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Norfolk Fire Rescue officers' attitudes and perceptions towards cell phones and email

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ABSTRACT

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NORFOLK FIRE RESCUE OFFICERS' ATTITUDES AND PERCEPTIONS TOWARDS CELL PHONES AND EMAIL
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This study investigated Norfolk Fire-Rescue (NFR) officers' attitudes and perception toward cell phones/email. What are the attitudes of NFR towards email/cell phones? What negative aspects of email/cell phones are affecting NFR? Do the negative aspects of information technologies increase with rank? Do the officers of NFR feel that classes aimed at "technological stress or information overload," would be beneficial to the department? NFR officers responded to a forced-choice survey about negative impact of cell phones/email focusing on use patterns, perceptions of negative impact, and attitudes towards cell phones/email. NFR officers are very supportive of email/cell phones, despite the negative affects that they may be experiencing across multiple dysfunctional areas. Chiefs reported higher levels of negative perceptions than Lieutenants and Captains, demonstrating that negative impacts of cell phones/email may increase with rank. Additionally, 75 % of respondents believed classes addressing "technological stress" or "information overload" would be beneficial to NFR.

I certify that I have read this thesis and find that, in scope and quality, it satisfies the requirements for the degree of Master in Human Resource Management.

By Thesis Committee

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THE UNIVERSITY OF RICHMOND

SCHOOL OF CONTINUING STUDIES

NORFOLK FIRE RESCUE OFFICERS' ATTITUDES AND PERCEPTIONS TOWARDS CELL PHONES AND EMAIL

By

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INTRODUCTION

This chapter will provide a brief discussion of the topic, provide an overview of the research questions that were answered, review terminology, discuss delimitations, and touch on the methodology and procedure used for this study. The second chapter will provide a review of the existing literature on the subject. Chapter Three will discuss methodology in detail. In Chapter Four, collections and procedures will be covered, findings will be reviewed, and the data will be applied to the research questions. Chapter Five will conclude the paper with a summary of findings, conclusions, and recommendations for Norfolk Fire Rescue.

Why email and cell phones?

Norfolk Fire Rescue takes pride in being on the cutting edge when it comes to new technologies. Over the past ten years the department has added numerous technological advances to help manage the department. For example, all reporting systems are now computerized. Computers are found not only in the stations, but in the trucks as well. Staffing is now managed with the help of a computer program called Telestaff. All members of Norfolk Fire Rescue have their own email account and every truck has its own cell phone. As a result, email and cell phones have become two very popular communication methods within the department.

Existing Studies

Studies have started to look at the negative aspects of these new technologies (Chesley, 2005; Middleton and Cukier, 2006; Sewell, 2003; Sundeen, 2005). Some studies examine the blurred boundaries between work and home created by cell phones (Chesley, 2005). Other studies have looked at the risk involved in driving and using a device such as a blackberry or cell phone (Middleton and Cukier, 2006; Sundeen, 2005). The Australian Psychological Society examined the number of emails that workers were receiving and found that most respondents received between 20-50 emails per day. Another 15% received 50-100 emails per day (The Australian Psychological Society, n.d.). The same study showed that 26% of respondents spent over 30% of the day responding to email (The Australian Psychological Society, n.d.).

Making the Connection

Is Norfolk Fire Rescue experiencing these problems? This study attempts to answer that question by examining existing research, using their research as a basis from which to design a survey, and then administering the survey to officers of Norfolk Fire Rescue. This allows the opportunity to examine the perception of impact of cell phones and email on Norfolk Fire Rescue.

Purpose

The purpose of this study is to investigate the perceptions and attitudes of the officers' of Norfolk Fire Rescue towards cell phones and email. This will be accomplished by answering the following questions:

1. What are the attitudes of Norfolk Fire Rescue towards email and cell phones?
2. What negative aspects of email and cell phones are affecting Norfolk Fire Rescue?
3. Do the negative aspects of information technologies increase with rank?
4. Do the officers of Norfolk Fire Rescue feel that classes aimed at "technological stress or information overload," would be beneficial to the department?

Methodology Overview

A non-experimental, descriptive survey design is the method chosen for this study. A survey was sent to officers of Norfolk Fire Rescue (NFR) who were chosen as the participants for this study. More detail about the methodology is presented in Chapter Three.

Descriptive Study

This study is also similar to Middleton's and Cukier's study in that it does not have a testable hypothesis. Instead this study seeks to answer the four research questions identified earlier in this chapter. Findings will be reported descriptively and will not be subjected to statistical analysis. This reporting method follows the approach taken by The Australian Psychological Society in their *Email Communication Survey (n.d.)* and the American Management Association's *2003 E-Mail Rules, Policies and Practices Survey.*

The Four Dysfunctions

Chapter Four, Research and Findings, will actually discuss the findings of the research. This section however, will establish the framework for the discussion. The discussion of findings incorporates the four dysfunctions identified by Catherine A. Middleton and Wendy Cukier in their 2006 study, *Is mobile email functional or dysfunctional?* The four dysfunctions are danger, distraction, infringement, and anti-social behavior (Middleton and Cukier, 2006). Most of the questions in the survey could be used to relate to one or more of these dysfunctions. Therefore, the four dysfunctions provide a good framework for the discussion of findings.

Target Population

The target population for this study is NFR officers across the Norfolk Fire Rescue Department. The decision to use only the officers, and not the entire department, was made for the simple reason that these individuals serve as the management of the department. This role forces them to make use of email and cell phones daily. Email and cell phones were chosen for the study, because they are used extensively in the day to day operations of the department. There are 36 Lieutenants, 48 Captains and 20 Chiefs employed at Norfolk Fire Rescue.

Norfolk Fire Rescue

Norfolk Fire Rescue has served the citizens of Norfolk, Virginia since 1871. Currently, the department protects more than 241,000 residents, as well as, daily commuters and visitors to the city. The mission of Norfolk Fire-Rescue is to protect life,

property, and the environment. To complete this mission, the department utilizes a staff of 500 personnel and an annual operating budget of 27 million dollars. Each year Norfolk Fire Rescue responds to approximately 15,000 fire calls and 24,000 emergency medical service (EMS) calls.

Procedures

The procedures for implementing the design are:

1. Develop survey and verify it with a small test audience for clarity and understanding.
2. Submit to University of Richmond Institutional Review Board (IRB) for approval.
3. Send surveys to participants via the inter-departmental mail system.
4. Participants will place the completed survey in a provided prepaid postage envelope and mail it back to the researcher with no return address.
5. Survey period will be December 1, 2006 through January 15, 2007.
6. Surveys will be collated and data analyzed to determine results.

Significance of Topic

The findings of this study will add to the research that already exists in this field. By measuring across several broad issues the findings will either strengthen or weaken the arguments of other researchers. In addition, this topic should be of great interest to Norfolk Fire Rescue. Norfolk Fire Rescue prides itself on being on the cutting edge when it comes to new technologies. In recent years, Norfolk Fire Rescue has

incorporated numerous technologies to assist with managing the department. This study will allow the department to see what impact email and cell phones have had on the employees using them.

Delimitations

Some studies into email and cell phones have chosen one specific area to explore and pick apart. However, the research in this study will explore a broad range of issues that relate to email and cell phones. The survey questions are designed to provide an overview of the issues and are not meant to delve too deeply into any one topic. This will allow the study to identify areas that may be a concern for Norfolk Fire Rescue and to answer the four research questions. These issues can then be further explored and addressed in later studies.

Terminology

The following is a list of terms used in this study. A definition has also been provided to clarify the meaning of the term within the context of the study.

1. Anti-social dysfunction: a person's willingness to abandon or ignore their physical surroundings, including other people, in order to answer or use their mobile devices (Middleton and Cukier, 2006).
2. cell phone (cellular phone): a mobile telephone system using low-powered radio transmitters, with each transmitter covering a distinct geographical area **(cell),** and

computer equipment to switch a call from one area to another, thus enabling large-scale car or portable phone service (cell phone, n.d.).

3. Danger dysfunction: the risk associated with using the device (cell phones, blackberries, etc.) (Middleton and Cukier, 2006).
4. Distraction dysfunction: the interruption to one's work created by the (call or message) (Middleton and Cukier, 2006).
5. Dysfunction: a consequence of a social practice or behavior pattern that undermines the stability of a social system (dysfunction, n.d.).
6. Email: 1) a system for sending and receiving messages electronically over a computer network, as between personal computers. 2) a message or messages sent or received by such a system (email, n.d.).
7. Information overload: the receipt of more information than is needed or desired to function effectively and further the goals of an individual or organization (Losee, 1998).
8. Infringement dysfunction: the violation of boundaries (work/home) created by email or cell phones (Middleton and Cukier, 2006).
9. Inter-departmental mail: an in-house system of Norfolk Fire Rescue's that uses department members, typically the Battalion Chief's aides, to physically shuttle documents from station to station.
10. Officer: any member of Norfolk Fire Rescue who has attained the rank of Lieutenant or higher.

While it is easy to focus on the positive benefits of email and cell phones, the negative aspects should not be ignored. Hopefully, this study will prove to be beneficial to Norfolk Fire Rescue by identifying areas of concern. The first step in this endeavor is to review the existing research on the topic, which brings us to chapter two: Research of the Literature.

RESEARCH OF THE LITERATURE

This chapter presents an overview of the research conducted in support of this study and the four questions under consideration. The research is presented in topic areas: a surge of technology, functional or dysfunctional, the danger dysfunction, the infringement dysfunction, the distraction dysfunction, the anti-social dysfunction, and conclusions.

A Surge of Technology

The last ten years has seen a revolution of information technologies. Cell phones, email, and BlackBerry® devices have become the norms that society uses to communicate (Chesley, 2005; Middleton and Cukier, 2006; Sewell, 2003). Based on this author's experience, it has never been easier to contact someone. Place and time are no longer limits to the flow of information. Documents, no matter the size, fly back and forth between sender and receiver in mere seconds. People are no longer tied to the office. They can work from home, the park, or half way around the world. However, what are the negative aspects of these new technologies? Recent studies, cited in this chapter, have started examining the various issues that email and cell phones have created.

Functional or Dysfunctional?

Catherine A. Middleton and Wendy Cukier examine the dysfunctions of mobile email in their 2006 study, *Is mobile email functional or dysfunctional? Two perspectives*

on mobile email usage. This study identified four areas of dysfunction associated with BlackBerry® devices or mobile email. These areas were labeled: danger, distraction, infringement, and anti-social behavior (Middleton and Cukier, 2006).

The Danger Dysfunction

The "danger dysfunction" refers to the risk associated with using the device (Middleton and Cukier, 2006).

Cell Phone Use While Driving

A good example of a physical risk would be driving while reading or typing email on a BlackBerry® or talking on a cell phone. Eight out of the 13 people interviewed in the Middleton's and Cukier's study admitted to engaging in this type of activity. They felt that this activity allowed them "to catch up on their email" (Middleton and Cukier, 2006, 255). While the risk this creates is still being debated, one study concluded that "driver inattention was the primary contributing factor in most crashes, and that hand-held wireless devices were among the highest distraction-related factors in crashes..."(Sundeen, 2005, 5). Many studies involving cell phones have focused on the level of distraction they create for the driver/user. However, one study showed that using a cell phone while driving can increase hostility in other drivers (McGarva, Ramsey, & Shear, 2006). Connecticut, New Jersey, New York and the District of Columbia have passed legislation that bans the use of hand-held phones (Sundeen, 2005). As of June 2005, 23 other states had considered similar legislation (Sundeen, 2005).

Legal Liability

Another area that would fall under the "danger dysfunction" category is legal liability. The American Management Association conducted a survey in 2003 to examine various issues surrounding email. It was found that "more than half of U.S. companies engage in some form of e-mail monitoring of employees and enforce e-mail policies with discipline or other methods" (2003, 1). In addition, "14% of companies have been ordered by a court or regulatory body to produce employee e-mail" and "1 in 20 companies has battled a workplace lawsuit triggered by e-mail" (American Management Association, 2003, 1). The study also found that 22% of respondents had terminated employees for violating email policies (American Management Association, 2003, 3). In his article, *Handling the Stress of the Electronic World,* James Sewell demonstrates the potential legal risk facing individuals and organizations alike, with the following;

> In an audit of 4 million e-mail messages on its internal information system, one police department identified 900,000(emails) as containing objectionable, vulgar, racist, sexist, or homophobic language. Some even documented criminal conduct by officers, including illegal stops or searches and buying illegal drugs (2003, 15).

Most employees do not realize that their email can be retrieved long after they delete it (Bowen et. al., 2001; Sewell, 2003).

Cell Phones and Cancer

The last topic that should be included in the "danger dysfunction" would be the relationship between cell phone use and cancer. A report by the Food and Drug Administration points out that despite the numerous studies that have been done in this area there are still no clear cut answers (Nordenberg, 2000).

The Infringement Dysfunction

Middleton and Cukier define "infringement" as a violation of boundaries (2006). Their study found that mobile email allowed people to work from anywhere at any time. Most people, in the study, did not see the opportunity to work from home or while on vacation as a negative. This was true even if it meant answering emails in the middle of the night or during family time. The study did find that family members were sometimes frustrated by the intrusion that mobile email created (Middleton and Cukier, 2006). Noelle Chesley would call this "work-family spillover" (2005, 1238). This term refers to an individual's work crossing the boundary into family life. This issue is illustrated by an article in the *Sydney Morning Herald*, discussing an attempt by the Independent Education Union and the National Tertiary Education Union to become compensated for answering emails (*Sydney Morning Herald*, 2002). The unions argue that teachers were not able to be reached at home prior to email, but now they are contacted around the clock by parents and students. These emails typically expect quick replies and create work for the teacher at home, which they are not compensated for (*Sydney Morning Herald,* 2002). Sewell also points out that workers should resist the temptation to try and

catch up on email at home. Sewell's article points out that most workers put in long days at the office and that adding hours at home will only lead to increased stress (2003). Chesley also points out that it is also possible to have "family-work spillover" (2005, 1238). This is when an individual's family life crosses the boundary into the workplace. In her study, *Blurring Boundaries? Linking Technology Use, Spillover, Individual Distress, and Family Satisfaction,* Chesley examines the negative impact of spillover. The study focused on families who used cell phones over a two year period. Chesley concluded that there was a relationship between spillover and distress in individuals (2005). Work-family spillover was an issue for both men and women, while family-work spillover was mainly an issue for women (Chesley, 2005). Despite her findings, Chesley states, "The question of 'blurred boundaries' may become an irrelevant one for the next generation of workers, spouses, and parents because they cannot imagine life any other way" (2005, 1244).

The Distraction Dysfunction

Middleton and Cukier simply address the "distraction dysfunction" as the interruption created by the (messages) (2006). Their respondents reported that "the buzzing is a 'truly Pavlovian' stimulus and elicits an immediate reaction" (Middleton and Cukier, 2006, 255). Regardless of what they were doing the respondents felt compelled to check the new message. These findings are similar to those of a study that was sponsored by Hewlett Packard. The Hewlett Packard study found that 62% of people are addicted to checking email, even when not at work (2005). Sewell reports that these interruptions

"can become a major irritant, reduce efficiency, and affect attention to other details" (2003, 12). The significance of this research is underscored when one looks at studies exploring the amount of email, workers are receiving on a daily basis.

The Volume of Email and Its Impact

An Email Communication Survey done by The Australian Psychological Society found that most respondents received between 20-50 emails per day. Another 15% received 50-100 emails per day (The Australian Psychological Society, n.d.). A study conducted by Day-Timers found similar numbers for email users in the United States. Workers in the states reported an average of 46 emails per day (Rueters, 2006). Studies also show similarities in the amount of time spent on reading and answering emails. In Australia, it was found that 28% of respondents spent 20% of their day on email, 22% spent as much as 30% of the day, and 26% spent over 30% of the day responding to email (The Australian Psychological Society, n.d.). *The 2003 E-Mail Rules, Policies and Practices Survey* from the American Management Association, Clearswift, and The ePolicy Institute found that the average American spends one and three quarter hours on email each day. Thirty percent of Americans spend two or more hours reading and answering email, while another eight percent spend over four hours per day doing so (*Management Issues News*, 2003). Along with this increased workload comes stress. Seventy percent of respondents in the Australian survey stated that they experienced moderate to high levels of stress simply from feeling that they needed to respond quickly to the emails (The Australian Psychological Society, n.d, 2). The study by Hewlett

Packard found that "half of workers will respond to an en email message immediately or within 60 minutes" (Hewlett Packard, 2005, 1)

Interruptions and Intelligence Quotient (IQ)

Dr. Glen Wilson, of the University of London, did a study to measure the effects of interrupting tasks to check email or answer calls. His research concluded that constantly moving back and forth between tasks was equal to a 10 point drop in IQ. Dr. Wilson points out that a 10 point drop in IQ is equal to trying to function after losing a night of sleep. Dr. Wilson also states that the 10 point drop is more than double the four point IQ loss caused by using marijuana (Hewlett Packard, 2005).

The Anti-Social Behavior Dysfunction

Middleton and Cukier categorize this dysfunction as peoples' willingness to abandon or ignore their physical surroundings, including other people, in order to answer or use their mobile devices (2006). Twelve of Middleton and Cukier's thirteen respondents admitted that they had exhibited such behavior. Some of the research subjects felt that this is an excepted behavior in today's world (Middleton and Cukier, 2006). However, another study showed that this type of behavior can be offensive to others. A survey conducted by the University of Surrey examined the stress that is created when a co-worker uses a device at an inappropriate time.

- Over half the respondents felt that using any type of communication device during a meeting was wrong.
- 80% felt it was wrong to read or send text messages in front of others.

- Only 11% felt it was alright to leave a cell phone on, during a meeting (Croasmun, 2004, 1).

The Paradox of Communication

This paradox of current day communications is summed up by Michael Warren of the University of Surrey, "We become stressed and impatient when we can't reach someone...yet we resent distractions and can become angry when our own meetings...are ...interrupted by a mobile phone." (Siemens, 2005, 1) Perhaps this is why the *2004 Invention Index Study* by Lemelson-Massachusetts Institute of Technology (MIT) found that the cell phone was the most hated invention of all, but one that we cannot go without (2004). America's, "strong feelings toward cell phones illustrate both the benefits and unintended consequences of innovation" (Lemelson-Massachusetts Institute of Technology, 2004, 1). The study concludes that "most people dislike cell phones because they either feel tethered to them or they are annoyed by others who use them in inappropriate public places, such as restaurants or movie theaters" (Lemelson-Massachusetts Institute of Technology, 2004, 1).

The Impersonal Side of Email

Another anti-social aspect that is being studied is the impersonal nature of email (Karovsky, 2004). Northwestern University and Duke University did a study in which they paired students, from each school, together and asked them to negotiate the purchase of a car using only email. Half of the paired students were allowed to call each other and get to know one another before starting the negotiation. The other half were not allowed

any contact. The research showed that "negotiators who first chatted by phone were more than four times likelier to reach an agreement than those who used only email (Karovsky, 2004, 15). In addition to not coming to an agreement, those who communicated only by email, "often felt resentful and angry about the negotiation" (Karovsky, 2004, 15). Janice Nadler, the social psychologist who ran this study, believes that the research shows the importance of social cues, such as body language and tone of voice, which are missing from email communication (Karovsky, 2004).

Conclusion

"How do we distinguish the work practices that are necessary from those that are dangerous, infringe upon personal space and time, disrupt work flow, or are anti-social" (Middleton and Cukier, 2006, 258)? Or, as Chesley predicts, will the "blurred boundaries" simply become an accepted part of life (2005, 1244). It is hoped that the following chapters will shed light on the issues confronting Norfolk Fire Rescue and prevent the "blurred boundaries" from becoming an accepted part of life.

METHODOLOGY

This chapter presents the research approach followed. It will discuss the participants, the design process, the Institutional Review Board exemption, and administration procedures.

Purpose

This study was intended to answer the following questions:

1. What are the attitudes of Norfolk Fire Rescue towards email and cell phones?
2. What negative aspects of email and cell phones are affecting Norfolk Fire Rescue?
3. Do the negative aspects of information technologies increase with rank?
4. Do the officers of Norfolk Fire Rescue feel that classes aimed at "technological stress or information overload," would be beneficial to the department?

Design

Survey Design

Using existing research, a survey was developed to answer the four research questions. The survey questions were designed to provide an overview of the issues and were not meant to delve too deeply into any one topic. This allowed the study to identify areas that may be a concern for Norfolk Fire Rescue. Identified issues could then be further explored and addressed in later studies. Despite the fact that the survey does not

explore positive impacts of cell phones and email on Norfolk Fire Rescue, this study is not meant to be biased against them. It is accepted that these technologies provide numerous benefits to Norfolk Fire Rescue. This study simply attempts to discover the negative by-products of their use.

All questions are forced-choice in terms of response. The survey is divided into three sections. Section one deals with issues related to email correspondence and contains 17 questions. Section two deals with behaviors related to cell phone use and contains 15 questions. Section three deals with perceptions of information overload and is comprised of six questions. Section three also has a question regarding the rank of the respondent. This allowed responses to be examined by rank.

Survey Validation

The survey was proof-read by three individuals to ensure that the survey flowed well, the questions were clear in thought, and to check for grammatical mistakes.

Institutional Review Board (IRB) Exemption

Once the survey instrument was completed, it was submitted to the University of Richmond's Institutional Review Board as required by law. Exempt status was requested on the grounds that the survey content did not pose a legal risk to the respondents. The IRB agreed and granted the study exempt status. This document can be found in Appendix A.

Participants

The Officers of Norfolk Fire Rescue

The officers of Norfolk Fire Rescue were chosen as the participants for this study. The decision to use only the officers, and not the entire department, was made for the simple reason that these individuals serve as the management of the department. This role forces them to make use of email and cell phones daily. Email and cell phones were chosen for the study, because they are used extensively in the day-to-day operations of the department. There are 36 Lieutenants, 48 Captains and 20 Chiefs employed at Norfolk Fire Rescue.

Norfolk Fire Rescue

Norfolk Fire Rescue has served the citizens of Norfolk, Virginia since 1871. Currently, the department protects more than 241,000 residents, as well as, daily commuters and visitors to the city. The mission of Norfolk Fire Rescue is to protect life, property, and the environment. To complete this mission, the department utilizes a staff of 500 personnel and an annual operating budget of 27 million dollars. Each year Norfolk Fire Rescue responds to approximately 15,000 fire calls and 24,000 emergency medical service (EMS) calls.

Permission to Conduct Survey

Chief Senter of Norfolk Fire Rescue was contacted via email for permission to conduct the survey within his department. The study and the intended methods were

explained. Chief Senter granted permission to conduct the survey with one change to procedure. Originally, it was planned that each survey would be mailed to each individual's residence. Chief Senter felt that this may create some privacy concerns among members of the department. Chief Senter stated that if the surveys could be distributed using the interdepartmental mail system then he would grant permission to conduct the study. The interdepartmental mail system is an in-house system that uses department members, typically the Battalion Chief's aides, to physically shuttle documents from station to station.

Data Collection

Procedures

The procedures for implementing the design are:

1. Develop survey and verify it with a small test audience for clarity and understanding.
2. Submit to University of Richmond Institutional Review Board (IRB) for approval.
3. Send surveys to participants via the inter-departmental mail system.
4. Participants will place the completed survey in a provided prepaid postage envelope and mail it back to the researcher with no return address.
5. Survey period will be December 1, 2006 through January 15, 2007.
6. Surveys will be collated and data analyzed to determine results.

Statistical Measures

Dependent Variables:

1. Officers' attitudes towards email and cell phones.
2. Officers' use patterns of email and cell phones.
3. Officers' perception of negative impacts, associated with email and cell phones.

Independent Variables:

1. Officers' Rank

Statistical Analysis Techniques

A descriptive approach was utilized to review the collected data. Data is presented in the form of percentages and graphs. Means and standard deviations were calculated and can be found in Appendix E.

Overall, the methodology was sound. However, there were some typographical issues found in the survey instrument. This issue will be discussed in the next chapter, along with data collection, data collation, and data analysis.

DATA ANALYSIS

This chapter will examine the data from the perspective of the four research questions. Data collection and collation will also be discussed.

Data Collection

Procedure

On December 1, 2006, surveys were distributed via the interdepartmental mail system to all 104 officers of Norfolk Fire Rescue. The officers were invited to participate in the study and were advised that the study was completely voluntary. Participants were instructed to read each question and circle the answer that fits them the best. Once the survey was completed, the participant was to place the survey in the provided envelope and mail it back to the researcher. Postage was prepaid and the participants were reminded not to include a return address in order to protect their identity. Surveys were collected through January 15, 2007. A total of 71 surveys were received for a 68.3% rate of return. This is a very good response and makes it easier to generalize the finding to the population.

Data Collation

Two of the 71 surveys were not used due incomplete data (section three of the survey was not completed). This section included the question that established rank. Rank was used in the study to establish whether or not negative impact increases with rank. Additionally, many respondents skipped questions on the survey, but as long as

they answered the question pertaining to rank, their surveys were used. Responses were tallied and percentage of response was calculated for each of the following categories:

1. Lieutenants and Captains
2. Chiefs
3. Total Responses

It should be noted that the percentage of response was calculated using the number of responses for each particular question, rather than the total number of surveys received. Using this method prevents the percentage from being skewed by those who did not answer a question. The survey results can be found in Appendix B.

Discussion of Findings

The Four Dysfunctions

The discussion of findings incorporates the four dysfunctions identified by Catherine A. Middleton and Wendy Cukier in their 2006 study, *Is mobile email functional or dysfunctional?* The four dysfunctions are danger, distraction, infringement, and anti-social behavior (Middleton and Cukier, 2006). Most of the questions in the survey could be used to relate to one or more of these dysfunctions. Therefore, the four dysfunctions provide a good framework for the discussion of findings.

Descriptive Study

This study is also similar to Middleton's and Cukier's study in that it does not have a testable hypothesis. Instead this study seeks to answer the four research questions identified earlier in this chapter. Findings will be reported descriptively and will not be

subjected to statistical analysis. This reporting method follows the approach taken by The Australian Psychological Society in their *Email Communication Survey (n.d.)* and the American Management Association's *2003 E-Mail Rules, Policies and Practices Survey.*

Findings

The following section discusses the findings of the survey

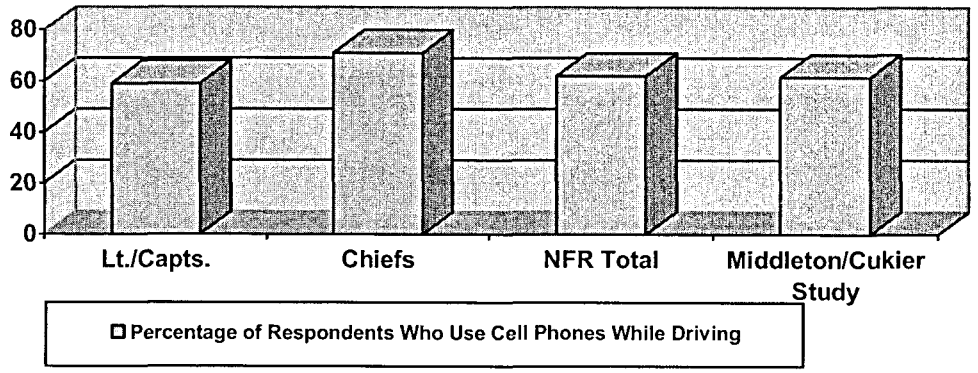
Danger Dysfunction

The "danger dysfunction" refers to the risk associated with using the device (Middleton and Cukier, 2006). There were three areas that were explored in the survey that would fall under the "danger dysfunction". These areas were 1) driving while using a cell phone, 2) inappropriate emails, and 3) perceptions of stress.

Cell Phone Use While Driving

Like the study by Middleton and Cukier (2006), the survey asked if respondents used their cell phone while driving. Middleton and Cukier found that 8 out 13 (61.5 %) individuals in their study used blackberries while driving (2006, 4). This study found similar results (see Graph 4.1). Sixty-two percent of all respondents stated that they used their cell phones while driving. This number changed little for Lieutenants and Captains (59 %) and increased to 71 % for Chiefs. An interesting finding was that despite these numbers, 76 % of respondents stated that they were annoyed by people who use cell phones while driving.

Graph 4.1: Use Cell Phones While Driving



Inappropriate Email

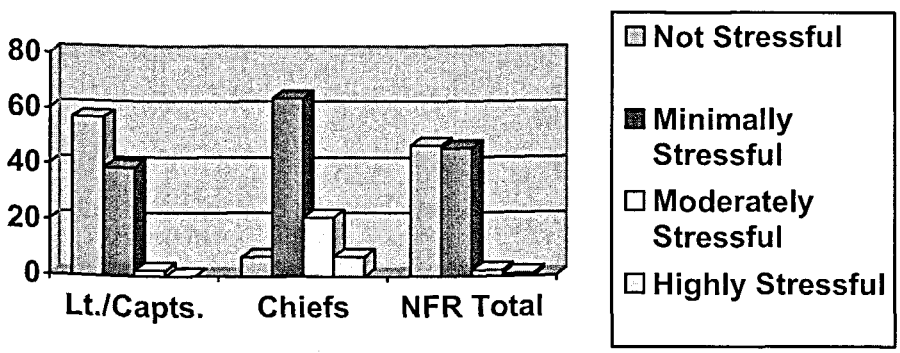
Inappropriate emails would fall under the "danger dysfunction" as a possible legal implication for both the individual and Norfolk Fire Rescue. Respondents reported that 74 % had received an email containing questionable content on the department email system. Fortunately, most respondents (75 %) stated that this was a rare occurrence. However, with 25 % reporting that this occurs on a moderate basis, it may be an issue that Norfolk Fire Rescue should take a closer look at.

Perceptions of Stress

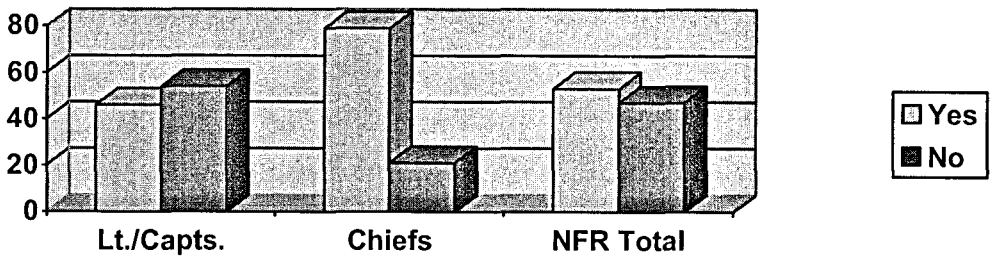
Stress was included under the "danger dysfunction," because of the potential health problems, both physical and mental, that it can inflict on an individual. The first question to address stress, asked "Is reading and responding to email stressful to you?" There was a difference between the responses of Lieutenants and Captains and the responses of Chiefs. Fifty-seven percent of Lieutenants and Captains reported that reading and responding to email was not stressful at all. Thirty-nine percent stated that it

was minimally stressful. Chiefs, on the other hand, reported that 64 % felt reading and responding to email was minimally stressful, while 21 % felt that it was moderately stressful (see Graph 4.2). Despite the fact that Chiefs reported higher levels of stress, the findings of this study are lower than the findings of a study done by The Australian Psychological Society. Their study found that 70 % of respondents stated that they experienced moderate to high levels of stress simply from feeling that they needed to respond quickly to the emails (The Australian Psychological Society, n.d). The second question to address stress was "Is 'information overload' a source of stress for you personally?" Once again there was a difference between the responses of Lieutenants and Captains and the responses of Chiefs. Seventy-nine percent of Chiefs stated that information overload was a source of stress for them, while only 46 % of Lieutenants and Captains reported this to be an issue (see Graph 4.3). This is the first evidence of the study that indicates information technologies may have a greater negative impact on Chiefs than on Lieutenants and Captains.

Graph 4.2: Percentage of respondents who find reading and responding to email is stressful.



Graph 4.3: Percentage of respondents who felt that "information overload" was a source of stress for them personally.



Infringement Dysfunction

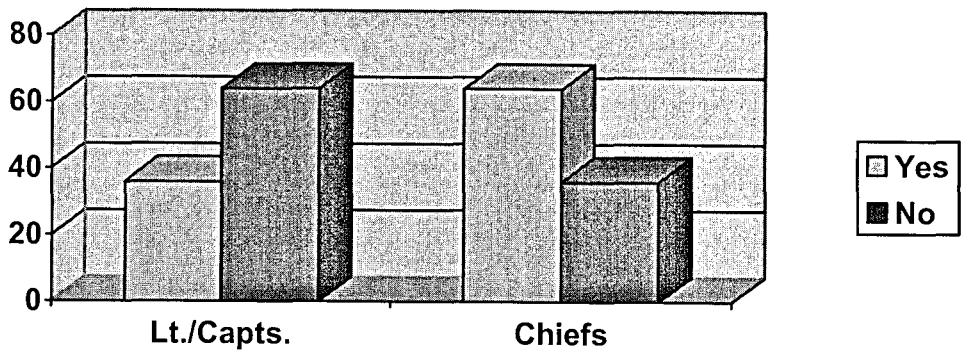
Middleton and Cukier define "infringement" as a violation of boundaries (2006). This concept was explored by looking at the impact that email and cell phones were having on the officers' home life.

The Intrusion of Email

Eighty-seven percent of survey respondents indicated that they check their department email while off duty. Eighty-eight percent checked it once or twice per day. Ninety-two percent of respondents spend an hour or less reading and responding to email from home. The only variation was when the respondents were asked whether or not department email has blurred the lines between "on duty" and "off duty". The majority of Lieutenants and Captains (64 %) did not feel that department email had blurred the line between work and play. Chiefs, on the other hand, were just the opposite. Sixty-four

percent of Chiefs stated that this division had become blurred as a result of department email (see Graph 4.4).

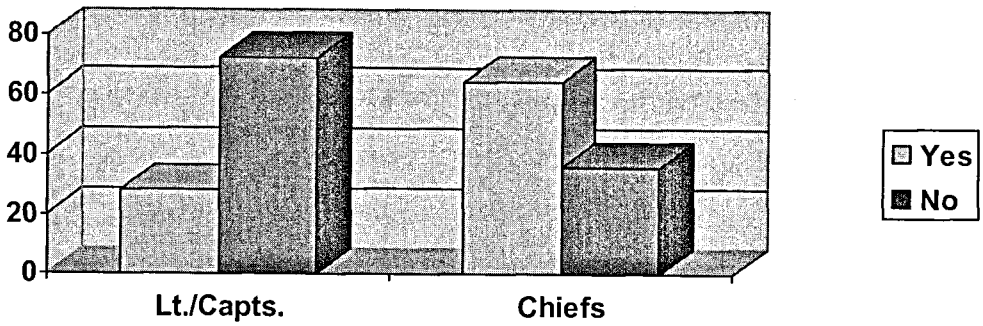
Graph 4.4: Has department email blurred the boundry between work and home?



The Intrusion of Cell Phones

This theme of opposite opinions continued through the cell phone questions. Seventy-five percent of Lieutenants and Captains reported that most cell phone calls that they receive are personal in nature, while 64 % of Chiefs stated most of their calls were department related. When asked if cell phones had blurred the lines between "on duty" and "off duty", 72 % of Lieutenants and Captains once again responded "no". Sixty-four percent of Chiefs responded "yes" (see Graph 4.5).

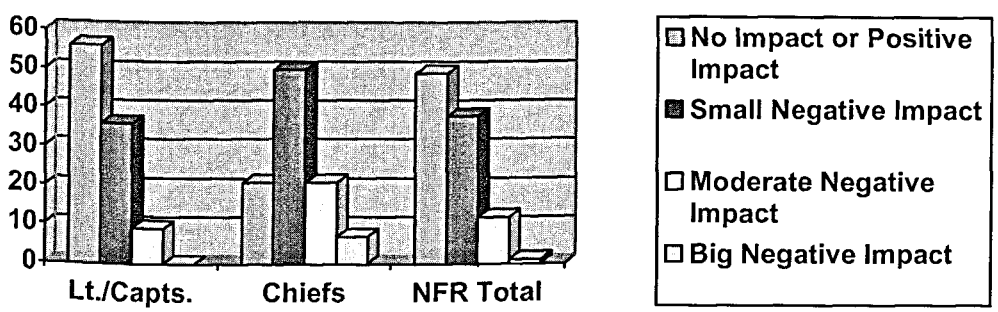
Graph 4.5: Have cell phones blurred the lines between work and home?



Impact on Home Life

When asked "To what extent is your home life being negatively impacted by Norfolk Fire Rescue's information technologies?" Most (56 %) Lieutenants and Captains stated no impact. However, 35 % said that there was a small impact and 9 % stated that there was a moderate negative impact. These numbers increased for Chiefs. Half of the chiefs said that there was a small impact, 21 % said that there was a moderate impact, and 7 % stated that there was a big negative impact to their home life (see Graph 4.6).

Graph 4.6: To what extent is your home life being negatively impacted by NFR's information technologies?



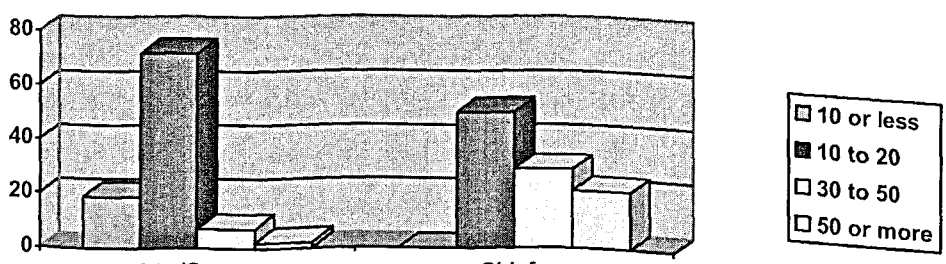
Distraction Dysfunction

Middleton and Cukier simply address the "distraction dysfunction" as the interruption created by the (messages) (2006). Sewell reports that these interruptions "can become a major irritant, reduce efficiency, and affect attention to other details" (2003, 2).

Email Volume

It was found that 72 % of Lieutenants and Captains receive between 10 and 20 emails per duty day. Chiefs, on average, receive a higher number of emails per duty day. 50 % of Chiefs received between 10 and 20 emails per day. Another 29 % of Chiefs received between 30 and 50 emails per day and 21 % received 50 to 100 emails per day (see Graph 4.7). These figures reported by the Chiefs are very similar to the data found by the *Email Communication Survey* done by The Australian Psychological Society (n.d.). The Australian Survey found that most people received between 20-50 emails per day. Another 15% received 50-100 emails per day (The Australian Psychological Society, n.d.).

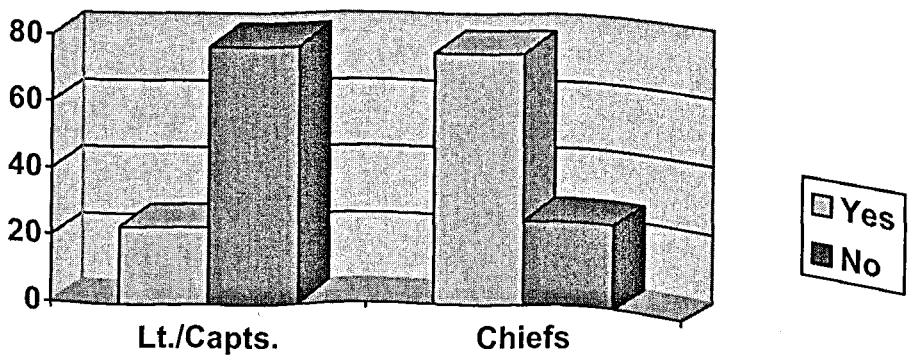
Graph 4.7: Number of emails received daily.



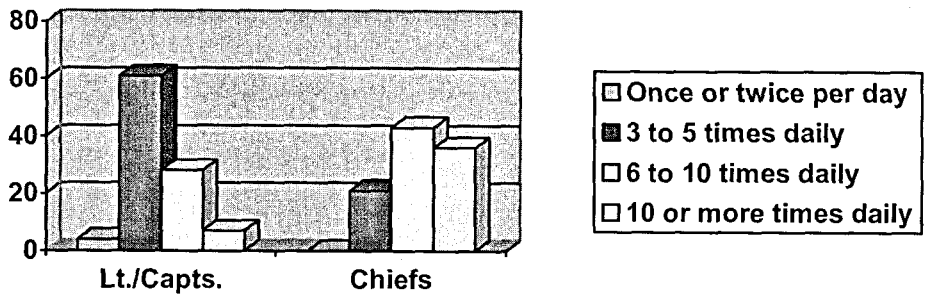
Receiving and Checking Email

Fifty-one percent of respondents had their email set up to notify them each time a new email arrives. Seventy-seven percent of Lieutenants and Captains said that this was not disruptive to their work, but 75 % of Chiefs stated that it was (see Graph 4.8). Most (61 %) of the Lieutenants and Captains only checked their email three to five times per day. Chiefs checked email more frequently throughout the day. 43 % of Chiefs checked email six to ten times per day and 36 % of Chiefs checked email ten or more times per day (see Graph 4.9).

Graph 4.8: Percentage of respondents who feel that incoming email is disruptive to their work.



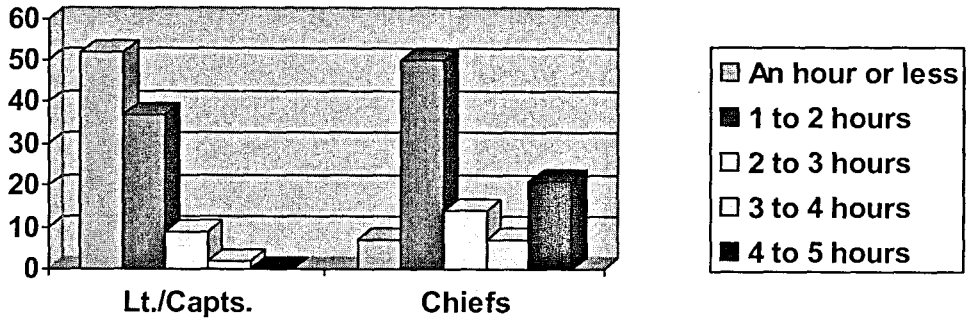
Graph 4.9: Number of times daily that respondents check email.



Reading and Responding to Email

The amount of time spent reading and responding to email also varied by rank. 89 % of Lieutenants and Captains spend two hours or less on email each duty day, while 42 % of Chiefs spend two hours or more on email (see Graph 4.10). Of this 42 %, half spent over four hours reading and responding to email each day. While 52 % of respondents felt that email had a positive impact on their production, 36 % of Chiefs felt that email had negatively impacted their productivity.

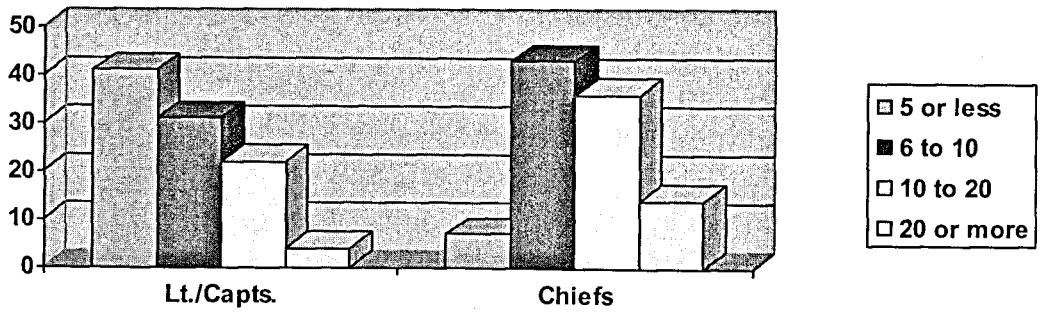
Graph 4.10: Amount of time spent reading and responding to email.



Cell Phone Calls

Cell phones can also cause interruptions to an individual's workday. Chiefs typically received more cell phone calls than Lieutenants and Captains. Chiefs reported that 36 % of them received 10 to 20 calls per day and that 14 % of them received over 20 calls per day. Seventy-two percent of Lieutenants and Captains received ten calls or less per day (see Graph 4.11). Most Lieutenants and Captains (60%) stated that these calls were not disruptive to their workday or private lives, but the majority of Chiefs stated that they could be a nuisance at times.

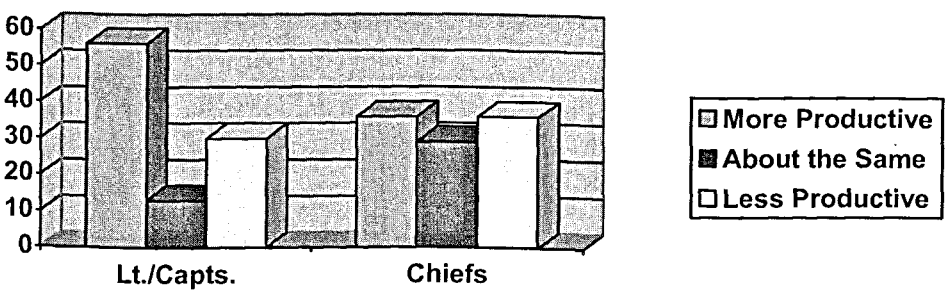
4.11: Number of cell phone calls received per day.



Daily Production

When asked if their workdays were more productive today than they were ten years ago, 56 % of Lieutenants and Captains said "yes" and 30 % said "no". Chiefs were more divided on the topic as 36 % said their days were more productive and 36 % said their days were less productive. Twenty-nine percent of Chiefs felt that their production had not changed (see Graph 4.12).

Graph 4.12: Do respondents feel that they are more productive today than they were ten years ago?



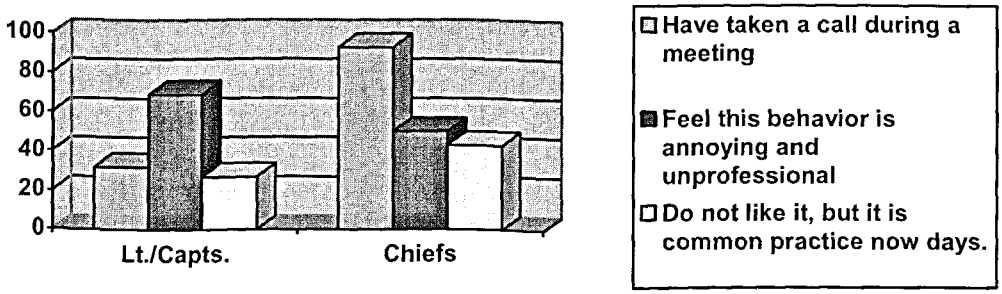
Anti-Social Behavior Dysfunction

Middleton and Cukier categorize this dysfunction as peoples' willingness to abandon or ignore their physical surroundings, including other people, in order to answer or use their mobile devices (2006). Chiefs reported that they were more likely to engage in behavior that is considered anti-social.

Taking Calls during Meetings

Ninety-three percent of Chiefs admitted to taking a call during a meeting. Only, 32 % of Lieutenants and Captains had done so. The personal feelings towards this behavior also differed between the ranks. Sixty-nine percent of Lieutenants and Captains said that it was annoying and unprofessional when a person takes a call during a meeting, while only 50 % of the Chiefs felt this way. However, 43 % of the Chiefs stated that they do not like it, but it is common behavior now days (see Graph 4.13).

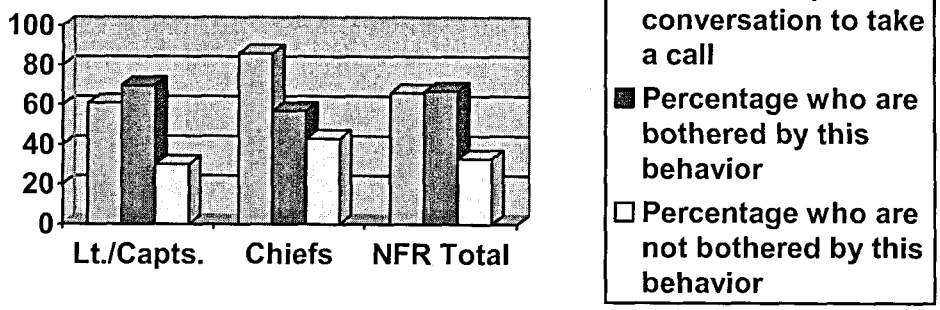
Graph 4.13: Percentage of respondents who have taken calls during meetings and their attitudes towards this behavior.



Interrupting Conversations

Despite the fact that a majority of the respondents (67 %) said that it bothers them when a person interrupts a face to face conversation to take a call, 86 % of Chiefs admitted to doing this. Sixty-one percent of Lieutenants and Captains had done so (see Graph 4.14).

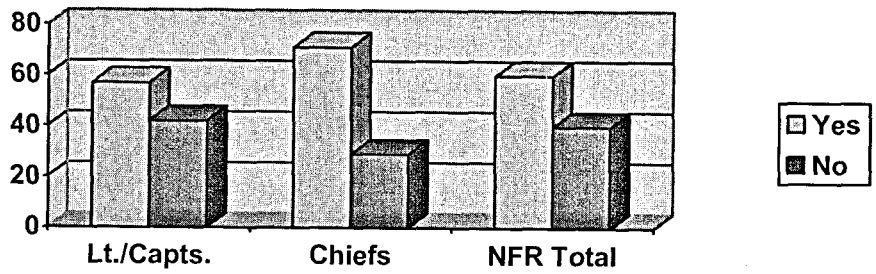
Graph 4.14: Percentage of respondents who have interupted conversations to take a call and their attitudes towards this behavior.



Creating Conflict

Email has also created a less personal communication system. When asked "Has the wording of an email ever been misconstrued and caused a conflict or misunderstanding between you and a coworker?" Sixty percent of respondents answered yes. This number rose to 71 % for Chiefs (see Graph 4.15).

Graph 4.15: Has the wording of an email ever been misconstrued and caused a conflict or misunderstanding between you and a co-worker?



Questions Answered

Question 1: What are the attitudes of Norfolk Fire Rescue towards email and cell phones?

The officers of Norfolk Fire Rescue are very supportive of email and cell phones despite the negative aspects that they might be experiencing. The following sections support this finding.

High Support for Email

Eighty-eight percent of respondents categorized email as either "essential" or as a "valuable asset" to the department. Most respondents claimed to "love" (15 %) or "like" (49 %) email, while 36 % said that they "tolerate" it.

High Support for Cell Phones

Cell phones found similar support with 97 % of respondents stating that they were either "essential" or a "valuable asset" to the department. Most respondents claimed to

"love" (13 %) or "like" (49 %) cell phones, while 37 % said that they "tolerate" them. Only one respondent said that they "hated" cell phones.

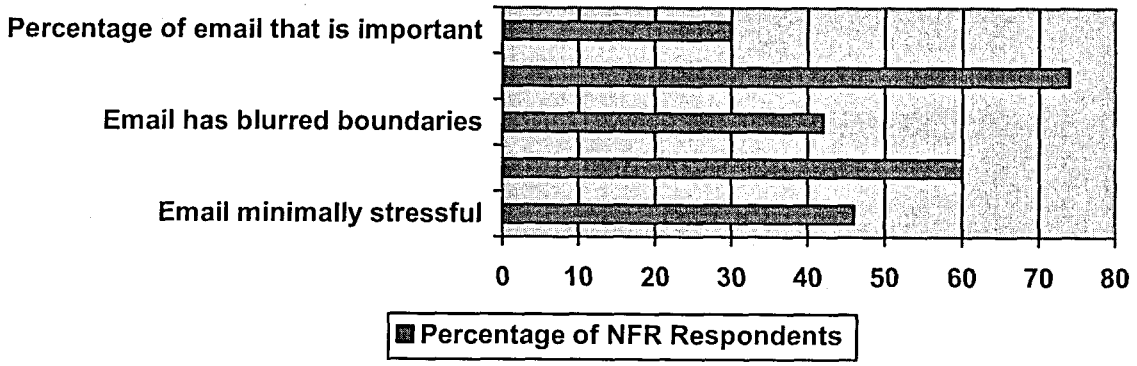
Question 2: What negative aspects of information technologies are affecting Norfolk Fire Rescue?

This study found that Norfolk Fire Rescue is experiencing negative aspects from information technologies. Furthermore, it was found that there is a variation in the amount of impact and source of impact when categorized by rank. This issue will be discussed more in the next section.

Impact of Email

Reading and responding to email was minimally stressful to 46 %, moderately stressful to 6 %, and highly stressful to 1 %. Sixty percent of respondents admitted that the wording of an email had created a conflict or misunderstanding between themselves and a coworker. When asked if email had blurred the lines between "on-duty" and "off-duty" 42 % said yes and 58 % said no. Seventy-four percent stated that they had received questionable email on the department email system, with 25 % saying that this happens at a moderate frequency. Sixty-four percent of respondents felt that less than 30 % of email messages they received were important or valuable pieces of information (see Graph 4.16).

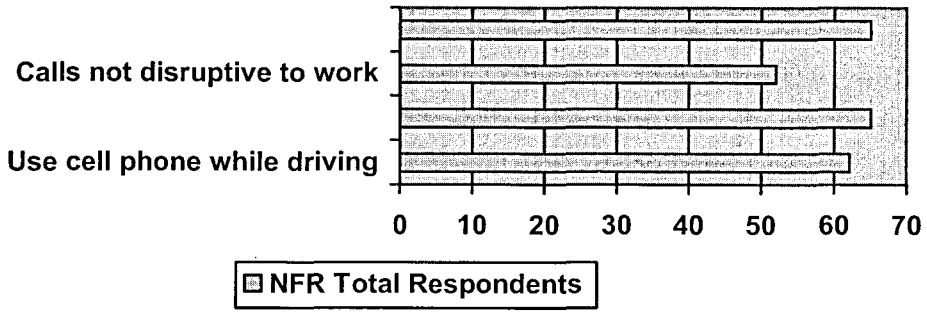
Graph 4.16: NFR's attitudes towards email



Impact of Cell Phones

The subject of cell phones found that most respondents (76 %) are annoyed by people who use their cell phone while driving, yet 62 % of respondents engage in this activity. Similarly, 67 % of respondents stated that it bothers them when someone interrupts a face to face conversation to take a call. However, 66 % had done so themselves. Most respondents (65 %) stated that most of the calls they receive on their cell phones are for personal reasons. Only 23 % stated that most of the calls received were related to Norfolk Fire Rescue. This is interesting to note, because 59 % stated that cell phones were essential to the department. Fifty-two percent stated that cell phone calls were not disruptive to their workday or personal lives. Approximately 42 % of respondents classified cell phone calls as a nuisance to their workday or personal lives, but stated the interruptions were tolerable. Lastly, 65 % stated that cell phones had not blurred the lines between "on duty" and "off duty" (see Graph 4.17).

Graph 4.17: NFR's attitude towards cell phones



Overall Impact

When the results are examined from the "total response" perspective, the impact of information technologies upon Norfolk Fire Rescue appears rather small. There is little evidence that information technologies are having a negative impact on production or blurring the lines between work and home. The biggest concern would probably be the amount of questionable email being received, since this could have direct legal implications for the department. The contradictory behavior of respondents who do not like certain types of behavior, yet actively engage in that behavior, is interesting and helps prove the statement made by Michael Warren, "We become stressed and impatient when we can't reach someone...yet we resent distractions and can become angry when our own meetings...are ...interrupted by a mobile phone." (Siemens, 2005, 1). If these were the most serious implications, then Norfolk Fire Rescue would have little to be concerned with. Unfortunately, the next section sheds light on another problem.

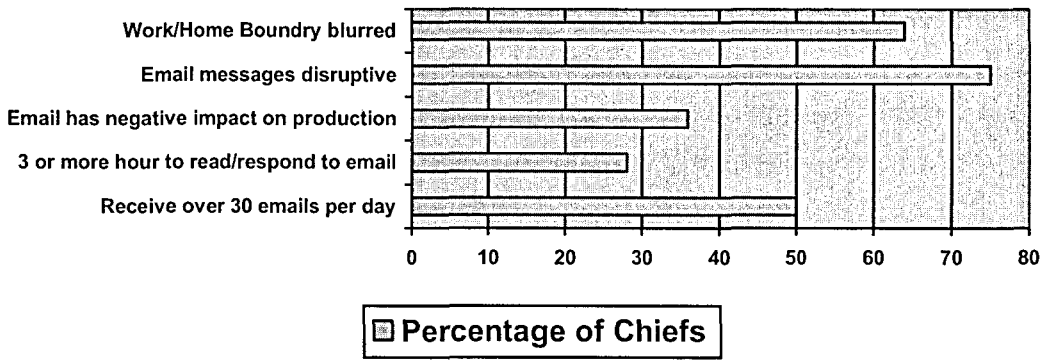
Question 3: Do the negative aspects of information technologies increase with rank?

Chiefs were more likely to report higher levels of stress, greater intrusion into their private lives, and disruption to their work. Basically, Chiefs are being impacted across all four dysfunctions.

Impact of Email on Chiefs

Chiefs reported that they receive high amounts of email. Twenty-nine percent received 30 to 50 per day and 21 % received 50 to 100 per day. Twenty-eight percent of Chiefs stated that it took three or more hours to read and respond to email. While half of the Chiefs stated that email had a positive impact on their production, 36 % stated that it had a negative impact. Seventy-one percent of Chiefs reported that email had caused a conflict with a coworker. Of the Chiefs who reported having email that was set up to notify them each time a new message arrived, 75 % said that this was disruptive to their work. Only 23 % of Lieutenants and Captains reported this. Sixty-four percent of Chiefs stated that they believed email had blurred the lines between work and home. Most Chiefs (79 %) still felt that email was essential to the department, but 21 % believed that it created just as many problems as it solved. Half of the Chiefs reported "loving" or "liking" email, while the other half stated that they "tolerate" it (see Graph 4.18).

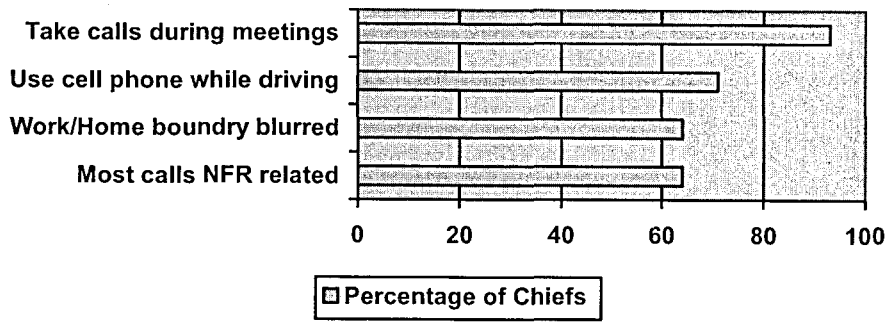
Graph 4.18: Impact of email on Chiefs



Impact of Cell Phones on Chiefs

Chiefs are more likely to be required to carry a cell phone than Lieutenants and Captains. This probably accounts for the higher percentages who admitted to driving while using the cell phone, taking calls during meetings, and interrupting face to face conversations to take a call. Although their percentages were slightly higher than the "total respondents", the trend remained the same. Chiefs, like Lieutenants and Captains, engage in behaviors that annoy or bother them. Chiefs, in general, receive more cell phone calls than Lieutenants or Captains and 64 % reported that the majority of their calls are department related. This is just the opposite of the "total respondents" in which 65 % said their calls were mostly personal. Eighty-six percent of Chiefs feel that cell phones are essential to the department, but half of them stated that they "tolerate" them. As with email, 64 % of Chiefs believe that cell phones have blurred the line between work and home (see Graph 4.19).

Graph 4.19: Impact of cell phones on Chiefs



Question 4: Do the officers of Norfolk Fire Rescue feel that classes aimed at "technological stress or information overload," would be beneficial to the department?

Classes Supported

With 66 % of respondents stating that information overload should be a concern for Norfolk Fire Rescue and 53 % admitting that it is a source of stress for them personally, it was no surprise that 75 % of respondents believed classes designed to address "technological stress" or "information overload" would be beneficial to Norfolk Fire Rescue.

Strong Support from Chiefs

The response from Chiefs was even stronger on this topic. Ninety-three percent of Chiefs felt that "information overload" is an issue that Norfolk Fire Rescue should be concerned with and 79 % stated that it was a source of stress for them personally. Fifty percent of Chiefs stated that Norfolk Fire Rescue's information technologies were having a small negative impact on their home life. Another 21 % categorized the impact as moderate and 7 % said that it was having a big negative impact. Ninety-three percent of

Chiefs believed classes designed to address "technological stress" or "information overload" would be beneficial to Norfolk Fire Rescue.

Overall Findings

Norfolk Fire Rescue is very supportive of email and cell phones. While, Lieutenants and Captains reported minimal negative impacts, Chiefs reported being impacted across all four dysfunctions. Classes designed to address information overload or technological stress were very popular with respondents.

Other Considerations

Impact of Job Assignment

While this study uncovered various issues affecting Norfolk Fire Rescue and suggested that Chiefs are the members most impacted, there is another possibility. This study did not look at assignment. Officers are assigned to either operations or an administrative position. Members in operations work out of the fire stations and their primary responsibility is to mitigate emergencies. Members working in administrative roles work in positions that are very similar to jobs found throughout the business world and are much more traditional of the forty hour workweek. These positions oversee areas such as training, investigations, and the overall management of Norfolk Fire Rescue. If the survey had been designed to include assignment, it may have been found that assignment, not rank, was a better predictor of impact. This speculation is due to the fact that many of the department's Chiefs work in administrative positions. However, a

review of the findings shows that small segments of Captains and Lieutenants also responded similarly to the Chiefs. It is possible that these individuals are also assigned administrative duties.

Gender Excluded To Protect Confidentiality

Gender is another variable that could have been looked at to see if there was a difference in the amount of impact reported between men and women. This was avoided due to the fact that there are limited numbers of women within the department and it was possible that this variable could pose a threat to confidentiality.

Typographical Errors on Survey Instrument

There were three typographical errors on the survey which could have caused confusion for the respondents. These errors could have affected questions one, eight, eleven, and twelve under the email section. All of these questions, except one, were follow-up questions. The respondents were only supposed to answer the question if they answered "yes" to the previous question. Unfortunately, all three questions referred back to the wrong question. Question eight referred back to question six instead of seven. Questions eleven and twelve referred back to question nine instead of ten. Questions eleven and twelve do not appear to have been impacted by this error. Both of these questions had the correct number of responses. However, question eight could have been affected. Only seven Chiefs should have responded to this question, but there were eight responses. All eight responses were included in the final calculation of findings. Question one's typographical error prevented the possible choices from being fully

exhausted. The question asked how many emails the respondent received daily, but the range of 20 to 30 was accidentally excluded. This could have forced respondents to choose an answer that did not accurately represent them. All typographical errors, except for those in question one, were corrected on the survey results page to limit confusion for the reader.

While there were some errors in the collection instrument the data appears to be sound enough to answer the four research questions. Support for email and cell phones was high with a majority of respondents stating that they were either "essential" or a "valuable asset" to the department. The data also supports the argument that negative impact may increase with rank. Chiefs reported the highest levels of impact across all four dysfunctions. However, it should be noted that another variable such as assignment, could be a stronger predictor of impact. Lastly, a majority of respondents stated that "information overload" is an issue that the department should be concerned with. As a result, 75% felt that classes designed to address this issue, should be implemented by Norfolk Fire Rescue.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter will review the background, purpose, and methodology in the summary section. The conclusion section will discuss the findings once more.

Summary

This section reviews the background of the study, discusses the purpose of the study, and reviews the survey methodology of the study.

History of Topic

Norfolk Fire Rescue has embraced new information technologies as a management tool for the department. However, studies have shown that with these new technologies come new problems (Middleton and Cukier, 2006; American Management Association, 2003; Chesley, 2005). The manner in which these technologies are utilized can create risk, such as when they are used while driving (Sundeen, 2005). The ability to instantly communicate with others, regardless of time or location, has started to blur the line between work and home (Chesley, 2005). Anti-social behaviors, such as interrupting a face to face conversation to take a call, are on the rise (Middleton and Cukier, 2006) and some find that the technologies that were supposed to help them be more productive have done just the opposite (Management Issues News, 2003).

Purpose

The purpose of this study was to investigate the perceptions of impact that cell phones and email have on the officers of Norfolk Fire Rescue. This was accomplished by answering the following questions:

1. What are the attitudes of Norfolk Fire Rescue towards email and cell phones?
2. What negative aspects of email and cell phones are affecting Norfolk Fire Rescue?
3. Do the negative aspects of information technologies increase with rank?
4. Do the officers of Norfolk Fire Rescue feel that classes aimed at "technological stress or information overload," would be beneficial to the department?

Background of Norfolk Fire Rescue

Norfolk Fire Rescue has served the citizens of Norfolk, Virginia since 1871. Currently, the department protects more than 241,000 residents, as well as, daily commuters and visitors to the city. The mission of Norfolk Fire-Rescue is to protect life, property, and the environment. To complete this mission, the department utilizes a staff of 500 personnel and an annual operating budget of 27 million dollars. Each year Norfolk Fire Rescue responds to approximately 15,000 fire calls and 24,000 emergency medical (EMS) calls.

Survey of Norfolk Fire Rescue Conducted

A voluntary, survey of Norfolk Fire Rescue's officers was conducted to discover what impact email and cell phones may be having on the department. The survey questions were established by reviewing existing literature on the topic. All questions were "force-choice" in terms of response. The survey was divided into three sections. Section one dealt with issues related to email correspondence and contained 17 questions. Section two dealt with behavior related to cell phone use and contained 15 questions.

Section three dealt with perceptions of information overload and was comprised of six questions. Section three also had a question regarding the rank of the respondent. This allowed responses to be examined by rank. Seventy-one surveys out of 104 were returned. Of these 71 surveys, 69 were included in the data analysis. (Two surveys were not used due to Section Three being incomplete.) Responses were tallied and percentage of responses was calculated for each of the following categories:

1. Lieutenants and Captains
2. Chiefs
3. Total Responses

It should be noted that the percentage of response was calculated using the number of responses for each particular question, rather than the total number of surveys received. Using this method prevents the percentage from being skewed by those who did not answer a question. The survey results can be found in the appendices.

Conclusions

This section will discuss how the findings of the survey relate to the four research questions.

Question 1: What are the attitudes of Norfolk Fire Rescue towards email and cell phones?

The officers of Norfolk Fire Rescue are very supportive of email and cell phones despite the negative aspects that they might be experiencing.

High Support for Email

Eighty-eight percent of respondents categorized email as either "essential" or as a "valuable asset" to the department. Most respondents claimed to "love" (15 %) or "like" (49 %) email, while 36 % said that they "tolerate" it.

High Support for Cell Phones

Cell phones found similar support with 97 % of respondents stating that they were either "essential" or a "valuable asset" to the department. Most respondents claimed to "love" (13 %) or "like" (49 %) cell phones, while 37 % said that they "tolerate" them. Only one respondent said that they "hated" cell phones.

Question 2: What negative aspects of email and cell phones are affecting Norfolk Fire Rescue?

This study found that Norfolk Fire Rescue is experiencing negative aspects from information technologies. Furthermore, it was found that there is a variation in the amount of impact and source of impact when looked at by rank. This issue will be discussed more in the next section.

Impact of Email

Reading and responding to email was minimally stressful to 46 %, moderately stressful to 6 %, and highly stressful to 1 %. Sixty percent of respondents admitted that

the wording of an email had created a conflict or misunderstanding between themselves and a coworker. When asked if email had blurred the lines between "on duty" and "off duty" 42 % said yes and 58 % said no. Seventy-four percent stated that they had received questionable email on the department email system, with 25 % saying that this happens at a moderate frequency. Sixty-four percent of respondents felt that less than 30 % of email messages they received were important or valuable pieces of information.

Impact of Cell Phones

The subject of cell phones found that most respondents (76 %) are annoyed by people who use their cell phone while driving, yet 62 % of respondents engage in this activity. Similarly, 67 % of respondents stated that it bothers them when someone interrupts a face to face conversation to take a call. However, 66 % had done so themselves. Most respondents (65 %) stated that most of the calls they receive on their cell phones are for personal reasons. Only 23 % stated that most of the calls received were related to Norfolk Fire Rescue. This is interesting to note, because 59 % stated that cell phones were essential to the department. Fifty-two percent stated that cell phone calls were not disruptive to their workday or personal lives. Approximately 42 % of respondents classified cell phone calls as a nuisance to their workday or personal lives, but stated the interruptions were tolerable. Lastly, 65 % stated that cell phones had not blurred the lines between "on duty" and "off duty".

Overall Impact

When the results are looked at from the "total response" perspective, the impact of information technologies upon Norfolk Fire Rescue appears rather small. There is little evidence that information technologies are having a negative impact on production or blurring the lines between work and home. The biggest concern would probably be the amount of questionable email being received, since this could have direct legal implications for the department. The contradictory behavior of respondents who do not like certain types of behavior, yet actively engage in that behavior, is interesting. However, if these were the most serious implications, then Norfolk Fire Rescue would have little to be concerned with. Unfortunately, the impact of cell phones and email appears to be a bigger issue when examined from the perspective of Chiefs.

Question 3: Do the negative aspects of information technologies increase with rank?

Chiefs were more likely to report higher levels of stress, greater intrusion into their private lives, and disruption to their work.

E-mail's Impact on Chiefs

Chiefs reported that they receive high amounts of email. Twenty-nine percent received 30 to 50 per day and 21 % received 50 to 100 per day. Twenty-eight percent of Chiefs stated that it took three or more hours to read and respond to email. While half of the Chiefs stated that email had a positive impact on their production, 36 % stated that it had a negative impact. Seventy-one percent of Chiefs reported that email had caused a conflict with a coworker. Of the Chiefs who reported having email that was set up to

notify them each time a new message arrived, 75 % said that this was disruptive to their work. Only 23 % of Lieutenants and Captains reported this. Sixty-four percent of Chiefs stated that they believed email had blurred the lines between work and home. Most Chiefs (79 %) still felt that email was essential to the department, but 21 % believed that it created just as many problems as it solved. Half of the Chiefs reported "loving" or "liking" email, while the other half stated that they "tolerate" it.

Cell Phones Impact on Chiefs

Chiefs are more likely to be required to carry a cell phone than Lieutenants and Captains. This probably accounts for the higher percentages who admitted to driving while using the cell phone, taking calls during meetings, and interrupting face to face conversations to take a call. Although their percentages were slightly higher than the "total respondents", the trend remained the same. Chiefs, like Lieutenants and Captains, engage in behaviors that annoy or bother them. Chiefs, in general, receive more cell phone calls than Lieutenants or Captains and 64 % reported that the majority of their calls are department related. This is just the opposite of the "total respondents" in which 65 % said their calls were mostly personal. Eighty-six percent of Chiefs feel that cell phones are essential to the department, but half of them stated that they "tolerate" them. As with email, 64 % of Chiefs believe that cell phones have blurred the line between work and home.

Question 4: Do the officers of Norfolk Fire Rescue feel that classes aimed at "technological stress or information overload," would be beneficial to the department?

Classes Supported

With 66 % of respondents stating that information overload should be a concern for Norfolk Fire Rescue and 53 % admitting that it is a source of stress for them personally, it was no surprise that 75 % of respondents believed classes designed to address "technological stress" or "information overload" would be beneficial to Norfolk Fire Rescue.

Strong Support From Chiefs

The response from Chiefs was even stronger on this topic. Ninety-three percent of Chiefs felt that "information overload" is an issue that Norfolk Fire Rescue should be concerned with and 79 % stated that it was a source of stress for them personally. Fifty percent of Chiefs stated that Norfolk Fire Rescue's information technologies were having a small negative impact on their home life. Another 21 % categorized the impact as moderate and 7 % said that it was having a big negative impact. Ninety-three percent of Chiefs believed classes designed to address "technological stress" or "information overload" would be beneficial to Norfolk Fire Rescue.

Recommendations

This section will discuss ways to expand this study and steps that Norfolk Fire Rescue should take to improve job satisfaction for their employees.

Future Studies

This study identified issues on a very broad level. Possible causes were not explored. Future studies should delve deeper into the issues that were reported. By looking closer at these issues it may be possible to pin-point behaviors or practices that are contributing to the issue.

Job Assignment vs. Rank

While Chiefs did report higher levels of stress, greater intrusion into their private lives, and disruption to their work, the relationship between rank and impact can only be taken at face value. It is possible that another factor, such as job assignment, could play a greater role in predicting impact than rank did. This is because administrative positions are more traditional of the "9 to 5" workday. Officers in administrative positions work in training, arson, prevention, or management roles. Those assigned to operations work out of the fire stations and their main responsibility is to respond to and mitigate emergencies. These individuals typically work ten 24-hour shifts per month. The amount of daily communication in administrative positions is probably greater than the amount of communications required for positions in operations. For this reason, it is recommended that future studies involving public safety entities incorporate job assignment.

Advice for Norfolk Fire Rescue

Seventy-five percent of respondents believed that classes designed to address "technological stress" or "information overload" would be beneficial to Norfolk Fire Rescue. This demonstrates that the officers of Norfolk Fire Rescue have concerns with

some of the new information technologies that are being used by the department. A majority of respondents rated these technologies as "essential" or a "valuable asset" to the department, so the support for classes is not being driven by a lack of faith in the technologies. Rather, it shows that the officers feel that steps should be taken to make sure that the department controls these technologies, instead of the technologies controlling the department. Steps should be taken to identify behaviors or practices that contribute to technological stress and eliminate them. The following is a possible approach that Norfolk Fire Rescue could take:

1. *Release results.* Allow the results of this study to be released to all members of Norfolk Fire Rescue. This could be done through the department's *On Scene* publication. This would help raise awareness of some of the issues the department is experiencing in regards to cell phones and email. In certain cases, awareness may be all that is needed to correct specific issues. For example, 86 % of Chiefs admit to interrupting a face-to-face conversation, to "take a call." However, 70 % of Lieutenants and Captains stated that this bothers them when it happens to them. Knowing that this behavior is not viewed favorably by other members of the department may help bring this behavior to an end. Tips could also be provided to help individuals manage email and cell phones. These tips include such actions as limiting the number of times email is checked, designating time for responding to email, and using the phone to discuss lengthy topics, rather than going back and forth on email. See Appendix D for more tips.
2. *Conduct Interviews.* Interview Chiefs and officers in administrative positions to find out which department practices are the most annoying in regards to email or

cell phones. These polices can then be looked at to see if they can be modified or eliminated.

3. *Implement changes.* Once causes are identified they can be addressed. For example, the practice of a chief having to monitor a BlackBerry® throughout the night could be the true cause of blurred work/home boundaries and not necessarily the email itself. In this case, the practice would have to be looked at to see if there are possible alternatives.
4. *Evaluate progress.* Approximately six months to a year after corrective action has been taken, it is recommended that a survey be administered to measure the success or failure of the program.

Dissemination of Findings

The information uncovered in this study will be submitted to *Fire Chief Magazine* in hope that it will be published. This periodical is read around the world by fire officers and would be a great avenue for raising awareness of issues associated with information technologies.

Final Thoughts

The officers of Norfolk Fire Rescue reported engaging in potentially dangerous behaviors such as driving while using cell phones. Others reported that they had exhibited anti-social behaviors in order to use cell phones. Chiefs tended to report higher levels of stress, greater intrusion into their private lives, and more disruption to their work as a result of cell phones and email. Overall, these findings were similar to results of

existing studies on email and cell phones. The lesson learned is that the benefits of information technologies are not without their costs. Unfortunately, these costs are paid by the individuals that use them, rather than the organizations that implement them. Middleton and Cukier ask the question, "How do we distinguish the work practices that are necessary from those that are dangerous, infringe upon personal space and time, disrupt work flow, or are anti-social" (2006, 258)? Hopefully, the information collected by this study will raise awareness of these issues at Norfolk Fire Rescue and provide a foundation from which they can be addressed.

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Appendix A

UNIVERSITY OF RICHMOND INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF RESEARCH PARTICIPANTS
NOTICE OF ACTION

Date: 10/03/06

Name(s): Ronald Mann

Faculty ☐ Student ☒ Other ☐

Faculty Mentor: Marcia Gibson

Is this for a class? ☒ yes ☐ no
If yes, department and course number HRM Thesis

Project Title: Study of Information Technologies

The IRB has reviewed your research protocol by ☐ full review ☒ expedited review.
Your application is:

☒	Exempt from further review	Your project does not fall within federal or university guidelines requiring review. If the nature of the project changes, you must resubmit this project for further review.
☐	Approved	Please review the criteria for approval at the end of this form.
☐	Approved with conditions	Please respond via email to the Chair of the IRB how you plan to address the concerns outlined at the end of this form.
☐	Third party verification required.	
☐	Disapproved	The IRB has some concerns regarding your proposed research; therefore, your project cannot be approved at this time. Please contact the Chair of the IRB to discuss the issues outlined at the end of this form.
☐	Incomplete	A decision on your protocol has been temporarily withheld until the information listed at the end of this form is provided for IRB consideration. Please send this information to the Chair of the IRB via email.

Kathy Hoke _____ _____
Kathy Hoke, Chair Date
Institutional Review Board (8089)

Notes: Exempt under 46.101 (b) (2) which states that surveys and interviews are exempt unless disclosure of responses could pose risk of criminal or civil liability or possibly be

damaging to the subjects' financial standing, emplyability, or reputation OR subjects can be identified.

Final Approval Kathy Hoke

Conditions of Approval

If your project has been **approved** by the University of Richmond Institutional Review Board for the Protection of Human Participants (IRB), this approval is based upon the conditions listed below. It is your responsibility to ensure that your research adheres to these guidelines.

1. IRB approval is for a period of one year. If this research project extends beyond one year, a request for renewal of approval (http://as.richmond.edu/facstaff/irbresources.htm) must be filed.
2. All subjects must receive a copy of the **approved** informed consent form. Unless a waiver of signature was given, researchers must keep copies of informed consent forms on file for three years.
3. Any substantive changes in the research project must be reported to the chair of the IRB. Changes shall not be initiated with IRB approval except where necessary to eliminate apparent immediate hazards to the subject. Based on the proposed changes, a new review may be necessary.
4. Any adverse reaction or other complication of the research which involves real or potential risk or injury to the subject must be reported to the Chair of the IRB immediately.

If your project has been **approved with conditions** or **disapproved**, or if your protocol is **incomplete**, please respond to the following concerns/questions of the IRB. Please send revisions or additional information to the Chair via email.

Appendix B

Survey Results-Email	**Number of Responses/ Percentage of Response**		
1. How many emails do you receive on average, when on duty?	**Lts./Capts.**	**Chiefs**	**Total**
• 10 or less	10 (19 %)	0 (0 %)	17 (25 %)
• 10 to 20 per day	39 (72 %)	7 (50 %)	43 (63 %)
• 30 to 50 per day	4 (7 %)	4 (29 %)	7 (10 %)
• 50 to 100 per day	1 (2 %)	3 (21 %)	1 (1 %)
• 100 or more daily	0 (0 %)	0 (0 %)	0 (0 %)
2. How many times per duty day do you check your email?			
• Once or twice per day	2 (4 %)	0 (0 %)	2 (3 %)
• 3 to 5 times daily	33 (61 %)	3 (21 %)	36 (53 %)
• 6 to 10 times daily	15 (28 %)	6 (43 %)	21 (31 %)
• 10 or more times daily	4 (7 %)	5 (36 %)	9 (13 %)
3. How much time do you spend reading and responding to emails each duty day?			
• An hour or less	28 (52 %)	1 (7 %)	29 (43 %)
• 1 to 2 hours	20 (37 %)	7 (50 %)	27 (40 %)
• 2 to 3 hours	5 (9 %)	2 (14 %)	7 (10 %)
• 3 to 4 hours	1 (2 %)	1 (7 %)	2 (3 %)
• 4 hours or more	0 (0 %)	3 (21 %)	3 (4 %)
4. Do you feel that the time you spend reading and responding to email has impacted your daily productivity?			
• Email has had a negative impact on my production.	5 (9 %)	5 (36 %)	10 (14 %)
• I do not feel that email has had a positive or negative impact.	21 (38 %)	2 (14 %)	23 (33 %)
• Email has had a positive impact on my production.	29 (53 %)	7 (50 %)	36 (52 %)

Email Cont.	**Number of Responses/ Percentage of Response**		
	Lts./Capts.	**Chiefs**	**Total**
5. Is reading and responding to email stressful to you?			
• Not at all.	31 (57 %)	1 (7 %)	32 (47 %)
• Minimally stressful	22 (39 %)	9 (64 %)	31 (46 %)
• Moderately stressful	1 (2 %)	3 (21 %)	4 (6 %)
• Highly stressful	0 (0 %)	1 (7 %)	1 (1 %)
6. Has the wording of an email ever been misconstrued and caused a conflict or misunderstanding between you and a coworker?			
• Yes	31 (57 %)	10 (71 %)	41 (60 %)
• No	23 (42 %)	4 (29 %)	27 (40 %)
7. Is your email or blackberry set up to notify you each time a new email arrives?			
• Yes	27 (49 %)	7 (54 %)	34 (51 %)
• No	28 (51 %)	6 (46 %)	33 (49 %)
8. If yes, to question 7, do you find this disruptive to your work?			
• Yes	7 (23 %)	6 (75 %)	13 (34 %)
• No	23 (77 %)	2 (25 %)	25 (66 %)
9. What percentage of the emails you receive, do you feel are important or valuable pieces of information?			
• 100%	0 (0 %)	0 (0 %)	0 (0 %)
• 90%	0 (0 %)	0 (0 %)	0 (0 %)
• 75-80%	5 (9 %)	3 (21 %)	8 (12 %)
• 50%	14 (26 %)	4 (29 %)	18 (26 %)
• 25-30%	22 (41 %)	4 (29 %)	26 (38 %)
• 10%	13 (24 %)	3 (21 %)	16 (24 %)
• 0%	0 (0 %)	0 (0 %)	0 (0 %)

Email Cont.	**Number of Responses/ Percentage of Response**		
	Lts./Capts.	**Chiefs**	**Total**
10. Do you check your department email when you are off duty?			
• No, I don't have the capability.	2 (4 %)	0 (0 %)	2 (3 %)
• No	7 (13 %)	0 (0 %)	7 (10 %)
• Yes	46 (84 %)	14 (100 %)	60 (87 %)
11. If yes to question 10, how many times per day do you check your department email from home?			
• Once or twice per day	39 (87 %)	13 (93 %)	52 (88 %)
• 3 to 5 times daily	5 (11 %)	0 (0 %)	5 (8 %)
• 6 to 10 times daily	1 (2 %)	0 (0 %)	1 (2 %)
• 10 or more times daily	0 (0 %)	1 (7 %)	1 (2 %)
12. If yes to question 10, how much time do you spend reading and responding to department email from home?			
• An hour or less	42 (93 %)	12 (86 %)	54 (92 %)
• 1 to 2 hours	2 (4 %)	2 (14 %)	4 (7 %)
• 2 to 3 hours	1 (2 %)	0 (0 %)	1 (2 %)
• 3 to 4 hours	0 (0 %)	0 (0 %)	0 (0 %)
• 4 hours or more	0 (0 %)	0 (0 %)	0 (0 %)
13. Do you feel that department email has blurred the lines between "on duty" and "off duty"?			
• Yes	19 (36 %)	9 (64 %)	28 (42 %)
• No	34 (64 %)	5 (36 %)	39 (58 %)
14. Have you ever received an email containing questionable content on the department email system? (Questionable content refers to any type of material that is inappropriate for the workplace.)			
• Yes	39 (72 %)	11 (79 %)	50 (74 %)
• No	15 (27 %)	3 (21 %)	18 (26 %)

Email Cont.	**Number of Responses/ Percentage of Response**		
	Lts./Capts.	**Chiefs**	**Total**
15. If yes to question 14, how often does questionable content come across your department email?			
• Rarely	31 (76 %)	8 (73 %)	39 (75 %)
• Moderate amount	9 (22 %)	3 (27 %)	12 (23 %)
• Frequently	1 (2 %)	0 (0 %)	1 (2 %)
16. When all things are considered, how would you characterize Norfolk Fire Rescue's email system?			
• Essential to department.	28 (52 %)	11 (79 %)	39 (57 %)
• Not essential, but a valuable asset.	21 (39 %)	0 (0 %)	21 (31 %)
• Creates just as many problems as it solves.	5 (9 %)	3 (21 %)	8 (12 %)
• Total waste of time and money.	0 (0 %)	0 (0 %)	0 (0 %)
17. How would characterize your feelings towards email?			
• Love it	8 (15 %)	2 (14 %)	10 (15 %)
• Like it	28 (53 %)	5 (36 %)	33 (49 %)
• Tolerate it	17 (32 %)	7 (50 %)	24 (36 %)
• Hate it	0 (0 %)	0 (0 %)	0 (0 %)

Cell Phones	**Number of Responses/ Percentage of Response**		
	Lts./Capts.	**Chiefs**	**Total**
1. Do you own a cell phone?			
• Yes	54 (100 %)	14 (100 %)	68 (100 %)
• No	0 (0 %)	0 (0 %)	0 (0 %)
2. Are you required to carry it at all times by the department?			
• Yes, at all times	6 (11 %)	6 (43 %)	12 (18 %)
• Yes, but only when on duty	1 (2 %)	2 (14 %)	3 (4 %)
• No	47 (87 %)	6 (43 %)	53 (78 %)
• N/A	0 (0 %)	0 (0 %)	0 (0 %)
3. Have you ever "taken a call" while in a meeting?			
• Yes	17 (32 %)	13 (93 %)	30 (45 %)
• No	36 (68 %)	1 (7 %)	37 (55 %)
• N/A	0 (0 %)	0 (0 %)	0 (0 %)
4. What are your feelings towards people "taking calls" during meetings?			
• Find it annoying and unprofessional.	38 (69 %)	7 (50 %)	45 (65 %)
• Do not like it, but it is a common practice now days.	15 (27 %)	6 (43 %)	21 (30 %)
• Have no problem with it.	2 (4 %)	1 (7 %)	3 (4 %)
5. Are you annoyed by people who talk on their cell phones, while they are driving?			
• Yes	42 (78 %)	10 (71 %)	52 (76 %)
• No	12 (22 %)	4 (29 %)	16 (24 %)

Cell Phones cont.

	Number of Responses/ Percentage of Response		
	Lts./Capts.	Chiefs	Total
6. Do you use your cell phone while driving?			
• Yes	32 (59 %)	10 (71 %)	42 (62 %)
• No	20 (37 %)	4 (29 %)	24 (35 %)
• N/A	2 (4 %)	0 (0 %)	2 (3 %)
7. Does it bother you if a person you are talking to, face to face, interrupts the conversation to "take a call"?			
• Yes	38 (70 %)	8 (57 %)	45 (67 %)
• No	16 (30 %)	6 (43 %)	22 (33 %)
8. Have you ever interrupted, a face to face conversation, to "take a call"?			
• Yes	33 (61 %)	12 (86 %)	45 (66 %)
• No	21 (39 %)	2 (14 %)	23 (34 %)
• N/A	0 (0 %)	0 (0 %)	0 (0 %)
9. How many calls, on average, do you get per day on your cell phone?			
• 5 or less	22 (41 %)	1 (7 %)	23 (34 %)
• 6 to 10	17 (31 %)	6 (43 %)	23 (34 %)
• 10 to 20	12 (22 %)	5 (36 %)	17 (25 %)
• 20 or more	2 (4 %)	2 (14 %)	4 (6 %)
• N/A	1 (2 %)	0 (0 %)	1 (1 %)
10. How would you characterize these calls?			
• Mostly personal	41 (75 %)	4 (29 %)	45 (65 %)
• Mostly NFR related	7 (13 %)	9 (64 %)	16 (23 %)
• Mostly related to a job or business other than NFR	7 (13 %)	0 (0 %)	7 (10 %)
• N/A	0 (0 %)	1 (7 %)	1 (1 %)

Cell Phones cont.	**Number of Responses/ Percentage of Response**		
	Lts./Capts.	**Chiefs**	**Total**
11. How disruptive are these calls to your workday?			
• Not disruptive at all	33 (60 %)	3 (21 %)	36 (52 %)
• Can be a nuisance at times, but tolerable	20 (36 %)	10 (71 %)	30 (43 %)
• Very disruptive to my workday.	2 (4 %)	1 (7 %)	3 (4 %)
• N/A	0 (0 %)	0 (0 %)	0 (0 %)
12. How disruptive are these calls to your private life?			
• Not disruptive at all	31 (60 %)	3 (21 %)	34 (52 %)
• Can be a nuisance at times, but tolerable	19 (36 %)	9 (64 %)	28 (42 %)
• Very disruptive to my private life.	2 (4 %)	2 (14 %)	4 (6 %)
• N/A	0 (0 %)	0 (0 %)	0 (0 %)
13. Do you feel that the cell phone has blurred the lines between "on duty" and "off duty"?			
• Yes	13 (24 %)	9 (64 %)	22 (32 %)
• No	39 (72 %)	5 (36 %)	44 (65 %)
• N/A	2 (4 %)	0 (0 %)	2 (3 %)
14. When all things are considered, how important are cell phones to Norfolk Fire Rescue?			
• Essential to department.	28 (52 %)	12 (86 %)	40 (59 %)
• Not essential, but a valuable asset.	24 (44 %)	2 (14 %)	26 (38 %)
• The convenience it creates is outweighed by other factors.	2 (4 %)	0 (0 %)	2 (3 %)
• Not needed by the department.	0 (0 %)	0 (0 %)	0 (0 %)

Cell Phones cont.	**Number of Responses/ Percentage of Response**		
	Lts./Capts.	**Chiefs**	**Total**
15. How would you characterize your feelings towards cell phones?			
• Love them	8 (15 %)	1 (7 %)	9 (13 %)
• Like them	27 (50 %)	6 (43 %)	33 (49 %)
• Tolerate them	18 (33 %)	7 (50 %)	25 (37 %)
• Hate them	1 (2 %)	0 (0 %)	1 (1 %)

Information Overload	**Number of Responses/ Percentage of Response**		
	Lts./Capts.	**Chiefs**	**Total**
1. Information overload: the receipt of more information than is needed or desired to function effectively and further the goals of an individual or organization. (Losee, 1998)			
With the above definition in mind, do you feel that "information overload" is an issue that Norfolk Fire Rescue should be concerned with?			
• Yes	32 (59 %)	13 (93 %)	45 (66 %)
• No	22 (41 %)	1 (7 %)	23 (34 %)
2. Is "information overload" a source of stress for you personally?			
• Yes	25 (46 %)	11 (79 %)	36 (53 %)
• No	29 (54 %)	3 (21 %)	32 (47 %)
3. To what extent is your home life being negatively impacted by Norfolk Fire Rescue's information technologies?			
• No impact at all or positive impact	30 (56 %)	3 (21 %)	33 (49 %)
• Small negative impact	19 (35 %)	7 (50 %)	26 (38 %)
• Moderate negative impact	5 (9 %)	3 (21 %)	8 (12 %)
• Big negative impact	0 (0 %)	1 (7 %)	1 (1 %)
4. Are your workdays more productive today than they were ten years ago?			
• Yes	30 (56 %)	5 (36 %)	35 (51 %)
• No	16 (30 %)	5 (36 %)	21 (31 %)
• About the same	8 (15 %)	4 (29 %)	12 (18 %)
5. Do you feel that classes designed to address "technological stress" or "information overload" would be beneficial to Norfolk Fire Rescue?			
• Yes	38 (70 %)	13 (93 %)	51 (75 %)
• No	16 (30 %)	1 (7 %)	17 (25 %)

Information Overload cont.

6. What is your current rank?	Number of Responses/ Percentage of Response Lts./Capts.	Chiefs	Total
• Lieutenant or Captain	55 (100 %)	0 (0 %)	55 (80 %)
• Battalion Chief or higher	0 (0 %)	14 (100 %)	14 (20 %)

Appendix C

RICHMOND
School of Continuing Studies

Survey for the Officers of Norfolk Fire Rescue

Dear Officer,

My name is Ronnie Mann and I am a Lieutenant within the department. I am working on my thesis for the University of Richmond. I invite you to participate in a survey investigating the use of cell phones/email and your feelings towards these items.

With the permission of the department, I am mailing this survey to all officers of Norfolk Fire Rescue. Other than granting me permission to conduct this survey, Norfolk Fire Rescue, is in no way involved with this study. All information collected will be used solely by me.

Participation is completely voluntary. If you chose to complete the survey, simply read each question and circle the answer that fits you the best. Completing the survey should take no more than ten minutes. When you have finished the survey, place it in the provided envelope and mail it back to me. Postage has already been paid. Do not write your return address on the envelope in order to protect your identity.

If you have any questions about the content of this study or of your rights as a research participant, you may contact the Institutional Review Board (IRB), at the University of Richmond. Should you have any other questions or concerns, please contact me at 757-420-9730.

Thank you for your time.

Sincerely,

Ronnie Mann
Lieutenant
Norfolk Fire Rescue

Section 1: Email

1. How many emails do you receive on average, when on duty?

- 10 or less
- 10 to 20 per day
- 30 to 50 per day
- 50 to 100 per day
- 100 or more daily

2. How many times per duty day do you check your email?

- Once or twice per day
- 3 to 5 times daily
- 6 to 10 times daily
- 10 or more times daily

3. How much time do you spend reading and responding to emails each duty day?

- An hour or less
- 1 to 2 hours
- 2 to 3 hours
- 3 to 4 hours
- 4 hours or more

4. Do you feel that the time you spend reading and responding to email has impacted your daily productivity?

- Email has had a negative impact on my production.
- I do not feel that email has had a positive or negative impact.
- Email has had a positive impact on my production.

5. Is reading and responding to email stressful to you?

- Not at all.
- Minimally stressful
- Moderately stressful
- Highly stressful

6. Has the wording of an email ever been misconstrued and caused a conflict or misunderstanding between you and a coworker?

- Yes
- No

7. Is your email or blackberry set up to notify you each time a new email arrives?

- Yes
- No

8. If yes, to question 6, do you find this disruptive to your work?

- Yes
- No

9. What percentage of the emails you receive, do you feel are important or valuable pieces of information?

- 100%
- 90%
- 75-80%
- 50%
- 25-30%
- 10%
- 0%

10. Do you check your department email when you are off duty?

- No, I don't have the capability.
- No
- Yes

11. If yes to question 9, how many times per day do you check your department email from home?

- Once or twice per day
- 3 to 5 times daily
- 6 to 10 times daily
- 10 or more times daily

12. If yes to question 9, how much time do you spend reading and responding to department email from home?

- An hour or less
- 1 to 2 hours
- 2 to 3 hours
- 3 to 4 hours
- 4 hours or more

13. Do you feel that department email has blurred the lines between "on duty" and "off duty"?

- Yes
- No

14. Have you ever received an email containing questionable content on the department email system? (Questionable content refers to any type of material that is inappropriate for the workplace.)

- Yes
- No

15. If yes to question 14, how often does questionable content come across your department email?

- Rarely
- Moderate amount
- Frequently

16. When all things are considered, how would you characterize Norfolk Fire Rescue's email system?

- Essential to department.
- Not essential, but a valuable asset.
- Creates just as many problems as it solves.
- Total waste of time and money.

17. How would characterize your feelings towards email?

- Love it
- Like it
- Tolerate it
- Hate it

Section 2: Cell Phones

1. Do you own a cell phone?

   - Yes
   - No

2. Are you required to carry it at all times by the department?

   - Yes, at all times
   - Yes, but only when on duty
   - No
   - N/A

3. Have you ever "taken a call" while in a meeting?

   - Yes
   - No
   - N/A

4. What are your feelings towards people "taking calls" during meetings?

   - Find it annoying and unprofessional.
   - Do not like it, but it is a common practice now days.
   - Have no problem with it.

5. Are you annoyed by people who talk on their cell phones, while they are driving?

   - Yes
   - No

6. Do you use your cell phone while driving?

   - Yes
   - No
   - N/A

7. Does it bother you if a person you are talking to, face to face, interrupts the conversation to "take a call"?

   - Yes
   - No

8. Have you ever interrupted, a face to face conversation, to "take a call"?

- Yes
- No
- N/A

9. How many calls, on average, do you get per day on your cell phone?

- 5 or less
- 6 to 10
- 10 to 20
- 20 or more
- N/A

10. How would you characterize these calls?

- Mostly personal
- Mostly NFR related
- Mostly related to a job or business other than NFR
- N/A

11. How disruptive are these calls to your workday?

- Not disruptive at all
- Can be a nuisance at times, but tolerable
- Very disruptive to my workday.
- N/A

12. How disruptive are these calls to your private life?

- Not disruptive at all
- Can be a nuisance at times, but tolerable
- Very disruptive to my private life.
- N/A

13. Do you feel that the cell phone has blurred the lines between "on duty" and "off duty"?

- Yes
- No
- N/A

14. When all things are considered, how important are cell phones to Norfolk Fire Rescue?

- Essential to department.
- Not essential, but a valuable asset.
- The convenience it creates is outweighed by other factors.
- Not needed by the department.

15. How would you characterize your feelings towards cell phones?

- Love them
- Like them
- Tolerate them
- Hate them

Section 3: Conclusions

1. Information overload: the receipt of more information
than is needed or desired to function effectively and further the goals of an individual or organization. (Losee, 1998)

With the above definition in mind, do you feel that "information overload" is an issue that Norfolk Fire Rescue should be concerned with?

- Yes
- No

2. Is "information overload" a source of stress for you personally?

- Yes
- No

3. To what extent is your home life being negatively impacted by Norfolk Fire Rescue's information technologies?

- No impact at all or positive impact
- Small negative impact
- Moderate negative impact
- Big negative impact

4. Are your workdays more productive today than they were ten years ago?

- Yes
- No
- About the same

5. Do you feel that classes designed to address "technological stress" or "information overload" would be beneficial to Norfolk Fire Rescue?

- Yes
- No

6. What is your current rank?

- Lieutenant or Captain
- Battalion Chief or higher

Appendix D

Tips for Managing Email from Sweetnam Communications (2005, 14-17)

New Time Management Tactics

1. Don't Check Your Email the First Thing Each Day

Edward Hallowell shared this challenging idea in his recent *Harvard Business Review* article:

"When you start your day, attend to a critical task instead rather than allowing yourself to get sucked into ***vortices of email or voice mail*** *or into attending to minor tasks that eat up your time but don't pack a punch."*

2. Schedule "Email Hours"

The common approach to checking email is to check email on the fly or try to find a lull at times during the day. How often have you decided to stop to take a quick look at your email and the next thing you knew, you glanced at your watch and one hour had evaporated from your day? And along with it disappeared your day's direction, resolve, rhythm, and priorities?

Schedule regular "Email Hours" one or two times every day. By doing so, you will find this dedicated time allows you longer and better concentration time so you can become more efficient and productive. It also gains you quiet time to plan thoughtful responses to recipients and update your email system (emptying your in-box, making new files, deleting files).

Schedule "Email Hours" as a routine, lower-value task that doesn't take up your peak performance time. Instead, protect your peak performance and high brain power times and save them for high-value tasks.

3. Walk Away from Black Holes

Black holes are when you experience unsettling confusion and information overload. You experience feelings of not being in control and you feel like you're falling into a black hole. Be on the alert for Black Holes and "nip them in the bud." Then, take a break and start over later.

4. Use the Ohio Rule: Only Handle It Once

Apply this common time management tool to email as well.

5. Approach Email as a Mini-Business

If you treat email as a mini-business that manages information and is subject to controls that you impose, then you can approach it differently. Think of it is a system with boundaries rather than an intrusive, all-pervasive presence that seeps into every corner of your business and psyche. Treat it no differently than you would the operations of a business that has procedures, processes, systems, timeframes, and schedules that occur daily, weekly, and yearly.

Shortcuts for

Getting Your Point Across

1. State the Purpose in Your Subject Title

When we first look at incoming emails, we look at what's obvious—the sender, the topic, and the time. But in the back of our minds we have one driving question: "What do I have to do?"

Many times we can't know if we have any action requirements until we open up the email. Several companies solve this dilemma by requiring their people to include their purposes in the subject title. For example:

Examples of Purposes in Subject Titles

Subject: Action: Your report needed 9/19

Subject: Urgent: See Client X Feedback

Subject: Information or (FYI): 3/14 Meeting Minutes

Subject: Question: What's the Status on XYZ Project?

These purpose words in the subject title help the recipient decide where to file your email, and to determine if it has high impact/low impact or high value/low value.

2. State "No Need to Reply" When Appropriate

Write these words somewhere in the subject title or the body of the message. People like knowing they're not responsible and that they aren't expected to reply. By saying this, you're giving them the green light to move on to other things.

3. Limit Your Message to the Subject Title

This works when you have a very short point to make. Condense the point as much as possible and place it in the subject title. After your point, add the acronym <EOM> and/or the words, "End of Message." The recipient then realizes he/she doesn't have to open the file. I've used it with the greatest success when I want to say "Thank you" because it comes off as a note—short and sweet.

Subject: Jack, Thanks for your detailed recommendation. <EOM> or, end of message.

4. Bold the Critical 3 to 4 Words in Your Email

This is an emphasis technique to use in the body of your message. In scanning your message, your recipient can instantly see what's important to you because the 3 to 4 most important words are bolded like a signpost. Jim Kish, the National Sales Training Manager at Dannon, uses this technique for emailing the sales force. This technique is a gift because it answers the audience's question, "What's important here?"

Appendix E

Means and Standard Deviations

Email:

1. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.92593
Variance(Standard deviation):	0.33403
Standard deviation:	0.57796
Population Standard deviation:	0.57258
Variance(Population Standard deviation):	0.32785

1. Chiefs

Total Numbers:	14
Mean (Average):	2.71429
Variance(Standard deviation):	0.68132
Standard deviation:	0.82542
Population Standard deviation:	0.79539
Variance(Population Standard deviation):	0.63265

1. NFR Total

Total Numbers:	68
Mean (Average):	1.88235
Variance(Standard deviation):	0.40386
Standard deviation:	0.6355
Population Standard deviation:	0.63081
Variance(Population Standard deviation):	0.39792

2. Lt./Capts.

Total Numbers:	54
Mean (Average):	2.38889
Variance(Standard deviation):	0.46855
Standard deviation:	0.68451
Population Standard deviation:	0.67814
Variance(Population Standard deviation):	0.45988

2. Chiefs

Total Numbers:	14
Mean (Average):	3.14286
Variance(Standard deviation):	0.59341
Standard deviation:	0.77033
Population Standard deviation:	0.74231
Variance(Population Standard deviation):	0.55102

2. NFR Total

Total Numbers:	68
Mean (Average):	2.54412
Variance(Standard deviation):	0.58011
Standard deviation:	0.76165
Population Standard deviation:	0.75603
Variance(Population Standard deviation):	0.57158

3. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.61111
Variance(Standard deviation):	0.54403
Standard deviation:	0.73758
Population Standard deviation:	0.73072
Variance(Population Standard deviation):	0.53395

3. Chiefs

Total Numbers:	14
Mean (Average):	2.85714
Variance(Standard deviation):	1.82418
Standard deviation:	1.35062
Population Standard deviation:	1.30149
Variance(Population Standard deviation):	1.69388

3. NFR Total

Total Numbers:	68
Mean (Average):	1.86765
Variance(Standard deviation):	1.04192
Standard deviation:	1.02075
Population Standard deviation:	1.01321
Variance(Population Standard deviation):	1.0266

4. Lt./Capts.

Total Numbers:	55
Mean (Average):	2.43636
Variance(Standard deviation):	0.43569
Standard deviation:	0.66007
Population Standard deviation:	0.65404
Variance(Population Standard deviation):	0.42777

4. Chiefs

Total Numbers:	14
Mean (Average):	2.14286
Variance(Standard deviation):	0.9011
Standard deviation:	0.94926
Population Standard deviation:	0.91473
Variance(Population Standard deviation):	0.83673

4. NFR Total

Total Numbers:	69
Mean (Average):	2.37681
Variance(Standard deviation):	0.5324
Standard deviation:	0.72965
Population Standard deviation:	0.72435
Variance(Population Standard deviation):	0.52468

5. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.44444
Variance(Standard deviation):	0.28931
Standard deviation:	0.53787
Population Standard deviation:	0.53287
Variance(Population Standard deviation):	0.28395

5. Chiefs

Total Numbers:	14
Mean (Average):	2.28571
Variance(Standard deviation):	0.52747
Standard deviation:	0.72627
Population Standard deviation:	0.69985
Variance(Population Standard deviation):	0.4898

5. NFR Total

Total Numbers:	68
Mean (Average):	1.61765
Variance(Standard deviation):	0.44864
Standard deviation:	0.66981
Population Standard deviation:	0.66486
Variance(Population Standard deviation):	0.44204

6. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.42593
Variance(Standard deviation):	0.24913
Standard deviation:	0.49913
Population Standard deviation:	0.49448
Variance(Population Standard deviation):	0.24451

6. Chiefs

Total Numbers:	14
Mean (Average):	1.28571
Variance(Standard deviation):	0.21978
Standard deviation:	0.46881
Population Standard deviation:	0.45175
Variance(Population Standard deviation):	0.20408

6. NFR Total

Total Numbers:	68
Mean (Average):	1.39706
Variance(Standard deviation):	0.24298
Standard deviation:	0.49293
Population Standard deviation:	0.48929
Variance(Population Standard deviation):	0.2394

7. Lt./Capts.

Total Numbers:	55
Mean (Average):	1.50909
Variance(Standard deviation):	0.25455
Standard deviation:	0.50452
Population Standard deviation:	0.49992
Variance(Population Standard deviation):	0.24992

7. Chiefs

Total Numbers:	13
Mean (Average):	1.46154
Variance(Standard deviation):	0.26923
Standard deviation:	0.51887
Population Standard deviation:	0.49852
Variance(Population Standard deviation):	0.24852

7. NFR Totals

Total Numbers:	68
Mean (Average):	1.5
Variance(Standard deviation):	0.25373
Standard deviation:	0.50372
Population Standard deviation:	0.5
Variance(Population Standard deviation):	0.25

8. Lt./Capts.

Total Numbers:	30
Mean (Average):	1.76667
Variance(Standard deviation):	0.18506
Standard deviation:	0.43018
Population Standard deviation:	0.42295
Variance(Population Standard deviation):	0.17889

8. Chiefs

Total Numbers:	8
Mean (Average):	1.25
Variance(Standard deviation):	0.21429
Standard deviation:	0.46291
Population Standard deviation:	0.43301
Variance(Population Standard deviation):	0.1875

8. NFR Total

Total Numbers:	38
Mean (Average):	1.65789
Variance(Standard deviation):	0.23115
Standard deviation:	0.48078
Population Standard deviation:	0.47441
Variance(Population Standard deviation):	0.22507

9. Lt./Capts.

Total Numbers:	54
Mean (Average):	2.7963
Variance(Standard deviation):	0.84451
Standard deviation:	0.91897
Population Standard deviation:	0.91043
Variance(Population Standard deviation):	0.82888

9. Chiefs

Total Numbers:	14
Mean (Average):	2.5
Variance(Standard deviation):	1.19231
Standard deviation:	1.09193
Population Standard deviation:	1.05221
Variance(Population Standard deviation):	1.10714

9. NFR Total

Total Numbers:	68
Mean (Average):	2.73529
Variance(Standard deviation):	0.91396
Standard deviation:	0.95601
Population Standard deviation:	0.94896
Variance(Population Standard deviation):	0.90052

10. Lt./Capts.

Total Numbers:	55
Mean (Average):	2.8
Variance(Standard deviation):	0.23704
Standard deviation:	0.48686
Population Standard deviation:	0.48242
Variance(Population Standard deviation):	0.23273

10. Chiefs

Total Numbers:	14
Mean (Average):	3
Variance(Standard deviation):	0
Standard deviation:	0
Population Standard deviation:	0
Variance(Population Standard deviation):	0

10. NFR Total

Total Numbers:	69
Mean (Average):	2.84058
Variance(Standard deviation):	0.1948
Standard deviation:	0.44136
Population Standard deviation:	0.43815
Variance(Population Standard deviation):	0.19198

11. Lt./Capts

Total Numbers:	45
Mean (Average):	1.15556
Variance(Standard deviation):	0.1798
Standard deviation:	0.42403
Population Standard deviation:	0.41929
Variance(Population Standard deviation):	0.1758

11. Chiefs

Total Numbers:	14
Mean (Average):	1.21429
Variance(Standard deviation):	0.64286
Standard deviation:	0.80178
Population Standard deviation:	0.77262
Variance(Population Standard deviation):	0.59694

11. NFR Totals

Total Numbers:	59
Mean (Average):	1.16949
Variance(Standard deviation):	0.28112
Standard deviation:	0.53021
Population Standard deviation:	0.5257
Variance(Population Standard deviation):	0.27636

12. Lt./Capts.

Total Numbers:	44
Mean (Average):	1.09091
Variance(Standard deviation):	0.13108
Standard deviation:	0.36205
Population Standard deviation:	0.35791
Variance(Population Standard deviation):	0.1281

12. Chiefs

Total Numbers:	14
Mean (Average):	1.14286
Variance(Standard deviation):	0.13187
Standard deviation:	0.36314
Population Standard deviation:	0.34993
Variance(Population Standard deviation):	0.12245

12. NFR Total

Total Numbers:	58
Mean (Average):	1.10345
Variance(Standard deviation):	0.12946
Standard deviation:	0.35981
Population Standard deviation:	0.35669
Variance(Population Standard deviation):	0.12723

13. Lt./Capts.

Total Numbers:	53
Mean (Average):	1.64151
Variance(Standard deviation):	0.2344
Standard deviation:	0.48415
Population Standard deviation:	0.47956
Variance(Population Standard deviation):	0.22998

13. Chiefs

Total Numbers:	14
Mean (Average):	1.35714
Variance(Standard deviation):	0.24725
Standard deviation:	0.49725
Population Standard deviation:	0.47916
Variance(Population Standard deviation):	0.22959

13. NFR Totals

Total Numbers:	67
Mean (Average):	1.58209
Variance(Standard deviation):	0.24695
Standard deviation:	0.49694
Population Standard deviation:	0.49322
Variance(Population Standard deviation):	0.24326

14. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.27778
Variance(Standard deviation):	0.2044
Standard deviation:	0.45211
Population Standard deviation:	0.4479
Variance(Population Standard deviation):	0.20062

14. Chiefs

Total Numbers:	14
Mean (Average):	1.21429
Variance(Standard deviation):	0.18132
Standard deviation:	0.42582
Population Standard deviation:	0.41033
Variance(Population Standard deviation):	0.16837

14. NFR Total

Total Numbers:	68
Mean (Average):	1.26471
Variance(Standard deviation):	0.19754
Standard deviation:	0.44446
Population Standard deviation:	0.44118
Variance(Population Standard deviation):	0.19464

15. Lt./ Capts.

Total Numbers:	41
Mean (Average):	1.26829
Variance(Standard deviation):	0.25122
Standard deviation:	0.50122
Population Standard deviation:	0.49507
Variance(Population Standard deviation):	0.24509

15. Chiefs

Total Numbers:	11
Mean (Average):	1.27273
Variance(Standard deviation):	0.21818
Standard deviation:	0.4671
Population Standard deviation:	0.44536
Variance(Population Standard deviation):	0.19835

15. NFR Total

Total Numbers:	52
Mean (Average):	1.26923
Variance(Standard deviation):	0.23982
Standard deviation:	0.48971
Population Standard deviation:	0.48498
Variance(Population Standard deviation):	0.23521

16. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.57407
Variance(Standard deviation):	0.43781
Standard deviation:	0.66167
Population Standard deviation:	0.65551
Variance(Population Standard deviation):	0.4297

16. Chiefs

Total Numbers:	14
Mean (Average):	1.42857
Variance(Standard deviation):	0.72527
Standard deviation:	0.85163
Population Standard deviation:	0.82065
Variance(Population Standard deviation):	0.67347

16. NFR Totals

Total Numbers:	68
Mean (Average):	1.54412
Variance(Standard deviation):	0.49056
Standard deviation:	0.7004
Population Standard deviation:	0.69523
Variance(Population Standard deviation):	0.48335

17. Lt./Capts.

Total Numbers:	53
Mean (Average):	2.16981
Variance(Standard deviation):	0.45138
Standard deviation:	0.67185
Population Standard deviation:	0.66548
Variance(Population Standard deviation):	0.44286

17. Chiefs

Total Numbers:	14
Mean (Average):	2.35714
Variance(Standard deviation):	0.55495
Standard deviation:	0.74495
Population Standard deviation:	0.71785
Variance(Population Standard deviation):	0.51531

17. NFR Total

Total Numbers:	67
Mean (Average):	2.20896
Variance(Standard deviation):	0.47083
Standard deviation:	0.68617
Population Standard deviation:	0.68103
Variance(Population Standard deviation):	0.4638

Cell Phones

2. Lt./Capts.

Total Numbers:	49
Mean (Average):	2.73469
Variance(Standard deviation):	0.44898
Standard deviation:	0.67006
Population Standard deviation:	0.66319
Variance(Population Standard deviation):	0.43982

2. Chiefs

Total Numbers:	14
Mean (Average):	2
Variance(Standard deviation):	0.92308
Standard deviation:	0.96077
Population Standard deviation:	0.92582
Variance(Population Standard deviation):	0.85714

2. NFR Total

Total Numbers:	68
Mean (Average):	2.60294
Variance(Standard deviation):	0.60119
Standard deviation:	0.77536
Population Standard deviation:	0.76964
Variance(Population Standard deviation):	0.59234

3. Lt./Capts.

Total Numbers:	53
Mean (Average):	1.67925
Variance(Standard deviation):	0.22206
Standard deviation:	0.47123
Population Standard deviation:	0.46677
Variance(Population Standard deviation):	0.21787

3. Chiefs

Total Numbers:	14
Mean (Average):	1.07143
Variance(Standard deviation):	0.07143
Standard deviation:	0.26726
Population Standard deviation:	0.25754
Variance(Population Standard deviation):	0.06633

3. NFR Totals

Total Numbers:	67
Mean (Average):	1.55224
Variance(Standard deviation):	0.25102
Standard deviation:	0.50102
Population Standard deviation:	0.49726
Variance(Population Standard deviation):	0.24727

4. Lt./Capts.

Total Numbers:	55
Mean (Average):	1.34545
Variance(Standard deviation):	0.30438
Standard deviation:	0.5517
Population Standard deviation:	0.54667
Variance(Population Standard deviation):	0.29884

4. Chiefs

Total Numbers:	14
Mean (Average):	1.57143
Variance(Standard deviation):	0.41758
Standard deviation:	0.64621
Population Standard deviation:	0.6227
Variance(Population Standard deviation):	0.38776

4. NFR Totals

Total Numbers:	69
Mean (Average):	1.3913
Variance(Standard deviation):	0.32992
Standard deviation:	0.57439
Population Standard deviation:	0.57021
Variance(Population Standard deviation):	0.32514

5. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.22222
Variance(Standard deviation):	0.1761
Standard deviation:	0.41964
Population Standard deviation:	0.41574
Variance(Population Standard deviation):	0.17284

5. Chiefs

Total Numbers:	14
Mean (Average):	1.28571
Variance(Standard deviation):	0.21978
Standard deviation:	0.46881
Population Standard deviation:	0.45175
Variance(Population Standard deviation):	0.20408

5. NFR Totals

Total Numbers:	68
Mean (Average):	1.23529
Variance(Standard deviation):	0.18262
Standard deviation:	0.42734
Population Standard deviation:	0.42418
Variance(Population Standard deviation):	0.17993

6. Lt./Capts

Total Numbers:	54
Mean (Average):	1.44444
Variance(Standard deviation):	0.32704
Standard deviation:	0.57188
Population Standard deviation:	0.56656
Variance(Population Standard deviation):	0.32099

6. Chiefs

Total Numbers:	14
Mean (Average):	1.28571
Variance(Standard deviation):	0.21978
Standard deviation:	0.46881
Population Standard deviation:	0.45175
Variance(Population Standard deviation):	0.20408

6. NFR Totals

Total Numbers:	68
Mean (Average):	1.41176
Variance(Standard deviation):	0.30553
Standard deviation:	0.55275
Population Standard deviation:	0.54867
Variance(Population Standard deviation):	0.30104

7. Lt./Capt.

Total Numbers:	54
Mean (Average):	1.2963
Variance(Standard deviation):	0.21244
Standard deviation:	0.46091
Population Standard deviation:	0.45662
Variance(Population Standard deviation):	0.2085

7. Chiefs

Total Numbers:	14
Mean (Average):	1.42857
Variance(Standard deviation):	0.26374
Standard deviation:	0.51355
Population Standard deviation:	0.49487
Variance(Population Standard deviation):	0.2449

7. NFR Totals

Total Numbers:	68
Mean (Average):	1.32353
Variance(Standard deviation):	0.22212
Standard deviation:	0.4713
Population Standard deviation:	0.46782
Variance(Population Standard deviation):	0.21886

8. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.38889
Variance(Standard deviation):	0.24214
Standard deviation:	0.49208
Population Standard deviation:	0.4875
Variance(Population Standard deviation):	0.23765

8. Chiefs

Total Numbers:	14
Mean (Average):	1.14286
Variance(Standard deviation):	0.13187
Standard deviation:	0.36314
Population Standard deviation:	0.34993
Variance(Population Standard deviation):	0.12245

8. NFR Totals

Total Numbers:	68
Mean (Average):	1.33824
Variance(Standard deviation):	0.22717
Standard deviation:	0.47663
Population Standard deviation:	0.47311
Variance(Population Standard deviation):	0.22383

9. Lt./Capts.

Total Numbers:	53
Mean (Average):	1.88679
Variance(Standard deviation):	0.79463
Standard deviation:	0.89142
Population Standard deviation:	0.88297
Variance(Population Standard deviation):	0.77964

9. Chiefs

Total Numbers:	14
Mean (Average):	2.57143
Variance(Standard deviation):	0.72527
Standard deviation:	0.85163
Population Standard deviation:	0.82065
Variance(Population Standard deviation):	0.67347

9. NFR Total

Total Numbers:	67
Mean (Average):	2.02985
Variance(Standard deviation):	0.84758
Standard deviation:	0.92064
Population Standard deviation:	0.91374
Variance(Population Standard deviation):	0.83493

10. Lt./Capts.

Total Numbers:	55
Mean (Average):	1.38182
Variance(Standard deviation):	0.49966
Standard deviation:	0.70687
Population Standard deviation:	0.70041
Variance(Population Standard deviation):	0.49058

10. Chiefs

Total Numbers:	14
Mean (Average):	1.85714
Variance(Standard deviation):	0.59341
Standard deviation:	0.77033
Population Standard deviation:	0.74231
Variance(Population Standard deviation):	0.55102

10. NFR Totals

Total Numbers:	69
Mean (Average):	1.47826
Variance(Standard deviation):	0.54731
Standard deviation:	0.73981
Population Standard deviation:	0.73443
Variance(Population Standard deviation):	0.53938

11. Lt./Capts.

Total Numbers:	55
Mean (Average):	1.43636
Variance(Standard deviation):	0.32458
Standard deviation:	0.56972
Population Standard deviation:	0.56452
Variance(Population Standard deviation):	0.31868

11. Chiefs

Total Numbers:	14
Mean (Average):	1.85714
Variance(Standard deviation):	0.28571
Standard deviation:	0.53452
Population Standard deviation:	0.51508
Variance(Population Standard deviation):	0.26531

11. NFR Totals

Total Numbers:	69
Mean (Average):	1.52174
Variance(Standard deviation):	0.34143
Standard deviation:	0.58432
Population Standard deviation:	0.58007
Variance(Population Standard deviation):	0.33648

12. Lt./Capts.

Total Numbers:	52
Mean (Average):	1.44231
Variance(Standard deviation):	0.32994
Standard deviation:	0.5744
Population Standard deviation:	0.56885
Variance(Population Standard deviation):	0.32359

12. Chiefs

Total Numbers:	14
Mean (Average):	1.92857
Variance(Standard deviation):	0.37912
Standard deviation:	0.61573
Population Standard deviation:	0.59333
Variance(Population Standard deviation):	0.35204

12. NFR Totals

Total Numbers:	66
Mean (Average):	1.54545
Variance(Standard deviation):	0.37483
Standard deviation:	0.61223
Population Standard deviation:	0.60757
Variance(Population Standard deviation):	0.36915

13. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.77778
Variance(Standard deviation):	0.25157
Standard deviation:	0.50157
Population Standard deviation:	0.4969
Variance(Population Standard deviation):	0.24691

13. Chiefs

Total Numbers:	14
Mean (Average):	1.35714
Variance(Standard deviation):	0.24725
Standard deviation:	0.49725
Population Standard deviation:	0.47916
Variance(Population Standard deviation):	0.22959

13. NFR Totals

Total Numbers:	68
Mean (Average):	1.69118
Variance(Standard deviation):	0.27634
Standard deviation:	0.52568
Population Standard deviation:	0.5218
Variance(Population Standard deviation):	0.27228

14. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.51852
Variance(Standard deviation):	0.32984
Standard deviation:	0.57432
Population Standard deviation:	0.56897
Variance(Population Standard deviation):	0.32373

14. Chiefs

Total Numbers:	14
Mean (Average):	1.14286
Variance(Standard deviation):	0.13187
Standard deviation:	0.36314
Population Standard deviation:	0.34993
Variance(Population Standard deviation):	0.12245

14. NFR Totals

Total Numbers:	68
Mean (Average):	1.44118
Variance(Standard deviation):	0.30992
Standard deviation:	0.55671
Population Standard deviation:	0.5526
Variance(Population Standard deviation):	0.30536

15. Lt./Capts.

Total Numbers:	54
Mean (Average):	2.22222
Variance(Standard deviation):	0.51572
Standard deviation:	0.71814
Population Standard deviation:	0.71146
Variance(Population Standard deviation):	0.50617

15. Chiefs

Total Numbers:	14
Mean (Average):	2.42857
Variance(Standard deviation):	0.41758
Standard deviation:	0.64621
Population Standard deviation:	0.6227
Variance(Population Standard deviation):	0.38776

15. NFR Totals

Total Numbers:	68
Mean (Average):	2.26471
Variance(Standard deviation):	0.49605
Standard deviation:	0.70431
Population Standard deviation:	0.69911
Variance(Population Standard deviation):	0.48875

Information Overload

1. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.40741
Variance(Standard deviation):	0.24598
Standard deviation:	0.49597
Population Standard deviation:	0.49135
Variance(Population Standard deviation):	0.24143

1. Chiefs

Total Numbers:	14
Mean (Average):	1.07143
Variance(Standard deviation):	0.07143
Standard deviation:	0.26726
Population Standard deviation:	0.25754
Variance(Population Standard deviation):	0.06633

1. NFR Totals

Total Numbers:	68
Mean (Average):	1.33824
Variance(Standard deviation):	0.22717
Standard deviation:	0.47663
Population Standard deviation:	0.47311
Variance(Population Standard deviation):	0.22383

2. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.53704
Variance(Standard deviation):	0.25332
Standard deviation:	0.50331
Population Standard deviation:	0.49863
Variance(Population Standard deviation):	0.24863

2. Chiefs

Total Numbers:	14
Mean (Average):	1.21429
Variance(Standard deviation):	0.18132
Standard deviation:	0.42582
Population Standard deviation:	0.41033
Variance(Population Standard deviation):	0.16837

2. NFR Totals

Total Numbers:	68
Mean (Average):	1.47059
Variance(Standard deviation):	0.25285
Standard deviation:	0.50285
Population Standard deviation:	0.49913
Variance(Population Standard deviation):	0.24913

3. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.53704
Variance(Standard deviation):	0.442
Standard deviation:	0.66483
Population Standard deviation:	0.65865
Variance(Population Standard deviation):	0.43381

3. Chiefs

Total Numbers:	14
Mean (Average):	2.14286
Variance(Standard deviation):	0.74725
Standard deviation:	0.86444
Population Standard deviation:	0.83299
Variance(Population Standard deviation):	0.69388

3. NFR Totals

Total Numbers:	68
Mean (Average):	1.66176
Variance(Standard deviation):	0.55553
Standard deviation:	0.74534
Population Standard deviation:	0.73984
Variance(Population Standard deviation):	0.54736

4. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.59259
Variance(Standard deviation):	0.54787
Standard deviation:	0.74018
Population Standard deviation:	0.7333
Variance(Population Standard deviation):	0.53772

4. Chiefs

Total Numbers:	14
Mean (Average):	1.92857
Variance(Standard deviation):	0.68681
Standard deviation:	0.82874
Population Standard deviation:	0.7986
Variance(Population Standard deviation):	0.63776

4. NFR Totals

Total Numbers:	68
Mean (Average):	1.66176
Variance(Standard deviation):	0.58538
Standard deviation:	0.7651
Population Standard deviation:	0.75946
Variance(Population Standard deviation):	0.57677

5. Lt./Capts.

Total Numbers:	54
Mean (Average):	1.2963
Variance(Standard deviation):	0.21244
Standard deviation:	0.46091
Population Standard deviation:	0.45662
Variance(Population Standard deviation):	0.2085

5. Chiefs

Total Numbers:	14
Mean (Average):	1.07143
Variance(Standard deviation):	0.07143
Standard deviation:	0.26726
Population Standard deviation:	0.25754
Variance(Population Standard deviation):	0.06633

5. NFR Totals

Total Numbers:	68
Mean (Average):	1.25
Variance(Standard deviation):	0.1903
Standard deviation:	0.43623
Population Standard deviation:	0.43301
Variance(Population Standard deviation):	0.1875

About The Author

Ronald Mann Jr. serves as a Lieutenant with Norfolk Fire Rescue. He has been with the department since 1996. Prior to his employment with Norfolk Fire Rescue, Lt. Mann was a police officer for two years with the City of Chesapeake. Lt. Mann received his Bachelor's of Science from Old Dominion University in 1992 and is currently pursuing a graduate degree from the University of Richmond.