

Obesity in the Fire Service

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Research Conducted by

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with

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University of Massachusetts Boston
and
Boston Fire Department



Research Project Findings

Introduction

Beginning in the Fall of 2017 University of Massachusetts Boston undergraduate student Matthew Bucala and academic advisor Elizabeth Sweet Boston partnered with the Boston Fire Department to conduct a research study that attempted to determine the if there existed a prevalence of obesity in the department and what the general attitudes and beliefs surrounding diet and exercise were in the department.

After obtaining the proper approval needed from the university the research was conducted in two Phases that consisted of both qualitative interviews and distributing an online survey to the entire department via email and took place during the Summer and Fall of 2018. Phase I consisted of **17** total interviews from **4** different stations within the department that could be considered “busy”, “moderate”, and “slow” stations, which granted the study the best possible representation of participants. Phase II consisted of distributing online surveys to the entire department of which a total of **129** members participated in the study. And while this was only approximately **9.2%** of the total membership for the department we feel as though the data revealed certain trends that indicate an increase in participants would not have significantly changed the overall response outcomes.

Phase I Findings

The data that was captured during Phase I of the study elicited some rich and interesting findings and was significantly influenced the questions used in Phase II of the study. These interviews unequivocally confirmed that the fire department is very social in nature, especially, during dinner. One member stated that **“the firehouse is almost**

like a clubhouse where there is a lot of joking and laughing in between calls”, while another noted that **“One thing that I always liked about the fire department was the team aspect. The idea that you can do something rewarding and do it together as a team.”**

Diet-Related Questions

During Phase I asked each member several questions that pertained to not only their experiences with food but the overall culture surrounding food in the department. Most of the members indicated that their diets were worse while working at the firehouse. For instance, one member explained that **“the portion sizes "are too large and he said that he often he eats " a little too much for dinner due to the larger portion sizes”** (Participant, 4, 2018). And that **“the amount of food they serve for dinner "could feed a soup kitchen. Generally, the fire service prepares for seconds and we cook so guys can have seconds”** (Participant, 7, 2018).

However, some members had devised eating habits to combat some of the temptations at the firehouse. For example, two members noted that they **“adhere to a diet that abides by the 80/20 rule which is the idea that I eat healthy 80 percent of the time and 20 percent of the time that includes deserts, and other less nutritious foods”** (Participant, 14, 2018).

Additionally, many of the members noted that with the advent of the Safety, Health and Wellness Division and programs such as O2X the attitudes and behaviors surrounding food have drastically improved.

Exercise-Related Questions

We also asked each member what their experience with exercise during their time spent with the department. almost every participant noted that they believe that exercise is an extremely important aspect of staying healthy and is imperative to performing effectively as a firefighter. For instance, a member explained that **“I know that exercise is undeniably important and something that should be done”** (Participant, 1, 2018). And another member stated that **“staying fit has the potential to save your own life or the lives of others, and that you must have a base level of strength and fitness in order to do the job”** (Participant, 14, 2018).

Additionally, almost all of the members I interviewed explained that the culture of exercise in the fire department has changed dramatically over the past five years and had noted a positive change in the department’s overall health and well-being. Moreover, they noted that with the advent of the Safety Division the levels of exercise among the members had increased. For instance, a member stated that **“overall and with the introduction of the O2X program the culture of the fire department has shifted and become more aware of the importance of regular exercise”** (Participant, 5, 2018).

However, despite the improvements, several members indicated there still exist certain issues that cause them to avoid exercising at the fire station. A member explained that **“I do not typically exercise at the station because I am afraid of an interruption during the workout”** (Participant, 8, 2018). Another member noted that **“depending on the shift that day there may not be enough time if the companies get a couple working fires, especially the willingness to exercise will be lost! Also, when the companies are assigned to cover other stations for an incident or training it can also throw off the members routine of eating and exercising properly”** (Participant, 10, 2018). And a member explained that **“the problem is each member has their own agendas for then the day that often do not include exercising. For example, a member might bring in a table to paint at work instead of**

focusing on exercise or trying to remain functionally ready for the job” (Participant, 15, 2018).

Sleep-Related Questions

Many of the members indicated that it was often extremely challenging to get any significant amount of rest due to the number of interruptions they would encounter during the night. One of the members explained what sleep is like for him in the firehouse as he stated that **“sleep was the one thing that is terrible and even though I can get approximately 6 hours of sleep during a shift the sleep it is often interrupted several times due to incident responses and then the department radio is constantly going that makes it hard to sleep”** (Participant, 17, 2018). Obviously not much can be done to mitigate the lack of sleep members receive as they work 24-hour shifts, therefore, several members noted that **“most members try to get sleep whenever they can and often take several naps over the course of a shift. Also, in the day following a shift, I will get a little extra rest in order to recover from the day prior”** (Participant, 14, 2018).

Obesity Question

The scope of the study was to determine the prevalence of obesity in the fire department was and to elicit the potential contributing factors that may be leading to levels of obesity. I found that most members believed that obesity was a problem earlier in their careers (for most this was about 10 years ago) but they stated that presently obesity no longer seems to be an issue as the department has taken the necessary steps in order to mitigate the obesity issue in the department. Moreover, the members explained that due to certain health and wellness initiatives and due to the fact that the members coming on the job are more aware of the health-related factors the membership overall has become more fit and maintain a more controlled weight on average. For instance, one member stated that **“I have seen a marked difference in the membership as the members new to the job are in better shape and weigh less than past generations”** (Participant, 1, 2018). And another member noted that **“in fact, I believe the fire department may have a lower rate of obesity**

than the general population” (Participant, 12, 2018).

However, in addition to the participants believing that the levels of obesity had either almost disappeared or significantly diminished, there were some members who put forth the factors that they believe could be attributed to obesity in the fire department and they were quite adamant in their responses. For instance, a member stated **“there is the potential for members to become lazy at the fire station as that may be the only free time they have to escape from the rigors of everyday life. Also, some members may be worried that they will be up throughout the night responding to incidents, therefore, they want to conserve their energy and rest during the day”** (Participant, 10, 2018).

Another member explained that some of the problems he has encountered with his own group members regarding being overweight and obesity. He stated that **“I have a member that works at my fire station that should not be working in the field, meaning he should not be allowed to work at a fire station. He does work on a busy company that always gets the job done, but if he went into a collapsed basement, we might lose two members trying to remove him from the basement due to them being out of shape”** (Participant, 17, 2018). And that **“I think department X is lacking is some type of physical fitness standard that followed each member throughout the entirety of their career. One of the common lines I get from other members is oh that guy is a little overweight, but he is a hell of a fireman”** (Participant, 17, 2018).

Separately, another member noted that **“many members unconsciously eat more while working at the firehouse because more food is readily available. And that some members never realize that the ways they conduct themselves at the firehouse are ultimately leading to their weight gain”** (Participant, 15, 2018).

Department Resources

I also asked each participant if the department provided them with the necessary literature and

resources needed in order to eat and exercise properly and if they generally promoted a positive state of health and well-being. Overall, the responses indicated that the department has improved dramatically over the past five years and that was due in large part to the creation of the Safety, Health, and Wellness Division, and for the initiation of the O2X program which was designed to teach the members how to exercise and eat in a way that is tailored to be a firefighter. I discovered that many of the participants were quite pleased with the paradigm shift that has occurred in their department as it shows them that the department is dedicated to investing in their well-being and safety. For instance, a member explained what the transition has been like in the department regarding health and wellness **“the department provided very little if any information for the membership on health and wellness and the department used to be very reactive in trying to implement changes after something happened to a member. Now the department is more proactive with all of the programs and new equipment it has introduced into the department. The department has gone from the dark ages to the Renaissance in regard to health and wellness”** (Participant, 1, 2018).

Another member stated that **“with the introduction of the Health and Wellness Division and the O2X program the department has solidified its stance on providing the members with ways to achieve and maintain proper health and mitigate the onset of various diseases such as cancer, cardiovascular disorders, etc.”** (Participant, 5, 2018).

However, despite the tremendous strides the department has made regarding the members’ overall health there are still several issues the members believed needed to be addressed in order to maintain and continue to gain momentum in promoting the importance of health and well-being in the department. Furthermore, several of the members believed that there was not enough accountability in ensuring that the members are taking proper advantage of the resources that the department provides. For instance, a member stated that **“the department has done a great job recently in implementing programs like O2X but**

that the department needs to follow up with holding the member accountable for continuing to eat healthy and exercise” (Participant, 14, 2018). Additionally, another member argued that the department needed to implement some type of physical abilities test for the members, and that **“each member should have to prove themselves at least once a year via some type of physical fitness assessment test. There needs to be a more stringent method of keeping track of each members job capabilities throughout their career”** (Participant, 17, 2018).

Hypothetical Questions

After asking the participants what their experiences within the department regarding health and well-being resources I asked each member a set of hypothetical questions. First, I proposed the idea of instituting a weight requirement into the department that could be scaled depending on the members’ age in an effort to ensure all of the members would be able to maintain a functional weight that was conducive to effectively performing the duties of a firefighter. The responses that I received regarding this concept were mixed as some of the members were in favor of a weight requirement that factored in each members’ BMI and age and was something akin to the military standards of which members have a few chances to try and make the weight standard before any type of sanctions are enforced. For instance, a member explained that **“having a weight requirement and annual fitness assessment would absolutely be beneficial for the department and if they did not at some point mandate these things the fire department is doomed for failure. As of right now, we have zero standards for fitness** (Participant, 7, 2018). And another member stated that **“having a weight requirement/physical assessment would be beneficial because if members knew there was something they had to pass in order to stay on the job or not be sanctioned that they would be motivated to get in shape”** (Participant, 10, 2018). However, members also believed that a weight requirement would not be beneficial, as one member explained that **“even the guys that are overweight in most cases can often do the job better than the guys who are physically fit”** (Participant, 13, 2018). And that **“a weight**

requirement would not be beneficial because every member both large and small has a role in the fire department and placing a weight restriction may limit the department in its overall physical capabilities. Big people have their uses with just brute strength that other members do not” (Participant, 3, 2018).

In addition to asking the members if they felt as though a weight requirement would be beneficial I asked them if they felt a regular physical fitness assessment could help to improve the health and safety of the department. Interestingly, many of the participants agreed that a regular fitness assessment would be a good idea for the department. Several of the participants indicated that something such as an annual fitness test would be imperative in gauging each member ability to still properly function as a firefighter. For instance, a member stated that **“a regular fitness assessment would force people to be accountable for themselves. It would allow for the department to ensure that every member is functionally capable of performing the tasks of a firefighter. Being in an unfit state in the fire service can pose a risk to not only yourself, but the other members of your group and the people you may need to save”** (Participant, 14, 2018).

Another member explained that **“there needs to be a more stringent method of keeping track of each members job capabilities throughout their career. I believe having a yearly scaled fitness test would be very beneficial and necessary for the department to continue its upward trends of attempting to keep the members as healthy as possible”** (Participant, 17, 2018).

Phase II Findings

During **Phase II** of the study, I found that the data corroborated what the participants stated in **Phase I** as many members indicated that they believed their diets were not as good as they should be and that a significant problem in the department was the larger portion sizes being served during meals such as dinner.

I learned that the levels of exercise in the department have increased dramatically over the past 5 years due to the department implementing

new exercise initiatives and the creation of an entirely new division designed solely to focus on the health of the members. The department has sought out the expertise of health and fitness experts to devise functional exercise programs for the members to implement in the firehouse and they have invested significant budgetary resources on purchasing the proper exercise equipment in order to foster and promote the fitness of the members.

Additionally, I think that one of the most significant questions I proposed to the members was the idea that firefighters are athletes. I found that approximately 62% of the participants agreed with this idea but due to the nature of the study, it was not clarified if the members really understood or considered what this meant as a concept for themselves and the department as a whole. Athletes train both mentally and physically to endure the rigors of each game and each season with intense conditioning and training with the ideas that their bodies are like superior machines that need require intense focus and dedication. Perhaps the members need to begin to truly think of their bodies as the greatest tool in their daily arsenal for combating fires and other dangers they encounter on a regular basis.

I also learned that the participants indicated that they and their peers in the department were exercising on a regular basis and that they felt as though they were equipped with the proper knowledge and equipment to exercise effectively in each of their respective fire stations. Moreover, a large percentage of the participants indicated that they believed having regular fitness assessments would be beneficial for themselves and the department, thus further proving that they are comfortable in their ability to perform physically. It is possible then that due to the stronger focus centered on fitness and regular exercise that the department has taken over the past 4-5 years that it has helped change a large part of the negative culture around exercise that used to be a significant part of the department. Furthermore, it may also be the case that members have an easier time making a correlation with exercising and job functionality versus diet and job functionality as regular exercise may provide them with tangible results that can be felt and seen whereas slightly modifying one's diet

may not produce the same amount of results in the same manner that exercising provides.

Ultimately, the research I conducted with the members of the X Fire Department helped to elicit the attitudes and beliefs surrounding diet and exercise in the department and to understand how they have improved exponentially over the past 5 years. The data indicates that the members' behaviors regarding diet and exercise were better than I initially predicted. However, I think that the study also revealed that there exist certain factors within the fire department that might be negatively impacting the members health and may be preventing them from reaching their full potential of optimal fitness and health capacity. For instance, some the findings around diet, exercise, and sleep indicated that there are certain structural aspects of the department that perhaps need to be re-thought or re-structured in order to accommodate what the members' have indicated is having the greatest impact on their ability to eat, sleep, and exercise effectively. My hope is that this study can serve as a useful guideline for not the Boston Fire Department but other departments nationally to discern what some of the major issues around diet and exercise might be as the issues and concerns the members' of the Boston Fire Department expressed in my experience are a good depiction of the larger fire service as a whole.

Finally, the following pages contain various tables and graphs from **Phase II** data that illustrate the how the members felt about diet, exercise, sleep, and overall health.

Demographic Data

FIGURE. 1

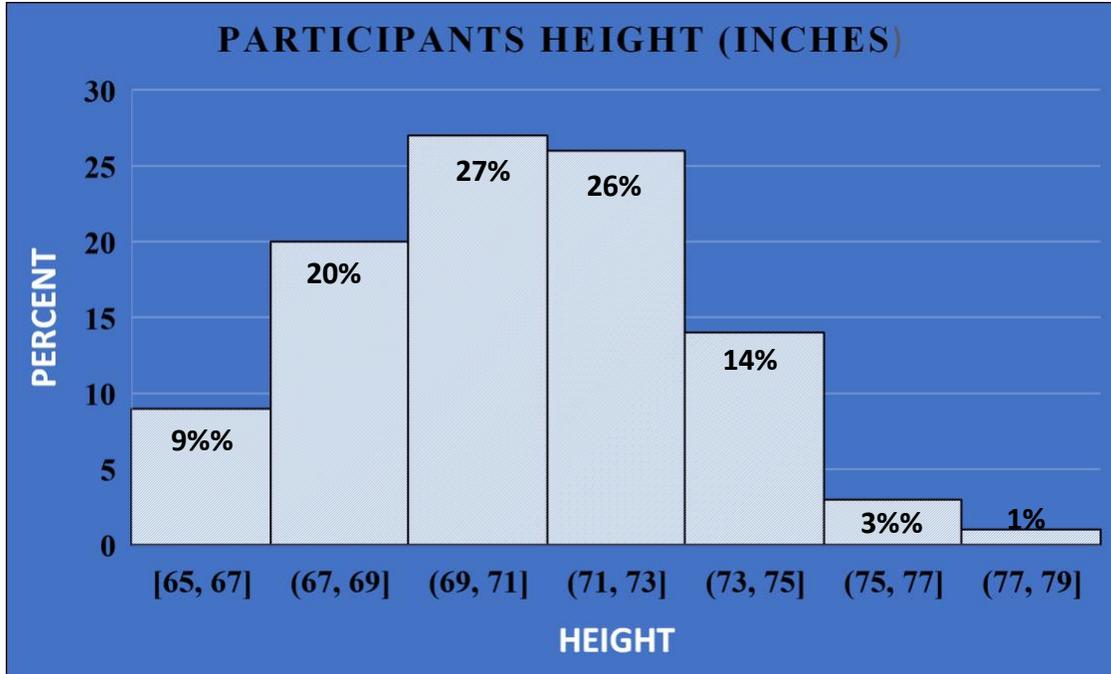


FIGURE. 2

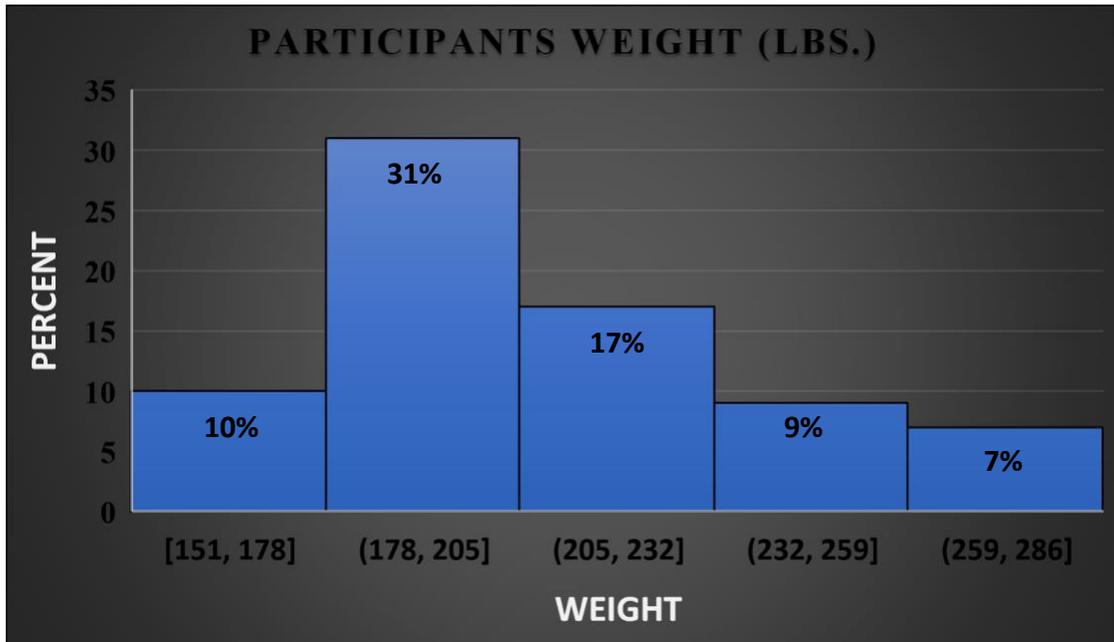


TABLE. 1

Demographic Questions		Response			
Education Level	High School (20.3%)	Some college credit, no degree (39.8%)	Associate Degree (8.74%)	Bachelor's Degree (23.3%)	Master's Degree (7.7%)
Rank	Firefighter (45%)	Lieutenant (26%)	Captain (14%)	District Chief (11%)	Deputy Chief (4%)
Average age of participants	Range: 30-64 yrs. Average: 47 yrs.				
Total years served	Range: 0.75 – 39 yrs. Average: 19.5 yrs.				
Years spent at current station	Range: 0 -29 yrs. Average: 5.5 yrs.				
Number of other stations assigned	Range: 0 – 18 Average: 3 yrs.				
Approximate height	Range: 5'4" – 6'5" Average: 5'9"				
Approximate weight	Range: 151 – 285 lbs. Average: 210.71 lbs.				
BMI	Range: 22.29 – 37.97 Average: 29.30*				

*It is important to note that normal BMI ranges from 18.5 - < 25 with overweight being in the range of 25 - < 30 and greater than 30 is considered obese. Therefore, the participants were just under the threshold for being considered obese.

FIGURE. 3

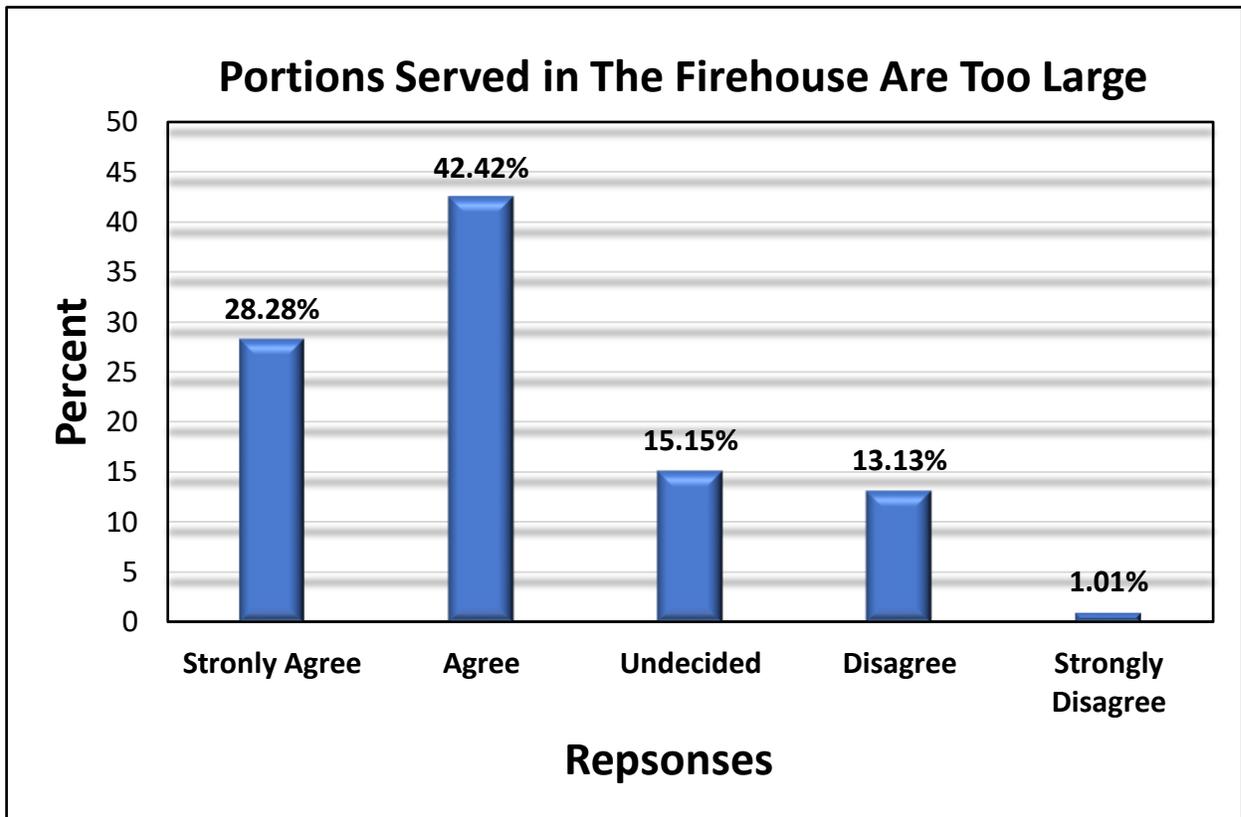


FIGURE. 4

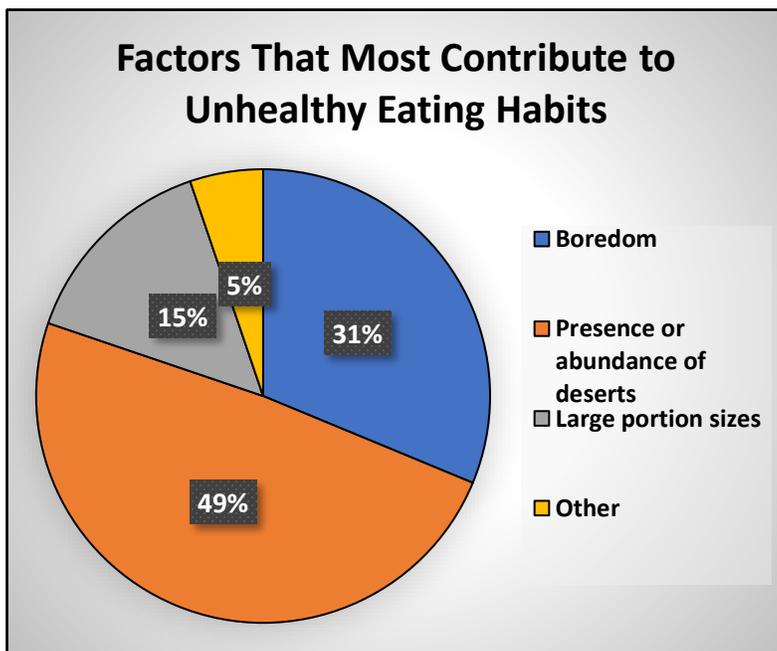


FIGURE. 5

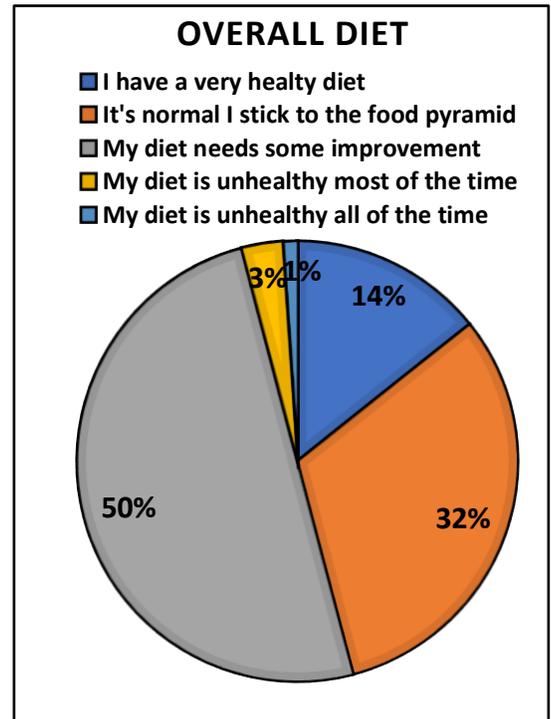


TABLE. 2

Diet-Related Questions			Response		
Overall diet	I have a very healthy diet (14.29%)	It's normal I stick to the food pyramid (31.63%)	My diet needs some improvement (50.00%)	My diet is unhealthy most of the time (3.06%)	My diet is unhealthy all of the time (1.02%)
Diet is better or worse at the firehouse	My diet is better when I am at the firehouse (5.05%)	My diet is worse when I am at the firehouse (46.46%)	My diet is the same regardless of where I am (48.48%)		
Prepare lunch at the firehouse or purchase on the road	While on the road (40.62%)	In the firehouse (11.46%)	A mixture of both (47.92%)		
Portions served in the firehouse are too large	Strongly agree (28.28%)	Agree (42.42%)	Undecided (15.15%)	Disagree (13.13%)	Strongly disagree (1.01%)
Have the necessary knowledge to cook healthy meals	Strongly agree (38.78%)	Agree (47.96%)	Undecided (8.16%)		
Pressure to eat certain foods while at the firehouse	Strongly agree (1.02%)	Agree (9.18%)	Undecided (13.27%)	Disagree (50.00%)	Strongly disagree (26.53%)
Preferred way to eat dinner in the firehouse	With every member who is working at the firehouse (95%)	Only with the other members assigned to my company's group (1.01%)	Only with certain members who are assigned to my firehouse (1.01%)	Alone (2.02%)	
Feel that the diet of members in the department have improved due to	People overall in society are more aware of healthier food options (22.45%)	The fire department has helped guide members to eating healthier (14.29%)	The newer members are more aware of healthier food options (16.33%)	All of the above (46.94%)	
Total meals consumed during a shift	1 meal (16.16%)	2 meals (45.45%)	3 meals (34.34%)	4 meals (3.03%)	5 meals (1.01%)
Meals consumed in after 10pm during a shift	0 meals (97.96%)	1 meal (2.04%)			
Two factors that contribute the most to unhealthy eating habits	Boredom (31.25%)	Presence or abundance of deserts (48.96%)	Large portion sizes (14.58%)	Other (5.21%)	

Exercise-Related Data

FIGURE. 6

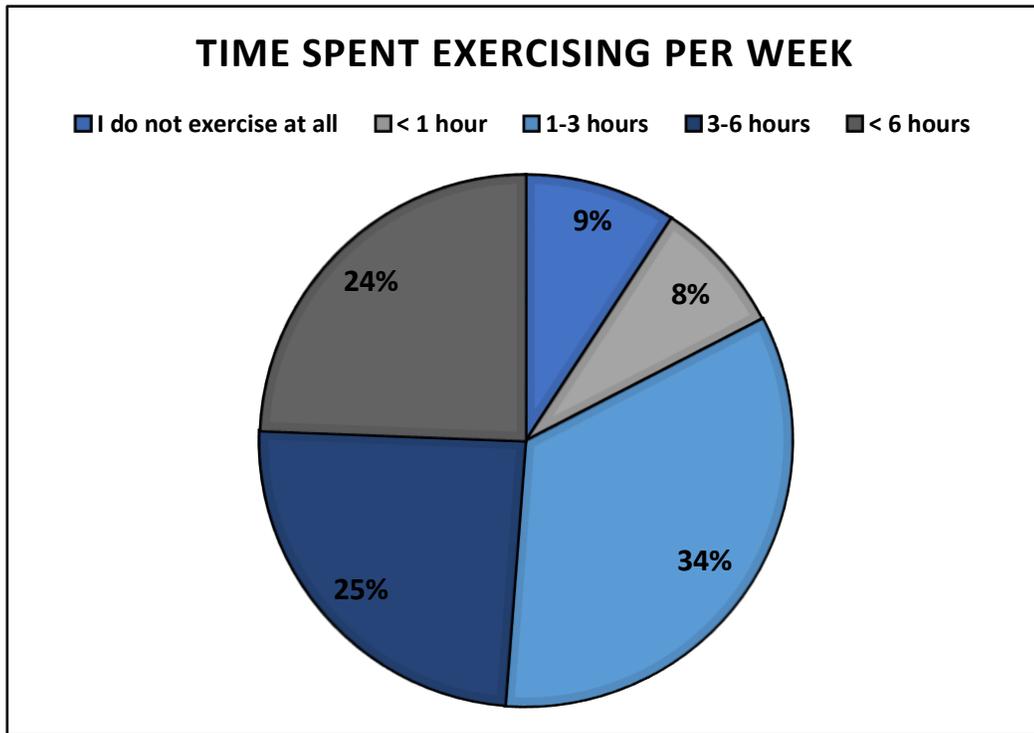


FIGURE. 7

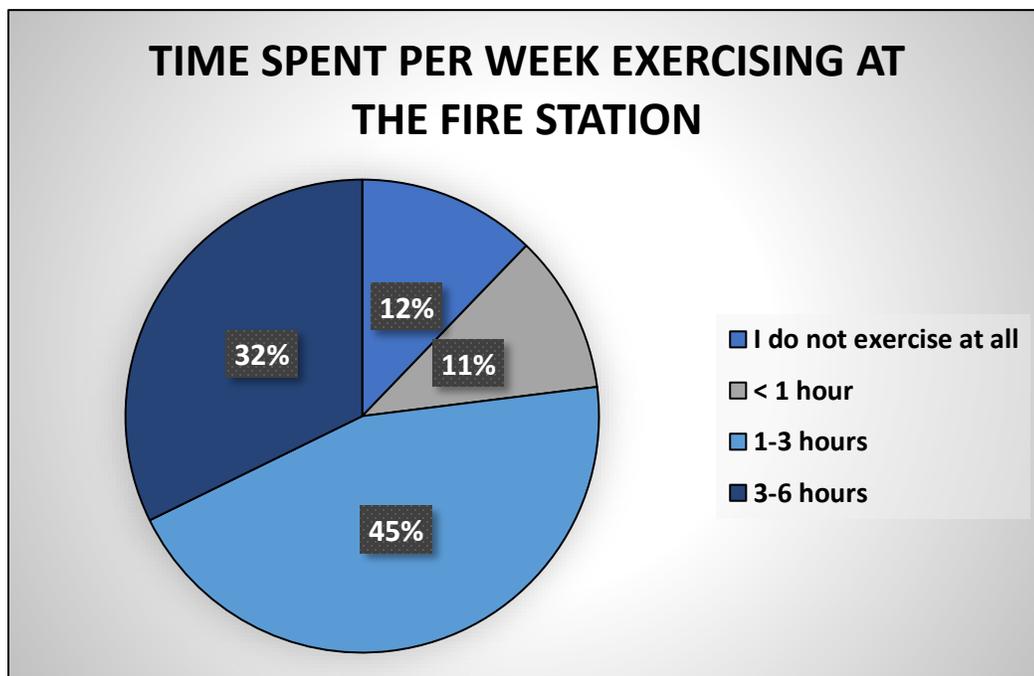


FIGURE. 8

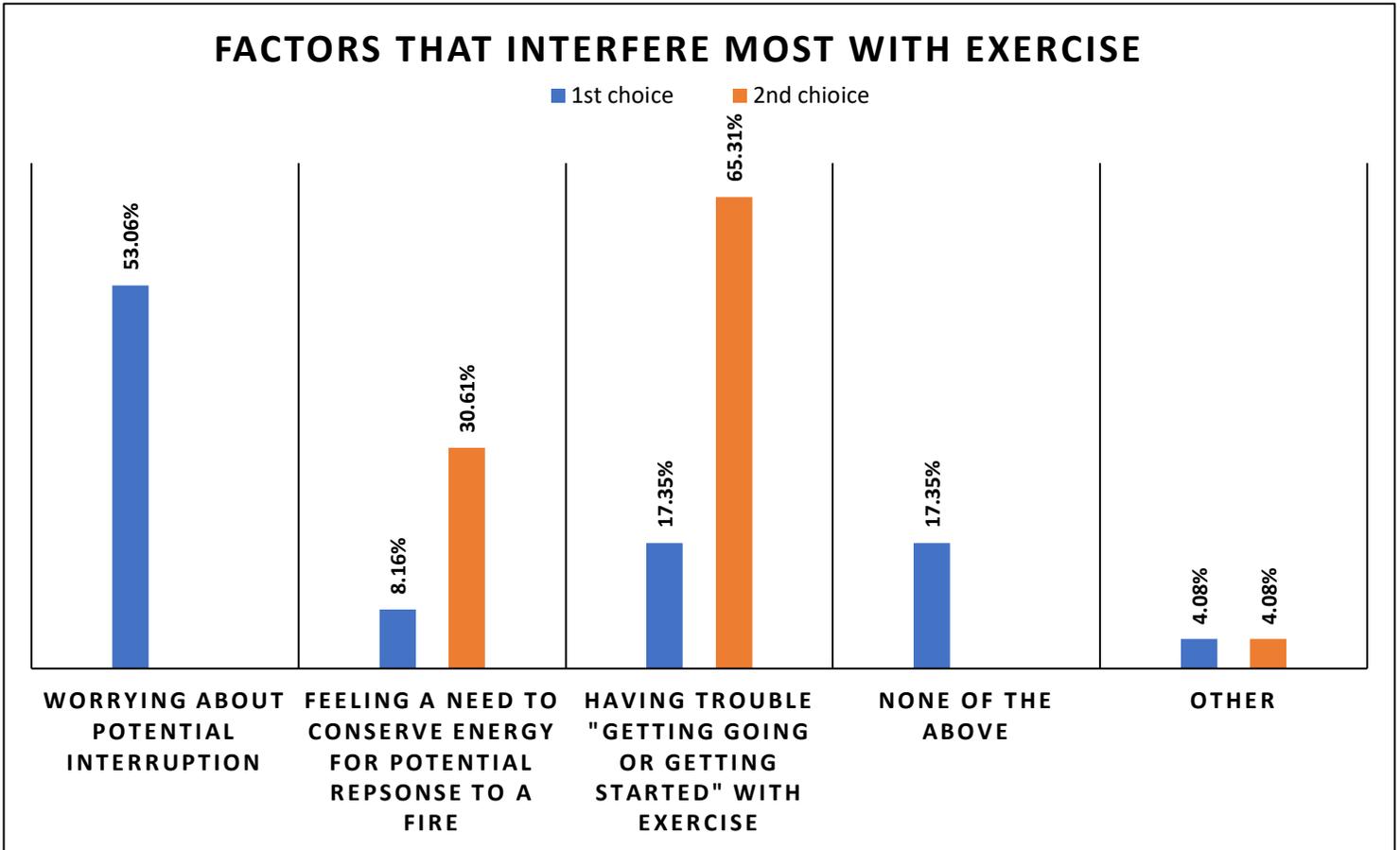


FIGURE. 9

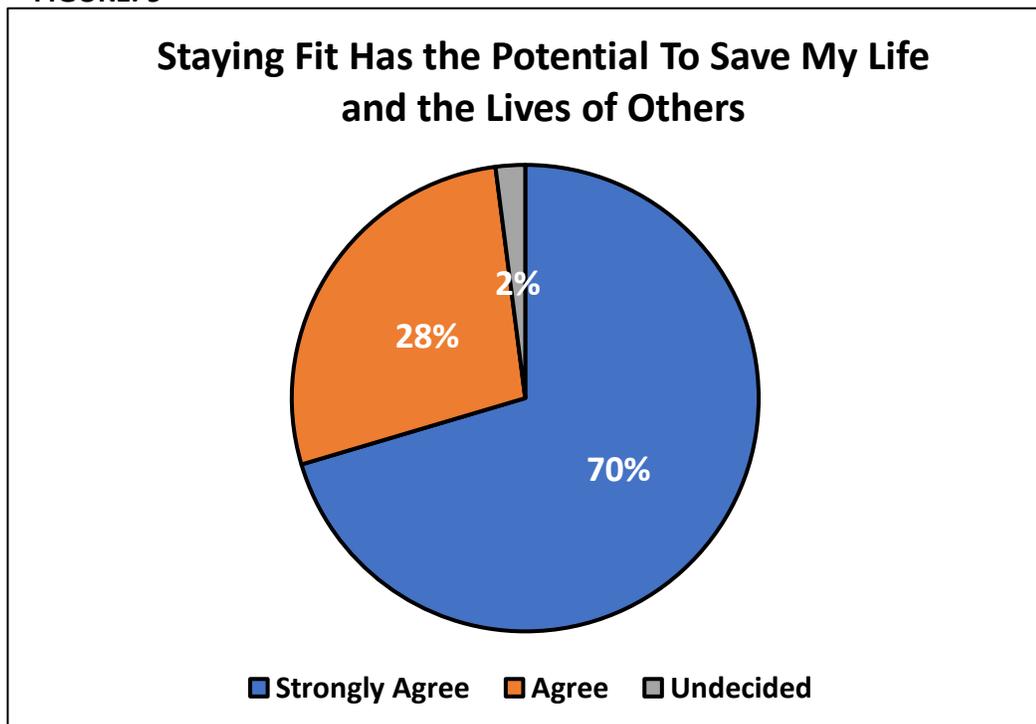


TABLE. 3

Exercise-Related Questions			Response		
Hours per week exercise overall	I do not exercise at all (9.18%)	< 1 hour (8.16%)	1-3 hours (33.67%)	3-6 hours (24.49%)	More than 6 hours (24.29%)
Hours per week exercise at the fire station	I do not exercise at all (27.84%)	< 1 hour (22.68%)	1-3 hours (45.36%)	3-6 hours (4.12%)	
Feel as though group exercise would be beneficial	Strongly Agree (13.40%)	Agree (25.77%)	Undecided (34.02%)	Disagree (19.59%)	Strongly Disagree (7.22%)
Feel as though I have access to the proper exercise equipment in my fire station	Strongly Agree (28.87%)	Agree (50.52%)	Undecided (7.22%)	Disagree (12.37%)	Strongly Disagree (1.03%)
Feel as though I have the proper knowledge to exercise on my own	Strongly Agree (37.76%)	Agree (52.04%)	Undecided (8.16%)	Disagree (2.04%)	
Firefighters are athletes	Strongly Agree (21.43%)	Agree (45.92%)	Undecided (17.35%)	Disagree (13.27%)	Strongly Disagree (2.04)
Staying fit and healthy has the potential to save my life and the lives of others	Strongly Agree (70.41%)	Agree (27.55%)	Undecided (2.04%)		
The department regularly encourages me to eat and exercise properly.	Strongly Agree (14.29%)	Agree (43.88%)	Undecided (20.41%)	Disagree (20.41%)	Strongly Disagree (1.02%)
Two factors that most interfere with or prevent exercise (variable 1)	Worrying about potential interruption (53.06%)	Feeling a need to conserve energy for potential response to a fire (8.16%)	Having trouble “getting going or getting started” 0.61 with exercise (17.35%)	None of the above (17.35%)	Other (4.08%)
Two factors that most interfere with or prevent exercise (variable 2)	Feeling a need to conserve energy for potential response to a fire (30.61%)	Having trouble getting going or “getting started with exercise (65.31%)	Other (4.08%)		
Percentage of department members you would say exercise regularly	0-10% (21.43%)	10-20% (57.14%)	20-30% (14.29%)	30-40% (7.14%)	

Sleep-Related Data

FIGURE. 10

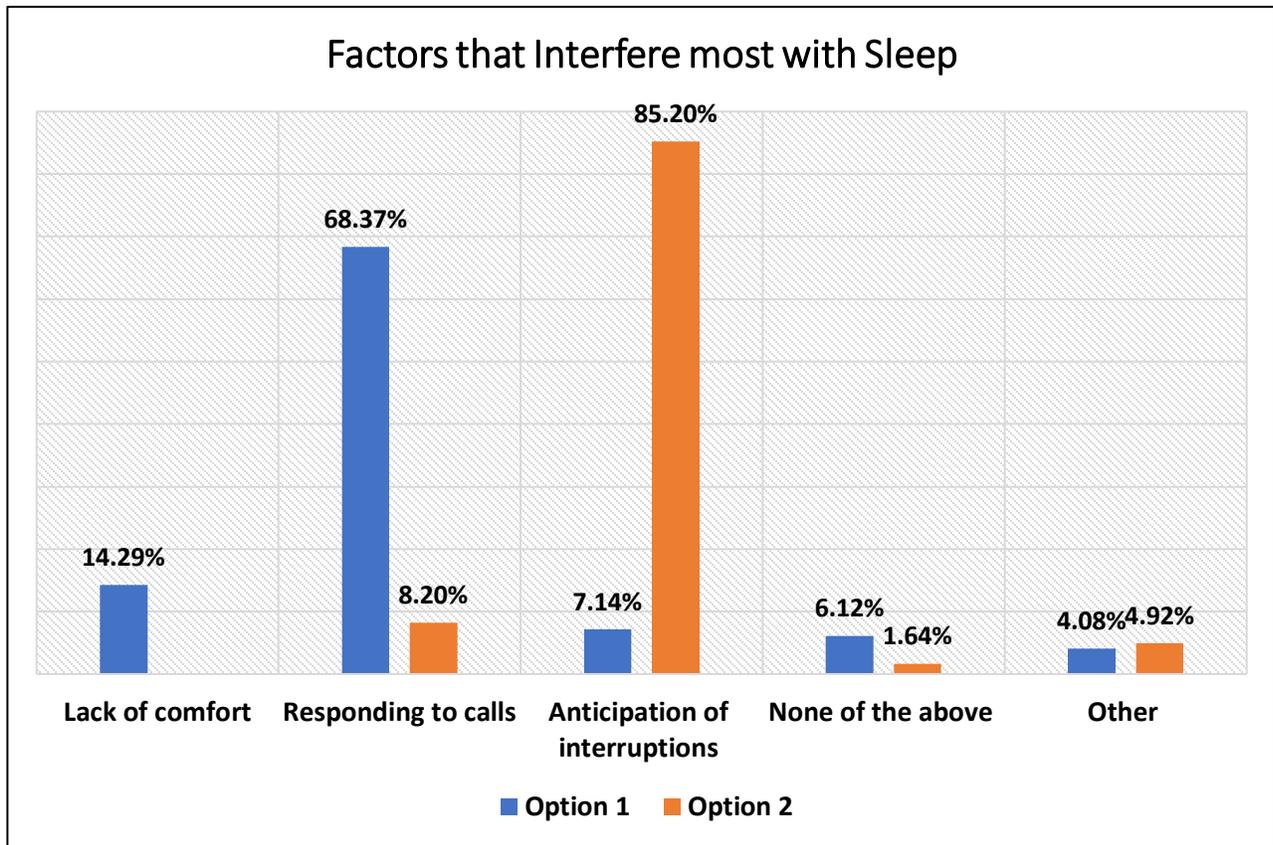


FIGURE. 11

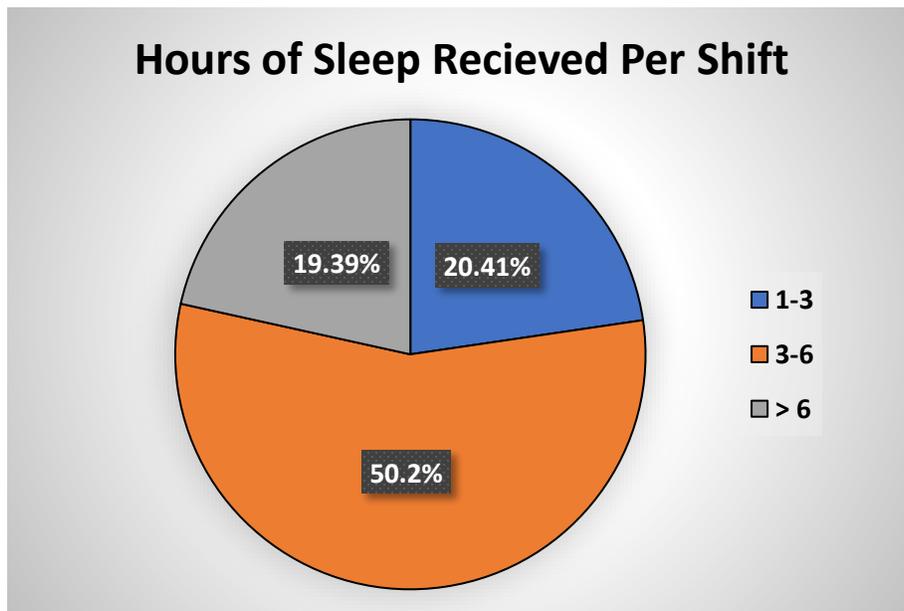


TABLE. 4

Sleep-Related Questions	Response				
How many hours of sleep do you receive during a regular shift	1-3 hours (20.41%)	3-6 hours (60.20%)	More than 6 hours (19.39%)		
Two factors that have the greatest impact on your ability to sleep at the fire station	Lack of comfort (14.29%)	Responding to calls (68.37%)	Anticipation of interruptions (7.14%)	None of the above (6.12%)	Other (4.08%)
Two factors that have the greatest impact on your ability to sleep at the fire station	Responding to calls (8.20%)	Anticipation of interruptions (85.25%)	None of the above (1.64%)	Other (4.92%)	

FIGURE. 12

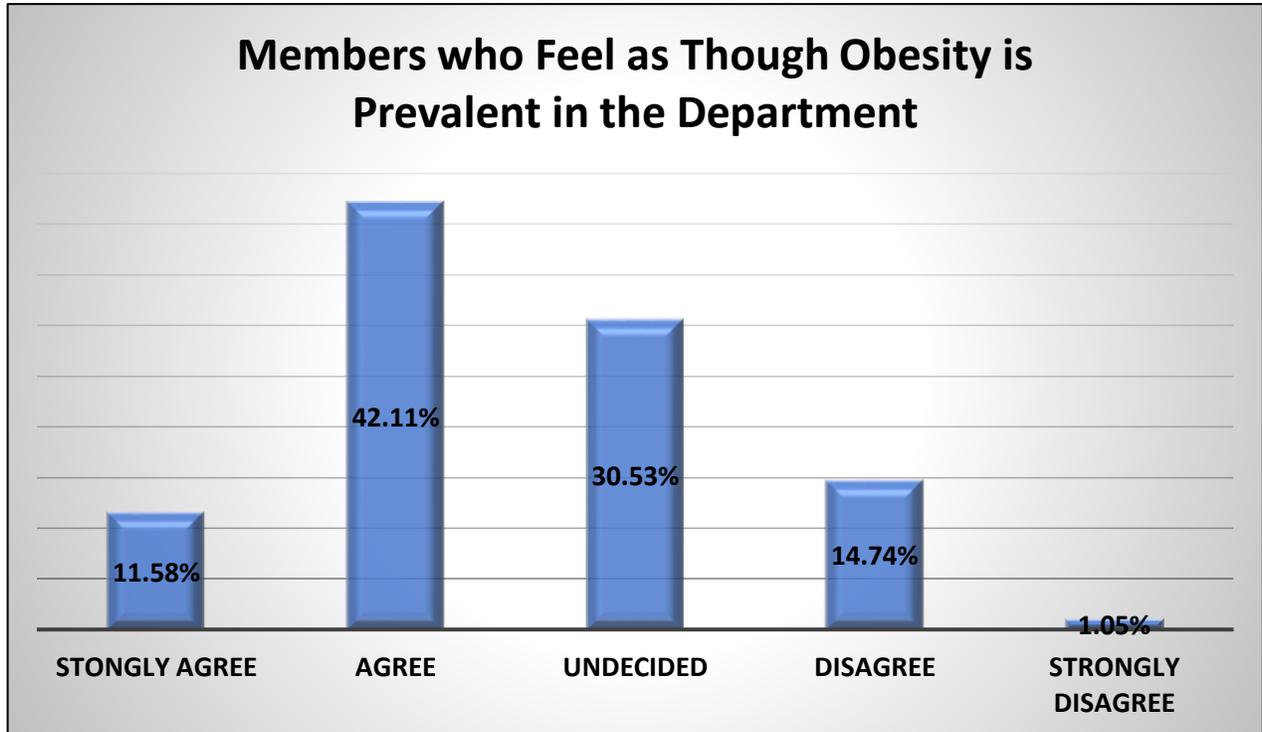
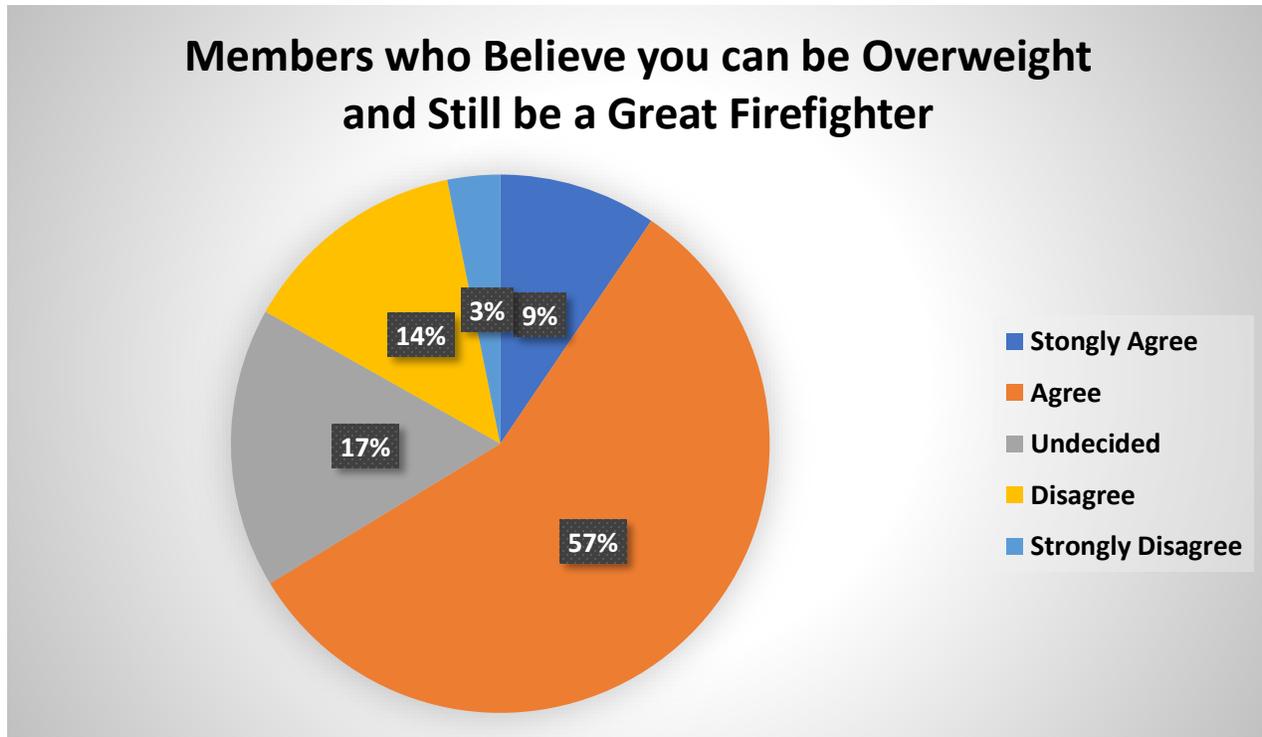


FIGURE. 13



Health-Related Data

TABLE. 5

Health-Related Questions	Response					
Do you feel as though you have ample time to eat and exercise properly	Always (10.53%)	Most of the time (53.68%)	About half the time (15.79%)	Sometimes (16.84%)	Never (3.16%)	
I feel as though obesity is prevalent in the department	Strongly Agree (11.58%)	Agree (42.11%)	Undecided (30.53%)	Disagree (14.74%)	Strongly Disagree (1.05%)	
Can you be overweight and still be a great firefighter	Strongly Agree (9.47%)	Agree (56.84%)	Undecided (16.84%)	Disagree (13.68%)	Strongly Disagree (3.16%)	
Which factors pertaining to your job with the fire service have the greatest impact on your overall health	Sleep quality of duration (28.26%)	Availability of healthy foods at the fire station (2.17)	Knowledge about healthy food and diet options (1.09%)	Harmful exposures during fire duty (47.83%)	All of the above (17.39%)	Other (3.26%)
Have you experienced any significant weight gain (>20lbs) over a short period of time (i.e. first 6 months – 1 year) since you became a firefighter	Yes (21.28%)	No (78.72%)				

TABLE. 6

Health-Related Questions	Response				
Having regular fitness assessments and/or required weekly exercise would foster a healthier overall environment	Strongly Agree (27.37%)	Agree (34.74%)	Undecided (17.89%)	Disagree (15.79%)	Never (4.21%)
I believe that having a weight requirement would be beneficial	Strongly Agree (8.42%)	Agree (26.32%)	Undecided (30.53%)	Disagree (25.26%)	Strongly Disagree (9.47%)

TABLE. 7

The Culture of the Fire Service Questions	Response				
Responsibility of the fire service	Average: (31.20%)				
Responsibility of the individual	Average: (83.38%)				
Hours spent with other group members during a shift, not at an incident	0 (10.53%)	< 1 hour (15.79%)	1-3 hours (56.84%)	3-6 hours (13.68%)	More than 6 hours (3.16%)

*It is important to note that the two questions regarding “responsibility” in the table above were designed to determine how the member’s perceived who was responsible for the health of the members and for the members obtaining the proper resources needed in order to maintain the proper level of health and well-being.