

**The Cost of Part-Time Turnover**  
**Is a Combination Department Still Effective?**

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A proposed research project submitted to the Ohio Fire Executive Program

January 11, 2018

**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.
2. I have affirmed the use of proper spelling and grammar in this document by using the spell and grammar check functions of a word processing software program and correcting the errors as suggested by the program.

Signed: S/Eric A. Simon

Printed Name: \_\_\_\_\_

## ABSTRACT

Butler and Hamilton County Fire Departments have experienced a double edge sword with part-time personnel. Part time personnel offer many advantages in theory, but what is unclear, are the fiscal responsibilities in fire departments and to determine whether part-time personnel are optimizing their resources. In a career department, all full-time personnel staff the fire department to operate in a more consistent and stable environment. Compared to a combination department, that maintains a strong, stable environment with the use of some full-time personnel but also has a rotating wheel of part-time personnel coming and going every day. The problem to evaluate was the costs associated with the continuous turnover of part-time personnel and the cost effectiveness of hiring additional full-time personnel to replace them. The purpose of this research project was to assist fire administration on future decision making with regards to full-time and part-time staffing.

This research project was an attempt to determine the cost comparison between the turnover costs of full time and part time personnel. An exact correlation to the overall it costs a fire department to recruit, hire, and employ with/without fringe benefit variable must be considered.

The research project set out to answer key questions, what is the cost to recruit, hire, train, equip, and compensate full and part-time personnel? How much does it cost to recruit, hire, train and equip an open position of full-time and part-time personnel in the years 2014, 2015, 2016? Is the use of part-time personnel still effective?

The literature review examined the various aspects in identifying the actual problem, while addressing the many short falls, fire department budgets face in the 21<sup>st</sup> century.

A survey was emailed to all 59-fire chiefs within the Hamilton and Butler County Fire Departments. In addition, an interview was conducted with a fire chief from each county to gain knowledge on their perspective of part-time personnel staffing.

Through the use of a survey and personal interviews the results were gathered and found that you would be able to hire 5.3 part-time personnel for the same cost as one full-time position. In conclusion, although you would be able to hire 5.3 part-time personnel to the one full-time position there is not an adequate pool of part-time personnel applying for those open positions. A recommendation would be further research to identify the total cost per unit a fire department pays from inception to resignation or retirement. This would quantify the actual number spent by the fire department on personnel.

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## INTRODUCTION

### **Statement of the Problem**

The City of Blue Ash Fire Department is struggling to retain part-time personnel to supplement its full-time workforce. In the last few years the Blue Ash Fire Department has experienced an increased turnover of part-time personnel. This is in part for several reasons but mainly to accept full-time job offers from other departments. This has left the Blue Ash Fire Department without adequate staffing on several occasions, and the need to fill those vacancies using overtime. The Blue Ash Fire Department is having trouble finding and retaining qualified part-time personnel, and there has been a steady decline in the part-time hiring pool over the past few years. The Blue Ash Fire Department has experienced increased financial expenditure to recruit, hire, train, and equip new part-time personnel, as well as the increased burden on current personnel to train the new members.

*The problem this study will address;* is it cost effective to hire additional full-time personnel to offset the reoccurring costs from the continuous turnover of part-time personnel.

The research method chosen for this study will be evaluative.

### **Purpose of the Study**

*The purpose of this study is to* evaluate the costs associated with the continuous turnover of part-time personnel and the cost effectiveness of hiring additional full-time personnel to replace them. The report and subsequent results will be utilized by the fire department and city manager for consideration in future decisions regarding the replacement of part-time personnel.

## **Research Questions**

The following questions will be answered by descriptive research. *The research questions this study will investigate are*

1. What does it cost to recruit, hire, equip, train, and compensate full-time personnel?
2. What does it cost to recruit, hire, equip, train, and compensate part-time personnel?
3. How much does it cost to recruit, hire, train, and equip an open position of full-time and part-time personnel in the years, 2014, 2015, and 2016?
4. Is the use of part-time personnel still effective?

## **BACKGROUND AND SIGNIFICANCE**

The City of Blue Ash fire department has been working as a combination department for more than 25 years. However, this type of staffing model is being called into question as providing the most cost effective service to the community. Over the past three years (2014, 2015, 2016) they had 38% of the part-time firefighters leave the department. This has brought about the question of, is the department really saving by utilizing part-time positions to supplement its full-time workforce?

Currently the BAFD employs 27 full-time and 3 part-time members (Fig 1) and protects an area of approximately seven and one half square miles. The city boasts 12,114 residents and a daytime population that swells to approximately 55,000 due to a large commercial population.

The BAFD responds to an average of 2,453 calls for service per year. The BAFD operates two stations (13 and 15) with a minimum staffing of seven personnel per day. The full-time staffing model is based on three unit days that work a 24-hour shift with 48 hours off. The part-time staffing model is two separate groups of personnel work a rotating shift of 24 hours every sixth day. Each unit day has 9 full-time firefighters assigned and anywhere from 0 to 2 part-time personnel. Most days they are able to operate with nine (this includes one to two part-time personnel) for the day. Having at least nine personnel on duty each day allows staffing a four-person engine company (E-13), a two person ALS (Advanced Life Support) medic unit (M-13), and a second station (St.15) with three personnel for first emergency (Engine or ALS medic). If staffing drops due to call offs, vacation, or no part-time personnel available, then overtime is required to bring the department to the minimum staffing for the shift. The department minimum is seven personnel for the day, this allows for a three-person engine company, two-person medic crew, and two personnel at a second station for first emergency



responses (Engine or Medic). Included in the daily staffing are one to two, or no part-time personnel per day depending on availability. As you can see a loss of one or two part-time personnel can have a negative effect on the day-to-day operations as well as meeting National Fire Protection Association (NFPA) 1710 standards for engine company operations.

For example, the department has encountered several occasions when there is not adequate part-time staff available to achieve department minimum staffing levels. This can occur when the full-time employees assigned to a shift are off for various reasons (e.g. sick leave, vacation time). This has led to, excessive full-time overtime, increased workload to the personnel on duty, and the need to recruit, hire, train, and equip new personnel.

These issues are further compounded due to the decline of qualified candidates now applying for open part-time positions. Due to the lack of fully qualified part-time personnel, the BAFD has had to change the hiring/minimum standards. BAFD now accept firefighters that are basic level Emergency Medical Technicians (EMT) versus the EMT paramedics they were accustomed to hiring.

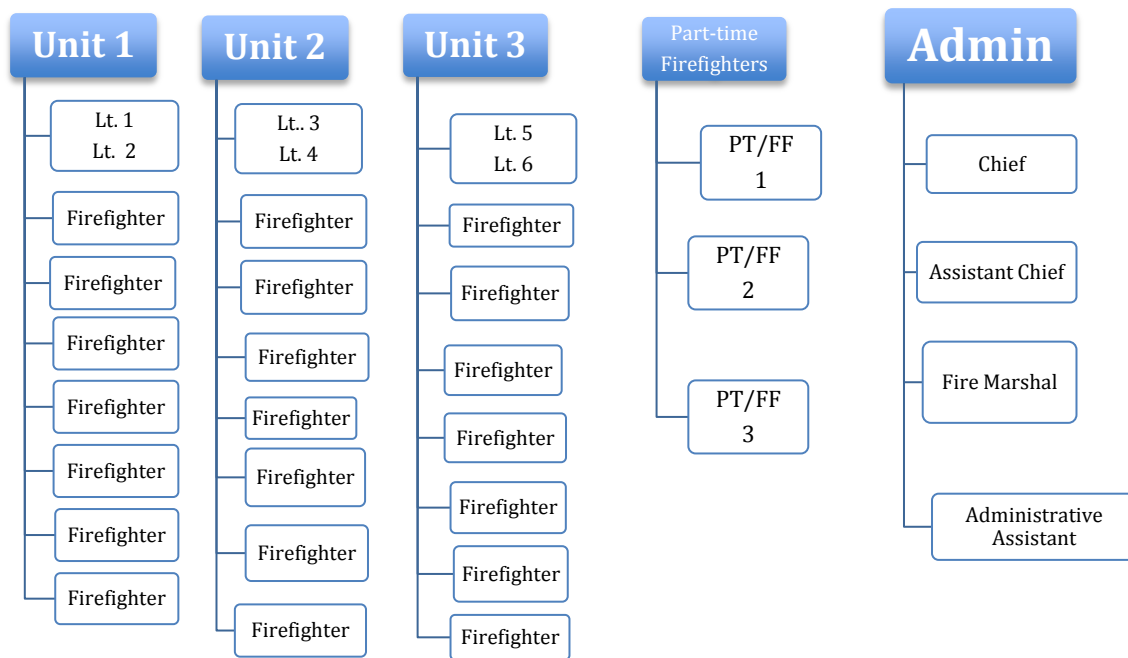
The new hiring standard also presents issues with equipment staffing. Currently due to the differences in certification levels, it is necessary to shuffle people around to properly staff the apparatus. Traditionally, the BAFD required firefighter level II, as well as, EMT paramedic certifications to work as a part-time firefighter; this enabled all members to be able to operate in any position within the department. While many newer part-time personnel are working towards a paramedic level certification, this does not help the day-to-day operations of the department. Furthermore, this has increased the financial expenditure by the fire department to recruit, hire, train, and equip the new part-time personnel.

While just hiring additional part-time personnel or moving to a career department would be a simple fix, many questions need to be answered to make the best decision. What is the actual cost to recruit, hire, train, and equip new members full and part-time? How much does it cost to recruit, hire, train, and equip an open position of full and part-time? Is the use of part-time personnel still effective?

Some of the potential short-term benefits from resolving these issues would be, that open shifts could be filled, adding additional members to the crew, thus potentially helping the crews to operate safer. Therefore, relying less on overtime to fill vacancies as well as decreasing the burden to the existing personnel. Some long-term benefits would be the decreased cost of recruiting, hiring, training, and equipping part-time personnel. These long-term benefits, overall, could increase morale due to the increase in staffing. Higher quality of personnel, all members have equal levels of certifications and training, resulting in operational efficiency, safer and more efficient department.

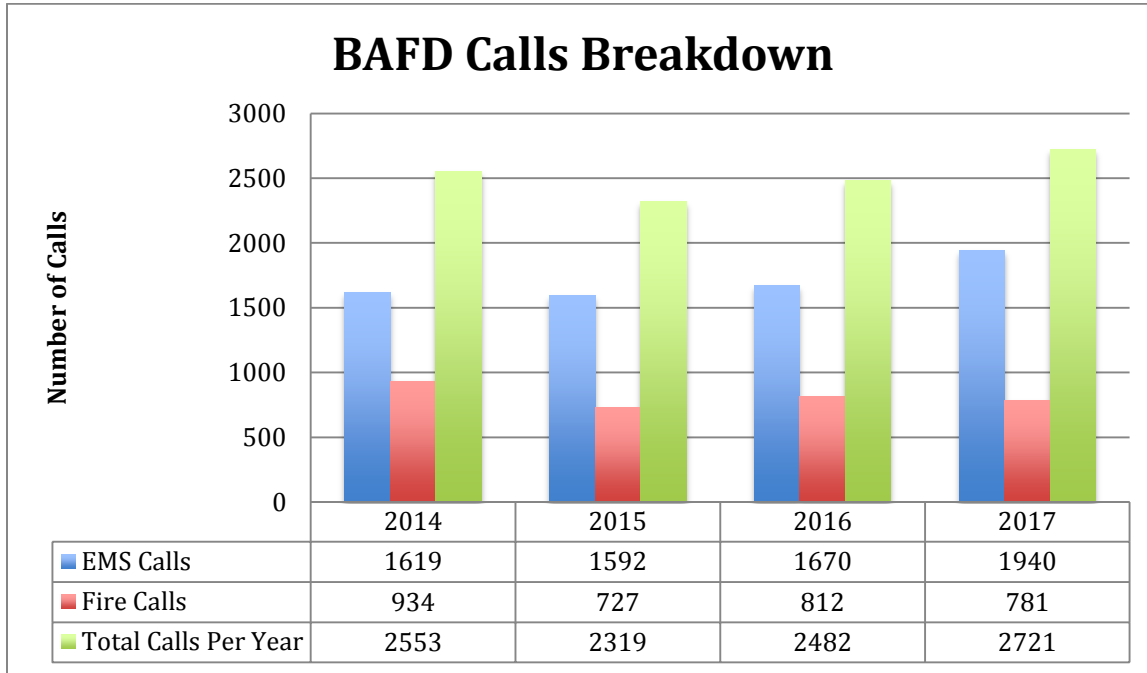
Unfortunately, attempting to recruit, hire, train, and equip additional part-time personnel has been a struggle. At this time the BAFD are losing more part-time firefighters than they are able to hire. In the last five years (2014 – 2018) BAFD has lost 37 part-time personnel out of 99 that were hired for a loss of 37%. In an attempt to correct this issue, the BAFD has attempted to hire additional full-time personnel, but is unable, due to budgetary restrictions.

*The potential impact this study could have on the Blue Ash Fire Department* would be the potential cost savings by identifying and reducing the reoccurring costs from the continuous turnover of part-time personnel.



**FIGURE 1**

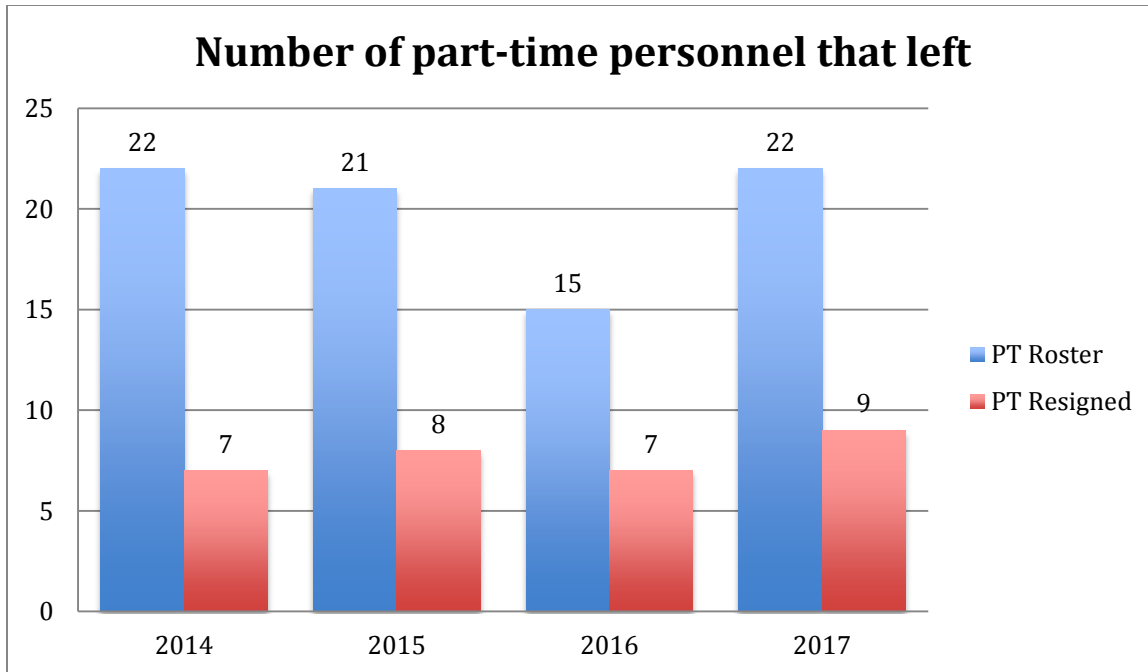
Blue Ash Fire Department 27 Full-Time Firefighters, 3 Part-Time Firefighters, and administrative staff.



**FIGURE 2** – Calls breakdown per year.

BAFD FT Overtime Costs		
Year	FT Overtime Hrs. Worked	Total Spent FT/OT
2014	3306.75	\$88,631.01
2015	3223.25	\$86,734.30
2016	4341.75	\$138,322.87
2017	5675	\$187,310.93

**FIGURE 3** – Full Time Overtime Costs



**FIGURE 4** – Number of part-time personnel that left.

## LITERATURE REVIEW

According to Wagner (2009) “*The department has been a revolving door of part-time employees*”, referring to the City of Fairfield Fire Department. With a turnover rate in 2005 of 28% (13 employees left), in 2006 it was 20% (9 employees left), in 2007 it was 20% (9 employees left) and a partial review of 2008 was at 15% (7 employees left) as of the time of writing. As for the main reason part-time employees leave, according to surveys conducted, 51% of current part-time personnel would leave for a full-time job elsewhere. Whereas a survey of the private sector, only 35.7% of part-time employees stated they will leave for a full-time job elsewhere.

This source of information is relevant due in part that this department experienced some of the same issues this research paper looked to address. This research and subsequent data is ten years old but still very relevant to today’s issues. The information contained in this research paper helped the question, and research of, why part-time personnel decide to leave.

“Here’s why relying on overtime rather than adding staff is a penny-wise, pound foolish proposition”, states Rielage (2016). Rielage goes on to speak out against this practice of using overtime to fill vacancies in the daily staffing for fire departments. Rielage claims there is a greater price that is being paid by having firefighters work excessive amounts of overtime. Rielage states that mandatory overtime can lead to stress at home with families, which puts police and firefighters at a higher percentage for divorce. The increased stress from overtime can also lead to errors in judgment such as incorrect drug dosing for EMS patients as well as missing key information when documenting treatment provided. Another key issue with excessive overtime is the probability of fatigue for the employee. Employees do not get the necessary time off to relax and come back to work recharged. Fatigued employees can turn to energy drinks to

stay alert and often have poor diets, which further compounds the fatigue already experienced by the employee. These unhealthy choices often lead to diabetes, obesity, or heart disease to name a few. On top of all that, one of the most recent trends seen in the fire service is the awareness of firefighter mental health issues. All too often these issues go undetected and can lead to catastrophic events such as violence, depression and even suicide. Rielage points out, that to combat these issues, it is key to have a balance in work and home life. Rielage concludes that, with all the negative effects, using overtime may not be the best choice to fill daily shift vacancies and administrators may not see the cost savings they had anticipated.

The point to this article is that there is more than just a monetary cost associated with the utilization of overtime to fill vacancies created by a lack of part-time personnel. This article points out other factors to consider that often go unnoticed.

According to Haigh (2005), “part-time employee turnover at the Hanover Park Fire Department is extremely high”. Haigh goes on to explain that hiring part-time employees who stay less than 3.5 years is not cost effective to fill the positions of full-time employees. Haigh points out that hiring and training one full-time firefighter is significantly less over a twenty-year career. Haigh states that “simply looking at the upfront cost difference between full- and part-time employees, it is easy to falsely conclude that part-time is cheaper; but to accurately see the real costs, both direct and indirect costs should be considered as well as the long term cost of repeated hiring”.

The main point to this article is that to accurately calculate the total costs differences associated with full-and part-time employees. There needs to be an in-depth study of the total costs and factors surrounding each position.

According to the U.S. Bureau of Labor Statistics (December 7, 2015), median pay firefighters earn \$46,870 per year or \$22.53 per hour. There is no mention as to whether the position is full or part-time and what if any other benefits the employee may receive. This particular article is useful to this research project due in part to the basic information that it provided.

According to the Benoit (July 2000) Over the long run, a combination fire department will provide fire services more efficiently. They go on to compare the cost differences, response times, and dollar loss per fire between fully career, combination, and fully volunteer fire departments. The operating budget comparison between a fully career and combination fire department are as follows. The fully career department had a \$28.82/capita whereas the combination department had a \$22.60/capita. However, despite the difference in cost the response times for each were very close with only .3 seconds difference between the two.

According to the Office of the Independent Budget Analyst Report (2008) concluded that using overtime to fill open shifts was cheaper than hiring additional personnel. The report found the City of San Diego California saved approximately three million dollars filling open shifts with overtime verses hiring additional personnel. The report highlighted the cost differences in fringe benefits. For a hired position the fringe costs are an additional 73% of salary, while the fringe costs for overtime are only an additional 9% of salary.

According to Bromen (2000), some of the primary benefits noted of part-time staffing were lower costs for salaries and fringe benefits. However, Bromen also pointed out that the disadvantages of the part-time system include scheduling reliability, competency, training concerns, including scheduling challenges, employee retention, and high hiring process costs. There are, however, competing advantages and disadvantages. The disadvantages, although not



directly monetary in nature, eventually have an impact on the quality and adequacy of the service provided.

Barnes, D (2002) article gives insight on specific staffing benefits by increasing full time personal in the Aurora Fire Department. The author claims “the cost of these full-time employees may be higher, but the benefit of their availability”. The estimated cost to hire an additional three full-time employees is approximately \$195,273. The estimated cost to hire additional thirteen part-time employees and staff three positions per day would be approximately \$172,848. Part-time employees will still be needed to cover all of the hours currently available to them and to cover time off for the new full-time employees” (21). The author continues to compare similar fire departments within its area specifically Hamilton County, expressing the same similarities of being understaffed and part time availability. This resource is helpful toward my research as it pertains to a combination department actually being effective. As suggested by the article, a combination department may result in career department. The figures given for the three additional full-time personnel seem to be low possibly due to not including fringe benefits.

According to Shared Services Study for the Butler County Fire Chiefs’ Association (January 2016) Ohio Fire Chiefs Association OFCA sent surveys out to all Butler County Fire Departments, and surround counties. This research study is to understand the underlying variables casing a significant decrease in part-time personnel turnover. The survey acknowledged Butler County Fire Department staffing models and limited only responses from surrounding combination departments. Based on twenty-four surveys returned (61%) the study gave several recommendations to improve the personnel turnover rate, such as (a) “develop a

common written entrance and physical capability testing process for full-time and part-time personnel. (b) develop a shared testing agreement for examinations. (c) centralized scheduling for part-time personnel. (d) develop a master scheduling system for apparatus maintenance (e) develop a joint purchasing process for personal protective equipment and fire hose (f) develop management oversight of the shared service process” (pg. i-iv). This information is valuable to this research because it has identified different solutions to address the overall part-time fire service culture, which suggest not to itemize through salary but through a more cohesive approach and consulate normal practices among the fire department.

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## PROCEDURES

The desired outcome of this research project is to find whether it is cost effective to hire additional full time to offset the cost to replace part-time employees who resign. In order to execute, research will be gathered from surveys pertaining to staffing model, hourly rate, fringe benefits, recruitment and hiring costs, and a snapshot over a three-year period of full-time and part-time. A survey was conducted with the 59 fire departments from Hamilton and Butler County. As well as a literature review was conducted to gather a better understanding, which is more cost effective, and to determine a common thread between full and part time employees.

To answer the first two questions, the author broke down the hourly, yearly, fringe benefits, and recruitment costs for full-time and part-time personnel. To perform this research, a survey questionnaire was sent out to the 59 fire chiefs from Butler and Hamilton counties to answer to the best of their ability.

To answer the third question, the author reviewed each fire departments financial expenses resulted from recruiting, hiring, training, and equipping full-time and part-time employees. This question will rely heavily on the data obtained from the survey sent. The author calculated the average of both career and combination departments, specifically hourly and salary, average monies and percentage costs, number of personnel resigned and cost to replace each lost personnel, to evaluate the cost to recruit and hire in monies. The problem to find a dollar amount is based on the survey data, and how well each respondent gave clear and concise answers.

To answer the fourth question, the author reviewed literature and personal interviews with fire chiefs within the Butler and Hamilton County fire departments. When conducting an interview, the author asked questions pertaining to the fire chief's personnel experiences in the

current fire department. These questions are supplemental to the survey questionnaire given to receive accurate data, and do determine the perspectives of local fire chiefs are comparative to the perspective of current trends in literature.

The procedures undertaken for this research project were a combination of data research and personal interviews.

### **Definition of Terms**

**ALS** – Advanced Life Support

**NFPA 1710** – National Fire Protection Association standard for the organization and deployment of Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments

**EMT-B** – Emergency Medical Technician Basic

**EMT-P** – Emergency Medical Technician Paramedic

**Full-Time** – Working greater than 1500 hours in one year and generally receiving fringe benefits.

**Part-Time** – Working less than 1500 hours per year and generally not receiving fringe benefits.

**RHTE** – Recruit, hire, train, equip.

### **Limitations of the Study**

The limited survey data return (16 of 59) contributed to the small population represented in this research. The survey questionnaire had been sent to the 59 Fire Departments in Butler and Hamilton Counties.

A limitation occurs when an error is made by inputting incorrect data, skipping the question or having a bias to disclosing staffing models accurately. Respondents who skipped a question obscured the data results and the reasoning they skipped is unclear. This raises many questions to the specific respondent such as did they skip the question because they did not know answer or did not want to share the information.

Another limitation is the accuracy of the data given and the assumption a fire chief completed the survey. Also, a personal interview is subjective and that is a limitation in the research. However, the data provides a glimpse of the financial cost to employ both full and part time personnel. Through this data it is optimal to find a common thread amongst all participating departments.

A limitation occurred processing data when “no answer” or “missing data” in a field was encountered causing problems when figuring for mean. When respondents skipped a question, the data was invalid, or missing, the author ignored the invalid data and the mean was calculated by a reduction in values.



## RESULTS

### **Research Question 1: What does it cost to recruit, hire, equip, train, and compensate full-time personnel?**

To answer research question 1, a survey (Appendix 1) was sent out to 59 fire departments in the Southwest Ohio counties in Hamilton and Butler. Fire Chiefs were to disclose, to their best ability, type of staffing model, full-time hourly salary, full-time fringe benefits, and recruit costs. Only 16 of the 59 (20%) departments surveyed responded to the survey and only 10 of the 16 provided valid data to answer question 1. One respondent answered with invalid data that could not then be calculated. These responses were null-void to represent question 1. Out of the 9 departments, 33.3 % were full-time career departments, and 66.6% represented combination departments.

According to the survey data (Figure 6) full-time base hourly salary mean is \$26.02/Hr. for a base annual salary of \$71,726.44. The mean of fringe benefits is \$66,414.22/Yr. bringing the mean of full-time annual salary to \$147,329.54 for the first year only. Beyond year 1 the cost of fire department full-time personnel decreases \$9,188.88 for the recruit, hire, train, and equip costs to a total of \$138,140.66/Yr.

Survey Raw Data For FT						
Survey ID #	Dept. Type	FT Hr. Rate	Yr. Salary *	FT Fringe Benefit	FT- R,H,T,E	Yr. Sal + FB + R,H,T,E
1	Combination	\$18.51	\$51,013.66	\$34,000	\$1,500	\$86,513.66
2	Combination	\$22.96	\$63,277.76	\$177,000	\$4,000	\$244,277.76
4	Combination	\$25.54	\$70,112.54	\$40,000	\$5,000	\$115,112.54
5	Career	\$24.29	\$66,943.24	\$35,000	\$7,000	\$108,943.24
6	Career	Invalid	Skipped	Skipped	\$25,000	N/A
7	Career	\$28.40	\$86,896.68	\$100,000	\$11,000	\$197,896.68
8	Combination	\$20.27	\$65,427.44	**\$22899.6	\$13,200	\$101,527.04
9	Combination	\$24.66	\$67,962.96	\$12,000	\$7,500	\$87,462.96
13	Combination	Skipped	Skipped	Skipped	Skipped	N/A
14	Combination	\$25.40	\$70,002.40	\$44,000	\$8,500	\$122,502.40
16	Combination	\$37.70	\$103,901.20	Skipped	N/A	N/A

**FIGURE 5 - FT Raw Survey Data**

FT (Full-time) HR (Hour) Yr. (Yearly) S (Salary) R,H,T,E (Recruit, Hire, Train, Equip)

\* Author calculated Hr. Rate x 106 Hrs. x 26 pays - FT

\*\* Author calculated 1.35% x HR Rate as provided in survey results

Mean of FT Costs from Fig 5					
	FT Hr. Rate *	Yr. Salary**	FT Fringe Benefit***	FT - R,H,T,E****	FT Cost = Sal + FB + R,H,T,E
Mean	\$26.02	\$71,726.44	\$66,414.22	\$9,188.88	\$147,329.54

**FIGURE 6 - Mean of FT Costs taken from figure 5**

FT (Full-time) HR (Hour) Yr. (Yearly) S (Salary) R,H,T,E (Recruit, Hire, Train, Equip)

\* Survey ID #13 not included

\*\* Survey ID #'s 6 and 13 not included

\*\*\* Survey ID #'s 6,13.and 16 not included

\*\*\*\* Survey ID's 13 and 16 not included

**Research Question 2: What is the cost to recruit, hire, train, equip, and compensate a part-time employee?**

In order to answer question 2, a survey (Appendix 1) was sent out to 59 fire departments in the Southwest Ohio counties in Hamilton and Butler. Fire Chiefs were to disclose to the best of their ability the type of staffing model, part-time hourly salary, part-time fringe benefits and, recruit costs. Of the 59 departments only 16 responded and of the 16 only 11 fire departments had part-time staffing models (8 of which were combination departments and are the same departments with full time personnel). From the respondents there were 8 Combination, 2 Part-Time only, and 1 Volunteer/Part-time department.

According to the survey data (Figure 8) part-time base salary mean is \$16.56/Hr. for a base annual salary of \$22,826.56. The mean of fringe benefits is \$6,400.00/Yr. bringing the mean of part-time annual salary to \$27,793.74 for the first year only. Beyond year 1 the cost of fire department part time personnel decreases \$2,509.37 for the recruit, hire, train, and equip costs to a total of \$25,284.37/Yr.

Survey Raw Data For PT					
Survey ID #'s	PT Hr. Rate	PT. Yr. Sal.**	PT. FB	PT - R,H,T,E	PT - Sal + FB + R,H,T,E
1	\$17.51	\$24,128.70	Not Offered	\$500	\$24,628.70
2	\$12.96	\$17,858.88	\$12,000	\$1,500	\$31,358.88
4	\$19.58	\$26,981.24	\$800	\$1,000	\$28,781.24
8	\$17.51	\$24,128.78	Not Offered	\$75	\$24,203.78
9	\$16.00	\$22,048.00	Not Offered	\$7,000	\$29,048.00
10	\$15.32	\$21,110.96	Not Offered	\$800	\$21,910.96
11	\$0	\$0	Not Offered	N/A	N/A
12	*\$16.15	\$22,254.70	Not Offered	Skipped	N/A/
13	\$12.00	\$16,536.00	Not Offered	Skipped	N/A
14	*\$18.04	\$24,859.12	Not Offered	\$3,000	\$27,859.12
15	Invalid	Invalid	Overtime	Skipped	N/A
16	*\$20.58	\$28,359.24	Not Offered	\$6,200	\$34,559.24

**FIGURE 7 - PT Raw Survey Data**

\* - Author calculated data from a range provided in survey

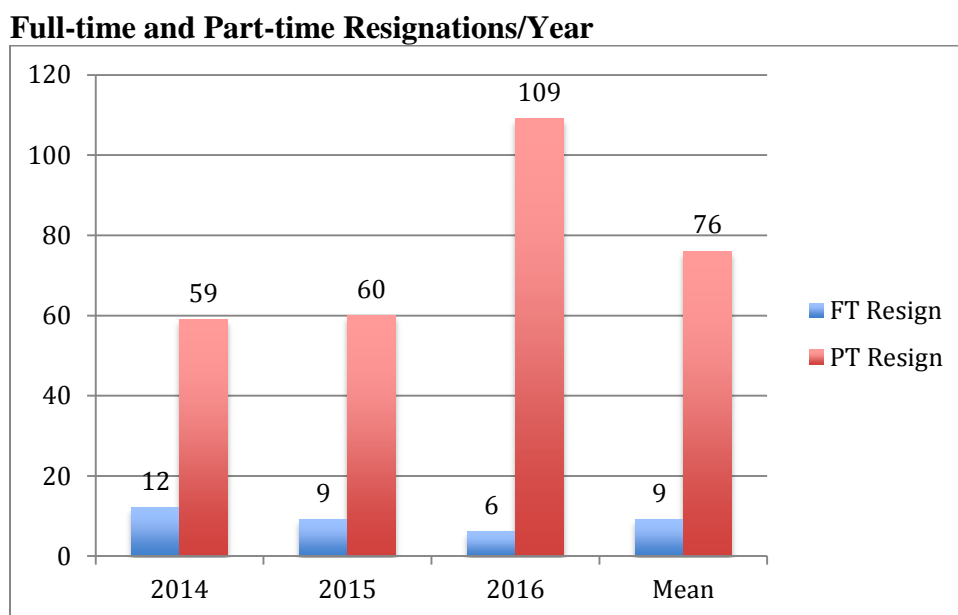
\*\* - Author calculated the PT Yr. Sal. based on PT Hr. Rate x 106 x 26 / 2

Mean of PT Costs from Fig 7					
	PT Hr. Rate	PT Yr. Sal.	PT FB	PT - R,H,T, E	PT - Yr. Sal + FB + R,H,T,E
Mean	\$16.56	\$22,826.56	\$6,400	\$2,509.37	\$27,793.74

**FIGURE 8 - Mean of PT Costs taken from figure 7**

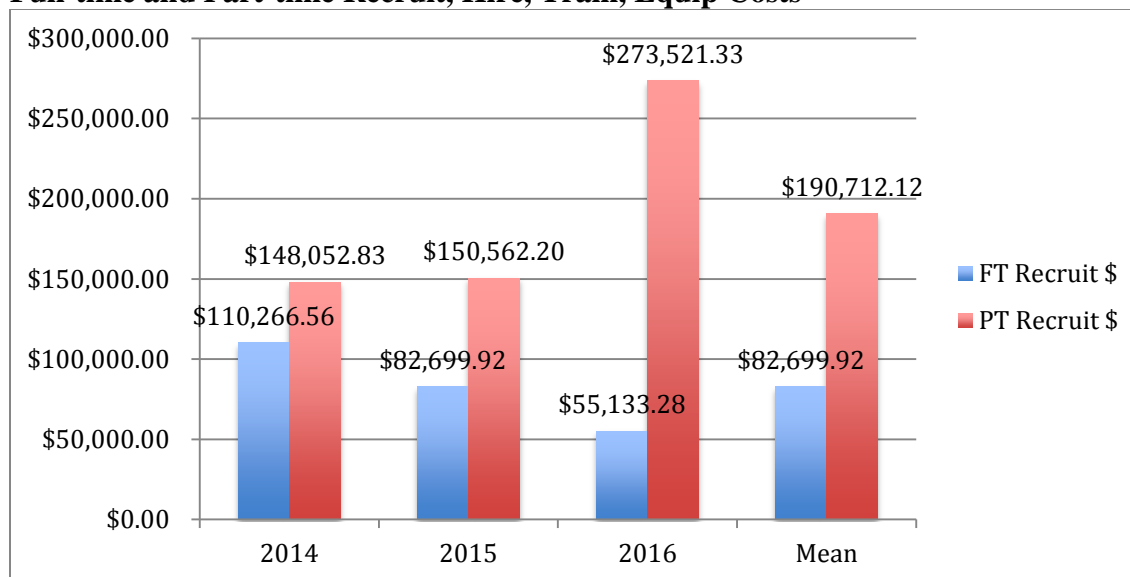
**Research Question 3: On average how much does it cost to recruit, hire, train, and equip the open positions of full-time and part time personnel over the years 2014, 2015, and 2016?**

In order to answer Question 3 it was necessary to determine the number of resigned full and part-time personal (Figure 9) utilizing the survey data results. Then the mean of the recruit, hire, train, and equip costs for full-time and part-time is calculated and then multiplied by the number of resignations for each of the following years 2014, 2015, and 2016 (Figure 9). As shown (Figure 9) the past three years, (2014 2015, 2016) the mean of full time personnel who resigned is 9, compared to the mean of part time personnel who resigned is 76. Based on the information over the three years (Figure 9) (2014, 2015, 2016); the number of full time personnel that resigned decreased, while over the same time frame (2014, 2015, 2016) the number of part-time personnel that resigned had increased.



**FIGURE 9** – Full-time and part-time resignations per year

### Full-time and Part-time Recruit, Hire, Train, Equip Costs



**FIGURE 10** – Full-time and part-time recruit, hire, train, and equip costs per year

### **Research Question 4: Is the use of part-time personnel still effective?**

In order to answer this question, I interviewed a Hamilton County Fire Chief and a Butler County Fire Chief (Appendix 3). Both responses offered insight to the spectrum of part time turnover rate. A combined 59 years in the fire service, both chief offices can relate to excessive part-time personnel resigning. To understand the excessive part-time turnover, the chiefs suggest to examine the part time fire service culture. Brown, R (Personal Interview, 2017, December 15) and Miller, S. (Personal Interview, 2017 December 13)

For example, in today's culture, part-time firefighters are employed at multiple fire stations that count on this person for their staffing model. For example, firefighter (A) has a two part-time jobs (Jobs 1 & 2) and is hired full-time by another fire department (Job 3). This now leaves (Jobs 1 & 2) short a person.

## DISCUSSION

The fire service is dealing with a predominate decline in part-time personnel. Lately the part-time personnel culture has turned fire service staffing models on end. Based on the information collected during research; the survey data represents 20% (16 out of 59) of the fire departments in Butler and Hamilton County. Although the sample population was low, the data results show common trends in the fire service.

The sample population represents four different staffing models; (3) career, (8) combination, (2) part-time, (1) part-time/volunteer, (2) volunteer fire departments. The data results give insight into the following variables, part-time personnel advantages, part-time personnel staffing disadvantages.

Historically, fire departments with a part-time personnel surplus had advantages such as a financially strong staffing budget due to low overtime usage. Also full-time personnel had flexibility with scheduling days off due the increased staffing that part-time personnel provided. This also increased minimum staffing levels that made it able to operate all apparatus and/or stations at full or desired capabilities and to have qualified personnel on staff.

However, in today's fire service culture, fire departments are dealing with part-time personnel staffing disadvantages such as. A lack of part-time applicants as well as an increase in the part-time turnover rate, difficulty in staffing all apparatus and/or stations and generally an increase in overtime for full-time personnel. Another issue faced is the lack of quality personnel applying for part-time positions.

Since this research paper began many things continue to evolve with regards to department staffing. Departments are now more than ever scrutinizing the costs associated with staffing and trying to determine what is the best choice for their department. This ultimately

stems from the availability of staffing in general. Whether it is full-time or part-time personnel that are desired there has been a steady decline in the quantity as well as quality of personnel applying for those positions. This leads to the thought that more research is necessary to find out why there has been a decline in the amount of personnel coming into the fire service.

The limitations to the study did impede on the survey data results. Specifically when questions were answered with the following inputted as “skipped, 0, partial, or the wrong value for the information was given”. These data results did not offer any value to the original question. These types of invalid answers eliminated the potential data from the results.



## RECOMMENDATIONS

Fire Departments will inevitably need different staffing models to accommodate the communities. Regardless, if a fire department is career, combination, or part time it is imperative funds are being used effectively to preserve the fire service provided. Many other research topics are similar to this research topic, many give quantitative, and subjective data to support claims, however, there is still more to be researched. More in depth research is needed to understand what a fire department spends on both full and part-time personnel. The research shows that part-time personnel turnover continues to increase more than full time. Therefore, a recommendation is to fine-tune the process and content of the concept in recruiting part-time and full-time personnel. Although data shows many fire chiefs believed they did not have an increased cost in hiring additional personnel but have spent over \$50,000 in recruiting, hiring, training and equipping costs. These costs are subjective to the survey respondents, and from the data a more in-depth evaluation to the 81% who responded no increase.

Finally, financial expenditures and staffing models are two variables to identify where fire department cost are contributing, but further research needs to look into the total cost per unit a fire department pays from inception to resignation or retirement to determine a quantified number to support the actual fire department expense on personnel.

## APPENDIX 1 – SURVEY QUESTIONS

### Survey Questions

1. How is your fire department staffed \_\_\_\_\_?
  - A. Full-time (Career)
  - B. Combination (Full-time and Part-time)
  - C. Part-time
  - D. Volunteer
  - E. Other – Please explain
  
2. How many members make up your department \_\_\_\_\_?
  
3. What is the population served by your department \_\_\_\_\_?
  
4. What was your department run volume for the following years?  
     2014 \_\_\_\_\_?      2015 \_\_\_\_\_?      2016 \_\_\_\_\_?
  
5. What is the number of full-time personnel on duty each day \_\_\_\_\_?
  
6. What is the number of part-time personnel on duty each day \_\_\_\_\_?
  
7. What is the average tenure of employment for your part-time personnel \_\_\_\_\_?
  
8. What is the average tenure of employment for your full-time personnel \_\_\_\_\_?
  
9. How many full-time personnel resigned from your department in each of the following years?  
     2104 \_\_\_\_\_?      2015 \_\_\_\_\_?      2016 \_\_\_\_\_?
  
10. How many part-time personnel resigned from your department in each of the following years?  
     2014 \_\_\_\_\_?      2015 \_\_\_\_\_?      2016 \_\_\_\_\_?

11. Over the last three years has your department experienced a higher than expected turnover of full-time personnel? Yes / No
12. Over the last three years has your department experienced a higher than expected turnover of part –time personnel? Yes / No
13. Has your department experienced increased financial expenditure to hire additional part-time personnel \_\_\_\_\_? If so how much \_\_\_\_\_?
14. Has your department experienced increased financial expenditure to hire additional part-time personnel \_\_\_\_\_? If so how much \_\_\_\_\_?
15. What is the hourly rate for part-time personnel \_\_\_\_\_?
16. What is the hourly rate for full-time personnel \_\_\_\_\_?
17. What is the approximate cost of fringe benefits paid to full-time personnel \_\_\_\_\_? i.e. Paid Time Off, Sick Time, Comp Time
18. Does your department offer fringe benefits for part-time personnel?  
i.e. Paid Time Off, Sick Leave, Comp Time Yes / No If so what is the  
approximate value \_\_\_\_\_?
19. What is the approximate cost to recruit, hire, equip, and train full-time personnel \_\_\_\_\_?
20. What is the approximate cost to recruit, hire, equip, and train part-time personnel \_\_\_\_\_?

**APPENDIX 2 – SURVEY RESULTS****Question 1 Survey Results**

<b>Survey ID #</b>	<b># FT Duty/Day</b>
1	Combination
2	Combination
3	Volunteer
4	Combination
5	Career
6	Career
7	Career
8	Combination
9	Combination
10	Part-time/Vol
11	Volunteer
12	Part-time
13	Combination
14	Combination
15	Part-time
16	Combination

**Question 2 Total # of Members**

Survey ID #	# of Members
1	51
2	61
3	35
4	66
5	23
6	65
7	25
8	36
9	90
10	53
11	23
12	82
13	25
14	40
15	45
16	83

**Question 3 - Population Served**

Survey ID #	Population Served
1	Invalid
2	29,510
3	2,200
4	18,500
5	4,600
6	47,000
7	2,800 Day /12,000 Night
8	14,511
9	42,000
10	12,300
11	5,900
12	23,000
13	6,000
14	10,250
15	9,500
16	23,000

**Question 4 – Run Volume**

Survey ID #	Dept. Runs '14	Dept. Runs '15	Dept. Runs '16
1	1071	1255	1365
2	3328	3304	3204
3	N/A	162	143
4	4698	4879	4834
5	1331	1516	1388
6	4850	4900	4960
7	1360	1253	1161
8	1600	1650	1590
9	2400	2511	2789
10	155	159	157
11	195	182	188
12	2603	2712	2897
13	1775	1250	1641
14	1526	1595	1528
15	830	745	856
16	2567	2633	2876

**Question 5 – FT on Duty/Day**

Survey ID #	# of FT/Day
1	1
2	8
3	0
4	6
5	6
6	17
7	8
8	5
9	11
10	0
11	0
12	Skipped
13	1
14	2
15	Skipped
16	3

**Question 6 – PT Duty/Day**

Survey ID #	# of PT/Day
1	4
2	8
3	0
4	4
5	Skipped
6	0
7	0
8	3
9	6
10	3
11	0
12	12
13	4
14	4
15	2
16	12

**Question 7 – Average Tenure of Full-Time Personnel**

Survey ID #	Avg. Tenure of FT
1	40
2	Skipped
3	0
4	11
5	18
6	15
7	12
8	6
9	18
10	0
11	0
12	Skipped
13	22
14	16
15	Skipped
16	10

**Question 8 – Average Tenure of Part-Time Personnel**

Survey ID #	Avg. Tenure of PT
1	12
2	3
3	0
4	3
5	0
6	0
7	0
8	5
9	2
10	6
11	0
12	8
13	10
14	8
15	3
16	11

**Question 9 – Number of Full-Time Personnel Resigned for years '14, '15, '16**

Survey ID #	FT Resign '14	FT Resign '15	FT Resign '16
1	0	0	0
2	1	2	1
3	0	0	0
4	2	0	0
5	0	1	0
6	3	2	2
7	1	1	1
8	4	1	2
9	1	2	0
10	0	0	0
11	0	0	0
12	Skipped	Skipped	Skipped
13	0	0	0
14	0	0	0
15	Skipped	Skipped	Skipped
16	0	0	0



**Question 10 – Number of Part-Time that Resigned in years '14, '15, '16**

Survey ID #	PT Resign '14	PT Resign '15	PT Resign '16
1	4	5	3
2	13	11	15
3	0	0	0
4	3	7	19
5	Skipped	Skipped	Skipped
6	0	0	0
7	0	0	0
8	2	5	4
9	11	8	16
10	6	3	4
11	0	0	0
12	7	7	13
13	Skipped	Skipped	Skipped
14	2	5	2
15	Skipped	Skipped	20
16	11	9	13

**Question 11 – Over the last three years has your department experienced a higher than expected turnover of full-time personnel? Yes/No**

Survey ID #	Increase in FT Turnover
1	No
2	Skipped
3	No
4	No
5	No
6	Yes
7	No
8	Yes
9	Yes
10	N/A
11	N/A
12	Skipped
13	No
14	No
15	Yes
16	No

**Question 12 – Over the last three years has your department experienced a higher than expected turnover of part-time personnel? Yes/No**

<b>Survey ID #</b>	<b>Increase in PT Turnover</b>
1	Yes
2	Yes
3	No
4	Yes
5	No
6	No
7	No
8	No
9	Yes
10	No
11	N/A
12	Yes
13	Yes
14	No
15	Yes
16	Yes

**Question 13 – Has your department experienced increased financial expenditure to hire additional full-time personnel? Yes/No If so how much?**

Survey ID #	Increased Cost to Hire FT	How Much
1	Yes	124,000
2	Yes	25,000
3	No	
4	No	
5	No	
6	No	
7	No	
8	No	
9	No	
10	No	
11	N/A	
12	Skipped	
13	No	
14	No	
15	No	
16	No	

**Question 14 – Has your department experienced increased financial expenditure to hire additional part-time personnel? Yes/No If so how much?**

Survey ID #	Increased Cost to Hire PT	How Much
1	No	
2	No	
3	No	
4	No	
5	No	
6	No	
7	No	
8	No	
9	No	
10	No	
11	N/A	
12	Yes	Invalid
13	No	
14	Skipped	
15	Skipped	
16	Yes	

**Question 15 – What is the hourly rate for full-time personnel?**

Survey ID #	FT Hourly Rate
1	\$18.51
2	\$22.96
3	N/A
4	\$25.54
5	\$16.70 - \$31.88
6	Invalid
7	\$28.40
8	\$20.27
9	\$24.66
10	N/A
11	N/A
12	Skipped
13	Skipped
14	\$22.27 - \$28.53
15	\$16.50
16	\$30.29 - \$45.10

**Question 16 – What is the hourly rate for part-time personnel?**

Survey ID#	Hourly Rate for PT
1	\$17.51
2	\$12.96
3	N/A
4	\$19.58
5	N/A
6	\$0.00
7	N/A
8	\$17.51
9	\$16.00
10	\$15.32
11	\$0.00
12	\$15.50 - \$16.80
13	\$12.00
14	\$14.87 - \$21.22
15	Invalid
16	\$15.50 - \$25.66

**Question 17 – What is the approximate cost of fringe benefits paid to full-time personnel?**

Survey ID #	Cost of FT Fringe Benefits
1	\$34,000
2	\$177,000
3	N/A
4	\$40,000
5	\$35,000
6	35%
7	\$100,000
8	1.35 x Hr. Rate
9	\$12,000
10	\$0
11	\$0
12	Skipped
13	Skipped
14	\$44,000
15	Skipped
16	Skipped

**Question 18 – Does your department offer fringe benefits for part-time personnel?  
Yes/No**

Survey ID #	Offer Fringe Benefits PT	How Much
1	No	
2	Yes	\$12,000
3	No	
4	Yes	\$800
5	No	
6	No	
7	No	
8	No	
9	No	
10	No	
11	N/A	
12	No	
13	No	
14	No	
15	Yes	Overtime
16	No	

**Question 19 – What is the approximate cost to recruit, hire, equip, and train new full-time personnel?**

Survey ID #	Recruit, Hire, Train, and Equip. - FT
1	\$1,500
2	\$4,000
3	N/A
4	\$5,000
5	\$7,000
6	\$25,000
7	\$10,000 - 12,000
8	\$13,200
9	\$7,500
10	N/A
11	N/A
12	Skipped
13	Skipped
14	\$8,500
15	Skipped
16	N/A

**Question 20 – What is the approximate cost to recruit, hire, train, and equip part-time personnel?**

Survey ID #	Recruit, Hire, Train, Equip - PT
1	\$500
2	\$1,500
3	N/A
4	\$1,000
5	N/A
6	\$0
7	N/A
8	\$75
9	\$7,000
10	\$800
11	N/A
12	Skipped
13	Skipped
14	\$3,000
15	Skipped
16	\$6,200

**APPENDIX 3**

## Oral Interview Q&amp;A

1. What County do you work in?
2. How many years have you been in the fire service?
3. What is your perspective of current fire department increased part-time turnover?
4. What suggestions would you give to improve the quality of the fire service?