Evaluating Part-Time Employee Retention within the Clearcreek Fire District

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CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

1. This paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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ABSTRACT

The problem that this research addressed was that the Clearcreek Fire District was having difficulty retaining part-time firefighting personnel. The purpose was to evaluate the cause and effect of the part-time attrition problem so that daily staffing needs can be met. The following research questions were addressed using evaluative methodology:

1. Why are part-time firefighters compelled to resign from their employment with the Clearcreek Fire District?
2. How does the turnover problem impact the performance of Clearcreek Fire District crews in the execution of their emergency duties?
3. What is the total direct, indirect, and opportunity cost associated with the part-time employee turnover problem?
4. What strategies might the Clearcreek Fire District use to help retain part-time employees?

Original data was gathered by evaluating the letters of resignation from 65 firefighters submitted over a five year period. An internal survey of part-time personnel was conducted as well as an external survey targeting fire officers in southwest Ohio. Total costs were calculated by documenting resources consumed by an actual hiring process. The majority of resignations occurred because the employee accepted a full-time fire service position. Firefighters reported that the potential for a full-time position would influence their longevity. The external survey revealed that this problem is wide spread and significant. The hiring process studied had direct costs of $16,732.00, indirect costs of $1,463.90, and an opportunity cost of 97.75 staff hours.

Recommendations include establishing a formal exit interview process, offering a 5% incentive for current part-time firefighters on full-time testing, and maintaining daily staffing of 15 firefighters per shift using 11 full-time employees certified as Firefighter/Paramedics, two

career oriented part-time employees certified as Firefighter/Paramedics, and two local part-time employees certified as Firefighter/EMT's. Recruitment activities should focus on attracting local residents as well as those seeking a fire service career.

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INTRODUCTION

Statement of the Problem

The problem that this research will address is that the Clearcreek Fire District is having difficulty retaining part-time firefighting personnel. In a recent evaluation spanning the years 2010 through 2012 it was found that the number of part-time employees hired totaled 31. During the same time period 33 employees resigned their position with the department. Part-time personnel are utilized every day to staff front line apparatus riding positions. Therefore, the maintenance of an adequate workforce is essential for the Clearcreek Fire District to provide the services expected by the community.

Purpose of the Study

The purpose of this study is to evaluate the cause and effect of the part-time attrition problem so that fire district administration can take the most appropriate actions to assure daily staffing needs are met. The Clearcreek Fire District staffing algorithm requires a total of 15 personnel to be assigned to each shift. When firefighters leave at a greater rate than they can be replaced the result is a staffing level that falls below the desired 15 personnel per shift. This research is intended to reduce the probability of this occurrence to the greatest extent possible.

This research will provide greater definition to the costs associated with the attrition problem in terms of finances, productivity, and operational effectiveness. The data collected will be used for the purposes of conducting a cost-benefit analysis should an idea emerge that bears promise in positively impacting the retention problem. Knowing the costs reasonably associated with the problem, fire district administration can calculate the cost of implementing a potential solution and determine if the proposed solution should be recommended.

The problem of part-time attrition has led the department to incrementally decrease reliance on part-time personnel over the past five years. Part-time positions have been vacated and replaced with full-time positions. By quantifying the costs associated with part-time attrition, a comparison can be made between the costs of maintaining an adequate part-time workforce and the cost of substituting full-time employees. This research will allow fire district administration to determine if this is a practice that should be continued, maintained, or reversed in the future.

Research Questions

The research questions this evaluative study will investigate are as follows:

1. *Why are part-time firefighters compelled to resign from their employment with the Clearcreek Fire District?*
2. *How does the turnover problem impact the performance of Clearcreek Fire District crews in the execution of their emergency duties?*
3. *What is the total direct, indirect, and opportunity cost associated with the part-time employee turnover problem?*
4. *What strategies might the Clearcreek Fire District use to help retain part-time employees?*

BACKGROUND AND SIGNIFICANCE

The potential impact this study could have on the Clearcreek Fire District would be the ability to maintain the desired level of staffing without the need for frequent hiring processes. The issue of part-time turnover has been a vexing problem for the Clearcreek Fire District for quite some time. In the last ten years alone 113 part-time firefighters have resigned from their position with the department. Identifying a solution to this problem would help to constrain the direct and indirect costs associated with part-time turnover. Increased crew continuity may also

lead to better operational performance on the scene of an emergency. To date, no efforts have been undertaken within the department to study the many complexities of this situation.

The Clearcreek Fire District is a combination fire department in northern Warren County, Ohio that is geographically situated between Dayton and Cincinnati. The department responds to emergencies within a fifty square mile jurisdiction that includes both the City of Springboro and the unincorporated areas of Clearcreek Township. The department is organized under the Clearcreek Township Board of Trustees and all personnel are township employees (Clearcreek Fire District, 2012). The jurisdiction includes several target hazards such as natural gas pipelines, petroleum terminals, bulk petroleum storage facilities, an armament production factory, data warehousing centers, and a busy general aviation airport. The total population of the response area is 30,265 as reported in the 2010 United States Census (U.S. Census Bureau, 2013).

The Clearcreek Fire District provides fire suppression, advanced life support EMS services, fire prevention, and public education services within the response area. The Insurance Services Office, Inc. (ISO) last evaluated the fire district using the Fire Suppression Rating Scale in 2005. As a result of this evaluation the department was awarded a Public Protection Classification rating of four (Clearcreek Fire District, 2012). The department operates from three stations geographically dispersed throughout Clearcreek Township and the City of Springboro. Collectively these three stations responded to 2,735 emergency incidents in 2012. Of those incidents, 1,084 occurred while another unit was assigned to a previous emergency. This demonstrates the necessity to maintain sufficient depth in daily staffing levels. The mission of the Clearcreek Fire District is to “provide customer oriented health, safety, fire, and emergency services with professionally trained personnel in an efficient and cost effective manner, utilizing resources provided by the community” (Clearcreek Township, 2013).

Funding for the fire district is derived primarily from three continuing property tax levies. The most recent was passed in 2001 at a rate of 3.85 mills. Residents of the City of Springboro pay the same tax rate per $100,000 of assessed value for fire and EMS services as those within Clearcreek Township. The funds collected through the levies can only be appropriated by the Clearcreek Township Board of Trustees for the delivery of fire protection and EMS services. In 2012 the tax levies provided $5,032,095 to the fire district. An additional $532,628 was received from EMS transport billing activities bringing total annual revenue to $5,564,723. Budgeted expenses for 2012 totaled $5,217,420. The most significant line items in the expense budget include personnel and various benefits such as health insurance, Ohio Police & Fire Pension Fund contributions for full-time employees, and social security contributions for part-time employees. Together these personnel costs account for approximately 82% of all annual fire department operating expenses (Clearcreek Township, 2013).

The Clearcreek Fire District employs a total force of 57 sworn employees. The department is led by a fire chief that reports to the Assistant Administrator / Public Safety Director. The fire chief is supported by two assistant fire chiefs. The administrative staff is comprised of a training captain, a planning captain, an EMS lieutenant, a fire prevention lieutenant, and a career firefighter assigned as a fire inspector. The operations division consists of three shifts working a 24 hours on and 48 hours off rotation. Each shift is led by a captain with one subordinate lieutenant assigned to each of the three fire stations. All officers are full-time employees. The operations staff is rounded out with 29 full-time firefighters and 11 part-time firefighters assigned amongst the three shifts. Three part-time administrative clerks provide support for the organization.

At maximum staffing 13 firefighters are on shift each duty day. It is assumed that at least two firefighters will be on leave each duty day which is why each shift has a total of 15 personnel assigned. Station 21 staffing consists of seven personnel assigned to one ALS medic unit, one ALS equipped rescue engine, and a shift supervisor vehicle. Station 22 and 23 staffing each consists of three personnel with one ALS medic unit and one ALS equipped engine; responding as dispatched with one vehicle and placing the other unavailable until the original incident is cleared. The Clearcreek Fire District participates in a mutual aid system with automatic assignment of the most appropriate response units through the county dispatch center. Of the 13 daily riding positions, 11 are filled by full-time employees with part-time firefighters covering the remaining two. Part-time personnel may serve in any capacity in which they are qualified including as the paramedic in charge of the medic unit or the fire apparatus operator.

According to the Dayton Business Journal (2013), Warren County is the second fastest growing county in the State of Ohio. The response area covered by the Clearcreek Fire District experienced a 44% increase in population in just ten years (U.S. Census Bureau, 2013). This growth has sparked a rapid transition for the fire district from a small, single station department staffed primarily by volunteers to a department operating three stations with a paid, professional staff. In 2000 the organization consisted of 30 total personnel with six of those being full-time employees. In 2001 the citizens approved a 3.85 mill levy which funded the construction, outfitting, and staffing of two additional fire stations. Station 22 and Station 23 were opened within Clearcreek Township with the intent to shorten response times and provide improved capabilities to a rapidly developing community (Simpson, 2013). The effect of this expansion was a significant increase in the number of personnel working for the Clearcreek Fire District. A graph of the growing total number of employees by year is located in Appendix 1.

The increase in staffing levels between 2002 and 2005 was achieved by the addition of both full-time and part-time firefighters. By 2007 it had become somewhat difficult to maintain part-time personnel rosters at the level necessary to sustain daily staffing needs. As a result, that year five additional full-time personnel were hired and five part-time positions were vacated. In 2010 a significant effort was made to recruit qualified part-time candidates and to move them through the hiring process in an expedient manner. This led to an all-time high in the number of part-time employees at the beginning of 2011. In a few short months 11 of those firefighters had resigned. That same year the annual attrition rate spiked to over 20% for the first time in the history of the department. Later in 2011 the fire district was awarded a Staffing for Adequate Fire & Emergency Response (SAFER) grant for the hire of 12 full-time firefighters. As part of the grant acceptance, the fire chief recommended to the Board of Trustees that 24 existing part-time positions be vacated through attrition. Because part-time personnel are scheduled one-half of the hours of their full-time counterparts, the net effect was the substitution of 12 full-time positions for 24 part-time positions without an increase in daily staffing levels.

The Clearcreek Fire District utilizes a competitive hiring process for both part-time and full-time positions. The hiring process is managed internally by administrative officers. The fire chief is not directly involved in the process until the final interview and recommendation. There are no dedicated human resource professionals working within the fire district or Clearcreek Township. Human resource functions are executed within each department under the general oversight of the Clearcreek Township Assistant Administrator / Safety Director.

The Clearcreek Fire District adheres to a set of minimum qualifications to determine candidacy for any sworn position. All applicants must be at least 18 years of age, physically fit, and of good moral character to include issues of a criminal, credit, and psychological nature.

Applicants must have a high school diploma or GED, a valid driver's license, reliable transportation, and an acceptable driving record. All individuals desiring a position as a full-time officer or firefighter must be certified as a State of Ohio Firefighter II, Paramedic, and Fire Safety Inspector. All part-time firefighters must be certified as a State of Ohio Firefighter II and EMT-Basic at minimum, yet many hold higher qualifications (Clearcreek Fire District, 2013).

The hiring process is essentially the same for full-time and part-time firefighter positions. When a vacancy exists in a certain classification the fire chief makes recommendation to the Clearcreek Township Board of Trustees to post an advertisement for the position. Once the board approves the action fire administration creates an advertisement that is circulated for 30 days. Interested individuals must then complete and submit their application by the stated deadline. The packets are reviewed by the administrative staff to ensure candidates meet the minimum eligibility criteria and that all application materials are present. A written test covering basic fire and EMS knowledge is then given to the candidates. Those who score a 70% or better are invited to a physical agility test. The agility test consists of several stations such as a hose drag, ladder raise, ladder climb, and a blind hose follow intended to mimic typical activities performed on the fireground. Candidates receive an initial drug screening at the conclusion of the agility test. The next step is an oral interview board and assessment center where candidates are placed in various scenarios typical of the position for which they are applying. The assessment center completes the review of the candidate's technical aptitude and capabilities. All candidates are then ranked based upon the cumulative total of the scores assigned to them through the process.

The number of candidates that move forward into the final phase of the selection process is determined by the number of vacant positions reasonably anticipated. At least three candidates are required for each position. Those selected to move forward have their criminal, credit, and

traffic background investigations completed. Simultaneously the candidate is scheduled for a psychological evaluation and a polygraph examination, each conducted by a private third party contractor. The psychological evaluation costs $350.00 and the polygraph examination costs $225.00 per candidate. If no irreconcilable issues are raised during the background investigation the candidates are recommended for a final interview. The fire chief conducts the final interview and then makes recommendation to the Board of Trustees to hire the necessary personnel. The candidates are then called with a conditional offer of employment. After acceptance, the candidate completes a second polygraph examination covering medical issues that cannot be legally included in the first polygraph. This second exam is at no additional cost. The candidate then has a physical exam completed by an occupational healthcare provider contracted to the fire district at a cost of $1,050.00 per person. Finally, the individual is sworn in at a subsequent meeting of the Clearcreek Township Board of Trustees (Clearcreek Fire District, 2013).

Once hired all firefighters are subject to a one year probationary period. During this year the firefighter is acclimated to all administrative and operational facets of the department. If the employee resigns during their probationary period they are responsible for reimbursing the department for their hiring expenses which total $1,746.75. This is pursuant to a pre-employment agreement signed by each applicant and is enforceable through the common pleas court. The first few months of the probationary period are focused on completion of a detailed orientation packet. This orientation packet is meant to assure that the firefighter can perform at a minimally acceptable level of proficiency across the wide spectrum of duties they may be required to perform. Topics include patient care reporting, EMS protocols, response district familiarization, routes to area hospitals, incident management guidelines, and task-level fireground skills. These criteria become the baseline for skill competency throughout the firefighter's tenure.

An ongoing departmental training program assures that employees receive continuing education for their firefighter, fire inspector, and EMS certifications. These continuing education sessions are held as part of daily on-duty activities. Part-time personnel can maintain their certifications simply by coming to work as scheduled without the need for additional time or expense on their part. Annual skills verification activities assure that personnel are maintaining their minimum competencies in all areas outlined within the orientation packet.

All part-time personnel are assigned to work a 24 hour shift every sixth day. Once hired, part-time firefighters must maintain the established minimum eligibility requirements throughout their employment with the fire district pursuant to the General Operational Guidelines (Clearcreek Fire District, 2013). This includes continuation of criminal, credit, and driving records at an acceptable level. Certifications must also be maintained continuously. Historically, few employees that complete the rigorous hiring process have had difficulty meeting these continuing expectations. Most disciplinary actions pertaining to part-time personnel are due to schedule related issues such as tardiness and absenteeism (Clearcreek Fire District, 2014).

The average longevity for a part-time firefighter within the Clearcreek Fire District is 3.90 years. This average is significantly skewed by five employees that each served over 13 years with the organization. The frequency distribution detailed in Appendix 2 shows that 46.15% of part-time firefighters resign within two years of joining the organization. The reasons that firefighters are compelled to resign from the organization are not well understood at this point. Historically exit interviews have not been conducted with employees as they leave the department. Often informal conversations between officers and the employee reveal the rationale behind their resignation. Many of the most promising part-time employees have left to accept a full-time firefighter position with another fire department. Some have left for neighboring

departments while others have crisscrossed the United States for a promising career opportunity. The information gathered through these informal interviews has not been systematically recorded in the past therefore no existing data set is available. The information currently on hand is limited to what was written by the employee on their letter of resignation.

The direct costs associated with conducting employee hiring processes, equipping new employees, and training new employees would be reduced by limiting turnover within our ranks. Each firefighter hired costs the department $1,746.75 in direct costs for the various steps of the hiring process. These costs cannot be recouped or reassigned as these items are a one-time investment in the individual that is lost when they resign. Examples include the expense associated with background investigations, physical examinations, drug screenings, personalized uniforms, etc. These direct costs represent a significant impact to the limited financial resources available to the district. While these direct costs are relatively easy to identify and document, a solution to reducing these costs has not been pinpointed by fire administration to date.

In contrast, the indirect and opportunity costs of this problem are not well understood or defined. If employee attrition could be reduced there would likely be a positive impact on the productivity of the existing workforce. For example the training officer could refocus on regular shift-based training versus conducting numerous orientation classes for new firefighters. Staff officers would no longer be required to conduct frequent background investigations and administer various elements of the hiring process. This would free these officers to handle other departmental priorities. Any improvement made to the part-time employee attrition rate would also bring a degree of stability to our duty crews and allow them to further solidify as teams.

LITERATURE REVIEW

The literature review for this research project was accomplished by first reading the contributions of other fire service professionals available through the Ohio Fire Executive archive of applied research projects as well as those made available through the Executive Fire Officer Program database at the National Fire Academy. A review of private sector literature focused on public employment and employee retention was conducted through the libraries of Sinclair Community College in Dayton, Ohio and Wright State University in Fairborn, Ohio. An internet search was conducted to identify and review credible sources of information.

The effective staffing of the fire department has long been recognized as one of the essential functions of a fire service administrator. In all fire departments there is a clear need to recruit and retain individuals who are qualified to execute the organizational mission. Focus is often directed to the fire ground tactics and strategies while the importance of the personnel that may be performing those tasks is overlooked by senior officials (Carter & Rausch, 1989).

The first research question seeks to understand the reasons that part-time firefighters may be compelled to resign from their employment with the Clearcreek Fire District. Currently there are no formal exit interviews conducted when an employee resigns from the department. This portion of the literature review sought to determine what others found to be contributing factors to an employee's decision to leave their current place of work.

Research from the Saratoga Institute forms the impressions published by Leigh Branham (2005) about the reasons an employee may choose to leave their workplace. This research found that people are four times more likely to leave a job because of something negative in their current setting versus for an outside opportunity. The seven reasons identified for employee resignations included a job that did not match the expectations of the employee and a mismatch

between the job and the person. Often this can be prevented by completing a thorough hiring process. Some employees felt they received too little feedback from their supervisors or felt their supervisors did not value them or the work they performed. At its most extreme, some employees reported leaving because they had lost faith in their senior leadership. These issues often require an adaptive change in the leadership culture throughout the organization. Some identified that there were too few growth opportunities with their current employer. Finally, a segment of employees left because they felt an imbalance in their work and home lives.

Judith Ross (2005) authored an article that categorized the reasons employees leave their workplace. Ross referenced Branham in her work yet continued to build upon his theories. The first category deals with a lack of growth opportunity with the employer. When career oriented employees feel they have nowhere to go in their current job they often seek another employer. The second category deals with a lack of focus on employee enrichment. Employees like to be engaged and empowered within their workplace. Ross suggests that this may be one of the most significant categories of all. The third category is a lack of appreciation expressed to the employee by management. The fourth category has to do with unmanaged stress within the employee. Finally, Ross suggests that a relationship based on trust and confidence must be in place between the employee and senior executives. Without this relationship the employee will feel unsecure about their future while at the same time the executive will lack confidence in the loyalty of their subordinate. When the employee does resign their position the mutual concerns regarding loyalty become somewhat of a self-fulfilling prophesy.

The issue of employee retention is an emerging, developing problem within the fire service. Gardner (2008) identifies several potential causes for firefighter turnover including wages, inadequate or substandard equipment, limited advancement opportunities, and proximity

of the work location to their home. Through surveys, it was concluded that the most frequently occurring reason for turnover was due to employees seeking work closer to home or at a higher wage than their previous work environment. The environment in which this study was completed was rural in nature and many firefighters were commuting significant distances to reach their place of work. The only successful method offered to combat this employee turnover issue was an effective mentoring program, and still the effects were limited. This research highlights the fact that environmental factors affecting each individual department must be given consideration.

As a whole, the fire service has migrated from a volunteer driven venture to a paid profession. At the same time the generations present within the firehouse and their respective work ethics have evolved. Hickey (2011) gives credence to the differences in motivation that exist between younger employees and the middle-aged employees within a fire department. This study refers to the notion that the youngest members of a fire department often seek to be involved in the overall direction of the organization and desire to have a strong sense of ownership in their careers. Younger firefighters were found to have a strong sense of commitment to family and less loyalty to their employers when compared to their elders. Personal commitments such as other jobs, financial considerations, or family issues were the primary reason for 83% of their resignations. A lack of promotional opportunities was the second largest reason given by 66% of respondents. The analysis offered by Hickey also showed that many firefighters of the millennial generation sought out jobs with other organizations where they saw potential for direct involvement and career development. In a traditional fire service culture it is easy to see how young firefighters coming into the service may find the existing bureaucratic structure to be out of alignment with their preferences.

The second research question seeks to explore how the turnover problem may impact the performance of Clearcreek Fire District personnel in the execution of their emergency duties. Firefighting and emergency medical service activities are approached from a team perspective. Firefighters always work in pairs at a minimum. They most often operate as part of a full company as a matter of safety. Paramedics work in teams of two on a routine basis (Clearcreek Fire District, 2013). The effect of attrition on this team dynamic is worth investigation.

An interesting twist on the way in which attrition affects performance was presented by Glebbeek & Bax (2004). Their study analyzed 110 offices of a large company and found that each had a varying rate of turnover. They found that performance was best when there was a minimal amount of turnover in personnel. If the turnover rate was too high it lead to difficulty maintaining continuity and accomplishing the assigned objectives. Constant turbulence in the staffing arrangement led to a significant decrease in production. Interestingly, they also found a decrease in productivity when there was too little turnover. The decrease in performance in offices with limited turnover was attributed to stagnation and complacency in the employee pool. As a result it was recommended that limiting turnover should be a goal of management, but that the elimination of turnover was neither likely nor advisable in most environments.

The U.S. Army Research Institute for the Behavioral and Social Sciences (2005) commissioned researchers from the University of Pittsburg to study the effect that attrition has on the performance of military teams. The research focused on two common tasks assigned to military units. The first was the production of a good or service and second was team-based decision making. The analysis centered on the “transactive memory system” that was employed by the team. The researchers defined this as the “shared mental model about how task competencies are distributed across team members”. When a member of a team leaves, the remaining individuals must

renegotiate their role within the team environment. This alters the transactive memory system and requires team members to rethink the distribution of tasks. When an individual joins a team they must assess the competencies and responsibilities of the existing team members to determine where their skills and abilities will fit best. The study found that this process of renegotiation and assimilation negatively impacted the performance of the team in both the production and decision making tasks. An exception was found when the individual being added to the team brought a skill that was severely needed within the team dynamic. Much like the fire service, some level of attrition is expected within the armed forces. The recommendations offered to counteract the problem focused on providing consistent training to the teams so the transactive memory system is continually reinforced and transmitted to new members (Levine, Moreland, Argote, & Carley, 2005).

In a study focused on attrition in the fire service, Hosford (2006) found that in just a decade over three hundred personnel had left the Kettering Fire Department. This turnover had reduced the average years of experience for career members from over 20 years to between five and ten years. Similarly, the average experience for non-career members dropped from the five to ten year range down to less than three years. In their staffing model, the Kettering Fire Department does not consider a member to be part of the "trained effective strength" of the organization until they have three years of experience. The three year benchmark was based on an analysis that determined that measurable deficiencies were found in increasing numbers as the average years of service decreased. The most significant and largest quantity of errors were made by those with less than three years of experience with the department. It could be inferred that the performance issues relate to firefighters with little experience operating within a complex, multi-hazard environment with limited preparation for the role in which they were placed.

In a survey of 21 fire departments in southwest Ohio, the Piqua Fire Department staff (Rindler, Kennedy, & Meckstroth, 2010) identified that a high turnover rate was professed by

most organizations as the single greatest disadvantage to staffing with part-time firefighters. This was related to the fact that many of the firefighters being hired were coming in with little or no prior experience. Regionally, the average length of service for part-time personnel was calculated to be between two and three years. This is significant when considered within the context of the Hosford's study, because the two to three year average regional tenure of a part-time firefighter is shorter than the amount of time the Kettering Fire Department determined is required to develop an acceptable level of proficiency. After this brief period the employee would resign their position and would often be replaced by another inexperienced firefighter. The study found that at this early phase in their career an inexperienced firefighter typically lacks some of the certifications possessed by other, more senior firefighters. Examples were provided such as EMT-Basic versus Paramedic medical certifications and lack of qualification in common specialty areas such as hazardous materials response. The survey information infers that this relative inexperience coupled with certifications in only the minimum areas results in less than optimal emergency scene performance. Unfortunately, this difference is not quantified.

This study went on to identify several specific areas where surveyed agencies felt the inexperience of their part-time staff negatively affected the operation of their departments. Limited continuity was cited as the most significant problem (Rindler, Kennedy, & Meckstroth, 2010). The study found that a revolving door of part-time employees can interrupt work flow and inhibit effective teamwork. The shift and company are limited in their ability to form as a team because members are constantly falling away and being replaced. Another issue raised with inexperienced part-time staff is the lack of familiarity with the dynamics of their specific response area. Community landmarks, target hazards, and unique emergency response challenges would not be well understood by an employee with limited experience in that district. Similarly,

the inexperienced firefighter may lack the ability to react to problems that are out of the ordinary while they are in the acclimation phase. For instance, an unusual noise indicative of an impending mechanical failure may be sensed by a seasoned firefighter and the situation averted before damage is incurred. The same is not likely to be said for an inexperienced firefighter that is not as familiar with the apparatus.

The third research question explores the direct and indirect costs associated with the turnover of part-time personnel. By identifying and measuring these costs the Clearcreek Fire District can determine areas in which cost containment measures might be employed.

The State of California published a report in which they outlined and quantified the costs of turnover within the state Child Protective Services agencies (Child Protective Services, State of California, 2006). This report proved valuable because the population studied is of a significant size and of such a diverse nature that no individual geographical area or labor market could substantially skew the results. Subordinate agencies exist in metropolitan areas, suburbs, and rural areas of the state. There are agencies that serve populations from across the spectrum of socioeconomic and ethnic backgrounds using a wide variety of staffing configurations.

The California study reported that the turnover cost for one entry level employee was estimated at $24,887.00. When considering employees in key positions of a higher salary base such as case workers the cost estimates soared to $51,511.00 per employee. This estimate took into consideration items such as separation costs, replacement costs, training costs, and lost productivity. The salary saved during the time the position was unfilled was factored into the estimate as a credit deducted from the total cost. The report concludes by defining the cost of attrition in terms of the way services could be enhanced if it were not for the turnover problem. The agency estimates that cutting turnover in half would allow for the hiring of 11 new child

welfare workers, which would in turn reduce the caseload of the existing employees by nine percent (Child Protective Services, State of California, 2006).

The cost of turnover within the fire service was investigated by Stacy (2008) in a study submitted to the National Fire Academy as part of the Executive Fire Officer Program. This study quantified the cost of part-time turnover in the Colerain Township Fire Department. Colerain Township is located in the same region of Ohio as Clearcreek Township and thus the two fire departments share a substantially similar labor market. Stacy used a very detailed formula to calculate the total cost incurred with the loss and subsequent replacement of one part-time firefighter. This formula included the cost of processing the separation, temporarily filling the vacancy created, hiring the replacement employee, and training the replacement employee. This study did take into account items such as the hours committed and wages earned by those conducting the hiring and orientation processes. The total cost estimate came to $32,472.55 per individual instance of turnover. Colerain Township realized an average annual turnover of 21 part-time employees in the years preceding the study. When multiplied by the annual average rate of employee turnover it was estimated that the annualized cost of part-time employee attrition within the Colerain Township Fire Department was $681,923.55 (Stacy, 2008).

Bartlett Harden (2009) focused on quantifying the cost of an individual employee hire within a medium sized fire department located in Alabama. This study found that the total cost of the process reached $78,561.00. The hiring process that was studied began with 72 applicants and concluded with four firefighters being appointed. As such, the cost divided equally amongst each applicant was $1,091.13 and the cost divided by each firefighter appointed to a position with the department reached $19,640.25. These costs included direct and indirect yet measurable items such as advertisement, pre-employment testing, background investigations, recruit salaries,

and use of vehicles and apparatus. In a sense, Harden used a very pure form of accounting for costs. The only expenditures accounted as costs were those that were actually paid out for the purposes of the hiring process. It did not include things such as the salaries of those conducting the hiring process because those would have been paid no matter what. There is no information provided regarding the opportunity costs in this study. Also, Harden did not investigate the costs associated with handling the resignation of an employee.

In a study regarding utilization of part-time firefighters, the Piqua Fire Department staff (Rindler, Kennedy, & Meckstroth, 2010) noted that there are three types of costs associated with maintaining a part-time firefighter staffing program. This study categorically described these costs as they are found in a typical fire department selection process. These include direct costs which are those associated with and directly attributable to a specific employee. For instance, a firefighter that is hired must typically undergo a medical evaluation prior to employment. The cost expended on that medical evaluation cannot be recouped in the event that the firefighter later decides to leave the organization. Indirect costs are not directly attributable to one specific employee yet they are very real and measurable. An example of the indirect cost is the expense of developing, maintaining, and securing written test material that is both valid and reliable. The indirect costs cannot be assigned to one specific candidate yet are a very real factor to be considered in the evaluation of overall financial impact. The concept of opportunity cost is also mentioned, where staff members must focus time and energy toward the maintenance of part-time staffing levels thus forfeiting the opportunity to advance other important objectives.

As the size of the organization increases, logically the number of positions that must be filled also increases. Larger organizations often have various classifications of employees that may require different hiring procedures to ensure a fair and equitable selection. The federal

government employs 1.9 million individuals and has an annual need to fill over 300,000 positions in a wide variety of disciplines (Riccucci, 2011). The federal Office of Personnel Management (OPM) is tasked with overseeing hiring practices for federal agencies and is allocated resources to execute this mission. Even with this economy of scale the federal OPM requires an annual appropriated budget of $2,341,472,000 (Office of Personnel Management, 2013). This equates to a cost of $7,804.91 to fill each open position at the federal level.

The fourth research question focuses in on methods that the Clearcreek Fire District could employ to help retain part-time employees. This portion of the literature review proved to be particularly helpful as various agencies have attempted to solve the problem of employee attrition in the past. The published studies outlining the methods used and their level of success or failure can provide useful insights for solving the problem at hand.

Understanding the human dynamics that motivate employees within the workplace is complex because it is influenced by measures that are hard to quantify such as personality, work ethic, and values. Still, the identification of common motivating factors can help employers understand the elements most likely required for employee satisfaction and ultimately retention of personnel. Extensive studies conducted by Wilson (1989) identified that wages, benefits, safety, and the ability to do their work well were often primary concerns for those on the front lines of public service delivery agencies. While these core concerns were common to most employees they did not encompass all of the motivating factors an employee may have to maintain their relationship with the employer. Issues such as job status, promotion potential, and the ability to influence the way in which work is performed are all possible motivators that may be significant to the individual employee. It is challenging to define a universal set of factors as each person is unique in their personal inspirations and professional desires.

In a similar study, Klingner and Nalbandian (1997) found that employees who enjoyed incentives, challenge, security, and meaningful work displayed a measurably increased level of commitment to their organization. The challenge for the employer is fostering an environment where these elements are present in a sufficient quantity. Challenge and meaningful work are found when the employee can realize their potential by applying creativity to overcome problems. Incentives are powerful when they are in line with the employee's goals and desires. Unfortunately, not all goals and desires are the same therefore incentives may not have the same motivating effect on each individual employee. When these basic items are void within the workplace a decreased level of commitment and increased employee turnover can reasonably be anticipated. Commitment can be measured both in terms of longevity and the sentiment expressed by the employee toward their employer through the use of a survey instrument.

Exploration into the part-time staffing issues specific to the fire service revealed a study targeting this issue within southwest Ohio (Broman, 2000). This research related that part-time employees generally migrate to whatever employer offers the highest wages and best working conditions at any given time. The author found that departments heavily dependent on part-time staff often engaged in "bidding wars" for employees. Some departments utilized costly incentives to retain part-time personnel such as salary bonuses, uniform allowances, and even insurance coverage. These incentives had little impact on the attrition problem (Broman, 2000).

The study also found that an increasing number of part-time firefighters were using the fire service as their primary source of income. These individuals often work long hours at multiple fire departments. Some employees reported working up to 120 scheduled hours per week. From the perspective of the firefighter the desire is to maintain a comfortable standard of living, prepare for a full-time opportunity, and maintain an acceptable work-life balance. The fire

chiefs surveyed felt that exhaustion, lack of focus, and confusion on operational procedures amongst various employers were all issues with their part-time staff. The fire chiefs also felt that there was a lack of loyalty amongst the part-time staff, as they were more than willing to change employers as often as necessary to achieve their goals. This pattern was found to persist until the employee ultimately achieved their goal and obtained a full-time position (Broman, 2000).

Similar results were found in a broad study conducted to determine the feasibility of the part-time program within a combination department in Hanover Park, Illinois (Haigh, 2005). The author of this research reached out to 163 fire departments throughout the Midwest receiving responses from 100 of them. The study reports that the retention problem was prevalent within the vast majority of responding departments. Each of these agencies utilized different incentives to attract employees, pay a different wage scale, and operate under different leadership styles. Despite this wide array of approaches the study found that most departments had significant difficulty maintaining an adequate roster of part-time personnel. Because of the problems, 22% of the departments surveyed reported having plans in place to decrease reliance on part-time personnel (Haigh, 2005). This author concluded that the problem with part-time retention spans many boundaries and is not easily solved by offering the right wage or incentive package.

In a study focused in the southwest Ohio region, the executive director of the Miami Valley Fire/EMS Alliance surveyed part-time firefighters affiliated with member departments to determine their perspectives on the attrition issue. It was determined in this study that the primary motivators for employee retention included flexible schedules, a regular quantity of work hours, and the potential to promote to a full-time position within the organization. Benefits packages were not found to be a significant motivation for the firefighters questioned in the survey (Caudill, 2005). It is implied that many firefighters may accept that benefits are not

available until the employee achieves full-time employment. Therefore, the desire to promote to a full-time position could be considered the same as the desire for benefits usually afforded full-time employees. The focus of most part-time firefighters was on the steps necessary to meet the minimum qualifications for full-time opportunities. This study also highlighted the overall shortage of part-time labor in the greater southwest Ohio area, noting that many departments exhaust their list of eligible part-time candidates before all positions are filled (Caudill, 2005).

Wagner (2009) researched the issue of part-time turnover within the City of Fairfield Fire Department. This department provides a good comparison to the Clearcreek Fire District due to similar demographics and employee composition. The two departments are both located within southwest Ohio and attract employees from the same labor market. The City of Fairfield struggles with attrition as well with Wagner reporting a turnover rate of 22.67% between 2005 and 2007. The Clearcreek Fire District saw a very similar rate of 23% for the same time period and 26.67% in the past three years. The most significant difference between the two departments is the generous incentives provided by the City of Fairfield to all part-time firefighters.

The benefits offered by the City of Fairfield include items such as bonus pay, holiday pay, tuition reimbursement, sick leave, employee cookouts, and even free golf on city operated courses. These benefits were in effect for the duration of the study and failed to have a significant impact on the rate of employee attrition. The primary reason noted in the research for employee turnover was the desire for a full-time job with associated benefits (72.4%) or the need for discounted health care benefits (53.3%). Recommendations included additional screening for applicants to determine long-term compatibility with the organization, expanding roles and scope of utilization for part-time personnel, and a realignment of incentives toward employee wishes.

Still, Wagner finds it unlikely that any realistic incentive will make an impact when employees are primarily motivated by their desire for a full-time position and associated benefits.

The literature reviewed proved to be very helpful in framing and guiding this research project. Information about the possible motivations for employee attrition has shaped the means in which the motivating factors for prior resignations will be reviewed, categorized, and evaluated. It also provided some interesting perspective on the possible patterns of thought that are involved when an employee decides to electively separate from the department.

The literature suggests that the attrition problem coupled with the limited experience level of the average part-time firefighter does have a negative influence on the performance of the individual at the scene of an emergency. Much of the existing research focuses on the military setting or the private sector including health care occupations. Those studies that are specific to the fire service concentrate on the performance and decision making of an individual firefighter. It does not appear that this has issue been studied thoroughly as it relates to the group operating environment that is characteristic of the fire service.

The true cost of employee attrition seems to vary significantly between sectors and even between classifications of employees within the same company. Many means of estimating the cost of attrition exist and there is certainly no accepted standard by which to perform the calculations. The literature suggests that each organization interested in studying this topic must determine the most appropriate manner by which to account for costs. For instance, a small department with a limited staff will experience significant opportunity costs as the attention of most staff members is diverted from normal duties to the process of replacing an employee. A large city with an independent human resources department may have a limited role in the actual

hiring process, therefore their costs will be categorized and accounted for much differently. The most important factor is that the costs are accounted for in a logical and reproducible manner.

Studies focused on the steps which may prove beneficial in reducing the part-time turnover problem paint an interesting picture that is somewhat unique to the fire service. Many part-time firefighters have a very specific focus in mind, and that is the attainment of their professional goal to become a full-time firefighter. The factors that influence their satisfaction at work have less to do with the incentives offered to them and more to do with the likelihood that they will reach their ultimate goal with their current employer. Literature suggests departments that focus on recruiting a select number of part-time employees with the real possibility of an eventual full-time position will likely see the lowest rates of attrition. Conversely, those departments that recruit a large number of part-time firefighters and offer little advancement opportunity can anticipate that turnover will be a perceptible factor in their organization.

PROCEDURES

In order to effectively address the research questions this analysis began with a review of all employee resignation letters submitted between January 1, 2008 and December 31, 2013. During this time period the department saw the resignation of 65 part-time personnel. The reason given for the resignation was categorized as either leaving due to a full-time fire service job, leaving for a part-time fire service job, leaving for a full-time non-fire service job, leaving due to personal circumstances, or leaving in lieu of disciplinary action. Nine letters were too vague to determine the reason for the resignation. Six letters were unable to be located. Other attributes suggested from the literature review such as travel distance and certification level were gathered. The data gathered from this process was analyzed in a statistical manner. This data was then compared to the regional and national trends identified in the literature review to determine what

similarities or differences exist. Unfortunately, formal exit interviews have not been conducted to date so there is no existing data set regarding the rationale behind the previous employee resignations. A survey of former employees would prove problematic because many of those employees have relocated and changed contact information since their separation. This was first recognized during a recent attempt to contact former employees on an unrelated research topic.

The effect of the turnover problem on the emergency scene performance of Clearcreek Fire District crews was evaluated using comparative data gathered through a survey instrument forwarded to 238 fire officers in southwest Ohio. The survey instrument is included as Appendix 3. The sample for the survey instrument was determined by gleaning data from the Ohio Fire Chief's Association (OFCA) membership database. The OFCA database has the State of Ohio divided into six geographical districts. The Clearcreek Fire District is located in Warren County which is in the heart of the southwest district. The membership of the OFCA consists of individuals actively employed as a fire officer with a fire department, individuals that are retired, and individuals that are representing a business that distributes fire department related goods or services. Due to the focus of the survey the list was filtered to include only active fire department officers. Officers employed by the Clearcreek Fire District were eliminated from the distribution list. To facilitate efficient data collection the survey instrument was converted to an internet-based format using the QuestionPro.com survey website. A link to the survey was then emailed to the participants as previously defined. Results were compiled via the website and then extracted in spreadsheet format for further statistical analysis and reporting.

The total direct, indirect, and opportunity costs were determined by categorizing the dollars spent and hours invested during an actual Clearcreek Fire District hiring process. The Clearcreek Fire District experienced a need for additional firefighters and officers in the fall of

2013. The hiring process to fill these positions was conducted over several months by the administrative staff of the fire district. Each member of the administrative staff was provided with a log to track the amount of time they devoted to the hiring process and any expenditures required. This log was completed as the hiring process was executed. The total expenditures directly attributable to the hiring process were categorized as either direct costs or indirect costs. Direct costs were those that can be assigned to a particular candidate and would not have existed if the candidate had not participated in the hiring process. Indirect costs were those that cannot be assigned to a particular candidate and would have existed regardless of the number of candidates participating in the hiring process. Opportunity costs were those working hours that staff officers used to carry out tasks related to the hiring of personnel rather than carrying out their primary job responsibilities. The opportunity costs were calculated by adding the total number of hours each officer dedicated to directly supporting the hiring process.

The evaluation of steps that the Clearcreek Fire District could utilize to retain part-time employees was addressed through the use of two survey instruments. The first survey, included as Appendix 4, was distributed to all part-time employees within the Clearcreek Fire District. Due to the attrition experienced in recent years it was feasible to survey the entire current population. The employees were asked about their impressions, perceptions, beliefs, and the factors that they believe will influence their longevity with the department. The second survey was distributed to 238 fire officers throughout southwest Ohio, as previously outlined.

Definition of Terms

Attrition. A reduction in number of employees as a result of resignation or retirement.

Direct Cost. Cost that can be associated directly to a particular object (Wang, 2010). For the purposes of this study, direct costs associated with a hiring process are those that can be

assigned to a particular candidate and would not have existed had the candidate not participated in the hiring process. An example of direct cost would be the expense of a pre-employment drug screening for a specific candidate. Direct costs are measured in dollars.

Full-time Employee. An employee working at least 40 hours per week on average and eligible for full benefits.

Indirect Cost. Cost that cannot be directly attributed to a particular object (Wang, 2010). For the purposes of this study, indirect costs associated with a hiring process are those that cannot be assigned to a particular candidate and would have existed regardless of the number of candidates participating in the hiring process. An example of indirect cost would be the expense associated with convening an interview panel for the selection process. Indirect costs are measured in dollars.

Opportunity Cost. The value of the best opportunity not chosen in a situation where the individual is constrained by limited resources and must select between at least two mutually exclusive alternatives. For the purposes of this study, opportunity costs associated with a hiring process are those working hours that staff officers use to carry out tasks directly related to the hiring of personnel. Each hour spent on a hiring process is an hour that cannot be spent on primary job functions such as training, fire prevention, or supervision of EMS operations. Opportunity costs are measured in hours.

Part-time Employee. An employee working less than 40 hours per week on average and not eligible for full benefits.

Sample. The set of data collected from a statistical population using a defined procedure.

Statistical Population. The entire set of individuals of interest.

Turnover. The rate at which an employer loses and subsequently replaces employees.

Limitations of the Study

This study was limited by the lack of detail contained in the personnel files regarding the reason behind each employee resignation. The Clearcreek Fire District does not currently perform a standardized exit interview with employees upon their resignation. This has led to a limitation on the data available for review in support of this research project. This lack of data limits the analysis that can be conducted regarding historical trends.

The collection of data regarding costs attributed to the employee hiring process (Appendix 9) is limited by the documentation compliance exercised by the personnel participating in the process. It is expected that some involved may omit costs due to perceived insignificance or simple forgetfulness. The standardization of reporting is also a factor. Though each individual is given the same form and the same instructions, the data reported back will be exposed to personal interpretation and may contain information subject to bias or error.

The collection of data regarding the impact of the turnover problem on the performance of Clearcreek Fire District crews in the execution of their emergency duties was limited by the fact that qualitative data was gathered using personal interviews and a survey instrument. The personal opinions expressed by the interviewees and respondents is potentially subject to bias. The use of quantitative means to measure these effects fell beyond the scope of this research.

The survey of existing part-time employees (Appendix 4) was limited by the fact that only five out of 11 (45%) current part-time employees returned the survey despite two follow-up reminders at three and five weeks, respectively. The survey was also constrained by the fact that it solicited qualitative data. The use of qualitative data limits the statistical analysis that can be performed. This survey will have limited external validity because it concentrates on the unique perspectives of current part-time employees working for the Clearcreek Fire District. It also

focused on a small population of 11 individuals. This pool of part-time employees continues to dwindle and the current expectation is that the remaining positions will go unfilled indefinitely. With this smaller population the potential for error in the results is increased. While organizations with similar characteristics may be able to infer useful information, the data collected is specific to the working conditions found within the subject department.

RESULTS

The results of this study were compiled from a detailed literature review, a review of the personnel file for past employees, documentation from a hiring process, and surveys conducted both within the department and externally in the region. The resulting information was analyzed using statistical methodology to identify any trends or relationships that exist within the data set.

Research Question 1 - Why are part-time firefighters compelled to resign from their employment with the Clearcreek Fire District?

The data gathered from the review of each of the 65 resignation letters submitted by previous employees is detailed in Appendix 5. This review found that 20 (30.77%) of the resignations occurred as a result of the part-time employee accepting a full-time firefighting position with another fire department. This was the leading cause of employee resignations. The second leading cause of resignations was personal circumstances, which was cited in 15 (23.08%) of the cases. Of the 15 individuals that left for personal circumstances, six left due to changes in their full-time job that precluded continued service with the fire department. Four left due to their families relocating to another area. Five left due to changes in their life circumstances such as the birth of a child or to voluntarily “retire” due to advancing age and health limitations. The remainder of the categories are detailed graphically in Appendix 6.

Observation of the collected data presented in Appendix 5 suggested that personnel

certified as paramedics may have a shorter overall longevity than those certified as EMT's. This relationship was evaluated and it was discovered that EMT's have an average longevity of 4.24 years while paramedics average just 2.91 years. Observation of the data also suggests that paramedics may be more likely than EMT's to resign due to acceptance of a full-time fire department job. The chi square statistical test allows for evaluation of the relationship between two categorical variables (Wang, 2010). In this case the categorical variables that we wish to evaluate are the EMS certification held by the employee and the reason for their resignation. The chi square test will determine if there is a statistically significant relationship between the variables of interest. The relationship was examined using a significance level of 0.05. The result was a determination that paramedics are in fact more likely than EMT's to accept a full-time fire department job. The chi square calculation establishes that this relationship is statistically significant and that it will be reproducible if generalized from our sample of 65 resignations to an entire population. The data and calculation of the chi square statistic is detailed in Appendix 7.

In evaluating the attributes gathered from the personnel files it was found that a moderate statistical correlation exists between the distance travelled by the firefighter to work and their overall longevity. As the distance travelled increases the longevity of the employee decreases. This correlation is detailed in Appendix 8. The statistical technique of regression allows for estimation of the impact of an independent variable such as distance travelled on the dependent variable of employee longevity. The regression model allows for the establishment of a confidence interval that can be used to estimate longevity based upon travel distance. In summary, the model suggests that employees living 30 miles from their place of work will have longevity ranging from 2.36 to 3.35 years. Increasing this distance to 40 miles leads to a decreased estimate of between 0.10 years and 2.10 years.

Research Question 2 - How does the turnover problem impact the performance of Clearcreek Fire District crews in the execution of their emergency duties?

This research question was addressed by first conducting interviews with ranking Clearcreek Fire District officers. The information obtained was then compared with the results of the external survey of regional fire officers to determine what consistencies could be identified. The results of the external survey are detailed in Appendix 3. In a personal interview, Fire Chief Robert Kidd III stated that he believes part-time turnover does negatively impact the emergency scene performance of Clearcreek Fire District crews (Kidd III, 2014). Chief Kidd based his perception both on direct observation of crews at the emergency scene as well as his knowledge of administrative actions that have occurred during his tenure. Chief Kidd related that inexperienced part-time personnel account for the majority of disciplinary actions that are taken as a result of operational mistakes. These disciplinary situations have occurred due to violations of safety procedures, misapplication of fire district tools and equipment, and delays in response caused by employees making a wrong turn. I asked Chief Kidd if a more robust training or orientation program would reduce the impact of this problem. Chief Kidd explained that enhancing the employee orientation program was a high priority for him when he assumed his position. The department designed and implemented a more robust orientation academy that he feels has had a slight impact on the problem, but it has certainly not been a panacea.

A personal interview was also conducted with Assistant Chief Stephen Agenbroad. Prior to his promotion to Assistant Chief in 2014, AC Agenbroad served for approximately 10 years as a Captain / Shift Commander in charge of one of the three operational shifts. During that time he supervised a number of part-time personnel on a variety of emergency scenes. When asked if part-time turnover affected the operational performance of his crews AC Agenbroad responded

"yes, very much so" (Agenbroad, 2014). He believes there is a significant negative impact. One of the issues AC Agenbroad highlighted was that part-time employees often work for multiple agencies and confuse operational procedures between departments. He also recalled "numerous times" where part-time employees have taken the wrong route when responding to an emergency scene. When asked if changes to the training program would help negate these issues AC Agenbroad responded that "nothing adequately compensates for experience".

The results of the external survey detailed in Appendix 3 were examined to determine if they corroborate the opinions expressed by the Clearcreek Fire District command staff. To ensure accurate comparison, the 2013 rate of part-time employee turnover between the Clearcreek Fire District and the departments surveyed was gathered. The average rate for the 102 respondents was 23.76% which is very close to the Clearcreek Fire District's rate of 21.94%. This means that the fire officers responding to the survey experience a rate of attrition similar to that of the Clearcreek Fire District within their own organizations.

The survey found that 64 (63.37%) of the 102 officers responding felt that part-time turnover has either a negative effect or a strong negative effect on their department. An overwhelming majority of 83 (82.18%) officers felt that service delivery would be enhanced in their community if a lower rate of turnover could be achieved. In the fire departments represented in the survey, 45 (45.00%) stated that it takes more than four months for a new part-time employee to acclimate so that they can perform at an acceptable level on an emergency scene. When reviewing the longevity of the Clearcreek Fire District sample presented in Appendix 5, 30 (46.15%) of the employees resigned prior to achieving two years of service with the department. This leaves less than 20 months of useful service for almost half of the firefighters included in the study. Out of 98 officers responding, only 67 (68.37%) felt that their

part-time personnel had the experience necessary to make independent decisions on the scene.

Based on information gathered, the level of employee turnover experienced by the Clearcreek Fire District does negatively impact emergency scene performance. The opinions expressed by the chief level officers that were interviewed is consistent with the opinions expressed by the fire officers who responded to the regional external survey.

Research Question 3 - What is the total direct, indirect, and opportunity cost associated with the part-time employee turnover problem?

The Clearcreek Fire District conducted a selection process for firefighters beginning in September of 2013 and concluding in February of 2014. Each cost associated with this hiring process is specifically detailed and categorized in Appendix 9. The direct costs incurred by the fire district included the following expenses for each of the 44 candidates:

Criminal background check	$31.75
Personnel portfolio background check	$55.00
Urine drug screen	$35.00
Total:	$5,357.00
	$121.75 / candidate

The total direct cost for the initial testing of the 44 candidates was $5,357.00. The pool of candidates was narrowed to seven for the final phase of the selection process. The following expenses were incurred for each of these seven candidates:

Pre-employment psychological evaluation	$350.00
Pre-employment polygraph examination	$225.00
Pre-employment physical examination	$1,050.00
Total:	$11,375.00
	$1,625.00 / candidate

The total direct cost for the additional testing on the seven finalists was $11,375.00. The total direct cost of the hiring process studied was calculated at $16,732.00.

The indirect costs associated with the hiring process were those not directly attributable to a specific candidate. The following indirect expenses were incurred in the process studied:

Advertisement of positions in local media	$150.10
Overtime for physical agility testing	$1,133.20
Assessment center lunch and refreshments	$69.68
Printing costs	$76.60
Mailing / postage costs	$34.32
Total:	$1,463.90

Advertisement of the selection process within local media outlets for a minimum of 30 days is a requirement imposed by the Clearcreek Fire District's General Operating Guidelines (Clearcreek Fire District, 2013). The physical agility test is administered by department personnel who are scheduled to conduct the test outside of their regular shift hours. As such, these employees are paid at a contractual overtime rate. The assessment center utilizes ranking officers from neighboring departments to conduct an interview panel. These officers are provided light refreshments and a box lunch during their participation. Printing costs include expenses for duplicating written tests, letters, background investigation packets, and assessment center materials. Mailing and postage costs include expenses for sending advertisements, informational letters to candidates, and letters of appreciation to interview panel participants. The total financial costs, direct and indirect, amounted to $18,195.90 and four firefighters were hired as a result of this process.

The selection process required the time and attention of several fire department officers as it progressed. Chief Kidd assigned Capt. Daniel Swords the responsibility of administering all aspects of the selection process. At the time, Capt. Swords was assigned as the departmental training officer. Capt. Swords was diverted from his primary training duties during the 63.75 regularly scheduled hours he dedicated to the hiring process. Chief Kidd personally dedicated six hours to author the written test and to conduct final interviews. Chief Kidd assigned AC Simpson, AC Agenbroad, Lt. Bonfield, and Lt. Carman to assist with conducting and coordinating the assessment center. Each dedicated seven hours to the event. In total, 97.75 staff hours were directed toward the process as detailed in Appendix 9. These working hours devoted exclusively in support of the hiring process were categorized as opportunity costs.

Research Question 4 - What strategies might the Clearcreek Fire District use to help retain part-time employees?

The 11 remaining part-time firefighters employed by the Clearcreek Fire District were surveyed to determine what steps could be taken to minimize the rate of turnover. The survey instrument and results are presented within Appendix 4. The initial survey was distributed on December 31, 2013 with follow-up reminders sent two weeks after initial distribution on January 21, 2014 and five weeks after initial distribution on February 4, 2014. Despite the follow up attempts only five (45%) of the 11 firefighters responded, limiting the overall usefulness of the survey results. The firefighters as a group were generally satisfied with their salary, safety of the workplace, and organizational leadership. The only two categories in which dissatisfaction was expressed were in scheduling flexibility and access to external training. All five respondents stated that they work for at least one fire department in addition to the Clearcreek Fire District.

Of the five responses, four (80%) stated that they desired a full-time fire service position. One (20%) stated that they were unsure. The firefighters were asked if they would accept a full-time position with another department even if they were very satisfied with their current position and every respondent stated either “likely yes” or “absolutely yes”. Four (80%) of the firefighters responded that the opportunity for promotion to a full-time position would influence them to continue working at the Clearcreek Fire District. Four (80%) stated that paid time off such as vacation days and personal days would influence them. Three (60%) stated that access to health, vision, or dental insurance would be a factor in their decision to remain at their current job.

A survey of similar fire departments in southwest Ohio was conducted to determine if there were any strategies being effectively used to combat the turnover problem. The survey instrument and results are presented within Appendix 3. The survey shows that a wide variety of strategies are used regionally to retain part-time firefighters. The most common incentives offered include schedule flexibility (24.49%), opportunity for upgrade training (17.35%), opportunity for internal promotion to a full-time position (16.72%), and holiday pay (16.09%).

No perfect or strong correlations were found between any of the retention strategies and the rate of turnover. Statistically, there is a moderate negative correlation between the opportunity for internal promotion to a full-time position and the resignation rate when adjusted for the conversion of part-time employees to full-time status. The data shows that the rate of resignation decreases when there is an opportunity for internal promotion to a full-time position. There was a weak negative correlation between the wage paid and the rate of resignation. The rate of resignation decreased as the wages paid increased. There was also a weak negative correlation between the opportunity for upgrade training and the resignation rate. The departments that offered upgrade training to their part-time employees saw a decreased rate of

resignation. The results of this analysis demonstrate that there are no identifiable retention strategies that show promise as the panacea for the issue of part-time employee turnover.

DISCUSSION

The results of this research in large part confirm and expand upon the existing knowledge that is contained within the literature. Judith Ross (2005) suggested that when career oriented employees feel they have nowhere to go in their current job they often seek another employer. No type of incentive seems capable of dissuading a part-time firefighter from accepting a full-time fire service position. Similarly, part-time employees are attracted to remain with organizations they perceive will have full-time openings in the future. This is evidenced through the responses of the current part-time firefighters who completed the internal survey (Appendix 4) and statistical inference from the external survey (Appendix 3). The external survey shows that this situation is prevalent within southwest Ohio and it is regarded as an unavoidable reality.

The data collected regarding longevity, certification level, and the reason provided for resignation supports the notion that career oriented firefighters will not stay with their part-time employer if offered a full-time job. The majority of full-time opportunities in the southwest Ohio region require paramedic certification as a minimum criterion to make application. Those who desire a fire service career typically obtain their paramedic certification and then begin applying for full-time positions as they become available. Firefighters that do not desire a career within the fire service are less likely to invest the time and effort necessary to achieve paramedic certification. These employees tend to be motivated by the service aspects of the job and they remain with one employer for a long period of time. Considering the issue of turnover alone, the Clearcreek Fire District might consider giving preference to applicants that are certified as EMT’s and who are not seeking a full-time fire service career. There are certainly a number of

other factors in this decision such as capacity for advanced procedures and clinical decision making capability that are beyond the scope of this study and do not factor into consideration.

The correlation identified between the longevity of the employee and the distance travelled to the primary fire station (Appendix 8) could be used to guide departmental recruiting strategies. Ohio law generally prohibits local entities from requiring an employee to live in any specific area of the state. Still, recruiting employees from outside the local region will simply exacerbate the attrition problem. One approach could be to limit the distribution of position announcements to a defined geographical radius shown to provide greater longevity. Another method could be to specifically recruit from educational institutions serving local residents.

It can be concluded that the issue of part-time turnover has a significant operational impact in the fire service within southwest Ohio. A study within the Kettering Fire Department found that the most significant and largest quantity of errors is made by firefighters with less than three years of experience (Hosford, 2006). Within the Clearcreek Fire District 61.54% of employees resigned prior to reaching the three year mark. This is very similar to the results derived from a similar study in Piqua, Ohio (Rindler, Kennedy, & Meckstroth, 2010). Therefore we can conclude that attrition prevents the accumulation of relevant experience and firefighters with limited experience will make mistakes that negatively impact operational effectiveness.

In response to the external survey detailed in Appendix 3, 82.18% of the respondents indicated that the technical aspects of service delivery would be improved if there were a reduction in firefighter turnover. A total of 63.37% of respondents indicated that turnover has a negative effect on their operations. The “transactive memory system” is the shared mental model of the anticipated interactions amongst team members that is broken down when members are removed and replaced (Levine, Moreland, Argote, & Carley, 2005). When a firefighter leaves

their assigned shift there is a time period where their contributions are lost and the remaining team members must renegotiate their roles based on personal strengths and weaknesses (Rindler, Kennedy, & Meckstroth, 2010). The external survey found that 45% of the departments feel it takes at least four months to orient the new firefighter to the team and rebuild a healthy dynamic.

The Journal of the American Medical Association published a study pertaining to the ways in which nursing attrition affected patient outcomes in the clinical environment (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). This study was extensive as it spanned 184 hospitals, over 10,000 nurses, and more than 232,000 patients. The research found that the nursing attrition problem contributed to a higher 30 day mortality rate when compared to those hospitals with an adequate and stable workforce. There was also a correlation found between the significance of the staffing problem and the burnout and job dissatisfaction reported by nurses (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). The settings are different however there are sufficient similarities between the work of nurses and EMS providers to generalize the results. One of the primary responsibilities for a Clearcreek Fire District employee is the delivery of EMS care. Given this existing knowledge coupled with the results of the external survey outlined in Appendix 3, it is reasonable to conclude that attrition has a negative impact on the ability of a health care provider to deliver quality patient care services in a team based environment.

The financial impacts of this problem are staggering. Four firefighters were hired in the selection process that was examined for the purposes of this study. If the total expenses reported in Appendix 9 were divided evenly amongst each newly hired employee it would equate to $4,548.98 per hire. In our five year study 65 firefighters resigned for an approximate total financial impact of $295,683.38. As such, the cost of hiring the necessary employees to compensate for attrition represents an average annualized cost of $59,136.68.

As noted previously, there is no agreed upon formula for creating a standardized estimate of the costs associated with employee turnover in the fire service. When reviewing the results of this research in comparison with the work of Stacy (2008) and Harden (2009) similar results were found. Stacy factored in the cost of filling the position of the former employee which increased the total expenses reported (Stacy, 2008). Harden had a larger initial applicant pool and incurred different costs due to the use of a civil service type recruitment process (Harden, 2009). When considering these differences in methodology it can be concluded that the costs incurred by the Clearcreek Fire District are in line with similar organizations. The organizations reviewed also used similar hiring criteria and pre-employment screening tools. Relaxing the hiring criteria or limiting the steps in the selection process as a cost savings measure would not be advisable.

The opportunity costs associated with the attrition problem tend to create a ripple effect throughout the fire department. Without a dedicated human resources professional or department the tasks associated with the hiring process fall to those that already have a substantial daily workload to contend with. Fire officers often become sidetracked from their normal duties when attrition necessitates repetitive hiring processes. As a result, other aspects of the fire department are at risk of being neglected as fire officers continuously shift focus to hiring new personnel.

Ross suggests that a harmonious work environment requires a relationship between the employee and senior executives that is based on trust and confidence (Ross, 2005). The results of the internal survey outlined in Appendix 4 shows that the current part-time employees are generally satisfied with mid-level and executive management. Gardner (2008) suggested that employees may resign due to dissatisfaction with wages, equipment, and safety factors. The employees that were surveyed did not express significant dissatisfaction in any of these categories. One theory suggested by Garner did prove to be accurate within the data collected for

this study. Gardner hypothesized that the distance travelled by the employee to their place of employment would be a factor in their longevity. The specifics of this relationship are outlined in Appendix 8. Statistical analysis showed that this theory could be confirmed to a degree that it is useful in predicting the longevity of a given employee.

The external survey outlined in Appendix 3 expanded upon the findings of Wagner (2009) that there are no incentive programs, bonuses, or benefit packages that come close to being the panacea for this problem. The most likely factor to influence longevity is the opportunity for the firefighter to obtain full-time employment within their current department where they already operate comfortably. Fire departments that pay a high wage will marginally increase their ability to retain employees as they attract the staff from lower paying departments (Broman, 2000). Still, this will only last until the employee is offered a full-time opportunity. Departments that offer paid upgrade training also reported slightly increased longevity. This is likely due to the fact that many organizations require the employee to remain active for a certain period of time after they attain the certification. If the employee leaves for any reason during this commitment period they are required to reimburse the cost of their training. This scenario creates a financial incentive to maintain their employment, discouraging resignation out of convenience.

Strategies that the Clearcreek Fire District might use to help retain part-time employees include allowing flexibility in the part-time scheduling system, providing training opportunities for part-time staff, and offering the opportunity for promotion to a full-time position within the department. Schedule flexibility could be provided by allowing shift trades or paid time off. Training opportunities appropriate for the part-time employee could include certification upgrade courses or continuing education offerings. Providing additional preference points for part-time employees applying for a full-time opening could incentivize loyalty to the department.

The findings of this project in large part confirm and expand upon the themes identified within the literature. The literature suggested several general reasons that firefighters resign from their positions, the most compelling being the desire for advancement to a full-time position. This research confirmed that this interest was significant and was the reason provided for the majority of resignations. The existing literature related to turnover of fire service personnel lacked a standardized method for cost accounting. This research defined the costs associated with employee turnover and presented the data in a format that can be easily replicated. Fire officers can utilize the cost accounting methodology presented to compare the expense of employee attrition with the expense of alternate staffing approaches or incentive programs. The literature indicates that one of the most effective strategies for reducing the severity of the turnover problem is providing advancement opportunities. The findings of the research confirm this fact.

RECOMMENDATIONS

The continued utilization of part-time employees to cover essential apparatus riding positions will certainly lead to ongoing issues with employee attrition. The greater the reliance on part-time employees as part of the daily staffing model the more profound the effects of the attrition problem will be. Decreasing reliance on part-time staff is one strategy that will limit the magnitude of the problem. This can be accomplished by replacing part-time positions with full-time firefighters. Within the Clearcreek Fire District one full-time firefighter works the same number of hours as two part-time firefighters. The cost for one full-time firefighter at entry level with all salary and benefits is $80,214.81. The annual cost of salary and benefits for two part-time firefighters is $50,976.00. The difference in cost over one year is $29,238.81 per full-time position (Kidd III, Fire Chief, 2013). This strategy was adopted by the Clearcreek Fire District shortly after the commencement of this research project. At the present time there are 11 part-

time employees remaining and there is no intention to convert additional positions (Kidd III, 2014). It is not recommended to convert any additional part-time positions to full-time however the previously converted positions should be maintained in a full-time status.

The continued utilization of a limited number of part-time employees is recommended to meet daily staffing requirements. Part-time employees should be drawn from two primary candidate pools. The first pool of up to six employees, assigned two per shift, should consist of local residents who are seeking to serve their community while earning a secondary income. These individuals have been shown to consistently have the greatest longevity. The second pool of up to six employees, assigned two per shift, should consist of career oriented individuals who are actively seeking a full-time fire service position. These individuals should be engaged in a grooming process to prepare them for the expectations of full-time employment. Using this arrangement the staffing level of 15 firefighters per shift is met using 11 full-time employees certified as Firefighter/Paramedics, two career oriented part-time employees certified as Firefighter/Paramedics, and two local part-time employees certified as Firefighter/EMT's.

Incentives such as providing preference for internal candidates on future full-time selection processes could enhance the loyalty of these employees. It is my recommendation that current part-time employees with a minimum of two years of service be awarded bonus points in the hiring process equivalent to 5% of the overall point value. Because the goal is to create employees that are competitive within the regional job market it should be understood that they may accept a job elsewhere before an internal opportunity opens. Limiting the number of these career oriented employees to a maximum of six will control the prevalence of this occurring.

The multiple regression analysis outlined in Appendix 8 suggests that hiring employees that live greater than 40 miles from the primary fire station will be counterproductive in terms of

longevity. The employee has a strong likelihood of resigning prior to becoming an effective part of the service delivery team. In the State of Ohio, townships are prohibited from requiring employees to live in any specific area of the state as a condition of employment (The City of Lima, Appellee, v. The State of Ohio, Appenant, 2009). An applicant cannot be turned away nor a firefighter terminated if they refuse to live within a certain distance of the fire district. Conversely, the township is not required to conduct recruitment activities over any specific geographical area. Recruitment strategies can be designed to attract employees that live within close proximity to the fire district. This could be accomplished by circulating part-time position announcements through local educational institutions and vocational schools. Additional outlets might include regional organizations such as hospital networks and fire chief's associations.

Attracting local residents to work for the Clearcreek Fire District should begin at a young age. An explorer program is an excellent method to ignite the interest of local teens. Explorer posts are organized geographically so participants typically reside within the local community (Learning for Life, 2014). The Warren County Career Center (WCCC) is located in the Clearcreek Fire District's response area and serves high school students residing within Warren County. The WCCC offers a Fire Science / EMT Basic vocational program and allows high school juniors and seniors to study for their initial certification while attending high school. At age 18, students are eligible to take the certifying exams (Warren County Career Center, 2014). By partnering with the WCCC, the Clearcreek Fire District could provide part-time employment opportunities for program graduates while securing a steady stream of qualified job applicants. The Captain of Planning would be the ideal candidate to coordinate these two initiatives.

The current part-time employees that responded to the survey presented in Appendix 4 indicated that they desire schedule flexibility and access to outside training. While the specifics

are subject to negotiation, both of these requests are relatively easy to accommodate. Neither issue is likely to have a substantial impact on the rate of attrition but responsiveness will demonstrate a respect for the opinions of existing employees. This in turn will foster the relationship between the employee and administration that is a factor in longevity. It is not recommended that the department add any additional incentive programs for the sole reason of reducing employee turnover due to their lack of effectiveness in addressing the problem.

A recommendation for future research would be to create a standardized, detailed, and quantitative methodology for evaluating the cost of hiring personnel as well as the cost of employee turnover. Having a standard method for performing these calculations would allow for more effective benchmarking and better comparison between organizations of a similar nature.

In order to retain part-time firefighters the Clearcreek Fire District should implement a meaningful exit interview process that produces actionable information. It is recommended that the Clearcreek Fire District establish a standardized exit interview process to be utilized each time an employee opts to leave the organization. As part of this research, a recommended exit interview instrument has been authored based on an internet search of best practices. The instrument is presented in Appendix 10. To avoid bias, this exit interview should be conducted by a chief officer not in a direct supervisory role to the employee. The data should then be aggregated in a fashion that allows for succinct and complete analysis of any trends that develop.

This information should serve as a guide for future administrative decision making on related matters. Part-time employees should be provided with the scheduling flexibility and the access to outside training opportunities they desire. Preference points should be given to qualified internal candidates that apply for full-time positions as previously noted. The Clearcreek Fire District should maintain the current staffing arrangement that features a

decreased reliance on part-time staff as compared to the state of the department when this research on his project commenced.

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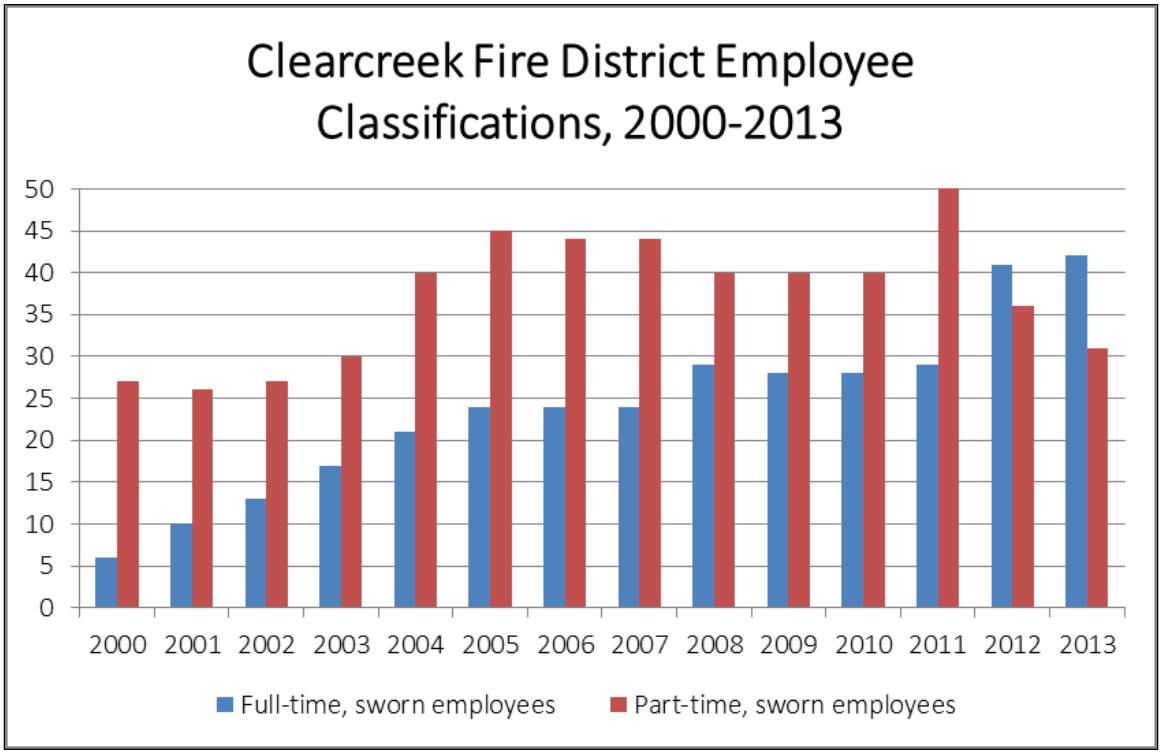
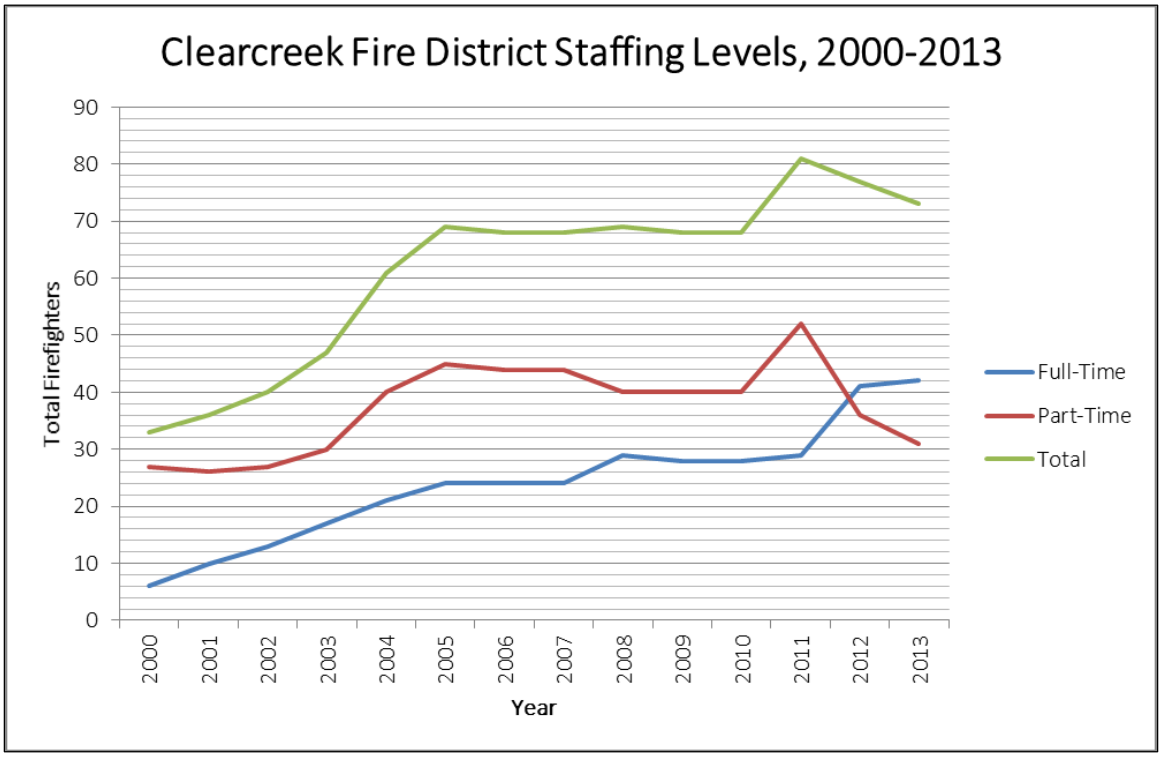
APPENDIX 1 – C.C.F.D. STAFFING DATA, 2000-2013



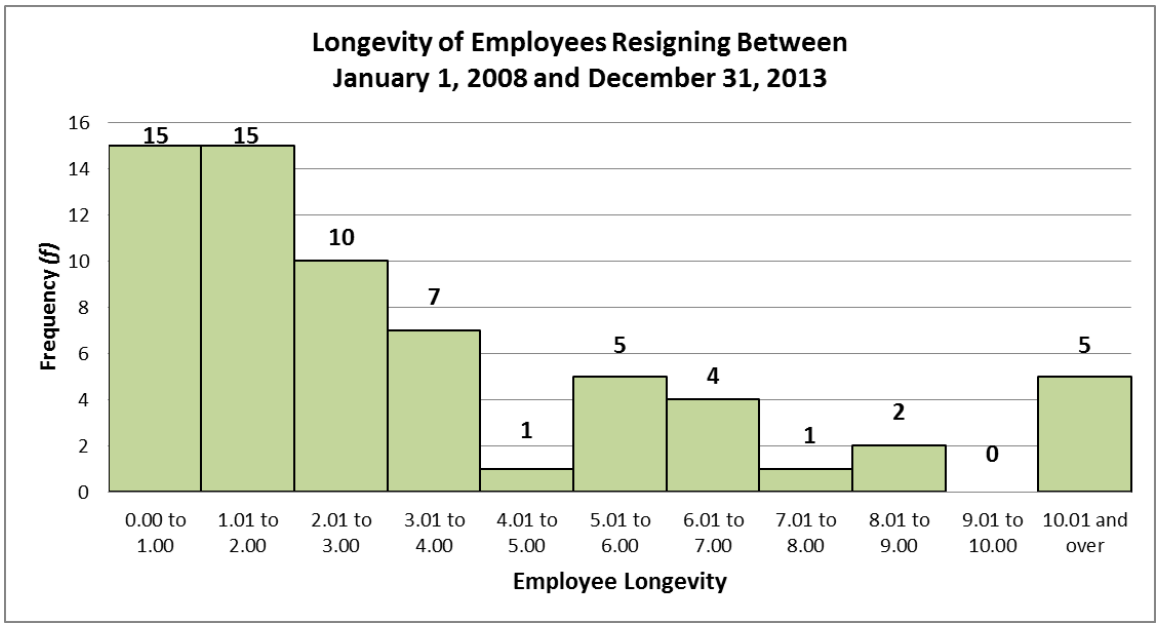
Clearcreek Fire District employee classifications, 2000-2013.



Clearcreek Fire District staffing levels, 2000-2013.

APPENDIX 2 – C.C.F.D. PART-TIME FIREFIGHTER LONGEVITY DATA

Longevity	Frequency	Cumulative Frequency	Percentage (%)	Cumulative Percentage (%)
0.00 to 1.00	15	15	23.08	23.08
1.01 to 2.00	15	30	23.08	46.15
2.01 to 3.00	10	40	15.38	61.54
3.01 to 4.00	7	47	10.77	72.31
4.01 to 5.00	1	48	1.54	73.85
5.01 to 6.00	5	53	7.69	81.54
6.01 to 7.00	4	57	6.15	87.69
7.01 to 8.00	1	58	1.54	89.23
8.01 to 9.00	2	60	3.08	92.31
9.01 to 10.00	0	60	0.00	92.31
10.01 and over	5	65	7.69	100.00
	N = 65		100.00	



APPENDIX 3 – EXTERNAL SURVEY INSTRUMENT AND RESULTS

You are invited to participate in a brief 10-question survey regarding part-time firefighter utilization in the State of Ohio. This survey is in support of research conducted as part of the Ohio Fire Executive program. In this survey, approximately 200 fire officers that are members of the Ohio Fire Chief's Association will be asked questions about utilization of part-time firefighters within their department. It will take approximately eight minutes to complete the questionnaire. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. Your survey responses will be strictly confidential and data from this research will be reported only in aggregate form. Your information will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Lt. Chris Vecchi at (937) 748-2766 or by email at chris.vecchi@clearcreektownship.com. Thank you very much for your time and support.

Question 1: What affect does part-time employee turnover have on your department?

n = 3 (2.97%)	Strong positive effect
n = 5 (4.95%)	Positive effect
n = 29 (28.71%)	Unsure / no effect
n = 55 (54.46%)	Negative effect
n = 9 (9.81%)	Strong negative effect

Question 2: How many hours of orientation / training does a new part-time employee receive prior to being assigned to a tour of duty on an apparatus?

n = 6 (5.94%)	None
n = 9 (8.91%)	Less than 8 hours
n = 31 (30.69%)	9 to 24 hours
n = 22 (21.78%)	25 to 40 hours
n = 16 (15.84%)	41 to 80 hours
n = 17 (16.83%)	More than 81 hours

Question 3: How long does it take a new part-time employee to acclimate so they can perform at an acceptable level on an emergency scene?

n = 18 (18.00%)	Less than 1 month
n = 37 (37.00%)	1-3 months
n = 32 (32.00%)	4-6 months
n = 6 (6.00%)	7-9 months
n = 4 (4.00%)	10-12 months
n = 3 (3.00%)	1-2 years
n = 0 (0.00%)	More than 2 years

Question 4: Please indicate if you agree or disagree with the following statement: Service delivery to my community would be enhanced if we had a lower rate of turnover within our part-time employee pool.

n = 32 (31.68%) Strongly agree
n = 51 (50.50%) Agree
n = 7 (6.93%) Unsure
n = 11 (10.89%) Disagree
n = 0 (0.00%) Strongly disagree

Question 5: Please indicate if you agree or disagree with the following statement: The part-time personnel in our department have the training and experience necessary to make independent decisions on an emergency scene.

n = 16 (16.33%) Strongly agree
n = 51 (52.04%) Agree
n = 14 (14.29%) Unsure
n = 12 (12.24%) Disagree
n = 5 (5.10%) Strongly disagree

Question 6: What is the range of hourly wages for your part-time personnel?

Lowest wage, per hour

- Average (mean) of $11.45
- Median value of $11.50
- Minimum value of $7.50
- Maximum value of $15.61
- Range of $8.11
- Standard deviation of $2.10

Highest wage, per hour

- Average (mean) of $15.06
- Median value of $15.00
- Minimum value of $9.50
- Maximum value of $22.00
- Range of $12.50
- Standard deviation of $2.92

Question 7: What benefits, if any, are provided for your part-time personnel (Select all that apply)?

n = 5 (1.58%)	Salary bonuses based upon job performance
n = 18 (5.68%)	Paid time off (vacation days, personal days, etc.)
n = 51 (16.09%)	Holiday pay
n = 11 (3.47%)	Longevity pay
n = 14 (4.42%)	Access to health, vision, and/or dental insurance
n = 55 (17.35)	Opportunity for upgrade training paid for by the department (paramedic, inspector, etc.)
n = 77 (24.29%)	Schedule flexibility (allowing trades, platoon changes on request, etc.)
n = 53 (16.72%)	Opportunities for internal promotion to a full-time position
n = 20 (6.31%)	Career mentoring programs
n = 13 (4.10%)	Other

Text responses for "Other":

"We have a part-time association (union contract) Serb website ----- Hamilton County Ohio"
"Fitness Program at FH and/or at a gym"
"Pay incentive based upon hours worked in a year"
"increased pay for driver certifications"
"paid training other than upgrade"
"We only use part time to cover EMS Monday Thru Friday. We use some of our volunteers as well as Full Time Paramedics from ----- Fire Dept"
"specialized training opportunities including ATO, FAO, etc."
"401k plan after 1 yr, service/10% gross salary contribution by employer"
"Incentives for additional certifications ie Paramedic, FAO, Officer"
"I utilize my volunteer staff to fill the part time positions."
"over-time, on duty trainings to maintain certifications"
"Added pay if promoted to Officer. Added pay with higher certification"

Question 8: How many part-time and full-time personnel are on duty each day within your department?

Part-time employees on duty each day

- Average (mean) of 6
- Median value of 4
- Minimum value of 1
- Maximum value of 36
- Range of 35
- Standard deviation of 6

Full-time employees on duty each day

- Average (mean) of 6
- Median value of 5
- Minimum value of 0
- Maximum value of 29
- Range of 29
- Standard deviation of 5

Question 9: What was the number of part-time and full-time sworn personnel employed by your department as of December 31, 2013?

Part-time sworn personnel

- Average (mean) of 39
- Median value of 37
- Minimum value of 1
- Maximum value of 142
- Range of 141
- Standard deviation of 28

Full-time sworn personnel

- Average (mean) of 20
- Median value of 14
- Minimum value of 0
- Maximum value of 56
- Range of 56
- Standard deviation of 17

Question 10: How many sworn personnel have resigned their position with your department between January 1, 2013 and December 31, 2013?

Part-time sworn personnel

- Average (mean) of 7
- Median value of 5
- Minimum value of 0
- Maximum value of 44
- Range of 44
- Standard deviation of 7

Full-time sworn personnel

- Average (mean) of 1
- Median value of 0
- Minimum value of 0
- Maximum value of 6
- Range of 6
- Standard deviation of 1

Thank you for taking the time to complete this survey!

APPENDIX 4 – INTERNAL SURVEY INSTRUMENT AND RESULTS

Instructions: Thank you for taking the time to complete this survey. This survey supports research being conducted for an Ohio Fire Executive (OFE) program applied research project. A focus of this research is to identify strategies that the Clearcreek Fire District could use to help retain part-time employees. This survey is anonymous in nature. Please respond to the following questions, seal the survey in the attached envelope, and return via the administrative forms box.

Question 1: Which statement best summarizes your reason for taking a part-time position with the Clearcreek Fire District?

n = 1 (20.00%)	To explore the fire service as a potential career path
n = 3 (60.00%)	To gain experience as I work toward the full-time firefighter position I desire
n = 0 (0.00%)	To earn extra income to supplement my career in the private sector
n = 0 (0.00%)	To give back to the community in which I live
n = 1 (20.00%)	To help others through serving as a firefighter, even if not in my own community
n = 0 (0.00%)	Other

Question 2: Please check the line that corresponds with your level of satisfaction with the following items:

Note: Values were assigned to responses on the following scale:

Null	N/A
0	Very unsatisfied
1	Unsatisfied
2	Neutral
3	Satisfied
4	Very satisfied

	Response 1	Response 2	Response 3	Response 4	Response 5	Average
Salary	4	3	3	3	4	3.40
Benefits	3	NULL	2	1	2	2.00
Schedule Flexibility	1	1	1	1	1	1.00
Potential for Full-time	1	3	2	2	3	2.20
Quality of internal training	3	2	2	3	3	2.60
Access to external training	1	2	2	1	1	1.40
Safety of the workplace	4	4	1	3	4	3.20
Leadership: Lieutenant	2	3	1	3	4	2.60
Leadership: Captain	2	3	2	3	4	2.80
Leadership: Chief, A/C	3	2	2	3	4	2.80

Question 3: Do you desire a full-time position within the fire service?

n = 4 (80.00%) Yes
n = 0 (0.00%) No
n = 1 (20.00%) Unsure

Question 4: If you were very satisfied with all aspects of your part-time position with the Clearcreek Fire District and were offered a full-time position with another fire department, would you accept the full-time position?

n = 1 (20.00%) Absolutely yes
n = 4 (80.00%) Likely yes
n = 0 (0.00%) Unsure
n = 0 (0.00%) Likely no
n = 0 (0.00%) Absolutely no
n = 0 (0.00%) Not applicable

Question 5: If you were offered a part-time position with another fire department, would you maintain your employment with the Clearcreek Fire District?

n = 2 (40.00%) Absolutely yes
n = 3 (60.00%) Likely yes
n = 0 (0.00%) Unsure
n = 0 (0.00%) Likely no
n = 0 (0.00%) Absolutely no
n = 0 (0.00%) Not applicable

Question 6: Which of the following factors would influence you to continue working at the Clearcreek Fire District? Please choose no more than five responses.

n = 2 (40.00%)	Increased wages / salary
n = 1 (20.00%)	Salary bonuses based upon job performance
n = 4 (80.00%)	Paid time off (vacation days, personal days, etc.)
n = 0 (0.00%)	Holiday pay
n = 2 (40.00%)	Longevity pay
n = 3 (60.00%)	Access to health, vision, or dental insurance
n = 2 (40.00%)	Opportunity for upgrade training paid for by the department (paramedic, inspector, etc.)
n = 2 (40.00%)	Schedule flexibility (allowing trades, platoon changes on request, etc.)
n = 4 (80.00%)	Opportunities for promotion to a full-time position
n = 0 (0.00%)	Career mentoring programs
n = 1 (20.00%)	Other
n = 0 (0.00%)	None of the above

Text responses for "Other":

"I will happily continue working @ CCFD. I love my job. And fulltimers protect, serve, support community"

Question 7: How many total years have you worked in the fire service?

n = 0 (0.00%)	Less than 1 year
n = 1 (20.00%)	1-3 years
n = 2 (40.00%)	4-6 years
n = 1 (20.00%)	7-10 years
n = 1 (20.00%)	10-15 years
n = 0 (0.00%)	More than 15 years

Question 8: How many fire / EMS agencies do you work for, other than the Clearcreek Fire District?

n = 0 (0.00%)	None
n = 3 (60.00%)	One
n = 2 (40.00%)	Two
n = 0 (0.00%)	Three
n = 0 (0.00%)	Four or more

Question 9: How many years have you worked for the Clearcreek Fire District?

n = 0 (0.00%)	Less than 1 year
n = 1 (20.00%)	1-3 years
n = 3 (60.00%)	4-6 years
n = 1 (20.00%)	7-10 years
n = 0 (0.00%)	10-15 years
n = 0 (0.00%)	More than 15 years

Question 10: What is your current level of qualification?

n = 1 (20.00%)	Firefighter / EMT
n = 1 (20.00%)	Firefighter / EMT / FAO
n = 1 (20.00%)	Firefighter / EMT / FAO / ATO
n = 0 (0.00%)	Firefighter / Paramedic
n = 2 (40.00%)	Firefighter / Paramedic / FAO
n = 0 (0.00%)	Firefighter / Paramedic / FAO / ATO

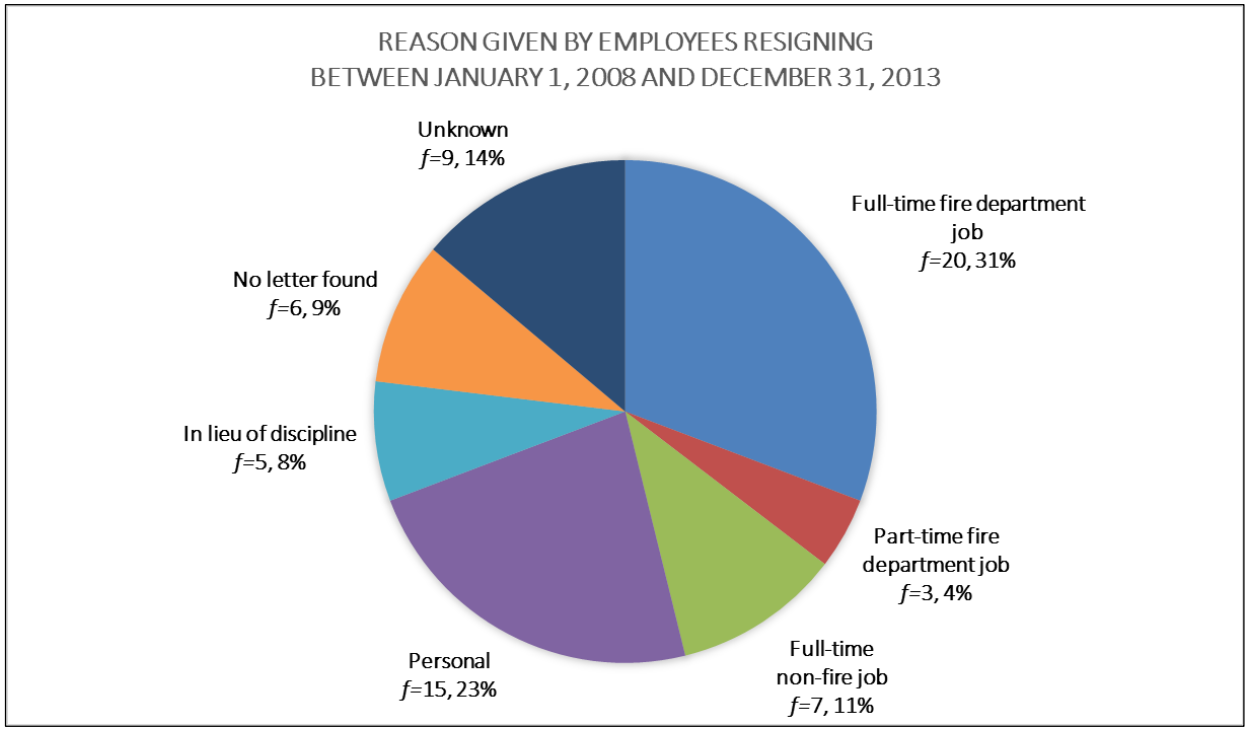
Thank you for taking the time to complete this survey!

APPENDIX 5 – C.C.F.D. PART-TIME FIREFIGHTER ATTRITION DATA

Part-time Firefighter Attrition Data			***Dependent Variable***	***Independent Variable***	***Independent Variable***	***Independent Variable***
Christopher Vecchi			***(H_O)***	***(H_1)***	***(H_2)***	***(H_3)***
Name	**Start Date**	**Resignation Date**	**Longevity (years)**	**Distance (miles)**	**Pay Rate (US Dollars)**	**Reason Given**
Case #1	08/12/10	09/08/10	0.07	24.4	$13.09	Personal
Case #2	07/19/09	08/22/09	0.09	7.9	$13.09	Personal
Case #3	03/25/10	05/02/10	0.10	41.0	$14.83	FT fire job
Case #4	08/12/10	11/25/10	0.29	19.5	$14.83	FT fire job
Case #5	05/27/10	09/30/10	0.35	33.3	$14.83	Unknown
Case #6	08/12/10	01/03/11	0.39	8.6	$13.09	Disciplinary
Case #7	09/03/08	04/04/09	0.58	25.0	$13.09	Personal
Case #9	08/12/10	03/13/11	0.58	33.1	$13.09	No letter found
Case #8	05/14/12	12/13/12	0.58	26.4	$14.83	Disciplinary
Case #10	01/04/08	08/27/08	0.65	5.1	$13.09	Disciplinary
Case #11	08/12/10	04/23/11	0.70	12.6	$14.83	No letter found
Case #12	01/04/08	10/04/08	0.75	24.4	$13.09	Personal
Case #13	05/27/10	03/13/11	0.79	24.3	$13.09	No letter found
Case #14	08/07/07	05/29/08	0.81	11.2	$13.09	FT fire job
Case #15	05/14/12	04/20/13	0.93	17.5	$13.09	Disciplinary
Case #16	05/14/12	05/18/13	1.01	21.8	$16.20	FT non-fire job
Case #17	09/03/08	10/05/09	1.09	37.6	$15.15	FT fire job
Case #18	06/18/12	08/14/13	1.16	10.0	$15.15	Unknown
Case #19	08/12/10	10/15/11	1.18	8.3	$15.84	PT fire job
Case #20	05/14/12	07/19/13	1.18	12.3	$16.20	FT fire job
Case #21	02/01/07	04/10/08	1.19	18.1	$15.15	No letter found
Case #22	05/27/10	11/21/11	1.49	7.6	$15.15	FT fire job
Case #23	05/27/10	12/28/11	1.59	82.0	$16.90	Unknown
Case #24	05/27/10	01/04/12	1.61	11.6	$15.15	FT non-fire job
Case #25	01/04/08	08/19/09	1.62	91.3	$15.15	Unknown
Case #26	02/12/11	10/17/12	1.68	30.1	$15.15	FT fire job
Case #27	05/27/10	02/17/12	1.73	15.0	$16.90	FT fire job
Case #28	05/27/10	02/25/12	1.75	10.2	$16.20	FT non-fire job
Case #29	11/14/07	10/13/09	1.92	34.7	$15.15	Unknown
Case #30	07/15/09	06/22/11	1.94	20.1	$16.90	FT fire job
Case #31	09/20/07	10/05/09	2.04	25.7	$15.15	FT fire job
Case #32	05/27/10	06/22/12	2.07	22.3	$16.20	FT fire job
Case #33	05/15/06	09/07/08	2.32	20.3	$15.15	Unknown
Case #34	05/27/10	10/30/12	2.43	8.6	$15.84	No letter found

Case #35	11/28/05	06/01/08	2.51	9.6	$15.15	FT fire job
Case #36	07/20/09	02/18/12	2.58	4.9	$16.90	Personal
Case #37	08/12/10	06/08/13	2.82	8.4	$16.90	FT fire job
Case #38	09/03/08	07/13/11	2.86	4.6	$16.90	Personal
Case #39	10/02/07	08/13/10	2.87	3.3	$15.84	Personal
Case #40	02/11/07	01/25/10	2.96	17.7	$16.90	Personal
Case #41	03/25/10	06/04/13	3.20	34.0	$16.90	FT fire job
Case #42	07/10/07	10/04/10	3.24	11.3	$16.20	FT fire job
Case #43	03/25/10	06/28/13	3.26	6.6	$16.20	Unknown
Case #44	07/17/09	12/24/12	3.44	27.0	$15.84	PT fire job
Case #45	11/03/04	05/08/08	3.51	25.6	$15.84	FT fire job
Case #46	07/16/09	03/22/13	3.68	11.1	$16.90	FT fire job
Case #47	07/15/09	05/02/13	3.80	25.8	$16.90	FT fire job
Case #48	09/03/08	10/05/12	4.09	47.8	$17.23	PT fire job
Case #49	09/03/08	10/15/13	5.12	13.8	$16.20	Personal
Case #50	05/13/04	08/26/09	5.29	42.9	$15.15	FT fire job
Case #51	08/26/03	12/09/08	5.29	9.0	$15.15	FT fire job
Case #52	08/07/07	11/20/12	5.29	10.5	$16.90	Unknown
Case #53	09/20/07	07/04/13	5.79	10.1	$15.84	FT non-fire job
Case #54	01/19/06	01/27/12	6.02	10.8	$15.84	Personal
Case #55	09/21/06	12/13/12	6.23	7.5	$16.20	No letter found
Case #56	09/24/06	05/29/13	6.68	21.8	$16.20	Personal
Case #57	09/21/04	05/31/11	6.69	4.1	$15.15	FT non-fire job
Case #58	09/09/03	07/09/11	7.84	17.0	$16.20	Unknown
Case #59	03/04/05	10/16/13	8.62	26.1	$15.84	FT non-fire job
Case #60	10/09/01	06/09/10	8.67	1.1	$16.20	Personal
Case #61	05/08/97	08/09/10	13.26	1.3	$16.20	Personal
Case #62	05/08/97	09/21/13	16.38	0.7	$16.20	FT non-fire job
Case #63	02/15/96	06/28/13	17.38	23.3	$15.84	Personal
Case #64	10/01/92	12/23/13	21.24	8.5	$16.20	Personal
Case #65	04/10/89	05/31/13	24.16	3.9	$16.20	Disciplinary

APPENDIX 6 – REASON GIVEN BY EMPLOYEES RESIGNING



Reason Given	Frequency	Cumulative Frequency	Percentage (%)	Cumulative Percentage
Full-time fire department job	20	20	30.77	30.77
Part-time fire department job	3	23	4.62	35.38
Full-time non-fire job	7	30	10.77	46.15
Personal	15	45	23.08	69.23
In lieu of discipline	5	50	7.69	76.92
No letter found	6	56	9.23	86.15
Unknown	9	65	13.85	100.00
	N = 65		100.00	

APPENDIX 7 – ROLE OF EMS CERTIFICATION LEVEL ON LONGEVITY AND REASON FOR RESIGNATION

The Chi Square test statistic was utilized for the purposes of this evaluation:

$$x^2 = \sum \left[\frac{(f_o - f_e)^2}{f_e} \right]$$

Where:

X^2 = Chi Square

$\sum$ = the "sum of"

f_0 = observed frequencies

f_e = expected frequencies

REASON GIVEN - CONTINGENCY TABLE AND CHI SQUARE CALCULATION

	Full-time FD Job	Other Reason	Total
Paramedic	11	13	24
EMT	9	32	41
Total	20	45	65

	Average Longevity
Paramedic	4.24
EMT	2.91

Cell	f_o	f_e	$f_o - f_e$	$(f_o - f_e)^2$	$(f_o - f_e)^2 / f_e$
A	11	7.3846	3.6154	13.071	1.7700
B	13	16.6154	-3.6154	13.071	0.7867
D	9	12.6154	-3.6154	13.071	1.0361
E	32	28.3846	3.6154	13.071	0.4605
				Chi Square	4.0533

Number of Rows of Data:	2
Number of Columns of Data:	2
Degrees of Freedom:	1

Level of Significance:	0.10	0.05	0.01	0.001
Critical Value:	2.70554	3.84146	6.63490	10.82757
Chi Square:	4.0533	4.0533	4.0533	4.0533
Statistically Significant Relationship?	YES	YES	NO	NO
If yes, reject the null hypothesis				

p-Value	0.044084422

APPENDIX 8 – ROLE OF DISTANCE TRAVELLED ON LONGEVITY

The statistical tool of simple regression was utilized for the purposes of this evaluation:

$$Y = a + bX \qquad a = \frac{\sum Y - b\sum X}{N} \qquad b = \frac{N\sum XY - (\sum X)(\sum Y)}{N\sum X^2 - (\sum X)^2}$$

Where:
N = number of observations
X = the independent variable
Y = the dependent variable
b = slope of the line
a = intercept of the line

SUMMARY OUTPUT - SIMPLE REGRESSION, LONGEVITY VERSUS DISTANCE (OUTLIERS EXCLUDED)

Regression Statistics	
Multiple R	0.28526487
R Square	0.08137604
Adjusted R^2	0.06631663
Standard Error	4.76270543
Observations	63

ANOVA

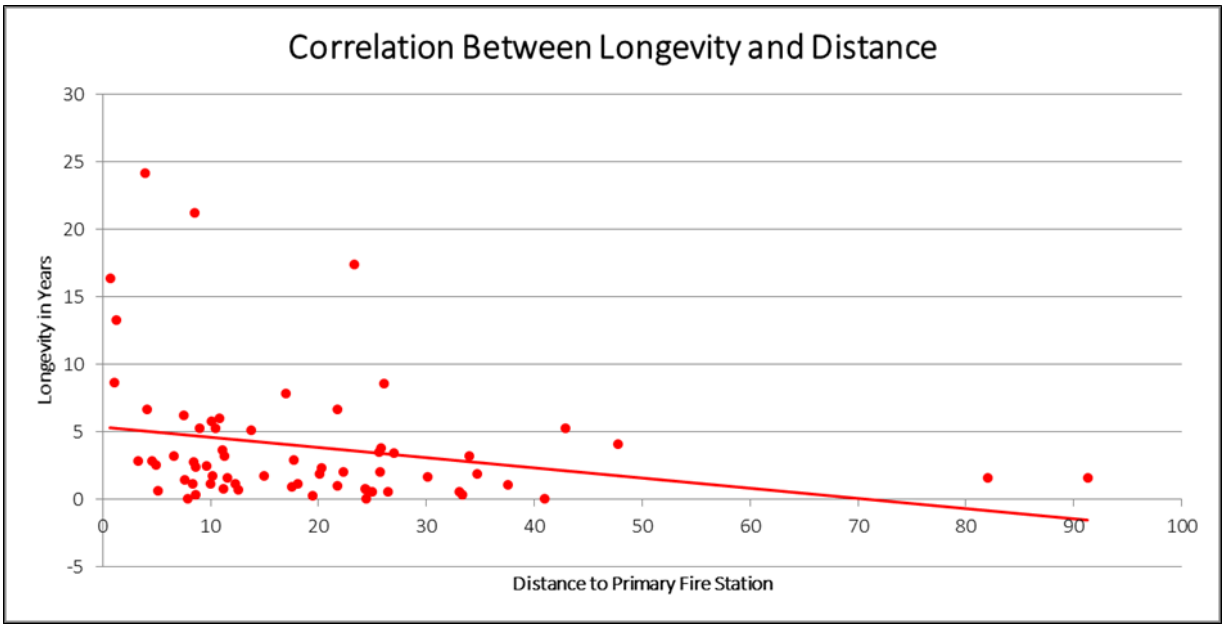
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	122.5733581	122.573358	5.40366779	0.02343971
Residual	61	1383.685144	22.683363		
Total	62	1506.258502			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	6.12162449	1.102265548	5.55367488	6.4762E-07	3.9175083	8.32574067
Distance	-0.125531	0.054001604	-2.3245791	0.02343971	-0.2335139	-0.01754812

Absolute Value of Pearson's r:	0.2853
Direction of Pearson's r:	Positive
Strength of Pearson's r:	Weak
Degrees of freedom:	61
t-statistic:	-2.3246
Absolute value of t-statistic:	2.3246
t-statistic critical value:	0.2091
Accept or reject null :	REJECT
Statistically significant:	YES
p-value:	0.0117
Level of significance:	0.05
Generalize to the population:	YES

Longevity Estimates and Confidence Intervals			
Distance	**Estimate**	**Lower Limit**	**Upper Limit**
5 miles	5.49	4.50	6.49
10 miles	4.87	3.87	5.86
15 miles	4.24	3.24	5.23
20 miles	3.61	2.62	4.61
25 miles	2.98	1.99	3.98
30 miles	2.36	1.36	3.35
35 miles	1.73	0.73	2.72
40 miles	1.10	0.10	2.10
45 miles	0.47	-0.52	1.47
50 miles	-0.15	-1.15	0.84

The scatterplot and trendline depict the slope and intercept visually:



APPENDIX 9 – HIRING PROCESS TIME AND COST TRACKING RESULTS

DATE	TASK	DIRECT COST	INDIRECT COST	OPPORTUNITY COST
08/01/13	Advertisement of positions in local media		$150.10	
09/30/13	Swords - Reviewed applications			3.00
	Swords - Contacted candidates with missing info			0.50
	Swords - Scheduled written test			0.50
	Swords - Sent Outlook invites to personnel			0.25
	Swords - Drafted written invitation letters			1.00
10/07/13	Swords - Secured tables and chairs for testing			0.25
	Swords - Drafted written test sign-in sheet			0.25
	Kidd - prepared written test			2.00
	Swords - prepared written test			2.00
10/08/13	Swords - Administered written test			3.00
	Criminal Background Checks (44 candidates at $31.75 ea.)	$1,397.00		
	Personnel Portfolio Background Checks (44 candidates at $55.00 ea.)	$2,420.00		
	Urine Drug Screen (44 candidates at $35.00 ea.)	$1,540.00		
10/10/13	Swords - Prepared Agility Test packets			2.00
	Swords - Drafted pass/fail/agility invite letters			2.00
10/17/13	Swords - Confirmed agility candidates by phone			1.00
10/24/13	Swords - Called overtime to assist with agility test			0.50
10/28/13	Swords - Prepared for agility test			2.00
10/29/13	Swords - Administered agility test			4.00
	Shift Captain - overtime for agility testing		$146.96	
	Shift Captain - overtime for agility testing		$146.96	
	Shift Lieutenant - overtime for agility testing		$139.88	
	Shift Lieutenant - overtime for agility testing		$139.88	
	Shift Lieutenant - overtime for agility testing		$139.88	
	Shift Lieutenant - overtime for agility testing		$139.88	
	Shift Lieutenant - overtime for agility testing		$139.88	

	Shift Lieutenant - overtime for agility testing		$139.88	
	Swords - Drafted assessment invite letters			2.00
11/01/13	Swords - Confirmed candidate appointments			0.50
11/05/13	Swords - Candidate law enforcement requests			1.00
11/06/13	Swords - Facilitated Assessment Center			7.00
	Simpson - Assisted with Assessment Center			7.00
	Agenbroad - Assisted with Assessment Center			7.00
	Bonfield - Assisted with Assessment Center			7.00
	Carman - Assisted with Assessment Center			7.00
	Swords - Scheduled psychological testing			0.50
	Swords - Assembled Assessment Center packets			0.50
	Assessment Center lunch and refreshments		$69.68	
11/08/13	Swords - Assembled Assessment Center master scoring spreadsheet			2.00
	Swords - Assisted Mike Jett with EMS scoring			1.00
11/14/13	Swords - Completed Assessment Center scoring			2.00
	Swords - Started purging excluded candidate files			1.00
	Swords - Processed background check documents			0.50
	Swords - Assembled personal reference info			1.00
11/15/13	Swords - Began candidate personal references			1.50
11/18/13	Swords - Worked on personal references			2.00
	Swords - Worked on personal references			0.50
	Swords - Processed law enforcement requests			0.50
11/19/13	Swords - Worked on personal references			2.00
	Swords - Worked on personal references			1.00
11/21/13	Swords - Worked on personal references			6.00
11/22/13	Swords - Worked on personal references			2.00
11/25/13	Swords - Completed personal references			0.75
12/02/13	Swords - Emailed candidates with update			0.25

01/27/14	Swords - Scheduled candidates for final activities			1.00
	Pre-Employment Psychological Evaluation (7 candidates at $350.00 ea.)	$2,450.00		
	Pre-Employment Polygraph Evaluation (7 candidates at $225.00 ea.)	$1,575.00		
	Pre-Employment Physical Examination (7 candidates at $1,050.00 ea.)	$7,350.00		
01/30/14	Swords - Facilitated final interviews			4.00
	Kidd - Conducted final interviews			4.00
02/13/14	Swords - Sent rejection letters to candidates			1.00
Various	Printing Costs		$76.60	
Various	Mailing / Postage Costs		$34.32	
	Totals:	$16,732.00	$1,463.90	97.75

APPENDIX 10 – RECOMMENDED EXIT INTERVIEW INSTRUMENT

Employee Name: _____

Direct Supervisor: _____

Hire Date: _____ Termination Date: _____

Starting Salary: $_____ Ending Salary: $_____

Q1. Please indicate what prompted you to resign from the Clearcreek Fire District:

___ Accepted a full-time fire service job
___ Accepted a full-time non-fire service job
___ Accepted a part-time job with another fire agency
___ Personal circumstances
___ Resignation in lieu of discipline
___ Other: _____

Comments: _____

_____

Q2. Please rank the following on a scale of 1 (Very Poor) to 5 (Very Good):

Salary	1	2	3	4	5
Benefits	1	2	3	4	5
Schedule flexibility	1	2	3	4	5
Potential for full-time	1	2	3	4	5
Quality of internal training	1	2	3	4	5
Access to external training	1	2	3	4	5
Safety of the workplace	1	2	3	4	5
Leadership: Lieutenant	1	2	3	4	5
Leadership: Captain	1	2	3	4	5
Leadership: Chief, A/C	1	2	3	4	5

Comments: _____

_____

Q3. Do you feel you had the resources necessary to satisfactorily perform your job?

Definitely Yes Yes Unsure No Definitely No

Comments: _____

_____

Q4. Do you feel you had adequate training to satisfactorily perform your job?

Definitely Yes Yes Unsure No Definitely No

Comments: _____

_____

Q5. Do you feel you received adequate feedback regarding your job performance?

Definitely Yes Yes Unsure No Definitely No

Comments: _____

_____

Q6. Did the Clearcreek Fire District meet your expectations as an employer?

Definitely Yes Yes Unsure No Definitely No

Comments: _____

_____

Q7. Would you recommend the Clearcreek Fire District to a friend who was seeking a part-time fire service position?

Definitely Yes Yes Unsure No Definitely No

Comments: _____

_____

Q8. If you are going to a new job, what does it offer that the Clearcreek Fire District does not?

Q9. What factors made your time at the Clearcreek Fire District enjoyable?

Q10. What feedback would you like to provide to make the Clearcreek Fire District a better place to work?