

GENDER PAY DISPARITIES WITHIN THE EMERGENCY MEDICAL SERVICES

by

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Gender Pay Disparities within the Emergency Medical Services

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## ABSTRACT

The current study examined nationally certified EMS data from 2008 in an effort to determine if wage disparities exist within the Emergency Medical Services (EMS). The present study also sought to identify potential factors that may contribute to any wage differences between men and women EMS professionals.

**Methods:** A secondary analysis of 2008 Longitudinal Emergency Medical Technician Attributes & Demographics Study (LEADS) data was used to examine factors that may contribute to wage differences in Emergency Medical Service (EMS) professionals within the United States.

**Results:** Gender wage disparities in the Emergency Medical Services were found to exist. Level of certification, years of experience, type of employer, type of community, and gender of the Emergency Medical Service professional were all found to predict significantly EMS earnings. Nearly half (49%) of EMS earnings is explained by the level of certification, years of experience, hours worked, type of employer, community size, and to the gender of the EMS professional. Gender by itself explained 4.4% of the variance in EMS earnings. The findings from this study may be used to help understand and possibly reduce gender pay differences in the Emergency Medical Services by identifying predictors of gender wage disparities.

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## CHAPTER I

### Introduction and Statement of Problem

Chapter I outlines the background of the present study. It addresses the issue of gender pay disparities within Emergency Medical Services (EMS) in the United States using data from the Longitudinal Emergency Medical Technician Attributes & Demographics Study (LEADS). The principle components of this chapter include the introduction, statement of the problem, purpose of the study, statement of the research questions, discussion of the delimitations, assumptions, and operational definitions necessary for understanding the study. Chapter II is the review of the literature and is followed by Chapter III which describes the methodology of the study. Chapter IV is a report of the results and findings of the study. Chapter V contains the summary, conclusions, and implications for future research followed by the references, appendices, and tables.

### Introduction

Pay parity among the genders remains an important topic in society. Research addressing this topic has been conducted worldwide and in virtually every occupation. Although some research involving gender within the field Emergency Services has been conducted, it is rare. Consequently, little is known about the factors that may directly impact wage disparities between men and women EMS professionals. The present study identifies if wage disparities exist within the Emergency Medical Services and identifies potential factors that may contribute to any wage differences between men and women Emergency Medical Service professionals. A secondary analysis of LEADS data was used to examine potential factors such as level of certification, type of employer, education, gender, hours worked and salaries from EMS related jobs that may affect

the gender wage gap. The LEADS study, a ten year undertaking, was created to describe the demographics and characteristics of EMS professionals throughout the United States. The LEADS study was designed to identify trends in EMS and to identify factors which influence the career and retention of individuals who practice and leave the EMS career field (Brown, Dickison, Missleback, & Levine, 2002).

### Statement of the Problem

The topic of gender pay parity is widespread and present in all countries, areas, and professions. In most countries, women earn significantly less money than men for similar work (World Health Organization, 2010). U.S. Census data released on September 16, 2010 indicates that the mean earnings for full-time year-round women workers are still 77 percent of what men workers earn (National Committee on Pay Equity, 2010). Although this topic has been addressed by many researchers, the conclusions of the research vary and the question of gender parity achievement still remains. One widely researched issue regarding gender differences in the workplace is pay. Previous research has found that in comparison with men most women experience notable pay differences (Williams & Fielder, 1974; Davis-Patton, 2000; Lips, 2003; Bolyard & Wan, 2007). Various theories (Blau & Duncan, 1965; Khoreva, 2008; Bolyard & Wan, 2007; McMillen, 1987; Liu, 1986) have been used to help understand and to help identify factors that may attribute to gender pay disparities. Many of these theories involve the investigation into various factors (such as education, experience, and tenure) and their impact on the economic compensation of the employees performing similar jobs. Legislative decisions that provide a foundation for gender parity within in the United States have been implemented to reduce gender disparities and require equal pay for equal work. Despite awareness and advancements made to reduce gender disparities in occupational settings, wage disparities continue. To date, EMS has

not been exempt from gender-based differences. Previous research has identified that one's perceived gender has a negative effect on the pay for women within EMS (Russ-Eft, Dickison, & Levine, 2008). To date, research targeting the analysis of specific factors that contribute to gendered pay differences is lacking. Although rather ambitious, the present study has the specific aim of redressing this gap in the research. This will be accomplished first by an examination of the literature, followed by a discussion of the data. Next, the findings of this study are presented and discussed in light of the literature. This thesis concludes with a set of suggestions for future research. But first, the purpose of the present study is reviewed.

### Purpose of the Study

The purpose of this study is to identify if gender pay discrepancies exist within the Emergency Medical Services and identify specific factors that may contribute to any pay discrepancies between men and women EMS providers.

- What level of gender pay parity has been achieved within the Emergency Medical Services?
- What are the factors contributing to the gender gap between men and women EMS professionals?
- What percentage of the gender wage gap in EMS can be attributed to factors such as education, community size, experience, certification level, and type of employer?

The findings from the present study seek to bridge the gap in research and work to provide information that may be used to help reduce gender wage disparities within EMS.

Disparities in pay can have serious impacts on both individuals and society. The difference in earnings impacts the economy by not only affecting an individual's purchasing power, but by lowering the living standards and free flow of goods (Hessaramiri & Kleiner, 2001). Important benefits in terms of the achievement of gender pay equity include the prospects of wider opportunities, improved quality of life for individuals and their offspring, increased taxes paid to society, increase in volunteer work, more satisfaction, less dependency on society for financial help contributions to public treasury, increased savings, job mobility, enhanced knowledge and improved social status (Bureau of Labor Statistics, 2010). Additionally, gender wage equality should have a positive impact on the socialization of future women and men; that is, boys and girls are raised to believe in and to embrace the equality of gendered actors in society, and that the "most qualified" is more of a job consideration than one's sex or gender (Risman, 1998).

### Hypotheses of the Study

The statement of the hypotheses was an effort to describe the difference in earnings between men and women in the Emergency Medical Services. The relationships that were examined would clarify the factors that influence the earnings of EMS professionals. The hypotheses and sub-hypotheses of the present study are listed below:

Hypothesis 1: Women EMS professionals are paid less than men EMS professionals.

Hypothesis 2: Factors such as education, level of certification, experience, community size, and type of employer contribute to the pay gap between men and women EMS professionals.

Sub-hypothesis 1: There is a significant difference between the earnings of men and women EMS professionals who have completed the same level of education.

Sub-hypothesis 2: There is a significant difference between the earnings of men and women EMS professionals who possess the same level of certification.

Sub-hypothesis 3: There is a significant difference between the earnings of men and women EMS professionals with the same years of experience.

Sub-hypothesis 4: There is a significant difference in the earnings between men and women EMS professionals who work in the same types of community.

Sub-hypothesis 5: There is a significant difference between men and women EMS professionals who work for the same type of employers.

### Operational Definitions

The following terms are defined as used in this study:

Gender - refers to the socially constructed attributes, roles, and behaviors that are considered appropriate for men and women in that society. West & Fenstermaker (1995) states gender is not just an attribute of an individual, it something accomplished through interaction with others. Gender is also a means by which power is enabled and articulated (Scott, 1986). Explanations for gender pay differences rest on the conceptualization that gender touches all aspects of our lives (Alksis, Desmar, & Curtis, 2008). “Gender” differs from “sex”, which refers to the biological and physiological characteristics that define men and women (World Health Organization, 2010). For the purpose of the present study, gender is self-identified by those completing the survey as male or female.

Discrimination- is the act of treating a person differently, or less favorably, for some reason. Employment discrimination occurs when unfair treatment is received because of race, color, religion, sex, national origin, disability, age, or genetic information (Equal Employment Opportunity Center, 2010).

Pay equity- is a means of eliminating sex and race discrimination through an employer's use of sex and race neutral wages (National Committee on Pay Equity, 2010).

Emergency Medical Services (EMS)- is a service which provides out-of-hospital emergency acute care and transport to definitive care to patients with illnesses and injuries (National Registry of Emergency Medical Technicians, 2010).

EMS professional- is any person who provides professional emergency medical care.

Emergency Medical Technician (EMT or EMT-Basic)- is an EMS professional who can assess a patient's condition and manage respiratory, cardiac, and trauma emergencies (Bureau of Labor Statistics, 2010).

Intermediate (EMT-I)- is an EMS professional who functions between the level of an EMT-Paramedic and EMT-Basic.

Paramedic (EMT-P)- represents the highest licensure level of emergency care in most states and certainly the highest national certification level (National Registry of Emergency Medical Technicians, 2010). Paramedics are able to provide more extensive care than an EMT-Basic or an EMT-Intermediate. Paramedics perform care such as medication administration, intravenous therapy, interpretation of electrocardiograms, and endotracheal intubation (Bureau of Labor Statistics, 2010).

National Registry of Emergency Medical Technicians (NREMT)- is a non-for-profit organization that serves as the national EMS certification organization. In its psychomotor

practical examination and its computer adaptive cognitive exams, the NREMT provides a valid, uniform process assessing entry-level competency for EMS professionals.

Longitudinal EMT Attributes and Demographics Study (LEADS)- is a joint venture research project between the National Registry of Emergency Medical Technicians (“NREMT”) and the US Department of Transportation, National Highway Traffic and Safety Administration (“NHTSA”) intended to describe the demographics and characteristics of EMS professionals throughout the United States. The study was designed to identify trends and factors which influence the careers of individuals in EMS (Brown, 2002).

Certification/licensure level- refers to the current level of certification as an EMS professional. Levels include EMT-Basic, EMT-Intermediate, and EMT-Paramedic.

Years of experience- is the self reported time an emergency medical service provider has worked as an EMS professional.

Community type - is the type of area in which the EMS provider has reported performing most of his or her EMS related work. The type of community is self selected from one of the following categories based on the communities population size: (1) Rural areas have less than 2,500 people, (2) Small towns have 2,500 -24,999 people, (3) Medium town 25,000 – 74,999 people, (4) Large town-75,000 – 149,000 people, (5) Mid-sized city has less than 500,000 people, (6) Suburb/Fringe of a midsized city, (7) Large city 500,000 or more, or the (8) Suburb/fringe of a large city.

Type of employer- is the type of organization or agency for which an EMS professional performs most of his or her EMS work. The type of employer is self-reported into one of the following categories: (1) Fire service, (2) County or municipal, (3) US Government (non-



military), (4) Military, (5) Hospital-based, (6) Private (not for profit), (7) Private (for profit).

Respondents who were not affiliated with an employer or selected other were omitted.

Earnings from EMS work- are the self-reported earnings from EMS related work that an EMS professional received during the past year. Compensation as measured in the present study is reflected only by the self-reported income from EMS work performed within the past year. Compensation from non-EMS work will be excluded from calculating disparities in pay for the present study. The earnings for EMS work and the number of hours worked are both categorized into groups, limiting the ability to account for a professional's overtime compensation.

#### Limitations of the Present Study

This present study is limited to nationally certified EMS professionals who were currently practicing EMS in the United States of America during 2008. All data is self-reported and were subject to recall bias and other limitations that are inherent in self-reported data. Research participants were at least 18 years of age and were registered with the National Registry of Emergency Medical Technicians as of 2008. Certification with the National Registry of EMTs is not a requirement for every state, therefore, only those individuals who were nationally certified in 2008 are included in the study. Although the present study provides valuable information relating to pay in Emergency Medical Services, the limitations of this study affects its ability to be generalized to all EMS professionals. EMS professionals who are not currently practicing were not included in the study.

Any number or combinations of socio-demographic traits can affect income and it's impossible to account for all of them. For example, affective traits and personality are not taken into account in the data utilized for the present study. In addition to monetary compensation,

other benefits such as leave time or job satisfaction can significantly impact the perceived value of a work position. The present study has elected to focus only on the monetary compensation from EMS related jobs. Given the complexity of relationships and issues produced by the number of concepts involved in gender pay gaps, it is beyond the scope of this project to review every possible relationship between factors that may contribute to the differences independently.

### Summary

The present study examines factors that may influence the salaries of men and women EMS professionals in order to determine if a gender pay gap exists in EMS. Chapter II is a review of the literature and provides a theoretical base for the study. It is followed by Chapter III, which addresses the data, methodology, and analysis used in the present study. Chapter IV provides the findings from the analysis of the data. The conclusions, discussions, implications, and suggestions for future research are presented in Chapter V.

## CHAPTER II

### REVIEW OF LITERATURE

#### Purpose

The present study attempts to explain and review the main relationships among gender and compensation in EMS as well as to identify the relationship that these factors have with the pay EMS professionals receive. The review of the literature contains background information about the theories used in the present study and contains general information about gender disparities, laws and gender discrimination, and factors that have contributed to the gender gap. It also discusses research addressing gender pay disparities in other occupational fields and within the Emergency Medical Services.

#### Theoretical Base

A number of theories have been used to help understand the mechanisms which attribute to gender pay disparities. For example, previous studies have explored the impact of education, experience, and tenure on compensation. Analyses of gender pay gap determinants have been approached from the perspectives of human capital theoretical model (Liu, 1986), contingency theory, several societal theories and feminist/gender theories (Khoreva, 2008; Bolyard & Wan, 2007). Other explanations ranging from neoclassical economic perspectives to feminist social theories have proven difficult to translate into testable hypotheses (Marschke, 2004). In addition to theories, male/female salary comparisons based on the comparable method have also been used to help identify disparities based on sex (McMillen, 1987).

One social theory—Social attribution theory— as developed by sociologists Peter Blau and Otis Duncan provides the theoretical base of the present study. A principle component of this

theory, status attainment, is that a social actor (e.g., a member of society) can move within a class system through the acquisition of education (Blau & Duncan, 1967).

“A man’s chance of occupational attainment (in the United States) depends on his education, which, in turn depends to a considerable degree on the socio-economic status of his father” (Blau & Duncan, 1965).

The ability of an individual to move within an organizational structure can influence social aspects of an individual’s life such as prestige, economic class, authority, and position (Knottnerus & Guan, 1997).

#### Legal Implications Associated with Gender Discrimination

The issue of equality in gender compensation has led to legislative decisions that provide a foundation for gender pay parity within almost every discipline in the United States.

The Equal Pay Act requires that employers give men and women equal pay for equal work (Equal Employment Opportunity Center, 2010). The “fairness notion” requires that employees performing the same job with equal contributions or investments such as experience, job responsibility, and training receive equal salary (Koeske & Krowinski, 2004). Discrimination may exist when employees with equal endowments receive different wages for the same work (Kalist, 2004). In a discriminatory employment environment, the strength of the relationship between contributions and salary as a reward is more pronounced among men than women (Yamatani, 2006).

Laws addressing equity in more than just the workplace have helped influence policy changes while serving as the basis for claims of discrimination. As an overall organizing principle, three grounds on which many gender-based wage discrimination claims are litigated in lower federal courts include: (1) unequal pay for equal work, (2) unequal pay for work of

comparable worth, and (3) unjustified pay disparity for comparable work (Lee, 1989). For example, after survey results of 200 academic institutions indicated that women faculty earned approximately eighty-eight cents for every dollar made by their male colleagues some universities adjusted their faculty salaries. Others such as the State University of New York at New Paltz and the Universities of Maryland and the University of Mississippi were served with lawsuits charging salary discrimination (McMillen, 1987).

More recent legislation, such as the Lily Ledbetter Fair Pay Act and the Paycheck Fairness Act, continues to address the issues of pay equity by extending the statute of limitations for claims involving wage disparities and ensure equal compensation for women who hold the same job as men (Williams, 2009). Laws and policies aimed to eliminate inequities must have *due attention* paid to them or they may have only limited effects on society (World Health Organization, 2010).

### Gender Disparities in Various Occupations

Despite awareness and advancements made to achieve gender equity, gender pay disparities continue to exist in a number of disciplines. Gender pay disparities have been proven to exist and women continue to face barriers to advancement in what is referred to as the “glass ceiling” (Alkadry, 2006). Research indicates women are underrepresented in leadership positions within the academe, government, organizations (both private and public) dedicated to the delivery of health technologies and services (Lantz, 2008). Gordon, Morton, & Braden (2001) reports that the salary profiles of women faculty members are 11 percent less than those expected for a man with similar characteristics. Ash, Carr, Goldstein, & Friedman (2004) identified that women in academic medicine were less likely to be full professors than men who worked within the same time frame with similar roles and achievements. Furthermore, researchers have found that

women healthcare executives earn significantly lower salaries than similarly qualified men (Lantz, 2008).

### Factors Influencing Pay Disparities

Differences between men and women are only partially explained by the characteristics of the workers or the job. Labor market behaviors and demographic characteristics of working women and men are able to explain part of the pay disparity; however, discrimination also remains a factor in explaining it (Hessaramiri & Kleiner, 2001). Penner (2008) states that insight into the intertwined mechanisms that contribute to gender differences in the labor market can be obtained by identifying the factors that play a vital role in the difference.

For example, education and experience; preferential treatment of men; and disadvantageous treatment of women was found to explain only about 60 percent of the gender wage gap in both the service and the manufacturing sectors (Greene & Hoffnar, 1995). Furthermore, in looking to nursing, only 10% of the wage differential between male and female registered nurses could be explained when they controlled for factors such as education, experience, work setting, and nursing position (Kalist, 2002). In academic medicine, the compensation of women was lower (than men) despite controlling for medicine specialty, job characteristics and responsibilities, and productivity at work (Laine & Turner, 2004).

Factors found to influence the salary disparity of men and women social workers include family commitments, stereotypes of job requirements, turnover rates, educational differences, career tenure, and aspirations for high-level positions (Williams & Fielder, 1974). Men social workers were found to receive a significantly higher yearly salary than women (\$3,665 more) even after controlling for years of experience, job role, and other variables due to more experience and their occupancy of management positions (Koeske & Krowinski, 2004).

Women faculty members with similar professional roles, achievements, credentials, motivation, and productivity as their men counterparts did not attain rank or promotion as quickly, which some believe is due in part to, having more family responsibilities; that is another job at home dealing with family matters (Ash, Carr, Goldstein, & Friedman 2004). The wage gap narrowed slightly between full time men and women faculty after controlling for “human capital attributes” including educational attainment and experience, as well as structural characteristics such as discipline and type of organization (Keller-Wolf, 2003, 2004). Pollard, Taylor, and Daher (2007) reported the estimated difference of \$4,965 between women and men registered dietitians was best explained by the size of the budget, years of experience, work setting, and the educational levels of the employees.

Another study reports that factors such as education, experience and unionization can help predict the compensation for a job. But, the single best predictor of compensation for social workers was found to be the sex of the worker (Gibleman, 2003). After analyzing the work profiles, opportunity paths and structures, credentials, and legal markets of private practice lawyers it was concluded that none of the mechanisms examined could fully explain the 5% gender gap (Dinovitzer, Reichman, & Sterling, 2009). Hessaramiri & Kleiner (2001) reports that women earn 81 percent of what men in similar occupations with the same level of experience and education earn.

### Education

Educational attainment has been theorized to directly impact the ability of an individual to move within a class system (Blau & Duncan, 1967). Bobbitt-Zeher (2008) reports that the gender gap for those with less education is substantially higher when compared with college-educated workers from the same cohorts. Even though the gap in educational attainment between

professional men and women has decreased in the past two decades, equal representation in meaningful top supervisory positions has yet to be attained (Mitra, 2003).

According to the 2005 *College Board* report “The Benefits of Higher Education for Individuals and Society”, education pays for all individuals regardless of their race/ethnicity, gender, or type of family background. The report also states that a typical college graduate earns about 73 percent more than a high school graduate over the individual’s working life. Individuals who have associate degrees earn almost 25 percent more than high school graduates and the earnings continue to increase with advanced educational attainment (Baum & Payea, 2005). For example, young adults with a master's degree or higher were also found to have earned 20 percent more than young adults with a bachelor's degree (U.S. Department of Education, National Center for Education Statistics, 2010). In addition to the increased income, college graduates also enjoy increased personal/professional mobility, improved quality of life for their offspring, better consumer decision making, are more open-minded, more cultured, more rational, and more consistent and less authoritarian optimistic views than those who have not completed college (Porter, 2002).

#### Level of Certification

Professional certification typically involves the successful completion of a competency examination that is designed and administered by the certification agency. The candidates are usually required to have graduated from an accredited educational program in their field, have practiced skills, and worked in some type of internship in order to obtain certification (National Highway Traffic Safety Administration, 2008).



When an individual becomes certified or licensed, their responsibilities in their work environment may increase. The level of responsibility an individual bears is likely to affect compensation (Alkadry & Tower, 2006). Compared to those with the lowest levels of training (EMT-I and EMT-B), those with the highest level of training (EMT-P) are more likely to work in private ambulance organizations, the very organizations that are more likely to operate outside of EMS markets (Chandler, 2007).

### Years of Experience

The number of years of experience has also been researched in relation to salary. Greater work experience has been found to lead to significant wage premiums (Mitra, 2003). According to Harrison, Tilly & Bluestone (1986), higher than average wages are payoffs to experience in many work settings. Tenure attainment has also been reported to increase the average annual salary of faculty members in non-unionized academic settings (Benedict, 1999).

Research also indicates that wage penalties can result from such intermittent labor force participation resulting from the fulfillment of domestic obligations such as raising children (Giapponi & McEvoy, 2006). Williams, Ho & Fielder (1974) addressed the topic of experience in a study of salary differences between men and women social workers. They stated that:

“It is well known that females may take time off to have children or attend to other family responsibilities. Thus one can argue that a male and female who graduated at the same time in a given period are not really equal in the eyes of a prospective employer if the male in fact has more months of job experience than the female.“

According to Williams (1974), family obligations are not the major reason that men social workers earn higher salaries than women social workers. According to England (1998), as long as women are more likely than men to leave work to raise a child, men will benefit from tying wages and promotion to seniority.

### Community Size

The size of a community where one works has been shown to have an impact on the income of its residents. The US Census Bureau (2010) reports that households inside principal cities experienced a 1.9 percent increase in real median income while those households outside of a principal city experienced a 1.9 percent decrease in income during 2009. Those in rapidly growing non-metro counties have higher incomes than those in the remaining poorer rural areas (Johnson, 2001).

People who reside in the “urban fringe” of cities have been identified as having higher socio-economic status than those who live in central cities, largest cities, medium cities, small towns, and the lowest is rural areas (Blau & Duncan, 1965). According to Johnson (2001), rural American population and income growth rates will equal or exceed those in urban areas; however, the difference between connected and isolated rural communities will increase. Gender and its relationship with community size was addressed by Gittell (2009) who reported women in the metropolitan areas of New York had greater earnings parity with men when they were compared to women in the mixed and non-metropolitan areas.

## Type of Employer

The type of employer, organization, or agency can also affect the earnings of an individual. According to Gittell (2009), the greatest gender earnings parity exists within the federal government, suggesting that where requirements for parity are institutional, they can, in fact, reduce the gender gap. However, these types of jobs are normally lower paying jobs, like government service, rather than more high paying jobs- such as large law firms (Mitra, 2003). Gender mobility and gender proportions are slowly improving in the private sector, but trail the improvements in the public sector (Buchanan, 2002). Larger employers typically offer higher wages, better benefits, and more mobility, than smaller employers (Mitra, 2003). The gender disparity appears to be decreased in unionized academic settings (Benedict, 1999).

Private or municipal ambulance agencies are the most common EMS providers used in many non-rural areas (Chandler, 2007). In the 2008 National Highway Traffic Safety Administration Report: *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment* municipal and fire-based EMS services have higher pay than hospital-based and private EMS services. Federiuk, O'Brien, Jui, and Schmidt (1993) reported that men working in the municipal ambulance organizations had higher job satisfaction than women or men employed in the private ambulance organizations. According to Chandler (2007), research supports that the disproportionate presence of women in private EMS rather than municipal ambulance organizations may be attributed to discrimination rather than choice.

## EMS Related Research

Data from sources including the Current Population Survey, National Registry of Emergency Medical Technicians, and LEADS surveys indicate that gender pay parity within the Emergency Medical Services has yet to be achieved (National Highway Traffic Safety

Administration 2008). According to the JEMS 2003 Salary Survey, most positions within EMS are predominately held by men (Monosky, 2003). Although women in EMS have been steadily increasing their representation over the years, the industry is still dominated by men (Williams, 2008).

According to the *EMS Workforce for the 21<sup>st</sup> Century: a National Assessment Report*, factors such as increasing job satisfaction through higher pay, better benefits, career ladders, and reducing injury, can influence an EMS organization's ability to retain their employees (National Highway Traffic Safety Administration, 2008). The recruitment and retention of underrepresented populations among EMTs and paramedics, such as women or non-white racial/ethnic groups is a pressing issue in today's EMS (National Highway Traffic Safety Administration, 2008).

While many anecdotal comments abound about the lifting and strength limitation of women in EMS among EMS professionals, Gonsoulin & Palmer (1998) actually examined the physical strength, assumption of authoritative roles, and structural preparedness related to gender. This study found that the gender of a partner in EMS "makes no difference" (Gonsoulin, 1998). Pirrallo, Levine & Dickison (2005) indicates stereotypical gender differences in risky behavior exist in the EMS profession. Another study examined the on the job illnesses of EMTs, and found that the groups at highest risk for injury were females and workers between the ages of 25 and 34 years (Studnek, Ferketich & Crawford, 2007).

According to Brown, Dawson, & Levine (2003), for the EMT-Basics the lowest areas of job satisfaction was pay and benefits; for paramedics, pay and benefits were only exceeded by the reported lack of opportunities for advancement in EMS. Patterson et al (2005) reports that the majority of EMS professionals believed their pay and benefits are inadequate for the work they perform.

The topic of EMT-Paramedic satisfaction was further addressed in 2008, with Russ-Eft's evaluation of job satisfaction for women and minorities in EMS. Although race did not appear to have an impact on the outcome of their study, gender had a negative influence on the participants' objective career success (e.g. education, experience, and hours worked). Russ-Eft, Dickison, and Levine (2008) also reports that women EMT-Paramedics received significantly lower compensation than men in both 2000 and 2004.

### Summary

Research addressing gender equity has been conducted and a number of mechanisms that contribute to the gender gap have been examined in many disciplines. Research, however, that specifically identifies contributory factors for possible disparities in compensation between men and women EMS professionals has not been thoroughly addressed; it is scant. It is hoped that the present study will help to redress this unfortunate gap in the literature by more thoroughly investigating factors that may (or may not) contribute to pay disparities among men and women in EMS.

## CHAPTER III

### METHODS

The present study addresses the issue of pay disparities between men and women within the Emergency Medical Services. Based on previous research and literature, disparities based on gender are anticipated. Chapter III provides an outline for the methodologies and statistical treatment of the data used to examine gender pay disparities and explore factors that may potentially influence any gaps in pay between men and women EMS professionals. This chapter begins with a description of the design and selection of the participants. The instrument, measures, sample, and methods for the collection, treatment, and analysis of the data will also be discussed in this chapter.

#### Data

Data for the present study comes from the National Registry of Emergency Medical Technicians' ("NREMT") LEADS survey. Starting in 1999 and ending in 2008, annual surveys were sent to randomly selected EMS professionals in the NREMT's data base. The surveys ask a set of core questions including pay, certification level, gender, and specific topical questions termed a "snapshot" survey. *Snapshot* surveys dealt with a number of "hot topics" in EMS including sleep, ambulance safety, and occupational identity. Since the snapshot survey does not inform the present study, they are not included in this body of work. (National Registry of Emergency Medical Technicians, 2010) A copy of the core survey is included in Appendix A.

## Research Design

The design for the present study is a secondary data analysis of the Longitudinal EMT Attributes and Demographics Study (LEADS). This design allows for new questions to be answered from previously collected data (Glass, 1976). The LEADS study is an untapped resource for pertinent information relevant to gender and EMS and will provide efficient data for the present study. The data set utilized in the present study includes the most recent national survey data that depicts the attributes and demographic information of individuals providing emergency medical services throughout the United States. Factors that influence the salaries of EMS professionals were addressed in the LEADS survey during 2008. Additionally, the data provides a unique opportunity to explore disparities between men and women in the field of EMS. Although the selected design cannot demonstrate causation, inferences about the relationships among the variables can be made. The quantity of responses from the large sample allows for the determination of statistical significance. The data from the present study is also significant in that identification of any gendered pay disparities can ultimately affect the lives of not only individual EMS providers who suffer as a result of the disparities.

## Selection of the Subjects

The sample for the present study comes from the National Registry of Emergency Medical Technician database for 2008. There are currently over 270,000 EMS providers who are Nationally Certified (National Registry of Emergency Medical Technicians, 2010). The LEADS sample consists of 1,610 randomly selected EMTs who were nationally certified within the United States at the time the survey was conducted. The LEADS sample is the largest known of its type within the field of EMS. It is large enough to provide a sufficient amount of data to perform a sub-analysis for the present study.

## Treatment of the Subjects

### *Human Protection*

The National Registry of Emergency Medical Technicians received approval for the original LEADS project by their Institutional Review Board, the American Institutes of Research. The present study was reviewed and approved by the Institutional Review Board (IRB) of Youngstown State University prior to its conduction. A copy of the IRB approval letter is included in Appendix B.

### *Instrumentation*

The LEADS project, which began in August 1998, is a “joint effort between the NREMT and the NHTSA and provides valuable data about nationally certified EMS professionals. This project is led by a team of researchers made up of State EMS Directors, State EMS Training Coordinators, EMS System Managers, Emergency Physicians, EMS Educators, survey researchers, and staff of the NREMT” (National Registry of Emergency Medical Technicians, 2010). The instrument was pilot tested, and underwent revisions prior to its inception and use in the present study.

The survey instrument consists of two separate sections- a “core” and “snapshot”. The “core” section consists of about 46 questions and is administered annually. The “snap-shot” consists of questions that address a different focus in each mailing. Only the “core” section of the instrument is used for analysis in the present study.



Specific items from the instrument that will be examined within this study include salaries for EMS related jobs, gender, education, level of certification, years of experience, size of community, area, organizational affiliation, and hours worked.

#### Collection of Data

The NREMT surveys mailed randomly selected nationally registered EMS professionals within the United States. Enclosed with the surveys was a letter detailing the purpose of the study and assuring the participants of confidentiality and a pre-paid envelope. The respondents were asked to voluntarily complete the surveys and return them to the NREMT. The returned surveys were scanned and used to provide the data for analysis. (National Registry of Emergency Medical Technicians, 2010) The data for the present study was obtained in electronic format from the NREMT with no identifiable information in order to protect the identities of the individual participants. The data consists of demographic, work history, and other attributes of certified EMS professionals.

#### Treatment of Data

The variables in the present study are described in the following section. The variables are used to investigate the relationship between salary and gender for EMS professionals. The data addresses the following hypotheses and sub-hypotheses:

Hypothesis 1: Women EMS professionals are paid less than men EMS professionals.

Hypothesis 2: Factors such as education, level of certification, experience, community size, and type of employer contribute to the pay disparity between men and women EMS professionals.

Sub-hypothesis 1: There is a significant difference between the earnings of men and women EMS professionals who have completed the same level of education.

Sub-hypothesis 2: There is a significant difference between the earnings of men and women EMS professionals who possess the same level of certification.

Sub-hypothesis 3: There is a significant difference between the earnings of men and women EMS professionals with the same years of experience.

Sub-hypothesis 4: There is a significant difference in the earnings between men and women EMS professionals who work in the same types of community.

Sub-hypothesis 5: There is a significant difference between men and women EMS professionals who work for the same type of employers.

In order to address these hypotheses, a variety of statistics were used in the present study. An alpha level of .05 was used to determine statistical significance. Earnings from EMS work within the past year served as the dependent variable in the present study. The independent variables examined within the study included gender, education, level of certification, years of experience, type of employer, and type of community. Each of the independent variables were examined independently and then controlled for later within the study.

### Dependent Variable

The dependent variable in the study is the salary which was measured by the income reported from EMS work within the past year. The salary was initially self reported as a value in one of eleven groups by respondents: (1) \$0, (2) \$1-\$999, (3) \$1,000 to \$9,999, (4) \$10,000 to \$19,999, (6) \$30,000 to \$39,999, (7) \$40,000 to \$49,999, (9) \$60,000 to \$74,999, (10) \$75,000 to \$99,999, and (11) \$100,000 or more. The categories were re-coded into one of three for statistical analysis. The recoded categories included: (1) Less than \$29,999, (2) \$30,000 to \$49,999, and (3) \$50,000 or more.

### Independent Variables

The independent variables addressed in the present study include the following:

*Gender.* The components and attributions of an individual's gender for the present study were based on the respondent's self selected identification as (1) male or (2) female on the survey questionnaire.

*Education.* Education was self reported and classified into one of six levels based on the highest level of education attained by the respondent. The levels were (1) did not graduate high school, (2) high school/GED, (3) some college, (4) Associate's degree, (5) Bachelor's degree, and (6) Graduate degree.

*Level of certification.* The level of certification was self reported initially as one of five responses: (1) First Responder, (2) EMT-Basic, (3) EMT-Intermediate, or (4) EMT-Paramedic (5) Temporarily not practicing, or (6) Permanently not practicing. Those that were not currently practicing at the EMT-Basic or EMT-Paramedic level were not included in the analysis.

*Years of experience.* The years of experience were derived from the years worked as an EMT. Initially, respondents self reported their years worked into one of nine pre-determined groups: (1) Never worked as an EMT, (2) Less than 1 year, (3) 1-2 years, (4) 3-4 years, (5) 5-7 years, (6) 8-10 years, (7) 11-15 years, (8) 16-20 years, or (9) 21 or more years. The data was re-coded into one of three categories for analysis: (1) Less than 5 years, (2) 5 to 10 years, or (3) 11 or more years.

*Type of community.* The type of community was classified into predetermined groups based on the area in which respondent performs most of their EMT work: (1) Rural areas have less than 2,500 people, (2) Small towns have 2,500 -24,999 people, (3) Medium town 25,000 – 74,999 people, (4) Large town-75,000 – 149,000 people, (5) Mid-sized city has less than 500,000 people, (6) Suburb/Fringe of a midsized city, (7) Large city 500,000 or more, or (8) Suburb/fringe of large city.

*Type of service provider.* The type of service provider was self reported in one of 11 pre-determined groups by the respondents reply to the type of organization for which most of EMS work is performed. The groups included: (1) Fire based, (2) County or municipal, (3) Private, for profit, (4) Private, not for profit, (5) Hospital based. (6) U.S. Federal government (non-military), (7) Military, (8) Not affiliated, or (9) Other. The responses were re-coded into one of two categories for analysis: (1) Fire based or (2) Not Fire Based.

### Statistical Treatment of the Data

The statistical treatment section describes the various statistical techniques that were used in the present study as well as their justification for use. The data provided by the NREMT was in an electronic format compatible with SPSS software. Data was analyzed using SPSS version 15.0. Descriptive and inferential statistics were used to test the hypotheses of the present study.

The statistical analyses were conducted in three stages. First, descriptive data identifying frequencies, percentages, means and modes were obtained. Second, comparisons between men and women EMS providers were made by performing cross-tabulations, chi-square, and Pearson's r correlation coefficients. T-tests were used to test the differences in certain interval-level items by gender and Pearson chi-square tests were used to evaluate if there was a dependent relationship between gender and certain predictors. The p-value less than or equal to .05 was considered statistically significant. Last, ordinary least squares regression analysis was used to help explain variations in the salary between men and women. Regression allowed the analysis to determine the relationship and contributions of one variable on another. The models were able to address in an efficient manner the hypotheses and sub-hypotheses of the present study.

### Summary

This chapter describes the sample, research design, methods, and treatment of the data that were conducted in the present study. The methods were designed to address the hypotheses of the present study on gender pay disparities within EMS. Chapter IV presents the analyses of the data and the results of the present study. Chapter V concludes the study, discusses the findings, and offers suggestions for future research.

## CHAPTER IV

### RESULTS

This chapter describes the findings of the present study that are used to examine gender pay differences within EMS. Chapter IV presents a brief description of the demographic and job related characteristics of the sample. It is followed by the results from a variety of tests that were used to examine the data relating to the hypotheses of the present study. The results are presented in three stages: 1) Demographic data, 2) Comparisons, and 3) Regression. Chapter V concludes the present study.

#### Profile of the sample

##### *Demographic data*

The demographic data for the present study is reported in Table 1 and reflects the demographic data of the sample. The sample consisted of 1,610 EMS providers. The mean age for EMS professionals was 38. The majority of respondents (72.0%) were men and only 28.0% were women. Whites accounted for 70.7 %, 12.6% were Hispanic, 7.3% were Black, 4.7% were Asian, 3.6% were American Indians/ Alaska Natives, and 1.1% were Native Indian/ Pacific Islander. Married EMS providers accounted for 54.9% of the sample and 45.1% reported being not married. Over half (53.4%) of the respondents reported having some type of college degree. Of the college graduates, 24.8% had an Associate degree, 21.9% had a Bachelor's degree, and 6.7% had a Graduate degree. Those who completed high school or a GED comprised 7.8% and those reporting some college were 38.7% of the respondents. Approximately 11.6% of respondents reported being from a rural area, 28.1% from a small town, 16.8% from a medium

town, 8.9% from a large town, 11.1% from a mid-sized city, 3.1% from the suburb/ fringe of a mid-sized city, 15.0% from a large city, and 5.3% from a suburb/fringe of a large city.

### *Job Related Characteristics*

In Table 2 the job related characteristics of the sample are presented. Approximately half (50.6%) of all the respondents reported being a paramedic, 3.2% were EMT-Intermediates, and 36.5% were EMT-Basics. Those either temporarily or permanently not practicing accounted for 9.2% of the respondents. Almost a third (29.8%) of respondents reported earning less than \$30,000 within the past year, 30.7% reported earning between \$30,000 and \$49,999, and 39.7% reported earning more than \$50,000 gross from all sources within a year. The majority of respondents (55%) reported earning between \$0 and \$29,999 from EMT work, while 22.6% reported earning between \$30,000 and \$49,999 from EMT work and 22.5% reported earning more than \$50,000 for EMT work within the last year.

Almost half (49.8%) of all EMS providers reported having less than 5 years of experience, 28.3% had 5-10 years, and 21.9% had more than 10 years of experience as an EMS professional. EMS professionals who worked 41 to 60 hours accounted for 33.6%, 1 to 8 hours 19.5%, 17 to 50 hours 19.0%, 9 to 16 hours 13.1%, more than 60 hours 13.0%, and zero hours 1.8%. According to respondents, 39.9% were employed by a fire based service, 19.0% by a private (for profit) agency, 14.2% by a county or municipal agency, 9.7% by a hospital based organization 8.9% by a private (not for profit) agency, 2.0% in the military 1.7% by the U.S. Federal government in a non-military job, and 4.7% were either not affiliated with or had a different type of an employer.

### Means and Modes

The average gross income from all sources was \$30,000 to \$39,999. The average earnings within the last year for EMS work were \$20,000 to \$29,999. The average number of years experience reported for all EMS professionals was 3-4 years. EMS professionals worked an average of 17 to 40 hours a week.

The modal category for number of hours worked per week as an EMS professional was 41 to 60. The modal category of gross earnings from all sources was \$30,000 to \$39,999. The modal category for the earnings from EMS related work was \$0. The modal category of experience as an EMS professional was 5-7 years.

### Comparisons

Cross-tabulations were performed and test of Chi-square were used to identify significant relationships in the cross tabulations. In Table 3, the percentages of men and women EMS professionals and their EMS earnings are presented. Men who made less than \$30,000 from EMS work accounted for 48.8% of all men. Women who made less than \$30,000 from EMS work accounted for 70.1% of all women. Men with an income of \$30,000 to \$49,999 accounted for 24.8% of all men compared to only women in the same range. Men with earnings above \$50,000 accounted for 26.4% of all EMS professionals. Women with earnings above \$50,000 accounted for only 13.0% of all women who were EMS professionals. The Chi-square test indicates that the relationship between gender and earnings was found to be statistically significant ( $p = .000$ ). The majority of women (70.1%) were found to occupy the lowest wage groups when compared to their male counterparts.



In Table 4, the percentages of men and women EMS professionals and their years of experience in EMS are presented. Men (46.0%) and women (47.1%) with less than five years of experience accounted for approximately the same percentage as each other. In the 5- 10 years range of working as an EMS professional, men accounted for 28.3% of all men, and women accounted for 36.6% all women. Men with 11 or more years of experience accounted for 25.8% of all men compared to only 16.3% of all women. The Chi-square test indicated that the relationship between the gender of the EMS professional and their years of experience in EMS work was found to be significantly significant ( $p = .000$ ). Men appeared to stay longer in EMS than women.

In Table 5, the percentages of men and women who are certified as EMT-Basics and Paramedics are depicted. Half of all women EMS providers (50%) were EMT-Basics compared to only 37.3% of all men EMS professionals. Half (50%) of all the women EMS professionals were paramedics compared to 61.4% of the men. The relationship between gender and the EMS professional's level of certification was found to be statistically significant ( $p = .000$ ).

In Table 6, the percentages of men and women EMS professionals and the types of communities they function in are depicted. The largest difference between representations by gender occurred in communities classified as rural areas where men accounted for 7.8% compared to women who accounted for 22.4%. The representation of men and women respectively in small towns (26.8% and 28.4%), large towns (9.8% and 7.5%), mid-sized cities (11.6% and 10.4%), suburbs/fringes of mid-sized cities (3.5% and 2.4%), large cities (16.3% and 13.1%), and suburbs/fringes of large cities (6.2% and 4.2%) were very similar. Men in medium towns account for 18.4% of all respondents compared to the women who are represented at 11.6%. The relationship between gender and the type of community served by the EMS professional was found to be statistically significant ( $p = .000$ ).

In Table 7, the differences between men and women EMS professionals and various types of EMS organizations are presented. Men who worked in fire based organizations accounted for 46.4% and women 22.6%. Men were represented less than women respectively in county or municipal agencies (12.6%, and 18.2%), private for profit agencies (18.1% and 23.3%), private not for profit agencies (6.4% and 13.0%), and hospital based agencies (13.4 and 8.5%). Men and women EMS professionals, respectively, were similarly employed in by non-military U.S. Government (2.1% and .3%) and military (1.8% and 2.7%) agencies, Men who reported being not affiliated with an organization or another type of agency accounted for 4.1% compared to women who accounted for 6.5%. Once re-coded, over half of the men (52%) were identified as being employed in a fire based organization compared to only 41.8% of the women. The significance between gender and type of EMS employer was found to be statistically significant ( $p = .000$ ).

In Table 8, the percentages of men and women EMS professionals and the highest level of education they attained are depicted. The representation of men and women EMS professionals was very similar throughout all educational levels. Men who completed high school accounted for 8.1% compared to women at 6.9%. Men completing their Associate's degree accounted for 24.9% compared to women with 26.4%. Those men with Bachelor's degrees represented 21.6% of all the men EMS professionals who responded compare to 23.1% of the women who responded. Those with the highest levels of education were represented least by both men (6.8%) and women (5.7%). After performing Chi-square analyses, the relationship between gender and education was found to be not significant ( $p = .780$ ).

## Multivariate Analysis

A regression analysis was used to determine the relationship and contributions of one variable to another. In Table 9, the regression analyses indicate that the largest affect on EMS earnings is produced by the level of certification (Beta =.318). The years of experience provided the second strongest affect (Beta =.256) on the earnings of an EMS professional. The third strongest affect was produced by the number of hours worked per week (Beta = .230). Other significant factors included type of community (Beta =.181), type of EMS employer (Beta =.180), and gender (which had a negative relationship with Beta =-.064).

Similarities in educational attainment for both men and women EMS professionals led to the omission of education as a factor analyzed in the regression model. When controlling for experience, hours worked, type of agency, community size, and level of certification, gender was found to produce a significant effect on the earnings of EMS professionals. Women EMS professionals were identified as make significantly less than men EMS providers. Almost half (49%) of the earnings of EMS professionals could be attributed to the years of experience, hours worked, type of employer, community size, level of certification, and to the gender of the EMS professional. The remaining 51.2% of the EMS earnings were attributed to other factors not specifically addressed in the present study. Of the explained factors, the gender of the EMS professional attributed to 4.4% of the EMS earnings.

## Summary

The data were analyzed and presented in this chapter. A description of the sample including demographic characteristics, job related characteristics were followed by the means, and modes of the data. Next, comparisons were made by utilizing cross-tabulations and chi-squares. Regression analysis of the data followed. Chapter V concludes the thesis and summarizes the findings from the study by discussing the results and findings in relation to the hypotheses of the present study. This is followed by recommendations for future research.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

This chapter serves as the final chapter of the present study. It is comprised of an overview of the problem, hypotheses, and method used to conduct the present study. It is followed by a discussion of the results and implications for future research.

#### Purpose

The purpose of this study is to identify if gender pay discrepancies are present within the EMS and to identify specifically if factors (education, community size, experience, certification level, and type of employer) contribute to any pay discrepancies between men and women EMS professionals. The present study provides valuable information about the earnings of EMS providers which can be used to help achieve gender equity in EMS. Gender equity benefits not only the individual, but also their society the achievement of which is a continuous process.

#### Summary of Procedures

The design, sample, instrument, measures, and methods for the collection, treatment, and analyses of the data are discussed in this section. Prior to conduction of the study, IRB approval was obtained. The design for the present study was a secondary data analysis. The data was provided by the National Registry of Emergency Medical Technicians' database. The data consists of survey responses from randomly selected EMS professionals from the Longitudinal Emergency Medical Technician Attributes and Demographics Study (LEADS) in 2008.

Although the study contains two sections, a “core” and a “snapshot”, only the data from the “core” was used in the present study.

Participants received the surveys in the mail and voluntarily consented to and completed them. The surveys were returned by the respondents to the National Registry of Emergency Medical Technicians in prepaid envelopes and scanned into the NREMT database. This data was provided electronically with no identifiable features and used in the present study. Specific items examined included salaries for EMS related jobs, gender, education, level of certification, years of experience, size of community, area, organizational affiliation, and hours worked

The sample consists of 1,610 randomly selected EMS professionals who were nationally certified within the United States at the time the survey was completed in 2008. This sample is the largest of its type within the field of EMS. The data addressed the following hypotheses and sub-hypotheses of the current study:

Hypothesis 1: Women EMS professionals are paid less than men EMS professionals.

Hypothesis 2: Factors such as education, level of certification, experience, community size, and type of employer contribute to the pay disparity between men and women EMS professionals.

Sub-hypothesis 1: There is a significant difference between the earnings of men and women EMS professionals who have completed the same level of education.

Sub-hypothesis 2: There is a significant difference between the earnings of men and women EMS professionals who possess the same level of certification.

Sub-hypothesis 3: There is a significant difference between the earnings of men and women EMS professionals with the same years of experience.

Sub-hypothesis 4: There is a significant difference in the earnings between men and women EMS professionals who work in the same types of community.

Sub-hypothesis 5: There is a significant difference between men and women EMS professionals who work for the same type of employers.

The hypotheses and sub-hypotheses of the present study were addressed by using several tests. The data was self-reported and participants chose one of several pre-determined categories for their responses. The data analysis was performed in three stages (descriptive, comparative, and regression) in order to obtain descriptive and inferential statistics. The results were said to be significant at an alpha level of .05. Earnings from EMS work within the past year served as the dependent variable and gender, education, level of certification, years of experience, type of employer, and type of community were considered independent variables in the present study. Each variable was examined independently and then the independent variables were controlled for later within the study during the regression analysis.

#### Summary of the Findings

The findings of the present study were used to examine gender pay differences within the Emergency Medical Services. The sample consisted of 1,610 randomly selected EMS professionals. The majority of all respondents were men, were white, were married, and had some type of college degree. Only 11.3% of EMS professionals worked in rural communities. Approximately half of all the respondents reported being a paramedic and reported having less than 5 years of experience as an EMS professional. The average number of years of experience

for EMS professionals was 3-4 years, and the average numbers of hours worked a week was 17-40.

Almost a third of all respondents reported earning less than \$30,000 within the past year from all sources and the majority of respondents reported earning between \$0 and \$29,999 from EMS related work. Approximately half of the respondents reported working between 17-60 hours per week. Approximately 40% of all providers worked for a fire-based agency. The average gross income from all sources was \$30,000 to \$39,999. The average earnings within the last year for EMS work for all EMS professionals were identified in the range of \$20,000 to \$29,999.

Comparisons were made by performing cross-tabulations and Chi-square tests which showed that the relationships between gender and EMS earnings, years of experience, type of employer, type of community, level of certification, and type of organization were all statistically significant with p values less than or equal to .05. Overall, men earned more income than women. The representation of men EMS providers in the fire service was greater than men working for other types of organizations. Women were represented in private agencies more than men EMS professionals. Approximately the same percentage of men and women reported having less than 5 years of experience. Men appeared to stay longer in EMS than women. Half of all women EMS professionals were EMT-Basics and half were Paramedics. Men accounted for a greater percentage of the more advanced level of certification (EMT-Paramedic) than women. The largest difference between representation of men and women by the size of the communities were found in rural areas. Men and women EMS professionals were found to be very similar in their level of educational attainment and the relationship between gender and education was found to be not significant.



A general linear regression model was used to determine the relationship between EMS earnings and gender, level of certification, years of experience, hours worked, type of employer, and community size. Education was omitted from the model because of the equal gender representation. The regression analyses indicate that the largest affect on EMT earnings is produced by the level of certification, then years of experience, followed by the number of hours worked per week. Type of community and type of EMS employer were also found to be significant. Gender was also found to be significant. Women EMS professionals were identified as making significantly less than men EMS professionals. Only 48.8% of EMS earnings could be attributed to the years of experience, hours worked, type of employer, community size, gender, and level of certification of the EMS professionals.

### Conclusions

Based upon the findings and limitations of this study, gender pay disparities are found to exist within the Emergency Medical Services. The significance of this claim is supported by both the previous research and the analysis of the data provided from the Longitudinal Emergency Medical Technician Attributes and Demographics Study in 2008. Level of certification, years of experience, type of EMS employer, hours worked a week, community size, and gender contributed to 48.8% of the EMS professional earnings from EMS related work. Gender was attributed to 4.4% of the EMS professional's EMS earnings.

The remainder of this section is guided by the hypotheses and sub-hypotheses of the present study.

*Hypothesis 1: Women EMS professionals are paid less than men EMS professionals.* The majority of women were found to be grouped in the lowest income category. As the income level

increased, the percentage of women prevalent in the high income brackets continued to decrease. Although almost half of the men reported their income to be in the lowest category, the percentage of men in both the middle and highest income ranges was very similar.

*Hypothesis 2: Factors such as education, level of certification, experience, community size, and type of employer contribute to the pay gap between men and women EMS professionals.* Education, level of certification, years of experience, community size, and type of employer were separately examined in relation to the gender of the EMS professionals. The educational attainment of both men and women was found to be very similar and therefore, it was not analyzed in the regression model. The remaining factors along with the gender of the EMS professional were controlled for using a general linear regression model. All of the factors were found to have a significant effect on the earnings from EMS related work. As each factor was added into the regression model, the significance of gender in relation to the earnings of the EMS professional became less important although gender still remained statistically significant. The hypothesis was supported by the data.

*Sub-hypothesis 1: There is a significant difference between the earnings of men and women EMS professionals who have the completed the same level of education.* Men and women EMS professionals were similarly represented in all pre-determined categories related to educational attainment. Comparisons between men and women EMS professionals found the relationship between gender and education level was not significant. This sub-hypothesis from the present study was not supported by the analyses.

*Sub-hypothesis 2: There is a significant difference between the earnings of men and women EMS professionals that possess the same level of certification.* Half of women EMS professionals occupied the lowest certification level of EMT-Basic and half occupied the Paramedic level. When compared to men, a larger percentage of men occupied the higher level of

certification than the women. EMT-Intermediates were omitted because of the lack of respondents in this level. When the relationship between gender and level of certification was addressed in comparisons and regression, the relationship was determined to be statistically significant. The hypothesis was supported by the data and the level of certification was found to be the most significant factor in relation to the earnings of an EMS professional.

*Sub-hypothesis 3: There is a significant difference between the earnings of men and women EMS professionals with the same years of experience.* The percentage of men and women EMS professionals with less than 5 years of experience was very similar. The percentage of men occupying the highest number of years experience was almost 10% more than the women. The relationship between gender and years of experience was addressed and found to be statistically significant in both the comparisons and regression. The amount of experience was found to be the second highest significant contributing factor to the EMS earnings of EMS professionals. The hypothesis was supported by the analyses.

*Sub-hypothesis 4: There is a significant difference in the earnings between men and women EMS professionals who work in the same types of community.* The representation of women EMS professionals in rural areas was almost three times higher than men. With the exception of medium sized towns in which the percentage of men was greater, the representation of men and women EMS professionals in the other community categories was almost equal. When the relationship between gender and community size was analyzed, the results were found to be significant. The regression model results demonstrated that the type of community had a significant effect on the earnings of EMS professionals. The results supported the hypothesis.

*Sub-hypothesis 5: There is a significant difference between men and women EMS professionals who work for the same type of employers.* The majority of men EMS professionals reported working for fire based services. The relationship between men and women in fire-based

services was almost 2 to 1. The majority of women EMS professionals reported working for private agencies. The relationship between employer type and gender was found to be significant, as was the impact of employer type on the earnings of the EMS professional. The findings of the analyses supported the hypothesis.

### Discussion and Implications

The findings from the present study indicate that gender is significantly related to the employer type, level of certification, community size, education, and years of experience of the EMS professional. When employer type, level of certification, community size, hours worked, years of experience, and gender were taken into account, 48.8% of the EMS earnings were explained. Gender, when considered by itself in regression analysis, accounted for 4.4% of the EMS professional's earnings. The findings from the present study continue to support previous research indicating that gender pay parity within the Emergency Medical Services has yet to be achieved (National Highway Traffic Safety Administration, 2008). Forthcoming LEADS research by Studnek (2011) identifies an earning difference ranging from \$7,000 to \$11,000 per year for EMT-Basics and even more for Paramedics in favor of men over women throughout the period of 2000 to 2008.

According to Blau & Duncan's (1965) Status Attainment Model, factors such as education can influence an individual's mobility (both upward and downward) within a class system. The roles of social class and aspiration were also found to influence an individual's mobility in the Status Attainment Model used as the foundation for this study; however, these factors were unable to be addressed by the available data. The EMS professionals' social class and aspirations might help explain some of the gender pay difference identified in the present

study. Additionally, other contributing factors such as family commitments, stereotypes of job requirements, turnover rates, and aspiration for high-level positions may also influence the gender pay disparity and was not addressed in this study (Williams, 1974).

The findings also suggest that equity in educational attainment between men and women EMS professionals has almost been achieved. Although the findings associating gender and education were found to be not statistically significant in the present study, they do not support the cessation of educational attainment for EMS professionals. Instead, the findings imply that men and women are similarly approaching their educational accomplishments within the EMS profession. Bobbitt-Zeher (2008) reported the gender wage gap for those with less education is substantially higher than college-educated workers from the same cohorts, but this idea is not supported by the findings of the present study. This difference between the previous research findings and those of the present study may be contributed in part to the certification requirements of the EMS profession. Because certification is associated with competency, a lack of emphasis to pursue additional training and educational attainment may not be viewed as a priority by some EMS professionals since their compensation may be based on their certification level alone. The lack of increased compensation for those EMS professionals who advance their education may also contribute to the percentage of men and women who hold or seek more advanced educational degrees.

The findings of the present study also indicate that more women occupy the lower level of certification as EMT-Basics when compared to men, what might be viewed as a “pink work ghetto” according to some gender scholars like Scott, Risman, West and Fenstermaker. Men continue to out represent women in the highest pay levels. This finding may be a result of personal choices to accept the increased responsibility associated with a more advanced certification level. During the present study, the number of hours worked by the EMS professional was identified as a potential factor that could influence any gender wage disparities.

To further explore this explanation, a cross tabulation of gender and the number of hours worked a week by men and women EMS professionals was performed and the results appear in Table 10. Men (31.1%) reported working 17 hours a week or less in EMS compared to women (43.5%). The relationship between gender and hours worked a week was determined to be statistically significant ( $p=.000$ ) by using a Chi-squared analysis. Table 11 reflects the regression summary which examined the EMS earnings after controlling for level of certification, years of EMS experience, gender, type of employer, type of community, and for the number of hours worked a week by omitting those EMS professionals who worked less than 17 hours a week. After analyzing the regression, the gender of the EMS professional who worked 17 or more hours a week was found not to be a significant ( $p=.957$ ) predictor of the EMS earnings. The gender of EMS professionals who worked 17 or more hours a week contributed to only 1.6% of their EMS earnings. The number of hours men and women work in EMS may be influenced by their roles at home, other work obligations, ability to volunteer, or many other factors that were not addressed in this study. Furthermore, the income of those professionals who work more hours a week would be expected to increase unless they volunteered their time or were employed in a salaried position that was not dependent on the number of hours a week they worked.

Previous research also suggests that EMS professionals with the highest level of training (EMT-Paramedic) are more likely to work in private ambulance organizations, the very organizations that are more likely to operate outside of EMS markets (Chandler, 2007). Higher percentages of women were found to be employed in private agencies. According to the National Highway Traffic Safety Administration Report: *EMS Workforce for the 21<sup>st</sup> Century: a National Assessment* (2008) both municipal and fire-based EMS services have higher pay than hospital-based and private EMS services. This suggests that men which are represented more within fire based agencies automatically have an advantage in earning more income than women based on their type of employer alone.

Another factor identified as having a significant role in the earnings of EMS professionals was found to be the type of community the professional worked in. Previous research reported that people who reside in the urban fringe of cities have been identified as having higher socio-economic status than those who live in central cities, largest cities, medium cities, small towns, and the lowest is rural areas (Blau & Duncan, 1965). Women in EMS were found to be disproportionately servicing the rural areas when compared to men EMS providers. This suggests that women are at a disadvantage for earning increased income based on the size of the community they serve. Chandler (2007) identified that in many non-rural emergency medical services, private or municipal agencies are the most likely type of agency used to provide care.

Years of experience was also found to be a significant factor in the earnings of EMS professionals. For Harrison, Tilly & Bluestone (1986), higher than average wages are payoffs to experience in many work settings. Mitra (2003) also suggested identified that greater work experience has lead to significant wage premiums, which was supported by the findings of the present study. Although a similar percentage of men and women reported less than 5 years of experience in EMS related work, the longevity of men in EMS was suggested. Suggested theories involving family roles and intermittent employment by women may influence the total number of consecutive years of experience, but do not decrease the actual years of experience one obtains. Although a potential delay in employment may influence the recruitment of an individual, those within the medical field are required to conform to continuing educational requirements to maintain certification and competency within the profession. Although the present study attempts to identify factors that impact the gender wage disparity in EMS, it is not without limitations. Because so many different factors are intertwined in both gender and equity, it is impossible to identify and address them all. Other possible reasons that a pay disparities in EMS may exist includes factors such as character and personality traits, behaviors, and other job characteristics that were beyond the course and scope of the present study and thus not explored. One of the

greatest limitations of the present study involved the categorization of the data. Although relevant information on the earnings of EMS professionals was obtained, interval data would have provided more information about any gender wage disparities. Other data, such as the number of hours worked a week if provided in interval instead of ordinal form, could have also provided more information about the factors influencing the earnings of EMS professionals. The specific values of categorical data would have made the comparisons of the overall findings more precise.

### Contributions of the Present Study

The findings from the present study are helpful in identifying disparities in the earnings between men and women Emergency Medical Service professionals, an area scarcely examined in previous research. The predomination of men in EMS (Monosky, 2003) continues to be supported by this study. The findings and suggestions of the present study can also provide valuable information on factors that may influence the compensation of current and future EMS professionals of all levels. The present study suggests that experience, level of certification, employer type, and gender all significantly impact the earnings of EMS professionals. By better understanding the role gender has in the factors (education, level of certification, type of community, type of employer, and years of experience) that affect compensation and earnings, it can promote equity. According to Penner (2008), identification of the factors that play a role in gender differences may lead to insight. These insights may, in turn, influence policy, actions, and behaviors that seek to promote positive improvements in both the socio-economic status of individuals and their respective society. The findings from the present study certainly serve as a basis for helping to understand and possibly reduce gender pay differences in the Emergency Medical Services by identifying predictors of gender wage disparities.



### Recommendations for Further Study

No study is without recommendations for improvement that future research may choose to assess. For example, in the future, research wanting to build upon the findings in this study may want to examine the factors (i.e. education, experience, employer type, community size, gender, and level of certification) that were addressed in the present study over an extended period of time; that is, to engage in a longitudinal study. This type of longitudinal study would provide valuable information about the disparities and factors that contribute to the earnings of EMS professionals over time. Additionally, future research could assess the effects of other factors such as personality, behavior, family roles, and beliefs in the exploration of gender differences in EMS. Extending beyond gender alone, additional future research may seek to explore the relationship between continuing education practices and field competency. The effects of intermittent employment on competency and the provision of EMS care could also be explored. EMS professionals' beliefs about the importance of education and professional development could also be addressed in future research.

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## APPENDIX A

Longitudinal Emergency Medical Technician Attributes & Demographics Study 2004

Appendix A removed due to copyright.

APPENDIX B

Institutional Review Board Approval

November 16, 2010

Dr. Salvatore Sanders, Principal Investigator  
Ms. Cornelia Bryan, Co-investigator  
Department of Health Professions  
UNIVERSITY

RE: HSRC Protocol Number: 074-2011  
Title: Gender Pay Disparities in the Emergency Medical Services

Dear Dr. Sanders and Ms. Bryan:

The Human Subjects Research Committee has reviewed the abovementioned protocol and determined that it is exempt from full committee review based on a DIIIS Category 4 exemption.

Any changes in your research activity should be promptly reported to the Human Subjects Research Committee and may not be initiated without HSRC approval except where necessary to eliminate hazard to human subjects. Any unanticipated problems involving risks to subjects should also be promptly reported to the Human Subjects Research Committee.

The HSRC would like to extend its best wishes to you in the conduct of this study.

Sincerely,

Peter J. Kasviňsky  
Dean, School of Graduate Studies and Research  
Research Compliance Officer

PJK/cc

c: Mr. Joseph Mistovich, Chair  
Department of Health Professions

## APPENDIX C

### Tables 3

Table 1. The demographic characteristics of EMS professionals in the 2008 LEADS project

Factor	Frequency	Percent
<i>Gender</i>		
Male	1096	72.0
Female	426	28.0
<i>Race</i>		
American Indian/Alaska Native	58	3.6
Native Indian/ Pacific Islander	18	1.1
Asian	75	4.7
Hispanic	203	12.6
Black	118	7.3
White	1138	70.7
<i>Marital status</i>		
Married	912	54.9
Not married	748	45.1
<i>Level of Education</i>		
Didn't complete high school	1	.1
High school/ GED	129	7.8
Some college	640	38.7
Associates	411	24.8
Bachelor's	362	21.9
Graduate	111	6.7
<i>Type of Community</i>		
Rural area	163	11.6
Small town	397	28.1
Medium town	237	16.8
Large town	126	8.9
Mid-sized city	157	11.1
Suburb of mid-sized city	44	3.1
Large city	212	15.0
Suburb of large city	75	5.3



Table 2. The job characteristics of EMS professionals in 2008 project

	Frequency	Percent
<i>Level of practice</i>		
First responder	8	.5
Basic	602	36.5
Intermediate	53	3.2
Paramedic	834	50.6
Temporarily not practicing	97	5.9
Permanently not practicing	54	3.3
<i>Type of employer</i>		
Fire based	502	39.9
County or municipal	179	14.2
Private, for profit	239	19.0
Private, not for profit	112	8.9
Hospital based	122	9.7
U.S. Federal government(non-military)	22	1.7
Military	25	2.0
Not affiliated	7	.6
Other	51	4.1
<i>Hours worked per week</i>		
0	26	1.8
1 to 8	279	19.5
9 to 16	187	13.1
17 to 40	271	19.0
41 to 60	481	33.6
More than 60	186	13.0
<i>Gross earnings</i>		
\$0	32	2.0
\$1 to \$999	16	1.0
\$1,000 to \$9,999	101	6.2
\$10,000 to \$19,999	145	8.9
\$20,000 to \$29,999	191	11.7
\$30,000 to \$39,999	265	16.2
\$40,000 to \$49,999	237	14.5
\$50,000 to \$59,999	221	13.5
\$60,000 to \$74,999	203	12.4
\$75,000 to \$99,999	139	8.5
\$100,000 or more	86	5.3

Table 2. Continued The job characteristics of EMS professionals in 2008 project

	Frequency	Percent
<i>EMT earnings</i>		
\$0	316	19.2
\$1 to \$999	97	5.9
\$1,000 to \$9,999	210	12.8
\$10,000 to \$19,999	134	8.1
\$20,000 to \$29,999	147	8.9
\$30,000 to \$39,999	182	11.1
\$40,000 to \$49,999	189	11.5
\$50,000 to \$59,999	154	9.4
\$60,000 to \$74,999	114	6.9
\$75,000 to \$99,999	79	4.8
\$100,000 or more	23	1.4
<i>EMT experience</i>		
Never worked as an EMT	120	7.2
Less than 1 year	237	14.3
1 – 2 years	217	13.1
3 – 4 years	252	15.2
5 – 7 years	265	16.0
8 – 10 years	205	12.3
11 – 15 years	153	9.2
16 – 20 years	102	6.1
21 or more years	110	6.6

Table 3. Percentages of men and women EMS professionals and their EMS earnings

EMS Earnings	Men	Women
\$0 to \$29,999	48.8%	70.1%
\$30,000 to \$49,999	24.8%	16.8%
\$50,000 or more	26.4%	13.0%

Table 4. Percentages of men and women EMS professionals and their years of experience

Years of experience	Men	Women
Less than 5 years	46.0%	47.1%
5 to 10 years	28.3%	36.6%
11 or more years	25.8%	16.3%

Table 5. Percentages of men and women EMS professionals and their levels of certification

Level of Certification	Men	Women
EMT-Basic	38.6%	50.0%
EMT-Paramedic	61.4%	50.0%

Table 6. Percentages of men and women EMS professionals and the communities they serve

Type of Community	Men	Women
Rural area	7.8%	22.4%
Small town	26.9%	28.4%
Medium town	18.4%	11.6%
Large town	9.8%	7.5%
Mid-sized city	11.6%	10.4%
Suburb o fringe of a mid-sized city	3.5%	2.4%
Large city	16.0%	13.1%
Suburb or fringe of large city	6.2%	4.2%

Table 7. Percentages of men and women EMS Professionals and their types of employers

Type of Employer	Men	Women
Fire-based	46.4%	22.6%
County or municipal	12.6%	18.2%
Private, for profit	18.1%	23.3%
Private, not for profit	6.4%	13.0%
Hospital- based	8.5%	13.4%
U.S. Government, non-military	2.1%	.3%
Military	1.8%	2.7%
Not affiliated	.6%	.3%
Other	3.5%	6.2%

Table 8. Percentages of men and women EMS professionals and their highest level of education

Highest level of Education	Men	Women
High school/ GED	8.1%	6.9%
Some college	38.6%	37.9%
Associates degree	24.9%	26.4%
Bachelor's degree	21.6%	23.1%
Graduate degree	6.8%	5.7%



Table 9. Summary of linear regression for variables predicting EMS earnings

Variable	Unstandardized	Unstandardized	Beta	T	p
	Coefficient	Coefficient			
	B	Std. Error			
Level of certification	1.741	.153	.318	11.378	.000
EMS experience	.331	.033	.256	10.086	.000
Gender	-.393	.142	-.064	-2.757	.006
Hours worked per week	.449	.050	.230	8.943	.000
Type of employer	.964	.124	.180	7.759	.000
Type of community	.223	.029	.181	7.707	.000

Table 10. Percentages of men and women EMS Professionals and their hours worked per week

Hours worked per week	Men	Women
0	1.4%	3.3%
1 to 8 hours	16.3%	28.6%
9 to 16 hours	13.4%	11.6%
17 to 40 hours	19.4%	17.6%
41 to 60 hours	35.7%	27.1%
More than 60 hours	13.9%	11.9%

Table 11. Summary of linear regression for variables predicting EMS earnings of EMS professionals working 17 or more hours per week

Variable	Unstandardized	Unstandardized	Beta	T	p
	Coefficient	Coefficient			
	B	Std. Error			
Level of certification	1.634	.166	.314	9.869	.000
EMS experience	.373	.036	.331	10.323	.000
Gender	-.008	.154	.002	.054	.957
Hours worked per week	.414	.092	.129	4.514	.000
Type of employer	1.222	.132	.268	9.252	.000
Type of community	.186	.030	.178	6.300	.000