

Fire Bad/Water Good: Evaluating the 48/96 Firefighter Work Schedule from a Cop's Point of View

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Abstract

Walton County Fire Rescue (WCFR) currently uses the 24/48 work schedule but the 48/96 schedule is a viable alternative that offers benefits to the Agency and personnel. Surveying members of the Florida and California Fire Chiefs' Associations showed the 48/96 schedule can improve personnel productivity and morale while reducing fatigue, sleep deprivation, sick/vacation leave usage, and workers' compensation claims. Couple those factors with increasing the amount of time personnel are home and reducing their number of commutes and you have a winner. Transitioning to the 48/96 schedule and implementing mandatory rest periods, and possibly shifting personnel, can improve WCFR personnel performance, resulting in our ability to better serve our community.

Introduction

As a cop, and looking at it from a cop's perspective, the day-to-day routine of a firefighter seems very appealing, even if we don't care for the work itself. You sleep until you're hungry, eat until you're sleepy, and maybe wash a fire truck or two. In the event you are called to respond to an actual fire, you just jump in your fancy, giant fire truck, drive to the scene, and spray water on whatever is hot until it isn't hot anymore. Fire bad, water good. Seems simple enough.

I poke fun at our brothers and sisters in the fire service but I've gained a new found respect for each of them and the job they do. I had no idea just how much work they actually do until my Agency, the Walton County Sheriff's Office, took over management and oversight of our county's fire service, Walton County Fire Rescue. Having both law enforcement and the fire service under the same roof has garnered a sense of comradery amongst us and given us a common goal to work towards, improving the lives of the citizens and visitors to Walton County.

It may seem a bit unorthodox to most that our Sheriff now has our fire service under his control, but it's worked out for the best, so far. We've been able to update and upgrade much of their equipment and were able to increase their pay, across the board. The fire service had been struggling with both of these issues while under the direction of the Board of County Commissioners (BCC) and our Sheriff was able to make them happen within the first two years of taking over the program. Our Sheriff has implemented several philosophies and strategies, such as having a customer service mindset and a focus on continuous improvement. These philosophies have led us to this discussion regarding a change in the work schedule for our firefighters. Employees are considered internal customers, so improving their work environment via their schedule, is beneficial to them and the Agency, as a whole, and is in line with our emphasis on customer service and continuous improvement. Just because its good doesn't mean it can't be better.

Before we can delve into the specifics of firefighter schedules, and which one is the best for us, we first need to understand the makeup of our fire service. Walton County Fire Rescue is responsible for roughly 1,000 square miles of coverage area, ranging from moderately populated towns and cities to the very rural areas of our county. Their coverage area is broken into 12 Fire Districts, with a dedicated fire station in each district. Ten of the 12 stations are manned around the clock. Walton County Fire Rescue employs 106 full-time fire fighters. All of our fire fighters also serve as either an Emergency Medical Technician (EMT) or as a Paramedic. Regardless of their assignment, all personnel are certified firefighters and can engage in firefighting duties, should the need arise.

Walton County Fire Rescue currently operates three squads on a 24/48 work schedule, which allows for more coverage with fewer personnel. This means personnel work for 24 continuous hours followed by 48 continuous hours off. They also have built in paid-time-off (PTO), known as “Kelly Days”. The term “Kelly Days” originates from Edward Kelly, a former Mayor of Chicago. In 1936, Mayor Kelly developed the usage of PTO as a means to control spending and to reduce the city’s firefighters’ work week. Today, Kelly Days are used as a way to mitigate overtime while giving personnel some extra time off. (Vish, 2018)

Now that we have a basic understanding of Walton County Fire Rescue’s current makeup and responsibilities, we can look into possible schedule changes to improve the employees’ overall work experience. While speaking with Walton County Fire Rescue Deputy Fire Chief, Tracey Vause, he mentioned the 48/96 schedule had been brought up by word of mouth from members of the department. Over several months, he heard the personnel discussing it in the halls of the Administration building and began looking into it since they were about to begin negotiations on a new Collective Bargaining Agreement (CBA). Deputy Chief Vause felt if the schedule change was important to the personnel, we should evaluate if it’s a beneficial change. (T. Vause, personal communication, March 2, 2020)

Literature Review

Positives

The Kern County Fire Department in California has been credited for creating the 48/96. Kern County had a problem with their fire fighters being unable to afford homes within their service area so they were forced to drive long distances to work. Converting to the 48/96 schedule from the previous 24/48 decreased the number of commutes to work an employee had to make by half, saving them a significant amount of time and money. (Poole, 2012)

In addition to having fewer commutes, another benefit identified was significantly reducing long-term fatigue and sleep deprivation by providing more consecutive days off. The 48/96 schedule has four consecutive days off built into its standard function. This provides for 60 instances per year of firefighters having at least four consecutive days off to rest and recuperate and prepare for their next work cycle. This resorted in firefighters feeling more refreshed on their days off and having less daytime sleepiness. This

schedule also gives firefighters 13 additional full weekends off per year over the 24/48 schedule and increases the number of days they wake up at home by 50%. (Vish, 2018)

The 48/96 schedule also increases the number of evenings spent at home compared to the 24/48 schedule. While working the 24/48 schedule, firefighters report only having one evening out of every three with their family, free of worrying about preparing to return to work. The 48/96 schedule gives firefighters three evenings out of every six to spend with their families. (Koen, 2005)

The increased number of consecutive days off, full weekends off, and days they wake up at home has shown to lead to an increase sense of family well-being. The off-time patterns of the 48/96 schedule provides firefighters with an increased quality of time at home. The ability to wake up at home more often allows them to spend more time with their children in the mornings, being able to see them off to school and avoiding building up a negative sleep debt by waking up later in the morning. The increased number of weekends off gives them the opportunity to spend quality time with their children and spouses, since schools are out during the weekends and most weekday, 9-5, employees are also off work. This leads families to perceive the firefighter as being present more often even though they are still working the same amount of hours as those working on the 24/48 schedule. A focus group study was conducted in 2006 to analyze the effect the transition to the 48/96 schedule had on the quality of family life of firefighters with the West Metro Fire Rescue. Overall, the study showed spousal support remained high after the transition and the spouses noted the firefighters were happier, more relaxed, and less fatigued compared to working the 24/48 schedule. (Poole, 2012)

The 48/96 schedule also allows firefighters to be more productive at work and at home. Based on a survey of members of the Roseville Fire Department, personnel working the 48/96 schedule feel they have more time to complete household projects or chores by having four consecutive days to do so. Likewise, having two consecutive days at work increases the firefighters' productiveness and their ability to complete a given task. The reduction in transitions between work and home life leads the firefighters to be organized and productive. (Poole, 2012)

The amount and quality of sleep the firefighters received while on shift also seemed to increase significantly after switching to the 48/96 schedule. A study conducted in 2015 revealed the mean hours of on-shift nightly sleep increased from 5.8 hours a night, to 6.6 hours. The study also showed a reduction in firefighters' daytime sleepiness and an increase in their feelings of refreshment, while on shift or off. Additional benefits discovered during the study were firefighters felt less burnout and felt the 48/96 schedule interfered with their personal lives and schedules less, allowing to have more time for household activities. (Caputo, Hawkes, Gosche, Vellman, Lange, Salottolo, Coniglio, & Mains, 2015)

The firefighters and their families aren't the only ones that will benefit from the 48/96 schedule because there are potential benefits for their Agencies, also. Reduction in work related injuries and the use of firefighter sick days are possible byproducts of the transition to the 48/96 schedule. West Metro Fire Department saw a reduction in work related injuries from 2004 to 2006. They also saw a roughly 38% decrease in the usage of sick leave during the same time period. In 2004, they had 13,277 sick leave hours used and by 2006, that total had decreased to 8,246 sick leave hours. Additional studies with the Pacifica Fire Department and the Manhattan Beach Fire Department, both in

California, displayed similar results. After the transition to the 48/96 schedule, Pacifica Fire Department saw a 20% decrease in sick leave usage while Manhattan Beach Fire Department saw a decrease of 80%. (Poole, 2012)

Negatives

While Todd Poole's article mentioned a decrease in the number of injuries and the usage of sick time, an article by Ken Harrison seemed to contradict parts of this theory. Harrison looked into the worker's compensation claims and the sick leave and vacation leave usage of members of the Orange County Fire Authority (OCFA), an 1,100 member department that currently operates on the 48/96 schedule. Harrison evaluated the information accumulated for the three years prior to the transition, while OCFA operated on the 24/48 schedule, and the three years directly after they transitioned to the 48/96 schedule. Between 2012 and 2015, OFCA personnel used 308,930 hours of sick leave and 269,400 hours of vacation leave, for a total of 578,330 hour used. Between 2015 and 2018, the three years directly after their transition to the 48/96 schedule, OFCA personnel used 301,806 sick leave hours and 277,146 vacation hours, for a total of 578,953 hours used. Based on these numbers during each three year period, sick leave usage decreased by 7,124 hours, or roughly 2.5%, while vacation leave usage increased by, 7,746, or roughly 2.8%. The result was an overall increase of 623 hours over the three year period. (Harrison, 2020)

In addition to sick leave and vacation leave, Harrison also looked at OFCA's Worker Compensation claims and costs during the same time periods. Between 2012 and 2015, OFCA personnel had 1,383 injury claims, with a total cost of \$47,771,578. Between 2015 and 2018, their personnel had 1,382 claims with a total cost of \$57,490,752. Based on these numbers, the amount of injury claims remained virtually the same but the cost of the claims after the transition to the 48/96 schedule totaled roughly \$9.7 million more. (Harrison, 2020)

Implementation of the 48/96 schedule may only be feasible to a select group of fire agencies, based on their call volume. Ottawa Fire Department in Illinois transitioned from the 24/48 schedule to the 48/96 schedule in 2016. Ottawa Fire Chief Andrew Borkowski said he saw some improvement in personnel morale after their transition and he believed it was due to the increased time firefighters were able to spend at home. Even though the transition seemed to increase morale, Chief Borkowski felt the 48/96 schedule may not be beneficial to busy departments with high call volumes. He felt the fatigue level would be significantly higher due to personnel not getting adequate rest for up to 48 hours. Chief Borkowski felt the fatigue issues could occur at smaller or slower departments but the chances are much less likely. (Vish, 2018)

The potential for increased injuries and the reduction of feasibility based on call volume were also noted issues in an article exploring the health hazard of the 48/96 schedule. A recent study by Dr. Laura Barger found injuries are most common during the second day of the 48 hour shift. During a separate study, conducted by Retired Fire Chief Don Abbott, it was discovered the most common time for a mayday (firefighter needs help) to occur is during the last 12 hours of the shift. Another factor that should be noted is how busy the department, or individual stations, are based on call volume. A station that tends to respond to a large number of calls during the night may not benefit at all

from the 48/96 schedule, while a station that is typically slower during the overnight hours may see a larger benefit to its firefighters. (Jahnke, 2017)

Out of all the negatives, concerns of increased fatigue and sleep deprivation are the most prevalent and worrisome. As fatigue and sleep deprivation increase, so does mistakes and injuries that could have been avoided with adequate rest. Chronic sleep loss results in the decreased ability to think clearly, handle complex mental tasks, form new memories, or solves problems. Staying awake for 24 hours can have the same impairment effect as someone with a blood alcohol level of 0.096, which is over the legal limit for most states. Should the firefighter be forced to work the following day, whether it's their regular shift or overtime due to staffing shortages, these effects can be compounded significantly. Extended periods of consistent sleep disruptions, or total lack of sleep, has a cumulative effect and is known as sleep debt. A firefighter who has worked 24 hours with no sleep would require two days of regular sleep to recover adequately. (Vish, 2018)

In her comparison study between the 24/48 schedule and the 48/96 schedule, Dr. Susan Koen pointed out two main factors for departments to focus on when deciding to change work schedules and shift lengths, the work to rest ratio and the frequency of sleep disruptions. The first factor was the work to rest ratio. Dr. Koen described the minimum work to rest ratio for shift employees as 3:4. At face value, both the 24/48 schedule and the 48/96 schedule have a work to rest ratio of 1:2, which is better than the minimum she mentions. In addition to the work to rest ratio, the frequency of sleep disruptions are also key. Firefighters who have one sleep disruption, a call for service, during their nighttime sleep period, typically 10:00pm to 6:00am, may complete the 24 hour shift in mild sleep deprivation. Having two or more disruptions by calls for service during their sleep period can lead to moderate sleep deprivation and cognitive fatigue problems. Having five hours of continuous, restful sleep can avoid sleep deprivation entirely. (Koen, 2005)

Sleep deprivation can not only cause cognitive problems but can lead to physical effects and issues also. Chronic sleep deprivation can negatively impact firefighters' metabolism, causing impaired glucose tolerance, risking the development of diabetes and weight gain. It can also lead to a compromised immune system and a higher risk of developing cancer, gastrointestinal disorders, and cardiovascular disease. Firefighters are also more likely to develop hypertension (high blood pressure). Hypertension is a leading factor in coronary heart disease, stroke, and total mortality. Job strain and work exertion can also be factors for the prevalence or hypertension among firefighters, however, sleep deprivation also plays into the severity of the condition. Roughly 45% of all firefighter line-of-duty deaths are direct results of cardiac events. (Vish. 2018)

The mental health of firefighters can also suffer as a result of chronic sleep deprivation. Disrupted, or lack of, sleep can effect a firefighters mood and can lead to emotional changes, clinical depression or anxiety. Fatigue from shift work can lead to increased feelings of burnout, emotional exhaustion, job stress, headaches, and upset stomachs. These increased facts can lead to firefighters feeling emotionally withdrawn and display a lack of empathy to patients. The factors can carry over to their personal lives, affecting relationships with their families, and disrupting their social lives and behaviors. Firefighters are exposed to significant emotional trauma, due to the nature and environment of their work. If these factors are compounded by chronic sleep deprivation, the firefighters become susceptible to various degrees of depression or other

mental health issues. If depression continues, untreated, it can progress to other, more serious, conditions including Compassion Fatigue, Compassion Avoidance, and Complex Post-Traumatic Stress Disorder. Ultimately, if these conditions are not treated, they can lead to firefighters contemplating suicide. Firefighters are three times more likely to die from suicide than in the line of duty. One study discovered firefighters reported high rates of suicidal thoughts (46.8%), plans (19.2%), and attempts (15.5%) during their career. Regardless of additional factors or sources of poor mental health among firefighters, the lack of sleep plays a major role. (Vish, 2018)

Methods

The purpose of this research was to identify the positive and negative impacts of converting the Walton County Fire Rescue personnel from the conventional 24/48 work schedule to the 48/96 work schedule and if the change would be beneficial to our members and the Agency, as a whole.

Data was gathered through two surveys, developed using Google Forms, and distributed to members of the Florida Fire Chiefs' Association and California Fire Chiefs' Association via an email list. Each Agency was asked to only complete one survey and not to forward it to anyone else. The first survey was designed to determine willingness to participate in my research, with survey questions designed to establish if their agency currently used the 48/96 schedule, if they were willing to participate by completing my actual research survey, and if they had easy access to their agency's sick/vacation leave and workers' compensation claims information. The second survey, my actual research survey, was designed to establish the location, size, and work-load of the agencies using the 48/96 schedule. Agencies were asked further questions that sought to determine how the transition has affected members' morale, productivity, fatigue and sleep deprivation, and if the agencies noticed any change in the amount of vacation/sick leave used and workers' compensation claims filed. All questions were marked as being required and didn't allow for questions to be skipped. The surveys were anonymous, for the individual completing the survey, but did ask participants to identify their agency and state.

Results

My research consisted of two surveys. Each survey required all the questions to be completed by each respondent, not allowing any to be skipped, and the resulting percentages were rounded to the nearest whole number.

The first survey was sent to 1,196 members of the Florida and California Fire Chief Associations. The survey was left open, to receive responses, for two weeks. I received 57 responses, for a response rate of 4.8%. While reviewing the responses, I realized I had a duplicate response from one respondent. Their answers were the same on both responses, so the second was removed and not counted, resulting in 56 total responses and a 4.7% response rate.

The first survey consisted of three questions, all yes or no responses, designed to determine their willingness to participate in my research. Respondents were first asked if their agency currently used the 48/96 schedule.

- 37 responded yes (66%)
- 19 responded no (34%)

The second question asked the respondents if they would be willing to participate in my eleven question research survey.

- 48 responded yes (86%)
- 8 responded no (14%)

The final question of the initial survey asked respondents if they had relatively easy access to their agency's sick/vacation leave and workers' compensation claim statistics for before and after their transition to the 48/96 schedule.

- 35 responded no (62%)
- 21 responded yes (38%)

My second survey was my actual research survey that consisted of eleven questions. I only sent my research survey to the respondents from my first survey who indicated they currently used the 48/96 schedule and were willing to participate in my research.

My research survey was sent to 37 members of the Florida and California Fire Chief's Associations. The survey was left open to receive responses for four weeks with a reminder email sent to all 37 members two weeks from the closing date. After my research survey was closed to responses, I had received 22 responses, for a response rate of 59%.

The respondents were first asked to identify their Agency. I received one response from each of the following Agencies:

- Pace Fire Rescue District, FL
- City of Dinuba FD, CA
- North County Fire Protection District, CA
- Apple Valley Fire Protection District, CA
- Newport Beach Fire Department, CA
- Navarre Beach Fire Rescue, FL
- North Bay Fire Control District, FL
- City of Merced Fire Department, CA
- San Gabriel Fire Department, CA
- Loma Linda Fire, CA
- US Davis Fire Department, CA
- Carpinteria Summerland Fire Protection District, CA
- Fullerton/Brea Fire Department, CA

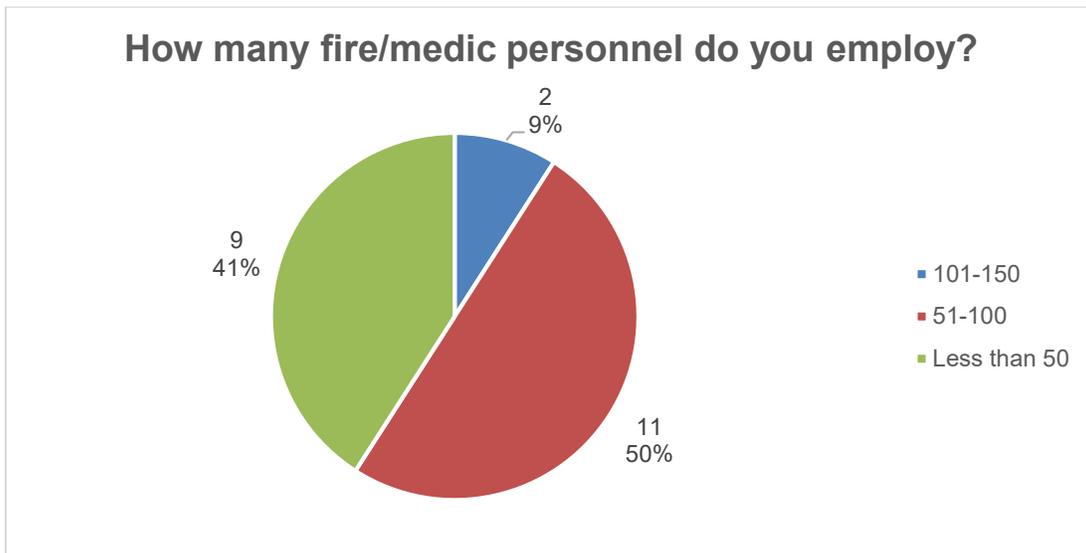
- Napa Fire Department, CA
- Clovis Fire, CA
- Ventura Fire Department, CA
- City of Corona Fire Department, CA
- City of Dixon Fire Department, CA
- Vista Fire Department, CA
- Santa Rosa Fire Department, CA
- Marco Island Fire Rescue, FL
- City of Monterey Park Fire Department, CA

The second question asked respondents to identify what state they were in, Florida or California.

- 4 were from Florida (18%)
- 18 were from California (82%)

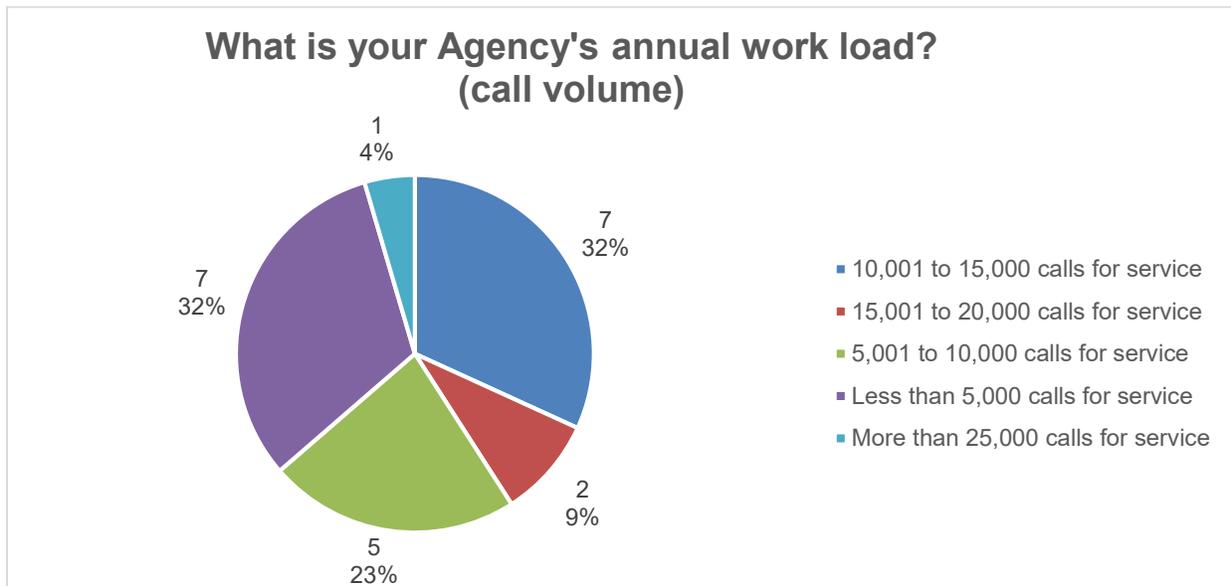
The third question asked how many fire/medic personnel each agency employed with the following possible selections: Less than 50, 51-100, 101-150, 151-200, or More than 200.

- 9 responded Less than 50 (41%)
- 11 responded 51-100 (50%)
- 2 responded 101-150 (9%)
- No one selected 151-200 or More than 200.



The fourth question asked respondents to identify their agency's annual work load, by call volume, and included the following possible selections: Less than 5,000 calls, 5,001-10,000 calls, 10,001-15,000 calls, 15,001- 20,000 calls, 20,001-25,000 calls, and More than 25,000 calls.

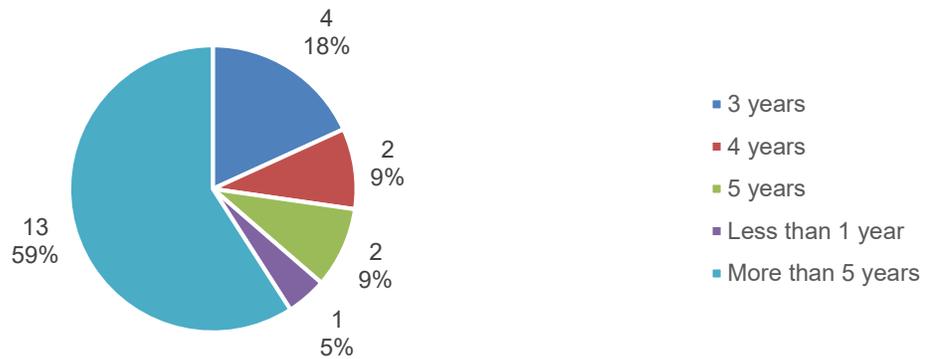
- 7 responded Less than 5,000 calls (32%)
- 5 responded 5,001-10,000 calls (23%)
- 7 responded 10,001-15,000 calls (32%)
- 2 responded 15,001-20,000 calls (9%)
- 1 responded More than 25,000 calls (4%)
- No one selected 20,001-25,000 calls.



The fifth question asked respondents how long their agency has used the 48/96 schedule and included the following possible selections: Less than 1 year, 1 year, 2 years, 3 years, 4 years, 5 years, More than 5 years.

- 1 responded Less than 1 year (5%)
- 4 responded 3 years (18%)
- 2 responded 4 years (9%)
- 2 responded 5 years (9%)
- 13 responded More than 5 years (59%)
- No one selected 1 year or 2 years.

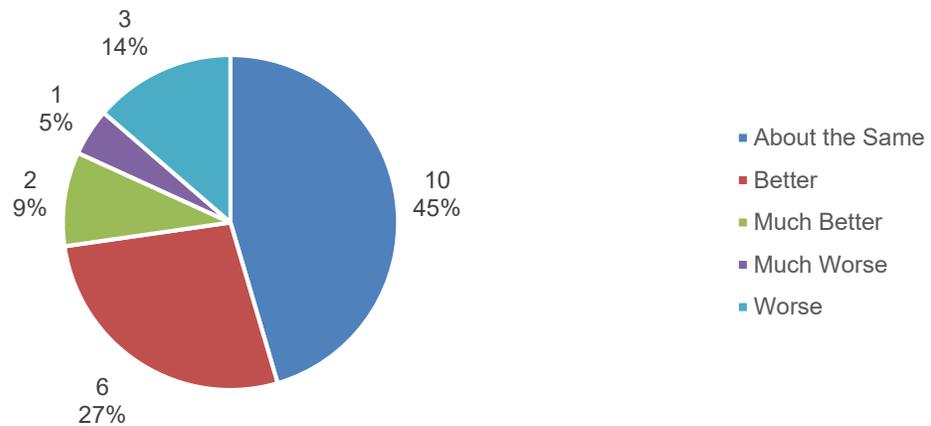
How long have you used the 48/96 schedule?



The sixth question asked respondents how the 48/96 schedule affected personnel productivity while on the job and provided the following possible selections: Much Better, Better, About the Same, Worse, Much Worse.

- 2 responded Much Better (9%)
- 6 responded Better (27%)
- 10 responded About the Same (45%)
- 3 responded Worse (14%)
- 1 responded Much worse (5%)

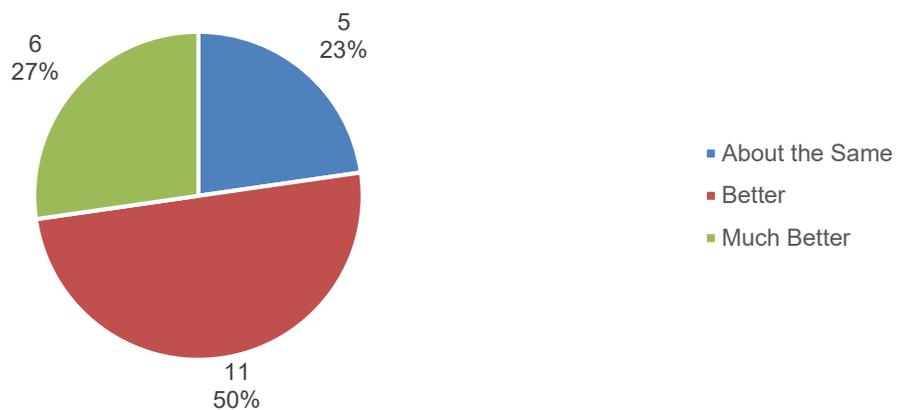
How has the 48/96 schedule affected personnel productivity while on the job?



The seventh question asked respondents how the 48/96 schedule has affected personnel morale and provided the following possible selections: Much Better, Better, About the Same, Worse, Much Worse.

- 6 responded Much Better (27%)
- 11 responded Better (50%)
- 5 responded About the Same (23%)
- No one selected Worse or Much Worse.

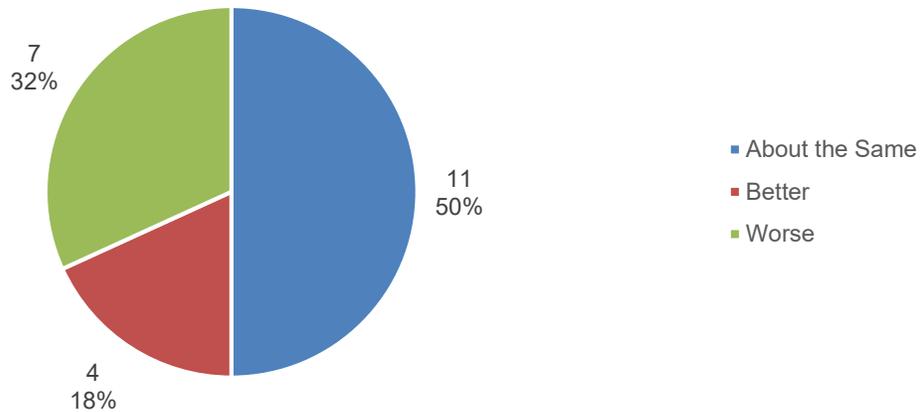
How has the 48/96 schedule affected personnel morale?



The eighth question asked respondents how the 48/96 schedule has affected personnel fatigue and provided the following possible selections: Much Better, Better, About the Same, Worse, Much Worse.

- 4 responded Better (18%)
- 11 responded About the Same (50%)
- 7 responded Worse (32%)
- No one selected Much Better or Much Worse.

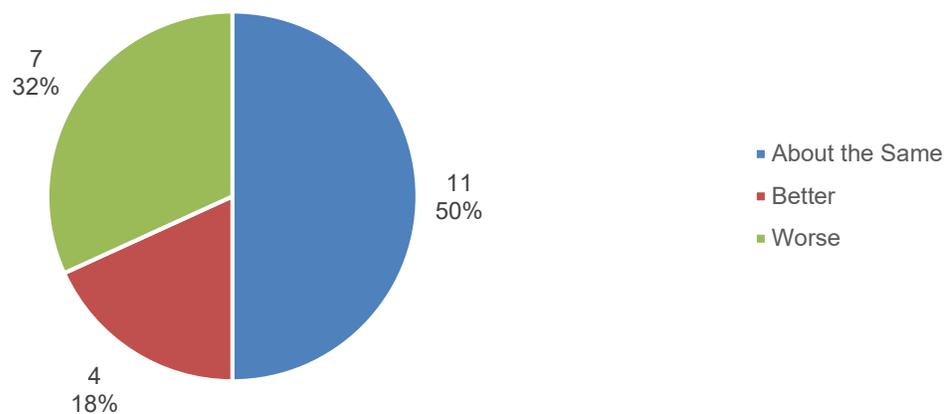
How has the 48/96 schedule affected personnel fatigue?



The ninth question asked respondents how the 48/96 schedule affected personnel sleep deprivation and provided the following possible selections: Much Better, Better, About the Same, Worse, Much Worse.

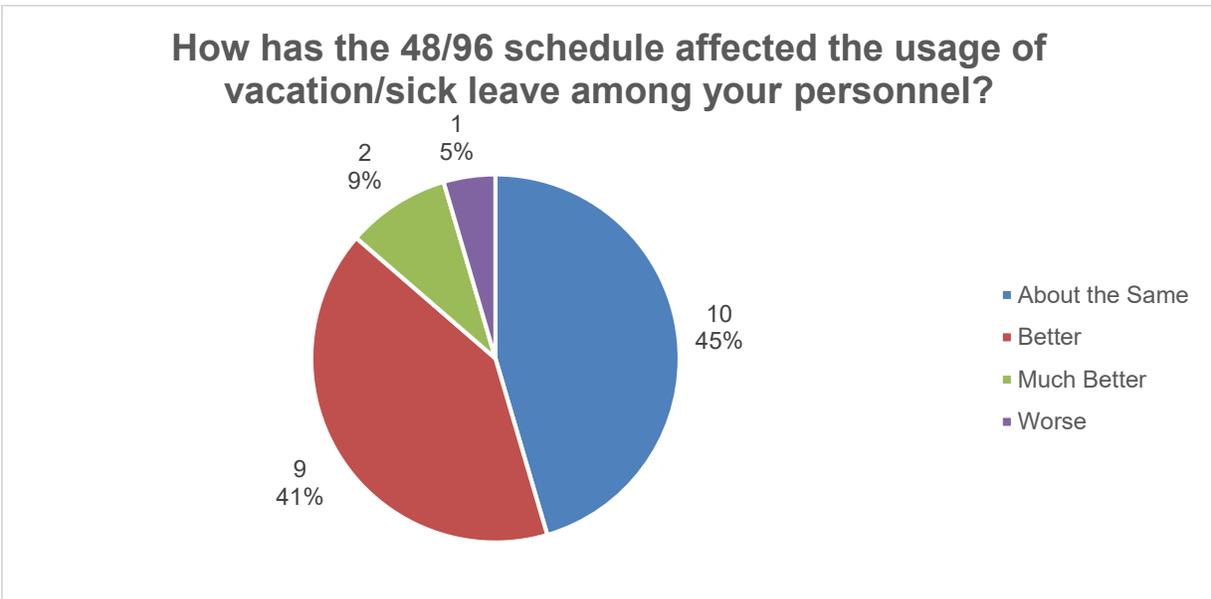
- 4 responded Better (18%)
- 11 responded About the Same (50%)
- 7 responded Worse (32%)
- No one selected Much Better or Much Worse.

How has the 48/96 schedule affected personnel sleep deprivation?



The tenth question asked respondents how the 48/96 schedule affected the usage of sick/vacation time among their personnel and provided the following possible selections: Much Better, Better, About the Same, Worse, Much Worse.

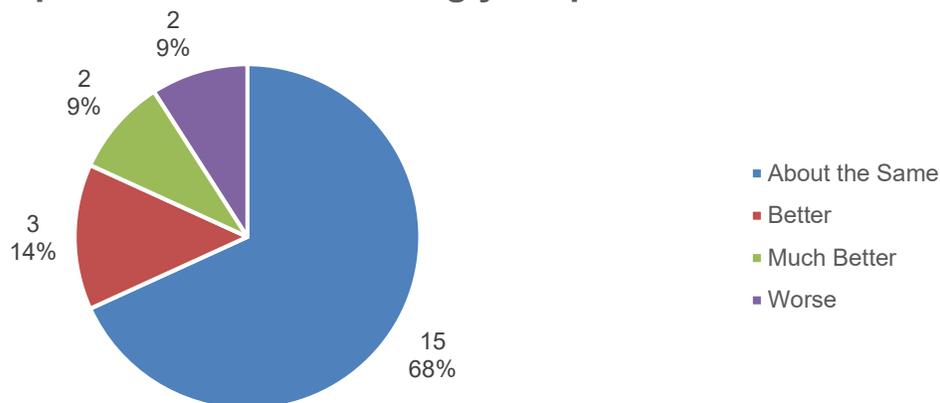
- 2 responded Much Better (9%)
- 9 responded Better (41%)
- 10 responded About the Same (45%)
- 1 responded Worse (5%)
- No one selected Much Worse



The final question asked respondents how the 48/96 schedule affected the Workers' Compensation claims among their personnel and provided the following possible selections: Much Better, Better, About the Same, Worse, Much Worse.

- 2 responded Much Better (9%)
- 3 responded Better (14%)
- 15 responded About the Same (68%)
- 2 responded Worse (9%)
- No one selected Much Worse

How has the 48/96 schedule affected the Workers' Compensation claims among your personnel?



Discussion

The results of my surveys largely reinforced the data and opinions I discussed in my Literature Review section. A majority (59%) of respondent agencies have used the 48/96 schedule for over five years and all but one agency has used it for at least three years. This leads me to believe the respondent agencies have significant experience and understanding of the pros and cons of the 48/96 schedule.

Regarding personnel productivity and morale, the results revealed the vast majority of respondents indicated about the same or improved levels in each area. Productivity results indicated 81% of all respondent agencies had the same or improved productivity levels from their personnel. The most telling area was morale, with 100% of all respondent agencies reporting the same or improved levels. This was the only area the respondents didn't note any decrease.

Fatigue and sleep deprivation results were identical to each other but didn't have the same positive trend compared to productivity and morale. While 50% of respondents reported about the same levels of both fatigue and sleep deprivation, the remaining respondents showed differing trends, with 32% reporting worse and only 18% reporting better. This resulted with 68% reporting the same or better levels of fatigue and sleep deprivation but 82% reporting the same or worse.

In terms of the areas beneficial to the agencies, sick/vacation usage and workers' compensation claims, the results followed similar trends as the previous mentioned areas. In the area of sick/vacation leave usage, 95% of respondent agencies reported about the same, or improved levels, with 45% reporting the same and 50% reporting better or much better numbers. Concerning workers' compensation claims, the vast majority of respondents, 68%, reported about the same levels. Compared to the remaining results of 23% of respondents indicated better or much better while 9% reported worse. Based on this data, worker's compensation claims could be considered largely unaffected by the schedule change.

Though I feel confident in the results of my research, I have discovered a few weaknesses. The first weakness in the data is it doesn't capture data from agencies that previously used the 48/96 schedule and reverted back to a different schedule. Further research including these agencies and their reasons for dropping the 48/96 schedule could be beneficial.

Another weakness in my research was the lack of hard data regarding sick/vacation leave usage and workers' compensation claims before and after the 48/96 schedule transition. During my initial interest survey, the majority of respondents (62%) indicated they did not have easy access to their statistics in these areas. This result caused me to amend my initial plan and restructure those questions to reflect how the respondents perceived the 48/96 schedule affected these areas. This limitation also caused me to remove an additional question regarding the cost associated with the workers' compensation claims. Obtaining this data from the participating agencies could paint a clearer picture of the 48/96 schedule's true impact on each agency.

The final, and most impactful, weakness I noticed was my very low response rate to my initial interest survey. This directly impacted the number of research surveys I disseminated. While speaking to representatives from the Florida and California Fire Chiefs' Associations, they gave me a couple reasons why this may have happened. Regarding Florida, the 48/96 schedule is still very new and in its infancy here. This could have been a reason for so few responses. Regarding California, where the 48/96 schedule originated and is widely used, it may have simply been the poor timing of my research. California was ravaged by numerous wild fires during my research period. Many fire service agencies were deployed to the affected areas for extended periods of time and were unavailable to respond and participate. If I would have conducted my research earlier or later in the year, before or after the wildfire crisis, the response rate may have improved significantly.

Recommendations

The results of my research indicate transitioning to the 48/96 schedule could be beneficial to both our Agency and our personnel. Offering at least the same or improved levels in all areas, while giving the personnel more time at home and having fewer commutes is a win for all involved. Based on the results, I recommend our Agency transition to the 48/96 schedule but we need to put some safe guards in place to protect the personnel, and the Agency, alike.

Even though the majority of respondents reported the same or improved levels regarding fatigue and sleep deprivation, we cannot ignore the fact that personnel will be on shift for twice as long as they have been accustomed to. Erring on the side of caution, and to protect the personnel from themselves as much as from the routine dangers of the job, I recommend instituting mandatory rest periods and possible personnel reassignment to combat or prevent increased fatigue and sleep deprivation.

As the literature mentioned, sleep deprivation can be mitigated or possibly eliminated by as little as five hours of restful sleep during a twenty four hour period. Having this in mind, I suggest implementing a mandatory five hour rest period for each twenty four hour work shift. The Fire Lieutenants in each Station would be responsible

for ensuring each member received their mandatory rest period but the members should be looking out for each other and making the proper notifications if they notice signs of sleep deprivation in a co-worker.

Not all fire stations operate at the same call volume. Some stations may respond to over a dozen calls in a shift while others may go days without leaving the station. Personnel stationed at particularly busy stations are more susceptible to sleep deprivation and increased fatigue than those stationed at slower stations. As the literature noted, most work related injuries occur during the last twelve hours of a shift. Having this in mind, I recommend shifting personnel from busy stations to slower ones, if needed, to further combat fatigue issues. If the busy station has a rough first shift, with little to no down time, shifting those members to a slower station for the second twenty four hour shift offers them an increased chance of getting their required rest and improving their fatigue related issues.

After considering all the factors, and weighing the options available, if the decision is made to transition to the 48/96 schedule, I recommend we compile data from the previous two years for future comparison. Gathering detailed data regarding our personnel's sick/vacation leave usage, worker compensation claims, and the cost associated with those claims, can give us a solid baseline of data to analyze once the 48/96 schedule has been in place for the same two year time span. Once the updated data is gathered, it can provide an apples-to-apples comparison of the two different schedules, easily conveying our gains and losses in each respective area.

Overall, I believe the 48/96 schedule could be a success for our Agency, and personnel, alike but we have to place an emphasis on mitigating any fatigue related issues. Requiring mandatory rest periods and shifting personnel, when needed, are just a couple of ways to accomplish this task. Furthermore, comparing the data of pre and post schedule transition will give us a better understanding of the true impact of the schedule change.

Lieutenant Cory Webster has been in law enforcement for 14 years. He began his career with the DeFuniak Springs Police Department, where he spent two and a half years and served as a patrol officer and the Public Information Officer. He joined the Walton County Sheriff's Office in 2009, serving as a patrol deputy, Field Training Officer, and Investigator prior to being promoted to Sergeant in 2015. He served as the Beach/Marine Sergeant and Patrol Sergeant until he was promoted to his current position of District Lieutenant in 2018. As a District Lieutenant, he is responsible for the day-to-day operations of the Northern District of Walton County. Cory is a graduate of the Florida Leadership Academy, Class 40.

References

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Appendix A

Survey 1 (Interest Survey)

Introduction

I'm Lieutenant Cory Webster with the Walton County Sheriff's Office in Florida. My agency assumed management of our county's Fire Rescue Service, Walton County Fire Rescue, in 2017. I'm compiling information for a research paper regarding the 48/96 work schedule and if it would be a beneficial change for our agency. This survey is designed to determine fire service agencies that are currently using the 48/96 schedule and are willing to participate a brief, 11 question follow-up research survey. Please only complete one survey per agency.

1. Does your agency use the 48/96 work schedule?
 - Yes
 - No

2. Would you be willing to take a brief, 11 question survey regarding your experience with the 48/96 work schedule?
 - Yes
 - No

3. Do you have relatively easy access to statistics regarding your agencies sick/vacation usage and Workers' Compensation Claims before and after your transition to the 48/96 schedule?
 - Yes
 - No

Appendix B

Survey 2 (Research Survey)

Introduction

I'm Lieutenant Cory Webster with the Walton County Sheriff's Office in Florida. My agency assumed management of our county's Fire Rescue Service, Walton County Fire Rescue, in 2017. All of our fire fighters are also cross trained as EMTs or Paramedics. I'm compiling information for a research paper regarding the 48/96 work schedule and if it would be a beneficial change for our agency. This survey is targeted at agencies that are currently using the 48/96 schedule. Please only complete one survey per agency.

1. Agency Name:
 - (Enter Your Agency Name Here)
2. What state are you in? (Please use two letter abbreviation. Ex: FL, CA)
 - (Enter you State Here)
3. How many fire/medic personnel do you employ?
 - Less than 50
 - 51-100
 - 101-150
 - 151-200
 - More than 200
4. What is your Agency's annual work load (call volume)?
 - Less than 5,000 calls for service
 - 5,001 to 10,000 calls for service
 - 10,001 to 15,000 calls for service
 - 15,001 to 20,000 calls for service
 - 20,001 to 25,000 calls for service
 - More than 25,000 calls for service
5. How long have you used the 48/96 schedule?
 - Less than 1 year
 - 1 year
 - 2 years
 - 3 years
 - 4 years
 - 5 years
 - More than 5 years

6. How has the 48/96 schedule affected personnel productivity while on the job?
 - Much Better
 - Better
 - About the Same
 - Worse
 - Much Worse

7. How has the 48/96 schedule affected personnel morale?
 - Much Better
 - Better
 - About the Same
 - Worse
 - Much Worse

8. How has the 48/96 schedule affected personnel fatigue?
 - Much Better
 - Better
 - About the Same
 - Worse
 - Much Worse

9. How has the 48/96 schedule affected personnel sleep deprivation?
 - Much Better
 - Better
 - About the Same
 - Worse
 - Much Worse

10. How has the 48/96 schedule affected the usage of vacation/sick leave among your personnel?
 - Much Better
 - Better
 - About the Same
 - Worse
 - Much Worse

11. How has the 48/96 schedule affected the Workers' Compensation claims among your personnel?
 - Much Better
 - Better
 - About the Same
 - Worse
 - Much Worse