

**How Many Part-time Personnel are Required to Staff
One Full-time Position?**

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CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

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ABSTRACT

Fire department budgets (as well as most other departments) are under very close scrutiny by city administrators and legislators. They, as well as the department heads closely monitor staffing and the costs associated with overtime staffing. In a combination department one way to keep overtime costs in check is to have an adequate amount of part time personnel available to fill empty shifts that may otherwise be filled by full time staffing on overtime. The problem is, just how many part time personnel must a department have on its roster in order to adequately staff the openings caused when full time are off duty or to fill dedicated part time positions.

This research project was intended to attempt to define the optimum number of part time personnel that may be required to fill a 24-hour working slot on a combination department. Determining the part time staff may be difficult. Many variables must be considered in the process.

The purpose of the research was ultimately to assist an entity including us; with determining how many personnel they would need to have on their roster in order to adequately staff the available working hours.

The literature review revealed many articles concerning career staffing levels and how they are determined, very few articles focused on the part time equation in combination departments. One could draw the conclusion that the amount of part time staffing was not an immediate concern. The consensus of the majority of articles was that combination departments are one of the first steps in a department making the move towards a career department. Usually, the first career personnel are taken from the volunteer or part time ranks. Once a department becomes established as a combination department and more focus is placed on the budget supplemental personnel then become a concern.

Descriptive research was used to create a survey instrument that was mailed to all combination departments in the 13-county area defined as Northeast Ohio. This information was

ascertained from the State Fire Marshall's Directory. The surveys were compiled and the data was analyzed. The results proved to be less than conclusive although it appears as though the range of four to six part time personnel per slot should yield the desired results.

It is recommended that a combination department attempting to have adequate part time staffing should begin with a minimum of four part time personnel per 24-hour shift and fine-tune that number as needs exist.

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INTRODUCTION

Statement of the Problem

It has become readily apparent through observation, conversation with peers, a look through the 2005 State Fire Marshal Fire Department Directory, and articles in leading fire service magazines that the “Combination” department is not only here to stay but also gaining in popularity. Many communities are suffering budget constraints and the outlook is not getting any rosier. Many communities have turned to some form of a combination department to help ease some of the shortfalls. Some communities are actually reducing career personnel not by layoffs but through normal attrition and replacing the career personnel with part time (O’Connor, 1998, p. 6). Generally, the combination department “is a progression from a purely volunteer-staffed organization to one that is primarily staffed by paid personnel (Lighting the Path of Evolution, 2005, p. 2).” A combination department enables a community to help to provide adequate staffing for fires and emergencies at a very significant cost savings over a completely full time staffed department (O’Connor, 1998, p. 10).

A common theme in many of the resources that were reviewed for this study is the inability of many of the departments to be adequately staffed. Many report that recruitment of part time and volunteer personnel is becoming more difficult. Fortunately, this is not an issue for the Twinsburg Fire Department. There are numerous fully paid departments in the area and many of the personnel employed by them actively seek a second means of income. The compensation paid to part timers here is significantly above the average and there are numerous applications on file from those seeking a secondary employment.

There are nearly as many styles of combination departments as there are combination departments. It appears as though the most common style is a base component of full-time firefighters supplemented by a cadre of part-time employees, the ratios, in either direction, are

largely dictated by the community and its available funding or desired level of service. Coleman (2002, p. 1) defines a combination department as “any fire department that uses both full-time and part-time people to meet commissions and goals of the organization”.

The problem is that not filling in available work slots with part time personnel necessitates filling that time, when it is below fulltime minimums, with overtime full time personnel and when over fulltime minimums, not filling the time at all. The consequence of this issue is even with full time overtime personnel being utilized to reach the minimum staffing level it then reduces the overall staffing to less than optimal conditions resulting in a realignment of the response procedures. The ramifications of the realignment can be numerous, the most notable being less than the required personnel to what we consider is the level desirable to safely accomplish our mission. Part time personnel play a very integral part in keeping our staffing at the desired minimum of nine personnel 24/7/365.

The Purpose of the Study

The purpose of this project will be to identify how many part time personnel must a combination fire department have on staff in order to adequately cover one 24-hour firefighter position, around the clock. To share this information with a government entity whether it is a City, Village, Township or District, to assist them in making an informed decision to determine the level of part time staffing in a combination department in order to facilitate the level of service desired by and delivered to the residents of their City.

Research Method Utilized

This study utilized the descriptive research methodology.

Research Questions

The research questions this study will investigate are:

1. Do departments with a majority of full time personnel or departments that have a majority of part time personnel have better coverage staffing?
2. Do part time members fill in for full time personnel on scheduled or unscheduled days off?
3. If they do, does it affect the percentage amount of coverage as it relates to authorized staffing?
4. Are there limits, minimum and maximum, individual part time employee may or are required to work?
5. Do departments that have set minimums of hours for part time personnel have better shift coverage than departments that do not?

BACKGROUND AND SIGNIFICANCE

Twinsburg Fire Department has been a combination department since 1992. It started with 3 fulltime personnel covering the daytime hours and over the last 15 years it has expanded to three shifts of nine personnel, three fulltime members of the Fire Prevention Bureau and two Chiefs. Back when the department was an all-volunteer organization, it was a normal occurrence to have enough personnel on hand for every call to essentially overwhelm an incident. All of the persons that were volunteers to the department lived in the district, they were available to come in for calls, callbacks and be part of the responding force. Employers including the City allowed employees to respond to fire calls while at work. This has all changed as the department has expanded, increasing full time employees to more than 50% of the force and the residency borders expanded out to a 25-mile radius. Approximately one-third of the employees still live within the district. Couple this with the fact that the majority of firefighters have secondary employment and still have to have some family time, the availability to respond to the station in response to a call for additional assistance is greatly diminished. With these facts in mind, the fire chief determined that it is his desire to maintain a minimum of nine personnel on duty, around the clock, everyday. This is an arbitrary number not based on any nationally recognized standard. The thought process was such that having nine personnel on duty would enable the department to have a safe, initial response to the vast majority of emergency calls. Increasing the staffing to the minimum nationally recognized standard would be cost prohibitive, adding no less than \$1,000,000 per year to our operating budget, this is not an option. Keeping the staffing level at a consistent level of nine personnel would be accomplished by employing equally qualified part time personnel to fill the open spots created when full time personnel are off for any reason.

The part time personnel do not have dedicated part time shifts; they cover the full time

personnel scheduled days off and may cover unscheduled days off unless staffing is below full time minimums. There are currently 25 part time members that are responsible to cover approximately 23,000 hours per year. They are required to work a minimum of 48 hours per month for a total of 612 hours per year. This accounts for approximately 15,300 hours per year, leaving us a shortfall in raw numbers of over 8,000 hours per year. Part time members are allowed to schedule themselves up to 159 hours in a 21-day cycle for an average of 56 hours per week, the maximum allowed by FLSA, which a small percentage do. The desired outcome of employing part time members is to have full authorized staffing 24/7/365, this is not happening. Through October 31, 2006, we are at full staffing only 66% of the time. Less than full staffing requires significant changes in response procedures, most of which are less safe than normal responses. The construction of a second station completed in June of 2007 will only increase the need for additional personnel and hiring will take place. The question is “How many part time personnel do we need to ensure nine on duty around the clock seven days a week?”.

It is hoped that other departments can use the accumulated research to assist them in their own quest to increase staffing. It is quite evident that some form of a combination department is a very popular and favorably economic option for many communities. This observation is drawn from personal experience, conversation with members of other departments, the State Fire Marshals Ohio Fire Department Directory (2005), the plethora of information that has been published in trade magazines and the numerous research studies on the subject of combination departments.

The “style” of a combination department is largely dictated by the individual community’s wants, needs, and affordability. In *Lighting the Path of Evolution (2005)*, the authors offer this summation:

The fire service is evolving as well; in fact, it always has been. As demand for services outstrip resources, there has been in many areas of the country a natural progression from departments fully staffed by volunteers, to some form of combination system, to a fully paid service. The pace of that change is different from place to place, as are the problems encountered along the way.

The goal of the fire service is to protect life and property by delivering the highest possible level of service consistent with need, at the lowest possible cost consistent with safety.

This is one of the primary basis' for all combination departments, how to deliver the highest level of service in the most financially responsible manner. Once it is determined that a combination department is the path a community wants to take, staffing then becomes a major concern. Staffing is dependent on the expectations of the community. "The larger a community, the higher level of service people expect" (Lighting the Path of Evolution, 2005, p. 3). This is directly related and quantified in "Community Choice Between Volunteer and Professional Departments" (p.27, 2001) where they offer:

Economic expansion is contributing to growth in what were rural communities. As local incomes rise and higher income people move in, the demand for fire protection increases. New residents may demand more fire protection services as well as quicker response times and a broader array of emergency service.

How much and what type of staffing is dictated by the economic factors of the individual community essentially what can the community afford to fund. The National Fire Protection Association (NFPA) *Fire Protection Handbook, 17th Edition* (1991) states that only after a

careful evaluation at the local level should an entity determine what level of service to provide whether it is staffed with career, part time, paid-on-call volunteer or a combination of all or part.

It goes on to iterate:

A situation of this type is probably most evident in the rapidly growing suburban communities surrounding major metropolitan areas. Originally, these outlying areas were composed of small communities that provided a climate suitable for volunteer departments. As times changed, however, these communities experienced rapid growth rate in population, housing, and ancillary services. The original corps of volunteers found themselves unable to meet the increased demands or recruit new members. Therefore, many of these once volunteer fire departments have added the services of career personnel (p.9-36).

How many fulltime positions are there going to be? How many part time positions are there going to be? Will the part timers fill in on full time off days? Once an entity has determined the base numbers they must determine how many of each type, full or part time, they need to fill those positions. That is the basis of this study. The amount of full time employees is a known entity, it is dictated by what a community can afford or desires. How many part timers does it take to make one full timer? It is a given that there must be more than a one-to-one ratio but what is the optimum number?

One must determine what type of part time employees they are hiring. In the study, "*Gender, Work and Organization*" (p. 306-333), the author talks about the three different types of part time workers. The author calls them core, peak and ancillary. Core part time workers are identified as those that put in the majority of time, probably the ones that utilize their part time job as a full time job. Peak workers are identified as those that do what is required and maybe a little more if necessary. Ancillary workers can be defined as those that work only when

absolutely required or in strictly a support mode. A department must find the best mix of all three types in order to accomplish their mission.

Ascertaining the optimum number of part time employees is important for many reasons. By far, the most important reason would be available funding. Any employee, full or part time, requires education, training, equipment and compensation. It seems that it would be counter-productive to have part time staff as a cost saving measure then turn around and hire more than a department would need. Even though most part time employees receive compensation only when they work, an agency would still have to provide necessities, an entity that overcrowds its roster is throwing money away.

An additional consideration is availability of the employee pool. In some urban and suburban departments, in the authors' experience, this does not appear to be as much of an issue. As evidenced by the stack of applications from those hoping to become a member of our department, as well as observation of other combination departments in our area, there is no shortage of available applicants. Having a very significant amount of applicants for the few openings in the part time cadre allows us to be very selective in the hiring process. Only those applicants that have the experience, training and education desired by us are invited to join our fire department. We consider ourselves lucky since this is clearly not true throughout the fire service. In the Mentor-On-The-Lake Fire Department (Ohio) Annual Report from 2004, they specifically state, "The Department is experiencing a problem with unavailable part time help during the weekly daytime hours. The administration is cognizant of the fact and attention is focused on gaining additional help during this period." There are other factors that impact the available resource pool these include, changes in local business and industry policies regarding employees leaving the workplace, the numbers of volunteers who are employed outside of their

response area, a tight labor market, or even members apathy (Lighting the Path of Evolution, 2005).

The potential impact this study could have on the Twinsburg Fire Department is that it could show that the current level of part time staffing is insufficient to maintain the staffing required to adequately and safely deliver the level of fire and emergency medical services to the community. We may also need to label or categorize our part time personnel in order to identify our needs more clearly. Identification of core, peak and ancillary part time personnel may be required and adapting or creating work schedules that correlate with the different types of part time workers may become necessary.

LITERATURE REVIEW

The task of finding relevant subject data for my research project turned out to be harder than it first appeared. Although there is no shortage of data concerning “Combination Fire Departments”, a simple search of the Internet resulted in over 1,000,000 hits. The individual topics are numerous, the further into the hits, the more it became apparent there was not a lot of subject matter on combination staffing available. Many of the items that were reviewed touched on the fact that there is increasing difficulty in finding volunteers and part time personnel but none offered a definitive answer on this particular subject. To help to obtain some background additional research outside of the fire service realm was undertaken.

The current definitive report on combination fire departments is probably, *Lighting the Path of Evolution, The Red Ribbon Report* (Various Authors, 2005) it was undertaken due to the ever-increasing amount of combination-style departments in the United States and the problems, concerns and issues associated with that form of service. The considerable amount of authors and contributors denotes its importance and significance. It indicated there are in excess of 26,354 fire departments in the country. Of those 19,224 (72+%) are staffed by volunteers, 2,238 (8+%) feature fully paid staff and 4,892 (18+%) have some form of combination paid and part time or volunteer. Ohio differs dramatically from the statistics in the Red Ribbon Report. According to the United States Fire Administration (USFA) National Fire Department Census Summary Data, some 63.2% are all volunteer, 26.4% are combination, and 10.4% are all career. Ohio is 11th in the continental United States in the number of career or mostly career departments. Ohio is ranked fifth in the amount of fire departments trailing only New York, Pennsylvania, Illinois and Texas.

The Red Ribbon Panel also reports that the numbers of pure volunteers has *decreased* by at least 10 percent in the last 20 years. This is important because the decrease in available volunteers is directly related to the increase in combination departments. This was attributed, to a certain extent, by the ever-increasing demands placed on the fire service. Urban dwellers fleeing to the suburbs coupled with natural population growth has increased the need for some form of paid staff to provide a basis of service, in many areas of the country that had been traditionally served by volunteer departments. There appears to be a natural sequence from volunteer staffing to duty shifts to paid on call to part time to combination and finally, a fully paid staff. They offer insight into the need for departments to undertake this evolutionary process, not the least of which is the availability of staffing to meet the needs and demands of a growing community.

Numerous individual combination fire department websites were reviewed that came up as a hit on this subject. It was not surprising to see that many of them indicated that they began as volunteer services but “increased demand for services, a shrinking volunteer corps, training and education requirements, time constraints on volunteers” necessitated changing to a combination department and continuing the evolution to a fully paid staff (Mankato Volunteers, Tracy Fire Departments, Milton Fire Department, Gulfport Fire Department).

In his research paper, *Career Staffing Levels in Combination Departments* (2000), Stephen Olson and his research project explored how combination departments integrate their career, part time and Paid-On-Call personnel to provide services to the community and how department administrators determine what is an appropriate amount of career personnel to meet the service expectations of the community. He was addressing the other end of the spectrum of this research; in it he does touch on some of the relationship between full and part time. He found many of the same items that cropped up during this research including conflict from full

time to part time, conflict with union officials or rules, training, availability and balancing the needs of all parties involved. He also delved into the supposition that hiring part time personnel reduced the need for full time personnel; his research proved that it did not. Of particular use to this research was one of his results tables that indicated the ratio of full time to part time personnel in metro and non-Metro areas. It showed a direct relationship between the increasing population of the response area and the amount of part time personnel employed in a department. The data was consistent between what was termed Metro and non-Metro fire departments. His research revealed that as the population in a given area increased, the level of part time personnel decreased. This indicated that as the increase for services was called for more departments turned to full time staffing as a means to accommodate the increase in required services. This particular phenomenon was not researched in this paper as trends or histories were not the focus. It is important to note that in the tables the amount of personnel per 1,000 residents is indicated not the ratio of full time to part time.

The search also revealed testimony to the House Committee on Science on June 4, 2003 from members of the fire service in regards to the Staffing for Adequate Fire and Emergency Response (SAFER) Act Grants. Chief Michael Quill of the Auburn Fire Department in Central New York added credence to the statements of many other articles concerning the natural progression from volunteer to full time employees when he testified, "In addition, volunteer fire departments across the country are facing great difficulty in maintaining and recruiting volunteer firefighters. There are a wide variety of reasons for this decline, but its impact is unmistakable the statistics show a consistent, significant downward trend over the last two decades." This testimony was indicative of the trend to fulltime and combination departments throughout America. And, James M. Shannon, President and CEO of the National Fire Protection Agency (NFPA), testified "Career fire departments need more firefighters, even as they've experienced

some success in adding firefighters to meet new assignments, standards, and guidelines over the past 15 years. There is nothing to suggest recruiting qualified firefighters would be an obstacle if departments were properly authorized and funded to do so. Volunteer fire departments also need more firefighters”. They touch on the reasons why more and more departments are foregoing their volunteer status and adopting some form of combination department. Having a definitive number, if it is possible, as to what part time resources an individual department would require would assist those departments in the planning and budget process.

In the article, “Community Choice Between Volunteer and Professional Departments (2001)”, Brunet, DeBoer, and McNamara undertook a study to show an economic model for community choice between volunteer and professional services. They offer the insight that “some communities may have no choice but to hire professionals”. In a twist to the conventional wisdom that had been iterated by numerous other articles that being volunteer departments are always more cost effective they offer:

Once the level of fire protection demanded is established, communities choose the lowest cost means of providing it. Some evidence implies that volunteer departments tend to have lower costs than professional departments for smaller levels of fire protection. Professional departments have lower costs for larger levels of fire protection. Professional departments also have relative cost advantages where the fire protection “environment” is more demanding where buildings are taller, houses closer together, or industries exist that use hazardous materials, and where there are more medical emergencies. As the cost of recruiting volunteers rises; the relative cost of volunteer protection rises.

A relevant, insightful article that shed some light on one of the many different angles of this equation was written by Sarah Jenkins (2004) and entitled "*Gender, Work & Organization*", in it she compiled case studies of part time female workers in six workplaces. For the purposes of this paper gender is not relevant but the outcomes are. Her findings suggest that there is a need to distinguish and differentiate the three types of part-time workers; core, peak, and ancillary. Her findings indicate that such distinctions capture the diversified utilization of part time workers and contribute to the debate concerning the integration or ostracizing of parttime staff within workplaces. Her categorization of the three types of part time workers can be directly related to the use of part time personnel in the fire service. Her definition of core workers could be interpreted to indicate those part time workers that make up the entire force of workers on a given department. This would be a situation where perhaps the only full time personnel would be a Chief or Fire Prevention person and all of the shift personnel would be part time employees. The parallel could be drawn that peak workers would be defined as those hired on to supplement an existing full time work force. And lastly, ancillary part time workers would be defined as the backups to the backups.

The many different articles made it apparent that there are numerous ways that research of this nature can be undertaken. In addition to finding an ideal number of part time personnel to fill a slot one could also delve in to what type and how many of each type, as defined by Jenkins, must an entity hire. Furthering that, one could look further into Olson's research and use the population driven number concept of how many full and part time personnel to have on staff. Or, is the decision to be based on Brunet, De Boer, and McNamara's research that indicated there is an economic model to be used as a basis. In summation, it is offered that all of the different models need to be considered. An entity may find that one or another or another or a combination of any may be the answer to their question but all of the models must be considered

in order to make an informed decision to hire part time personnel for your combination department. As it was quickly discovered there is no easy answer to this query. It was stated earlier, this is a local decision that can only be made after intense investigation and scrutiny by the relevant parties.

PROCEDURES

This project began as a quest to identify the optimum number of part time personnel to employ to maintain the desired level of staffing. Twinsburg Fire Department has a very successful program but there are still significant gaps in the coverage. In order to arrive at the optimum number of part time personnel, questionnaires were sent to other combination fire departments that share similar population and services they offer to their residents. The data received was compiled and studied. They were sent to departments in Northeast Ohio simply because there appeared to be an adequate number of combination departments to get a relevant cross-section of data to be researched. The surveys were sent to departments that are in the general nighttime population range of 3,000-40,000 residents and sharing similar demographics. In the survey, a variety of questions that culminated in a range of answers that were placed in to a matrix that provided a general number that appeared to be a good starting point but would need tweaking dependent on other factors.

To arrive at the conclusion to start at four part time personnel per 24-hour shift required the researcher to assign the definition that a minimum of 95% shift coverage would be indicative of full coverage. Then to use the staffing ratios of those entities that reported 95% or better coverage, average them, and deem that number as the definitive answer.

Definition of Terms

Combination Department- A fire department that consists of a full time, part time, and/or volunteer component. The local governing authority dictates the ratios in either direction.

Career/Full Time- An employee whose primary means of employment or classification is at a particular fire department. Full time usually means the employee has benefits.

Part time- An employee whose primary means of employment or classification is other than full time at a particular fire department. Some part time personnel do use their part time employment as a primary means of support.

Volunteer- An employee that is usually not compensated or compensated at a much lesser rate than full time or part time employee.

Coverage staffing- The amount, in personnel, of staffing required to work a single 24-hour period of time.

Limitations of the Study

Because a department is classified as a combination department it does not mean they are all the same. The only real commonality in all combination departments is that they are comprised of full time and part time people. There were a few entities where the only full time employee was the fire chief because of the definition they were classified as a combination department. These could not be used in the study. The research could have been separated into two categories, one being those departments that have a majority of full time personnel and those that have a majority of part time. This was done to a certain extent in this study but the lack of a large sample of majority full time departments caused the data to be suspect. A wider sampling probably would have given the research more credibility.

It was very difficult to find relevant research resources. Much of the research that is available is focused on increasing career staffing not on determining part time staffing. As stated earlier, it appears as though part time staffing is a secondary thought. In this author's opinion, if an agency chooses to go the route of a combination department, there should be as much thought put into staffing the part time side, as there is the full time side.

In addition, the reliability of some of the respondents' information is suspect. Simply because in informal conversation with a few of the respondents they stated that they "really don't keep track of stuff like that" but they were able to provide information to their best recollection.

RESULTS

Answers to Research Questions

Research Question 1. Do departments with a majority of full time personnel or departments that have a majority of part time personnel have statistically better coverage staffing?

Of the 43 departments that responded to the survey, 12 of them had a majority of full time personnel and 31 had a majority of part time personnel. Four of the departments that responded to the survey cannot be included in the analysis due to the fact they do not meet the criteria of having full time suppression personnel. They are considered as a combination department only because they have one full time member. All four departments have only a full time chief and no other full time personnel. Therefore, the data would be skewed and unusable. The true count of majority part time departments would be 27.

It is interesting to note that of the 12 departments that reported a higher ratio of full time to part time personnel, none of them reported 100% staffing of available hours, the best percentage reported was 95% by one department. Whereas, seven of the 27 (nearly 26%) departments reporting a higher ratio of part time to full time reported 100% staffing coverage.

In the departments that had a majority of full time personnel, the average was 23.25 full time personnel to 14.1 part time personnel. The ratio of full time to part time ranged from 1.2 to one up to 6.5 to one, the average ratio was 2.375 to one. The daily authorized staffing ranged from four personnel to 15 personnel with an average of 7.92. The minimum daily staffing ranged from zero to 11 with an average of 5.25. The departments reported they are at full authorized staffing in a range of 0% to 95% of the time; the combined average for full staffed was 41.33%. They further reported they were at minimum staffing in a range of 5% to 90% of the time for an average of 45.08%.

In the departments that had a majority of part time personnel, the average was 8.12 full time personnel to 30.3 part time personnel. The ratio of full time to part time ranged from one to two up to one to 15, the average was one to 4.51. The daily authorized staffing ranged from two personnel to nine personnel with the average being 4.39. The minimum daily staffing ranged from one to seven with the average being 3.42. The departments reported that they were at full authorized staffing in a range of 10 to 100% with the average reported being 89.87%. They further reported they were at the minimum authorized staffing in a range of 0 to 100% with an average of 17.61%. In those departments that reported 100% coverage staffing the ratio was one full time person to 6.45 part time personnel. It is interesting to note that no department that was a majority full time department indicated they had 100% staffing all the time.

Table 1 shows majority full time department %-full/minimum staffing:

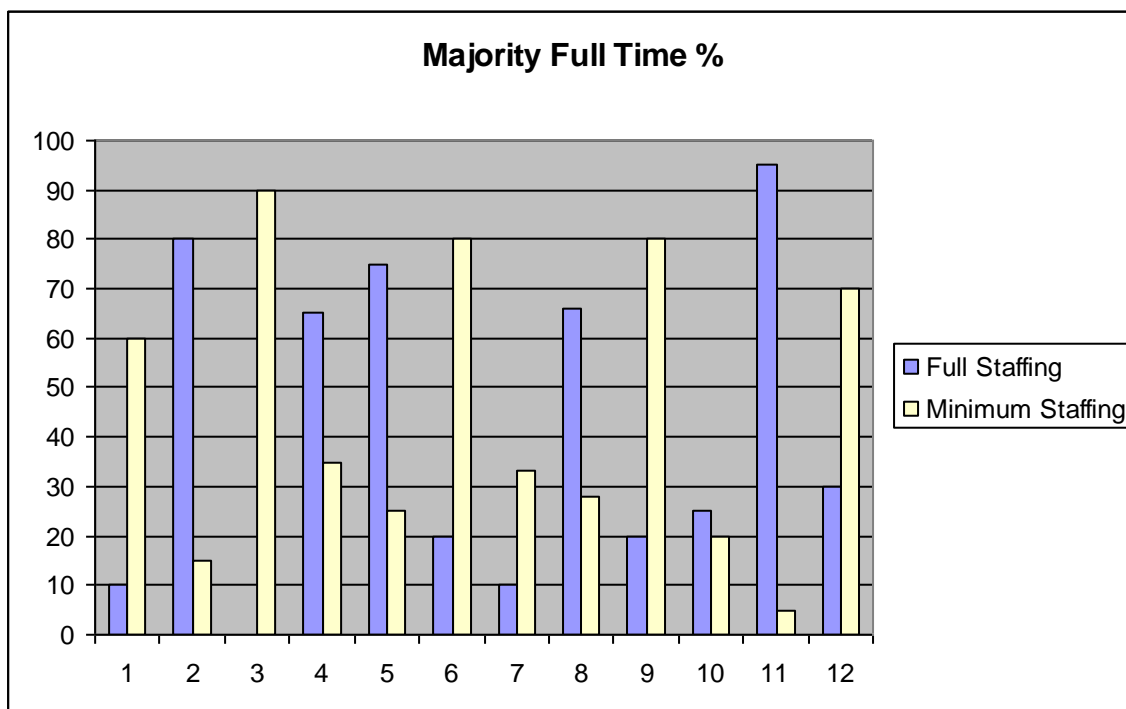
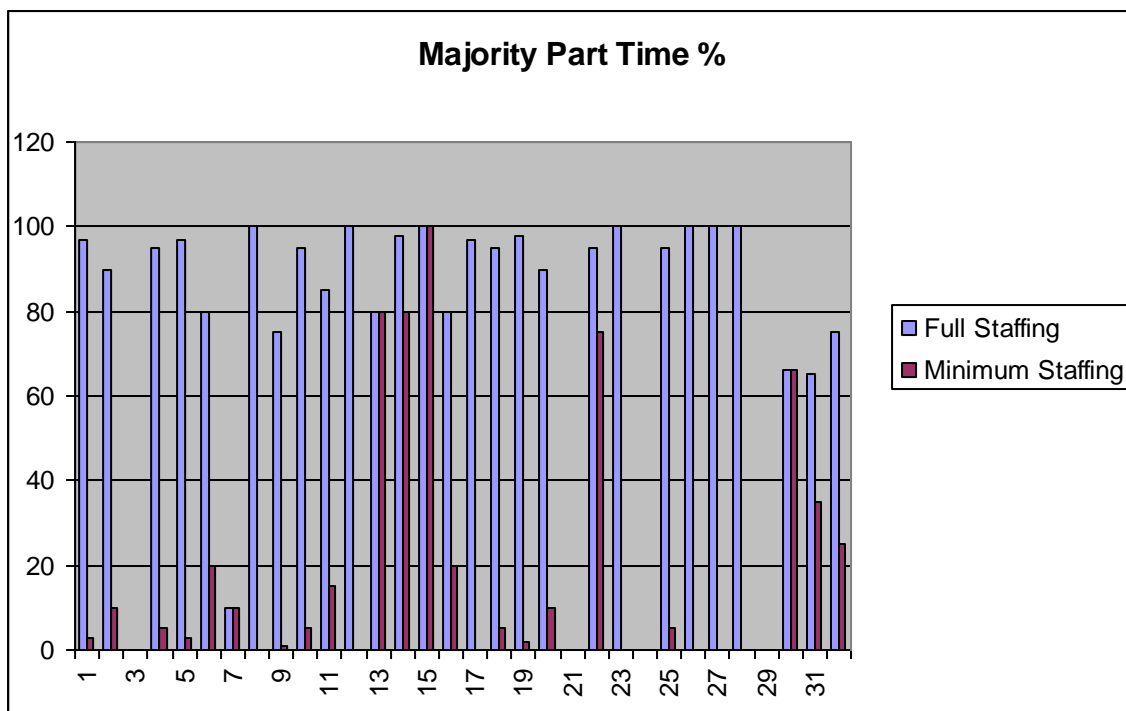


Table 1

Table 2 shows majority part time department % full/minimum staffing:



Note: Nine departments reported they are never at minimum staffing.

From the data supplied by the respondents it would appear statistically that departments that are staffed with a majority of part time personnel have better staffing coverage than those with a majority of full time staff.

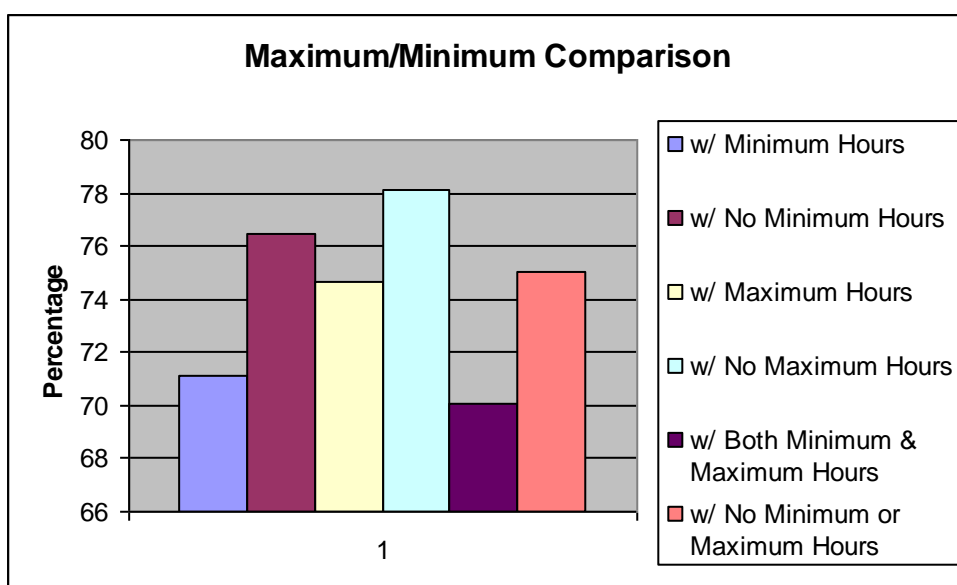
Research Question 2. Do part time members fill in for full time personnel on scheduled or unscheduled days off? Of the 39 respondents, 32 report that part time fill in on full time scheduled days off and 27 report that part time fill in on unscheduled days off.

Research Question 3. In reference to question 2, does it affect the percentage amount of coverage as it relates to authorized staffing? Of the 32 that report part time cover full time scheduled days off the range of full coverage went from 25% to 100% with an average of 85.56%. Of the seven that responded in the negative, the range of full coverage was 0 to 80%,

with an average of 27%.

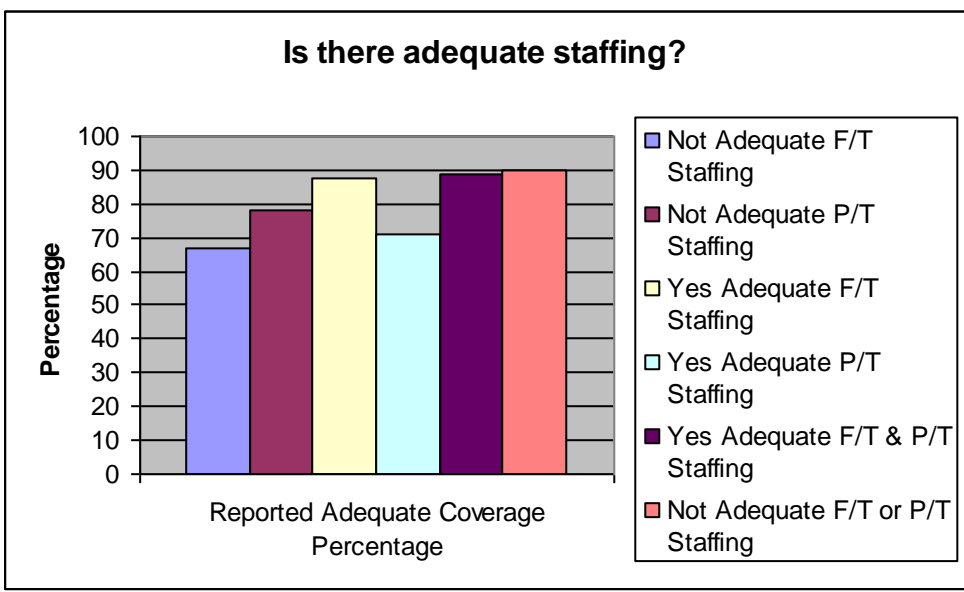
Twenty-seven departments responded that part time employees filled in on the unscheduled full time employees' days off. They reported full coverage in a range similar to those that covered full time scheduled days off and the percentage of average increased coverage went up by only 4/10ths of a percent to 85.96%. Of the 12 departments that reported that part time, do not cover unscheduled days off the reported coverage fell in the range of 10 to 80% full staffing with an average of 52.75%.

Research Question 4. Are there limits, minimum and maximum, individual part time members may or are required to work? Of the 39 respondents, 18 required a minimum amount of hours ranging from four hours a week to 15 hours a week with 9.5 hours being the average. Twenty-six respondents indicated a maximum amount of hours, ranging from 12 hours per week to the FLSA maximum of 212 in 28 days. Table 3 shows a comparison of respondents that indicated minimums, maximums, none of either or one or the other.



Research Question 5. Do departments that have set minimums of hours for part time personnel have better staffing coverage than departments that do not?

The percentage difference of coverage for all categories is relatively insignificant but it is interesting to note that the highest percentage of coverage comes from those departments that indicated there was no minimum or maximum amount of hours an individual could work. Furthermore, although relatively insignificant, those departments that had a minimum and maximum requirement had the lowest percentage of staffing coverage.



DISCUSSION

Through all of the literature review, nowhere was there found a similar undertaking. Most of the other research has focused on adequate full time staffing, as that appears to be the direction that most departments elect to take. It was quite surprising, given the amount and variety of combination departments, that there has not been a study of this nature. To suggest a hypothesis, it appears that most departments feel that the more full time personnel they have equates to better staffing. The results simply just did not bear this out. While studying the results and attempting to interpret them, a few things became apparent. Staffing is dictated by a few variables; one being how much funding is a community willing and able to render. This is more apparent and becomes more of an issue when it comes to hiring full time personnel over part time personnel. When an entity hires part time personnel most of the time they are hired to cover specific amount of hours or to cover gaps in the coverage but sometimes the part time personnel are the entire workforce hired to cover all of the shifts.

A 24-hour day equals 8,760 hours a year, it doesn't matter how many personnel are hired, that number never changes and if 100% coverage is the desired level of coverage than all of those hours must be filled. An entity can hire as many part time employees as they want to cover that amount of hours and they would still only have to pay wages for that amount of hours. For a comparison, using a 48-hour work week and other common vacation, holidays and sick days data, the average tenured full time employee would only work about 2,164 (out of 2,496 that they would be scheduled) hours or 90 days a year. If full time employees were to completely cover the 8,760 hours, it would require four employees but that is never the case, three employees would be hired to cover those hours resulting in 2,268 hours not being covered by full time employees. Shortfalls in coverage may result in utilizing overtime to bring in personnel to cover the unfilled hours or those hours may go unfilled resulting in shift or staffing

shortages. One thing that needs to be repeated, normally, having a combination department is a cost saving measure for departments that cannot afford to staff their department with an all full time staff. Although, some entities chose to fill all of their staffing needs with part time personnel, these entities have come to accept that with a full roster of part time personnel there may be the need to increase staffing substantially to ensure coverage or availability of personnel to respond to alarms. Some entities reported a staffing ratio of one to 10 or more.

So much of the data accumulated is subjective. In the authors experience, one, or two “aggressive” part time employees may work the same amount of time that five or six regular part time employees. This could lead a manager to conclude they do not need as many part time employees. Then in the blink of an eye one of these employees leaves and there becomes significant gaps in the coverage. Furthermore, what does a department staff, a first out rescue squad, a first responder, or a full-blown fire response? What is the station staffing one, two, four, six, eight, or more? The more staffing the bigger pool of staffing one must have to draw from. In essence, you would not need fifty personnel to staff just two positions but you may need fifty personnel to staff 15 positions. Staffing is dependent a few things, the amount of funding available, the requirements of the community, and the available pool of personnel from which to draw.

Moreover, afford is subject to interpretation, it is not only the monetary affordability but what is the expectation of the community. Some communities have a very small resident and/or commercial/industrial population and are only required to staff a few personnel. Whereas some other communities’ demographics are substantially, different and staffing requirements are increased dramatically. Staffing is also somewhat dictated by the local Union and its collective bargaining agreement, depending on how strong, it is and what it will “allow” as far as part time staffing. As was asked in the questionnaire, “Are part time personnel allowed to fill in for full

time personnel scheduled or unscheduled days off?” If the Union has negotiated certain rights and privileges concerning staffing, part timers in some departments may or may not be able to work as many hours or days as they may in other departments. Henceforth, this may require more or less part time personnel to fill the same amount of hours in similar scheduling circumstances. The results in the survey indicated that where part time members are allowed to cover scheduled and unscheduled time off there was a significantly higher amount of full coverage of the available shifts. It is significant to point out that, all agencies that reported they did not allow the same type of coverage indicated they are never at full authorized staffing.

It is interesting to note that of all the respondents, only eight indicated they are adequately staffed with full and part time staff. The submitted data of these eight indicated they in fact are adequately staffed. With one exception, all reported a minimum of 95% full staffing coverage. It must be said that other agencies that reported they were not adequately staffed indicated equal or higher levels of full coverage staffing.

From the data submitted one could make the definitive conclusion that a ratio of one part time person for each 24-hour shift is not feasible and would not result in adequate coverage. In the same context, the data would indicate that having 10 personnel per 24-hour shift would not be realistic or cost-effective. Although no definitive answer was consistently indicated a conclusion could be reached by analyzing the data submitted that a ratio in the range of four to six part time personnel per 24-hour shift would yield the best results if complete staffing were the desired outcome. Four personnel may be an acceptable starting point, from there an entity would have to tweak the numbers until they find what works best for them. They may find that because of one reason or another four personnel may not be adequate, it would depend on whether they have hired the appropriate ratio of core, peak, or ancillary part time personnel.

RECOMMENDATIONS

There are so many variables to bring into the equation that to decide on the definitive answer to the question is nearly impossible. For the purposes of this research paper, concentration on the results of the study must be interpreted to apply to the Twinsburg Fire Department (TFD). A true statement would be that it takes no less than two part time employees to take fill the hours covered by one full time employee. In the same token, a full time employee does not nearly cover the 2,928 hours (1/3 of a year) that represent 24-hour coverage for one full time employee. In fact, on paper, it takes four full time personnel to cover the 8, 760 hours per year required for 100% coverage. So one could draw the conclusion that if full coverage staffing is the desired outcome, it takes at 1.33 full time employees to completely cover the available hours of one full time employee.

To arrive at the conclusive answer there must be a series of parameters that must be met that in the end result in the definitive amount. These parameters are set by the strategic goals and objectives that are agreed upon by the powers that be; these include the Fire Chief, the Mayor, the City Council and the community as a whole.

Recommendation 1: Determine what level or standard of coverage the community wants, needs, or desires. The standard of coverage for the community would include those items such as response times to all areas of the coverage district, the minimum amount of personnel to respond on the first alarm, how many stations and their locations. This needs to be determined by the entities involved after extensive consideration and study. Once this standard of coverage is determined it must be set to paper to ensure that future generations of leaders are consistent with what had been previously established. To ensure future compliance the standard of coverage should be adopted into ordinance in order to give it the teeth to stand up to future concerns. In addition, the standard of coverage needs to be revisited as conditions evolve,

expected or unexpected growth occurs or if economic conditions worsen. A thought would be that as the demands and increased needs for service becomes apparent an entity could stipulate benchmarks as to when additional full time or part time staffing increases are warranted.

Recommendation 2: Determine the funding required to attain the coverage the community wants, needs, or desires. Ensure that expected growth would continue to support the increase in staffing and therefore the increase in funding. Then we must determine from where that funding is to be obtained. If funding is not available in the normal city coffers, determine from where is it going to come? Will the community support additional funding in the form of tax levies, service billing, or increase in income taxation? The question must be answered, if there is a limited pool of funding available what is the best use of the funding, is it more full time personnel or more part time personnel? Would hiring more full time personnel result in an increased need for part time personnel to fill in the coverage gaps that is inherently part of the full time employee?

Recommendation 3: Determine whether the department is going to be a full time cadre supported by part time personnel or vice versa. This determination is dynamic not static. As the response area experiences growth in population and business or industrial the decision must be made by those responsible to swing one way or the other dependent upon the parameters set forth in the strategic plan. It is the desire of the community that TFD be a full time cadre supported by part time personnel.

Recommendation 4: In conjunction with the strategic plan determine what level of staffing is going to be acceptable to meet the parameters set forth. In other words, is less than 100% staffing coverage acceptable? Is less than 80%? Is less than 60%, etc.? This can only be determined by the City administration, Township Trustees or governing board in conjunction with the administration of the individual fire department. It has been determined by the

consensus of the legislative and administrative bodies of the city that their goal is 100% coverage of the available slots for part timers.

Recommendation 5: Based on the research data accumulated from the study area defined as Northeast Ohio that reported a coverage rate of better than 98%. They report that they have an average of 5.38 part time personnel for every 24-hour slot that they must fill. Therefore, the recommendation would be to staff 5 1/3 part time personnel for each 24-hour part time shift that must be filled. It is believed that this number would yield the highest level attainable of desired shift coverage. Although 100% coverage is the desired level, it is believed that in our circumstances it is not attainable no matter how many people were to be employed and that a coverage rate of 98% would represent a level that would be acceptable. What is meant by this is that although on paper 100% of the available shifts would have an employee to fill them, circumstances beyond anyone person's control would have the undesired effect of having shifts go unfilled therefore resulting in less than 100% coverage.

REFERENCES

Brunet, A., De Boer, L. Mc Namara, K., Purdue University, (2001, March). Community Choice Between Volunteer and Professional Departments. *Nonprofit and Voluntary Sector Quarterly*, 32(1), 27

Buchanan, E., Scott, G., Windisch, F., Holman, T., Fulmer, D., Curl, L., Buckman, J. International Association of Fire Chiefs, Volunteer and Combination Officers Section, Lighting the Path of Evolution, The Red Ribbon Report (2005, November), IAFC Organization, 1-7

Casner, J. (2006, September), Transition to a Combination Department, Cheshire, CT, *Fire Engineering*, 16-20

City of Milton, (2006) City Services, *Fire Department Website*, Milton, WA

City of Gulfport Florida, (2004), Department of Public Safety, *Fire Department Website*, Gulfport, FL

City of Twinsburg, (2007) Fire Department Strategic Plan, Twinsburg, Ohio

Coleman, R. (2002, February), Have you found a conflict free combination? *Fire Chief Magazine*

Fair Labor Standards Act, U.S. Department of Labor, Wages and Hour Division

Jenkins, Sarah, (2004, April) ,Restructuring Flexibility: Case Studies of Part-Time Female Workers in Six Workplaces, *Gender, Work and Organization*, Volume 11, Issue 3, 306-333

Love, M., (1999, August), Improving Work Relations Between Career and Volunteer Fire and Rescue Members of the Montgomery County, Maryland Fire and Rescue Services, (Executive Fire Officer Research Project), Emmitsburg, MD: National Fire Academy

City of Mankato, (2006), Public Safety, *Fire Department Website*, Mankato, MN

City of Mentor, (2004), Division of Fire, *Fire Department Website*, Mentor, OH

O'Connor, S., (1998, January), Change Management: How to Transform from an All-Career into a Combination Fire Department, (Executive Fire Officer Research Project), Emmitsburg, MD: National Fire Academy

Olson, S., (2000, March), Career Staffing Levels in Combination Departments, (Executive Fire Officer Research Project), Emmitsburg, MD: National Fire Academy

Oster, G., Holmes, M., (1997, May), Staffing Patterns of Combination/Career Fire Departments in Iowa, Iowa State University Fire Service Institute

Quill, M., (2003, June), Testimony on SAFER Grant, House Committee on Science, Washington, D.C., US House of Representatives

St. Joseph's University, (2004, May), Economic Impact of the Volunteer Fire Service Report, National Volunteer Fire Council Foundation and the St. Josephs University, Philadelphia, PA

Shannon, J., (2003, June), Testimony on SAFER Grant, House Committee on Science, Washington, D.C., US House of Representatives

Tracy Fire Department, (2006), Fire Department Website Report, Tracy, CA

U.S. Fire Administration, (2006, December), National Fire Department Census, Emmitsburg, MD.

APPENDIX 1 – COMBINATION STAFFING QUESTIONNAIRE

The following survey will be used to accumulate data for an Ohio Fire Executive research project. This is a significant portion of the program; your participation is highly valued and greatly appreciated. Your department was selected due to being classified as a “Combination” department. Results of this survey will be made available to you, if you desire. Please include a SASE if you would like the results. Please fill in your answer in the space provided.

- 1) How many personnel are currently on your staff?
 Uniformed Administration _____
 Suppression Personnel _____
 Fire Prevention Personnel _____
- 2) Of these, how many personnel are classified as fulltime? _____
- 3) How many personnel are classified as part time? _____
- 4) What is your daily authorized shift staffing? _____
- 5) What is your minimum daily shift staffing? _____
- 6) What percentage of daily shifts are you at full, authorized staffing?
 _____ If, you do not track this, please take your best guess and give an approximate number. _____
- 7) What percentage of daily shifts are at minimum staffing? _____ If you do not track this, please take your best guess and give an approximate number.

- 8) Do your part time personnel cover full time personnel scheduled days off?
 _____ Unscheduled days off? _____
- 9) Do you have a minimum amount of hours/shifts part time must work, if so what?
 _____ Is there a maximum? _____

- 10) Do you feel you have adequate full time staffing? _____ Part time?

- 11) If you answered no to either question above, what do you feel would be adequate staffing? Full time _____ Part time _____ Why?

- 12) Considering all of the hours your part time personnel are required and/or eligible to fill, what do you consider is the optimum number of part time personnel to fill those positions? _____
- 13) What is the top hourly rate for full time firefighters? _____ Part time? _____

Demographic Information

- 1) What is the current population of the area your department serves? _____
- 2) Do you consider your department as an Urban, Suburban or Rural department?

- 3) How many square miles is your primary coverage area? _____
- 4) How many stations do you operate from? _____
- 5) On average, how many times a month do you utilize mutual aid? <10 _____
10-20 _____ 20-30 _____ >30 _____
- 6) Are you a part of a Fire District? _____
- 7) What are the sources of funding for your department?

8) What is your level of service provided, please check all that apply:

Fire _____

EMS _____ If so, what level: First Responder _____ ALS _____

BLS _____

Do you transport? _____ If not, who does your transports? _____

Technical Rescue (dive, rope, trench, collapse) _____

HazMat _____ If so, what level? _____

Fire Prevention Activities _____ What type? (education, inspections, plans review
etc.) _____

Other services offered:

Your Department name: _____

Location: _____

Optional, your name and phone#: _____

Thank you in advance for your time and cooperation. Please return the survey in the enclosed

SASE or fax to my attention at (330) 963-6298, by April 30, 2007.

Captain Glenn M. Broska
Chief Fire Inspector, Twinsburg Fire Department
10069 Ravenna Rd.
Twinsburg, Ohio 44087

330-963-6256

APPENDIX 2 – SURVEY RESULTS

Fire Departments Returning Surveys - 44/71 62% Return rate

Majority Full time Departments- 12

Majority Part time Departments- 32

By County- Ashtabula- 2 Cuyahoga- 7 Geauga- 1

Holmes- 1 Lake- 9 Lorain- 4 Mahoning- 2

Medina- 1 Portage- 6 Summit- 9 Stark- 0

Trumbull- 2 Tuscarawas- 0

Administrative Personnel

Majority F/T Departments High-5 Low-1 Average- 2

Majority P/T Departments High-6 Low-1 Average- 2.06

Suppression Personnel

Majority F/T Departments High-75 Low-13 Average- 34.9

Majority P/T Departments High-70 Low-22 Average- 36.8

Breakdown F/T and P/T

Majority F/T Departments High- 44/36 Low-12/5 Average- 23.25/14.1

Majority P/T Departments High-20/30 Low- 1/15 Average- 8.12/30.3

Daily Authorized Staffing

Majority F/T Departments High- 15 Low-4 Average- 7.92

Majority P/T Departments High- 9 Low-2 Average- 4.39

Minimum Daily Staffing

Majority F/T Departments High- 11 Low-0 Average- 5.25

Majority P/T Departments High- 7 Low-1 Average- 3.42

Percentage of Time at Full Strength

Majority F/T Departments High-95 Low- 0 Average- 41.33

Majority P/T Departments High- 100 Low-10 Average- 89.87

Percentage of Time at Minimum Strength

Majority F/T Departments High-80 Low- 5 Average- 45.08

Majority P/T Departments High- 80 Low- <1 Average- 17.61

P/T Cover Scheduled Days Off

Majority F/T Departments Y-7 N-5

Majority P/T Departments Y-25 N-4*

* = 3 respondents did not answer

P/T Cover Unscheduled Days Off

Majority F/T Departments Y-5 N-7

Majority P/T Departments Y-22 N-8**

** = 2 respondents did not answer

Minimum Hours for P/T in Mostly F/T Departments

6/12 reported no minimum

Of the other six, the range was from 10 hours per week to 53 hours per week

Maximum Hours for P/T in Mostly F/T Departments

4/12 reported no maximum hours

Of the other eight, the range was from 20 hours per week to 53 hours per week

Minimum Hours for P/T in Mostly P/T Departments

20/32 reported no minimum hours

Of the other 12, the range was from 4 hours per week to 12 hours per week

Maximum Hours for P/T in Mostly P/T Departments

14/32 reported no maximum hours

Of the other 18, the range was from 28 hours per week to 53 hours per week

Are you adequately staffed with F/T personnel?

Mostly F/T departments- Y=3 N=9

Mostly P/T departments- Y=9 N=23

Are you adequately staffed with P/T personnel?

Mostly F/T departments- Y=5 N=7

Mostly P/T departments- Y=20 N=12

Wages

Mostly F/T Departments- F/T High-\$26.20 Low-\$9.50 Avg.-\$18.59

P/T High-\$19.20 Low-\$9.50 Avg.-\$15.07

Mostly P/T Departments F/T High-\$27.29 Low-\$14.25 Avg.-\$ 19.98

P/T High-\$18.00 Low-\$8.08 Avg.-\$13.35

Population Served

Mostly F/T Departments- High-39,500 Low-6,660 Avg.-16,664

Mostly P/T Departments High-40,000 Low-2,300 Avg.-11,395

Area Served (in square miles)

Mostly F/T Departments High-26 Low-4 Avg.-16.85

Mostly P/T Departments High-125 Low-1.75 Avg.-24.89