efforts to communicate to the workforce that women are welcome.³⁵⁴ The MFD also specifically extends its welcome to gay and lesbian applicants.³⁵⁵ The MFD's robust efforts to be reflective of its community build resilience into its ability to select the best people to be firefighter-paramedics even in the face of a national shortage of candidates.

5. Retention and Advancement

Since employees with special assignment options and promotional opportunities are usually more satisfied with their jobs and less likely to leave their employer, the MFD's range of programs improves retention. The MFD provides many such opportunities including paramedic training and special teams service opportunities including on the Tactical EMS team, Lake Rescue (dive) Team, Hazardous (materials) Incident Team, and Heavy Urban Rescue Team.³⁵⁶ Firefighter-paramedics given additional training as community paramedics provide non-emergency home visits to patients who would otherwise call an ambulance.³⁵⁷ Initially a pilot project but now enshrined in state law, this

³⁵⁴ "Nontraditional Occupations," Bureau of Labor Statistics, 2015, <https://www.dol.gov/wb/stats/Nontraditional%20Occupations.pdf>; City of Madison Fire Department, "Why MFD."

³⁵⁵ City of Madison Fire Department, "Why MFD."

³⁵⁶ "EMS Q&A: Did You Know MFD Paramedics Are Also Firefighters?," City of Madison Fire Department, May 25, 2017, <https://www.cityofmadison.com/fire/blog/ems-qa-did-you-know-mfd-paramedics-are-also-firefighters>; "Tactical Emergency Medical Services," City of Madison Fire Department, accessed September 17, 2018, <https://www.cityofmadison.com/fire/emergency-medical-services/tactical-emergency-medical-services>; "Lake Rescue Team," City of Madison Fire Department, accessed September 17, 2018, <https://www.cityofmadison.com/fire/stations/special-teams/lake-rescue-team>; "Hazardous Incident Team," City of Madison Fire Department, accessed September 17, 2018, <https://www.cityofmadison.com/fire/stations/special-teams/hazardous-incident-team>; "Heavy Urban Rescue Team," City of Madison Fire Department, accessed September 17, 2018, <https://www.cityofmadison.com/fire/stations/special-teams/heavy-urban-rescue-team>.

³⁵⁷ David Wahlberg, "Stepping in before the Ambulance Is Called: Community Paramedics Help Avert Crises," *Wisconsin State Journal*, December 25, 2016, https://madison.com/news/local/health-med-fit/stepping-in-before-the-ambulance-is-called-community-paramedics-help/article_38f69c8c-ac1c-5d49-92e5-4d72e5b70961.html.

community paramedic program provides opportunities for some seasoned paramedic-firefighters to serve in a different role.³⁵⁸

The MFD's absence of barriers to hiring and promotion, and its many special team opportunities are not the only forces that keep job satisfaction high and turnover low. Investment in fire stations and equipment also signal to employees and potential applicants that the department and city are growing and bringing new opportunities that foster employee retention. The Madison metropolitan statistical area's gross domestic product growth in 2017 was 4.9 percent, compared to 2.9 percent state and national economic growth.³⁵⁹ Besides the station that will open in December 2018, this growth allows the MFD to break ground on a new fire station in early 2019, as well as to renovate two others.³⁶⁰ As well, Chief Davis and Fleet Superintendent Joishy Mahanth have prioritized the purchase of fire apparatus with the 2019 budget.³⁶¹ Providing firefighters with good equipment and stations makes them feel appreciated, and like advancement opportunities, aids in retention. Not all fire departments can afford to replace vehicles and facilities on a prudent schedule. Madison's investment in facilities and equipment for its firefighters cannot be taken for granted any more than its exceptional commitment to diversity, equity, and inclusion.

Not every firefighter develops the drive and skill set to become an officer or chief officer. For those who do aspire to promote, it is often important to be able to identify with

³⁵⁸ Wisconsin State Legislature, "Wisconsin Legislature: 2017 Wisconsin Act 66," Act 66 § (2017), <https://docs.legis.wisconsin.gov/2017/related/acts/66>; "Community Paramedic Program," UnityPoint Health, 2018, <https://www.unitypoint.org/madison/communityparamedic.aspx>.

³⁵⁹ City of Madison Economic Development Division, *2017 City of Madison Economic Development Division Year End Report* (Madison, WI: City of Madison Economic Development Division, 2018), 1, https://www.cityofmadison.com/dpced/economicdevelopment/documents/2017%20EDD%20annual%20report_draft%205_1_18.pdf.

³⁶⁰ City of Madison, Wisconsin, *Madison 2018 Adopted Operating Budget: Fire*; Paul R. Soglin, *2019 Capital Budget Instructions and Target* (Madison, WI: Mayor's Office, 2018), <https://www.cityofmadison.com/sites/default/files/city-of-madison/budget/documents/2019/capital/CapitalMessageMayor.pdf>.

³⁶¹ Steven Davis, *2019 Capital Budget Transmittal Memo Fire Department* (Madison, WI: City of Madison, 2018), 185, [https://www.cityofmadison.com/budget/documents/2019/capital/requests/Fire Department.pdf](https://www.cityofmadison.com/budget/documents/2019/capital/requests/Fire%20Department.pdf); Mahanth Joishy, *City of Madison 2019 Capital Improvement Plan: Agency Request Summary—Fleet Services* (Madison, WI: City of Madison, 2018), 205, <https://www.cityofmadison.com/budget/documents/2018/capital/adopted/Fleet.pdf>.

officers and chief officers; in other words, to see themselves in these roles. For female firefighters in an occupation with low female representation, the presence of female chiefs helps remove perceived barriers to advancement. The same is true for ethnic and racial minorities. Madison and the MFD take an inclusive approach to career advancement that demonstrates an absence of gender or racial barriers to promotion.³⁶² For example, Madison hired Debra Amesqua as its first female fire chief in 1996.³⁶³ Although she retired at the end of 2011, women and racial minorities continue to be represented among the MFD's chief officers.³⁶⁴

C. ANALYSIS

Orange County Fire Rescue and the MFD have comparable hiring processes, but differ slightly in outreach, recruiting, and retention. By state law, the OCFR cannot hire those who have used tobacco within the past year, but otherwise, their recruiting targets similar applicants.³⁶⁵ Although the OCFR has more employment entry points than the MFD, their staffing performance is similar, especially with respect to the representation of women in their firefighting ranks.

That neither agency has been the subject of a consent decree appears to be because of the depth of their commitment to inclusive recruiting and fair hiring, which likely increases staffing performance. The same organizational commitment to lawful conduct and the prevention of harassment is likely a factor in the author's inability to find discrimination allegations against either department on the industry's leading legal news

³⁶² Lipski et al., *Equity in Hiring and Employee Development*, 18.

³⁶³ "Madison Fire Department Chiefs," City of Madison Fire Department, accessed September 18, 2018, <https://www.cityofmadison.com/fire/about/history/madison-fire-department-chiefs>.

³⁶⁴ City of Madison Fire Department; Mary Ellen Bell, "Hail to Outgoing Madison Fire Chief Debra Amesqua," *Isthmus*, August 11, 2011, <https://isthmus.com/isthmus/article.php%3Farticle%3D34354>; City of Madison Fire Department, "Leadership Team."

³⁶⁵ "The 2018 Florida Statutes: Title XXXVII Insurance Chapter 633 Fire Prevention and Control," Florida State Legislature, August 27, 2018, http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0600-0699/0633/Sections/0633.412.html.

blog.³⁶⁶ This is not to say that neither department will ever face such a claim. The natural experiment of the many other fire departments that employ no females and struggle with staffing suggests that the substantial efforts of the MFD and the OCFR to recruit inclusively is a factor in their ability to staff paramedic-firefighter positions successfully.

If fully staffing with paramedic-firefighters were easy, most agencies would consistently do so. The same can be said for achieving and maintaining representative numbers of female paramedic-firefighters. The MFD's percentage of female firefighters has decreased from 15.31 percent to 10.49 percent in the last 10 years.³⁶⁷ It is beyond the scope of this research to determine why even departments like the MFD, which staffs very successfully, have experienced a drop in female firefighters over the decades, but it is important to note that staffing is a continuous challenge that always takes personnel, resources, and leadership.

³⁶⁶ Curt Varone, "Search for 'Florida,'" *Fire Law* (blog), accessed October 28, 2018, <http://www.firelawblog.com/search/florida/>; Curt Varone, "Search for 'Wisconsin,'" *Fire Law* (blog), accessed October 28, 2018, <http://www.firelawblog.com/search/wisconsin/>.

³⁶⁷ City of Madison Fire Department, *City of Madison Fire Department 2017 Annual Report*, 4.

IV. STAFFING SUCCESS ABOVE AND BEYOND A CONSENT DECREE

To explore the impact that increased recruitment of women can have on the paramedic-firefighter shortage, this chapter analyzes fire service staffing in the Philadelphia Fire Department (PFD) and the San Francisco Fire Department (SFFD). These two large career fire departments each experienced a court-approved consent decree and changed hiring practices as a result. Each decree considered in this chapter imposed hiring obligations on the affected city to remedy alleged violations of Title VII of the 1964 Civil Rights Act, as amended.³⁶⁸ This type of preferential treatment in employment would otherwise violate Title VII and the Equal Protection clause of the Fourteenth Amendment except where endorsed by a court in very narrow and temporary circumstances.³⁶⁹ After earning freedom from court supervision in hiring and promotion, they distinguished themselves by recruiting, hiring, and promoting women—based on their merits—at a much higher percentage than the average fire department.

A. PHILADELPHIA, PENNSYLVANIA

From 1975 through 2011, the city of Philadelphia operated under a consent decree with the U.S. District Court for the Eastern District of Pennsylvania.³⁷⁰ The decree initially required Philadelphia to create new entry-level and promotional tests and to hire and promote qualified African-American firefighters within court-defined quotas.³⁷¹ Later decree modifications approved the new tests, ended the promotional quotas, added a restorative firefighter-hiring plan, and extended this plan to all uniformed positions.³⁷² In October 2010, parties reached a settlement requiring the PFD to form a recruitment team

³⁶⁸ *Rice, Commonwealth of Pennsylvania, et al., Michael Kirby, et al. vs. Joseph Rizzo et al.; Davis v. City and County of San Francisco.*

³⁶⁹ Thompson and Morris, “What Factors Influence Judges’ Rulings about the Legality of Affirmative Action Plans?” 414–15.

³⁷⁰ *Rice, Commonwealth of Pennsylvania et al.; Michael Kirby et al. vs. Joseph Rizzo, et al.*

³⁷¹ *Rice.*

³⁷² *Rice.*

and create an equal opportunity employment report.³⁷³ The decree would be suspended for two years from the start of the next firefighter eligibility list and then dissolved if the representation of African-American firefighters remained at least 26.73 percent in the PFD during the suspension period.³⁷⁴ The court permanently dissolved the decree in September 2014 after finding that the PFD had met its requirements under the settlement.³⁷⁵ The following sections examine the PFD's recruitment and hiring in the context of the impact of recruiting women on the paramedic-firefighter shortage.

With 63 fire stations serving more than 1.5 million residents, the PFD is the largest department that this thesis considers.³⁷⁶ Beginning service in 1871 as an all-career department, the PFD currently trains firefighters as EMTs in the fire academy and employs single-role paramedics on fire department ambulances based out of fire stations.³⁷⁷ PFD paramedics who wish to become PFD firefighters may apply as entry-level firefighters.³⁷⁸ Overall, however, Philadelphia's low barriers to entry for firefighters does not compensate

³⁷³ Rice.

³⁷⁴ Rice.

³⁷⁵ *Timothy R. Rice, Commonwealth of Pennsylvania, et al., Michael Kirby, et al., v. Joseph Rizzo, et al.*, No. 2:74-cv-00258 (United States District Court for the Eastern District of Pennsylvania September 29, 2014).

³⁷⁶ "Philadelphia, PA," accessed September 21, 2018, World Media Group, LLC, <http://www.usa.com/philadelphia-pa-population-and-races.htm>; Philadelphia Fire Department, *Philadelphia Fire Department Fiscal Year 2019 Budget Testimony* (Philadelphia: Philadelphia Fire Department, 2018), 1, http://phlcouncil.com/wp-content/uploads/2018/04/FY19-Testimony_Fire_submitted-to-Council-4.27.pdf.

³⁷⁷ Kathy Matheson, "Philly Students Get a Head Start on Careers in Firefighting, EMS," Mayor's Office of Education, City of Philadelphia, September 7, 2018, <https://www.phila.gov/2018-09-07-philly-students-get-a-head-start-on-careers-in-firefighting-ems/>; "Become a Paramedic," City of Philadelphia, September 7, 2018, <https://www.phila.gov/services/working-jobs/find-a-job-or-internship/join-the-fire-department/become-a-paramedic/>; "Philadelphia Fire Department," City of Philadelphia, accessed September 28, 2018, <https://www.phila.gov/departments/philadelphia-fire-department/>.

³⁷⁸ Cherri Gregg, "Historic Promotion: 2 Women Making Their Mark within the Philadelphia Fire Department," CBS Philly, April 3, 2017, <http://philadelphia.cbslocal.com/2017/04/03/women-making-mark-within-philly-fire-department/>.

for its slow hiring process citywide, which often takes a year from the job announcement to hiring.³⁷⁹

1. Measures of Staffing Performance

As of December 2017, the PFD had 91 percent of its 2,800 budgeted positions filled, which is the lowest of the four cases examined in this research.³⁸⁰ As of May 2018, women filled 11.86 percent of these positions.³⁸¹ The women of the PFD hold ranks from entry-level paramedic and firefighter to deputy chief and hold three of nine executive positions.³⁸² Philadelphia’s hiring system is merit-based, not timely.³⁸³ The lack of a city recruitment office, combined with the cumbersome hiring process, challenge the PFD to improve its modest staffing performance.³⁸⁴

In Mayor Jim Kenney’s January 2016 policy statement, he established that—beyond being an equal opportunity employer—Philadelphia will take affirmative measures “to recruit qualified minorities, women, and disabled persons to all levels of City employment where under-utilization is reflected.”³⁸⁵ This statement does not present a policy of preferential treatment for employment decisions, just for recruitment.

In 2016, Mayor Kenney set up the Office of Diversity and Inclusion to “build a more inclusive city workforce related to race, ethnicity, disability, gender, gender identity,

³⁷⁹ “Become a Firefighter,” City of Philadelphia, September 7, 2018, <https://www.phila.gov/services/working-jobs/find-a-job-or-internship/join-the-fire-department/become-a-firefighter/>; Michelle Schmitt and Katie Martin, *Hiring and Employment in Philadelphia City Government* (Philadelphia: Pew Charitable Trusts, 2018), 1–2, https://www.dol.gov/asp/evaluation/completed-studies/FirstResponders_Full_Report.pdf.

³⁸⁰ Philadelphia Fire Department, *Philadelphia Fire Department Fiscal Year 2019 Budget Testimony*, 2, 8; Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 30.

³⁸¹ “Fire Department Full-Time Staff and Executive Staff,” Philadelphia Fire Department, May 2018, <http://phlcouncil.com/wp-content/uploads/2018/05/Demographics-Fire-Department.png>.

³⁸² Kathy Matheson, “Women You Should Know in the Fire Department,” City of Philadelphia, March 23, 2018, <https://beta.phila.gov/2018-03-23-women-you-should-know-in-the-fire-department/>; Philadelphia Fire Department, “Fire Department Full-Time Staff and Executive Staff.”

³⁸³ Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 9.

³⁸⁴ Schmitt and Martin, 9.

³⁸⁵ “City of Philadelphia, Mayor Statement of Policy,” Office of the Mayor, July 15, 2011, <https://www.phila.gov/personnel/eo/mayormem2.htm>; Office of Justice Programs, *EEOP Utilization Report* (Washington, DC: Department of Justice, 2016), 2, https://www.phila.gov/personnel/pdfs/EEOP_2016.pdf.

and sexual orientation.”³⁸⁶ Within the context of reportedly inefficient citywide hiring processes, Philadelphia been more successful than most cities at removing barriers to the employment of female firefighters but, with only 91 percent of positions filled, it has not been particularly successful at removing barriers to the employment of firefighters overall.³⁸⁷

Table 1 uses a group ratio to demonstrate that the PFD is more representative of Philadelphia’s African American, white, and Hispanic population than it is of Philadelphia’s Asian-American and female population. Ratios closer to 1.00 are most representative of the population, while ratios closer to zero are less representative. Ratios exceeding 1.00 indicate over-representation of PFD members compared to the Philadelphia population. At more than 43 percent of the population, African-Americans are the largest racial or ethnic group in Philadelphia, followed by whites at 41.56 percent and Hispanics at 13.03 percent.³⁸⁸ As of May 2018, African-Americans account for 29.34 percent of non-executive PFD members and for three of the nine executive PFD members.³⁸⁹ The consent decree was reasonably effective in reversing the PFD’s discrimination against African-Americans, who accounted for under eight percent of uniformed PFD members just before the consent decree but more than 29 percent now.³⁹⁰

³⁸⁶ Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 19.

³⁸⁷ Philadelphia Fire Department, *Philadelphia Fire Department Fiscal Year 2019 Budget Testimony*, 2.

³⁸⁸ World Media Group, LLC, “Philadelphia, PA.”

³⁸⁹ Philadelphia Fire Department, “Fire Department Full-Time Staff and Executive Staff.”

³⁹⁰ John C. McWilliams, “‘Men of Colour’: Race, Riots, and Black Firefighters’ Struggle for Equality from the AFA to the Valiants,” *Journal of Social History* 41, no. 1 (September 1, 2007): 115, <https://doi.org/10.1353/jsh.2007.0141>; Philadelphia Fire Department, “Fire Department Full-Time Staff and Executive Staff.”

Table 1. Philadelphia and PFD Demographic Summary³⁹¹

	African-American	White	Hispanic	Asian-American	Female	Male
Philadelphia population (>100% because includes option of more than one race)	43.04%	41.56%	13.03%	6.68%	52.78%	47.22%
PFD	29.34%	60.75%	8.56%	0.84%	11.86%	88.14%
Group ratio of percent PFD members to percent Philadelphia population	.68	1.46	.66	.13	.22	1.87

The decree likely also played a tangential role in the hiring of the PFD’s first female firefighters in 1985.³⁹² More than three decades of stakeholder, court, and City of Philadelphia attention to the PFD’s hiring practices probably increased its female and paramedic staffing because this attention occurred in an era of increasing societal acceptance of—and sometimes demand for—women in non-traditional jobs. Table 2’s group ratios show that, while the percentage of Philadelphia’s female firefighters far exceeds the national average, it still vastly under-represents the local labor force.

³⁹¹ Adapted from World Media Group, LLC, “Philadelphia, PA”; Philadelphia Fire Department, “Fire Department Full-Time Staff and Executive Staff.”

³⁹² “Fire Department,” City of Philadelphia Department of Records, November 8, 2000, <https://www.phila.gov/phils/docs/inventor/graphics/agencies/A074.htm>; Matheson, “Women You Should Know in the Fire Department; Gregg, “Historic Promotion.”

Table 2. Philadelphia Workforce and PFD Group Ratios by Gender³⁹³

	Female	Male
Philadelphia workforce participation	69.2%	72.2%
PFD	11.86%	88.14%
Group ratio of percent PFD members to percent Philadelphia workforce	.17	1.22

2. Entry Points

The single entry point for PFD firefighters is as firefighter recruits, beginning with a 24-week fire academy.³⁹⁴ The entry point for PFD paramedics is also entry-level, but with a six-week paramedic academy.³⁹⁵ Qualified PFD EMTs and paramedics may be very competitive on the firefighter exam due to bonus points as discussed in the hiring process section. These extra points make employment as a PFD EMT or paramedic another possible entry point to a firefighter position.

3. Hiring Process

A 2018 Pew Charitable Trusts report commissioned by the City of Philadelphia characterized the city’s hiring process as “cumbersome, inflexible, and slow” with a median time of 360 days from application to selection.³⁹⁶ Notwithstanding that it is sluggish, the Philadelphia firefighter hiring process is simpler than most. Savvy candidates complete the optional online job interest form that allows the PFD to notify them by email when the biannual two-week hiring process opens.³⁹⁷ When the hiring is open, interested

³⁹³ Adapted from Philadelphia Fire Department, “Fire Department Full-Time Staff and Executive Staff”; “Philadelphia’s Labor Force,” Philadelphia Works, February 6, 2015, <http://www.philaworks.org/workforce-information-works/philadelphia-data/philadelphias-labor-force/>.

³⁹⁴ City of Philadelphia, “Become a Firefighter.”

³⁹⁵ City of Philadelphia, “Become a Paramedic.”

³⁹⁶ Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 1–2.

³⁹⁷ City of Philadelphia, “Become a Firefighter.”

parties complete an online application profile.³⁹⁸ The requirements to apply are having a high school diploma or equivalent, being at least age 18 years old by the hire date, having a Pennsylvania driver's license, and possessing the physical ability to do the job.³⁹⁹ The PFD assesses part of this physical ability with a pre-hire medical exam and then enhances it with fire academy fitness training and testing before advancing capable firefighter recruits to probationary firefighters.⁴⁰⁰ The lack of a physical fitness test prior to being hired as a firefighter recruit for the 24-week academy means that the PFD both eliminates the barrier of high physical fitness to hiring and yet maintains a high fitness standard for those who pass the academy. Philadelphia notifies those applicants meeting the minimum requirements to take a civil service exam administered on a given date.⁴⁰¹ The PFD interviews about twice as many applicants who have passed the exam as are needed for a conditional employment list and then conducts background checks and medical exams before selecting firefighter recruits.⁴⁰² The PFD hires as firefighters those recruits who complete the fire academy, at which time they begin a six-month probationary period.⁴⁰³ New firefighters must live in Philadelphia within six months of being hired, but may move out of the city after five years' of service.⁴⁰⁴

To say that the PFD's hiring process is simple does not mean that it is easy to be hired. The process is very competitive and bonus points available to qualified applicants influence the PFD hiring process by impacting applicants' places on the eligibility list. The June 2018 Pew Charitable Trusts report on city government hiring and employment notes that Philadelphia offers more options to earn bonus points than most other municipalities, with the effect of making it difficult for applicants without bonus points to get hired,

³⁹⁸ Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 8.

³⁹⁹ City of Philadelphia, "Become a Firefighter."

⁴⁰⁰ City of Philadelphia.

⁴⁰¹ Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 8.

⁴⁰² City of Philadelphia, "Become a Firefighter."

⁴⁰³ City of Philadelphia.

⁴⁰⁴ City of Philadelphia; Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 11.

regardless of their exam score.⁴⁰⁵ This report uses the example of the 2013 firefighter eligibility list, on which the top 239 applicants scored in excess of 100 due to bonus points and strong exam performance.⁴⁰⁶ Since this bonus point system dramatically elevates PFD's non-firefighter EMTs and paramedics on the firefighter eligibility list, it likely has the effect of both increasing and decreasing the single-role paramedic pipeline in ways that are difficult to measure within the scope of this thesis. Philadelphia's firefighter/EMT pipeline, as in most urban career departments, is more than adequate to meet the supply of non-paramedic firefighters. Philadelphia further fills this pipeline by awarding three bonus points to single-role EMTs with a Pennsylvania Firefighter 1 certification. With good planning, hard work, and some luck, aspiring firefighters may earn 13 bonus points in fewer years than it takes them to earn the 10 bonus points reserved for PFD EMTs and paramedics with at least five years' service to the city. Some PFD EMTs and paramedics, however, may enter the exam with up to the maximum 23 possible points, which makes the PFD EMS path to a PFD firefighter job long but rewarding.

4. Outreach and Recruiting

Since the PFD does not need to recruit to have many qualified firefighter applicants, something else must drive its outreach and recruiting. That something is Mayor Kenney's policy statement as expressed by Fire Commissioner Adam Thiel, "if we don't do active recruitment, we don't receive a diverse and inclusive applicant pool."⁴⁰⁷ Philadelphia's Office of Human Resources disbanded its recruitment unit several years into this millennium.⁴⁰⁸ Although Philadelphia hosts job fairs, including one at the Pennsylvania Convention Center that 4,200 people attended in 2017, most of the recruiting burden falls

⁴⁰⁵ Schmitt and Martin, 5.

⁴⁰⁶ Schmitt and Martin, 5, 33. Philadelphia offers bonus points as follows for the firefighter eligibility list: 10 points for paramedics and EMTs with at least five years' service to Philadelphia, three points each for completion of their Fire Explorers program, the Philadelphia High School Fire and EMS Training program, and/or a fire science associate degree from an accredited college or university, and two points each for a Pennsylvania Firefighter 1 certification and/or Pennsylvania EMT certification.

⁴⁰⁷ Schmitt and Martin, 10.

⁴⁰⁸ Schmitt and Martin, 9.

to departments.⁴⁰⁹ Pew found that 45 percent of Philadelphians would prefer to work for the government, compared to 39 percent for businesses, because they perceive that the government offers better benefits, job security, and opportunities to serve society, as compared to businesses.⁴¹⁰ Thus, the PFD’s task is to reach out to those who are receptive to government employment in an inclusive manner.

The PFD addresses its desire for a diverse workforce through a strategy of inclusive communication with potential firefighters of all ages. This outreach begins from early childhood with interested preschool programs visiting fire stations and with elementary and junior high school students’ participation in the PFD’s Junior Fire Patrol educational program.⁴¹¹ Youths ages 14–18 can participate in a free one week Girls Camp or Coed Camp, and those ages 14–20 can make a two-year commitment to learn and volunteer in the Fire Explorers program.⁴¹² Philadelphia’s High School Fire and EMS Training program is open to any student through the city’s school selection process.⁴¹³ This program prepares 20 students per year for the NREMT EMT exam and begins their fire service education.⁴¹⁴ Fifteen graduates of this high school program have joined the PFD.⁴¹⁵ While these many programs help put Philadelphia youth into the firefighter pipeline, there is a synergistic effect from the city’s online promotion of these programs, of the city’s diversity goals, and even of its values.

⁴⁰⁹ Schmitt and Martin, 9.

⁴¹⁰ Schmitt and Martin, 11.

⁴¹¹ Philadelphia Fire, “Pre-K Students from Friends Select School Stopped by Ladder 2 This Week and Ended up Meeting Members of Ladder 23 as Well! It’s Never Too Early to Learn about Fire Safety. #FireIsEveryonesFightpic.Twitter.Com/AnTpVzPu7v,” Tweet, *@PhillyFireDept* (blog), September 27, 2018, <https://twitter.com/PhillyFireDept/status/1045406054840971265>; Philadelphia Fire Department, “MEDIA ADVISORY: Junior Fire Patrol Awards Luncheon,” City of Philadelphia, May 21, 2018, <https://beta.phila.gov/2018-05-21-media-advisory-junior-fire-patrol-awards-luncheon/>.

⁴¹² “Sign Your Child up for Philadelphia Fire Department Summer Camp!” City of Philadelphia, July 7, 2017, <https://beta.phila.gov/news/philadelphia-fire-department/sign-your-child-up-for-philadelphia-fire-department-summer-camp/>; “Become a Fire Explorer,” City of Philadelphia, November 6, 2017, <https://www.phila.gov/services/working-jobs/find-a-job-or-internship/join-the-fire-department/become-a-fire-explorer/>.

⁴¹³ Matheson, “Philly Students Get a Head Start on Careers in Firefighting, EMS.”

⁴¹⁴ Matheson.

⁴¹⁵ Matheson.

A good indicator of Philadelphia’s values is that the city touts its ordinances that protect people—to a greater extent than state law—from discrimination and violence based on gender identity or sexual orientation.⁴¹⁶ For example, Philadelphia’s Fair Practices Ordinance protects 16 categories of people.⁴¹⁷ At least 60,000 Philadelphia residents relate as lesbian, gay, bisexual, transgender, or queer.⁴¹⁸ The city’s expanded anti-discrimination legislation may encourage more potential paramedics and firefighters to consider careers with the PFD. The PFD includes many images of uniformed members who are female, African-American, or both on its web pages and very active social media accounts. These images reinforce the message that Philadelphia tries to be representative of the community that it serves.

5. Retention and Advancement

Besides interesting public service work that earns a good salary, benefits, and retirement, the PFD offers many incentives for its employees to stay and promote. Foremost, the same inclusive local legislation, city policy, and departmental messages that are forces for recruitment should serve to make all employees feel that they are valued members of the PFD team. Some fire departments report friction between their fire suppression employees and their EMS employees, particularly when they are in different divisions—and even on different shifts schedules—often because EMS employees have a higher workload than fire suppression employees. Philadelphia is not immune to these issues but is addressing them. Commissioner Thiel’s fiscal year 2019 plans include bringing in new resources to have suppression and EMS personnel work similar shifts, hiring a fulltime medical director and EMS support positions, replacing 11 older ambulances, and implementing an alternative response unit to address increasing demands on EMS.⁴¹⁹

⁴¹⁶ Amber Hikes, “Philadelphia’s LGBTQ Protections,” City of Philadelphia, December 4, 2017, <https://www.phila.gov/2017-12-04-philadelphias-lgbtq-protections/>.

⁴¹⁷ Hikes.

⁴¹⁸ Hikes.

⁴¹⁹ Philadelphia Fire Department, *Philadelphia Fire Department Fiscal Year 2019 Budget Testimony*, 1.

Employees who have their psychological safety, respect, and logistical needs met, as the PFD tries to do, are likely to stay for the many available special duty opportunities. These opportunities include the ability to join special teams like the Hazardous Materials Team, marine program, or PA-Task Force 1, the state and national urban search and rescue team in which the department participates.⁴²⁰ In addition, several nearby colleges discount tuition 25 percent for city employees through a partnership with Philadelphia.⁴²¹ Advancement opportunities for firefighters include the positions of fire boat pilot, fire lieutenant, fire boat engineer, fire captain, fire battalion chief, and fire deputy chief.⁴²² This career ladder and challenging assignments like working at the airport or in the recruiting unit are forces for the retention and advancement of the PFD's workforce.

Philadelphia follows many staffing best practices and is a desirable employer for both firefighters and paramedics. The paramedic shortage and an unhurried city hiring process both limit the PFD's staffing achievements.

B. SAN FRANCISCO, CALIFORNIA

In response to claims of discrimination against women and minorities from 1970, the U.S. District Court for the Northern District of California approved a consent decree with the City of San Francisco on June 10, 1988.⁴²³ To represent the city's labor force better, the decree established goals that 10 percent of new firefighters be women and 40 percent be minorities and stipulated promotional and grievance procedures and training expectations.⁴²⁴ The court terminated the consent decree in 1999.⁴²⁵

⁴²⁰ "Philadelphia Fire Department"; Pennsylvania Task Force 1, "PA Task Force 1, Participating Agencies," Philadelphia Fire Department, accessed September 30, 2018, <http://www.patf1.org/participating.htm>; City of Philadelphia, *Philadelphia Firefighter Career Progression* (Philadelphia: City of Philadelphia, n.d.), accessed September 21, 2018, <http://www.phila.gov/personnel/specs/careerladders/LFirefighterHS.pdf>.

⁴²¹ Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 6.

⁴²² City of Philadelphia, *Philadelphia Firefighter Career Progression*.

⁴²³ *Patel, United States v. City and County of San Francisco*, 696 F. Supp. 1287 (N.D. Cal. 1988), Justia.

⁴²⁴ *Patel*.

⁴²⁵ Krieger, *Beyond the Consent Decree*, 90.

The SFFD has a diverse workforce and staffs its fire apparatus and ambulances—locally called Medics—with several entry-level positions, some of which it organizes into what it terms deep classifications.⁴²⁶ Established as a paid fire department in 1866, the SFFD did not accept firefighter applications from women until 1976 and hired no women until 1987.⁴²⁷ With 47 fire stations, the SFFD serves a population of 829,000 residents, hundreds of thousands of commuters, and more than 25 million annual visitors.⁴²⁸ Almost half of San Francisco residents are white, almost 34 percent are Asian-American, more than 15 percent are Hispanic, and almost six percent are African-American.⁴²⁹ Representation among Caucasian SFFD employees is nearly identical to that of Caucasian San Francisco residents, but African-American and Hispanic SFFD employees slightly exceed their residential representation.⁴³⁰ Just more than 22 percent of SFFD employees and just more than 33 percent of San Francisco residents are Asian-American.⁴³¹

1. Measures of Staffing Performance

The SFFD has excelled at eliminating barriers to equal opportunity employment since entering into the consent decree in 1987. As of August 1, 2018, the SFFD has 98 percent of uniformed positions filled.⁴³² As of June 1, 2018, women fill 14.99 percent of uniformed SFFD positions and hold positions from entry-level to Chief of Department.⁴³³

⁴²⁶ Fire Department, “Employment Opportunities: Fire Department,” City and County of San Francisco, accessed July 11, 2018, <https://sf-fire.org/employment-opportunities>.

⁴²⁷ “Fire Department,” City and County of San Francisco, accessed September 30, 2018, <https://sf-fire.org/about-us>; *Patel, United States v. City and County of San Francisco*.

⁴²⁸ “San Francisco, CA,” World Media Group, LLC, accessed September 28, 2018, <http://www.usa.com/san-francisco-ca-population-and-races.htm>; “Homelessness Crisis Dents San Francisco Tourism,” *San Francisco Business Times*, accessed September 30, 2018, <https://www.bizjournals.com/sanfrancisco/news/2018/02/23/slow-growth-in-san-francisco-tourism-due-to.html>; “Fire Station Locations,” City and County of San Francisco, Fire Department, accessed September 30, 2018, <https://sf-fire.org/fire-station-locations#stations>.

⁴²⁹ World Media Group, LLC, “San Francisco, CA.”

⁴³⁰ San Francisco Fire Department, *San Francisco Fire Department Aggregate Data Report: Classification—Race/Gender* (San Francisco: San Francisco Fire Department, 2018).

⁴³¹ San Francisco Fire Department.

⁴³² Kelly Alves, email message to author, August 6, 2018; San Francisco Fire Department, *San Francisco Fire Department Aggregate Data Report: Classification—Race/Gender*, 1.

⁴³³ San Francisco Fire Department.

Direction to value diversity, to avoid discrimination and harassment, and to be an equal opportunity employer comes from City policy, the Fire Commission, and the SFFD.⁴³⁴ Several policy documents specifically express the goal of having a work environment that reflects San Francisco’s diversity; the SFFD’s measures of performance demonstrate that the agency’s progress on this goal is industry-leading, although incomplete with respect to Asian-Americans and women.⁴³⁵

2. Entry Points

The SFFD’s various entry-level classifications bear some explanation because their minimum qualifications and career paths impact staffing, retention, and advancement. The primary entry-level classification is H2 Firefighter, for which the requirements are a high school diploma or equivalent, a California driver’s license, a California EMT certification, and be at least 20 years of age by the time of hire.⁴³⁶ The San Francisco Budget and Legislative Analyst reports that, “In 2011, the Fire Department and Firefighters [sic] Union agreed to a less formal H2 P designation for H2 firefighters with paramedic training.”⁴³⁷ This designation indicates some willingness on behalf of both stakeholders to address the paramedic shortage by reevaluating staffing. H2 Firefighters work in fire suppression, fire

⁴³⁴ “Equal Employment Opportunity,” City and County of San Francisco, Department of Human Resources, accessed October 5, 2018, <https://sfdhr.org/equal-employment-opportunity>; Fire Commission, *Annual Statement of Purpose 2018* (City and County of San Francisco: Fire Commission, 2018), https://sf-fire.org/sites/default/files/COMMISSION/Documents/2018%20-%20sop_0.pdf; City and County of San Francisco, “Employment Opportunities: Fire Department.”

⁴³⁵ Fire Commission, *Annual Statement of Purpose 2018*, 1; San Francisco Fire Department, *San Francisco Fire Department Annual Report 2012–2013 (FY)* (San Francisco: San Francisco Fire Department, 2013), 3, <https://sf-fire.org/modules/showdocument.aspx?documentid=3584>.

⁴³⁶ “Announcement: Entry Level (H-2) Firefighter,” City and County of San Francisco, Department of Human Resources, March 11, 2016, <https://jobapscloud.com/SF/sup/bulpreview.asp?R1=CCT&R2=H002&R3=900310>.

⁴³⁷ San Francisco Budget and Legislative Analyst, *Performance Audit of the City’s Practices to Recruit, Retain and Promote Uniformed Fire Staff and the Fire Department’s Use of Overtime to Meet Minimum Staffing Requirements* (San Francisco: Board of Supervisors, 2014), vii, <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.

prevention, and even dispatch, but typically not in ambulances.⁴³⁸ The other two possible entry points are deep class EMS positions: H3 EMT/Paramedic/Firefighter, a set of career positions, and H8 EMT/Paramedic, a set of temporary, per diem positions.⁴³⁹ Each set of deep class position merits its own description.

The H3 deep class gives the SFFD flexible staffing options and the responsibility to exercise these options wisely to fulfill its mission. This class encompasses: Level I, EMT, assigned to ambulance duty with a Level II Paramedic, Level II, Paramedic, assigned to ambulance duty with a Level I EMT or Level II Paramedic, and Level III Firefighter/Paramedic and fully trained firefighter, assigned to a fire suppression unit who reports to an engine company officer, or assigned to an ambulance with either of the previous H3 personnel who report to a paramedic captain.⁴⁴⁰ The three levels give the SFFD flexibility in its deployment model. The impact of this deep class position on staffing depends on how it is used. A 2004 report by the Office of City Auditor found that the SFFD needs to have a greater portion of its workforce qualified to provide paramedic care and observed that H3 Firefighter/Paramedics are fully qualified for both firefighting and EMS duties.⁴⁴¹ The report recommended, in part, hiring more H3 Firefighter/Paramedics and cross-training H2 Firefighters who would promote to H3 Firefighter/Paramedic.⁴⁴² In fairness, the SFFD has

⁴³⁸ City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter”; “Hourly Rates of Pay by Classification and Step FY18–19,” Rows 1741–1742, City and County of San Francisco, Department of Human Resources, June 20, 2018, <http://sfdhr.org/sites/default/files/documents/Classification-and-Compensation/Hourly-Rates-of-Pay-by-Classification-and-Step-FY18-19.xlsx>.

⁴³⁹ City and County of San Francisco, “Employment Opportunities: Fire Department”; “City and County of San Francisco EMT/Paramedic/Firefighter (H#003),” City and County of San Francisco, Department of Human Resources, March 10, 2011, <https://www.jobapscloud.com/SF/specs/classspecdisplay.asp?ClassNumber=H003&R1=undefined&R3=undefined>; “Announcement: H-8 Level II Paramedic—City and County of San Francisco,” City and County of San Francisco, Department of Human Resources, 2018, <https://jobapscloud.com/SF/sup/bulpreview.asp?R1=TEX&R2=H008&R3=067545>; City and County of San Francisco, Department of Human Resources, “Hourly Rates of Pay by Classification and Step FY18–19.”

⁴⁴⁰ City and County of San Francisco, Department of Human Resources, “City and County of San Francisco EMT/Paramedic/Firefighter (H#003).”

⁴⁴¹ City and County of San Francisco, Office of the Controller, *A Review of the San Francisco Fire-EMS System* (San Francisco: City and County of San Francisco, Office of the Controller, 2004), 18–19, <https://sfcontroller.org/ftp/uploadedfiles/controller/reports/FireEMS.pdf>.

⁴⁴² City and County of San Francisco, Office of the Controller, 18–21.

implemented some of the report’s recommendations, including that the SFFD require EMT certification to apply as a H2 Firefighter.⁴⁴³

The H8 deep class affords the SFFD even more staffing flexibility than the H3 deep class. The three H8 classes of temporary, part-time employees that constitute the H3 deep class serve at will for not more than 1,040 hours per fiscal year: Level I, EMT, Level II, Paramedic, and Level III Firefighter/Paramedic.⁴⁴⁴ Like for the H2 Firefighter position, the SFFD continuously runs an open enrollment for H8 Level 2 “per diem” paramedics.⁴⁴⁵ In recent years, the SFFD has accepted applications only for H8 Level 2 paramedics.⁴⁴⁶ Although per diem paramedics handle many of the SFFD’s more than 200,000 annual EMS responses—that in 2017 numbered almost three times as many as the next three most common types of responses combined—they are less useful to the SFFD’s diverse mission than Level III H3 Firefighter/Paramedics.⁴⁴⁷ Per diem paramedics are well-compensated but their lack of job security likely contributes to the paramedic shortage.

The flexible nature of the SFFD’s entry-level positions raises the question of what it means to be a firefighter. SFFD employees and well-informed SFFD job applicants understand the nuances of each classification. The public’s understanding of firefighter is contextual. Members of the public who encounter firefighters during fire suppression activities will understand them to be firefighters by their personal protective clothing, equipment, and actions. Members of the public who encounter firefighters during, for example, responses to indoor medical emergencies, may not distinguish between those SFFD personnel assigned to fire suppression and EMS duties as compared to those personnel in the same uniforms who work exclusively on ambulances and have no fire

⁴⁴³ City and County of San Francisco, Office of the Controller, 19; City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter.”

⁴⁴⁴ City and County of San Francisco, Department of Human Resources, “Announcement: H-8 Level II Paramedic—City and County of San Francisco.”

⁴⁴⁵ City and County of San Francisco, “Employment Opportunities: Fire Department.”

⁴⁴⁶ City and County of San Francisco, Department of Human Resources, “Announcement: H-8 Level II Paramedic—City and County of San Francisco.”

⁴⁴⁷ “DataSF,” City and County of San Francisco, accessed October 6, 2018, <https://data.sfgov.org/d/enhu-st7v/visualization>.

suppression duties. Deep inquiry into the social identity perceptions of employees and stakeholders is beyond the scope of this thesis. Underlying these perceptions are real differences in job permanence, advancement opportunities, benefits, and attrition patterns. While members of the public may not distinguish between classifications of fire department personnel in many situations, they often distinguish between males and females. This distinction is especially true during the majority of times the public encounters these public servants in uniform, rather than while wearing breathing apparatus and turnout gear. Public assumptions that uniformed employees in red SFFD vehicles enjoy similar levels of job security, advancement opportunities, and respect within the department may or may not be accurate, depending on the SFFD's choices in a complex political, fiscal, and operational setting. Depending on what classes of employees it hires, the SFFD can be a market force for increasing or decreasing the supply of paramedics and firefighter-paramedics.

The SFFD's staffing profile addresses the need for more personnel to respond quickly to fires than to medical emergencies. That is, while five personnel are sufficient to treat and transport the most seriously ill or injured patient, the NFPA recommends that a minimum of 14 firefighters respond to single-family dwelling fires, 27 firefighters to mall or garden apartment fires, and 42 firefighters to high-rise fires.⁴⁴⁸ Including H2 Firefighters, H20 Lieutenants, and H30 Fire Captains, about three times as many SFFD personnel are assigned to fire suppression units as to ambulances, yet EMS responses accounted for about 69 percent of the SFFD's 2017 responses.⁴⁴⁹ The persistence of such staffing suggests that the SFFD disagrees with the Controller's Office recommendations to change the hiring, promotional, and deployment decisions that can enable the department's EMS mission, for example, by hiring more dual-role paramedic-firefighters.⁴⁵⁰

⁴⁴⁸ National Fire Protection Association, *NFPA 1710 Changes to Fireground Staffing Levels for Career Fire Departments* (Quincy, MA: National Fire Protection Association, 2016), <https://community.nfpa.org/servlet/JiveServlet/download/17677-1-12253/1710%20Tip%20Sheet%20%2011-15.pdf>.

⁴⁴⁹ "Seniority Rosters by Class 8-15-16," City and County of San Francisco, Department of Human Resources, August 15, 2016, <https://sfdhr.org/sites/default/files/documents/.../Seniority-Rosters-by-Class-8-15-16.xlsx>; City and County of San Francisco, "DataSF."

⁴⁵⁰ City and County of San Francisco, Office of the Controller, *A Review of the San Francisco Fire-EMS System*, 18–21.

3. Hiring Process

The process to get on San Francisco’s H2 Firefighter eligibility list is transparent. The SFFD website informs readers that they must be at least age 19 to apply.⁴⁵¹ In addition, a high school diploma or equivalent, a California driver’s license, and a California EMT certificate are required to earn a spot on all entry-level firefighter and EMS eligibility lists.⁴⁵² San Francisco accepts open enrollment H-2 Firefighter applications continuously and conducts fire academies as needed, approximately once or twice annually.⁴⁵³ Applicants begin their firefighter applications online, then schedule, and take the NTN video-based FireTEAM test.⁴⁵⁴ The test has minimum scores for all components, but is scored entirely on the human relations component because these skills are highly correlated with fire service job success.⁴⁵⁵ To secure a place on the eligibility list for two years, applicants next fax or email their California EMT or paramedic credentials to the San Francisco Department of Human Resources.⁴⁵⁶ Military veterans meeting specific criteria and widows, widowers, or surviving domestic partners are eligible for veteran’s preference points.⁴⁵⁷ The process of getting on the SFFD firefighter eligibility list is contemporary, valid, and job related.

Applicants that the department selects for a background investigation must provide proof of having passed the CFFJAC) CPAT within the last 12 months.⁴⁵⁸ CPAT

⁴⁵¹ City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter.”

⁴⁵² City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter”; “City and County of San Francisco, “Employment Opportunities: Fire Department.”

⁴⁵³ City and County of San Francisco, “Employment Opportunities: Fire Department”; Edwin M. Lee, *Mayor’s 2017–2018 and 2018–2019 Proposed Budget* (San Francisco: City and County of San Francisco, 2017), 230, http://sfmayor.org/sites/default/files/CSF_Budget_Book_2017_Final_CMYK_LowRes.pdf.

⁴⁵⁴ City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter.”

⁴⁵⁵ City and County of San Francisco, Department of Human Resources, *Information about the San Francisco Continuous Testing Program for Entry-Level Firefighters* (San Francisco: City and County of San Francisco, 2013), 2, <https://sf-fire.org/sites/default/files/SFFD/H2FAQs.pdf>.

⁴⁵⁶ City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter.”

⁴⁵⁷ City and County of San Francisco, Department of Human Resources.

⁴⁵⁸ City and County of San Francisco, Department of Human Resources.

preparation is most effective when it includes meeting with a peer fitness trainer as much as four times per week for up to four months. Thus, candidates should plan ahead to be able to provide this proof in a timely manner if they are offered a background investigation.⁴⁵⁹ The SFFD also requires persons selected from the eligible list to pass medical examinations, vision screening, and the fire academy.⁴⁶⁰ These features of San Francisco’s hiring process are job related and common in the industry.

Regarding advancing to a background investigation, the job announcement informs applicants that:

Criteria for selection will include the following:

- Score on the firefighter eligible list
- Additional certificates: Firefighter 1, Paramedic
- Fire science/fire technology coursework/degree
- State fire marshal courses
- Work experience as a firefighter, paramedic, EMT
- Proficiency in a second language relevant to San Francisco communities
- Demonstrated participation/involvement in community programs
- Experience in the U.S. military⁴⁶¹

⁴⁵⁹ California Fire Fighter Joint Apprenticeship Committee, *Candidate Physical Ability Test Preparation Guide* (Sacramento, CA: California Fire Fighter Joint Apprenticeship Committee, n.d.), 26–35, accessed January 29, 2018, <http://www.cffjac.org/go/jac/?LinkServID=3E94B79A-1CC4-C201-3E4BF872E67CB568>; Fire Service Joint Labor Management Wellness-Fitness Initiative, *Candidate Physical Ability Test*, 2nd. ed. (Washington, DC: International Association of Firefighters, 2007), 9, www.iaff.org/library/pdfs/hs/IAFF%20Manuals/CPAT%202nd%20Edition.pdf.

⁴⁶⁰ City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter.”

⁴⁶¹ City and County of San Francisco, Department of Human Resources.

This information suggests a good range of pre-service education and experiences that will make them more competitive. Well-informed applicants may choose to volunteer for one or more of the half-dozen SFFD or employee-sponsored community programs that many firefighters continue to serve during their careers.⁴⁶²

The hiring rule has subtleties worth understanding to appreciate its effect on the SFFD’s ability to meet its hiring needs. San Francisco Civil Service Commission Rule 313 requires the appointing authority—the fire chief—to specify on job announcements which of several hiring rules will apply: The Rule of Three Scores, The Rule of Three or More Scores, The Rule of the List, or the Statistically Valid Grouping (Sliding Band).⁴⁶³ The Rule of the List allows for the hiring of anyone on the eligibility list, until less than one third of the original eligibles remain, which exhausts the list.⁴⁶⁴ This rule gives the SFFD the widest selection of qualified candidates.

The most recent H2 Firefighter job announcement specifies, “The Fire Department has the authority to hire any candidate named on the eligible list (“Rule of List”). Therefore, one’s placement on this list neither guarantees nor implies an offer of employment.”⁴⁶⁵ This statement should encourage more applicants than it discourages. Rule 313 also states:

The Civil Service Commission endorses and supports the broadening of the Rules governing the certification of eligibles from civil service eligible lists and considers this broadening as an increase in opportunities for appointing officers to select employees who are best suited to perform the duties of specific positions and to ensure equal employment opportunity to all persons. Selection of employees from eligible lists shall be based on merit and fitness...Appointing officers and their designees shall be responsible for establishing non-discriminatory selection procedures which may include scheduling each interested eligible for interview, conducting interviews by a diverse panel, asking job-related questions, maintaining documentation of

⁴⁶² “Programs,” City and County of San Francisco, Fire Department, accessed October 9, 2018, <https://sf-fire.org/programs>.

⁴⁶³ “Rule 313 Certification of Eligibles—Fire Department,” City and County of San Francisco, Civil Service Commission, accessed October 8, 2018, <https://sfgov.org/civilservice/rule-313-certification-eligibles-fire-department>.

⁴⁶⁴ City and County of San Francisco, Civil Service Commission.

⁴⁶⁵ City and County of San Francisco, Department of Human Resources, “Announcement: Entry Level (H-2) Firefighter.”

selection criteria, and reviewing the proposed selection with the department’s Equal Employment Opportunity Officer or with the Department of Human Resources Equal Employment Opportunity Unit...prior to the issuance of any job announcement, secondary criteria shall be presented to the Civil Service Commission for its approval in advance and will be discussed in open session with all parties interested.⁴⁶⁶

The aforementioned Civil Service Commission’s statement is important because it upholds lawful and inclusive hiring. Rule 313 also requires the SFFD to report annually to the Civil Service Commission on recruitment, testing, and selection procedures.⁴⁶⁷ The net effect of Rule 313, Civil Service Commission oversight, the SFFD hiring process, and job announcements is to tell applicants how to increase their chances of possible selection and to signal the absence of all but job-related barriers to hiring.

4. Outreach and Recruiting

Many public documents guide the SFFD’s recruiting efforts. San Francisco policy prohibits discrimination against 18 categories of employee, applicants, interns, volunteers, other persons, and any “other protected category under the law.”⁴⁶⁸ The Department of Human Resources and Civil Service Commission both make it clear that the city selects employees based on merit.⁴⁶⁹ San Francisco’s Department on the Status of Women offers suggestions to recruit females in non-traditional occupations.⁴⁷⁰ The SFFD’s staffing performance since the consent decree ended over the years 1999–2002 demonstrates that it conforms to both local policy and state and federal law.⁴⁷¹

⁴⁶⁶ City and County of San Francisco, Civil Service Commission, “Rule 313 Certification of Eligibles—Fire Department.”

⁴⁶⁷ City and County of San Francisco, Civil Service Commission.

⁴⁶⁸ “Equal Employment Opportunity Policy,” City and County of San Francisco, Department of Human Resources, September 2017, <https://sfdhr.org/equal-employment-opportunity-policy>.

⁴⁶⁹ City and County of San Francisco, Department of Human Resources, “Equal Employment Opportunity”; City and County of San Francisco, Civil Service Commission, “Rule 313 Certification of Eligibles—Fire Department”; Lee, *Mayor’s 2017–2018 and 2018–2019 Proposed Budget*, 139.

⁴⁷⁰ “Recruitment of Women in Non-Traditional Fields,” City and County of San Francisco, Department on the Status of Women, accessed December 30, 2017, <http://sfgov.org/dosw/recruitment-women-non-traditional-fields>.

⁴⁷¹ Krieger, *Beyond the Consent Decree*, 77.

In letters responding to the 2014 San Francisco Budget and Legislative Analyst’s audit of SFFD personnel management and overtime, Fire Chief Hayes-White and Human Resources Director Micki Callahan expressed several ideas that bear on how the SFFD meets the paramedic-firefighter shortage.⁴⁷² First, Hayes-White argued that she used employee groups to target recruitment because Proposition 209 prohibits this activity.⁴⁷³ The California Constitution bars state discrimination against or preferential treatment of persons in public employment, education, or contracting based on race, ethnicity, gender, or national origin.⁴⁷⁴ In her letter, Hayes-White also noted that San Francisco policies allow her to hire based on department needs; for example, foreign language proficiency.⁴⁷⁵ In a letter rebutting this same audit, Callahan offered examples of department needs, like second languages, that city rules allow the SFFD to hire for.⁴⁷⁶ In a separate letter highlighting diversity accomplishments, Callahan noted that the SFFD’s 2010 hires were within five percent of representative for all categories of those on the eligibility list.⁴⁷⁷ The high level of civic discourse about SFFD staffing shows that stakeholders’ opinions about the fire department’s role in the community are evolving.

⁴⁷² Joanna Hayes-White, *RE: Performance Audit Review of the City’s Practices to Recruit, Retain and Promote Uniform Fire Staff and the Fire Department’s Use of Overtime to Meet Minimum Staffing Requirements* (San Francisco: Board of Supervisors of the City and County of San Francisco, 2014), <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.

⁴⁷³ Hayes-White, 1.

⁴⁷⁴ “California Constitution: Article 1 Declaration of Rights [Section 1—Sec.32]” (1996), California Legislative Information, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS§ionNum=SEC.%2031.&article=I. The author is unaware of the extent to which public employers may partner with other entities for outreach and recruitment. In 2018, the City of San Diego and a non-governmental partner struggled with the question of how inclusive state and local government must be in public matters that are not clearly employment, education, or contracting. Rava and Elliott, “Re: No-Boys-Allowed Empowerment Camp: March 3 and 4, 2018”; Stone, ““Girls Empowerment’ Fire Camp Canceled after Civil Rights Lawyer Complains”; Elliott and Rava, “Dear Mr. Rava”; Kuchner, “A Week after It Was Canceled, Girls’ Empowerment Camp Reinstated, Expanded.”

⁴⁷⁵ Hayes-White, *RE: Performance Audit Review of the City’s Practices*, 1–2.

⁴⁷⁶ Micki Callahan, *Re: Response to the Report Entitled Performance Audit of the City’s Practices to Recruit, Retain and Promote Uniform Fire Staff* (San Francisco: Board of Supervisors of the City and County of San Francisco, 2014), 5, <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.

⁴⁷⁷ Micki Callahan, *Re: Accomplishments Provided in Response to the Report Entitled Performance Audit of the City’s Practices to Recruit, Retain and Promote Uniform Fire Staff* (San Francisco: Board of Supervisors of the City and County of San Francisco, 2014), 1–2, <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.

Like the PFD, the SFFD does not need to recruit to fill firefighter positions, just to put diverse candidates onto the eligibility list in competitive quantities. San Francisco has many recruiting strengths. It is helpful that more than 5,000 people applied for the 2010 firefighter recruitment and that those selected met diverse department needs without consideration of race or gender.⁴⁷⁸ Large numbers of non-traditional firefighter applicants enable significant outreach in many non-traditional communities. Good compensation, benefits, and an average work week that is shorter than most of the region’s agencies helps recruiting and retention.⁴⁷⁹ Recruiting efforts include traditional methods, like word of mouth, a full-time recruiter, and posting announcements online, as well as innovative methods like holding monthly career information sessions throughout the community.⁴⁸⁰ The SFFD’s diverse employees and the many community programs that they conduct, on duty and off duty, are a substantial recruiting force. These members are also visible through online SFFD content.⁴⁸¹

In 2016, the DOL selected the SFFD and four other public safety programs in the nation for study.⁴⁸² The DOL published these agencies’ leading diversity practices to foster improved workforce development and relationships between communities and public safety employers.⁴⁸³ The DOL study praised the SFFD widely, including for recruitment strategies like engaging with community groups and all levels of schools, both

⁴⁷⁸ Hayes-White, *RE: Performance Audit Review of the City’s Practices*, 2; Callahan, *Re: Accomplishments Provided*, 1–2.

⁴⁷⁹ City and County of San Francisco, Department of Human Resources, “Hourly Rates of Pay by Classification and Step FY18-19,” Rows 1739–1788; Micki Callahan et al., *Memorandum of Understanding between The City and County of San Francisco and the San Francisco Firefighters Union Local 798, IAFF, AFL-CIO July 1, 2007 to June 30, 2018 Unit 1 Revised per Amendment #7 & 8* (City and County of San Francisco: Human Resources Department, 2014), 19, 34–47, <http://sfdhr.org/sites/default/files/documents/MOUs/Firefighters-Local798-Unit-1-2007-2018.pdf>.

⁴⁸⁰ Callahan, *Re: Response to the Report Entitled Performance Audit*, 1; “Fire Department: About the Division of Training,” City and County of San Francisco, accessed July 2, 2018, <https://sf-fire.org/about-us-2>.

⁴⁸¹ City and County of San Francisco, “Fire Department”; “Fire Training Orientation,” Granicus, 2014, http://sanfrancisco.granicus.com/MediaPlayer.php?publish_id=79dfa77a-16ae-11e4-b03e-f04da2064c43.

⁴⁸² Miller et al., *Promising Practices for Increasing Diversity among First Responders*, 1.

⁴⁸³ Miller et al., 1–2.

for public education and recruitment.⁴⁸⁴ In particular, the DOL commended the SFFD and its employee groups for targeted recruiting traditional groups like veterans, as well as non-traditional groups like LGBT clubs, and for the inclusive example that the diverse employee groups themselves set.⁴⁸⁵

Another SFFD recruiting strength is the continuous firefighter testing recruitment, which offers applicants several advantages over periodic testing. Continuous recruiting gives potential firefighters the opportunity to apply and test immediately, rather than having to wait for an exam.⁴⁸⁶ This recruiting model also gives applicants specific information about how to re-test and how to meet more of the secondary criteria that may distinguish them from other candidates.⁴⁸⁷ The hiring process's convenience, the readily available information online and ability to contact the SFFD recruiter are empowering, especially for those potential applicants who do not have a friend or family member already employed by the department.

5. Retention and Advancement

Many effective recruitment approaches also aid retention, which, in turn, aids advancement. One basic approach is to reduce harassment in the workplace. The San Francisco Fire Commission requires that probationary employees and supervisors complete biennial harassment prevention training to comply with California's AB1825 law.⁴⁸⁸ The commission also upholds city anti-discrimination policies and recommends

⁴⁸⁴ Miller et al., 22–25, 36–37.

⁴⁸⁵ Miller et al., 38–39, 49, 60–61.

⁴⁸⁶ City and County of San Francisco, Department of Human Resources, *Information about the San Francisco Continuous Testing Program for Entry-Level Firefighters*, 1.

⁴⁸⁷ City and County of San Francisco, Department of Human Resources, 3; City and County of San Francisco, "Employment Opportunities: Fire Department"; City and County of San Francisco, Department of Human Resources, "Announcement: Entry Level (H-2) Firefighter."

⁴⁸⁸ Fire Commission, City and County of San Francisco, *Resolution 2017-01 Resolution Recommending that the San Francisco Fire Department Require that All Members, Uniformed and Civilian Take the Biennial Harassment Prevention Training* (City and County of San Francisco: Fire Commission, 2018), 1, <https://sf-fire.org/sites/default/files/COMMISSION/Documents/Resolution%202017-01%20Harassment%20Prevention.pdf>.

that the SFFD require harassment prevention training for all employees.⁴⁸⁹ The DOL uses the SFFD’s employee groups as an example of how to create emotionally supportive environments in the workplace.⁴⁹⁰ Training and clear expectations about workplace conduct are likely helpful steps toward retaining non-traditional employees.

The SFFD offers the same types of special assignments and promotions that other fire departments do, including to rescue squads, rescue watercraft, fire boats, the hazardous materials team, the training division, and the airport.⁴⁹¹ SFFD members also may participate in CA-Task Force 3, a national urban search and rescue team.⁴⁹² In addition, SFFD firefighters and EMS employees may serve in the dispatch center, which offers shorter shifts and less physically demanding work.⁴⁹³ Firefighter promotional opportunities include lieutenant, captain, battalion chief, assistant chief, assistant deputy chief, and chief of department.⁴⁹⁴ EMS promotional opportunities include EMS captain, EMS section chief, and EMS chief.⁴⁹⁵ These special assignment and promotional opportunities, combined with very competitive compensation, benefits, and retirement, are strong incentives for permanent SFFD members to serve for many years.

C. ANALYSIS

The PFD and the SFFD both have had consent decrees. Research found that some male SFFD firefighters expressed hostility toward female firefighters subsequent to the consent decree’s implementation.⁴⁹⁶ Similarly, a work environment hostile to blacks was

⁴⁸⁹ Fire Commission, City and County of San Francisco, 1–2.

⁴⁹⁰ Miller et al., *Promising Practices for Increasing Diversity among First Responders*, 49.

⁴⁹¹ “About SFFD Operations,” City and County of San Francisco, Fire Department, accessed October 15, 2018, <https://sf-fire.org/about-sffd-operations>; “Airport Division—About Us,” City and County of San Francisco, Fire Department, accessed October 15, 2018, <https://sf-fire.org/airport-division-about-us>.

⁴⁹² “Participating Agencies,” California Urban Search and Rescue Task Force 3, accessed October 15, 2018, <http://www.catf3.org/participating-agencies>.

⁴⁹³ City and County of San Francisco, Department of Human Resources, “Hourly Rates of Pay by Classification and Step FY18–19.”

⁴⁹⁴ City and County of San Francisco, Department of Human Resources.

⁴⁹⁵ City and County of San Francisco, Department of Human Resources.

⁴⁹⁶ Krieger, *Beyond the Consent Decree*, 91–93.

reported in 2011, near the end of the PFD consent decree dating from 1975.⁴⁹⁷ It is reasonable to conclude that consent decrees alienate some portion of the community and the workforce. Consent decrees appear useful in some cases, but may create more justice than trust or understanding, at least in the short run.

Philadelphia's consent decree did not address the hiring or promotion of women, but San Francisco's did.⁴⁹⁸ Perhaps this omission resulted since no group in Philadelphia advocated as effectively in the courts for fair employment of women in firefighting as Club Valiants, Inc. advocated for fair employment of black firefighters.⁴⁹⁹

Regardless, each department is now a national leader in attracting and retaining female firefighters. Largely because firefighters in each department do not need to be paramedics and are well compensated, the PFD and the SFFD can probably meet their staffing needs without the targeted recruiting that results in an inclusive workforce. However, the value of their inclusive staffing example for those agencies facing a shortage of paramedic-firefighters is not diminished. The practices that Philadelphia and San Francisco implemented and continued past the expiration of their respective consent decrees suggest how to recruit women as a potential solution to the paramedic-firefighter shortage.

⁴⁹⁷ Iulia Filip, "Racism Decried in Philly Fire Department," Court House News, November 15, 2011, <https://www.courthousenews.com/racism-decried-in-philly-fire-department/>; Rice, *Commonwealth of Pennsylvania, et al., Michael Kirby, et al., v. Joseph Rizzo, et al.*

⁴⁹⁸ Rice, *Commonwealth of Pennsylvania, et al., Michael Kirby, et al., v. Joseph Rizzo, et al.*; *Davis v. City and County of San Francisco.*

⁴⁹⁹ Rice, *Commonwealth of Pennsylvania, et al., Michael Kirby, et al., v. Joseph Rizzo, et al.* at 2. Club Valiant, Inc., the Philadelphia Chapter of the International Association of Black Professional Firefighters, was a plaintiff in *Kirby v. Rizzo*, the lawsuit that precipitated the PFD consent decree. See also Patricia Clifford, "Club Valiants Celebrates 50th Anniversary," October 2, 2012, *Philadelphia Tribune*, http://www.phillytrib.com/lifestyle/out-and-about/club-valiants-celebrates-th-anniversary/article_6efc07a1-5f5c-5e14-bd2c-5baf9208b0d3.html.

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V. CONCLUSION

Women should have free access to every field of labor which they care to enter, and when their work is as valuable as that of a man it should be paid as highly.

—Theodore Roosevelt, 1913⁵⁰⁰

This research has shown that recruiting female paramedics and paramedic-firefighters—as part of a comprehensive and ongoing hiring effort that prioritizes both deference to the law and to the community’s interests—can help overcome the shortage of competitive candidates for these skilled positions. Recruiting women holds the greatest potential to mitigate the paramedic-firefighter shortage because women are by far the largest underrepresented component of the workforce. Employers who inclusively develop future applicants and employ, retain, and promote people on their merits can successfully staff their agencies. Full and qualified staffing benefits the community by providing the breadth and depth of human resources to meet fire departments’ current and evolving public safety and public health missions.

A. IMPORTANCE

In part due to popular media treatment of the fire service and EMS, the public has high expectations for timely and professional paramedic and firefighting service but low understanding of who can become a paramedic-firefighter and how they may do so. This lack of understanding limits the applicant pool. The overrepresentation of males in firefighting causes females to overlook the profession as an option for themselves, their sisters, daughters, and nieces. Such male overrepresentation, the relative scarcity of fire station facilities for women, the history of sexual harassment, and the inexperience of many fire service-hiring managers with recruiting non-traditional applicants all combine to limit the number of women seeking paramedic-firefighter jobs unnecessarily. The shortage of paramedic-firefighter candidates sometimes causes agencies to leave positions unfilled,

⁵⁰⁰ Theodore Roosevelt, *Theodore Roosevelt: An Autobiography* (Salt Lake City, UT: Project Gutenberg, 2006), 117, <http://www.gutenberg.org/ebooks/3335>.

which burns out the workforce and reduces communities' resilience to fires, disasters, and public health threats like influenza. Compensating for short staffing with overtime is unsustainable because of employee fatigue and public concern about overtime increasing firefighters' wages.⁵⁰¹

B. LIMITATIONS

This case study design created trade-offs that resulted in limitations. One limitation is that the researcher could only compare data available from all four cases. Since not all agencies provided gender demographics for each uniformed rank, the thesis describes staffing by aggregating all ranks into one firefighter identity. The decision to include the PFD, which employs paramedics only in non-fire suppression roles, is representative of a common northeastern staffing model but also precludes strict comparison of paramedic-firefighter gender integration. Also, this thesis does not study how fire departments with no uniformed women recruit differently from those with above average gender integration.

This research presents a snapshot of staffing data. Except in the case of the MFD, for which female staffing peaked at 15.3 percent from 1998 through 2008, the research does not identify trends in staffing performance measures over time.⁵⁰² The significance of these limitations is that only basic comparisons are possible. It can be argued that any department typically has a higher or lower percentage of positions filled—or of positions

⁵⁰¹ Fire and Emergency Service Image Task Force, *Taking Responsibility for a Positive Public Perception* (Chantilly, VA: International Association of Fire Chiefs, 2013), 4, <https://www.iafc.org/docs/default-source/uploaded-documents/takingresponsibility4positivepublicperception.pdf>; Scott Marks and Sean McManus, "The 24-Hour Shift: A Growing Trend in Canada," *International Association of Fire Fighters*, 2016, 8, <http://services.prod.iaff.org/ContentFile/Get/11429>; Marie Wilson, "Why 4 Naperville Firefighters Switched off 24-Hour Shifts," *Daily Herald*, October 24, 2018, <https://www.dailyherald.com/news/20181024/why-4-naperville-firefighters-switched-off-24-hour-shifts>; San Francisco Fire Department, *What Does the Future Hold? City and County of San Francisco Civil Grand Jury, 2014–2015* (San Francisco: San Francisco Fire Department, 2015), 12, http://civilgrandjury.sfgov.org/2014_2015/14-15_CGJ_Report_SFFD_What_Does_the_Future_Hold_%207_16_15.pdf. News outlets typically report individual annual firefighter earnings without reporting hours worked, which obscures hourly wage rates. These hours may include extended responses to hurricanes and wildfires or backfilling shifts for others assigned to these events. With overtime—sometimes involuntary—firefighter workweeks of 60 hours or more are common. Some firefighters work 42-hour weeks. Some departments offer ambulance crews both 24-hour and shorter shifts. Shift options presumably aid employee retention.

⁵⁰² City of Madison Fire Department, *City of Madison Fire Department 2017 Annual Report*, 4.

filled by women—than is represented in this thesis due to factors such as firefighter age distribution or changes in recruiting resources.

C. FINDINGS AND RECOMMENDATIONS

This research generated five main findings:

- Women are underrepresented among paramedics and drastically underrepresented in the career fire service, notwithstanding their ability to do these jobs.
- A shortage of paramedics and paramedic-firefighter applicants exists.
- This shortage’s powerful causes are increasing, and include low EMS wages stemming from low CMS reimbursement for ambulance bills.
- Fire departments’ limited awareness of the decade-old IAFF Diversity Initiative suggests that recruiting is somewhat haphazard even in the most inclusive departments.
- Strong staffing performance requires doing many things consistently well. For example, Philadelphia shows that inefficient recruiting and hiring blunt full employment.⁵⁰³

This research, and its history of discrimination lawsuits, are a reminder to the fire service that adequate and representative staffing requires deep organizational commitment to—and continuous evaluation of—inclusive workforce development, outreach, recruitment, hiring, and advancement strategies.

Table 3 compares performance measures—including the ratio of female firefighters to firefighter positions filled—across all four case departments. Similar to the group ratio

⁵⁰³ Schmitt and Martin, *Hiring and Employment in Philadelphia City Government*, 1–2; Philadelphia may improve its staffing by streamlining hiring, perhaps by accepting applications continuously like San Francisco does. See City and County of San Francisco, “Employment Opportunities: Fire Department.”

introduced in Chapter IV’s discussion of the PFD, the female staffing ratio is most representative as it approaches .469, the ratio of females to the general workforce.⁵⁰⁴

Table 3. Staffing Measures of Performance⁵⁰⁵

2018 Measure	Orange County	Madison	Philadelphia	San Francisco
% positions filled	96.3	102	91	98
% positions female	8.6	10.49	12	14.99
Female staffing ratio	.09	.10	.13	.15

Figure 5 shows that the SFFD has the highest ratio of firefighter positions filled by women, where firefighter includes all ranks. Since the percentage of female residents and women in the workforce does not vary much among the four case jurisdictions, the measure to keep in mind is that women account for almost .47 of the nation’s workforce.⁵⁰⁶

The low percentage of female firefighters across departments and the persistent shortages of paramedics and paramedic-firefighters is evidence of far less fire department attention to inclusive recruitment than to operations. Fire departments in the last few decades have almost universally adopted new operational practices like rapid intervention teams, tactics based on modern fire behavior, and the reduction of exposure to toxics and carcinogens, but have largely neglected to update recruiting and staffing approaches.

Excluding women, even unintentionally, deprives work teams of valuable life experiences and staffing. This exclusion is equally true for volunteer fire and EMS services, private industry, and the non-profit sector. The increasingly rapid pace of technological

⁵⁰⁴ Bureau of Labor Statistics, “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” January 19, 2018.

⁵⁰⁵ Adapted from Jacobs, *Orange County Florida Budget Highlights Fiscal Year 2018–2019*, 9–4; Mike Wajda; City of Madison Fire Department, *City of Madison Fire Department 2017 Annual Report*, 4; Soglin, *2018 Adopted Budget*, 191; Lance Langer; Philadelphia Fire Department, *Philadelphia Fire Department Fiscal Year 2019 Budget Testimony*, 2, 8; Philadelphia Fire Department, “Fire Department Full-Time Staff and Executive Staff”; Alves, email message to author; San Francisco Fire Department, *San Francisco Fire Department Aggregate Data Report: Classification—Race/Gender*; Miller et al., *Promising Practices for Increasing Diversity among First Responders*, 23.

⁵⁰⁶ Bureau of Labor Statistics, “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity,” January 19, 2018.

change requires teams of employees to be efficient at their jobs today and able to adapt to—and even influence—how they will work tomorrow. The most flexible employee teams consist of lifelong learners whose multi-cultural, multi-disciplinary, and multi-lingual understandings of the world help them rapidly identify and meet workplace challenges. Failure to explicitly enlarge the pool of paramedics and paramedic-firefighters with underrepresented classes, including women, increasingly limits the ability of fire departments and other providers to staff their EMS systems.

Since EMS systems require budgets, communities must more closely align their desire for paramedic service with their willingness to pay for it. This alignment may involve offsetting low ambulance reimbursement rates and unfavorable payer mixes with taxpayer funds or increased EMS user fees. Some may say that implementing these recommendations is unlikely in a nation that struggles with the role of government. Another view is that public servants—including firefighters—need to maintain trust in local government exactly by implementing the recommendations that are under their control and advocating for those that are not.⁵⁰⁷ Maintaining trust requires meeting community expectations.

The underrepresentation of women among paramedic-firefighters even in the context of a paramedic-firefighter shortage, low unemployment, and continuing concern over the gender wage gap indicates that the fire service should do several things differently. First, it should overcome its traditional humility and promote the fact that paramedic-firefighters earn good wages—regardless of gender—while performing interesting duties and fulfilling an important public service mission.⁵⁰⁸ Second, fire departments should advocate for investment in a more robust paramedic-firefighter employment pipeline. This investment must include increased staff implementation of recruiting best practices, especially those that focus on getting more women to seek paramedic-firefighter positions.

⁵⁰⁷ Justin McCarthy, “Americans Still More Trusting of Local than State Government,” Gallup, October 8, 2018, <https://news.gallup.com/poll/243563/americans-trusting-local-state-government.aspx>.

⁵⁰⁸ Sabrina Kim Pasztor, “Myth, Math and the Money: Media Framing of the U.S. Gender Wage Gap Debate from 1980–2014,” INDIGO, November 29, 2016, <https://dspace-prod.lib.uic.edu/handle/10027/21612>.

Third, fire departments should actively develop potential paramedic-firefighters from among their communities' children, students, athletes, and even mid-career employees.

Many stakeholders should take responsibility for enlarging the paramedic-firefighter applicant pool by investing in development, training, and recruiting. In contrast to the military and many law enforcement agencies, most fire departments rely on paramedic-firefighters to have completed paramedic education, training, and licensure prior to hire. Before fire departments can recruit women and other non-traditional applicants as paramedic-firefighters, these applicants need at least a high school education, integrity, fitness, a strong work ethic, a desire to serve the public, and respect for the rule of law. Many of these KSAs are the responsibility of families, teachers, coaches, counselors, and first employers to develop. Fire service organizations should partner with others—as case departments do—to provide pre-service camps, cadet programs, explorer programs, reserve programs, internships, and EMS education so that women and other potential applicants have an uninterrupted set of opportunities to develop paramedic-firefighter KSAs. At the same time, employment decisions must remain based strictly on ability rather than on gender, race, or other class.

Fire departments, fire and EMS industry associations, and labor organizations should lobby for local and state tuition assistance, loan forgiveness, training grant programs and—at the federal level—for fair CMS reimbursement. Increased CMS reimbursement would give private ambulance providers the option to increase their low compensation. Proponents of such policies should argue that they are needed to support the nation's EMS systems by providing a path from training to a livable wage, which may remedy the paramedic shortage.

Where local access to EMS education is inadequate, colleges, hospitals, employment development agencies, and EMS providers—including fire departments—should cooperate to increase such access. As aspiring paramedic-firefighters near adulthood, such programs allow those with initiative to seek appropriate education and vocational training. Some departments also require applicants to have earned college fire science credits before applying for paramedic-firefighter positions. As women are underrepresented in EMS and the fire service, it may be reasonable to infer that they are

also underrepresented in EMS and fire science education programs. Families and school counselors should challenge traditional societal gender role beliefs to help all students engaged in career exploration consider occupations like firefighting.

Adults have a responsibility to advocate for themselves as well, for example by weighing whether they are better served by employment in the gig economy, retail sales, or in a public service career, such as a firefighter. These extremes may seem to omit many professional career options, but are framed in this manner to acknowledge that only a small percentage of persons preparing to work in specific fields, such as law, engineering, or hospitality end up in fire service careers. Potential paramedic-firefighter applicants who cannot afford EMS training should look beyond the for-profit loan market to other possibilities like scholarships, state skilled training grants, and employer-based tuition assistance, or loan-forgiveness programs. As employers face greater difficulties finding qualified staff, they may become more receptive to requests for such programs.

Local government is among the most important institutions in American life because of how it determines the level of services like paving, policing, and public education, necessary to meet the community's needs. Fire departments are essential institutions within local government, and paramedic-firefighters are increasingly important within fire departments and EMS systems. Not everyone wants to be a paramedic-firefighter, but nobody should rule it out—at any age or stage of career exploration—for any reason other than inability to fulfill the required duties.

D. SUGGESTIONS FOR FUTURE RESEARCH

The thesis's research regarding gender-integration leadership of San Francisco and the other case fire departments posits several questions for future research. First, the research community could explore—in greater detail—the possible relationship between targeting women for paramedic-firefighter recruitment and resulting paramedic-firefighter staffing performance measures. Second, research could better characterize how fire department hiring managers analyze, plan, implement, and evaluate their recruiting and staffing. For example, fire departments come closer to sharing an understanding of modern fire behavior—a subject most popularized by research disseminated since 2008, and

especially since 2013—than they do to sharing an understanding of modern recruitment practices, which the IAFF published in 2006.⁵⁰⁹ Trade journals have covered modern fire behavior much more than modern recruiting practices and far more firefighters identify as responsible for the former as the latter. Still, it may be helpful to research why the modern recruiting recommendations of the nation’s largest labor organization—that represents the paramedics and firefighters who protect all but 15 percent of the U.S. and Canadian population—appear not to be widely recognized or followed even among case fire departments selected for their recruiting success.⁵¹⁰

Finally, it would be useful to have a better understanding of evolving workforce and youth gender-role beliefs. It has been 46 years since the Civil Rights Act made employment discrimination by all levels of government, for example by fire departments against female applicants, illegal. Paramedic-firefighter positions offer desirable compensation, job satisfaction, and advancement opportunities, including advancement to some positions that work a 40-hour week. More fire departments are providing fire station facilities appropriate to a gender-integrated workforce. The fire departments in this thesis demonstrate that the combination of targeted recruitment, visible commitment to equal opportunity employment, and fair hiring without preferences can combine to increasing staffing. All the same, the U.S. fire service’s abilities to fill paramedic-firefighter spots and to include women could both be much better. This thesis aims to continue a necessary discussion about how to remedy a shortage of qualified applicants for an important public safety position. This study recommends that future researchers further that effort by investigating the following questions. What is necessary to increase the percentage of the population willing and able to fill available paramedic-firefighter equal employment opportunities? What part of the solution to this recruiting problem involves society re-

⁵⁰⁹ Kristy D. Thompson, “National Institute of Standards and Technology Engineering Laboratory/Fire Research Division,” NIST, October 15, 2010, <https://www.nist.gov/el/fire-research-division-73300/firegov-fire-service>; “Modern Fire Behavior,” Underwriters Laboratories Fire Safety Research Institute, 42, January 30, 2014, <https://modernfirebehavior.com/page/42/>; Fox, Hornick, and Hardin, *IAFF Diversity Initiative*.

⁵¹⁰ “About Us,” International Association of Fire Fighters, accessed October 21, 2018, <http://www.iaff.org>.

examining its commitment to equal opportunity employment? Is an opportunity really an opportunity if few believe that it is available to them?

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LIST OF REFERENCES

- Acadian. "National EMS Academy Announces Tuition Refund Program." Accessed June 10, 2018. <http://nationalemssacademy.com/national-ems-academy-announces-tuition-refund-program>.
- Alexander, Melissa, Steven Weiss, Darren Braude, Amy A. Ernst, and Lynne Fullerton-Gleason. "The Relationship between Paramedics' Level of Education and Degree of Commitment." *The American Journal of Emergency Medicine* 27, no. 7 (2009): 830–7. <http://dx.doi.org.libproxy.nps.edu/10.1016/j.ajem.2008.06.039>.
- AMR. "American Medical Response—AMR Career Development." Accessed June 10, 2018. <https://www.amr.net/careers-training/career-development-training>.
- Austin Community College District. "Firefighter Certification." May 5, 2016. <http://www.austincc.edu/fireprot/fta.dwt.php>.
- Avesta Systems Inc. and American Ambulance Association. "AAA/Avesta 2018 Ambulance Industry Employee Turnover Study." Confidential report, Washington, DC, Avesta Systems Inc. and American Ambulance Association, 2018.
- Bares, Ann. "2016 Turnover Rates by Industry." *Compensation Force* (blog), April 21, 2017. <http://www.compensationforce.com/2017/04/2016-turnover-rates-by-industry.html>.
- Bauer, Robert O. "Emergency Airway, Ventilation, and Cardiac Resuscitation." *Anesthesia Progress* 14, no. 9 (November 1967): 236–249. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2235452/>.
- Bell, Mary Ellen. "Hail to Outgoing Madison Fire Chief Debra Amesqua." *Isthmus*, August 11, 2011. <https://isthmus.com/isthmus/article.php%3Farticle%3D34354>; City of Madison Fire Department. "Leadership Team."
- Bentley, Melissa A., Abigail Shoben, and Roger Levine. "The Demographics and Education of Emergency Medical Services (EMS) Professionals: A National Longitudinal Investigation." *Prehospital and Disaster Medicine* 31, no. Supplement 1 (December 2016): s18–s29. <https://doi.org/10.1017/S1049023X16001060>.
- Berkman, Brenda, Terese M. Floren, and Linda F. Willing. *Many Faces, One Purpose: A Manager's Handbook on Women in Firefighting*. Emmitsburg, MD: U.S. Fire Administration, 1999.

- Blau, Gary, and Susan Chapman. “Retrospectively Exploring the Importance of Items in the Decision to Leave the Emergency Medical Services (EMS) Profession and Their Relationships to Life Satisfaction After Leaving EMS and Likelihood of Returning to EMS.” *Journal of Allied Health; Washington* 40, no. 2 (Summer 2011): e29–e32. <https://search.proquest.com/docview/887255408/abstract/27B267217B114DF0PQ/16>.
- Blau, Gary, and Susan A. Chapman. “Why Do Emergency Medical Services (EMS) Professionals Leave EMS?.” *Prehospital and Disaster Medicine* 31, no. S1 (December 2016): S105–S111. <https://doi.org/10.1017/S1049023X16001114>.
- Blau, Gary, Susan Chapman, Gregory Gibson, and Melissa A. Bentley. “Exploring the Importance of Different Items as Reasons for Leaving Emergency Medical Services between Fully Compensated, Partially Compensated, and Non-Compensated/Volunteer Samples.” *Journal of Allied Health; Washington* 40, no. 3 (Fall 2011): e33–7. <https://search.proquest.com/docview/918119361/abstract/E556992441864387PQ/18>.
- Bloom, Ester. “Here’s How Much the Average American Spends on Health Care.” June 23, 2017. <https://www.cnbc.com/2017/06/23/heres-how-much-the-average-american-spends-on-health-care.html>.
- Brinkman, Paul. “Orange and Seminole Unemployment Rates Among the Lowest in the State.” *Orlando Sentinel*, March 12, 2018. <http://www.orlandosentinel.com/business/brinkmann-on-business/os-bz-orange-december-unemployment-20180312-story.html>.
- Brouhard, Rod. “Why Is an Ambulance so Expensive and Does Insurance Pay the Bill?.” *Verywell Health*, November 2, 2017. <https://www.verywellhealth.com/why-an-ambulance-costs-so-much-4093846>.
- Brown, William E., Drew Dawson, and Roger Levine. “Compensation, Benefits, and Satisfaction: The Longitudinal Emergency Medical Technician Demographic Study (LEADS) Project.” *Prehospital Emergency Care* 7, no. 3 (September 2003): 357–62. <https://search.proquest.com/docview/221167569/citation/9B9B6421E1C44EA5PQ/1>.
- Brundage, Vernon. “Profile of the Labor Force by Educational Attainment.” August 2017. <https://www.bls.gov/spotlight/2017/educational-attainment-of-the-labor-force/home.htm>.
- Bucher, Joshua, and Hashim Q. Zaidi. “A Brief History of Emergency Medical Services in the United States.” EMRA, 2018. <http://www.emra.org/about-emra/history/ems-history/>.

- Bureau of Labor Statistics. *2018 SOC User Guide Classification Principles and Coding Guidelines*. Washington, DC: Office of Management and Budget, 2017. https://www.bls.gov/soc/2018/soc_2018_class_prin_cod_guide.pdf.
- . “Athletes and Sports Competitors: Occupational Outlook Handbook.” April 13, 2018. <https://www.bls.gov/ooh/entertainment-and-sports/athletes-and-sports-competitors.htm>.
- . “Bureau of Labor Statistics Data, Unemployment Rate.” August 25, 2018. <https://data.bls.gov/timeseries/LNS14000000>.
- . “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity.” 2015. <https://www.bls.gov/cps/tables.htm>.
- . “Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity.” January 19, 2018. <https://www.bls.gov/cps/cpsaat11.htm>.
- . “EMTs and Paramedics.” April 13, 2018. <https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm>.
- . “EMTs and Paramedics: How to Become an EMT or Paramedic.” April 13, 2018. <https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm#tab-4>.
- . “EMTs and Paramedics: Job Outlook.” April 13, 2018. <https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm#tab-6>.
- . “Firefighters: Occupational Employment and Wages.” May 2017. <https://www.bls.gov/oes/current/oes332011.htm>.
- . “Home: Occupational Outlook Handbook.” April 13, 2018. <https://www.bls.gov/ooh/home.htm>.
- . “Household Data Annual Averages 11. Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity.” 2016. <https://www.bls.gov/cps/cpsaat11.pdf>.
- . “Labor Force Statistics from the Current Population Survey.” January 19, 2018. <https://www.bls.gov/cps/tables.htm>.
- . “May 2017 National Occupational Employment and Wage Estimates.” March 30, 2018. https://www.bls.gov/oes/current/oes_nat.htm#00-0000.
- . “Nontraditional Occupations.” 2015. <https://www.dol.gov/wb/stats/Nontraditional%20Occupations.pdf>.
- . “Occupational Outlook Handbook: How to Become a Firefighter.” April 24, 2018. <https://www.bls.gov/ooh/protective-service/firefighters.htm#tab-4>.

- . “Women in the Labor Force: A Databook: BLS Reports.” November 2017. <https://www.bls.gov/opub/reports/womens-databook/2017/home.htm>.
- . “Women’s Bureau (WB)—Quick Facts on Women in the Labor Force in 2010.” 2010. <https://www.dol.gov/wb/factsheets/qf-laborforce-10.htm>.
- Burk, David, and Joshua Montes, *Factors Affecting the Labor Force Participation of People Ages 25 to 54*. Washington, DC: Congressional Budget Office, 2018. <https://www.cbo.gov/system/files?file=115th-congress-2017-2018/reports/53452-lfpr.pdf>.
- California Firefighter Joint Apprenticeship Committee. “CA Fire Fighter Joint Apprenticeship Committee.” Accessed October 30, 2018. <http://www.cffjac.org/go/jac/about-jac/>.
- . “CFFJAC to Begin Written Testing.” 2007. <http://www.cffjac.org/go/jac/media-center/news-and-events/news-and-events/cffjac-to-begin-written-testing/>.
- . *Candidate Physical Ability Test Preparation Guide*. Sacramento, CA: California Fire Fighter Joint Apprenticeship Committee, n.d. Accessed January 29, 2018. <http://www.cffjac.org/go/jac/?LinkServID=3E94B79A-1CC4-C201-3E4BF872E67CB568>.
- California Legislative Information. “California Constitution: Article 1 Declaration of Rights [Section 1—Sec.32]” (1996). https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS§ionNum=SEC.%2031.&article=I.
- California Urban Search and Rescue Task Force 3. “Participating Agencies.” Accessed October 15, 2018. <http://www.catf3.org/participating-agencies>.
- Cal-JAC Academy. “About.” Accessed October 30, 2018. <https://www.caljacacademy.org/about/>.
- Callahan, Micki. *Re: Accomplishments Provided in Response to the Report Entitled Performance Audit of the City’s Practices to Recruit, Retain and Promote Uniform Fire Staff*. San Francisco: Board of Supervisors of the City and County of San Francisco, 2014. <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.
- . *Re: Response to the Report Entitled Performance Audit of the City’s Practices to Recruit, Retain and Promote Uniform Fire Staff*. San Francisco: Board of Supervisors of the City and County of San Francisco, 2014. <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.

- Callahan, Micki et al. *Memorandum of Understanding between The City and County of San Francisco and the San Francisco Firefighters Union Local 798, IAFF, AFL-CIO July 1, 2007 to June 30, 2018 Unit 1 Revised per Amendment #7 & 8*. City and County of San Francisco: Human Resources Department, 2014. <http://sfdhr.org/sites/default/files/documents/MOUs/Firefighters-Local798-Unit-1-2007-2018.pdf>.
- Carbone, Christopher. “Facebook Accused of Allowing Gender Bias in Job Ads.” Interactive Resource. Fox News, September 18, 2018. <https://www.foxnews.com/tech/facebook-accused-of-allowing-gender-bias-in-job-ads>.
- CBC/Radio-Canada. “‘You Can’t Be What You Can’t See’: 25 Years Later, Female Firefighters Still Few Among Men.” CBC News, October 22, 2017. <http://www.cbc.ca/news/canada/british-columbia/you-can-t-be-what-you-can-t-see-25-years-later-female-firefighters-still-few-among-men-1.4366234>.
- Census Bureau. “QuickFacts: Madison City, Wisconsin.” July 1, 2017. <https://www.census.gov/quickfacts/fact/table/madisoncitywisconsin/PST045217>.
- Center for Allied Health Education. “Paramedic Tuition and Fees.” New York Health Education Training Program Certification. Accessed June 9, 2018. <https://www.cahe.edu/school-paramedic/section-tuition-and-fees>.
- Center for Public Safety Excellence. “Accredited Agencies.” Accessed August 27, 2018. <https://cpse.org/accreditation/accredited-agencies/>.
- Centers for Medicare and Medicaid Services. “Ambulance Fee Schedule Public Use Files.” February 21, 2018. <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AmbulanceFeeSchedule/afspuf.html>.
- Chapman, Susan A., Gary Blau, Robert Pred, and Andrea B. Lopez. “Correlates of Intent to Leave Job and Profession for Emergency Medical Technicians and Paramedics.” *Career Development International* 14, no. 5 (September 18, 2009): 87–503. <https://doi.org/10.1108/13620430910989861>.
- Chapman, Susan A., Vanessa Lindler, and Jennifer A. Kaiser. *The Emergency Medical Services Workforce Agenda for the Future*. Washington, DC: National Highway Traffic Safety Administration, 2011. https://www.ems.gov/pdf/2011/EMS_Workforce_Agenda_052011.pdf.
- Chapman, Susan A., Vanessa Lindler, Jennifer A. Kaiser, Christine S. Nielsen, Timothy Bates, and Laurie Hailer-O’Keefe. *EMS Workforce for the 21st Century: A National Assessment*. Washington, DC: National Highway Traffic Safety Administration, 2008. <https://www.ems.gov/pdf/810943.pdf>.

- Charles N. Pozner, Richard Zane, Stephen J. Nelson, and Michael Levine. “International EMS Systems: The United States: Past, Present, and Future.” *Resuscitation* 60, no. 3 (March 2004): 239–244. <https://doi.org/10.1016/j.resuscitation.2003.11.004>.
- Chatman, Jennifer A., and Sandra E. Spataro. “Using Self-Categorization Theory to Understand Relational Demography-Based Variations in People’s Responsiveness to Organizational Culture.” *The Academy of Management Journal* 48, no. 2 (April 2005): 1–11. <http://www.jstor.org.libproxy.nps.edu/stable/20159658>.
- City and County of San Francisco, Civil Service Commission. “Rule 313 Certification of Eligibles—Fire Department.” Accessed October 8, 2018. <https://sfgov.org/civil-service/rule-313-certification-eligibles-fire-department>.
- City and County of San Francisco, Department of Human Resources. “Announcement: Entry Level (H-2) Firefighter.” March 11, 2016. <https://jobapscloud.com/SF/sup/bulpreview.asp?R1=CCT&R2=H002&R3=900310>.
- . “City and County of San Francisco EMT/Paramedic/Firefighter (H#003).” March 10, 2011. <https://www.jobapscloud.com/SF/specs/classspecdisplay.asp?ClassNumber=H003&R1=undefined&R3=undefined>.
- . “Equal Employment Opportunity.” Accessed October 5, 2018. <https://sfdhr.org/equal-employment-opportunity>.
- . “Equal Employment Opportunity Policy.” September 2017. <https://sfdhr.org/equal-employment-opportunity-policy>.
- . “Hourly Rates of Pay by Classification and Step FY18–19.” June 20, 2018. <http://sfdhr.org/sites/default/files/documents/Classification-and-Compensation/Hourly-Rates-of-Pay-by-Classification-and-Step-FY18-19.xlsx>.
- . *Information about the San Francisco Continuous Testing Program for Entry-Level Firefighters*. San Francisco: City and County of San Francisco, 2013. <https://sf-fire.org/sites/default/files/SFFD/H2FAQs.pdf>.
- . “Seniority Rosters by Class 8-15-16.” August 15, 2016. <https://sfdhr.org/sites/default/files/documents/./Seniority-Rosters-by-Class-8-15-16.xlsx>.
- . “Announcement: H-8 Level II Paramedic—City and County of San Francisco.” 2018. <https://jobapscloud.com/SF/sup/bulpreview.asp?R1=TEX&R2=H008&R3=067545>.
- City and County of San Francisco, Department on the Status of Women. “Recruitment of Women in Non-Traditional Fields.” Accessed December 30, 2017. <http://sfgov.org/dosw/recruitment-women-non-traditional-fields>.

- City and County of San Francisco, Fire Department. "About SFFD Operations." Accessed October 15, 2018. <https://sf-fire.org/about-sffd-operations>.
- . "Airport Division—About Us." Accessed October 15, 2018. <https://sf-fire.org/airport-division-about-us>.
- . "Fire Station Locations." Accessed September 30, 2018. <https://sf-fire.org/fire-station-locations#stations>.
- . "Programs." Accessed October 9, 2018. <https://sf-fire.org/programs>.
- City and County of San Francisco. "DataSF." Accessed October 6, 2018. <https://data.sfgov.org/d/enhu-st7v/visualization>.
- . "Employment Opportunities: Fire Department." Fire Department. Accessed July 11, 2018. <https://sf-fire.org/employment-opportunities>.
- . "Fire Department." Accessed September 30, 2018. <https://sf-fire.org/about-us>.
- . "Fire Department: About the Division of Training." Accessed July 2, 2018. <https://sf-fire.org/about-us-2>.
- City and County of San Francisco, Office of the Controller. *A Review of the San Francisco Fire-EMS System*. San Francisco: City and County of San Francisco, Office of the Controller, 2004. <https://sfcontroller.org/ftp/uploadedfiles/controller/reports/FireEMS.pdf>.
- City of Madison City Clerk's Office. "Women's Initiatives Committee." July 27, 2017. </clerk/meeting-schedule/womens-initiatives-committee-8>.
- City of Madison Department of Civil Rights. *Equitable Workforce (Affirmative Action) Plan 2017 Report*. Madison, WI: City of Madison Department of Civil Rights, 2017. <https://www.cityofmadison.com/dcr/documents/EWplan2017.pdf>.
- City of Madison Economic Development Division. *2017 City of Madison Economic Development Division Year End Report*. Madison, WI: City of Madison Economic Development Division, 2018. https://www.cityofmadison.com/dpced/economicdevelopment/documents/2017%20EDD%20annual%20report_draft%205_1_18.pdf.
- City of Madison Engineering. "Fire Station 14." Accessed September 15, 2018. <https://www.cityofmadison.com/engineering/projects/fire-station-14>.
- City of Madison Fire Department. "Academy: Recruit Training." Accessed September 17, 2018. <https://www.cityofmadison.com/fire/join-mfd/academy>.

- . “Application Process: Fire.” 2018. <https://www.cityofmadison.com/fire/join-mfd/application-process>.
- . “Captain Jen Román Receives National Honor for Work with CampHERO.” August 9, 2018. <https://www.cityofmadison.com/fire/blog/captain-jen-roman-receives-national-honor-for-work-with-camphero>.
- . *City of Madison Fire Department 2017 Annual Report*. Madison, WI: City of Madison, 2018. <https://www.cityofmadison.com/fire/documents/MFD%202017%20Annual%20Report.pdf>.
- . “City of Madison Fire Department Organizational Chart.” 2018. <https://www.cityofmadison.com/fire/documents/MFDOrgChart.pdf>.
- . “EMS Q&A: Did You Know MFD Paramedics Are Also Firefighters?.” May 25, 2017. <https://www.cityofmadison.com/fire/blog/ems-qa-did-you-know-mfd-paramedics-are-also-firefighters>.
- . “Hazardous Incident Team.” Accessed September 17, 2018. <https://www.cityofmadison.com/fire/stations/special-teams/hazardous-incident-team>.
- . “Heavy Urban Rescue Team.” Accessed September 17, 2018. <https://www.cityofmadison.com/fire/stations/special-teams/heavy-urban-rescue-team>.
- . “Hiring Timeline: An Overview of the 2017–2018 Application Process.” November 10, 2017. <https://www.cityofmadison.com/fire/blog/hiring-timeline-an-overview-of-the-2017-2018-application-process>.
- . “Join MFD.” 2018. <https://www.cityofmadison.com/fire/join-mfd>.
- . “Lake Rescue Team.” Accessed September 17, 2018. <https://www.cityofmadison.com/fire/stations/special-teams/lake-rescue-team>.
- . “Leadership Team.” Accessed June 1, 2018. <https://www.cityofmadison.com/fire/about/leadership-team>.
- . “Madison Fire Department Chiefs.” Accessed September 18, 2018. <https://www.cityofmadison.com/fire/about/history/madison-fire-department-chiefs>.
- . “Notable Department Milestones.” 2017. <https://www.cityofmadison.com/fire/about/history/notable-department-milestones>.
- . “Tactical Emergency Medical Services.” Accessed September 17, 2018. <https://www.cityofmadison.com/fire/emergency-medical-services/tactical-emergency-medical-services>.

- . “What We Look For.” Accessed September 17, 2018. <https://www.cityofmadison.com/fire/join-mfd/what-we-look-for>.
- . “What We Look For: Firefighter Prerequisites.” Accessed September 16, 2018. <http://www.cityofmadison.com/fire/join-mfd/what-we-look-for>.
- . “Why MFD.” Accessed September 17, 2018. <https://www.cityofmadison.com/fire/join-mfd/why-mfd>.
- City of Madison Human Resources. “Navigating the City of Madison’s Hiring Process.” July 2017. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjOnteN76HcAhWT14MKHYP_A_gQFg6MAE&url=https%3A%2F%2Fwww.cityofmadison.com%2Fsites%2Fdefault%2Ffiles%2Fcity-of-madison%2Fhuman-resources%2Fdocuments%2Fnavigating-CityHiringProcess.pdf&usg=AOvVaw26I3crv-bbpBGioiQAS7BL.
- City of Madison Police Department. “Explorer Post 911.” Accessed September 16, 2018. <https://www.cityofmadison.com/police/community/explorer/>.
- City of Madison, Wisconsin. “2016 Madison Fire Department PAT Training.” 2016. <https://media.cityofmadison.com/Mediasite/Play/100464acc2124c179e06c0fca51bab2e1d>.
- . “Ask a Recruiter: Fire.” 2018. <https://www.cityofmadison.com/fire/join-mfd/ask-a-recruiter>.
- . “Department of Civil Rights: City of Madison, Wisconsin.” 2018. <https://www.cityofmadison.com/dcr/aaFAQ.cfm>.
- . *Madison 2018 Adopted Operating Budget: Fire*. Madison, WI: City of Madison, n.d. Accessed September 9, 2018. <https://www.cityofmadison.com/budget/documents/2018/operating/adopted/Fire.pdf>.
- City of Madison. “Chapter 39—Department of Civil Rights.” Code of Ordinances § (2006). https://library.municode.com/wi/madison/codes/code_of_ordinances?nodeId=COORMAWIVOIVCH32--45_CH39DECIRI.
- . “Mobile Integrated Health (Community Paramedicine).” Accessed September 15, 2018, </fire/emergency-medical-services/mobile-integrated-health-community-paramedicine>.
- City of New York. “Fire Commissioner Daniel A. Nigro Announces Results of Recent Firefighter Exam.” November 13, 2017. <https://www1.nyc.gov/site/fdny/news/fa6517/fire-commissioner-daniel-a-nigro-results-recent-firefighter-exam/#/0>.

- City of Orlando. “Impasse Hearing—Fire Main and District Chiefs: City Presentation.” Presentation, Orlando, Florida, September 24, 2017. docplayer.net/58484379-Impasse-hearing-fire-main-and-district-chiefs.html; National Testing Network. “Orange County Fire Rescue Job Information.”
- City of Philadelphia. “Become a Fire Explorer.” November 6, 2017. <https://www.phila.gov/services/working-jobs/find-a-job-or-internship/join-the-fire-department/become-a-fire-explorer/>.
- . “Become a Firefighter.” September 7, 2018. <https://www.phila.gov/services/working-jobs/find-a-job-or-internship/join-the-fire-department/become-a-firefighter/>.
- . “Become a Paramedic.” September 7, 2018. <https://www.phila.gov/services/working-jobs/find-a-job-or-internship/join-the-fire-department/become-a-paramedic/>.
- . “Philadelphia Fire Department.” Accessed September 28, 2018. <https://www.phila.gov/departments/philadelphia-fire-department/>.
- . *Philadelphia Firefighter Career Progression*. Philadelphia: City of Philadelphia, n.d. Accessed September 21, 2018. <http://www.phila.gov/personnel/specs/careerladders/LFirefighterHS.pdf>.
- . “Sign Your Child up for Philadelphia Fire Department Summer Camp!” July 7, 2017. <https://beta.phila.gov/news/philadelphia-fire-department/sign-your-child-up-for-philadelphia-fire-department-summer-camp/>.
- City of Philadelphia Department of Records. “Fire Department.” November 8, 2000. <https://www.phila.gov/phils/docs/inventor/graphics/agencies/A074.htm>.
- City of Pittsburgh. “Paramedic Recruitment.” Accessed June 11, 2018. <http://pittsburghpa.gov/humanresources/public-safety-recruitment/ems-recruit.html>.
- City of San Jose. “Qualifications.” Accessed September 2, 2018. <http://ca-sanjose.civicplus.com/index.aspx?nid=2348>.
- Clifford, Patricia. “Club Valiants Celebrates 50th Anniversary.” October 2, 2012. *Philadelphia Tribune*. http://www.phillytrib.com/lifestyle/out-and-about/club-valiants-celebrates-th-anniversary/article_6efc07a1-5f5c-5e14-bd2c-5baf9208b0d3.html.
- Collegescholarships. “College and Continuing Education Scholarships for EMS and Paramedics.” Accessed November 10, 2018. <http://www.collegescholarships.org/scholarships/health/ems.htm>.

- Collins, Sara R. “The Slowdown in Employer Insurance Cost Growth.” *Medical Benefits; New York* 34, no. 1 (January 2017): 9–10. <https://search-proquest-com.libproxy.nps.edu/docview/1875717111/abstract/424B3B22E13044F9PQ/1>.
- Colwell, Christopher B., Peter T. Pons, and Randy Pi. “Complaints against an EMS System.” *The Journal of Emergency Medicine* 25, no. 4 (November 2003): 403–408. <https://doi.org/10.1016/j.jemermed.2003.02.004>.
- Commission on Accreditation of Allied Healthcare Programs. “CAAHEP—Find an Accredited Program.” Accessed June 9, 2018. <https://caahep.org/Students/Find-a-Program.aspx>.
- Committee Information—Legislative Information Center. “Police and Fire Commission.” City of Madison, Wisconsin, June 29, 2018. <https://www.cityofmadison.com/cityhall/legislativeinformation/roster/104500.cfm>.
- Cosgrove, James C. *Ambulance Providers: Costs and Medicare Margins Varied Widely; and Transports of Beneficiaries Have Increased*. GAO-13-6. Washington, DC: Government Accountability Office, 2012. <http://www.gao.gov/assets/650/649018.pdf>.
- da Cunha, Margot. “11 Unbelievably Specific Facebook Audiences You Can Target.” *Wordstream* (blog), March 31, 2018. <https://www.wordstream.com/blog/ws/2015/10/20/facebook-audience>.
- Davidson, Paul. “‘Ghosting’ Creeps into Workplace.” *USA Today*, July 20, 2018. <https://www.usatoday.com/story/money/2018/07/19/strong-job-market-candidates-ghosting-interviews-offers/794264002/>.
- Davis, Steven. *2019 Capital Budget Transmittal Memo Fire Department*. Madison, WI: City of Madison, 2018. <https://www.cityofmadison.com/budget/documents/2019/capital/requests/FireDepartment.pdf>.
- . “Chief’s Blog.” *City of Madison Fire Department* (blog), July 11, 2018. <https://www.cityofmadison.com/fire/blog/chief>.
- DeLucia, Joseph. “Innovations: What Is Community Paramedicine?.” *Urgent Matters*, March 1, 2013. <https://smhs.gwu.edu/urgentmatters/news/innovations-what-community-paramedicine>.
- Denning, Steve. “The Ten Happiest Jobs.” *Forbes*. Accessed August 14, 2018. <https://www.forbes.com/sites/stevedenning/2011/09/12/the-ten-happiest-jobs/>.
- Denver Health Paramedic Division. *Denver Health Paramedic Division EMS Diversity Scholarship*. Denver, CO: Denver Health Paramedic Division, 2017.

- Department of Defense. *2016 Demographics: Profile of the Military Community*. Washington, DC: Department of Defense, 2016. download.militaryonesource.mil/12038/MOS/Reports/2016-Demographics-Report.pdf.
- Department of Homeland Security. “Emergency Services Sector.” March 22, 2018. <https://www.dhs.gov/emergency-services-sector>.
- Department of Transportation. “Creation of Department of Transportation—Summary.” February 3, 2016. <https://www.transportation.gov/50/creation-department-transportation-summary>.
- Dineen, Caitlin. “Orange County Fire Rescue Special Operations Members Train on the Orlando Eye.” *Orlando Sentinel*, April 8, 2015. <https://www.orlandosentinel.com/business/tourism/os-orlando-eye-training-day-20150408-story.html>.
- Doornbos, Caitlin. “Orange County Fire Rescue Aims to Use Drones to Save Lives.” *Orlando Sentinel*, April 29, 2017. <https://www.orlandosentinel.com/news/breaking-news/os-fire-drones-orange-county-20170427-story.html>.
- . “Orange County’s First Transgender Deputy: ‘I’m Becoming Who I Want to Be.’” *Orlando Sentinel*, June 23, 2017. <http://www.orlandosentinel.com/news/crime/os-first-transgender-deputy-20170609-story.html>.
- Drozd, Otto III. “Orange County Fire Rescue Organizational Assessment.” PowerPoint presentation, May 14, 2013. <http://otv.ocfl.net/otv/bcc2013/bcc051413/Default.html>.
- Eckstein, Marc. “The Ambulance Industry Struggles to go the Distance.” *Health Affairs* 32, no. 12 (December 2013): 2067–8. <https://search.proquest.com/docview/1467750135/abstract/197F92B80CAA4391PQ/1>.
- Ely, Robin J., and Debra E. Meyerson. *Theories of Gender in Organizations: A New Approach to Organizational Analysis and Change*. Boston, MA Center for Gender in Organizations, 2000. <http://www.simmons.edu/~media/Simmons/About/CGO/Documents/Working-Papers/CGO-Working-Paper-08-DNC.ashx?la=en>.
- EMS World. “Paramedic Shortage Limiting Choices for Fire Departments.” March 13, 2007. <https://www.emsworld.com/article/10322019/paramedic-shortage-limiting-choices-fire-departments>.
- Envision Healthcare Holdings, Inc. *Pioneering the Delivery of Care: 2015 Annual Report*. Greenwood Village, CO: Envision Healthcare Holdings, Inc., 2016. http://investor.evhc.net/sites/emsc.investorhq.businesswire.com/files/doc_library/file/Envision_Healthcare_Holdings_Inc.—2015_Annual_Report_and_Proxy_0.pdf.

- Equal Employment Opportunity Commission. “Adoption of Questions and Answers to Clarify and Provide a Common Interpretation of the Uniform Guidelines on Employee Selection Procedures.” April 24, 2008. https://www.eeoc.gov/policy/docs/qanda_clarify_procedures.html.
- Equal Opportunity Employment Commission and Office of Federal Contract Compliance Programs. *Equal Opportunity Employment Is the Law*. Washington, DC: U.S. Government Publishing Office, 2009. <https://www.dol.gov/ofccp/regs/compliance/posters/pdf/eeopost.pdf>.
- Ergometrics and Applied Personnel Research, Inc. “Ergometrics FireTEAM Testing System for Firefighters.” 2013. <https://www.ergometrics.org/>.
- . *Fire Department Candidate Orientation Handout*. Madison, WI: City of Madison Fire Department, 2015. http://www.cityofmadison.com/fire/documents/Madison%20Candidate%20Study%20Guide_2016-2017_Final.pdf.
- Executive Office of the President. *Standard Occupational Classification Manual*. Washington, DC: Office of Management and Budget, 2018. https://www.bls.gov/soc/2018/soc_2018_manual.pdf.
- Fagenson, Ellen A. “The Mentor Advantage: Perceived Career/Job Experiences of Proteges versus Non-Proteges.” *Journal of Organizational Behavior* 10, no. 4 (October 1989): 309–20. <https://doi.org/10.1002/job.4030100403>.
- Feder, Jody. *Sex Discrimination and the United States Supreme Court: Developments in the Law*. CRS Report No. RL30253. Washington, DC: Congressional Research Service, 2015. <https://fas.org/sgp/crs/misc/RL30253.pdf>.
- Fernandez, Antonio R., Jonathan R. Studnek, and Gregg S. Margolis. “Estimating the Probability of Passing the National Paramedic Certification Examination.” *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine* 15, no. 3 (March 2008): 258–264. <https://doi.org/10.1111/j.1553-2712.2008.00062.x>.
- Filip, Iulia. “Racism Decried in Philly Fire Department.” Courthouse News Service, November 15, 2011. <https://www.courthousenews.com/racism-decried-in-philly-fire-department/>.
- Finance Committee. *EMS Funding and Reimbursement*. Washington, DC: National EMS Advisory Council, 2016. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=13&cad=rja&uact=8&ved=2ahUKEwjT0I64w93cAhUC26wKHZI0DHIQFjAMegQIAhAC&url=https%3A%2F%2Fwww.ems.gov%2Fpdf%2Fnemsac%2FNEMSAC_Advisory_EMS_System_Funding_Reimbursement.pdf&usg=AOvVaw0xXI8VztSzIef84pgj1Pl6.

- Findley, Henry, Robert Wheatley, and Earl Ingram. "Affirmative Action: The Law." *Journal of Individual Employment Rights* 11, no. 1 (January 1, 2003): 5–10. <https://doi.org/10.2190/KE8X-J7E8-RWD5-XMVQ>.
- Fire and Emergency Service Image Task Force. *Taking Responsibility for a Positive Public Perception*. Chantilly, VA: International Association of Fire Chiefs, 2013. <https://www.iafc.org/docs/default-source/uploaded-documents/takingresponsibility4positivepublicperception.pdf>.
- Fire Commission. *Annual Statement of Purpose 2018*. City and County of San Francisco: Fire Commission, 2018. https://sf-fire.org/sites/default/files/COMMISSION/Documents/2018%20-%20sop_0.pdf.
- . *Resolution 2017-01 Resolution Recommending that the San Francisco Fire Department Require that All Members, Uniformed and Civilian Take the Biennial Harassment Prevention Training*. City and County of San Francisco: Fire Commission, 2018. <https://sf-fire.org/sites/default/files/COMMISSION/Documents/Resolution%202017-01%20Harassment%20Prevention.pdf>.
- Fire Department. "Employment Opportunities: Fire Department." City and County of San Francisco. Accessed July 11, 2018. <https://sf-fire.org/employment-opportunities>.
- Fire Science. "Fire Science Degree Programs in California." Accessed November 3, 2018. <https://www.firescience.org/fire-science-degrees-and-programs/california/>.
- Fire Service Joint Labor Management Wellness-Fitness Initiative. *Candidate Physical Ability Test*. 2nd. ed. Washington, DC: International Association of Firefighters, 2007. www.iaff.org/library/pdfs/hs/IAFF%20Manuals/CPAT%202nd%20Edition.pdf.
- Firefighter Candidate Testing Center. "FCTC Statewide Eligibility List." Accessed October 30, 2018. <https://www.fctconline.org/find-a-job/fctc-statewide-list/>
- . "Financial Hardship." Accessed October 30, 2018. <https://www.fctconline.org/candidates/financial-hardship/>.
- . "Frequently Asked Questions." 2016. https://www.fctconline.org/media/uploads/faq_written_test_update_march_2016.pdf.
- . "Hiring Agreements." Accessed October 30, 2018. <https://www.fctconline.org/find-a-job/hiring-agreements/>.
- . "What We Offer." Accessed October 30, 2018. <https://www.fctconline.org/candidates/what-we-offer/>.

- Fire-Rescue Wingspread Conference. *Wingspread VI: Statements of National Significance to the United States Fire and Emergency Services*. Racine, WI: Fire-Rescue Wingspread Conference, 2016. <http://wingspreadvi.org/home.html>.
- First Response Training Group. "Home." Accessed October 8, 2018. <http://www.firstresponsetraininggroup.com/>.
- Fitch and Associates. *2017 EMS Trend Report*. Platte City, MO: Fitch and Associates, 2017. <https://www.ems1.com/ems-trend-report-2017/articles/294703048-2017-EMS-Trend-Report-The-forces-shaping-the-future-of-EMS/>.
- Florida State Fire Marshal. *A Review of the Minimum Standards Program*. Tallahassee, FL, January 13, 2014. https://www.myfloridacfo.com/division/sfm/bfst/Documents/MIN_STD_Report_JAN_2014.pdf.
- Florida State Legislature. "The 2018 Florida Statutes: Title XXXVII Insurance Chapter 633 Fire Prevention and Control." August 27, 2018. http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0600-0699/0633/Sections/0633.412.html.
- Fox, Kathryn A., Chris W. Hornick, and Erin Hardin. *IAFF Diversity Initiative: Achieving and Retaining a Diverse Fire Service Workforce*. Washington, DC: International Association of Fire Fighters, 2006. www.iaff.org/HR/Media/IAFF_Diversity_Report.pdf.
- Fraess-Phillips, Alex J. "Can Paramedics Safely Refuse Transport of Non-Urgent Patients?." *Prehospital and Disaster Medicine* 31, no. 6 (December 2016): 667–674. <http://dx.doi.org/10.1017/S1049023X16000935>.
- Freeman, Victoria A., Daniel Patterson, and Rebecca T. Slifkin. "Issues in Staffing Emergency Medical Services: A National Survey of Local Rural and Urban EMS Directors" *Journal of Public Health Management and Practice*, 15 no. 3 (May 2008): 1–31.
- Friese, Greg. "AAA Study Sets a Benchmark for Turnover in the EMS Industry." EMS1, July 18, 2018. <https://www.ems1.com/ems-advocacy/articles/387159048-AAA-study-sets-a-benchmark-for-turnover-in-the-EMS-industry/>.
- Gnacinski, Stacy L., Barbara B. Meyer, and David J. Cornell. "Tactical Athletes: An Integrated Approach to Understanding and Enhancing the Health and Performance of Firefighters-In-Training." *International Journal of Exercise Science* 8, no. 4 (2015): 341–57. digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1721&context=ijes.
- Gottfried, Mara H. "St. Paul Ex-Firehouse Rechristened 'Freedom House'; It Trains EMTs." Twin Cities, April 15, 2012. <https://www.twincities.com/2012/04/15/st-paul-ex-firehouse-rechristened-freedom-house-it-trains-emts/>.

- Granicus. "Fire Training Orientation." 2014. http://sanfrancisco.granicus.com/MediaPlayer.php?publish_id=79dfa77a-16ae-11e4-b03e-f04da2064c43.
- Gregg, Cherri. "Historic Promotion: 2 Women Making Their Mark within the Philadelphia Fire Department." CBS Philly, April 3, 2017. <http://philadelphia.cbslocal.com/2017/04/03/women-making-mark-within-philly-fire-department/>.
- Gurchiek, Kathy. "Is It Discriminatory to Show Job Ads to Only Young Social Media Users?." SHRM, August 17, 2018. <https://www.shrm.org/resourcesandtools/hr-topics/behavioral-competencies/global-and-cultural-effectiveness/pages/is-it-discriminatory-to-only-show-job-ads-to-young-social-media-users.aspx>.
- Hardison, Chaitra, Nelson Lim, Kirsten M. Keller, Jefferson P. Marquis, Leslie Adrienne Payne, Robert Bozick, and Louis T. Mariano et al. *Recommendations for Improving the Recruiting and Hiring of Los Angeles Firefighters*. Santa Monica, CA: RAND, 2015. https://www.rand.org/pubs/research_reports/RR687.html.
- Hayes-White, Joanna. *RE: Performance Audit Review of the City's Practices to Recruit, Retain and Promote Uniform Fire Staff and the Fire Department's Use of Overtime to Meet Minimum Staffing Requirements*. San Francisco: Board of Supervisors of the City and County of San Francisco, 2014. <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.
- Haynes, Hylton J. G., and Gary P. Stein. *U.S. Fire Department Profile—2015*. NFPA Research. Quincy, MA: National Fire Protection Association, 2017. <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf>.
- Heitner, Keri L., Amy E. Kahn, and Kenneth C. Sherman. "Building Consensus on Defining Success of Diversity Work in Organizations." *Consulting Psychology Journal: Practice and Research* 65, no. 1 (March 2013): 58–73. <http://dx.doi.org/10.1037/a0032593>.
- Henry J. Kaiser Family Foundation. "Professionally Active Physicians by Gender." *Henry J. Kaiser Family Foundation* (blog). October 17, 2018. <https://www.kff.org/other/state-indicator/physicians-by-gender/>.
- . "Total Number of Professionally Active Nurses, by Gender." *Henry J. Kaiser Family Foundation* (blog). October 17, 2018. <https://www.kff.org/other/state-indicator/total-number-of-professionally-active-nurses-by-gender/>.
- Hikes, Amber. "Philadelphia's LGBTQ Protections." City of Philadelphia, December 4, 2017. <https://www.phila.gov/2017-12-04-philadelphias-lgbtq-protections/>.
- Hofman, John. "Tactical Facilitators in Firefighting." NSCA, 2018. https://www.nsca.com/education/articles/tactical_facilitators_in_firefighting.

- Holfeld, Mike. "Orange County Fire Rescue: Drone Technology Delivers 'Beyond Expectations.'" WKMG, December 19, 2017. <https://www.clickorlando.com/news/orange-county-fire-rescue-drone-technology-delivers-beyond-expectations>.
- Hollenbach, David R. III. "Women in the Fire Service: A Diverse Culture Leads to a Successful Culture." *Fire Engineering*, April 25, 2014. <http://www.fireengineering.com/articles/print/volume-167/issue-4/features/women-in-the-fire-service-a-diverse-culture-leads-to-a-successful-culture.html>.
- Hoogendoorn, Sander, Hessel Oosterbeek, and Mirjam van Praag. "The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment." *Management Science* 59, no. 7 (March 2013): 1479–1724. <https://doi.org/10.1287/mnsc.1120.1674>.
- Hudak, Stephen. "Fla. Firefighters Get Decontamination Kits to Fight Cancer Risk." *FireRescue1*, August 24, 2018. <https://www.firerescue1.com/fire-products/Personal-protective-equipment-ppe/articles/389876018-Fla-firefighters-get-decontamination-kits-to-fight-cancer-risk/>.
- Hulett, Denise M., Marc Bendick Jr., Sheila Y. Thomas, and Francine Moccio. "Enhancing Women's Inclusion in Firefighting in the USA." *International Journal of Diversity in Organisations, Communities & Nations* 8, no. 2 (May 2008): 189–207. <http://libproxy.nps.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sih&AN=33979752&site=ehost-live&scope=site>.
- . *Report Card on Women in Firefighting*. Washington, DC: International Association of Women in Fire and Emergency Services, 2008. <https://www.i-women.org/wp-content/uploads/2014/07/35827WSP.pdf>.
- IAFC Board of Directors. "Human Dignity." 2013. <https://www.iafc.org/about-iafc/positions/position/iafc-position-human-dignity>.
- IAFF Fire Fighters. "Human Relations." Accessed November 5, 2018. <http://client.prod.iaff.org/#page=HumanRelations>.
- Indeed. "Paramedic Offshore International Jobs, Employment in United States." 2018. <https://www.indeed.com/q-Paramedic-Offshore-or-International-l-United-States-jobs.html>.
- Institute of Medicine. *Emergency Medical Services: At the Crossroads*. Washington, DC: National Academies Press, 2006. <https://doi.org/10.17226/11629>.
- Interactive Archive. "Wayback Machine." Accessed November 7, 2018. https://web.archive.org/web/*/http://www.orangecountyfl.net/EmploymentVolunteerism/JobOpenings.aspx#.W-KAvuJRcvg.

- International Association of Fire Fighters. “About Us.” Accessed October 21, 2018. <http://www.iaff.org>.
- . *The Professional Firefighter*. Washington, DC: International Association of Fire Fighters, 1997. www.iaff.org/library/pdfs/LICB_ProfessionalFF.pdf.
- International City/County Management Association. “Fire Service Role in Emergency Management and Homeland Security.” September 17, 2012. <https://icma.org/articles/fire-service-role-emergency-management-and-homeland-security>.
- Jackson, Jessica, Joe Lee, Michael C. Y. Lin, and Minoli Ratnatunga. *Best-Performing Cities 2017: Where America’s Jobs Are Created and Sustained*. Santa Monica, CA: Milken Institute, 2018. <https://www.milkeninstitute.org/publications/view/897>.
- Jacobs, Ken, Nereida Heller, Saba Waheed, and Sam Appel. *Emergency Medical Services in California: Wages, Working Conditions, and Industry Profile*. Berkeley, CA: University of California, 2017. <http://laborcenter.berkeley.edu/emergency-medical-services-in-california-wages-working-conditions-and-industry-profile/>.
- Jacobs, Teresa. *Orange County Florida Annual Budget Fiscal Year 2017–2018*. Orlando, FL: Orange County Government, Florida, 2017. http://www.orangecountyfl.net/Portals/0/resource%20library/open%20government/FY2018_Adopted_Budget.pdf.
- . *Orange County Florida Budget Highlights Fiscal Year 2018–2019*. Orlando, FL: Orange County Government, Florida, 2018. <http://www.orangecountyfl.net/Portals/0/resource%20library/open%20government/FY-2019%20Proposed%20Budget%20web.pdf>.
- Johnson, Steven Ross. “Paramedics Deployed as Care Navigators.” *Modern Healthcare*, December 21, 2015. https://search-proquest-com.libproxy.nps.edu/docview.docviewtoolssection_0.toolssectionotherformatlinks.saveaspdf:saveaspdfevent?t:ac=1751584222.
- Joishy, Mahanth. *City of Madison 2019 Capital Improvement Plan: Agency Request Summary—Fleet Services*. Madison, WI: City of Madison, 2018. <https://www.cityofmadison.com/budget/documents/2018/capital/adopted/Fleet.pdf>.
- Jones, Reginald E., Wallace Lew, Harriett Jenkins, Irene Hill, Mark Wong, Andy Imperato, and Paul Richard et al. *Best EEO Practices Task Force Report*. Washington, DC: Equal Opportunity Employment Commission, 1997. https://www.eeoc.gov/eeoc/task_reports/best_practices.cfm.
- Kemp, Mac. “EMS and Homeland Security.” *Homeland Security Affairs* 10 (June 2014). <https://www.hsaj.org/articles/262>.

- Kennedy, John F. "Executive Order 10925: Establishing the President's Committee on Equal Employment Opportunity." (1961). <https://www.eeoc.gov/eeoc/history/35th/thelaw/eo-10925.html>.
- Kirnan, Jean Powell, John A. Farley, and Kurt F. Geisinger. "The Relationship between Recruiting Source, Applicant Quality, and Hire Performance: An Analysis by Sex, Ethnicity, and Age." *Personnel Psychology* 42, no. 2 (June 1989): 293–308. <https://doi.org/10.1111/j.1744-6570.1989.tb00659.x>.
- Knight, Steven G. "Retention versus Satisfaction: An Empirical Analysis of Firefighter Paramedic Retention and Job Satisfaction in St. Petersburg Fire & Rescue, Florida." Applied research paper, National Fire Academy, 2008. <https://www.hsdl.org/?abstract&did=692642>.
- Kochan, Thomas, Katerina Bezrukova, Robin Ely, Susan Jackson, Aparna Joshi, Karen Jehn, Jonathan Leonard, David Levine, and David Thomas. "The Effects of Diversity on Business Performance: Report of the Diversity Research Network." *Human Resource Management* 42, no. 1 (March 2003): 3–21. <https://doi.org/10.1002/hrm.10061>.
- Krause, Larry. "Central Florida's Unemployment Rate at 3.1 Percent for May 2018." Career Source Central Florida, June 15, 2018. <http://careersourcecentralflorida.com/blog/2018/06/15/central-floridas-unemployment-rate-at-3-1-percent-for-may-2018/>.
- Krieger, Aisha. *Beyond the Consent Decree*. Emmitsburg, MD: National Fire Academy, 2012. <https://usfa.kohalibrary.com/app/work/175707>.
- Krueger, Alan B. "Where Have All the Workers Gone?: An Inquiry into the Decline of the U.S. Labor Force Participation Rate." *Brookings Papers on Economic Activity*, no. 2 (Fall 2017): 1–87. <https://doi.org/10.1353/eca.2017.0012>.
- Kuchner, Karen. "A Week after It Was Canceled, Girls' Empowerment Camp Reinstated, Expanded." *San Diego Union-Tribune*, March 6, 2017. <http://www.sandiegouniontribune.com/news/public-safety/sd-me-camp-reinstated-20180306-story.html>.
- Kupietz, Kevin. "Tale of Disparity: A Delphi Study of Gender Diversity in the U. S. Fire Service." Applied research paper, National Fire Academy, 2010. <https://www.hsdl.org/?abstract&did=695207>.
- Lalchandani, Ajit, and Andre Perez. *Agreement between Orange County, Florida and Orange County Fire Fighters Association I.A.F.F., Local 2057*. Orlando, FL: Orange County Government, Florida. <http://www.orangecountyfl.net/Portals/0/resource%20library/employment%20-%20volunteerism/IAFF%20Local%202057%20Contract.pdf>.

- LeDuc, Todd J. "Are You a Tactical Athlete?" March 15, 2018. <https://www.fireengineering.com/articles/2018/03/tactical-athlete.html>.
- Lee, Edwin M. *Mayor's 2017–2018 and 2018–2019 Proposed Budget*. San Francisco: City and County of San Francisco, 2017. http://sfmayor.org/sites/default/files/CSF_Budget_Book_2017_Final_CMYK_LowRes.pdf.
- Leonard, Bill. "Diverse Workforce Tends to Attract More Female and Minority Job Applicants." *HR Magazine*, April 2001. <http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=1&sid=52a4de85-28d9-4148-bd8b-c827f9200b05%40sessionmgr4006>.
- Lewis, Sue. *Gender and Firefighter Selection and Recruitment: Research Paper Three: MFB Gender Equity Research Project 2004*. Melbourne, Victoria, Australia: Swinburne University of Technology, 2004. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.491.1719&rep=rep1&type=pdf>.
- . *Gender and Firefighter Training: Research Paper Two: MFB Gender Equity Research Project*. Melbourne, Victoria, Australia: Swinburne University of Technology, 2004. <https://www.google.com/search?q=Gender+and+firefighter+training+%3A+Research+Paper+Two+%3A+MFB+Gender+Equity+Research+Project&ie=utf-8&oe=utf-8>.
- Lezzoni, Lisa I., Stephen C. Dorner, and Toyin Ajayi. "Community Paramedicine—Addressing Questions as Programs Expand." *New England Journal of Medicine* 374, no. 12 (March 24, 2016): 1107–1109. <https://doi.org/10.1056/NEJMp1516100>.
- Linder, Doug. "Levels of Scrutiny under the Equal Protection Clause." 2017. <http://law2.umkc.edu/faculty/projects/ftrials/conlaw/epscrutiny.htm>.
- Lioni, Kaitlyn. "Rural/Metro Responds to Staffing Shortage with EMT Training." *Spectrum News*. February 2, 2016. <http://spectrumlocalnews.com/nys/buffalo/news/2016/02/2/rural-metro-emt-training->.
- Lipski, Mike, Erin Stenson, Melissa Gombar, and Brad Wirtz. *Equity in Hiring and Employee Development*. Madison, WI: City of Madison Human Resources, 2015. <https://www.cityofmadison.com/human-resources/documents/EquityReport2015.pdf>.
- Livability—Journal Communications, Inc. "#7 of 2018 Top 100 Best Places to Live: Madison, WI." 2018. <https://livability.com/best-places/top-100-best-places-to-live/2018/wi/madison>.

- Lord, Vivian B., and Paul C. Friday. "Choosing a Career in Police Work: A Comparative Study between Applicants for Employment with a Large Police Department and Public High School Students." *Police Practice and Research: An International Journal* 4, no. 1 (2003): 63–78. <https://nps.illiad.oclc.org.libproxy.nps.edu/illiad/illiad.dll?Action=10&Form=64>.
- Lowthian, Judy A., Damien J. Jolley, Andrea J. Curtis, Alexander Currell, Peter A. Cameron, Johannes U. Stoelwinder, and John J. McNeil. "The Challenges of Population Ageing: Accelerating Demand for Emergency Ambulance Services by Older Patients, 1995–2015." *The Medical Journal of Australia* 194, no. 11 (June 6, 2011): 574–76. https://www.mja.com.au/system/files/issues/194_11_060611/low11437_fm.pdf.
- Lussier, Robert N., and John R. Hendon. *Fundamentals of Human Resource Management*. Los Angeles: SAGE Publications, Inc., 2017.
- Marks, Scott, and Sean McManus. "The 24-Hour Shift: A Growing Trend in Canada." International Association of Fire Fighters, 2016. <http://services.prod.iaff.org/ContentFile/Get/11429>.
- Martin, Rick. "January 2014 CMS Fee Schedule Update." January 2014. https://comstarbilling.com/wp-content/uploads/2015/01/newsletter_01_2015.pdf.
- Matheson, Kathy. "Philly Students Get a Head Start on Careers in Firefighting, EMS." Mayor's Office of Education, City of Philadelphia, September 7, 2018. <https://www.phila.gov/2018-09-07-philly-students-get-a-head-start-on-careers-in-firefighting-ems/>.
- . "Women You Should Know in the Fire Department." City of Philadelphia, March 23, 2018. <https://beta.phila.gov/2018-03-23-women-you-should-know-in-the-fire-department/>.
- McCarthy, Justin. "Americans Still More Trusting of Local than State Government." Gallup, October 8, 2018. <https://news.gallup.com/poll/243563/americans-trusting-local-state-government.aspx>.
- McKeon, Jennie. "EMTs on the Decline." Northwest Florida Daily News, October 18, 2016. <https://www.nwfdailynews.com/news/20161018/emts-on-decline>.
- McWilliams, John C. "'Men of Colour': Race, Riots, and Black Firefighters' Struggle for Equality from the AFA to the Valiants." *Journal of Social History* 41, no. 1 (September 1, 2007): 105–125. <https://doi.org/10.1353/jsh.2007.0141>.
- Michigan Legislature. "Article I § 26." Accessed September 15, 2018. [http://www.legislature.mi.gov/\(S\(nrznorcvfid5xvssykgedqw3\)\)/mileg.aspx?page=GetObject&objectname=mcl-Article-I-26](http://www.legislature.mi.gov/(S(nrznorcvfid5xvssykgedqw3))/mileg.aspx?page=GetObject&objectname=mcl-Article-I-26).

- Michigan Works!. “Paramedic Shortage Leads to ‘Grow Your Own’ Partnership.” Accessed November 10, 2018. <https://www.michiganworks.com/paramedic-shortage-leads-to-grow-your-own-partnership/>.
- Military Leadership Diversity Commission. *Business-Case Arguments for Diversity and Diversity Programs and Their Impact in the Workplace*. Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010. <https://www.hsdl.org/?abstract&did=716065>.
- . *Compelling Government Interests and Diversity Policy [Version 2]*. Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010. <https://www.hsdl.org/?abstract&did=716174>.
- . *Introduction to Laws Governing Diversity Policies [Version 2]*. Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010. <https://www.hsdl.org/?abstract&did=716173>.
- . *Narrow Tailoring and Diversity Policy [Version 2]*. Arlington, VA: Department of Defense Office of Diversity Management and Equal Opportunity, 2010. <https://www.hsdl.org/?abstract&did=716177>.
- Miller, Abby, Sue Clery, Samantha Richardson, Amelia Topper, Stephanie Cronen, Samantha Lilly, Emma Hinkens, and Michelle Yin. *Promising Practices for Increasing Diversity among First Responders*. Bethesda, MD: Department of Labor, Chief Evaluation Office, 2016. https://www.dol.gov/asp/evaluation/completed-studies/FirstResponders_Full_Report.pdf.
- Morrow, J. Brian. “Orange County, FL, Applies Recent Fire Research to Live Fire Training.” *ModernFireBehavior*, June 14, 2016. <https://modernfirebehavior.com/orange-county-fl-applies-recent-fire-research-to-live-fire-training/>.
- Muse. “You Can’t Be What You Can’t See: How to Get More Women in Tech.” March 23, 2012. <https://www.themuse.com/advice/you-cant-be-what-you-cant-see-how-to-get-more-women-in-tech>.
- National Academy of Sciences and National Research Council. *Accidental Death and Disability: The Neglected Disease of Modern Society*. Washington, DC: National Academies Press, 1966. <http://www.ncbi.nlm.nih.gov/books/NBK222962/>.
- National Association of Emergency Medical Technicians. “How Does the U.S. Count EMTs and Paramedics? Not Very Well, Actually.” *NAEMT News*, Spring 2018. https://www.naemt.org/docs/default-source/member-resources-documents/naemt-news/2018/naemt-news-spring-2018-low-res-03-13-2018.pdf?sfvrsn=b1b3cb92_0.

- National Association of State Emergency Medical Services Officials. *EMS Workforce Planning and Development: Guidelines for State Adoption*. Falls Church, VA: National Association of State Emergency Medical Services Officials, 2014. <https://www.nasemso.org/EMSWorkforcePlanningandDevelopmentGuidelines.asp>.
- National College of Technical Instruction. *BPPE Annual Report for 2016—Institution*. Roseville, CA: California Department of Consumer Affairs, Bureau for Private Postsecondary Education, 2017. https://ncti.edu/wp-content/uploads/2018/03/BPPE_Annual_Report_for_2016.pdf.
- National Fire Protection Association. “NFPA 1021: Standard for Fire Officer Professional Qualifications.” 2014. <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1021>.
- . *NFPA 1710 Changes to Fireground Staffing Levels for Career Fire Departments*. Quincy, MA: National Fire Protection Association, 2016. <https://community.nfpa.org/servlet/JiveServlet/download/17677-1-12253/1710%20Tip%20Sheet%20%2011-15.pdf>.
- National Highway Traffic Safety Administration. *National EMS Scope of Practice Model*. Washington, DC: Department of Transportation, 2007. <https://www.ems.gov/education/EMSScope.pdf>.
- National Highway Traffic Safety Administration, Office of the Assistant Secretary for Preparedness and Response, and Health Resources and Services Administration. *Innovation Opportunities for Emergency Medical Services: A Draft White Paper*. Washington, DC, Rockville, MD: 2013. https://www.ems.gov/pdf/2013/EMS_Innovation_White_Paper-draft.pdf.
- National Opinion Research Center. “Top/Bottom Occupations.” no. 21 (July 2007). http://gss.norc.org/Documents/newsletter/GSSNEWS2007_V2_GSSNews.pdf.
- National Registry of Emergency Medical Technicians. *2014 National EMS Practice Analysis*. Columbus, OH: National Registry of Emergency Medical Technicians, 2015.
- . “Criminal Conviction Policy.” Accessed September 24, 2018. <http://www.nremt.org/rwd/public/>.
- . “Emergency Medical Technicians (EMT).” Accessed June 8, 2018. <http://www.nremt.org/rwd/public/>.
- . “National Registry of EMTs.” February 5, 2018. <http://www.nremt.org/rwd/public/>.
- . “Paramedic Certification.” Accessed July 22, 2018. <https://www.nremt.org/rwd/public/document/paramedic>.

- National Testing Network. "National Testing Network Candidate FAQs: Test Pricing." Accessed June 17, 2018. <https://nationaltestingnetwork.com/publicsafetyjobs/test-pricing.cfm>.
- . "Orange County Fire Rescue Job Details." July 11, 2018. <https://www.nationaltestingnetwork.com/publicsafetyjobs/fullJobDetails.cfm?agentid=586&jobid=2&agencyjobid=930>.
- . "Orange County Fire Rescue Job Information." July 11, 2018. <https://www.nationaltestingnetwork.com/publicsafetyjobs/fullJobDetails.cfm?agentid=586&jobid=2&agencyjobid=930>.
- NCTI. "Welcome to NCTI—The Nation's Largest EMS Training Facility." Accessed June 11, 2018. <https://ncti.edu/>.
- Neal, Scott F. "Millennials in the Fire Service: The Effectiveness of Fire Service Recruiting, Testing, and Retention." Master's thesis, Naval Postgraduate School, 2017. <https://www.hsdl.org/?abstract&did=808276>.
- NHTSA Office of EMS. "NEMSIS—National EMS Information System." September 25, 2018. <https://nemsis.org/>.
- Nugent, Mike. "Analysis of Minority Student Recruiting within the Denver Health Paramedic School." Unpublished paper, Regis University, Summer 2006. <https://epublications.regis.edu/theses/326/>.
- Office of Justice Programs. *EEOP Utilization Report*. Washington, DC: Department of Justice, 2016. https://www.phila.gov/personnel/pdfs/EEOP_2016.pdf.
- Office of Management and Budget. "Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity." White House. Accessed August 26, 2018. <https://obamawhitehouse.archives.gov/node/15626>; Fox, Hornick, and Hardin, *IAFF Diversity Initiative*, 29–30.
- Office of the Mayor. "City of Philadelphia, Mayor Statement of Policy." July 15, 2011. <https://www.phila.gov/personnel/eo/mayormem2.htm>.
- Olson, Garret M. "Gender Diversity Recruitment and Retention for the Scottsdale Fire Department." Applied research paper, National Fire Academy, 2006. <https://www.hsdl.org/?abstract&did=682347>.
- Orange County Fire Rescue. *Orange County Fire Rescue 2015–2016 Annual Report*. Winter Park, FL: Orange County Fire Rescue, 2016. https://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/AnnualReport2016_FINAL_compressed.pdf.

- . *Orange County Fire Rescue 2016–2017 Annual Report*. Winter Park, FL: Orange County Fire Rescue, 2017. <https://www.ocfl.net/Portals/0/Library/./FY%2016-17%20Annual%20Report.pdf>.
- Orange County Fire Rescue Department. *2015–2016 Annual Report*. Winter Park, FL: Orange County Government, Florida, 2016. https://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/AnnualReport2016_FINAL_compressed.pdf.
- . *CPAT Test Preparation Guide*. Orlando, FL: Orange County Government, Florida, n.d. <http://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/CPAT%20Test%20Prep%20Guide.pdf>.
- . *Explorer Program Brochure*. Winter Park, FL: Orange County Fire Rescue Department, n.d. Accessed September 8, 2018. <http://www.orangecountyfl.net/Portals/0/Library/Employment-Volunteerism/docs/Explorer%20Program%20Brochure.pdf>.
- . “Orange County Fire Rescue Recruitment Interest Form: Reserve Firefighter (Volunteer).” September 25, 2014. <https://netapps.ocfl.net/ocservices/Org/14/Fo rms/Recruitment%20Interest%20Form%20Reserves.pdf>.
- . “Reserve Firefighter Application Packet.” March 27, 2013. <http://www.orangecountyfl.net/Portals/0/Library/Employment-Volunteerism/docs/Reserve%20Fire fighter%20Application.pdf>.
- Orange County Fire Rescue Department Recruitment Bureau. *Orange County Government: Firefighting*. Winter Park, FL: Orange County Fire Rescue Department Recruitment Bureau, n.d. Accessed August 26, 2018. <http://www.orangecountyfl.net/Portals/0/Library/Employment-Volunteerism/docs/Certified %20Firefighter%20Brochure.pdf>.
- Orange County Fire Rescue Department—Safety and Wellness Bureau. *Candidate Physical Ability Test: Orientation Guide*. Orlando, FL: Orange County Government, Florida, n.d. Accessed September 3, 2018. <http://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/CPATOrientation Guide.pdf>.
- Orange County Florida Economic Development. “Economic Outlook.” Accessed September 19, 2018. <http://www.orangecountyfl.net/EconomicDevelopment/EconomicOutlook.aspx#.W6HgZfZRc3U>.
- Orange County Government, Florida. “About Fire Rescue.” Accessed March 2, 2018. <http://www.orangecountyfl.net/EmergencySafety/AboutFireRescue.aspx#.Wplt7udG0vg>.

- . “Compensation and Job Descriptions: Paramedic 12 Hour.” January 13, 2015. <http://www.orangecountyfl.net/EmploymentVolunteerism/CompensationandJobDescriptions.aspx>.
- . “Compensation and Job Descriptions: Paramedic 8 Hour.” January 13, 2015. <http://www.orangecountyfl.net/EmploymentVolunteerism/CompensationandJobDescriptions.aspx>.
- . “Fire Rescue Careers, Reserve and Youth Programs.” 2018. <http://www.orangecountyfl.net/EmergencySafety/FireRescue/Careers.aspx#.W44PyrgnYig>.
- . “Fire Station 72—Orange County Government, Florida.” 2016. <http://apps.ocfl.net/ocfrd/locations/StationDetails.asp?StationMapNumber=1053>.
- . “Fire Station Locations.” Accessed October 3, 2018. <https://apps.ocfl.net/ocfrd/locations/default.asp>.
- . “Fire Safety Public Education.” 2018. <http://www.orangecountyfl.net/EmergencySafety/FireSafetyPublicEducation.aspx#.W5MFNrgnY3U>.
- . “OCFL Serves Volunteer Portal: By Organization—UCF Football Game.” September 8, 2018. <https://netapps.ocfl.net/ocservices/Events.aspx?sby=organization&sfor=14>.
- . “OCFL Serves Volunteer Portal: Orange County Fire Rescue Department.” 2018. <https://netapps.ocfl.net/ocservices/Organization.aspx?oid=14>.
- . “Orange County and Orlando Remain America’s Most-Visited Destination with 72 Million Visitors in 2017.” OCFL Newsroom, May 10, 2018. <https://newsroom.ocfl.net/2018/05/orange-county-orlando-remain-americas-visited-destination-72-million-visitors-2017/>.
- . *Orange County Certified Firefighter Hiring Process*. Orlando, FL: Orange County Government, Florida, n.d. Accessed March 5, 2018. <http://www.orangecountyfl.net/Portals/0/Library/Emergency-Safety/docs/Certified%20Firefighter%20Hiring%20Process.pdf>.
- . *Orange County Government Employee Handbook*. Orlando, FL: Orange County Government, Florida, 2016. <http://www.orangecountyfl.net/Portals/0/resource%20library/employment%20-%20volunteerism/Employee%20Handbook.pdf>.
- . *Orange County Policy Manual and Operational Regulation*. Orlando, FL: Orange County Government, Florida, 2004. <http://www.orangecountyfl.net/Portals/0/resource%20library/employment%20-%20volunteerism/Policy%20Manual.pdf>.

- OrangeTV. "Orange County Fire Rescue #LipSyncChallenge: Whatever It Takes." YouTube video, 2:17. July 27, 2018. <https://www.youtube.com/watch?v=m8iS8wdYMqY>.
- Orlando Medical Institute. "Paramedic." *OMI/Orlando Medical Institute* (blog). Accessed October 7, 2018. <https://omi.edu/paramedic/>.
- Oxnard College. "Fire Academy Costs." Accessed June 17, 2018. <http://www.oxnardcollege.edu/departments/academic/fire-technology/fire-academy/fire-academy-costs>.
- Oyez. "Schuette v. Coalition to Defend Affirmative Action." Accessed September 15, 2018. <https://www.oyez.org/cases/2013/12-682>.
- Pakeman, La Sauna. "2017 Firefighter Career Expos." California Firefighter Joint Apprenticeship Committee. May 2, 2017. <http://www.cffjac.org/go/jac/?LinkServID=F4D0CB08-1CC4-C201-3E8F229BD2EE80FD>.
- Palmer, David B. "Developing Alternative Components for Improvement of EMS System Paramedic Workforce Resources in Marion County, Florida." Applied research paper, National Fire Academy, 2007. <https://www.hsdl.org/?abstract&did=682706>.
- Parker, Kim, Anthony Cilluffo, and Renee Stepler. "6 Facts about the U.S. Military and Its Changing Demographics." *Pew Research Center* (blog), April 13, 2017. <http://www.pewresearch.org/fact-tank/2017/04/13/6-facts-about-the-u-s-military-and-its-changing-demographics/>.
- Pasztor, Sabrina Kim. "Myth, Math and the Money: Media Framing of the U.S. Gender Wage Gap Debate from 1980–2014." INDIGO, November 29, 2016. <https://d-space-prod.lib.uic.edu/handle/10027/21612>.
- Patterson, P. Daniel, Charity G. Moore, Nels D. Sanddal, Gary Wingrove, and Brian LaCroix. "Characterizing Job Satisfaction and Intent to Leave among Nationally Registered Emergency Medical Technicians: An Analysis of the 2005 LEADS Survey." *Journal of Allied Health* 38, no. 3 (2009): e-86–e-87.
- Patterson, P. Daniel, Cheryl B. Jones, Michael W. Hubble, Matthew Carr, Matthew D. Weaver, John Engberg, and Nicholas Castle. "The Longitudinal Study of Turnover and the Cost of Turnover in EMS." *Prehospital Emergency Care*, 14, no. 2 (April 6, 2010): 209–221. <https://doi.org/10.3109/10903120903564514>.
- Patterson, P. Daniel, Janice C. Probst, Katherine H. Leith, Sara J. Corwin, and M. Paige Powell. "Recruitment and Retention of Emergency Medical Technicians: A Qualitative Study." *Journal of Allied Health; Washington* 34, no. 3 (Fall 2005): 153–62. <https://search.proquest.com.libproxy.nps.edu/docview/210973437/abstract/125DB7D51BDE4A8APQ/1>.

- Pedersen, Joe Mario. "Orange County Fire Rescue Dive Team Growing Quickly." *Orlando Sentinel*, September 12, 2018. <https://www.orlandosentinel.com/news/breaking-news/os-orange-county-fire-rescue-dive-team-growing-20180910-story.html>.
- Pennsylvania Task Force 1. "PA Task Force 1, Participating Agencies." Philadelphia Fire Department. Accessed September 30, 2018. <http://www.patf1.org/participating.htm>.
- Perez, William. "Increasing Paramedic Retention in the East Hartford Fire Department." Applied research paper, National Fire Academy, 2010. <https://www.hsd1.org/?abstract&did=692615>.
- Philadelphia Fire. "Pre-K Students from Friends Select School Stopped by Ladder 2 This Week and Ended up Meeting Members of Ladder 23 as Well! It's Never Too Early to Learn about Fire Safety. #FireIsEveryonesFightpic.Twitter.Com/AnTpVzPu7v." Tweet, @PhillyFireDept (blog). September 27, 2018. <https://twitter.com/PhillyFireDept/status/1045406054840971265>.
- Philadelphia Fire Department. "Fire Department Full-Time Staff and Executive Staff." May 2018. <http://phlcouncil.com/wp-content/uploads/2018/05/Demographics-Fire-Department.png>.
- . "MEDIA ADVISORY: Junior Fire Patrol Awards Luncheon." City of Philadelphia, May 21, 2018. <https://beta.phila.gov/2018-05-21-media-advisory-junior-fire-patrol-awards-luncheon/>.
- . *Philadelphia Fire Department Fiscal Year 2019 Budget Testimony*. Philadelphia: Philadelphia Fire Department, 2018. http://phlcouncil.com/wp-content/uploads/2018/04/FY19-Testimony_Fire_submitted-to-Council-4.27.pdf.
- Philadelphia Works. "Philadelphia's Labor Force." February 6, 2015. <http://www.philaworks.org/workforce-information-works/philadelphia-data/philadelphias-labor-force/>.
- Powers, Scott. "Wage Growth, Growing Pains, Projected for Central Florida Economy." *Orlando Rising*, January 19, 2018. <http://orlando-rising.com/wage-growth-growing-pains-projected-central-florida-economy/>.
- Prieto, Bianca. "Bessie Hudson Named First Black Female Battalion Chief of Orange County Fire Rescue." *Orlando Sentinel*, May 15, 2010. http://articles.orlandosentinel.com/2010-05-15/news/os-bessie-hudson-20100515_1_teen-mother-hudson-last-week-sherman-hudson.
- Proost, Karin, and Dieter Verhaest. "Should We Tell the Recruiter that We Value a Good Work–Life Balance?" *Journal of Personnel Psychology* 17, no. 3 (July 2018): 120–130. <https://doi.org/10.1027/1866-5888/a000214>.

- Rava, Alfred G., and Mara Elliott. "Re: No-Boys-Allowed Empowerment Camp: March 3 and 4, 2018." Letter, private attorney to San Diego City Attorney, February 22, 2018. <https://timesofsandiego.com/wp-content/uploads/2018/02/rava-letter.pdf>.
- Rittmeyer, Brian C. "Ambulance Services Warn That Money Woes Threaten Their Existence—and Patient Lives." *Trib Total Media, LLC*. Valley News Dispatch edition. April 3, 2018. <https://triblive.com/local/valleynewsdispatch/13421312-74/ambulance-services-warn-that-money-woes-threaten-their-existence-and-patient>.
- Roosevelt, Theodore. *Theodore Roosevelt: An Autobiography*. Salt Lake City, UT: Project Gutenberg, 2006. <http://www.gutenberg.org/ebooks/3335>.
- Rouan, Rick. "Columbus Fire Overtime Surges despite New Paramedic Plan." *Columbus Dispatch*, June 18, 2017. <http://www.dispatch.com/news/20170617/columbus-fire-overtime-surges-despite-new-paramedic-plan>.
- Rouleau, Mark, Terry L. Sharik, Samantha Whitens, and Adam Wellstead. "Enrollment Decision-Making in U.S. Forestry and Related Natural Resource Degree Programs." *Natural Sciences Education* 46, no. 1 (2017): 1–7. <https://doi.org/10.4195/nse2017.05.0007>.
- Rural/Metro Corporation. "Ambulance Services, Emergency Ambulance, Fire Services, Community Fire, Wildland Fire." 2015. <https://www.ruralmetro.com/>.
- S. A. Transcripts. "Envision Healthcare (EVHC) Q4 2017 Results—Earnings Call Transcript." Seeking Alpha, February 28, 2018. <https://seekingalpha.com/article/4151775-envision-healthcare-evhc-q4-2017-results-earnings-call-transcript>.
- Saint Paul, Minnesota. "EMS Academy." Accessed June 10, 2018. <https://www.stpaul.gov/departments/fire-paramedics/ems-academy>.
- San Francisco Budget and Legislative Analyst. *Performance Audit of the City's Practices to Recruit, Retain and Promote Uniformed Fire Staff and the Fire Department's Use of Overtime to Meet Minimum Staffing Requirements*. San Francisco: Board of Supervisors, 2014. <https://sfbos.org/Modules/ShowDocument.aspx?documentid=47587>.
- San Francisco Business Times*. "Homelessness Crisis Dents San Francisco Tourism." Accessed September 30, 2018. <https://www.bizjournals.com/sanfrancisco/news/2018/02/23/slow-growth-in-san-francisco-tourism-due-to.html>.
- San Francisco Fire Department. *San Francisco Fire Department Aggregate Data Report: Classification—Race/Gender*. San Francisco: San Francisco Fire Department, 2018.

- . *San Francisco Fire Department Annual Report 2012–2013 (FY)*. San Francisco: San Francisco Fire Department, 2013. <https://sf-fire.org/modules/showdocument.aspx?documentid=3584>.
- . *What Does the Future Hold ? City and County of San Francisco Civil Grand Jury, 2014–2015*. San Francisco: San Francisco Fire Department, 2015. http://civilgrandjury.sfgov.org/2014_2015/14-15_CGJ_Report_SFFD_What_Does_the_Future_Hold_%207_16_15.pdf.
- Scaglione, Matias D. *Skilled Non-College Occupations in the U.S.* Madison, WI: Wisconsin Center for Education Research, 2018. https://www.researchgate.net/profile/Matias_Scaglione/publication/325550469_Skilled_Non-College_Occupations_in_the_US/links/5b1545d74585150a0a675222/Skilled-Non-Coll-ge-Occupations-in-the-US.pdf.
- Schafer, Kristina, Ryan Sutter, and Scott Gibbons. *Characteristics of Individuals and Employment among First Responders*. Washington, DC: Department of Labor, Chief Evaluation Office, 2015. <https://www.dol.gov/asp/evaluation/analy-tics-reports/CharacteristicsOfIndividualsAndEmploymentAmongFirstRespond-ers.pdf>.
- Schermerhorn-Collins, Anna L. “The Challenges to Gender Integration in the Career Fire Services: A Comparative Case Study of Men in Nursing.” Master’s thesis, Naval Postgraduate School, 2017. <http://calhoun.nps.edu/handle/10945/53044>.
- Schmitt, Michelle, and Katie Martin. *Hiring and Employment in Philadelphia City Government*. Philadelphia: Pew Charitable Trusts, 2018. https://www.dol.gov/asp/evaluation/completed-studies/FirstResponders_Full_Report.pdf.
- Senate Committee on EMS Recruitment, Retention, and Training in Georgia. *Final Report of the Senate Committee on EMS Recruitment, Retention, and Training in Georgia*. Atlanta, GA: Senate Research Office, 2007. <http://www.senate.ga.gov/sro/Documents/StudyCommRpts/07EmsRetainRecruitRpt.pdf>.
- Shapiro, Mary, Cynthia Ingols, and Stacy Blake-Beard. “Optioning in versus ‘Opting Out’: Women Using Flexible Work Arrangements for Career Success.” Working paper, Center for Gender in Organizations, 2007. <http://www.simmons.edu/~media/Simmons/About/CGO/Documents/INsights/Insights-25.ashx?la=en>.
- Sielski, Matthew C. *Implementing the 1966 Highway Safety Acts*. Washington, DC: National Highway Safety Agency, 1967. <http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=3150&context=roadschool>.
- Society for Human Resource Management. *2017 Human Capital Benchmarking Report*. Alexandria, VA: Society for Human Resource Management, 2017. <https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/2017-Human-Capital-Benchmarking.pdf>.

- . *Employee Job Satisfaction and Engagement: Revitalizing a Changing Workforce*. Alexandria, VA: Society for Human Resource Management, 2016. <https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/2016-Employee-Job-Satisfaction-and-Engagement-Report.pdf>.
- . “Firefighter/Paramedic.” August 22, 2017. https://www.shrm.org/resourcesandtools/tools-and-samples/job-descriptions/pages/cms_001277.aspx.
- Soglin, Paul R. *2018 Adopted Budget: City of Madison*. Madison, WI: City of Madison, 2018.
- . *2019 Capital Budget Instructions and Target*. Madison, WI: Mayor’s Office, 2018. <https://www.cityofmadison.com/sites/default/files/city-of-madison/budget/documents/2019/capital/CapitalMessageMayor.pdf>.
- St. Louis County Fire Academy. “St. Louis County Fire Academy: Self-Sponsored Students.” Accessed June 17, 2018. <https://stlcofireacademy.com/>.
- Stone, Ken. “‘Girls Empowerment’ Fire Camp Canceled After Civil Rights Lawyer Complains.” *Times of San Diego*, February 24, 2018. <https://timesofsandiego.com/life/2018/02/23/san-diego-cancels-girls-empowerment-fire-camp-after-lawyer-complains-for-dad-seeking-sons-entry/>.
- Sword, Katy. “Vancouver Fire Dept. Reviews Efforts to Address Gender Bias.” *Columbian*, May 27, 2018. <https://www.columbian.com/news/2018/may/27/vancouver-fire-dept-reviews-efforts-to-address-gender-bias/>.
- Tamme, Susan. “I Stands for Inclusion.” *On Scene*, November 2, 2018. https://www.iafc.org/on-scene/on-scene-article/i-stands-for-inclusion?utm_source=informz&utm_medium=email&utm_campaign=onscene.
- Taunton Fire Department. “About Us.” Last accessed October 28, 2018. <https://tauntonfd.com/about-us/>.
- Taylor, Bruce, Bruce Kubu, Lori Fridell, Carter Rees, Tom Jordan, and Jason Cheney. *Cop Crunch: Identifying Strategies for Dealing with the Recruiting and Hiring Crisis in Law Enforcement*. Washington, DC: Police Executive Research Forum, 2005. <https://www.ncjrs.gov/pdffiles1/nij/grants/213800.pdf>.
- Thompson, Jennifer L., and Scott B. Morris. “What Factors Influence Judges’ Rulings about the Legality of Affirmative Action Plans?” *Journal of Business & Psychology* 28, no. 4 (December 2013): 411–424. <https://doi.org/10.1007/s10869-013-9292-y>.
- Thompson, Kristy D. “National Institute of Standards and Technology Engineering Laboratory/Fire Research Division.” NIST, October 15, 2010. <https://www.nist.gov/el/fire-research-division-73300/firegov-fire-service>.

- Todaro, John. "The Transformation of Education." *EMS World*, Supplement (October 2016): 12–13. <https://search.proquest.com/docview/1822358045/citation/CE0F198A8D2F4FA1PQ/1>.
- Toossi, Mitra. "Labor Force Projections to 2024: The Labor Force Is Growing, but Slowly: Monthly Labor Review." Bureau of Labor Statistics, December 2015. <https://www.bls.gov/opub/mlr/2015/article/labor-force-projections-to-2024.htm>.
- Topalian, Claire. "You Can't Be What You Can't See: Carving Paths for Female Entrepreneurs." *Huffington Post* (blog), May 28, 2014. https://www.huffingtonpost.com/claire-topalian/you-cant-be-what-you-cant-see-carving-paths-for-female-entrepreneurs_b_5386321.html.
- Trujillo, Kelley. "Candidate Outreach Social Media." California Firefighter Joint Apprenticeship Committee. May 2, 2017. <http://www.cffjac.org/go/jac/?LinkServID=F472BAD5-1CC4-C201-3E373461CAF06504>.
- U.S. Equal Employment Opportunity Commission. "The Law." Accessed July 14, 2018. <https://www.eeoc.gov/eeoc/history/35th/thelaw/index.html>.
- U.S. Fire Administration. "About the Fire and Emergency Services Higher Education Initiative." February 12, 2018. https://www.usfa.fema.gov/training/prodev/about_feshe.html.
- . "Fire and Emergency Services Higher Education Recognition Program." August 1, 2018. https://www.usfa.fema.gov/training/prodev/feshe_recognition.html.
- UCF Athletics. "Spectrum Stadium." UCFKnights, July 25, 2018. http://UCFKnights.com/ViewArticle.dbml?ATCLID=211735275&DB_OEM_ID=34100.
- UCLA Center for Prehospital Care. "Costs and Budgeting." Accessed June 9, 2018. <https://www.cpc.mednet.ucla.edu/paramedic-planningforcosts>.
- . "Paramedic Program." Accessed November 11, 2018. <https://www.cpc.mednet.ucla.edu/paramedic>.
- . "What's the Difference Between an EMT and a Paramedic?." Accessed September 1, 2017. <https://www.cpc.mednet.ucla.edu/node/27>.
- Underwriters Laboratories Fire Safety Research Institute. "Modern Fire Behavior." 42, January 30, 2014. <https://modernfirebehavior.com/page/42/>; Fox, Hornick, and Hardin, *IAFF Diversity Initiative*.
- United States Census Bureau. "Full-Time, Year-Round Workers and Median Earnings: 2000 and 2013–2016." February 15, 2018. <https://www.census.gov/data/tables/time-series/demo/industry-occupation/median-earnings.html>.

- UnityPoint Health. "Community Paramedic Program." 2018. <https://www.unitypoint.org/madison/communityparamedic.aspx>.
- Valencia College. "Fire Fighter Minimum Standards Course." 2018. <http://Valenciacollege.edu/public-safety/fire-rescue-institute/academy-fire-fighter-minimum-standards-course.cfm>.
- . *Program Guide for the Technical Certificate in Paramedic Technology and Associate in Science Degree in Emergency Medical Services Technology*. Orlando, FL: Valencia College, 2018. <http://valenciacollege.edu/west/health/documents/18-19-Program-Guide-Paramedic-Technology-TC-and-EMS-AS.pdf>.
- Varn, Kathryn. "Largo, Joining Other Cities, Looks for Ways to Deal with Paramedic Shortage." *Tampa Bay Times*, December 29, 2016. <http://www.tampabay.com/news/publicsafety/fire/largo-joining-other-cities-looks-for-ways-to-deal-with-paramedic-shortage/2307572>.
- Varone, Curt. "Search for 'Florida.'" *Fire Law* (blog). Accessed October 28, 2018. <http://www.firelawblog.com/search/florida/>.
- . "Search for 'Wisconsin.'" *Fire Law* (blog). Accessed October 28, 2018. <http://www.firelawblog.com/search/wisconsin/>.
- Virginia Law. "Criminal or Enforcement History." Virginia Administrative Code § 12VAC5-31-910 (2018). <https://law.lis.virginia.gov/admincode/title12/agency5/chapter31/section910/>.
- Visit Orlando. "Orlando StarFlyer Now Open at ICON Orlando 360." Accessed October 8, 2018. <https://www.visitorlando.com/blog/index.cfm/2018/6/1/Orlando-StarFlyer-Now-Open-at-ICON-Orlando-360>.
- Vock, Daniel C. "Fire Departments Struggle to Meet New Demands." *Governing*, September 2018. <http://www.governing.com/topics/public-justice-safety/gov-firefighters-firehouse.html>.
- Wahlberg, David. "Community Paramedics Catching on in Madison Area." TCA Regional News, July 12, 2015. <https://search-proquest-com.libproxy.nps.edu/docview/1695440312/D9A00D0AF2E1423DPQ/9?accountid=12702>.
- . "Stepping in before the Ambulance Is Called: Community Paramedics Help Avert Crises." *Wisconsin State Journal*, December 25, 2016. https://madison.com/news/local/health-med-fit/stepping-in-before-the-ambulance-is-called-community-paramedics-help/article_38f69c8c-ac1c-5d49-92e5-4d72e5b70961.html.

- Washington State Patrol. "Fire Training Academy Course Announcement." Accessed June 17, 2018. <http://smhttp.72879.nexcesscdn.net/807B2B0/wsp/wp-content/uploads/2018/05/2018-Weekday-RA-Announcement-NSP.pdf>.
- Washington, Ella, and Camille Patrick. "3 Requirements for a Diverse and Inclusive Culture." Gallup, September 17, 2018. <https://www.gallup.com/workplace/242138/requirements-diverse-inclusive-culture.aspx>.
- Washko, Jonathan, and Michael Ragone. "2016 JEMS Salary Survey." *Journal of Emergency Medical Services* 42, no. 11 (November 2017). <https://www.jems.com/articles/print/volume-42/issue-11/features/2016-jems-salary-survey.html>.
- WDRB Media. "Rural/Metro Ambulance Looking for EMTs, Offering Free Training." August 18, 2015. <http://www.wdrb.com/story/29825373/rural-metro-ambulance-looking-for-emts-offering-free-training>.
- Weeden, Kim A., Mary Newhart, and Dafna Gelbgiser. "Occupational Segregation." *Pathways: A Magazine on Poverty, Inequality, and Social Policy*, 2018. <https://inequality.stanford.edu/>.
- WESH. "How Central Florida Firefighters Are Using Drones to Save Lives." May 3, 2018. <https://www.wesh.com/article/how-central-florida-firefighters-are-using-drones-to-save-lives/20135413>.
- Wikipedia. S.v. "Orange County Fire Rescue." July 13, 2018. https://en.wikipedia.org/w/index.php?title=Orange_County_Fire_Rescue&oldid=850141342.
- Williams, David M. "2005 JEMS Salary & Workplace Survey: What You Earn, Where You Work & What It All Means." *JEMS: A Journal of Emergency Medical Services* 30, no. 10 (October 2005): 36–55.
- Willing, Linda. "Firehouse Bedrooms and Bathrooms: The Ongoing Debate." *FireRescue1*, July 5, 2018. <https://www.firerescue1.com/fire-chief/articles/386232018-Firehouse-bedrooms-and-bathrooms-The-ongoing-debate/>.
- Wilson, Marie. "Why 4 Naperville Firefighters Switched off 24-Hour Shifts." *Daily Herald*, October 24, 2018. <https://www.dailyherald.com/news/20181024/why-4-naperville-firefighters-switched-off-24-hour-shifts>.
- Wisconsin State Legislature. "Chapter 196, Laws of 1977." (1977). <https://docs.legis.wisconsin.gov/document/acts/1977/196>.
- . "Wisconsin Legislature: 2017 Wisconsin Act 66." Act 66 § (2017). <https://docs.legis.wisconsin.gov/2017/related/acts/66>.

- . “Wisconsin Legislature: 230.03(2)(B).” Accessed September 15, 2018. <https://docs.legis.wisconsin.gov/statutes/statutes/230/1/03/2/b>.
- World Media Group, LLC. “Orange County, FL.” Accessed July 16, 2018. <http://www.usa.com/orange-county-fl-population-and-races.htm>.
- . “Philadelphia, PA.” Accessed September 21, 2018. <http://www.usa.com/philadelphia-pa-population-and-races.htm>.
- . “San Francisco, CA.” Accessed September 28, 2018. <http://www.usa.com/san-francisco-ca-population-and-races.htm>.
- Young, Aaron, Humayun J. Chaudhry, Xiaomei Pei, Katie Halbesleben, Donald H. Polk, and Michael Dugan. “A Census of Actively Licensed Physicians in the United States, 2014.” *Journal of Medical Regulation* 101, no. 2 (2015): 7–22. <http://jmronline.org/doi/pdf/10.30770/2572-1852-101.2.7>.
- Zamzow, Aaron. *FRF Introduction to Firefighter Fitness*. Madison, WI: Madison Wisconsin Fire Department, 2016. <http://www.cityofmadison.com/fire/documents/frf-intro-to-firefighter-fitness.pdf>.
- ZOLL. “EMT Scholarship—Medical Education Grant.” Accessed November 10, 2018. <https://www.zoll.com/medical-markets/ems/emt-scholarship>.

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