The Impact of Academic Achievement and Professional Certification on Florida Fire Service Efficiency

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ABSTRACT

The need for professionalism has long been recognized by the Florida fire service. While it is understood that formal education and professional certification are needed, the problem was little research has been conducted concerning the types of degrees and professional credentials that are available. The purpose of this research was to investigate the educational opportunities available to Florida chief fire officers and determine what relevances these certifications had on the efficiency in which their departments operated.

The process used two research methodologies**.** First, a historical perspective was taken by reviewing relevant literature and previous research conducted relating to the topic. Next, a correlation study was conducted by developing and tabulating the results of a 27-question survey that was posed to 94 Florida fire chiefs. These two designs were used to answer the following questions:

Question 1. What academic degrees and professional certifications are available to Florida chief fire officers?

Question 2. What are the competency requirements for these degrees and certifications?

Question 3. What is the availability of these degrees and certification requirements?

Question 4. What percentage of Florida chief fire officers have taken advantage of these degree and certification programs?

Question 5. Is there a correlation between the educational backgrounds of paid career Florida fire chiefs with a minimum employment of 10 firefighters and the level of efficiency in which their departments operate?

The results of this research were the recognition that professional certifications and academic degrees that exist and are available to Florida chief fire officers. It also identified the requirements and the percent of officers that have obtained these certifications. While there are significant requirements for these documents, certifications do appear to influence the efficiency of the Florida fire service, resulting in greater levels of effectiveness, higher levels of productivity and overall efficiency and readiness.

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INTRODUCTION

Every job has skill associated that gives it merit or worth. The proficiency can be very basic to extremely complex. When the task complexity increases, so does the expected level of competence. Professions or careers, typically have educational standards established. The definition of a profession is an occupation or vocation requiring training, while a job is a task or duty (Morris, 1984). In the United States, the fire service has evolved from a job into a professional career. The evolutionary process has caused a dilemma involving a lack of consistent educational standards. Leadership standards in the fire service is expected to change as rapidly as the environment in which it operates (O'Neal, 1997).

The purpose of this research project is multifaceted. It will attempt, through Action Research and Correlation Research methods, to determine and clarify the following questions:

Question 1. What academic degrees and professional certifications are available to Florida chief fire officers?

Question 2. What are the competency requirements for these degrees and certifications?

Question 3. What is the availability of these degrees and certification requirements?

Question 4. What percent of Florida chief fire officers have taken advantage of these degree and certification programs?

Question 5. It is hypothesized that there is a direct correlation between the educational backgrounds of chief officers meeting the state criteria and .

BACKGROUND AND SIGNIFICANCE

For several centuries, the fire service in this country has been a model for technical change. Meeting the constantly changing requirements and demands of various emergency and non-emergency

situations have required the profession to mold, adapt and overcome as have few other career fields. Conditions from extreme heat to frigid cold, flexibility and strength have always been the keys to survival, service provision and meeting the demands and needs of the citizenry. These skills, tasks and techniques change, the information has been disseminated through training programs, seminars, conferences and news bulletins. This is a by-product of an ever changing work environment, the fire service has educated itself well technically. However, the fire service has not faired as well administratively and managerially.

Traditionally, the leaders, officers, and chiefs in the fire service have been selected in several ways. Some public service associations used a democratic process. In the past, popular vote was used to select the best liked candidate. This selection process was not based on qualifications, managerial ability or administrative skill. Often, the selection process was not even based on fire fighting ability. Other officers were chosen based on their longevity, physical size or genealogy in the fire service. None of the selection processes were consistently applied or correlated to their predictability for success. There were no certification programs available in the early days. Florida was not excluded from this inability to certify fire officers. The lack of professional consistency has led to deficiencies and inefficiencies in the fire service.

For years, there has been a realization of the need for government efficiency. This becomes evident when deliberating pubic initiatives to reduce taxation, such as the well-known California Proposition #13 or Massachusetts' Proposition 2½. While nothing is more certain than taxes (Swope, 1998), citizens expect the government to operate in a manner that is similar to private enterprise (Hedley, 1998). When noting the methods and techniques of the open market system, it is expected that

more results can be achieved with fewer resources. Improved levels of efficiency, formalized education has been indicated as a key in the process. New methods of preparing budgets, developing work teams and changing the organizational culture are processes that must be taught and learned; these are not ideals that simply materialize. Efficiency comes through education, training, and planning.

To confirm and verify a fire officer's competency, the Florida State Fire Marshal's Office developed a proficiency examination. In 1983, the first Fire Officer One testing took place. Eligibility requirements to take this exam required several college level courses: Fire Tactics I (FFP 2410), Hazardous Materials I & II (FFP 2500 & FFP 2501, respectfully), Methods and Techniques of Fire Service Instruction (FFP 2150), Fire Protection Systems (FFP 2620), Fire Prevention Practices (FFP 2200) and Fire Company Leadership (FFP 1130). The direction and emphasis of this process were to validate a line officer's level of competency, not their level of managerial ability. The emphasis was on skill/task completion, not on administrative ability, duty, or responsibility. This new exam replaced the older Fire Company Supervision and Leadership certification that did not have an evaluation process and only required four classes (L. McCall, Telephone Interview, September 16th, 1998). This was a progressive step not seen in many parts of the country, but it still did not address the chief fire officer. This deficiency in professional certification and a standard formal education for Florida fire chiefs still exist today. Although several attempts have been made to rectify this dilemma, no agency has been able to initiate a change process to improve the competency and proficiency in which these individuals function.

Slow progress toward the managerial side and establishing formal certifications has become almost a trademark for the fire service. In February 1966, the need for

formalized education was first addressed. At the Wingspread Conference in Dothan, Alabama, it was proclaimed that the surest manner to achieve professionalism in the fire service was through a deliberate education program leading to an extensive knowledge base that was acceptable to the academic community (Latin, 1992), but little process was shown. In June of 1987, the National Fire Protection Association, in conjunction with the Educational Testing Service, formulated a voluntary certification program for Fire Inspectors and Fire Officers ("Certifications for Inspectors and Officers," 1987); few took advantage. In 1994, the National Coordinating Council for Emergency Management (N.C.C.E.M.), currently known as the International Association of Emergency Managers (I.A.E.M.), initiated a certification program for emergency managers. The program was open to anyone who could meet the five stringent criterions: formal education, experience, contribution to the field, public involvement, and training. The International Association of Emergency Managers developed this mechanism to create and maintain awareness of professional standards and professionalism in the field of emergency management ("C.E.M. Certification," 1994). Of the approximate 2000 total members, only 662 are certified emergency managers. Of the 662, less than 10% are chief fire officers. "Present initiatives to provide a formal certification process for chief fire officers comes from the International Association of Fire Chiefs" (C.E.M. Certification, 1994). This credential is being designed to emphasize the need for a formal education and a certification process to insure competency and credibility. Competency is expected, not only in the field, but in the board rooms, the commission chambers and the town halls across America. The evolution from the days of volunteer firemen without funding to unionized firefighters with

millions of dollars of support and resources, few organizations have survived this level of change without progressing educationally.

The following section analytically reviews contemporary literature, trade journals and other professional publications regarding the issue of educational standards for fire service careers. While few research projects have actually been conducted in this area, other inquiries have been conducted relating to organizational efficiency. The following studies, reports and opinions acknowledge the awareness for increased levels of instruction and the imperative need for professional certifications. This project attempts to overcome the lack of research in this area. It attempts to examine and identify the availability and effect of educational accomplishments of Florida chief fire officers and the subsequent effect on the efficiency of Florida fire service.

LITERATURE REVIEW

The literature reviewed for this research project includes, but is not limited to: journals, books, newspaper articles, periodicals, electronic correspondences from the Florida State Fire College and the Florida Fire Chief's Association, and the Executive Fire Officer Applied Research Projects from the National Fire Academy.

The Academic Requirement Recognition

Education and training play a critical role in enhancing our capabilities during emergency incidents (Witt, 1996); knowledge is center stage (Beers, Davenport, DeLong, 1998). In the rapidly evolving fire service profession, fire chiefs must be academically and professionally prepared to meet the increasingly complex employment challenges (Latin,

1992). Fire chiefs are expected to have a bachelor's or master's degree to qualify for the position (Richmond, 1998). Viewed as one of the most dangerous and physically demanding occupations (Bockenstedt, 1997), fire fighting lends itself to require mentally well conditioned employees (Dwyer, 1996). Tradition bound fire departments in the United States are going to have to adjust their mission statements to reflect this new reality (Macko, 1996). There must be an increased emphasis on the role of higher education in the continuation of the professionalization of the fire service (Burton, 1993). This educational process brings credentials, esteem, pride, and credibility to the fire profession (Stilp, 1998 and Edelman, 1997).

The Wingspread Conference held in 1966 concluded that a systematic, deliberate progressive movement to a formal education was the surest approach to professionalism (Latin, 1992). In acknowledgment of this, in 1979, the Federal Emergency Management Agency (F.E.M.A.) was established to provide consistency and decrease the fragmentation and duplication of training programs (Saitta, 1993). Fire & emergency managers must have college experience, if recognition of their professional status is going to be maintained (Wingspread, 1997). Chief fire officers need to be educated because for only a gifted leader can leap directly into a high command position and be successful for there is much to learn (Blumenson, 1975). Competency and experience take time. However, through formal education coupled with experience, the time line required to become an effective supervisor can be decreased (Kossen, 1991). To operate effectively and efficiently, the best qualified people must be groomed and promoted to executive command staff positions (Latin, 1992). Continued classroom training is necessary (Ireland,

1998). While on-the-job training is beneficial, these are lessons that cannot be taught or learned strictly in a fire station (Latin, 1992). “Education and professional development are lifelong processes” (Rickey, 1998, p. 16).

Even individuals not directly related to the career fire service field recognize the importance of a formal education in public service. The best public organizations use formal programs to expand, sharpen, and develop leadership knowledge and skills (Blunt and Clark, 1997). During a presentation to an Executive Development class at the National Fire Academy, Mr. Howard M. Markman, Attorney at Law, presented a list of characteristics that managers look for when hiring a fire chief. At the top of this list were education and experience (1998). This sentiment is echoed in a letter dated from Bill Hershman to the author (May 19, 1998), which references a draft of the proposed International Association of Fire Chiefs’ Fire Chief Certification process (1998) and again by German Fire Department in an electronic mail (July 30, 1998). Even though, the application of knowledge is more important than the accumulation of it, the failure to be educationally prepared is a critical flaw in the overall plan for achievement (Staten, 1992). Educational preparedness is the key to professionalism.

The International Quest

Worldwide, fire service managers must increase their professional standing to remain credible to community policy makers and the public (Wingspread, 1997). “In the fire service, professionalism is expected and this professionalism should be grounded in an integrated system of nationally recognized and certified education and training programs” (Wingspread, 1997, p. 3). To assist in this process, several programs are being developed

and implemented. The Canada Chief Fire Officer certification is in the early phases of development, but offers an excellent base for other programs (Hershman, 1998). With requirements, such as academic achievement, experience, and professionally demonstrated competencies, this program offers an opportunity to increase the body of knowledge and establish a formalized education system (Hewitt, 1998). Another program that offers international recognition is the International Association of Emergency Managers's Certified Emergency Manager program; this is the only internationally recognized certification for emergency management professionals (S. Kelly, Personal Communication, May 16th, 1998). This certification was established in 1993 ("C.E.M. Certification," 1994). Individuals that earn this certification can expect improved international recognition, peer acknowledgment, increased salary potential, and self satisfaction ("N.C.C.E.M. Announces ...," 1996). Each of these initiatives offers a mechanism to create and maintain awareness of the professional standards in the field of emergency management ("C.E.M. Designation: Why It's Important for Chief Fire Officers," 1996). Each of these certifications offers an opportunity to increase the professionalism and the credibility of the fire service.

The National Quest

Nationally, there is over 30,000 organized fire departments (Paulsgrove, 1997). The problem of fire officer training and certification revolves around the lack of an adopted standard, inconsistencies in the educational requirements, and implementation process and procedures (Pierce, 1991 & Hartsfield, 1993). The topic of professional requirements is not broached by many authorities in the field. Surprisingly, the National Fire Protection

Association's publication Management in the Fire Service does not mention specific officer training program or implementation of officer training programs (Pierce, 1991).

Today's fire service members are expected to have undergraduate or graduate degrees (Huffman, Nutter, 1998). However, these degrees are often borrowed from other disciplines. In 1982, to assist in specializing this educational process, the National Emergency Training Center (N.E.T.C.) and National Fire Academy (N.F.A.) in Emmitsburg Maryland was opened (Saitta, 1993).

While the recognition for the need is there, little progress has been made over the years until recently. Presently, there is a national initiative to establish a professional standard for fire officers. The International Association of Fire Chiefs is making a tremendous headway toward implementing a national certification program for fire chiefs and chief fire officers (Hershman, 1998). As a standard, it is expected that a fire chief will have a certain number of years of experience and at least a Bachelor's degree as a minimum requirement (Fisher, 1997). However, there does not appear to be a consensus on the definition of leadership or leader; there is only a general agreement that an education is needed in these positions (Hartsfield, 1993). Managing a fire or emergency service department requires a vast array of knowledge that includes, but is not limited to: trend analysis, statistics, communications, financial budgeting, and human resource management (Latin, 1992). The public expects fire officers to not only suppress hostile fires, but to be effective in the areas of management and administration (Malmquist, 1989). Having a degree or particular certification doesn't necessarily make you smarter, but it does teach you to establish goals, set deadlines, make plans and keep long-term

commitments (Stilp, 1998) and helps prevent further losses during emergencies (Henning, 1998). “A formal education offers a rehearsal for the real world” (Alexander, Newman, 1985, p. 23). Career opportunities are for educated people (Drucker, 1982); those who have a strong desire to advance not only personally, but to raise the service to a higher standard (Bush, McLaughlin, 1979).

The Florida Quest

Florida has recognized the need for a formal education. Florida State Fire Marshal Bill Nelson has articulated the vision for the state to have the best educated emergency services in the nation (Huffman, 1998). The quest for knowledge is represented and emphasized in the Florida State Fire College’s official seal. In the upper right-hand corner, there is an open book that represents the never-ending quest for knowledge (1998). On the Florida State Fire College Bureau Chief’s Special Welcome Page, it states that not only is the Florida State Fire College developing programs for this year, they are working hard to prepare the firefighters for the next century (Napoli, 1998). This refers to the distance learning program that is being developed in cooperation with the University of Florida. This initiative will allow Florida firefighters to earn a bachelor’s degree through a distance learning program (Florida State Fire College: General Catalog and Course Schedule, 1998). Even the Florida State Fire College’s motto recognizes the need for an educational base. “Progressio Pere Eruditionem” translates to “Progress through Learning” (Florida State Fire College: Special Welcome, 1998). The Florida State Fire College has offered formal certifications and education to the profession since 1975 (Florida State Fire College: General Information, 1998). If we are going to protect and predict the future, we

have to create it (Drucker, 1998).

In spite of the long standing recognition and the need for a formalized education for Florida chief fire officers, no mandated standard has been initiated and the education level is still highly segregated (Raelin, 1997). On July 1, 1983, the first "Fire Officer One" certification was offered in Florida (L. McCall, Telephone Interview, September 16th, 1998). These educational standards for examination eligibility have progressed to include: Fire Tactics 1 (FFP 2410), Hazardous Materials 1 & 2 (FFP 2500 & 2501, respectfully), Fire Protection Systems (FFP 2620), Methods and Techniques of Fire Service Instruction (FFP 2150), and Fire Prevention and Inspection (FFP 1130). These requirements are clearly stated in the Florida State Fire College: General Catalog and Course Schedule (1998). However, these courses focus on technical skills, not management skills and leadership.

In summary, the reviewed literature indicates and identifies the need for formalized professional certification for chief fire officers and offers a historical perspective of the options, alternatives, and opportunities that are available in this area.

PROCEDURES

Definition of Terms

Associates Degree - typically a 2-year community college degree program that may be transferrable to a four-year degree program. This degree can be specialized for a particular field or area of expertise.

Bachelors Degree - typically a four-year college or university degree. Also, known as an undergraduate degree.

Chief Fire Officer - individual selected to manage and lead the fire service organization.

Distance Learning Program - degree programs that do not require the normally expected classroom participation; lessons are given via mail, Internet, or remote classrooms.

Executive Fire Officer Program (E.F.O.P.) - Nationally recognized certification that requires a four-year commitment to the National Fire Academy.

International Association of Emergency Managers (I.A.E.M.) - Formally known as the National Coordinating Council on Emergency Management (N.C.C.E.M.), this nationally recognized, nonprofit organization is dedicated to promoting the goal of saving lives and property prior and during emergency incidents.

International Association of Fire Chiefs - independent organization dedicated to providing leadership to chief fire officers through education, vision, and the enhancement of their educational abilities.

Masters Degree - advanced degree that builds from an undergraduate degree providing extensive knowledge and development.

National Emergency Training Center (N.E.T.C.) - Federally-funded institution, located in Emmitsburg, Maryland, dedicated to educating emergency service professionals.

National Fire Academy - Portion of the National Emergency Training Center dedicated to the fire service.

National Coordinating Council of Emergency Managers - See International Association of Emergency Managers.

Wingspread Conference - A meeting held every ten years to discuss and project the future of the fire service.

The desired outcome of this research project was to:

Question 1. Determine what academic degrees and professional certifications are available to Florida chief fire officers.

Question 2. What are the educational requirements needed for these degrees and certifications?

Question 3. What is the availability of these degree and certification requirements?

Question 4. What quantity of Florida chief fire officers have taken advantage of these educational programs?

Question 5. Determine if there is a correlation between the educational backgrounds of paid career Florida fire chiefs with a minimum employment of 10 firefighters and the level of efficiency in which their department operates?

Population

To evaluate the research questions, several functions had to be accomplished. A study was conducted of the current literature available from the Learning Resource Center at the National Fire Academy located in Emmitsburg, Maryland, the library at the University of South Florida located in Tampa, Florida and the library at the University of Sarasota in Sarasota, Florida was reviewed. Many on-line resources were investigated, compared and contrasted. This allowed a historical perspective to be obtained.

Another task that was necessary was to determine if an acceptable database existed that would

support the investigation. Following several intense probes of the Internet and telephone calls to the Florida State Fire Marshal's Office and the Florida State Fire College, it was determined that the information that was needed was not available and would have to be collected and compiled independently. Several steps would be needed in this process. A survey instrument would have to be developed and a representative population sample would be required.

To select a representative population, a database of Florida fire departments had to be developed. Obtained from the Florida Fire Chiefs Association at 140 South Atlantic Avenue, Suite #303 in Ormand Beach, Florida, the 1998 membership names and department addresses were compiled into a database using an SPSS format. This membership represents approximately 1400 members with the majority of the organized fire department in the state of Florida being denoted, especially those that were paid. There are some small volunteer organizations that are not members of this association. Due to the salary status of these organizations, these departments would have been excluded from the survey anyway. A total of 447 fire departments is listed by the Florida Department of Insurance as participating in the statewide reporting system. Most of these departments are represented in the Florida Fire Chiefs Association. Logistically, surveying every member of these organizations was not feasible. A sample population was needed.

To develop a representative sample population, several tasks had to be completed. Many of the members of this database are not chief fire officers and many members are from the same department. Due to the potentially sensitive nature of the information and to avoid duplication of records, only chief fire officers were selected to receive the survey. Once this population was defined and restricted, due to the limited number of individuals that met the criteria, the statistics from the entire population was

requested.

Due to the lack of an acceptable database of statistical records, a survey instrument was needed and developed. The survey (Appendix B) was a 27-multiple choice and fill-in-the-blank questionnaire, which covered basic organizational information. On August 15, 1998, the survey, complete with a cover letter (Appendix A), a return fax number, and a self-addressed stamped return envelope, was sent to each chief fire officer that met the stated criteria. Anonymity was assured, if desired. The purpose of the survey was conveyed and the importance was emphasized. The final results were offered and have been made available to each respondent in a printed and/or a computer format. The final results are being made available to the Florida Fire Chiefs Association. A total of 312 surveys was mailed. The instructions were clear that each response was to be returned prior to October 1st, 1998. The total number of responses was 140; this was a 44.87% return rate. The return rate was greater than typically expected. A return rate on mail questionnaires is usually between 20-40% (Nachmisa, Nachmisa, 1992).

From this total response, the sample was reduced. To insure that the results would not be skewed due to volunteer departments or departments that were mainly supported by volunteer fire departments, the sample was limited to include only paid fire departments with a minimum employment of ten (10) firefighters. The total number of departments that met the criteria was 94.

To determine the impact of educational achievement and professional certification on the level of efficiency that a department was operating, numerous factors were considered. First, the data was divided into categories according to academic achievement levels: No Degree, Associate's Degree, Bachelors and Master's Degree. The Professional Certification classifications were done in a similar

fashion with the certification classes being: No Certification, Florida Fire Officer One, Executive Fire Officer and Certified Emergency Manager. To determine the level of efficiency, the total number of emergency responses was compared to the total department budget. This ratio was separated by category and classification.

Limitations

There are several limitations and assumptions that pose a threat to the internal and external validity of this research project. The first supposition is that the previously conducted research and articles written that addresses this topic is believed to be valid and accurate. Information that may have been included in this research could be skewed by the original author and offer a tainted view of the subject. Next, it is assumed that the information provided in the 27-question survey that was ultimately used to develop the database for the research was authentic, factual and theoretically sound. As a result of the method in which this database was developed, there is a slight possibility that not all departments meeting the stated criteria were given the option to participate in this analysis. Another possibility is that fewer individuals from one group or classification may have responded than did the other. This is conceivably due to a myriad of reasons from evaluation apprehension to the simple lack of time and commitment. Finally, the time allowed for the research was definitely a limiting factor. The time constraints imposed by the National Fire Academy restricts the depth and breath of this inquiry and lends itself to suggest that further investigation and inquiry in this area is needed and desired. Each of these areas has the potential to skew these conclusions.

Additionally, there may be some ambiguity concerning the causality of the results or over generalization of the findings. This research is designed to display a trend at a certain period in time.

Also, it is assumed that there is some level of consistency in fire service operational components across the state of Florida. The impact of any missing or omitted data has the potential to skew the results or conceal bias. Each of these limitations should be critically considered and systematically evaluated when reviewing this research project.

RESULTS

Question 1. What academic degrees and professional certifications are available to the Florida chief fire officer?

This project identified a number of academic degrees and professional certifications that are or soon will be available to Florida chief fire officers. Many of these degrees and certifications are interrelated, most certification programs require some form of formal education, each to varying stages. Currently, there are 28 of accredited community colleges operating in the state of Florida (Florida Department of Education: Florida Public Community Colleges, 1998). Investigation reveals that 47% offer Associate in Science degree in fire science or fire management. Fewer colleges and universities are accredited to offer four-year undergraduate degrees and an extreme few of these institutions offers a Bachelor's degree specifically in fire science or fire administration. This research reveals that there are currently two scholastic institutions in the state of Florida that support a graduate degree relating to fire administration. These institutions are the University of Florida and the University of South Florida. Both programs are in their infancy and have not awarded any of these degrees to date. Nationally, this research reveals only two organizations offer graduate, or Master's degrees relating to fire administration. These are the University of Cincinnati and the Oklahoma State University. While the availability and probability for advanced degrees in fire administration are minimal, other degrees that

are related to public service are available.

Related degrees are convenient and accessible for chief fire officers. Nearly 100% of the universities listed by the Florida Department of Education offered degrees that could be related to public service or contemporary business practices. Both state and private colleges and universities offered degrees in business administration, public administration, and/or management. Many agendas include undergraduate, graduate, and postgraduate degrees in the same areas.

The financial impact of these programs can be significant. The current cost per credit hour at a Florida state-funded community college is $32.42 (B. Klingensmith, personal communication, September 15, 1998). At the present rate, every three credit hour class will cost $97.26 plus any additional charge for the initial registration, books, laboratory fees, insurance, graduation, etc... . Typically, an Associate Degree in Fire Science consists of 60 credit hours, resulting in a base tuition expense of nearly $2000. Likewise, there are costs associated with time from work and other personal expenses.

As the level of expertise increases, so does the related educational expense. At the undergraduate levels, the state tuition cost increases by over 100% to $69.48 per credit hour. With the typical degree requiring an additional 45 to 60 hours of study, the disbursement for the program can exceed $4,100. for tuition. At the graduate level, a similar increase is seen with tuition cost escalating to $138.83 per credit hour. The additional 45 to 60 hours that builds on the previous degree will result in a tuition cost of over $8,200. Proportionally, the associated cost for books and other services increase. While this cost is significant, other factors can influence the educational process.

Private institutions offer an alternative to the state education system, but at a significantly higher

cost. Depending on the establishment, the cost per credit or semester hour for the undergraduate programs could be $250 or more. On the graduate agenda, prices could be as high as $500 per credit hour. This represents a possible increase of over 350%, respectfully. Boasting exclusive enrollment and specialized instruction, the expense for convenience and assessable is always much greater than the state colleges and universities.

Even though, the traditional classroom schedule still exists, most educational organizations offer scheduling that is conducive to adult students. These schedules include, but are not limited to: weekend classes, evening classes, on-line computer classes and even distant learning and mail order classes. These programs are offered around the state at various locations by assorted institutions.

On the professional certification aspect, few established programs were available for the Florida chief fire officer. These include, but are not limited to: National Fire Academy's Executive Fire Officer Program, the California Fire Chief Certification, the International Association of Emergency Managers's Certified Emergency Manager Certification, the Florida Fire Officer One Certification, Canada's Fire Chief's Certification and soon to be introduced, the International Association of Fire Chiefs' Fire Chief Certification. The latter is to be introduced during the Fire-Rescue International Conference in Louisville Kentucky scheduled for September 1998. Of these programs, none are required to obtain, support, or retain the position of fire chief.

Question 2. What are the competency requirements for these degrees and certifications?

The competency requirements for these certifications vary, as would be expected. The Florida Fire Officer One Certification has the least amount of college level courses to be eligible for the state examination. Requiring seven college level classes: Fire Tactics 1 (FFP 2410), Hazardous Materials 1

& 2 (FFP 2500 and FFP 2501, respectfully), Methods and Techniques of Fire Service Instruction (FFP 2150), Fire Protection Systems (FFP 2620), Fire Prevention and Inspection (FFP 1130), and Fire Company Leadership (FFP 1130), this examination is focused on the technical expertise required to be a fire officer. These 100 question examinations are given monthly at the Florida State Fire College in Ocala or the exam is given quarterly around the state at regional testing sites, which includes Fort Myers, Tampa, Miami, Panama City, Orlando, and Pensacola.

The availability of the required courses is relatively convenient. Many community colleges around the state of Florida offer fire science courses that are compatible with, and acceptable to the requirements of the certifying agency. Many vocational institutions are also certified to instruct the required classes. In addition, these courses are offered at the Florida State Fire College on a regular basis, normally several times each year. While these classes represent the bulk of the requirement for examination eligibility, there are several other significant prerequisites.

The Florida State Fire Officer One examination has several other requirements. All applicants must be certified as a Florida Firefighter. This implies an entire set of requirements that includes 450 classroom hours, a clear legal background, and being medically fit. Drawbacks to the Fire Officer One credential are that there are no recertification requirements and no emphasis is given to the managerial necessity essential for success as a Chief Fire Officer.

Another testimonial to a fire officer's competence is the Certified Emergency Manager Certification. This is offered by the International Association of Emergency Managers, formally known as the National Coordinating Council of Emergency Managers. The requirements for this certification are much more concentrated on the administrative and managerial aspect of the emergency

professional's career. The educational requirement includes a four-year undergraduate degree in business administration, public administration, or comparable programs. This requirement may be substituted with a combination of 45 credit hours of related college courses and 100 additional hours for documented affiliated training.

Additional training hours must be documented above and beyond this degree. Advanced college level training must total 200 hours. Subdivided into general management and emergency management, these hours must be divided into distinct separate areas with no more than 25% coming from any single area. This ensures a wide diversity and variance in the individual's background, experience, and education.

The Certified Emergency Manager Certification has several other requirements. Some of these include practical experience, where documented proof must be submitted of involvement in a major, critical incident. Contributions to the advancement of the profession must be documented. Proof in this area can be shown by having articles published, serving on a community board or engaging in public education or speaking. Involvement in public activities is required, as are personal references and an application fee.

The membership and application fee are considerable. To become a member of the International Association of Emergency Managers, the annual expense is $100 with a $10 initiation fee. This entitles the member many benefits which include monthly newsletters, up-to-date information concerning emergency management, and a reduced application fee for the C.E.M. certification application. To receive the application packet requires a fee of $60. With membership, the application submission fee is $250; without membership, the cost soars to $300. The total expense can be as much

as $410, but the benefits of an international certification are immense.

The Canadian version of this certification is the Canada Fire Chief Certification. Implemented in February of 1992, this credential appears to have many similar requirements as the Certified Emergency Manager Certification. It requires experience, academic achievement, community involvement, and professional association. In addition, this certification requires continuous learning and specific competencies to be demonstrated. There are three levels of professional designation available: General, Intermediate, and Advanced. Each has specific requirements and standards to meet.

The expense necessary for this program has to be considered. First, all applicants must be a member in good standing with the Canadian Association of Fire Chiefs (C.A.F.C.). Membership in this association cost $105 annually. This is followed by the application fee, which is a mere $60. Finally, an assessment charge that is an additional $460. The total is $625. for certification. None of these certifications are currently held by any United States Chief Fire Officer.

The final certification considered is the proposed Professional Chief Certification that is being developed by the International Association of Fire Chief. The cost and final details are still being developed. The draft of this document states varying levels of education, experience, and training will be required. While the final document awaits its debut in Kentucky, it is sure to include an educational element.

Each of these certifications attempts to improve the fire service. The goal is to establish a standard for chief officers, to increase the body of knowledge, to have a recognition process, and to develop highly qualified fire officers. By establishing clearly defined career development paths, a model can be developed for performance and professional competency. This will allow future trends to be

predicted and considered when making organization policies and procedures.

Question 3. What is the availability of these degrees and certification requirements?

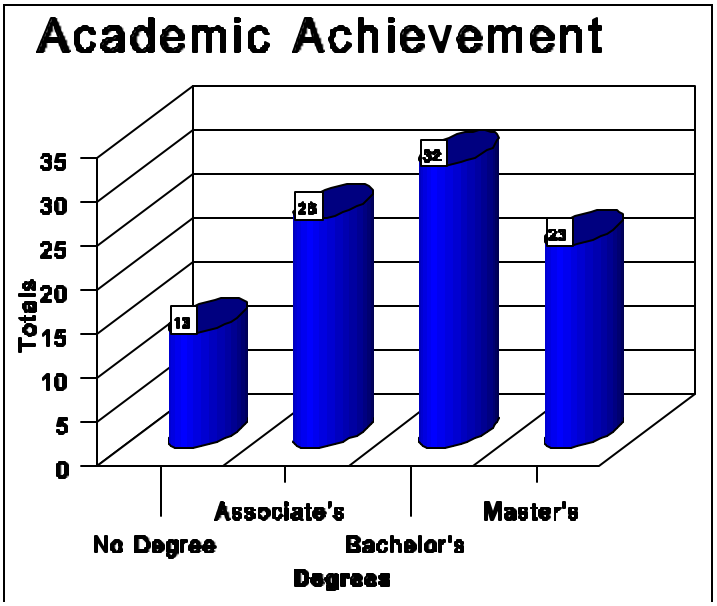
The educational standard required for the aforementioned degrees and certifications are accessible and convenient to most everyone in Florida. Either thru Internet access, on-site training programs, or in the traditional classroom setting, within an hour driving time, these classes can be obtained. Instructors from the International Association of Fire Instructors or Instructors from the Florida State Fire College can be seminars, and credits can be earned. Individuals with the determination and drive can excel and achieve.

If funding is an issue, there are several solutions. Government loans are available at a nominal interest rate and payment does not have to begin until the degree program is complete. Scholarships and grants are available to those who qualify. Procurement of these funding sources can be investigated at the educational facility thru the college counselor, or on several websites, such as the International Association of Fire Chiefs Home Page, which list over a dozen funding sources. Even most colleges and universities offer short term loans at no interest to students in good academic standing. Funding sources are available to ease the financial burden associated with higher levels of education.

Question 4. What quantity of Florida chief fire officers have taken advantage of these degree and certification programs?

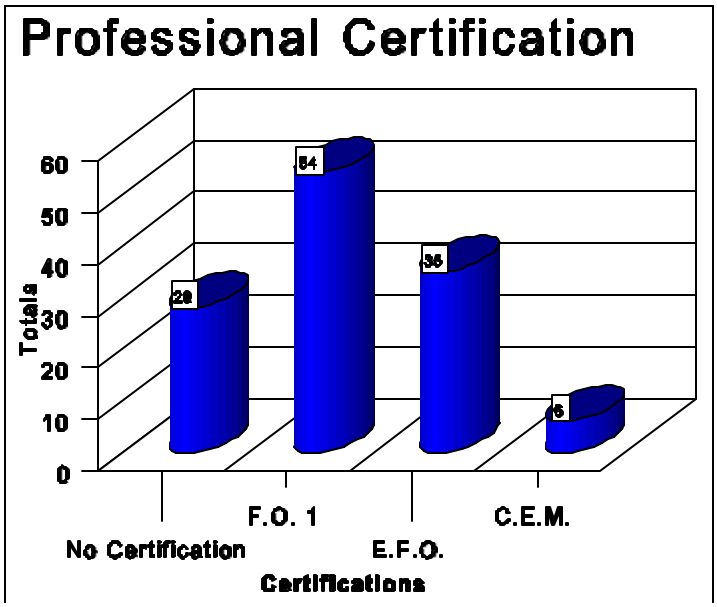
This information was tabulated from a database that was developed from the 27-question survey that was mailed out. It was quantified in several forms to offer the best possible statistical perspective. The data was divided into several academic degree categories and segregate by certification classifications. Beginning with the academic degrees, categories have been separated into:

No Degree, Associate's, Bachelor's and Master's. Even though multiple degrees can be earned, because these degrees build and progress sequentially, only the highest degree classification was used. These facts were calculated using measures of frequency to determine the total number for each academic education and professional certification levels. Of the 94 Florida chief fire officers selected for the study, the academic totals were as follows: No Degree resulted in a total of 13, or 14%, Associate's Degree equated to 26 or 28% of the total population; Bachelor's Degree category had 32 or approximately 34% and finally the Master's Degree classification generated 23 or 24.5%.



Professional Certification classifications were tabulated in a similar manner. Certifications were grouped and limited to the following classifications: No Certification, Fire Officer 1, Executive Fire Officer, and Certified Emergency Manager. Because these

certifications do not progress sequentially, respondents may have entries in multiple categories. This will create a total number of certifications greater than the total number of respondents. The categories in this area were: No Certification, Fire Officer One, Executive Fire Officer and Certified Emergency Manager. These figures were tabulated using measures of frequency to determine the total number for each professional certification. Of the 94 Florida Fire Chiefs that were included in this research, the results are as follows: No Certification resulted in 28 or nearly 30%, Fire Officer One equated to 54 or 57.4%, Executive Fire Officer equaled 35 or 37.2% and the Certified Emergency Manager generated 6 or 6.4%.



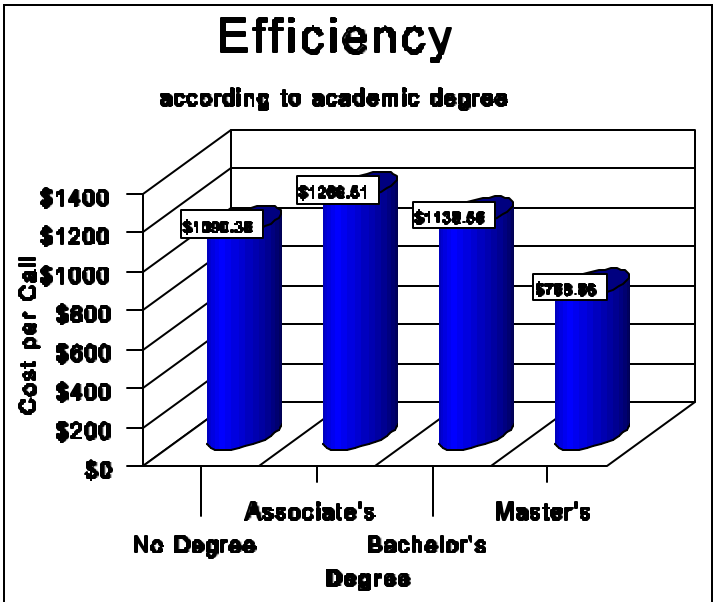
Question 5. Is there a correlation between the educational achievement and professional certifications of paid career Florida fire chiefs with a minimum employment of 10 firefighters and the level of efficiency in which their department operates?

Using the same data base used in Question #4, an attempt was made to correlate the educational levels and professional certifications with the level of efficiency that each department operates. This task was complicated and convoluted by the various services that are provided by each organization. The various levels of commitment to public service and safety compounded and confused the issue. To give consideration to each of these variables and attempt to account and consider these irregularities would have been counterproductive to the general emphasis of this project. Therefore, each department was treated as equal, no matter what level of service was provided. All responding members of the population were used.

The hypothesis for this research project could be written several ways. The positive directional hypothesis would be that there is a positive correlation between the educational achievement and professional certifications of paid career Florida fire chiefs with a minimum employment of 10 firefighters and the level of efficiency in which their department operates. The null hypothesis would be that there is no relationship between the educational achievements or the professional certifications of paid Florida fire chiefs and the level of efficiency that their departments operate.

While efficiency can be defined in many terms, for the purpose of this research, efficiency was measured by the total annual expense of operating the department divided by the total yearly request for emergency service. The beginning evaluation considered the Measures of Central Tendencies: the mean, the median, the mode and the range. Of the 94 departments represented, the average cost per emergency response was $1075.98. The most often occurring cost per call, the mode was $666.67 and at the 50% point, the median, the cost was $748.89. The range reached from a minimum of $92.31 to a maximum of $6511.63.

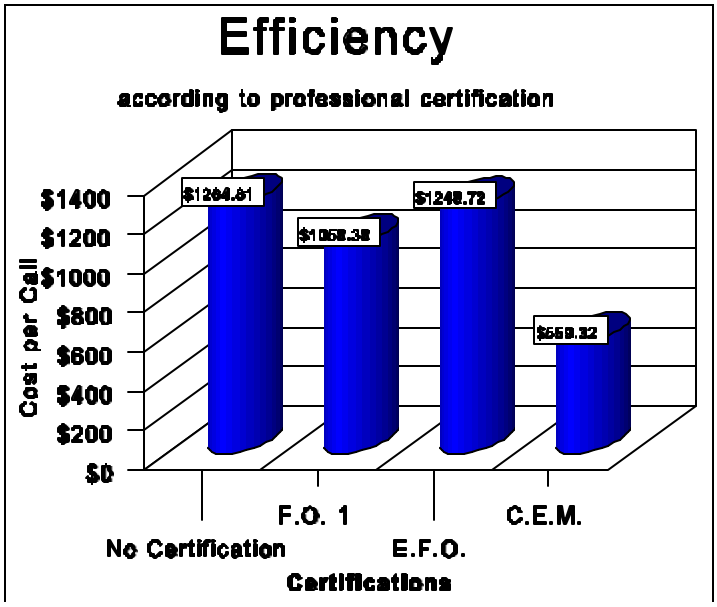
To evaluate the relationship between the educational achievement and the expense associated with emergency response, simple averages were used. Divided by educational degree, the means were tabulated. Those departments with chief officers without any educational achievement resulted in an average cost per call of $1090.36, which was slightly above than the overall mean. The next category was the Associate's degree with an average cost of $1269.51. A decrease was noted in the Bachelor's degree category to an average cost per call of $1138.56. By far the lowest average cost per emergency response was seen in the Master's degree classification. Here, the expense dropped to $768.86.



On the professional certification aspect, categorization was not as clearly defined. Professional certifications do not progress sequentially, as do educational degrees. There can be and was a significant overlap in the certifications that are held. The classifications were designed to offer the basic

certification without the consideration of the other possible certifications. This has resulted in a total number of cases greater than the total number of respondents. The classifications were: No Certification, Executive Fire Officer (E.F.O.), Fire Officer One (F.O. 1) & Certified Emergency Manager (C.E.M.). The total number for each class is as follows: No Certification resulted in 28 or 29.8%, Executive Fire Officer (E.F.O.) equaled to 35 or 37.2%, Fire Officer One (F.O. 1) equated to 54 or 57.4% or, and Certified Emergency Manager (C.E.M.) generated 6 or 6.4%. The grand total of 123 certification responses were given by the 94 respondents. This results in a cumlative percentage total greater than 100%.

The average cost per emergency response varied by certification class. In the No Certification category, the highest cost incurred with an average cost of $1264.81 per call. A close second was the Executive Fire Officer (E.F.O.) category with an average cost of $1248.72. Next was the Fire Officer One (F.O. 1) category with an expense of $1058.38. Finally, the departments that had a chief officer with a Certified Emergency Manager (C.E.M.) certification had an average cost per call of $559.32. While these expense variations may appear to have a significant variation, further statistical evaluation was necessary.



While some of this data appears relevant, several statistical evaluations would be necessary to determine if this data was significant. A Paired T-Test and a Pearson Correlation were conducted on the entire population. Due to the limited size of the sample and incomplete data, the results are presumed to have limited validity; no significance was found (Hacker, 1998). A more thorough population should be obtained, if the results are going to be generalized. Unfortunately, the tests were inconclusive.

DISCUSSION

A review of the data indicates, several factors appear to diminish, dim and interfere with the clarity of the results. Convoluted by the various levels of service that is provided to the public, determining what qualifies a department as an equal to another is difficult. Probably the largest variation is whether or not a department provides emergency medical rescue and what level of care is rendered.

There are many other factors, including patient transport, hazardous materials services, confined space rescue, and others. Each added service has the potential to skew the results and bias the findings.

Another area of concern was quantifying the efficiency level for the departments. The study used a comparison between the number of emergency calls that were made to the overall department budget, there are other formulas that could be used to benchmark the department. The efficiency could be rated by the percentage of the overall municipality's budget as compared to the individual department. Determining a formula to evaluate departmental efficiency was difficult. The educational degrees and professional certifications were tabulated, this produced another area of concern. While the academic degrees progressed in a typical manner, the professional certifications did not. It was possible for a chief fire officer to have multiple certifications and not have earned a degree. Likewise, a well-educated chief officer may not have any additional certifications. The influences of these combinations were perplexing and difficult to account for. Determining the impact of a certification on a certain degree would have been a next to an impossible task. Due to the complexity of the elements and influences involved, it became obvious that there is not a clearly defined formula for achieving organizational efficiency.

RECOMMENDATIONS

Based on the supporting information in the literature review and the data collected in the mail survey of chief Florida fire officers, the following recommendations are made. It is suggested that Florida fire officers, through the Florida Fire Chiefs Association, should develop a program to increase the awareness of the academic degrees and professional certifications that are available to this discipline. This program should include the requirements for these credentials and the accessibility of these programs. Emphasis should be given to the benefits of improving professionalism, increasing expertise,

and building credibility in managing public service. From this program, a standard should be developed for the minimum requirement for a chief fire officer. Requirements should include a balance between experience and education. If voluntary, it is expected that few officers already in the position would comply. This certification process should be mandatory and implemented over a five-year period to allow adequate time for everyone to comply.

In conclusion, it is felt that additional research is needed to further promote, encourage, and clarify the impact of academic achievement and professional certification on the efficiency of the Florida fire service. Limited data has restricted the generalization of these results and has confined the overall conclusion. An expanded database, possibly on a national level, may yield significant results that would confirm this influence and verify the results presented in this research project.

REFERENCES

Alexander, R. & Newman, J.A. (1985). *Climbing the Corporate Matterhorn*. New York: John Wiley & Sons.

Beers, Michael C., Davenport, Thomas H. & DeLong David W. (1998). Successful Knowledge Management Projects - *Sloan Management Review*, p. 43.

Blumenson, Martin (1975). *Masters of the Art of Command*. Boston: Houghton, Moffin Company.

Blunt R. And Clark, H. (1997, September). Growing Public Service Leaders. *The Public Manager.* vol. 26, no. 2, p. 43

Bockenstedt, G. (1997, December). Public Safety. *Governing.* p. 9

Burton, Clark A. (1993, September). Higher Education and Fire Service Professionalism - *Fire Chief* , pp. 50-53.

Bush, Loren S. & McLaughlin, James H. (1979). *Introduction to Fire Science*. New York: MacMillan Publishing Company.

C.E.M. Certification - *International Association of Fire Chiefs: On Scene* (1994, July 15)**.** p. 1-3.

C.E.M. Designation: Why It's Important for Chief Fire Officers - *International Association of Fire Chiefs: On Scene* (1996, February 15)**.** p. 1.

Certifications for Inspectors and Officers. (1987, June). *Fire Chief*. p.10.

Drucker, P. (1998). *Street News, vol. 7, issue 17.* p. 1.

Drucker, P. (1982). *The Changing World of the Executive.* New York: Truman Talley Books.

Dwyer, J. W. (1996). *The Validity of a Simulated Forcible Entry Test for Firefighters*. [On-line]. Available: http://wwwlib.umi.com/dissertations/fullcit?429925

Edelman, L. (1997). Pride in Public Service. *The Public Manager, vol. 26, no. 1.* p. 49

Fisher, J. A. (1997, September). *E.F.O., Does It Make A Difference.* Unpublished manuscript, National Fire Academy: Emmitsburg, Maryland.

Florida State Fire College: General Catalog and Course Schedule, (1998). Ocala, Florida

Florida State Fire College: General Information (1998). [On-line]. Available: http://fsfc.ufl.edu/fsfc/general/general2.htm

Florida State Fire College: Special Welcome (1998). [On-line]. Available: http://fsfc.ufl.edu/fsfc/special/specwel.htm

Hartsfield, F. (1993, August). *The Relationship of Higher Education and Educational Requirements to Fire Service Leadership*. Unpublished Manuscript, National Fire Academy: Emmitsburg, Maryland.

Hedley, T. (1998, March). Measuring Public Sector Effectiveness Using Private Sector Methods. *Public Productivity and Management Review, vol. 21, no. 3,* p. 251

Henning, K. (1998, June). Member Viewpoint: Project Impact. *I.A.E.M. Bulletin*, *vol.5, no.6,* p 5

Hershman, B. (1998). IAFC Moves Forward on Chief Certification. *International Association of Fire Chiefs: On Scene.* p. 1.

Hewitt, W.J. (1998, February). *Canadian Chief Officer Professional Designation* - Seminar Outline. Fire-Rescue East: Jacksonville, Florida.

Huffman, D. L. & Nutter, R. E. (1998, June). The Journey Toward Professionalization - *Florida Fire Service Today*: Vol. 6, No. 6. p. 4-5.

Ireland, Lee. (July, 1998). This is How to Beat the Dinosaur Mentality. *Florida Emergency Services News:* p. 12

Kossen, S. (1991). *Supervision* (2nd ed.). New York: West Publishing Company.

Latin, O. (1992, January). *Command Staff Executives need a College Degree* Unpublished Manuscript, National Fire Academy: Emmitsburg, Maryland.

Macko, S. (1996). The Changing Face of the Fire Service. *EmergencyNet News Service* Vol. 2 - 164. Http://www.emergency.com/firesvc3.htm

Malmquist, L.A. (1989) *Educating Tomorrow's Executive Fire Officers - Do They Know Which Classes to Take?* Unpublished manuscript, National Fire Academy: Emmitsburg, Maryland.

Markman, Howard M. (1998, June). *Hiring a Fire Chief: What Qualities Does Today's Managers Look For?*. Paper presented during the Executive Development class at the National Fire Academy: Emmitsburg Maryland.

Morris, W. (1982). *The American Heritage Dictionary, New College Edition*. Boston: Houghton Moffin Company.

Nachmias, Chava and David Nachmias (1992). Research Methods in the Social Sciences, Fourth Edition. New York: St. Martin's Press.

Napoli, R. (1998, June). *Florida State Fire College Home Web Site.* [On-line]. Available: Http://www.fsfc.ufl.edu/fsfc/special/specwel.htm

National Fire Protection Association. (1998). *Management in the Fire Service*. Quincey, Massachusetts p. 12.

National Fire Protection Association. (1998). NFPA Standard #1977 - Appendix A-1-2.1. Quincey, Massachusetts p. 37.

National Fire Protection Association. (1998). *NFPA Standard #295, 3-1.2* Quincey, Massachusetts p. 7.

NCCEM Announces Creation of Associate Emergency Manager Credential in Conjunction with F.E.M.A. - *International Association of Fire Chiefs: On Scene* (1996, May 15). p. 4.

O'Neal, Derryl B. (1997, November). But What About an ALS Plow Unit. *Florida Fire Service Today.* p 11.

Paulsgrove, R. (1998). Fire Department Administration and Operations. *Fire Protection Handbook, Eighteenth Edition. p. 10-3.*

Pierce, M. (1991, March). *Key Factors in Implementing a Fire Officer Certification Program.* Unpublished manuscript, National Fire Academy: Emmitsburg, Maryland.

Raelin, Joseph A. (1997). Executive Professionalization and Executive Selection - *Human Resource Planning, Vol. 20.2.* p. 19

Rickey, Denis G. (1998, July). Training, Education are important parts of the job - *Florida Emergency Services News,* p. 16.

Richmond, William C. (1998, April). Paving the Path to Advancement - *Firestation Management Advisor.* p. 6.

Saitta, Joseph V. (1993, Fall). NETC: Training the Nation's Emergency Managers -Journal of Civil Defense. p. 43-45.

Staten, C. (1992). *Ten Steps to Achievement of Excellence*. [On-line] Available: http://www.emergency.com/10stepex.htm

Stilp, Richard (1998, July). We Need Higher Education in Fire Service - *Florida Emergency Services News*, p. 7.

Swope, C. (1998, June). Many Unhappy Returns. *Governing*. p. 14.

Wingspread IV. (1997). *Wingspread IV: Statement of Critical Issues to the Fire and Emergency Services in the United States.* Workshop conducted at Dothan, Alabama.

Witt, James L. (1996). Message from the Director - *Emergency Management Institute: 1996-1997 Catalog of Activities*, p. iii

August 31, 1998

Fire Chief _____
Specific Fire Department
Address
City, State

Dear Chief _____,

As part of an Applied Research Project for the National Fire Academy, I am conducting a survey to collect various statistics for fire departments in the state of Florida. The intent of this study will be to provide indicators that will allow every department in the state the ability to compare and inspect similar organizations. This information should be very useful during budget preparations and other administrative duties. Your participation in this program will allow an accurate, valid database to be developed. A copy of the final totals will be available, either through the National Fire Academy Library or, at your request, a copy will be returned to you in a printed form and/or in an Excel format. This information will also be provided in the same format to the Florida Fire Chief's Association.

Please complete and return by October 1st, 1998.

With time being a factor, your prompt reply is greatly appreciated!

Thank you for your cooperation and assistance in this project!

Sincerely,

Derryl B. O'Neal, MPA
Director / Fire Chief

APPENDIX B

Fire Department Survey

Chief Officer Personal Information

Department Head Name (optional):

Rank/Title:

Years of service:

Years in present position:

Current Salary (not including benefits, overtime, or other compensation):

Projected years till retirement:

Chief Officer Academic Achievement/Education

(please specify course of study)

Associates Degree:

Bachelor's Degree:

Master's Degree:

Other:

Chief Officer Certification

Fire Officer One:

Executive Fire Officer:

Certified Emergency Manager:

Other (please specify):

APPENDIX B

Fire Department Information

Type of Government: City County Special District

Protected Population:

Coverage Area (in square miles):

Total Municipal Tax Base:

Annual Department Budget:

Annual Department Salary Expenditure:
(not including benefits, overtime, or other compensation)

Number of Paid Department Members:

Number of Paid Line Officers: Engine Ladder Rescue Other

Are Department Members Unionized?

Number of Volunteer Department Members:

Number of Volunteer Line Officers: Engine Ladder Rescue Other

Number of Staff Officers: Paid Volunteer

Number of Stations: Total Paid Volunteer

Number of Staffed Apparatus:
Engine Ladder EMS/Rescue Staff Other

Number of Responses Annually:

Estimated Average Response Time:

Level of Medical Service: ALS BLS 1st Response

Who Transports Your Medical Patients?
Self Private Other Govt. Agency Combination

Value Added Service: Hazardous Material
Confined Space
Non-Emergency Transport
Other (please specify)

Please return in the stamped, self addressed envelope or fax to:
Fire Chief Derryl B. O'Neal @ (941) 625-1222

Include your name, address, & desired format, if you would like a copy of the final results.