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Government Rule Compliance, Safety, and the Influence of Regulation on Railroad Trainmen

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Operational testing of railroad trainmen on federal government safety rules is a daily occurrence on every railroad in the United States. This constant testing and resulting discipline distracts trainmen from the task at hand, causing a loss of focus which could lead to injury or accidents. Using the social construction framework, this research sought to gain an understanding of trainmen's perception on how operational testing impacts their workplace safety, as well as how they perceive the U.S. federal government influences regulation and discipline. This phenomenological study investigated a segment of railroad employees, the trainmen, because they are operationally tested more than other employees. A representative sample of trainmen (n = 20), managers (n = 7), retirees (n = 4), and U.S. federal government officials (n = 4) who oversee railroad safety, were interviewed using a semistructured interview protocol. The transcribed interviews were analyzed for patterns and trends of safety and testing outcomes. The software analysis provided frequencies of qualitative features in the participants' responses such as stressor words and fear of discipline. Government reports regarding incident rates across U.S. railroads demonstrated that private rail companies are about equal in their incident rates. Considering incidents occur equally, the interviewees indicated that some companies test more frequently than others. This study concluded that excessive operational testing does not positively impact safety nor reduce incidents, but creates a potential for distraction among trainmen. By taking the opinion of employees into consideration, railway managers can create a safer work environment, as well as a more coherent and less stressful workplace for their employees.

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Dedication

This is dedicated to all the men and women and their families, past and present, that work on the nation's railroads. It is through their dedication and sacrifice that allows this industry to remain strong and fundamental to the nation's economy.

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Chapter 1: Introduction to the Study

Introduction

Government regulation affects everyone, and the railroad industry is no exception. Interaction between the government and railroads spans over 150 years, through multiple wars, countless political changes, regulation, and subsequently deregulation. Railroad managers and the labor unions have often struggled to find common ground as it relates to government rule compliance, particularly discipline for noncompliance. The problem with discipline and how it is applied to railroad employees, specifically trainmen, appears to be found on almost every railroad in the United States, with safety and rule compliance being the motive. As much as both management and labor strive for safer working conditions, each group has a distinct approach, where management/government enforces discipline and fines, and labor feels as though such measures are not necessary for the professional railroader.

On September 12, 2008, a Metrolink passenger train crashed head on into a Union Pacific freight train, resulting in 25 deaths, 135 people injured, and millions of dollars in damages and lawsuits (Schwartz, 2008). The aftermath of this accident led to the creation of the Rail Safety and Improvement Act of 2008, which was approved on October 16, 2008, just 30 days afterwards. The expeditious passage of this law was due to the significant loss in life, as well as several other accidents that occurred since 2002. Positive Train Control (PTC) and other regulations stemming from this act forced the railroad industry to conduct frequent *efficiency tests*, which require observation of the employee for potential rule deviation. Typically, failing an efficiency test results in an

employee getting disciplined by means of being *fired,* which, in this industry, refers to a suspension from the railroad for 30, 60, or 90 days, for rule noncompliance.

Hovland (2013) argued that the railroad industry attempts to make the work environment safer for the worker and the public. The railroad industry and labor unions agreed that safety is paramount for worker security, but government "regulation is not the way to increase safety" (Hovland, 2013, p. 74). Hovland explains that "Regulation is the way to sap time and resources from railroads that could be spent more wisely" (p. 74). Hovland's research is reaffirmed by other research that mutual understanding and communication between government and industry plays an important role in rule creation for the railroad, and its absence is detrimental to safety (Sussman & Rasler, 2008; Stich & Miller, 2012). Disciplinary actions resulting from industry efforts to comply with government regulations have created strife and pushback among the labor force, and is apparent on most railroad properties (Personal communications, 2017; BLET, 2016). This situation reflects on the relationship between government, railroad management, and the workforce and begs the question: Does mandatory organizational compliance with federal regulation foster an environment of diminished safety awareness, lower moral, and ultimately place the railroad employee at a higher risk of accident and injury?

Interesting enough, the aviation and medical industry have both turned to incident self-reporting to reduce incidents and accidents in their respective industries. The success here has reduced incidents and accidents and improved safety thresholds for pilots and patients in these industries. Ancillary benefits of this program have resulted in improved management-labor relationships, improved communication, and higher morale (Nelms,

1995). Following the success of these programs, NASA has established a system of self-reporting for passenger and freight railroad industries called Confidential Close Call Reporting System (C3RS). However, the railroad freight industry has not embraced this system but instead has created a more disciplinary environment. This has resulted in low morale, poor communication between management and labor, and unexplained incident rate that persists in the railroad industry.

Background of the Study

The private rail industry, which is deregulated today, continues to be overseen by the Federal Railroad Administration (FRA). Most of the rules that railroads operate under originate in some form from incidents investigated by the FRA and the National Transportation Safety Board (NTSB). Scholars such as Sussman and Raslear (2008) reviewed the present research base on human factor incidents on the railroad within the United States and Canada. The authors discussed the critical issues concerning stressors that affect train crews. Stich and Miller (2012) extended this discussion and argued that the influence of government on railroad policy needs "a balanced normative grounding for railroad administration" (p. 602). Greiner, Krause, Ragland, and Fisher (1998) measured stressors in rail transit operators and concluded that multiple issues impact employee performance, one of which being stressful environments.

Many scholars have investigated the issues that surround safety, and how negative environments work to diminish cohesiveness of the workforce. Abbott and Freeth (2008) and Sussman and Raslear (2008) observed issues of trust and state that when trust has been earned, it should be reciprocated within the workplace. Reciprocation of trust would

improve the communication abilities and health of workers. Kath, Margley, and Marmet (2010) further elaborated on how trust and safety go together within organizational processes. Reinach and Gertler (2002) revealed important issues that surround worker safety and how government influences this area. Furthermore, von Dawans, Fischbacher, Kirschbaum, Fehr, and Heinrichs (2012) explained that stressful work conditions have been shown to negatively increase health issues in labor, which consequently places further demands on the health care system. The perpetuation of stressful environments allows for rail incidents to persist among railway workers.

The FRA, under the guidance of the NTSB, conducted studies that demonstrated a need for more defined rules and regulations in the rail industry. Research carried out by the U.S. Department of Labor (DOL, 2007) addressed these issues, highlighting many of the challenges that take place within the rail industry and the need to tackle critical issues, particularly safety. Liem and Mendiratta (2011) argued for the need for clear channels of communications within the railroad for added security. Bell's (1965) landmark study on the importance of labor's role in the rail industry remains overlooked. Pressured by management to perform flawlessly, some trainmen will inevitably be involved in some sort of rail related incident during their career. A U.S. Department of Transportation-FRA study looked at the human factors (i.e. situational awareness) behind incidents within railroad operations, which surround cognitive tasks of locomotive engineers (Drudi, 2007). However, as this study looked at past or ongoing issues, but the causes behind these incidents were not evaluated.

Each of these studies, as well as many others, have established the importance of safety to the welfare of railroad workers. However, what remains to be determined is how government interaction with private industry affects confidence. For instance, how are Western Region trainmen affected by the government's rules and regulations, and how is discipline for compliance and/or noncompliance dealt with by private railroad industry managers? If it can be determined that government has forged a pattern of discipline for the private sector that affects safety, then the government itself has created a larger problem that remains to be resolved.

Strife and antagonism in the railroad industry remains a constant reminder of how a lack of communication or understanding can create an imbalance in the labor environment. Away from the railroad, managers and their subordinates often mingle and socialize with one another at community events, golf tournaments, as well as social gatherings. The caveat here is that organizational culture and communication on railroad property appears to be the primary impetus for discord. As a matter of course, it remained to be seen if all railroad terminals and their staff feel the same way. Personal observations following visits to railroad terminals demonstrated a recurring theme of resentment and hostility at many terminals. Employees from both the union crafts and management acknowledged the atmosphere of antagonism on the railroad (Reinach & Gertler, 2002). Thus, the question that remained was how and why this comes to pass and what effect does this have on the safety of railroad personnel?

Problem Statement

Although the aforementioned research regarding discipline illuminates important findings, I have found no research examining how rule testing and discipline directly affect safety thresholds with railroad conductors**.** Further research was therefore warranted to examine government-required rule compliance testing and resultant discipline impacting railroad employee safety. Gaps in the literature led to several questions and concerns for rail workers, one of which was how frequent testing practices may unconsciously lead to rule noncompliance or to potential incidents or accidents in which fatigued employees can suffer severe injury due to diminished focus and concentration. Potential instances of *fatigue-induced noncompliance* linked to distraction resulting from the presence of the testing manager, and not the task at hand, were of concern; however, this is not known as researchers have not fully investigated such instances.

Organizational communication between management and labor within the railroad is often limited without reason. Sussman and Raslear (2008) noted that an absence of communication is not uncommon within the transportation sector, but there needs to be detailed communication between the principal actors in the industry. This implies that the absence of trust reduces opportunities for effective teamwork. Inadequate communication between railroad labor and management also degrades the public's assurance in the quality of safety measures the industry implements (as required by federal law), and such elements do not foster a safe work atmosphere for all involved. Accordingly, the increase

of disciplinary actions on the railroad operator (i.e. trainmen and engineer) may have the potential to decrease safety margins in the railroad industry.

According to Greiner et al. (1998), stressful working conditions lead to more incidents and to increased loss of time at work. These conditions highlight the importance of social capital and of safety nurturing environments, and therefore the need for a study that supports a better understanding of the conditions in which railroad workers operate. Without such an investigation, the reasons that railroad employees have human factors incidents that lead to unsafe work environments remain unclear. Therefore, in this study, I sought a greater understanding of the impact of government authorized discipline on railroad employees and thus on safety. The significance of this study is that the railroads transport a considerable amount of goods in the United States, including the majority of hazardous material, making employee wellbeing and safety of high importance to communities across the countries.

Purpose of the Study

The purpose of this phenomenological study was to discover how federal rules and regulations influence the private rail industry in the testing and discipline of railroad trainmen and to improve their safety. At present, many trainmen feel antagonism towards their testing managers, due to their rule testing method of federal regulations and subsequent discipline, according to on-sight observations. This decrease in confidence has demonstrated increased stress and directly effects safety thresholds with trainmen. Therefore, the central phenomenon I addressed in this study was how the safety of Western Region trainmen is affected, and to explore how the testing methods employed

by management correlate to the federal government's intervention in private industry. For the purpose of this investigation, questions were focused on understanding how employees experience safety challenges in their daily work.

In this phenomenological project, I conducted interviews with Western Region trainmen. The qualitative data from the interviews were coded and categorized by themes, then compared for patterns that revealed if ongoing policy processes induce stressors on the job, and how this affects safety. Data analysis demonstrated replicating patterns of discipline that resulted in stressful conditions within the railroad safety culture, decreasing the element of trust. I also included input from middle management to identify operating objectives. Consequently, I found that government regulations had the potential to aggravate these conditions and played a significant role in the railroad worker's confidence in the system. Finally, any element that can enable social change within an industry such as the railroad, is important. Improving safety and the well-being of those who labor in this environment, will be beneficial to the railroaders', their families, and the community at large.

Research Questions

To synthesize the root cause of the issues trainmen dealt with on a daily basis, an earnest attempt was made to formulate questions that would directly address the problem. When I inquired with railroad trainmen concerning this issue, they argued that trust was the principal factor in the breakdown of the working relationship between them and management. However, few trainmen realized the influence that the federal government had on what the rail industry does. Gaining the point of view of the railroad employee by

means of interviewing them would help to explain the reasons for which these industry employees feel as they do. My main research question was as follows:

RQ: How is the Western Region trainman's perception of workplace safety impacted by the Federal government's role in regulation and discipline?

To help answer the principal research question, the following secondary questions (SQ) are provided:

SQ1: How do Western Region trainmen perceive government rule compliance as it pertains to their safety?

SQ2: What recommendations can be offered to improve safety and testing practices on the railroad?

Theoretical Framework

Understanding the connection between rule creation, compliance, and discipline can illuminate how trainmen perform on the job. Determining this perspective was critical to making the correlation between safety and job security. Much greater, however, was to determine how deeply rooted the perceptions of industry and governmental influences are in the minds of Western Region trainmen. Therefore, the theoretical foundation for this study, based on the social construction framework (SCF), would best explain how Western Region trainmen viewed their workplace safety, as well as how they perceived the influences of federal regulation and rule compliance in their work environment. It was essential to comprehend the views of trainmen on safety and how discipline played a role in their job security and morale.

Berger and Luckmann (1966) maintained that "reality is socially constructed . . . [and] man's consciousness is determined by his social being." These authors emphasized that what people encounter in their everyday lives forms the basis of their social outlook and environment. For example, if railroad workers are told that management's focus is on firing the employee and their observations support this, employees will be convinced that this is reality, despite what management's true intentions are. According to Cairney and Heikkila (2014), SCF allows the researcher to look at how the design in public policy affects specific groups. These authors inferred that policy aims to suit preferred groups.

Subsequently, other authors identified SCF as creating an understanding and framing of the social environment of where people work (Creswell, 2013; Guba & Lincoln, 1990; Patton, 2002). As such, I interviewed the study group, which consisted of men and women who labor as trainmen in the Western Region of the United States, to understand how they see their work setting. Once this worldview of the railroad was defined by those who experienced it daily, the social framework was outlined and explained so that the reader was better able understand this unique environment.

Historically many have argued that the railroad treats its workforce with contempt, hence the creation of the labor unions to protect the worker (The Brotherhood of Locomotive Engineers, 2013). Such disdain carries on today in the view from the management side, as it is believed by many managers and train dispatchers that the railroad employees attempt to stymie rail operations at every turn (Personal communications, 2017; The Brotherhood of Locomotive Engineers, 2013). One can argue that distrust of managers in this industry started years ago, but how can a mindset

that was forged over 100 years ago can still be alive and active today (The Brotherhood of Locomotive Engineers, 2013)? Therefore, it remained essential that this premise of antagonism between management and labor, and how this affects safety was explored and developed alongside of what the employee feels, because understanding both sides of the situation can create a whole picture of what is happening to safety in this industry.

Finally, whether it was to influence public policy or to improve profitability by reducing lost man-hours due to injuries or accidents, the railroad industry benefits from such regulation and discipline. As such, the disciplinarian strategy to design a safer work environment appears to be the motivating factor in safety in the railroad industry. However, as one interviewee stated, "too much safety can be as dangerous as no safety at all".

Nature of the Study

The nature of the study was to determine how the trainman described how safety is impacted by government intervention on the railroad. To this end, the study used a detailed qualitative method via interviews to obtain data, which allowed further understanding of this phenomenon. Maxwell (2014) postulated that research design has five basic components, consisting of the following;

1. Goals
2. Framework
3. Research questions
4. Methods, and
5. Validity (p. 4).

This research project entailed interviewing at least 10 Western Region trainmen with greater than 5 years of continuous service spanning from West Colton, CA to El Paso, TX in a convenience sample, using semistructured questions to allow them to explain their experience at work. The investigation followed Maxwell's (2014) research design. Convenience sampling was the best way to speak with employees and managers who work nonscheduled days off. In addition, at least five present or past managers of different levels of authority throughout the same region, also in a convenience sample.

Furthermore, I gathered information from retired personnel, as their unique insight shed light on multiple changes throughout their many years of service. Interviewing five railroad employees from different crafts, such as signal, car, and engineering departments helped evaluate the differences in testing impacts and saturation. Finally, interviewing officials from the FRA in Washington, D.C. and the Western Region helped provide much-needed information for this study. Identification and confidentiality was attained by giving selected interviewees a random identification number once their identity and working criteria had been verified. This master list is held only by me and will be destroyed within 5 years, in agreement with the Institutional Review Board (IRB). I coded the qualitative data from the interviews, categorized them by themes, and compared to patterns, revealing the ongoing processes that induce stressors on the job.

I chose the qualitative research method for this study because of the nature of the subject. Within railroads, asking the rank and file to describe their work environment was usually followed by declarations of negative sentiment. Such negative feeling ranged

from employees fearing that management is looking for any excuse to fire them, to suspicions of an untrusting nature. Using the quantitative method, a researcher can determine how many times employees felt bad, and possibly to what extent. Perhaps, this method could even allow the researcher to calculate the number of distinct causes of such feelings. However, understanding the quantities and the numerical value of such information does not necessarily lead to any substantial discovery of the source of these concerns. Moreover, one can make a significant case as to where this distrust originates solely based on the data. However, these discoveries would not lead the reader, much less the researcher, to any significant conclusions as to changes that need to be made in policy. Hence, the qualitative research methodology was the best approach for this study.

Qualitative studies entail lengthy observations by the researcher, taking him or her into the world itself that is being studied (Miles, Huberman, and Saldaña, 2014). Sometimes this means that the researcher participates in the actual day to day phenomenon, to garner a full understanding of exactly what is happening within the community being studied. Once the data is collected by the researcher on site, through interviews and observations, the information is recorded and analyzed. Principally, the scientist in this study attempts to create and identify patterns, thus bringing meaning and determining the theory that a phenomenon is based on, allowing the reader to better understand what is happening, and why the study was needed. Here are some other terms that need repetition. Saldaña (2011) argued that there are close to two dozen distinct varieties of qualitative methodology. For the purposes of this study, a phenomenological

analysis was applied, as the norms found within the railroad fraternity are common throughout the rail industry but not elsewhere.

Qualitative methodology allows the researcher to not only discover how many workers feel distressed but also why. Through this qualitative research I sought to capture the essence of the phenomenon as experienced by railroad operating personnel. These considerations are important, not only because the discovery might lead to policy changes, but also because these considerations might help the study participant understand his/her work environment better. Changing government policy, discipline protocol, and operational rules testing to create better and safer work environments is essential. However, contributing to a greater understanding of why one's work environment operates as it does, remains necessary for social change.

Definitions

Some of the key terms and concepts used in this study include the following:

Brakeman: A railroad trainman in work-train service or working a terminal switching job. This employee holds the least responsibility and is the number three employee on a terminal-yard job classifying rail cars.

Cab red zone: A state of conditions within the control cab of the locomotive that emphasizes complete attention to the operation of the train, including all associated directives and rules for the safe handling and movement during crucial moments.

Class I, II, III: Reinach and Gertler (2002) identified Class I railroad as the largest operating railroads in the United States, with income surpassing $450 million dollars of revenue, as established by the Surface Transportation Board (STB). *Class II* railroads

earn between $450 million but no less than 37.4 million. Finally, *Class III* railroads earn less than $37.5 million dollars.

Foot-board yard master: A railroad trainman acting as the lead-man or head of a terminal switching job.

Fired: The temporary removal of a railroad employee from active service for a period of 30 to 180 days, as per FRA rules, following an incident, investigation, and subsequent disciplinary action.

Hours of service: A term used on the railroad, as established by the U.S. Department of Transportation, identifying the expiration of the 12th hour of activity.

Job insurance: Unique to the railroad environment, this insurance provides supplemental income to the railroader while in *fired* status. Such income protection does not apply to cases of insubordination or failing a drug/alcohol screening (*Rule G*).

Positive train control (PTC): A rail safety system mandated by the federal government to prevent head-on collisions, consisting of train dispatching control, trackside monitoring, and locomotive installed software.

Remote-control operator (RCO): A trainmen called to work an RCO job in terminal to classify rail cars.

Rule G: The barring of drug and alcohol use by operating railroad employees. The railroads maintain ongoing vigilance of drug and alcohol use through random tests of on-duty employees. Even though this rule has been known for greater than 80 years on the railroad, random drug and alcohol tests became required of train crews after the 1987 Maryland-Conrail crash, in which drug use by a Conrail locomotive engineer was a

contributing factor. The Department of Transportation (1991) implemented this testing for all freight and transportation services that work under DOT regulations.

Switchman: A trainman working in the terminal classifying rail cars, also the number two employee of responsibility on a three-man job.

Switching operations: How railroad employees (switchman) classify cars in rail yards (Reinach & Gertler, 2002).

Terminal: Location where train crews receive, classify, and build trains (also known as *rail classification yard* or *depot*).

Terminated: This term signifies the permanent end of employment of the railroad employee, as opposed to *fired.*

Trainman: A railroad employee who can hold various titles such as *brakeman*, *foot-board yard master, remote-control operator (RCO), switchman,* or *trainman* depending on the assignment of his or her *covered service*.

Assumptions

It is presumed, that the federal government, in order to safeguard the public from reckless rail operations, must create rules and impose discipline that will discourage railroads and their employees from acting irresponsibly. Laws and regulations that guide railroads to test their employees might be influenced by the railroads themselves. There were assumptions that the major railroads, could implement rules that govern employee's actions while on duty, such as the prohibition of the use of electronic devices. The railroads themselves had no documented incidents of accidents due to cell phone use, yet when the Metro-link commuter train crashed into a Union Pacific freight train, cell

phones were banned on all railroads. This rule/law might be a knee-jerk reaction by the government, but also, a useful tool for freight railroads.

The example below demonstrates how the railroads prohibit the use of cell phones within their general operating rules. This rule is backed by the FRA's Emergency Order (EO) No. 48, and prohibits the following:

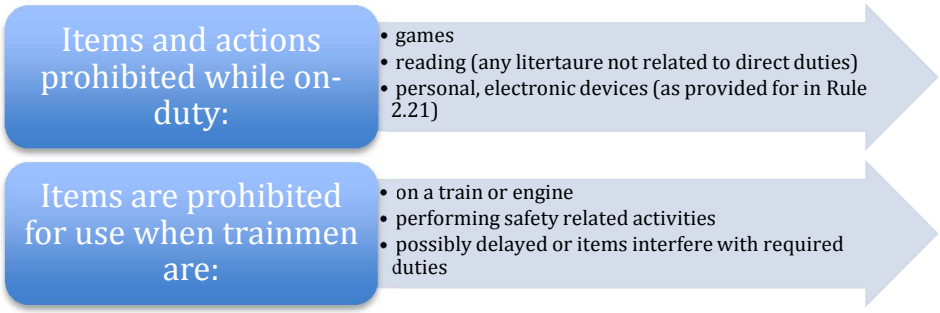


Figure 1. General Code of Operating Rules 2.21.

The railroad rule demonstrated above, attempts to eliminate distractions caused by the use of electronic devices. Since the MetroLink commuter crash, FRA's EO will make the use of cell phones a federal offense. Here again, it is presumed that the federal government influences operational testing of train crews. The fines assessed to the railroad and their employees for circumventing these laws, are considered by many in the industry, exorbitant.

Scope and Delimitations

Simon (2011) interprets delimitations as "those characteristics that limit the scope and define the boundaries of your study" (p. 2). Therefore, what a researcher decides to study and why, are the delimitations of the study. This study looked at how government rules and regulation affect railroad trainmen in the execution of their jobs. Attempting to

understand what was happening in today's freight railroads is essential to preventing potential incidents and accidents, and improve safety.

Interviewing railroad crew members, managers, and government officials yielded a clearer view of what exactly was the cause/effect of public policy in the rail industry. However, not all railroad employees were interviewed. Locomotive engineers, who work directly with trainmen, cannot be readily observed by most managers. The engineering and signal department employees who work individually, or in groups, principally performing maintenance were included to offer opposing viewpoints of their feelings on being tested by their managers. The trainmen, that classify railcars at terminals, perform multiple tasks on work-trains, and road freight trainmen functioning across the system are under constant scrutiny. This employee grouping of trainmen is the most observable, and has the greatest potential incidents since their duties are so diverse. Given this theoretical framework, how the trainmen operate, as well as their various environments, their social constructs provided this study with abundant examples of how they feel about their work and those that test them periodically.

Limitations

A limitation in this study was that there are over 40,000 trainmen in the U.S., according to the Department of Labor (2014), working for railroads across the country; thus, getting feedback from even a portion of this labor force is extremely difficult and beyond the scope of this project. Railroads big and small must adhere to federal guidelines; however, smaller rail lines might not handle hazardous material or classify many cars as often or in such quantities as the larger Class I railroads. Such lines, might

not test their employees with the same frequency as the larger lines do, or may even have a different discipline procedure than the larger Class I railroads' which move much of freight within the U.S. This being the case, these smaller railroads constitute only a small percentage of the trainmen operating on railroads, and subsequently their impact is minimal but equally significant.

The results of this study, and the methodology used herein, might not be transferrable to Class II or Class III railroads or those found in other countries due to size and differing regulations. Consequently, bias was addressed, as some may view that personal experience allowed me to compare the pros and cons of different departments, for instance. Having worked in management and in the engineering department, I felt that those areas are sparsely observed and tested, as opposed to the operating and transportation department, where trainmen fall under.

Overall, all units are tested, but not equally. Social constructs of the environments of the engineering or operating departments are distinct, but not uncommon to operational time periods they share with the transportation department trainmen. Therefore, describing my background and intentions helped address potential bias. Finally, it was not the intention of this study to criticize, demean, or marginalize government policy or railroad management procedure. This study only intended to determine if policy, and the subsequent testing of rules, caused safety issues in this industry.

Significance of the Study

The significance of the study was to increase awareness of how government can influence trust and safety through its actions (and communications) to personnel in the railroad industry. As it stands now, there is a general belief that employees do not trust management; consequently, safety issues, communication, absenteeism, and health problems may be influenced by this lack of confidence (personal communications, 2017; BLET, 2016).

Rulemaking should not come at a personal cost to those who are affected by it but rather improve their lives and keep them safe. Presently, some rules and laws enforced by the FRA, and overseen by railroad managers, are creating potential hazards for those who must adhere to these rules (Hovland, 2013). Risks occur when the individual rail employee begins to focus more on whether he/she is being tested than on the task at hand (Sussman & Rasler, 2008; Stich & Miller, 2012). If the government took this into consideration when making rules/laws, direct social change within the rail industry would assuredly ensue (Sussman & Rasler, 2008; Stich & Miller, 2012). Finally, the objective of this research was to increase the knowledge and understanding of the scope of government's influence within the railroad system.

Significance to Practice

A potential that this study has to current rulemaking is that a report, based on government findings, can be created to address the potential issues with those that will be directly affected by the rule. For example, some agencies (e.g., Forest Service) conduct studies when the environment is disturbed by actions such as the allowance of mining

permits. The government can complete a quantitative or qualitative review to consider how railroad companies and their employees will be affected. Such studies can be overseen by the American Association of Railroads (AAR) for example, which represents the industry before government, and can be carried out with the help of the labor unions that represent the employees, and even the industry players themselves.

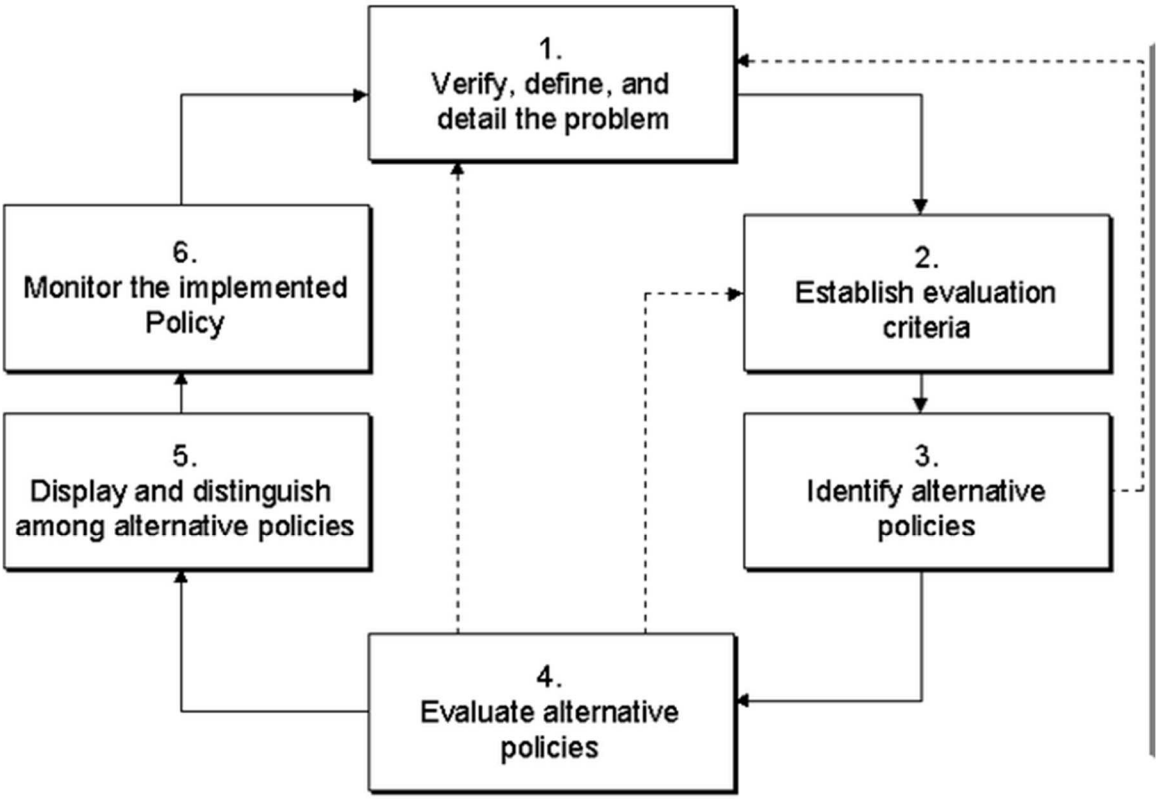
Considering the toll, a new rule or law might have a significant effect on those it regulates; better acceptance of a rule, not to mention fine-tuning of the rule itself has positive value. Railroad companies can readily see the advantages here. If the industry and the unions support the new changes, greater adherence and less animosity between industry actors might occur. If the represented parties can discuss potential issues with rules, a greater understanding of the rule/law will be transmitted to the railroad employees. This dissemination of information helps not only to make the workplace safer but also to educate the employees who will work under these rules.

Significance to Theory

The intent of this study was to acknowledge that government influences industry through their rulemaking. Much has been written about how communications, stress, and fatigue in the railroad industry are contributing factors in accidents and incidents on the rail system. However, research on the effect of government policy on how railroads implement discipline, and the subsequent outcome on the Western Region trainmen, was missing. By observing this group of employees, researchers can take these results and compare incident rates and employee sentiment across the nation. Therefore, by observing trainmen, as well as looking at the effect government has on the rail industry,

employee/management testing, and the disciplinary process, a greater view of how three actions are correlated.

In theory, wherever a class of citizen is included when addressing change, laws tend to be more readily accepted. Sometimes factors that are never considered by the rule maker are significant enough to cause irreparable damage to those affected. Had the law maker obtained input from the field, no significant impact would be felt by the recipient (University of Oregon, 2003).



Therefore, by taking into consideration the Western Region trainmen in proposed rule changes, a greater acceptance, but more importantly, a safer industry to work in would likely be the result. In many cases, the government seems to be doing this very

action, but since there have been no studies as to the effect of government regulation on trainmen, this practice was unknown in the railroad industry today.

Significance to Social Change

Scholars, professionals, and experts in the railway field often discuss ongoing necessities in the form of laws or rules that protect the citizenry and the railroad worker. The U.S. Congress and the Senate hear the recommendations provided by the NTSB, government agencies, such as the FRA, and provides the rail industry rules and regulations to follow. These rules, however, come at a cost that is often never contemplated (Hovland, 2013). The outcome of these expenses, whether monetary or emotional, is never discussed. This study intended to highlight the cause and effect that is often overlooked when government imposes its rules and regulations for the rail industry.

The implications for creating social change stemmed from the need to work with the government and industry to review its disciplinary measures, and introduce a better training program for those employees at risk of a rule's infraction. Meanwhile, the creation of a safe work environment that both labor and management agree upon was the intended outcome here. It was anticipated that better communications would lead to a safer work environment and improve the lives of railroad workers. When such costs of rulemaking are considered, the rule/law itself can be reconsidered, which may not only lessen its effect on those individuals who are affected by the rule or law, but also allow for fine tuning by lawmakers in Washington, D.C.

Summary

Communication and understanding are vital to the creation of effective rules or laws. The federal government, while attempting to develop a safer environment for the public, may have contributed to a distrustful work environment for the trainmen in the rail industry. Defining rules and regulations in the rail sector is complex, and sometimes confusing due to seemingly reactionary and frequent changes. Nevertheless, rules can be established more effectively by including input from all parties within the industry, especially those who work in the field and are directly affected by those rules.

The rail industry management team is often forced into testing for federal rules that seem unnecessary or too complicated. The government, the rail industry, and the unions that represent the railroad employees need to collaborate on the development of laws that govern this industry in order to improve safety, which is vital for the welfare and security of the men and woman who work around the clock in the rail industry today. It was hoped that this phenomenological study could determine whether federal standards and regulations, and the process of their creation, substantially influences the private rail industry.

Qualitative data collected for this phenomenological study, once coded and categorized, may create a better understanding of the interactions between government and those who labor in the rail industry. SCF allowed me to identify the burdens placed on the Western Region trainmen in order to create awareness and directly influence the safety of the employees that work in a very hazardous environment.

Managers were often forced into participating in the enforcement of rules that they believe are not essential, or created without input from those who know and understand this industry the best. Moreover, many railroads have managers that have no experience working as trainman, and yet are required to test individuals in their work environment without prior knowledge of how they work. The interviews and data interpretation provided herein can become a vehicle to coordinate better the creation of laws that would fulfill the government's intent of protecting the public.

In Chapter 2, I provide a comprehensive review the previously mentioned research done in the rail industry, including studies, journal articles, and textbook sections. This literature review will help explain some of the many components that make up the rail industry.

Chapter 2: Literature Review

Introduction

Today's railroad is an example of how modern technology and the transportation industry can work concurrently to provide world class service to the nation. The most significant contribution of this 150-year old rail industry is how much freight it can move across this nation with its low emissions and operating costs. The companies that operate these freight lines are no longer regulated by the federal government, yet they are still governed by their rules and regulations. This officiousness, in the form of Title 49 and Code of Federal Regulations 240/242, guides the men and women within this industry. It is the interaction between government and the private rail industry, and the effects of such that set the trajectory of this investigation. Principally, how the FRA requires testing and compliance by the railroads, and how these tests and observance of these rules have potential to cause safety issues with railroad operating employees.

This literature review focuses on the railroad's history, how the government, railroad companies, and the worker themselves have shaped the current level of safety. I provided an overview of the railroad, which includes a brief history of safety on the railroads and the contributing factors to safety, such as fatigue and injury. Safety critical issues discussed are highlighted by the collaborative demands on the railroad employee and their safety behavior. Human factor incidents, a major cause of incidents on the railroad, are explained, along with their causation. Finally, stressors that result in conflict between the government, railroads, and the worker within their environment are discussed. These studies help to magnify an understanding of what is happening on the

railroad, but none address the question of how government rule compliance influences safety issues with their regulations.

Literature Search Strategy

To tackle the topic of safety on the railroad, I began a review of the current literature through Walden University's online library database, through which I gained access to other databases that provided journal articles, court documents, and primary source material that I reviewed in preparation for this study. Google Scholar provided additional sources of information that I could not find through Walden's databases. I also referred to government websites to investigate rule explanations and creation, as well as documents describing the application of certain regulations. Government websites also provided the origins of each rule or law and how the agencies justify their presence in current railroad practice. In addition, I used LexisNexis (Lexis), a legal database containing court cases and proceedings dating back to the beginning of this country's legal system. These records were key to determining the emphasis of laws, as well as how justices ruled on cases and their commentaries. The insights provided by Lexis helped me understand the reasoning behind significant legal decisions.

Journal articles provided useful and relevant references. To locate adequate sources for this study, I determined key words or phrases that were applicable to the topic and subject matter of this investigation. For this study, it was important to include not only government resources, such as the FRA website and the Lexis legal database, but also articles on rail operations and the effects of rule violations on safety. Therefore, the principal terms used to generate Boolean searches were *railroad*, *trainmen*, *Federal*

Railroad Administration, and *railroad safety*. These terms enabled me to discover various sources and related items for each search term. For example, a search for *railroad* delivered multiple studies of rail operations, which includes passenger and freight service. Moreover, these articles included potential leads to other areas of interest I had not previously considered. For example, I searched for articles on *rail safety*, which then populated findings with articles on *locomotive ergonomics*. I had not previously entertained the subject of locomotive ergonomics, yet these articles showed how the ergonomic design of a locomotive cab can tremendously impact the fatigue of train crews which ultimately affects safety.

Fatigue was overlooked in my initial literature search, but I reconsidered its inclusion, as safety is a significant factor in rail operations and fatigue is a key factor in safety and rule compliance. Fatigue strongly determine how well train crews can function while performing their duties. Another term I encountered through searches for other terms was *crew scheduling*. Knowing when and where an employee will come to work is essential. When rail employees are unaware of their schedules, it leads to loss of sleep, personal time, and work-life balance, and ultimately antagonizes the workforce as management and employer appear inefficient.

Amongst the sources mentioned above, ProQuest and EbscoHost, were utilized extensively. Entering search criteria such as *railroad*, *rail transport*, *government*, *politics*, and *public policy* provided over 120 peer-reviewed journal articles, many of which I have included in this literature review as these articles postulated upon government

intervention within the rail industry. Many sources offered important information concerning government intervention in the private rail industry.

The data sources I selected provided the necessary access to background research and publications that focus on the issues that railroaders face in today's workplace. In the following sections, I provide details on this study's theoretical foundation. Then, I review the literature on the history and development of the railroad, how federal policies shaped railroad processes, the evolution of the role of management in the rail industry, the expansion of federal regulation requirements for testing railroad employees, and how policy is created and securitized by both industry and federal agencies. Additionally, this section discusses the personal impacts of management and regulations on trainmen in today's workforce.

The Social Construction Framework

As highlighted in the previous chapter, this study's theoretical foundation is based on SCF. Gergen (2004) stated that a human's view of his environment creates, or constructs, his knowledge as their reality. Through a person's interaction with others, his understanding of what comprises his environment is created. Historical accounts, such as stories from the past or those told by co-workers, contribute to man's construct of his circumstances. It is this interpretation that builds on people, and subsequently passed on to others, which typifies social construction. Understanding what people perceive through their eyes and experiences, helps the world gain a greater understanding of how people act and why.

Schneider (2005) argued that the social construction of one's environment is a product of society. He goes on to describe this by examining two previous research studies, conducted by Foucault and Berger & Luckmann, showing that how society is molded in one's mind depends on how the human subject assesses their surroundings. In consideration of this concept, I endeavored in this study to understand how Western Region trainmen feel about safety. Trainmen's sentiments regarding their safety is important, especially since management and the federal government mandate what is necessary for employees to do their jobs.

A great source of insight to their role on the railroad was gleaned through the trainmen's experiences and stories they collected from tenured colleagues. Through a socially constructed reality, inexperienced trainmen craft their identity through historical and personal accounts divulged by veteran trainmen. Whether positive or negative, such personal accounts shape how employees interpret their interactions with the management that supervises their daily work across railroad territories. Through this understanding of how trainmen interact on the railroad, the SCF is an appropriate theoretical foundation to guide this study.

Creswell (2013) postulated that social constructionism is how "*subjective meanings"* plays a large role in creating one's cognition of their environment (p. 24). He implied that perhaps one's past and upbringing can also influence how one dissects and interprets his feelings. The application of social constructionism in this study, allowed for questions to be posed to the participants that delved into and encouraged personal reflection on the trainmen's personal beliefs and observations, as well as how the

influences of co-workers impacted their individual understanding of the environment on the railroad.

Maxwell (2013) argued that the theoretical beliefs of research participants form social constructs that allow the researcher to gain a better understanding of the participants' environment. The reality of the participant can be formed through a multitude of conduits, as previously mentioned, and it is this perceived reality that alluded to the researcher how each participant viewed his world. Based on Maxwell's argument, there is a need for future research to critically examine all areas of participant testimonies to uncover clues and unifying links that connects all participants.

The research investigation discussed in this dissertation sought to connect participant experiences on the railroad, in order to gain an understanding of how trainmen interpret safety issues and regulations that impact their understanding of their work environment. The participants were encouraged to discuss their feelings and sentiments regarding the rules they must follow in the workplace. Consequently, how management deciphers the government's intent of their regulations, also shed light on how the industry holds the employee accountable for rule compliance.

Literature Review

The literature review highlights the obstacles and issues that train crews face daily. Many U.S. Supreme Court cases involving the railroad and their past practices, leads one to surmise that the industry needs oversight via federal governance (Harvard University, 2015). The rail industry, without restraint, has been known to determine what is best for its own survival not what is best for those who labor under its corporate flag or

the nation's citizenry, for that matter. Large industries within the United States cannot operate without feeling the effects of federal government regulation, and the railroad is no exception. This industry, which moves most of the nation's goods including large quantities of hazardous materials, feels the impact of government regulation directly through Title 49 and the Code of Federal Regulations 200 through 243 that oversee how train crews and the rail companies operate. Despite the leaps and bounds in technology, such as PTC and Computerized Traffic Control that has come to the railroad, the industry itself relies heavily on human interaction to operate trains. It is the impact of federal oversight on the railroad employee, the trainmen this study investigated. The FRA is the principle overseer of the men and women that work in the rail industry, alongside the industry's operation managers who supervise the safe practices of operating procedures.

Principal to government intervention it was important to discuss the history of safety on the railroad. I began this chapter with a historical discussion of the development of safety on the rails. After presenting the railroad's history of safety, I next presented how fatigue and injuries affect trainmen safety. This chapter concludes with a discussion of safety critical issues, human factor elements, and the stressors that are caused by rule compliance. This dissection of railroads, safety, human factors, and stressors on the railroad lead to a deeper understanding of how such elements impact the safety threshold of rail employees who are now subjected to frequent scrutiny and discipline.

Overview of the Railroad

Railroads have been around since 1810, using technology borrowed from England, a few American companies built short line railroads to transport heavy and

bulky goods to local refineries (Adrich, 2009). However, the industry gained a substantial foothold in transportation in 1826 with the creation of the Baltimore and Ohio Railroad. The Civil War era witnessed transportation companies push the government for longer rail lines and financing to reach across the nation. Some of the large companies created back then are still running today. In 1869 the nation was connected from coast to coast, but the industry saw hard times ahead as the nation recovered from the plight of the aftermath of the Civil War.

After the war, jobs were tight and the rail industry was growing, creating a cheap labor force needed for expansion. This affordable labor not only endured low wages but faced dangerous working conditions and aggressive management. Unions were formed to help labor overcome the distressed conditions, which only antagonized railroad owners. The railroads continued to shunt better working conditions until strikes and government intervention forced railroads to improve their practices (BLET, 2013). The industry eventually began to take notice that safer rail lines were more profitable and began to invest in safe practice methods on their property. Eventually, all the railroad, whether they wanted to or not, began standardizing their lines to survive and prosper. Railroads have come a long way since the first railroad line was built in 1810, but their focus between profit, productivity, and safety measures remain cloudy as to how rules and regulations should be enforced and complied with.

Today, railroads are much stronger financially than they were years ago. However, rule observance, testing, and discipline are at an all-time high. The results of these organizational changes have led to a greater reduction in accidents and incidents but

have also created another paradox. The paradox here occurs when the tested employee is set up for test failure through distractions and bad influence created by the railroad manager action and constant testing. Coplen and the Volpe Center (1999) studied railroad testing procedures and found that the increased testing frequency lead to unintended rule violations. Excessive emphasis of rule compliance, coupled with productivity goals "have created an organizational culture that unintentionally encourages operating rules violations" (Coplen & Center, 1999, p. viii). In addition, this study addresses a critical concern on how "senior management may influence unsafe work behavior by unintentionally encouraging operating rule violations . . . [by using] incentives to urge middle managers to improve productivity" (Coplen & Center, 1999, p. viii). The authors argued that such activity and influence perpetuate rule noncompliance during work events, which could possibly lead to accidents or incidents for the employee.

History of Safety on the Railroad

In the early days of railroading, safety was not the focus of this burgeoning industry. Focusing on industry advances in new techniques to improve profitability often left safety by the wayside, but the last century has brought more stringent regulations at a big cost to the rail industry. Aldrich (2009) goes on to explain that the railroads were extremely unsafe for both the railway worker and passengers alike, in the United States during 1800s, as opposed to Great Britain at the time. According to statistics between the two countries, the U.S. rail industry was attributed to 913 deaths between 1850 and 1852, with Great Britain having only 335 during the same time (Aldrich, 2009). During the mid to late 1800s, unendurable conditions existed for train crews, leading the formation of

train crew unions, which led to greater conflicts between management and labor (The Brotherhood of Locomotive Engineers, 2013). Again, safety rules and regulations were not a focus during this era, as many individuals who were disciplined and fired were replaced by inexperienced workers, which attributed to a greater number of accidents, because of this.

Table 1
Causes of Death on British and American Railroads, 1850-1852

	New York, *1850-1852				Great Britain, 1852			
Cause	Employee	Passenger	Other**	Total	Employee	Passenger	Other**	Total
Collision	23	26	0	49	12	0	0	12
Derailment	47	23	0	70	13	10	0	23
Run over**	53	0	406	459	91	0	86	177
Jump off/on	35	73	6	114	20	16	0	36
Fall from train	96	35	0	131	51	8	0	59
Other	67	20	3	90	28	0	0	28
Total	321	177	415	**913**	215	34	86	**335**

Note. Adapted from "Death rode the rails: American railroad accidents and safety 1828-1965," by Michael Aldrich. Copyright 2009 from Michael Aldrich. Other** (trespassers, bystanders.) Rates are per one hundred million train miles.

As the railroad industry grew so did the fatalities, "From 1900 to 1919 there were an average of 9,600 rail deaths per year, of whom 3,000 were rail employees…in 2004 there were 899 of which 25 were employees" (Sussman & Raslear, 2008 p. 152). Safety aside, many issues that faced rail crewmembers were employment assurances. Around the turn of the century, unions fought and won major concession that improved safety, and brought a standard of the work day we know today. Negotiation between railroads and labor during 1915-17 brought about the 8-hour/12-hour day, as opposed to their previous 16-18-hour day. The railroads previously had denied these concessions but had

to forfeit their pursuit in view of the Supreme Court ruling in, 243 U.S. 332, 1917 (The Brotherhood of Locomotive Engineers, 2013; Wilson v. New, 1917).

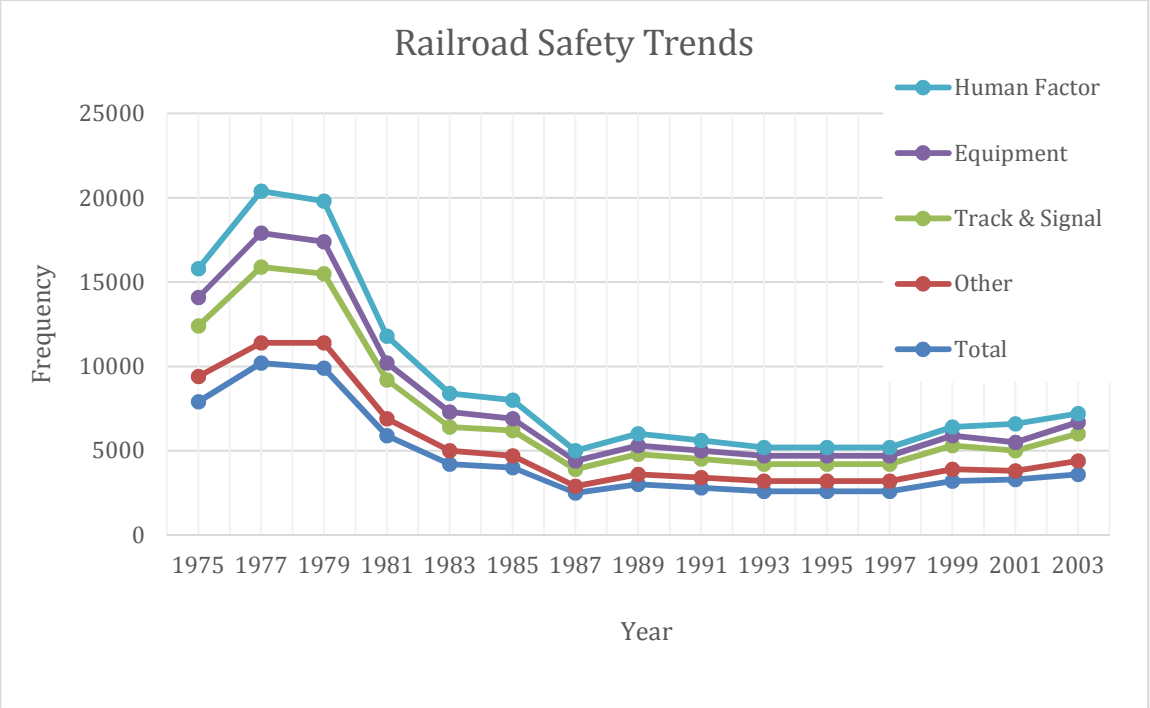


Figure 2. Railroad safety trends: Accidents by cause category. Adapted from "Railroad human factors. In D.A. Boehm-Davis (Ed.), *Reviews of human factors and ergonomics,"* by Sussman and Raslear. Copyright 2007 from Sussman and Raslear.

The big boost to train crew safety and equality came in 1926 with the enactment of the Railway Labor Act, later amended in 1934. This foundational piece of legislation created the National Labor Mediation Board (NLMB), the National Railroad Board of Adjustments (NRBA), and the Washington Job Protection Agreement (The Brotherhood of Locomotive Engineers, 2013). The principal item here was that unions were given an established path to negotiate wages and working conditions, which remained perilous at the time. Nevertheless, the rail carriers (aka the rail industry), continued to seek productivity over safety, and at the onset of the WWII, the rail unions called for strikes across the nation due to the deterioration of working conditions. The mid-1930's through

the 1960's saw greater development of laws that protected the employees, in addition to the way the management was poised in the rail industry. Many agreements came along during this time to avert railroad strikes and stoppages but none more prevalent than during the 1980s, which have formed today's railroad regulatory environment.

The 1980s saw the implementation of the FRA and the Staggers Rail Act, one creating the regulatory and safety agency that oversees railroad activity, with the latter that deregulated the entire rail industry (The Brotherhood of Locomotive Engineers, 2013). Both were monumental in that, for the first-time government created an agency to directly oversee safe-practices of the newly deregulated rail industry. This action, which still is in practice today, writes rules and regulation for the industry at the behest of the Senate and the NTSB.

In a safety study conducted by the FRA, in conjunction with Union Pacific Railroad, it was discovered that a reduction in safety incidents, accidents and injuries occurred when both labor and management worked together to address differences (Zuschlag et al., 2012). The pilot study named Clear Signal for Action (CSA) showed "an approximately 80 percent decrease in at-risk behavior…and an 81 percent decrease in the derailments and other incidents" (Zuschlag et al., 2012. pp. 3-4). Studies such as these demonstrate that there exist safety issues, and that collaborative efforts between government, management, and labor can reduce the potential for accidents and improve the lives of employees. When both management and labor understands what government requires of them a clearer path to rule compliance can be assured. However, the results of this study were only temporarily used in one railroad service unit, and were not

implemented throughout the entire railroad system. Unfortunately, nothing was done to further the results of these studies and injuries, accidents, and incidents continue to occur on the railroad industry.

In circumspect of the railroad's sordid history, the events substantiate that working conditions in this industry were in dire need of change, particularly concerning government intervention. The requirements by government for greater management oversight of the railroad employee, and the effects of the impetus of safety of the rail employees has left a trail of unanswered question. There was no mention of how required testing of regulation increases the critical issue of safety for the men and women who labor in the railroad industry. The rules and regulations that are written and implemented today to oversee the railroader are not done so with the input of those men and women who work in this industry. It is this very caveat that is being discussed within this paper, and how rules are created in the industry that affect railway workers without their input.

Fatigue Amongst Trainmen

Principal to the safety issue is the effect of fatigue of the railroad worker. Fatigue is a major concern for both government and industry, and one the needs to be addressed. However, addressing the issue today is a very difficult problem because you cannot accurately determine when a train will arrive at a terminal in a 9-to-5 shift. Trains arrive at railroad terminals around the clock, which means that railroad workers are on duty around the clock without cycled or regimented rest periods that can be counted on. Some large railroad companies experimented with rest cycles but determined that the cost of

having rail crews getting paid to stay home if their cycle pasted was costly and not worth further consideration, placing profit before safety.

The government and railroad both acknowledge difficulties in keeping train crews constantly alert throughout their 12-hour shifts (Reinach & Gertler, 2002). With numerous functions and rules to follow, trainmen sometimes overlook the most basic tasks that result in rule violations and more seriously, human factor incidents. These issues at large have caused tension and animosity between the working ranks and management, who are constantly required to test their employees. It remains important to be vigilant, and well-versed on the rules set forth by the government and the railroad. Consequently, the circumventions of government stipulated railroad regulations come at a financial and personal cost to the employee and the company. However, this often happens unknowingly, in the form of what this study labels *fatigue-induce noncompliance*.

The NTSB stated that fatigue is a leading cause of accidents and should be addressed, adding this to their priority list of needed actions (BLET, 2016). The BLET reported research on fatigue-induced accidents compiled by the NTSB and Transportation Safety Board of Canada (TSBC) showing that not enough has been done to thwart these occurrences, such as addressing the problem of schedule variability (BLET, 2016). The impacts that fatigue causes can be reduced through proper planning and research, “But research only goes so far; we must implement what we have learned”, and the TSBC argued that, “The initiatives taken to date have been inadequate to fully address the issue”

(BLET, 2016, p. 2). In the middle of the fatigue issue lays the testing procedures that take place hourly on the railroad, and complicate the issue of safety.

BLET vice-president J. P. Tolman (2016), argued in a hearing before the FRA that despite the addition and ongoing implementation of safety devices such as PTC, railroad crews still incur substantial fatigue. This fatigue is experienced due the railroads not having set hours of operation and defined work schedules. Sen. H. Heikamp (D-ND), and the executive director of the Louisiana Municipal Association concurred with Mr. Tolman as he stated that technology is no replacement for the human element and that, "The ability to mitigate…potential catastrophe simply [is not] possible with a single person working alone on a locomotive" (The Brotherhood of Locomotive Engineers, 2013, p. 1). The testimony continued to emphasize that the industry has insufficient crew data that supports one-man operation, and with irregular scheduling, commonplace in the industry, rail crews will always be experiencing substantial fatigue.

Coincidentally, the railroad argued that industry data had verified that only 1 in 4 accidents will be avoided using the latest technology such as PTC, and that the human element is essential to avoid the others (The Brotherhood of Locomotive Engineers, 2013; Stagl. J. 2012). Such testimony demonstrates the need for better support for rail crews and the issues that they deal with on a regular basis. However, despite this concern for the issue of fatigue, there remains an absence of a call for better testing practices that takes into consideration how government and industry will address the element of fatigue through efficiency testing.

In order "to ensure that all of the human factor integration plans and sets of guidelines and standards actually support rather than stifle the human-centered successful operation of the railways," management and those who make policy, whether it is government or industry, need to take into consideration the stakeholders involved (Wilson & Norris, 2005, p. 655). A study by Wilson and Norris (2005) focused on the effects of human factor incidents on the railroad, more importantly safety issues, while discussing their shortcomings. They argue that there is "a constant trade-off between safety, efficiency (embracing cost consideration), quality, and reliability of the service," but miss discussing how to improve or close the gap in their discovery (Wilson & Norris, 2005, p. 651). What is more incredible is Wilson and Norris's (2005) contention that many rail industry leaders believe that total safety with zero injuries is unrealistic in the industry without a substantial cost. Such beliefs demonstrate that the there is potential for the railroads to incorporate better practices as it pertains to rule compliance to improve the safety margin within their sphere of influence.

The issues of safety legislation and human factor incidents were followed up by Sussman and Raslear (2008) as they state, "The sheer number of [railroad] rules, however, maybe a threat to safety…as many rules overlap and conflict, which lead to poor compliance with the rule. This…has tended to make rules the focus of labor-management conflict rather than a means to communicate about safety" (p. 160). The command and control structure of the railroads must contend with "strong labor unions and active government regulation" that impede on the "return on investment, competition, and safety" (Sussman & Raslear, 2007, p. 149). The authors here argued that

the today's rail regulation is "prescriptive, and performance based…[with] consensus rule-making" but fail to describe whose are those that are consulted, the industry or those representing labor (Sussman & Raslear, 2007, p. 151). Within their study, they had highlighted issues that employees face such as "work-rest cycles, fatigue, and alertness" but also make clear that further field research is needed to substantiate measured changes to create legislation that will address these issues. With over one-third of deaths on the railroad contributed to human factor issues, rules testing and cooperative oversight remains somewhat elusive to this industry (Sussman & Raslear, 2007; FRA, 2017).

A defined safety culture is an important element in maintaining a clear view of safe practices within the railroad. Sussman and Raslear (2007) argued that "a positive safety culture are characterized by communications founded on mutual trust, and shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measures" (p.158). Unfortunately, such idyllic environments rarely exist, if at all, due to the difference in how labor and management view safety and efficiency testing and their resultant disciplinary consequences. One such program to improve safety is the C3RS, developed by NASA and presently used by the aviation industry to report close calls, has failed to take a foothold with the large Class I railroads. The FRA, the railroad industry, and stakeholders (labor) had agreed in principle to participate to determine program effectiveness in 2005, but the Class I railroads have failed to design or implement a pilot project that would demonstrate utility for the industry (Sussman & Raslear, 2007).

Fatigue being a large factor in incidents and accidents, the railroads and the federal government have yet to create a method to reduce these affects. The testing of

employees remains at an all-time high, however, nothing is being done to improve the incident rate during testing. Constant testing of employees, at all hours of the day and night, without a comprehensive scheduling system or improved working conditions that lower stress and improve relationships between labor and management, we will continue to see failure rates at present levels. Meurs and Perrewé (2011) theorized that "the stress experience" is the "physical physiological, psychological, and emotional loads or demands felt by the individual that are reported as stress to the extent that they are deemed a loss or a threat" (p.1052). Forwarding that testing does not improve safety, it only increases the likelihood that an employee will be found non-compliant of rules. With the excess of rules in today's rail industry, as one interviewed manager stated, "if you observe an employee long enough you will find them breaking a rule" (personal communication, 2017).

Complications herein arise when management, acting as an agent of discipline for the federal government, cannot justify the extent and necessity of punishment, which in turn, places trust and safety at critical levels. This is major problem that is not addressed by the aforementioned studies and the impact of increased use of testing practices on a fatigued employee have serious consequences. Injuries are a serious issue, and one that needs attention to demonstrate its gravity on the railroad.

Injuries on the Railroad

When the railroads were starting out, men injured on the job would not be compensated for their injury and would have to fend for themselves (Aldrich, 2009). When death occurred, as it did often, it came at a large cost to the family of the deceased

railroader as the railroads offered no indemnification for the loss, and oftentimes would claim that the incident occurred off the property (Aldrich, 2009). Such irresponsibility of the railroad companies was focused more on profits than on the human element. As the railroads grew and the railroad worker organized to demand better hours and safer working conditions things improved on the railroad properties. Nevertheless, injuries still happened as companies continued to focus more on productivity than safety. As decades passed and the railroad evolved, labor unions began to pressure the government to intervene on the unsafe conditions that was critical for the railroader (BLET, 2016; Aldrich, 2009; Marvit, 2015). Eventually, the federal government began to take notice and established a governing body to oversee safety practices on the railroad. The Department of Transportation Act of 1966 laid the groundwork for the creating of the FRA. This agency was tasked to oversee the safe practices of the rail industry and how those who labored within the industry were protected. Eventually the government established safety rules that required regular rule testing to ensure compliance.

How companies establish testing procedures and requirements to fulfill government standards precipitates safety issues on the railroad. A direct result of the rules testing process is that the tested employee has the potential to lose their focus on the task at hand. Instead, he becomes consumed with attending to the presence of the testing manager, anticipating and fearing discipline. Understanding this fundamental element, one can construct a general understanding of why government becomes involved in private industry. Dino Drudi (2007) stated, “with a fatal injury rate more than twice the

all-industry rate, the railroad industry is hazardous" (p. 22). As shown in Table 2, the FRA (2017) statistics for 2016 concur with Drudi's analysis from nine years prior.

Table 2
One-year Accident/Incident Overview (January 2016 – December 2016)

	2016 Total railway related incidents	2016 Total train accidents
Accidents/incidents	10,843	1,582
Fatalities	813 (High rail: 265) (Trespassers: 511) (Railroad Workers: 8)	8
Non-fatalities	7,961	284
Fatal train accidents	N/A	5
Collisions	N/A	89
Derailments	N/A	1,116

Note. Adapted from "One Year Accident/Incident Overview – Combined" by Federal Railroad Administration, Department of Transportation. fra.dot.gov. http://safetydata.fra.dot.gov/officeofsafety/publicsite/query/accident. Copyright 2017 by Federal Railroad Administration.

2016 Primary cause of train accidents, according to the FRA (2017);

- Human Factor-609
- Equipment defects-232
- Track defects-463
- Signal defects-41
- Misc. causes-237

The railroad and the government is hard at work to reduce these numbers. Drudi (2007) indicated that in 1970 the total number of accidents and incidents was a staggering 684,000 per year, and 575,000 ten years later, but by 1996 that number had decreased to

265,000 (p. 19). Today, the 10,843 accidents and incidents are far from previous year's statistics but remain of concern. Fatigue contributes to railroad worker injury, but so does stress caused by increased testing that takes place in this industry. Meurs and Perrewé (2011) postulated that "stress…[is] thought of as an imbalance between the demands of a situation and the resources available to deal with these demands…and emerges from the relationship between person and [their] environment" (p.1045). One of the principal issues that the railroads focus on is productivity, while safety remains important, it is sometimes superseded by productivity.

Safety Critical issues

One of the fundamental issues of this study is how safety checks on the railroad is creating potentially dangerous situations. Railroad employees are tested almost daily, the potential for distracting the employee is evident because discipline or coaching is part of the process. Abbott & Freeth (2008) discussed the significance of safety on the railroad. Their study suggested that trust and reciprocity are often misunderstood. Employees frequently feel targeted by management and thus their apprehension decreases their performance when managers appear to conduct rules testing. Safety cost money, which if looked at from a revenue standpoint, less money is earned if more money is spent working slower and safer. Subsequently, the railroad industry does acknowledge that working safer saves them money. However, the message is lost at the ground level, were the actual work takes place.

Safety initiatives should be clearly outlined, and "the courts, the public, and popular press" play a significant role in safety mandates and regulations (Aldrich, 2009,

p. 6). Discipline, however minor, distracts the employee from that task at hand and stresses the employee to make mistakes (Meurs & Perrewé, 2011). Meurs and Perrewé (2011) concluded, "if employees are allowed to make mistakes without being subjected to punishment or abuse and they are encouraged to learn from their mistakes, they will be more likely to anticipate positive outcomes and interpret their environment as challenging as opposed to threatening" (p. 1057). Aldrich (2009) states, "Better safety…cannot be separated from other forces that improve railroad productivity" (p. 5). The emphasis here is that productivity, which determines the bottom line, cannot be achievable without strong safety practices in place.

Collaborative Demands of the Railroad Industry

Railroads can move "a ton of freight an average of 473 miles per gallon of fuel" says the American Association of Railroads, with this much efficiency one can only imagine the strain on capacity by shippers (Davies, 2015, p. 8). The demands placed on the railroads and on the workforce, which supports this industry, is at an all-time high. Davies (2015) went on to stress that large capital investments, trackage (railroad routes), labor, and rolling stock barely meets shipper demands, "Job one is to sweat the assets and create as much velocity as we can in the infrastructure we have" (p.6). With this increase in rail traffic comes an increase in incidents on the rails, and safety being an essential element in today's rail industry. The federal government, through the Railroad Safety Improvement Act of 2008, pressed the rail industry to implement PTC, without providing funding for it. This has added additional financial burdens to state and federally funded commuter lines, but also to railroad companies big and small. To comply with

government mandates companies must increase freight traffic without increasing overhead of hiring more workers, only increase the days worked by their employees.

Rosenhand, Roth, and Multer, along with the Volpe National Transportation Systems Center, and Roth Cognitive Engineering (2011) deduced that an increase in work load for the railroad worker will place a greater demand on their necessity to be ever vigilant. Rosenhand et al. observed that the railroad worker, specifically the transportation employee, require "high-level cognitive and collaborative functions" to meet the demand of their occupation (p. 1884). The study focused on "the situational factors that arise to complicate performance, and the knowledge and skills that experienced freight train conductors have developed to cope with performance demands as so to maintain safe and efficient operation" (Rosenhand et al., 2011, p. 1884).

Nevertheless, these researchers maintained that more experienced employees are less likely to fail in the field and advocate better on the job training to meet with increase cognitive demands (Rosenhand et al., 2011). However, their study failed to mention the effects of efficiency testing by management. Future research needs to study the impact of how rules testing, of even the experienced crews. As this testing will sometimes result in failures or negative outcomes due to the quantity of rules and frequency of efficiency rule testing of these workers.

Safety Factor Influences

Testing on railroad property involves discipline, and discipline forces the employee to be ever vigilant while at work. LaRocco and Radek (2013) explained that discipline is part of the compliance factor that the federal government requires.

Discipline, license revocation, and the testing process is at the disposition of the railroads and the principal factor in discourse between labor and management (LaRocco & Radek, 2013). Railroad employees have many things to worry about besides being vigilant for the testing manager. Yard and road track conditions, other crews working in their area, weather conditions, footing, lighting while working at night, to name a few. Improving safety in the railroad environment and making it more cohesive is possible, as examples from the aviation and medical fields have demonstrated (Barach & Small, 2000; Nelms, 1995). Nevertheless, implementation of better systems of rule checks require both government and industry to work together to accomplish this.

Improving safety and lessening the likelihood of incident or injury of the railroad worker is the essences of this study. Uncovering specific elements in rules testing and how they affect safety on the railroad was the ultimate objective. Roth, Multer, and Raslear (2006) positioned, "proactive communications foster shared situation awareness across the distributed organization, facilitate work, and contribute to the overall efficiency, safety, and resilience to error of railroad operations" (p. 967). With the advent of increased rail traffic, and the greater demand placed on the railroad conductor, optimizing the employee's situational awareness is instrumental to rule compliance and safety. However, placing a greater need for attention occupying situations such as observing safety in one's surroundings remains essential. Following rules and regulations for switching operations, radio communication protocol, track conditions, rolling stock proximity, potentially complicated by night operations and potential rule testers, the railroad conductor finds his situational awareness spread extremely thin.

Experience and training are the best means to improve the safety threshold for the railroad worker, but also lessening the surrounding distractions such as efficiency testing, bode well for this craft. Roth et al. (2006) postulated that communication in railroad operations is essential for complete understanding of the scope of any task. Moreover, "to maintain awareness of the activities and plans of others to be able to coordinates goals, synchronize activities, prevent coordination breakdowns, and create resilience in the face of unanticipated events and errors" is essential (Roth, Multer, & Raslear, 2006, p. 984). The challenge, according to Roth et al. is to improve situational awareness so there is no gap in the task of crew members, but they fail to emphasize the impact that management observations have on those and the distraction from the task as hand.

Behavior

Roth et al. (2006) claimed that "Effective performance depends on shared information about both the situation and the other team members," as well as experience and training, but cannot be accomplished with full attention (p.968). Altering behavior in any scenario will change the efficiency and effectiveness of the individual's input, changing environmental behavior may offer some benefits to reducing post-completion errors, though better communication between labor and management (McDonald & Durso, 2015). The railroad environment is one that lacks complete and thorough communications, and the highlighting safety issues by the employee base of sometimes overlooked. Kath, Marks, and Ranney (2010) asserted;

> Research to date has demonstrated that good supervisor-employee relationships (leader - member exchange), a sense that organization values

> an employee (perceived organizational support) and safety climate (including perceived management attitudes toward safety job demands interfering with safety, and pressure from coworkers to behave safely) all contribute to employees' comfort in bringing up safety issues to their supervisors (p. 643).

Kath, Marks, et al. come very close to stating that poor management-labor relationships have the potential to increase incidents. Their study highlighted the importance of good supervisor-employee relationships having the potential to reduce unsafe circumstances, but without it, a tenuous environment persists. Good employee-management communication may be an avenue that improves testing outcomes and advances safety but the issues remain to be addressed. Such efforts could help reduce the ill effects of government required rules testing, and make the rail industry a safer place to work, but could also improve the overall morale of those railroaders in the industry.

As much as it remains an important concept to improve situational awareness and cognitive demands on the railroad conductor, nothing addresses how to reduce the distraction caused by rule efficiency testing. McDonald and Durso (2015) were motivated to test post-completion errors of railroad conductors to see if behavior and training made a difference in reducing incidents in the rail yard. Their research concluded that "in the absence of secondary tasks and interruptions because users began thinking about their next task before completing the current task, contributing to their tendency to abandon any unsatisfied steps in the current task" (McDonald & Durso, 2015, p. 927).

This observation directly correlated to the railroad worker fearing discipline, who is being tested by a manager. Post-completion errors can be an ongoing problem when examined under the filter of rule testing distractions. Roth et al. (2006) and Rosenhand et al. (2011) argued definitive processes to help improve the threshold of safety for the railroad worker, however, they stop short of mentioning how rules testing and testers distract this class of worker. Kath, Magley, et al. (2010) and McDonald and Durso offered good research in how distraction can lead to errors, but stop short of identifying that rule testing is a significant part of this disturbance. This distraction, which can lead to human factor errors, is an issue that is correctable.

Human Factor Errors

Human factor errors are the leading cause of incidents on the railroad (see table 2, pg. 45). Human factor errors are those errors cause by man because of rule noncompliance, whether due to distractions, fatigue, training, and experience. Langer (2013) explained, "the yard master's constant interruption were causing unsafe working conditions" (p.43). Incidents occur most often when the railroad worker forgets the rules, or when fatigue sets in. However, the emphasis of this study concentrates on how efficiency testing distractions cause rail employees to focus on the testing manager instead of the task at hand. This distraction the rail employee feels is due to the federal requirement of industry official to efficiency test rail crews. Sussman and Raslear (2008) argue that "safety legislation versus regulation, safety and productivity, perceived versus measured safety…the social environment of the U.S. railroad industry, [and] operator

fatigue and alertness" all contribute to human factor error and need to be studied (p.148).

Contributors to Human Factor Errors

Reinach and Gertler (2002) conducted research on railroad injuries, accidents, the effects of work schedules for trainmen working railroad switching yards, labor and management practices. They discovered that employees view rules testing more negatively than their managers. The researchers argued that rules testing is implemented to find fault and error with individual employee performance rather than measuring process/rule compliance by the railroad company (Reinach & Gertler, 2002). The result of this investigation revealed that rail yard incident rates far exceeded those of road-freight crew members. These rail-yard incidents are attributed to the extensive operations that take place in a rail yard such freight car switching, moving locomotives, other switch crews working near, the arrival and departure of road freight trains, training, and experience.

Reinach and Gertler (2002) discovered that "rail labor painted a generally negative adversarial picture of the safety climate in the rail industry," citing "harassment and intimidation were common, and were used to pressure employees to not report an injury, to cut corners, and to work faster" (p.1204). This foundational research helps to understand the climate that railroad workers labor under, and it sets the stage for further investigation of the ill-effects of government required testing. It is this pressure that yard switchmen work under that contribute to human factor errors. Constant observation and

disciplined employees by the railroads allegedly demonstrate to the government that the rail industry is doing something to promote safety.

Promoting safety on the railroad is easier said than done. Government can create safety rules, industry managers can test for rule compliance, but the human element will always be a factor whether the rule is applied to the work task. In addition, of the thousands of rules that railroad employees must follow daily, their interpretation can mean something different to each testing manager, causing conflict or transgression of the rule. Wilson and Norris (2005) ascertained, "Railway culture is highly evident in the procedures by which [they operate] and the *tacit knowledge* held by experienced staff which includes them knowing which rules are vital, where there are 'grey areas' and which rules are counterproductive" (p.651).

When the government sets out to write a rule they don't do so with the premise of whether it is counterproductive or not, the rule is written to avoid and protect future issues from occurring. However, sometimes those rules counter others that are already in use. Wilson and Norris (2005) stated "it is impossible to have 100% safety," as there will always be a tradeoff, whether it is in productivity, efficiency, or safety (p.651). This argument helps support the greater need for rules to be created with the valuable input of the railroad employee. As Wilson and Norris (2005) concluded, input from the workforce, which is on the ground doing the work, is fundamental to writing safety rules, as it this group that must comply with them.

Causation

Uncovering the circumstances under which accidents and incidents occur is time consuming and laborious. Reinach and Viale (2006) identified 36 probable human factors that contribute to incidents that occur during rail yard switching operations. One of the issues at the base of human factor errors that was investigated was how blame is attached. They infer that assigning blame to the railroad employee, who was the last person at the scene of the incident, is what ends up happening. "The *bad apple* theory seeks to fix the problem by blaming the operator…and typically does little to correct the problem(s)" (Reinach & Viale, 2006, p. 397).

Of the accidents and incidents studied, 10 were attributed to organizational factors such as rules related issues (i.e., not clearly understood or identified). Six were supervisory components, such as insufficient supervision, and management processes (i.e., efficiency testing). Nine issues were related to environmental issues, and 12 to operator errors (Reinach & Viale, 2006). This research did not specifically identify manager testing presence as a distracting factor, however, this paper argues that this is a significant factor in potential incidents. Although, one might reason that of the 12 errors, four were decision errors that could be caused by distracting observations by the management staff.

A research study that was conducted by Baysari, McIntosh, and Wilson (2008) identified that close to half the accidents on the railroad they investigated were equipment related. The other half of the incidents were fatigue, experience, but principally organizational factors related to rail-yard operations, which can be symptomatic in this

environment. Baysari et al. (2008) stated that organizational and management errors create a framework of error driven processes that continue to manifest themselves daily. Moreover, their investigation lists “Unsafe Supervision” as a precursor to human factor incidents (Baysari, McIntosh, & Wilson, 2008, p. 1752). Out of the 40 accident/incidents that were investigated, 145 factors were identified; 51 were equipment related, 67 were organizational (i.e. testing, oversight), 9 were attributable to operator negligence, and 18 being environmental (Baysari, McIntosh, & Wilson, 2008).

Overall, each incident had an organizational element that was attributable to the event, this lends itself to surmise that management and industry protocol directly influence how safety is approached on the railroad. What was not addressed was how the employees felt about management efficiency testing. This is the gap in literature that is repeated time after time in investigations on the cause of railroad incidents, addressing the concerns of the employee, and yet the origin of their distraction remains unaddressed.

In another human factor study by Baysari, Caponecchia, McIntosh, and Wilson (2009) on locomotive engineers, 44% of errors identified were organizational. Management, protocol (i.e., rule compliance), communication, and equipment were attributed to issues. One third of these issues were processes that the organization deemed necessary for operations; this is principally rules and regulation compliance. Without a doubt, factors such as fatigue and alertness play into how well safety is achieved, still, the circumspection of governmental oversight has lasting effects but was not directly identified in the study. Training and experience is essential to reducing accidents, but communication is also very important.

Communicating risk identification is a key component to mitigating accidents and incidents, but known factors such as fatigue and alertness remain unaddressed and continue to be a factor in accidents (Baysari, Caponeccia, McIntosh, & Wilson, 2009). Managers and labor both commit errors in the field, however, it is only the railroad laborer that gets disciplined. Nevertheless, if managers commit errors by misinterpreting rules it could setup a greater number of employees for failure. The relationship between management and labor is very delicate at most terminals, and disciplining employees for rule noncompliance reduces this connection. Rule noncompliance, for whatever reason, is identified, examined, and discussed by stakeholders, including the federal government. This will lead to better rule creation, updating current rules, and even potentially eliminating those rules that are obsolete.

Stressors

The U.S. Bureau of Labor Statistics (BLS, 2016) classified railroad workers as a hazardous occupation stating, "Rail yard engineers and conductors and yardmasters have a higher rate of injuries and illnesses than the national average…moving heavy equipment around, which can be dangerous" (p.4). This industry works around clock, despite weather conditions, and its employees are exposed to a multitude of environmental conditions. Moreover, the irregular schedules place greater physical demands on the employee than those of regular heavy industry. These types of working conditions place demanding forms of stress, physical and mental, on the railroader. Working under these types of inherent stressor reduces the safety threshold that keep the

worker safe. Add stressful distraction, in the form of testing and discipline, to the railroad worker's environment and that creates an accident waiting to happen.

Organizational Stressors

A 2010 report from Britain's railroad inspectorate service cited, "work-related violence as one of the top five health and safety risks to railway workers" (Vazquez, 2014, p. 43). Vazquez (2014) argued that "violence and aggression" on the railroad are common occurrences (p. 42). Working under turbulent conditions where one might be victimized or antagonized leave the employee stressed and unsure whether they can work within such an organization. Abbott and Freeth (2008) introduced evidence that substantiate how lower stress in organizational settings generates better health, through positive employee/management interactions creating a safer work environment. They argued that "Trust and reciprocity may help to protect against chronic stress by reducing anxiety about the behavior of others" (Abbott & Freeth, 2008, p. 879).

Subsequently, von Dawans, Fischbacher, Kirschbaum, Fehr, and Heinrichs (2012) concluded that physiological problems occur due to stress, especially in the work place. Workplace stress created by railroad environment can perpetuate long lasting negative effects on a person, and building on a distrustful relationship between labor and management only tends to deepen the chasm between these two groups. Von Dawans et al., study argued that a positively reinforced atmosphere is conducive to better understanding between stakeholders and could lead to safer surroundings for all involved.

Workplace stress has multiple detriments. This study focused principally and how required efficiency testing of railroad workers tends to increase stress, which can

potentially lead to health issues, poor job satisfaction, high turnover, but mainly incidents or accidents. Meurs and Perrewé (2011) argued that the balance of people in their environment is essential to eliminate or reduce work place stress.

High demands to work hurriedly pressure the railroad worker to possibly skip or overlook a rule. When this is coupled with discipline, the worker tends to slow down in the future, or look at safety through negligible filters. Stress sets in, argued Meurs and Perrewé (2011), when such demands and reprimands are handed down to the employee, which complicates any potential communication between labor and management. "Occupational stress research" by Meurs and Perrewé (2011) correlated a direct link between event uncertainty and anxiety, which is what happens every day when railroaders are exposed to rule testing.

Such studies offer evidence of the importance of cohesive working relationships between employees and management. Government intervention can help create a more balanced working environment by encouraging the industry to have a greater input in rule development. This leads to greater buy-in by those working crafts that must abide by such regulations.

Environment-Related Stressors

Organizational safety practices enhance the quality of work industry. More importantly it gives employees greater satisfaction and peace of mind when coming to work for a company whose main goal is worker safety when producing their product (Etheridge, 2016). Yi Hsin Lin's (2012) (as cited by Etheridge, 2016), research stated, "employee job satisfaction increased when the dangers of injuries in the work

environment decreased" (p.1). Job satisfaction reflects several important factors which contribute to it. While training and experience are essential to worker productivity and safety, employers that play an active role in jointly creating a safe work environment also improve communication between stakeholders (Etheridge, 2016).

Reducing and eliminating injuries on the railroad is an ongoing mission for government. For most railroad companies, productivity and safety go hand and hand, but this is not always the focus when deadlines are approaching. The priority of worker safety should never be overruled by productivity, and this is something that many railroad workers complain about. Etheridge (2016) study pointed out key items that affect employee fulfillment, but also argued that management is a key component to this. However, the question that remained unanswered by this study is if the railroads did not have to test and/or discipline the employees, would there be greater satisfaction and less incidents in the railroad?

Environmental conditions that exist on the railroad is monotony, job pressure, and job design. Road freight conductors face long hours of staring out of the window of locomotive cab, looking for anything that could hamper their train movement. Greiner, Krause, Ragland, and Fisher (1998) observed that, "Continuous visual attention in combination with under-stimulation because of repetitive task elements and homogenous incoming information" creates a great deal of monotony (p. 133). Oftentimes, after long waits in rail sidings waiting for passing trains, dispatchers request that crews do work. Such request are not uncommon, however, the crews are expected to perform at their

optimum, and to work expeditiously. Greiner et al. argued that such working environments create negative physiological conditions in human beings.

To complicate these matters, government and most railroads require that employees are efficiency tested under all conditions. Testing a crew that has been languishing for hours on a train, whose mental focus is flagging, will only lead to a safety or disciplinary action if the crew circumvents a rule or regulation in the performance of their job. Greiner et al. (1998) discovered negative consequences in workforce performance when companies required to employees to carry out detailed tasks after being on duty for long hours. This edification supports that testing tired crews can have the potential to subject the railroad employees to possible incidents by taking their focus away from the task at hand and focusing on the testers.

Trust is instrumental in achieving open communications and creating job satisfaction. This in turn lowers employee turnover, but to a greater extent, improves the safety climate of the workplace, according to Kath, Magley, and Marmet (2010). The Theory of Work Adjustment quoted by Kath, Magley, et al. directly correlated safety with job satisfaction and stated, "safety, as an important environmental need, would affect workers' perception that their working conditions were favorable, resulting in enhanced organizational attitudes, such as job satisfaction" (p.1489). Working in an industry whose rules and regulation are constantly influx, it is essential that information, decisions, and transparency are present for safety to prevail (Kath, Magley, & Marmet, 2010). The question that remains unanswered in this study, however, is how to incorporate the railroad industry and federal government's objective of public safety

while still fulfilling the purpose of protecting the railroad worker them as they do their job.

Summary and Conclusions

Literature noted in this chapter focus on the behavioral practices of the railroad employee and their managers, the culture of the railroad, and how government interacts with these dynamisms. What cannot be seen from the evidence presented is how rules influence the aspect of safety in the day to day operations of the railroad. It is aspired that this research will bridge the gap of how rules are created, enforced, and followed by the railroad employee that will lead to a safe work environment. Presently, the government, the rail industry, and labor unions do not have a well-defined plan on how rules should be created to benefit the community and those who labor within the industry. The government and present research has determined that issues exist within the industry and acknowledge their occurrence.

Contemporary scholarly literature highlights many of the critical elements that preoccupy the rail industry and how the government attempts to ameliorate safety issues through regulations. In addition, many of the authors presented in this chapter have accentuated the problems that the railroad employees face daily; yet no connection has been made to determine a viable alternative to present industrial practices. It can be deduced from what has been described in the literature so far, that researchers acknowledge that issues exist. Perhaps, industry and government focus should not be so narrow as only to focus on the community, but also on the community of railroaders that provide the services to the industry as well?

It is essential to comprehend the history of the railroad in order to grasp the workplace atmosphere of railroad workers. A number of trainmen experience fatigue, injury, and unsafe work practices daily while laboring on the nation's railroads. These occurrences are important to understand as each experience frames the relationships trainmen establish within their work environments, and sculpts the behaviors trainmen exhibit. The behavior of rail workers is what this study focused upon. On the railroad, work behavior is characterized by how employees approach and view their jobs -- just as in any other industry. Viewing trainmen's behavior through this approach better allows for investigative research to determine how rail workers view safety and safety practices, as well as how the worker's focus contributes to human factor errors.

Many factors exist (aside from trainmen behavior) that contribute to human factor errors and safety issues occurring on the railroads. Understanding the causation of incidences on the railroad is important, as an employee's working conditions and environment can result in injuries. Stressors experienced on the job also contributes to trainmen behaviors and attitudes. As trainmen experience stress resulting from pressures exhibited by rule testing management, the stressor of interacting with managers may potentially impact employee performance. Consequently, stressful work environments have a significant influence on how employees view safety. Employees experiencing stress may struggle to clearly communicate critical issues to managers. Some stressors could result in a number of concerns such as fear of reprisal or job security, and such anxiety may lead to incidents or accidents for the employee.

Establishing a partnership between government, the rail industry, and railroad labor unions to find common ground when creating, testing, and applying rules and regulations to prevent injury is a worthy endeavor. As history has demonstrated, without regulation, the safe work environment is compromised. When the employee is at risk of injury, the community is also at risk. Therefore, by working together with the government, the railroad employee and the industry could theoretically improve safety, productivity, efficiency, and reduce liabilities. Until all parties involved acknowledge the importance of these issues, there will be no winners, only losers in this important endeavor of transportation.

Chapter 3: Research Method

Introduction

The purpose of this phenomenological study was to discover how Western Region trainmen feel about federal and industry testing, and how this impacts their safety in the work environment. A trainmen's reduced sense of confidence in their testing managers may have direct effects on safety thresholds. The central phenomenon I addressed in this study is how Western Region trainmen's safety is affected by manager testing, and to explore how management testing methods directly correlate with the federal government's intervention in private industry.

This chapter discusses the study's research design and rationale. I employed the SCF to illuminate how the environment on the railroad influences trainmen's perspectives of trust in safety procedures while carrying out railroad activities. Following the discussion of the SCF, I highlighted my role in the investigation as an observer-participant. My work experience is integrated into the analysis of the field interviews conducted with the study's participants, who are also my coworkers.

The qualitative methodology applied in this study consisted of structured interviews with a group of railroad workers and managers, randomly and conveniently selected, based on employment background and experiences. Current Western Region trainmen and retirees, railroad managers, as well as federal railroad officials comprised the participant group. Through triangulation and member checks, I addressed trustworthiness and credibility of the study.

Additionally, I addressed the issue of transferability, which refers to the way the procedures and outcomes of this study can be used in other scenarios. The events that take place in the railroad industry and the outcome of the effects of government regulations, as well as management testing protocols, can be used for all crafts within the railroad industry. Whether the railroad is private, publicly traded, or government operated, the observations and resultant findings can apply proportionally.

I monitored the dependability of this study by looking for answers to questions being asked that were purposeful to improving safety for each rail employee. Another aspiration of this study was to be able to use the information gathered to improve rules testing on all railroads. The collection of information, and its interpretation, is the culmination of years of observation and inquiry. To this end, being able to test the hypotheses highlighted here and potentially generalize this investigation to all railroad companies was this study's goal.

Essential to interpretation is confirmability of the data collected. To ensure confirmability, it was necessary to interview other crew members who participated in an identified incident. As a result, perspectives regarding specific testing incidences can be confirmed in follow-up interviews with identified crew members. Confirmation of the data was achieved by following the same data collection procedures described in this chapter, across all participants. By presenting the exact same questions and employing the exact same data collection methods, standardization of the procedures was achieved. Through this uniform procedural implementation, confirmation of this study's data rendered reliable results.

As with all research investigations involving human subjects, ethical procedures are of the utmost concern. This study employed a multitude of security measures to maintain participant confidentiality, job protection (whereby participant interviews will not be disclosed to testing managers or any other individuals), and data encryption. Subsequently, the study's participants had the option to decline answering any questions they perceived as invasive, as well as opting out of the entire interview and study at any point in time. The participants consisted of both adult males and females, who had at least 5 years of service in their respective craft (e.g., engineer, carman, signal department, trainman). The safety and privacy of the participants are crucial to the success of this investigation.

Research Design and Rationale

The research questions driving this investigation will focus on safety practices and testing procedures. The following information was addressed:

RQ: How is the Western Region trainman's perception of workplace safety impacted by the government's role in regulation and discipline?

Secondary questions could be;

SQ1: How do Western Region trainmen perceive government rule compliance as it pertains to their safety?

SQ2: What recommendations can be offered to improve safety and testing practices on the railroad?

The core phenomenon of this study was safety, and how excessive rules testing compromised safety on the railroad. Throughout my work experiences, many trainmen

have expressed the feeling that they are being *singled out* and are often the subject of discipline as a result of doing their jobs. From these experiences and conversations, it appeared to me that this was a common sentiment amongst many trainmen on all railroads. Appendix A presents the semistructured interview questions posed to the selected participants.

A narrative study, describing the issues trainmen face, may help future researchers better comprehend the railroad environment. However, this method does not fully encompass the manner in which the industry operates. A case study could help to determine certain events that resulted in lived experiences and issues railroaders face, yet this approach falls short in fully describing what occurs in other crafts in the rail industry. Ethnographic theory could allow a researcher to delve into the cultures and beliefs of the railroad worker, but it would inadequately relay what this participant group experiences daily on the railroad and why. Lastly, grounded research could be used, although the processes within one railroad are commonly practiced throughout many railroads across the nation. This would demonstrate that the issues trainmen face are not confined to a singular geographic area or ethnic group. As such, a phenomenological study was a more appropriate approach to uncover why railroad employees feel and react as they do.

Phenomenology can help researchers draw connections across different groups and various locations, such as how trainmen in general feel about the testing policies required by the government and rail industry. Being able to identify the driving force of how trainmen feel, whether laboring in Los Angeles, California or in Livonia, Louisiana, would help to reform testing procedures that can be prescribed to improve the safety of

those laboring on the railroad. More importantly, the benefit of using this research design maximizes the generalizability, which allows future research to apply what has been learned from one sample group to another.

Role of the Researcher

My role as the researcher in this study was that of an observer-participant. In my current position as a locomotive engineer, I worked alongside the intended sample group, the Western Region trainman, several times a week. My job includes observing how trainmen function in their work environment and deal with safety issues, planning the work to be done, and taking rules classes alongside trainmen. Today's trainmen work in coordination with locomotive engineers, but mainly from the ground, whereas engineers operate the locomotive. As far as relationships go, I have known some of this study's participants since I began my career with the railroad, and there remain many others I have never worked with before. However, each employee plays a specific role, and neither is superior to the other. The railroad industry, and each railroad's service unit, is as diverse and yet as similar as the other. An engineer rarely works with the same trainman on their next shift; therefore, it is not surprising that after working with one trainman, you may not work with him again for many years.

Resulting from the railroad system's special instructions, which are guidelines or rules specific to operational locations, an engineer and trainman equally share the responsibility for the safe passage of trains in their care. Although each craft, whether it be engineer or trainman, has his respective duties, each is represented under similar but distinct union contracts. Each group has their own union steward, and each group meets

different criteria for contract negotiations. Their contracts negotiate pay, benefits, arbitraries, and discipline, but do not bid one craft against the other. Hence, animosity rarely develops between the positions of these two railroad professions.

Researcher bias can be critical to a study's outcome. Angrosino (2004) argued that preconceived notions can cloud the meaning of actions that take place during an observation. However, bias "can be mitigated by a rigorous and sustained effort at making conscious all the unconscious assumptions that might lead to misperception" (Angrosino, 2004, p.758). As such, lending my experience to determine what is occurring to railroaders tested by management could incur bias. Therefore, observations need to be made of both the manager's objective and the employee's sentiment, without taking sides. The key here is that my experience and tenure with the railroads kept assumptions neutral; having worked as both trainman and manager helped ensure that my bias was minimized.

To control for bias, I decided to interview trainmen and managers. Upon selecting the sample group, I randomly assigned each participant an identification number. I conducted the interviews over the phone or in person, after proper qualifications of time on the job and experience had been established according to the selection criteria for the study. The interviews were conducted off railroad property, and on each participant's day off, so as not to interfere with their rest or work. No money or incentives were offered for participation in the interviews; participation occurred solely on a voluntary basis.

Having previously been a Western Region trainman for 6 years, I had the opportunity to encounter what the study's participants are experiencing. Subsequently,

over the last 11 years working as a locomotive engineer, I have acquired a unique vantage point where I can listen to the feelings of trainmen about their jobs and life on the railroad.

Additionally, my position as an engineer allowed me to participate in situations where trainman underwent testing by managers. As such, I have listened to many trainmen's grievances, most of which managers and some union stewards are not privy to. Finally, when I was a manager for the railroad, I witnessed many of the issues the management team faces with the employees the test. Leveling discipline, administering rules class, and testing employees were a few of my many responsibilities. However, holding the position of a manager created a challenge to collect interview data from subordinate reporting employees, as trainmen might not speak as freely or negatively about policies and testing practices. Moreover, Institutional Review Board ethics rules do not allow data collection from individuals in positions subordinate to the researcher. Therefore, returning to the craft as a locomotive engineer, provided me with the neutral point in which to complete this study.

Methodology

The methodology used in this study was qualitative, using in-person and phone interviews with the study participants. To attain a random sample of participants, I utilized the network of the trainmen's union steward to send out an email invitation to participate in a study for union members working in the Western Region (see Appendix C). The email stated participant criteria and the study's intent and solicited volunteers to participate. Of those trainmen who replied to the email expressing interest, I assigned a

random number from 1 to 1000 to the first 90 trainmen, and randomly selected 10 from this list. Once a representative sample was determined, I contacted the selected participants via telephone or email, during non-work hours. This study was conducted off work hours because it is a better time to approach the participant who took part in this research. However, meeting with participants in person remained a preferable option, as it better allowed me to gather *soft data,* or data collected by observing individuals' body language and physical gestures that occurred as the interview questions were presented.

Western Region road freight trainmen do not have scheduled time off, except for vacation, which is seniority based. Therefore, having predetermined interview times with the participants presented some challenges. Nevertheless, getting this group to discuss important issues was best accomplished when the selected participants felt secure and unpressured by time or work. The down side to interviewing this sample group was to pinpoint the proper time when the individuals could be available for the interviews to proceed uninterrupted.

Some of the present and former managers, assembled from a purposeful sample group, were obtained through the director of road operations; they were asked via email if they were interested in participating in this study. After receiving follow-up contact, a plan to conduct the interview sessions at mutually agreed times was determined by each manager-participant. The other three groups within this study were retired railroad employees, other railroad crafts (i.e., signal, car, engineering dept. employees), and government officials. These sample groups would have greater availability to participate in in-person interviews and were purposefully selected. Three retirees were selected

through the union steward network and snowball sampling. Participants from the other railroad crafts that were interviewed were selected by snowball sampling as well. In addition, I interviewed government officials from the FRA, and the NTSB in Washington, D.C., and the Western Region. The selection method, which took a few weeks to complete, offered distinct views of safety. The interviews, discussing the effects of testing processes and discipline, as well as perspectives on safety thresholds, took about two months.

Once the interview times were established, one of two interview methods were employed with each participant, in person or over the phone, such as those interviews with government official or managers who were located in other states. Next, digital audio recording were used during each interview. Informed consent was obtained from all participants, ensuring they have full awareness that the interview was recorded and transcribed for analysis. After each interview was concluded, the audio recording was transcribed, and then entered into the NVivo software program for analysis.

The NVivo software program processed data from transcriptions (.doc or .docx) in MS Word and analyzed the documents for patterns and trends. For example, if transcribed interviews contain repetitive use of the words *trust* and *discipline,* NVivo will process every occurrence of these words and establish patterns. Identifying word patterns can demonstrate the number of times particular terms and phrases are used and how they are expressed. When a particular set of words were used, NVivo highlighted the significance of the usage. Subsequently, the interpretation of word patterns, word repetition, body language, and specific word usage was the work of the researcher.

Participant Selection Logic and Sample Size

The Institutional Review Board (IRB) approved this study's proposal, and participants were selected using the previously described criteria. The anticipated number of participants in this study were 10 Western Region trainmen, three retired railroad employees, five current or former railroad managers, three government officials, and five railroad employees from other crafts. Data saturation was achieved through semistructured interview questions, as well accessing a diverse participant sample of trainmen. The rationale for the selection of trainmen from the Western Region was convenient and stable, as the individuals participating in this study have diverse employment backgrounds, yet hold common concerns about the railroad industry.

The number of railroad managers selected for this study is sufficient as the number of tests required by each Western Region manager do not vary, except between companies. All railroad managers follow the same testing plan throughout the entire Western Region, as assigned by their company. What varies are the rules tested by each manager, and the specific rules observed depending upon whether the testing is conducted on the road or in the switching yards. Also, former managers were offered the opportunity to participate in this study. Former managers were found to be more inclined to discuss operating protocols without reservation due to their separation from managerial roles. In addition to managers, federal officials were included in this study, because federal guidelines dictate how and what railroads test their rail crews on. Hence, the participation of FRA and NTSB officials was essential for understanding government

intent. Understanding the rules and repercussions for noncompliance by trainmen is a large part of this study.

The selection criteria of the participants strove to include the representation of five distinct groups, within the rail industry. The inclusion of these five groups helped to provide a full view of the issues that exists in each setting. The first and primary group will be Western Region trainmen, who work throughout California, Arizona, New Mexico, and Texas. Each participant from this group needed to possess at least 5 years of trainmen seniority. The significance of this revolves around the employee's railroad knowledge and education throughout the years; as oftentimes, trainmen can be furloughed due to a lack of seniority. As such, trainmen gain an extensive background working different jobs (e.g., through-freight conductor, switchman, brakeman, work-train trainman.) which provides ample experience operating under federal rules and the subsequent testing that follows.

The second group consisted of retired trainmen who are under the age of 65—railroad employees can retire at 60 years old, if they have achieved 30 years of service. Participants from this select group had observed the industry and property changes over the last 40 years, and offered historical perspectives on how testing processes have evolved. Moreover, most from this group were generational railroaders, whose fathers', uncles, and even grandfather worked on the railroad previously. This group's insight was important as the Department of Transportation (DOT), specifically the FRA, was not operational during the early 1970s, and many changes have taken place since that time. The FRA's predecessor, the Interstate Commerce Commission (ICC), was responsible for

all railroad regulations prior to the establishment of the FRA. In addition, the retirees offered a unique insight on the safety, rules, and operating practices during their tenure as trainmen, which was stark contrast from today's operating standards. Today, the rail industry is rife with litigation, regulation, standards, and over 3,000 rules, as noted by several government and industry sources (American Association of Railroads, 2014; Code of Federal Regulations 240-242; & FRA, 2016).

The third group that was an essential voice in this investigation was current and former railroad managers. The participants in this group included railroad employees who have previously worked within the union ranks and moved into managerial roles. Within the railroad, there are managers that are hired from outside the ranks of the railroad and come from other industries or the military. Managers who were hired off-the-street with non-railroad backgrounds were excluded from this study; never having worked in the craft limits the understanding of the daily occurrences of the trainmen. The railroad environment is unique unto itself, and the experiences garnered within this industry cannot be replicated outside of this setting.

The fourth group included in this investigation were federal officials. FRA, a federal agency comprised of rule makers, investigators, instructors, and auditors. The FRA official interviewed possessed investigative experience at the agency, and were former railroaders themselves. The inspection side of the FRA handles rule compliance on railroad property. These federal agents were former railroad employees, and their purpose is to oversee the rail industry's compliance with federal regulations. One of the government officials that participating in this study stationed in the same region as that of

the trainmen and managers included in this study, and had at least one year of full employment with the FRA.

The final group that participated in this study were railroad employees from other crafts such as the signal department, the car/roundhouse shops, and the engineering department. This group of participants are not tested as often as the trainmen; however, they are tested annually and are obligated to follow many of the same rules as the trainmen. These employees offered a distinct view of what it is like to be tested in a far less intensive manner than the trainmen.

This study's participants were selected by the following criteria: (a) the trainmen were selected using random and convenient sampling. From this group, twenty were chosen at random to participate in this investigation, leaving an additional five in reserve in case of *participant attrition,* whereby any if the first five participants dropped out of the study at any time; (b) the retirees will be chosen using snowball sampling, by speaking with one names were obtained for other retirees who participated; (c) the management participants were chosen via convenient sampling, of which seven were individuals were eventually interviewed, instead of five; (d) the FRA and NTSB officials who participated were a total four, instead of three. Lastly, (e) participants from other crafts were selected using snowball sampling. Random numbers were assigned to all participants so that their identities will be protected and remain confidential.

Instrumentation

The type of instrumentation that was used to collect this study's data included digital audio recordings of phone calls or digital audio recordings of in-person interviews.

Data collection followed the procedures as described by leading qualitative researchers (i.e., Creswell, Maxwell). Some historical data was used, but only to demonstrate the differences that exist between how the industry operates today compared to years past. This historical data came from government sources such as the Department of Transportation, the Federal Railroad Administration, as well as labor union print sources.

Creswell (2013) describes the best approach to phenomenology data collection methods is to locate many people that have experienced the same feeling or lived in similar circumstances. Interviewing anywhere from five to 20 people will help saturate this study with data. In addition, the *bracketing* of my experiences on the railroad provided a unique way of highlighting my experience in multiple departments and in different roles as a railroad employee.

Maxwell (2013) tells us that depending on the type of question you ask the answer you receive will be comparable. He believes that it is important to ask questions that the study participants find of value to their environment. Moreover, Maxwell also stresses a balanced and open relationship with your study participants, one where trust is inherent. In view of these methods, following a general format for data collection allowed straightforward replication.

Content validity was established by following up with the participants after the interviews and discuss what was shared, and to confirm if their statements were transcribed accurately. It was important that each participant have an opportunity to revisit their commentary and provide changes as needed. Nevertheless, the content that was provided was examined and substantiated for accuracy, to ensure validity. Working

within the same industry as the participants, the verification of information was not difficult. Having access to company staff members facilitated this action when needed. Inasmuch, confirming with other participants concerning specific incidences also provided confirmation and verification.

Procedures for Recruitment, Participation, and Data Collection

Recruitment for this study was in person. With trainmen working on the Western Region, the railroad has many of these individuals working a multitude of positions and locations. Those that have at least 5 years of employment were selected at random, with the number of potential participants doubling the amount that will be needed. Having ready access to the Western Region trainmen pool made recruitment less challenging. A brief discussion of what was intended and the specific requirements for participation identified who can or cannot take part in the study. The railroad industry is a large but close-knit community, where most individuals experience similar work issues at different locations. As a result of this, the pool of possible participants was ample.

Participation in the study group was carefully considered. There was not a focus group to discuss high level or broad issues that occur on the railroad. An interesting characteristic within the railroad industry is how its employees frequently deliberate on current issues and events that take place, and who may have been involved. Such a characteristic suggested that railroaders would not have reservations to participate in discussions revolving around their perspectives and experiences.

Data collection from each participant followed a consistent set of protocols. Each participant provided their years of service and experience, and participation was solely voluntary with no compensation.

- Data was collected through in-person or phone interviews.
- The study's author was the sole collector of the data
- The study's author initiated primary contact and follow-up phone calls with each participant.
- The interviews took place over a two-month period, or as participants were available.
- Duration of data collection events were scheduled for as much time as the participant was willing to give during each interview session.
- The interviews were recorded using a digital voice recorder or hand-written notes taken during the interviews.
- The follow-up plan if recruitment fell short was not a problem. The pool of trainmen on the Western Region is more than 1,000 employees, and many of these potential participants were readily available. Nevertheless, the number of trainmen selected were double the amount projected for this study.
- One concern in the participant selection process was if railroad managers declined to participate, in which case there were alternatives. In any case, managers from others railroads or service units were also available.

After each interview, the audio recordings and hand-written notes were transcribed. There was a post-interview call (or meeting) to verify the information

transcribed and confirm the observations with the participant that were available. Once the data had been analyzed by the author and NVivo, the results were analyzed and discussed in a later chapter of this study. The study, once completed with noted conclusions and recommendations, a final summary was presented to each participant in the form of a final debriefing of the study.

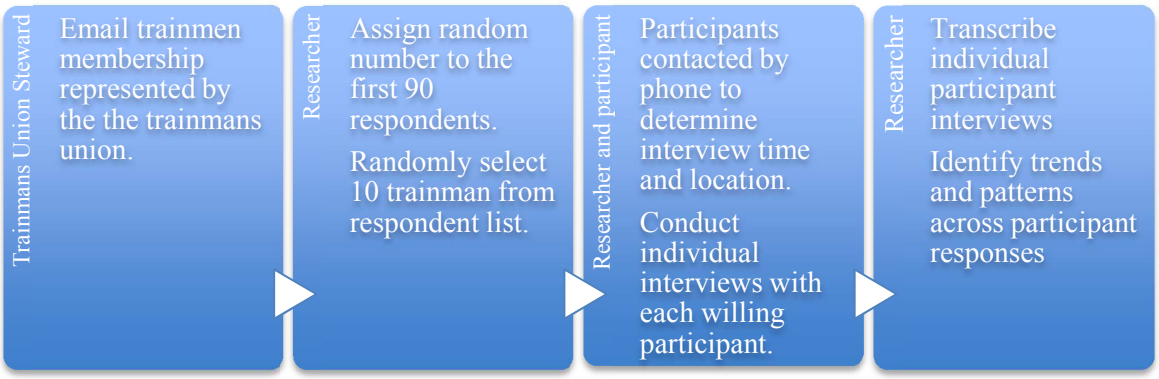


Figure 3. Participant selection and interview process.

Data Analysis Plan

Working around trainmen, hearing their interests and resentments of how they are treated can quickly become exposed, and it was important to highlight these issues through proper analysis. Each research question investigated when, where, and how certain incidences took place. The data collected was transcribed and revisited with each participant for accuracy. A thorough examination of the data collected looked for specific values each participant holds, such as what value do the trainman hold, in regard to their work, and what might be some of their biases? Do certain crafts within the railroad view their work differently than their counterparts? Examining the work trainmen perform, when it is performed, and what conditions do they labor under, the field can better understand the work environment. This understanding helped set the stage for what

happens when this study group is tested and disciplined; how discipline is administered is also very important to uncover.

When collecting data though interviews, it was important to remain observant and cognizant that all information or gestures were not overlooked. Taking notes during the interviews was critical, such as noting when the research detects stress in the participant's voice when responding to certain questions, as well as the words used to describe incidences. During the transcription process, the active notes taken during each interview were of value. These clues, revisited with the participant by following up on their feelings about their lived experience and how they felt in the past, helped to garner if there were changes in attitude or mindset. Once the data had been transcribed, certain keywords were identified, such as those that emphasized stress in the participant. Individual participant responses were coded for word phrases to identify commonalities and thematic patterns. Then the researcher triangulated the thematic patterns presented in the data to validate the coding process.

NVivo software helped to analyze the interview data. Word repetition, word count, descriptive phases, stress words, and derogatory terms were observed. The text analysis processed by NVivo contributed to the analysis by determining patterns and themes. Word clouds and star-burst that were created in NVivo, helped identify key terms that the interviewee contributed. Word frequency is a big clue in emphasizing values the participant places on their experiences.

Issues of Trustworthiness

Credibility

The issues of trustworthiness and credibility were addressed through triangulation and member checks. Through the inclusion of trainmen from different parts of the Western Region, this availed triangulation of the data. The data collection from distinct locations on the Western Region, which compromises of five western states, provided the diversity needed to assure that the data was credible. The information collected from one participant can be verified through company officials or union stewards. For study replication purposes, future researchers should contact local union stewards or railroad managers for verification of incident reports.

Prolonged contact with the Western Region trainmen was accomplished through the 19 years of working among this railroad craft, and within this same region. Observation of this craft across 10 Western states has allowed this researcher an uncanny close view of how this employee group operates. Member checks also helped confirm the authenticity of the data collected. Speaking with other trainmen helped to confirm the credibility of information that was collected during the interviews.

Transferability

The issue of transferability is important and one that was addressed through commonalities. Within the railroad environment, when critical incidences occur, the effects are not only felt at the location where the incident happened but throughout the railroad system. Thus, the fallout of critical incidences prompts company officials to create rules to prevent reoccurrence; this is intended to protect the employee and reduce

future liability for the company. A hopeful outcome of this study was to prompt the government and industry to revisit how rules are created; as well as, how discipline measures and testing procedures can be modified to improve safety thresholds for trainmen.

Interestingly, when the FRA implements rules, rule changes, or additions, the entire rail industry feels the change; as described earlier in chapter two, this reactivity parallels the response process that occurs in both the medical and aviation industries. Railroads, big and small, must make these adjustments to comply with current federal guidelines. Accordingly, any conclusions that are determined as a result of this study, could have an effect on the entire workforce within the rail industry.

The interviewees that participated in this study were asked to offer a description of their experiences in order to obtain a more in-depth understanding. The description of events offered by the study participants, included all the elements of when, how, and where the event took place. Weather conditions were also a part of the description of events, as well. This helped to understand how the trainmen felt when working within this environment.

Dependability

The dependability of the information for this study was essential. Researching the question that the Western Region trainmen ask themselves was vital, and being able to answer the question accurately is paramount. Safety, the impetus of this study, is of critical interest to each railroad employee and their families, not to mention the industry and government as a whole. The data collected herein sought to improve safety, but more

importantly, help rail employees understand the reasoning behind the current oversight system. Understanding the reasons why a rule was written or providing feedback in its creation, may facilitate acceptance of a given rule. The gathering of information for this study and its interpretation was the result of years of observation and inquiry. To this end, being able to confirm the results highlighted in later chapters, was essential. Interestingly, the railroad environment changes very little or very slowly, which allows for changes to be readily observed.

Being able to confirm dependability via audit trails can be performed, however, using triangulation was more efficient. As mentioned in previous sections, triangulation was accomplished by confirming data with the trainmen from other areas who participated in the study. Furthermore, having access to union stewards that represent the trainmen craft or operation managers that may have participated in an incident, helped described certain events; this aided in triangulating the data collected in this study.

Confirmability

Confirmation of the data collected is primary to interpretation. Confirmability was achieved by following the same patterns used in collecting the data presented herein. By using similar questions, and methods of collection and interpretation, confirmation of the study results rendered comparable results. Having worked as a trainman for six years prior to becoming a locomotive engineer, I could readily understand what most trainmen are experiencing in their work. My experience on the railroad also helped me to confirm the information for accuracy. Taking the information that is provided and reflecting on

one's own experience helped me to interpret what was being said, the nomenclature, and of the feelings that the participants had.

Most railroads are similar – as they follow federal guidelines for safe operating practices. If one outcome is discovered in a railroad's operating service unit, it can typically be found in other service units. Theoretically, this idea can be used when looking at other railroads across the nation for trends and patterns, making the results universal. Whether a railroad is privately held or government subsidized, the men and women that work on the railroads throughout the nation will feel the effects of any changes this study might precipitate.

Ethical Procedures

Ethical procedures for collecting data from the participants mirrored the IRB's recommendations for data collection. Participants were informed that their participation was held in the strictest of confidence, and their identities remain confidential. The identities of the participants, to only be known to me, and their participation was confidential from the public and other participants. The relevance and outcome of this study was explained to the participant, and any question that they may have had concerning the goals that are attempted through this study was thoroughly explained. The participants had the option to decline answering any question they perceive to be intrusive, as well as opting out of the interview process at any time. Overall, the safety and privacy of the participants are of the utmost concern in this study.

There were no significant ethical concerns related to recruitment materials and processes, as recruitment was handled in-person or through emails of interest to target

groups. The Western Region trainmen selected to participate in this study were approached via email. After they responded and were selected, they were asked if they would be willing to discuss and share their experiences on the railroad. Declining the invitation to participate was a possible outcome and one that was readily acceptable. Fortunately, there was a very large pool of eligible participants for this study, and finding replacements or alternate individuals for this investigation was not a great concern. Inasmuch, participants were not pressured or forced to participate. Moreover, my current position on the railroad is not of a superior or management position, and does not affect the trainmen's evaluation or work performance in any way. Ethical concerns such as trainmen or managers refusing participation or withdrawing from the study was not an issue. For instance, some railroad managers and directors declined to take part in this study. Therefore, by contacting other managers or former managers they helped fill this gap in this investigation. Likewise, participants were informed that they could stop the interview at any time they wished, or if they felt uncomfortable with the questions presented.

Treatment of Data

Data collected was saved on an encrypted, password protected stand-alone hard drive. This external hard drive contains the bulk of the sensitive information and only this author has access to the data. Other data that is non-sensitive in nature, was also kept on this hard drive. Making sure that the data is secure and remains confidential is important. Password protection of both the hard drive and servers is assured. Moreover, the computers used in this study have password protection. The identities of the study

participants will not be revealed to anyone except the IRB and select entities the board grants access. Otherwise, 5 years following the completion of this study, all sensitive data is to be erased from the encrypted hard drive storage.

Summary

The research design and rationale follow a phenomenological approach, which was obtained through interviews and personal observations. Improving safety, the primary concern of this study, sought to define answers and solutions to current safety issues on the railroad. Two over-arching questions were address: (1) How do Western Region trainmen perceive their safety is impacted through the rules testing process, as enforced by government and industry, and (2) What recommendations can be offered to improve safety and testing practices on the railroad? These principal points allowed this study to investigate what and how safety is viewed, practiced, and implemented on the railroad; as well as, if the discipline process jeopardizes trainmen safety.

My role as the researcher was to prepare the interview questions, data collection, and to ensure study integrity and confidentiality. All these steps were carefully approached to safeguard participant identity and participation. In addition, as the researcher, I provided personal observations and commentary of my experiences while working in the rail industry and with the Western Region trainmen. Finally, participant selection for this study followed qualitative structures for convenience sampling, which will allow for a more robust data set. Once all data had been collected, it was transcribed and analyzed for trends and patterns using NVivo qualitative software analysis.

Trustworthiness of the study warranted credible academic practices to ensure that data collected was protected and secure. The study was constructed using commonly known instruments so that the data and study can be easily replicated by other researchers. This allows for dependability and conformability of the study. Ultimately, it was the intention of this researcher to attain data from sources, without undue pressure on the participant, while guaranteeing confidentiality and dependability of the data. Ethics in pursuing this information was integral to completing this study accurately and safely for all involved.

Chapter four takes this study directly into the heart of the rail industry. Interviews with the men and women who are directly responsible for the safe handling of all rail shipments across the United States are presented. Also, discussion with the trainmen reveals on how they feel about today's rail safety programs and testing, and how these rules and regulations affect their safety. The subsequent chapters compile and present testimony from government officials on how rules are written and on what basis. The railroad officials' commentary provided further evidence for understanding how and why the Western Region trainman is frequently tested. In the end, these interviews were intended to help this study to uncover how railroad trainmen feel about their safety; and how, if any, improvements can be made to ensure less injury and human factor incidences on our nation's railroads.

Chapter 4: Results

Introduction

The interviews I conducted for this study with trainmen, managers, government official, and retirees from the railroads yielded one commonality: all interviewees believed the industry desperately needs to change its operational testing protocol. A number of participants cited command and control issues, while others argued there was a far greater focus on discipline instead of employee productivity. In order to gain clarity and better understand how railroad trainmen feel about safety it was essential to listen to the voices of those who labor within this industry.

This phenomenological study attempted to describe the environment of the railroad trainman, and the interaction that takes place between these employees, their managers, and the federal government. In this chapter, I focus on the research setting, the demographics of the research participants, the data collection, and subsequent data analysis. I also explain member checks and triangulation I implemented in order to address trustworthiness of the data collected.

As important as it was to learn what the interviewees had to say, it was also essential to explain my lens and potential researcher bias within the data analysis, so that all elements are considered and that the data analysis process is transparent. The presence of any bias requires highlighting so that any potential effect on the stated conclusions and interpretations can be taken into account. As such, researcher bias is discussed as well in the final chapters.

Managers, directors, and general directors from the Western Region Class I railroad carriers were invited to participate. Unfortunately, some general directors from one of the railroad companies never responded to the invitation, while all the other Class I invitees agreed to participate. The frontline supervisors and trainmen from one Class I railroad, whose upper management officials declined to participate in the study, shared their perspectives and antipathy about their company's command and control culture. These individuals appeared to suffer from disenfranchisement from their company. Ironically, the upper management staff that did participate, shared sentiments similar to those of their frontline supervisors (testing managers) and trainmen and sounded positive about their company's business culture.

Demographics

In this study, I investigated the work lives of railroad trainmen, those who have worked yard jobs as well as the road-freight trainmen, railroad managers and government officials. Most of the trainmen selected for this study had a diverse work history, within and outside of the railroad. Railroad managers were personally invited via email or phone call. The government officials invited to participate graciously accepted my invitation and were interviewed, delivering very candid and insightful sessions. This last group of participants helped to provide a better understanding of the interaction between the government and industry.

For this study, officials from FRA were interviewed, as well as officials from the NTSB. The NTSB makes recommendations for regulations to the FRA; however, whether the FRA follows through on such recommendations is optional. Interviewing

individuals within this investigatory and regulatory branch was enlightening and informative. The final participant group I interviewed, retired railroad trainmen, provided their views on railroad culture, the work environment, and operational testing in the 1960s, 1970s, and 1980s, prior to the establishment of FRA oversight.

All of the participant groups included in this study shared how they felt about operational testing, the railroad industry, and the government's role in the operating equation. Improving trainmen safety is the underlying purpose of this study, and getting the feedback from those who labor in the railroad industry is vital to this goal. The significance to social change in the rail industry cannot be fully addressed unless we understand what the railroad trainmen experience in their daily work life, what they are exposed to, and how they deal with adversity and dangers they encounter. Consequently, the role of government and industry can also help to explain why the rail industry operates as it does.

Data Collection

The data collection process followed the methodology described in Chapter 3, primarily consisting of in person interviews. Although a few interviews took place by phone due to the distant locations of the interviewees, the essence of their testimony was carefully noted and their information carefully analyzed. Almost all interview participants displayed a real passion for their jobs, their feelings about how they are scrutinized, and how important corporate culture is to trainmen safety.

Following this study's objective, I transcribed all the interview recordings and noted nuances such as the study participants' tone of voice or nonverbal communication,

which added important information to the interview transcript. The interview participants' observable passion for the topic revealed not only the desire to participate in this study, but the yearning for change in the industry. Despite being offered a private location (i.e., private library room) in which to conduct the interview, most participants instead chose open, familiar locations. Being comfortable in one's setting is important, so if the interviewee chose familiarity over privacy, their comfort would greatly benefit the depth of this study (Wilkinson, 2017).

The time allotted for each interview was 1 hour; however, when that time was up, many participants chose to continue to discuss their thoughts and feelings about their job, well after the one hour mark. I recorded each interview using a digital audio recorder, except those with the government officials, which I completed using hand written notes, with later member checking with the interviewee for accuracy.

The recruitment of study participants from the primary focus group, the railroad trainmen, was the only group that was not personally asked, but emailed through their union steward. Their response to participate was overwhelming, which led to the conclusion that the trainmen desire to have their voices heard. During these interviews, hearing the words *testing* and *discipline* repeatedly from trainmen across four geographic states was revealing. Even more interesting was the unanimity of how negatively this group felt about being tested by their employer.

Attempting to collect the most data possible, I asked 10 managers from one railroad company to participate, but only half agreed to do so. It is interesting to note that so many senior administrators from the largest Class I railroad in the Western Region

declined to participate, whereas all of the administrators and managers from the other Class I company agreed to participate. Whether this difference in willingness to participate in the study corresponds to meaningful differences in the culture of the two companies is up for speculation. The end result, however, was a lost opportunity to discover why the upper management-group from one particular rail-carrier operates as it does.

Finally, the information from the men and women that work switching cars in railyards and road-freight conductors about their safety is what this study is about. Oftentimes, upper management can be so disconnected from the field employee that they have difficulty understanding the daily obstacles that are encounter, which includes the constant operational testing and hundreds of operating rules that govern them. Thus, what upper management concludes can be substantially distinct from the man on the ground.

The retired railroad trainmen invited to participate in this investigation spoke of what operational testing was like in their early days, and described how intensive the testing was when they retired. This purposeful sample group was assembled using snowball sampling. After I interviewed one retiree, that participant would recommend others to contact, due to their knowledge of the railroad's history and the suggested participant's willingness to be involved in a research study.

Finally, the most noteworthy participants in this study were government officials. This group demystified the role government plays in the operational testing of railroad trainmen. After interviewing the government officials, it was very notable how much railroad management does not fully understand the role that government plays in

operational testing. The trainmen, for that matter, also share in this misunderstanding of the government's role. The willingness of government officials to help clarify and contribute to this study was essential, not to mention insightful. Each interviewee from this group helped create a better understanding of how rules are conceived, approved, and implemented in the field.

I maintained confidentiality by being the sole interviewer and transcriber of the data collected. Consequently, as the interviews lasted greater than 1 hour, on most occasions, the data collected and notes taken were very revealing. Even more revealing were the stories that were recounted by several study participants who were aware of the same event(s), allowing for spontaneous member checking and triangulation.

After conducting all the interviews, I used Vector 3 recording software to transcribe audio notes and transfer them to Microsoft Word files. The Word files were later entered into NVivo software for data analysis. Furthermore, the tones and nuances of speech patterns that took place helped add description of expressions and tone to each of the paragraphs and sentences as needed. Data analysis ensued with replicable processes of using transcribed digital audio, handwritten notes, and digital analysis of word repetitions and sentence patterns.

Data Analysis

As the data was personally collected and each interviewee's feelings transcribed, the digital audio recordings were downloaded into Vector 3 software for transcription. The Vector 3 software allowed for complete audio transcription of each participant's interview, word for word, in order to ensure that no data was overlooked. After the

transcriptions were completed, they were saved into a Microsoft Word document and then downloaded into NVivo for analysis. This qualitative software allowed for the interviews to be coded. Trigger words were identified from the interviews. As each interview was coded, phrases and sentences were placed within these trigger word nodes. This helped to determine patterns and trends of the interviewees. Word repetition, word count, descriptive phases, stress words, and derogatory terms were also observed.

Word frequency can be a clue in emphasizing values the participant places on their experiences (see Table 3). The text analysis produced by NVivo contributed to the analysis by determining patterns and themes. Individual participant responses were coded for word phrases to identify commonalities and thematic patterns. Notes taken during the interviews were critical, as the notes indicated when the interviewee became stressed when responding to certain questions, as well as the words used to describe incidences.

The railroad industry trains its own employees on how to work, and on the rules and regulations that govern them. It was discovered that trainmen and managers who argued about similar working problems and issues principally came from one company. Interestingly, these managers and employees from one railroad company expressed the same stresses and anguish over testing requirements, while trainmen and managers from another railroad company responded much more amicably and positively about their duties and responsibilities. These other Class I railroad trainmen expressed their issues in a much more favorable light than their colleagues from the other company.

Evidence of Trustworthiness

Credibility

Researcher credibility and bias in this study needs to be discussed, and while doing so, it is also important to discuss some background information that is useful in understanding the need for this study. Some of my personal experiences can be summed up using examples of incidents while working different positions on the railroad.

Hiring out on the railroad I worked in the engineering department, I experienced no forms of testing and discipline, yet in the transportation and operating departments this was not the case. Describing the engineering department, and how it operates, will help explain some of the different work environments within the railroad.

The engineering department, also known as the Maintenance of Way, includes different work groups. One group known as section (gangs), and the other known as system (gangs). These two groups handle different responsibilities. The section gangs repair and replace rail, switches, rail crossovers, ties, and other rail components that can fail along predetermined sections of mainline and intercity rail. Some of these sections extend out as far as 100 miles from the section gangs base of operation. The individuals that are assigned to these work gangs typically labor during the daylight hours, Monday through Friday; this occasionally varies due to traffic or emergency circumstances, such as a rail break. This group's workday begins with the morning call to order to discuss accidents or incidents that occurred during the previous day or during the night across the entire system. Next, the section gang discusses a different safety rule(s), and how they

could improve their work surroundings. Keeping workers safe and incident free is the priority of these repair gangs, and this department has a very low incident rate.

One of the positive outcomes from the morning safety briefing of both work groups is a low incident rate. Another tool this group uses to keep abreast of safety issues are the monthly stand-downs. These stand-downs require the attendance of all of the engineering employees from their sector, and no additional activities are planned during this day. The events are usually led by the safety captain, manager of terminal maintenance (MTM), or another group leader. The discussion of rules, processes, and issues are discussed. On occasion this event is used to present safety awards and to recognize employees who have made exemplary efforts to keep the group safe. These opportunities give the employees a platform in which to discuss safety and other concerns. While working in this department, I experienced zero operational testing.

I began working for the railroad in 1998, in the engineering department in El Paso, TX, later moving to Phoenix, AZ. While working in the engineering department, I moved from the section gang in Phoenix, AZ. to the system steel gang in the Western Region. The system steel gangs laid Continuous Welded Rail (CWR), or ribbon rail, and worked 5- to 12-hour days. My particular gang moved from Northern California all the way up to the state of Washington. In 2000, engineering employees were offered the opportunity to transfer to other railroad crafts, and I transferred to the transportation department in Stockton, CA, where I became a trainman. From Stockton, CA, I moved back to Phoenix, then eventually to Tucson, AZ. While working as a trainman based in Tucson, I worked at rail terminals from El Centro, CA to El Paso, TX. This lasted until

2004, when I transferred to the operating department as a locomotive engineer. I remained a locomotive engineer until 2014 when I joined the management team at my company.

While in management I worked several positions, beginning as a yard manager, then moving to manager of quality, safety, and production manager for tie projects (railroad cross ties) then manager of operating practices (rules instructor), and finally taking the responsibilities of an road operations manager in 2016. After these management experiences, I returned to the operating craft as a locomotive engineer, in order to gain a better understanding of the safety issues railroad trainmen encounter, as well as to conduct this study from a non-management position.

Upon initiating this study, issues of credibility arose when it was questioned that I was too close to the subject matter to accurately report the data collected. In response to this question, I chose to interview individuals who labored outside of my area of operations. Moreover, this study intended to record the voice and feelings of Western Region trainmen, and how the rules that they work under are affected by operational testing.

The diversity of the data collected in this study was achieved by interviewing trainmen, their managers, and retired trainmen. Member checks ensured that the data collected was not only transferable but accurate. Many of the stories that were told during the interviews were confirmed through interviews of the union stewards and other trainmen lending credibility to the data collected. In addition, the managers interviewed acknowledged many of the issues that the trainmen shared during their interviews. The

feelings the managers shared revealed how they perceive their position influences the safety of trainmen. Such data can be acquired in a similar fashion through in-person interviews of the union stewards and managers alike, making this study easily transferable. This is essential to confirming credibility of the data in future studies.

Triangulation and member checking ensured that the data was credible and accurate. Trainmen from across the Western Region were added to the participant lists, and then randomly selected. What was revealed in the interviews was that, depending on the company a trainman worked for, the stories recounted were very similar. Moreover, the thoughts and concerns of managers from the different companies helped to confirm what the trainmen were enduring in the performance of their duties. What the employee liked or disliked about their company was echoed in the voices of their coworkers and managers. What was said in the interview did not vary from employee to employee, rather the differences were seen between company practices.

Transferability of a Phenomenological Study

The transferability of the results of this study are applicable on all railroads, as the railroad environments do not vary much from company to company. In fact, if the eastern railroad carriers were to be studied using the methodology of this investigation, similar outcomes would be apparent. This phenomenological study, in its attempt to understand the railroad environment and the interactions that take place between labor, management, and the government. Federal oversight agencies, such as the FRA and the NTSB, have discovered that critical incidents and safety issues occur on all railroads. The need to reduce incidents and dangerous events, in a sensible and reasonable manner, remains a

constant challenge for the government and rail carriers. Unfortunately, much of the fallout from any incident falls on the shoulders of the railroad worker first; according to the interviews collected in this study, it is common practice to lay fault on the human element involved in accidents and incidents. Understanding what happens among Western Region trainmen can translate to a better understanding of how other railroads operate, as well as how safety is addressed and what can be accomplished to improve trainmen safety.

There are no lines that divide railroad operations from different geographic areas, only the business culture that lies within. Government oversight remains equal on the eastern coast and the western coast of the United States. Again, this suggests that the outcome of this study can be applied to any rail system in this country, as governing rules remain the same throughout the United States. Moreover, when the FRA issues an emergency order, it affects all the railroad and rail carriers across the nation. Consequently, any changes made are felt across the rail system as a whole. Therefore, what happens on one railroad will have an effect on the future practices on all other railroads.

Transferability of the results of this study to other rail carriers was important while undertaking this research. As railroads operate under similar protocols, taking the results of this study and applying them to other rail carriers is feasible. Nevertheless, it remains important that the corporate culture of a particular railroad be taken into account when determining how safety is addressed. Dependability of the results of this study are

as important as the transferability, in that it remains critical to all railroaders that safety remains at the forefront of railroad operating protocols.

Dependability

The dependability of the data that was collected for this study helped to clarify many of the questions that were raised concerning railroad operational safety. In order to achieve this, it was essential that trainmen and their managers that work in the Western Region of the United States be asked a series of questions concerning operational safety. It is of extreme importance to understand the safety rules and how they are applied and become mitigating factors in railroad operation safety. The dependability of the information and how it was collected is as important as the data itself.

Uncovering the contributing factors that are at play concerning operational safety is crucial when determining safety thresholds. For this reason, not only was it important to collect data from the railroad trainmen, but also from operational testing managers and government officials. The inclusion of the latter group is necessary to help identify how safety rules from government and industry cooperate, and how such rules affect the working trainmen. To ensure dependability in the data collected, triangulation of the information was incorporated. This was achieved by taking the data collected from each trainman and comparing their responses across those that were collected from other trainmen and their operating managers.

Questions asked of operating practice managers and government officials concerning rules and their reach, helped to determine the dependability of the information provided by the trainmen, which was the study's focus group. Moreover, triangulating the

data provided by trainmen throughout the Western Region also helped ensure the dependability of the data collected. As data flowed from one operating area to the next, the information remained relatively constant. This phenomenon that trainmen and their managers' responses remained similar, in regard to safety related questions; which provided internal dependability within the data collected, and was constant throughout the Western Region.

Dependability is imperative to ensure consistency in the information obtained and the transferability to future studies. The collection of data from a broad operating range of railroad trainmen across the Western Region helped to ensure diversified information. The parallels drawn from the trainmen data, the data collected from the operating practices managers, and those from government, strengthened the dependability of the outcomes and results of this study. Conformability is significant to study replication and applicability, and should be discussed so that the format of this study can be replicated and extended in future research.

Confirmability

Confirmation of the data collected is primary to interpretation. Confirmability was achieved by following the same patterns used in collecting the data presented herein. By using similar questions, and implementing uniform methods of collection and interpretation, confirmation of this study's results rendered comparable results. Having worked as a trainman for six years prior to becoming a locomotive engineer, I am able to recognize what the trainmen experienced in their daily work. Collecting data from other labor areas and managers helped to confirm the information the interviewees provided.

Taking detailed notes during each participant's interview, member checking, audio recordings, and personally transcribing the recorded interviews allowed for the data to be interpreted accurately; in addition, participant and researcher bias was acknowledged and accounted for.

Results

This study intended to garner a better understanding of the effects of operational testing as it concerns safety, so that the field manager could learn how to improve rule testing and implementation. However, what this study discovered was that operational rules within railroads are created primarily as a liability buffer, then used to improve safety, as discipline is applied to the employee. What remains as the basic change agent in safety is the culture within the railroad company itself. While some companies include the employees in improving safety, other companies use discipline to keep workers in line. Unfortunately, assessing discipline to ensure performance has a negative effect on morale, and that is an approach that should be avoided.

The results of the interviews, following the audio recordings and handwritten notes transcribed with the Vector 3 audio software, were analyzed using NVivo qualitative software. The NVivo software allows the researcher to identify patterns and trends, and to help organize the data collected for every participant of the study. In addition, this method allows the researcher to add important notes such as facial expressions, body language, and other observations. These items are not only unique to each interview, which are essential in determining the strength and depth of each

interviewee's response. The results from the participant interviews and the patterns observed are reported below.

The outcome of this part of the study was disturbing in that a pattern of *disenfranchisement* appears significantly among employees from one particular company, the words and feelings which were conveyed throughout the interviews. Participant X sums this up, "…the company on the other hand determines their effectiveness of their managers by the amount of testing failures they get, otherwise, why would there be quotas on the amount of failures that they have to find? It makes you more bitter about coming to work."

Meanwhile, all Western Region trainmen equally demonstrated negative feelings about discipline and operational testing. Positive patterns came mainly from operational testing managers in their desire to help keep employees safe.

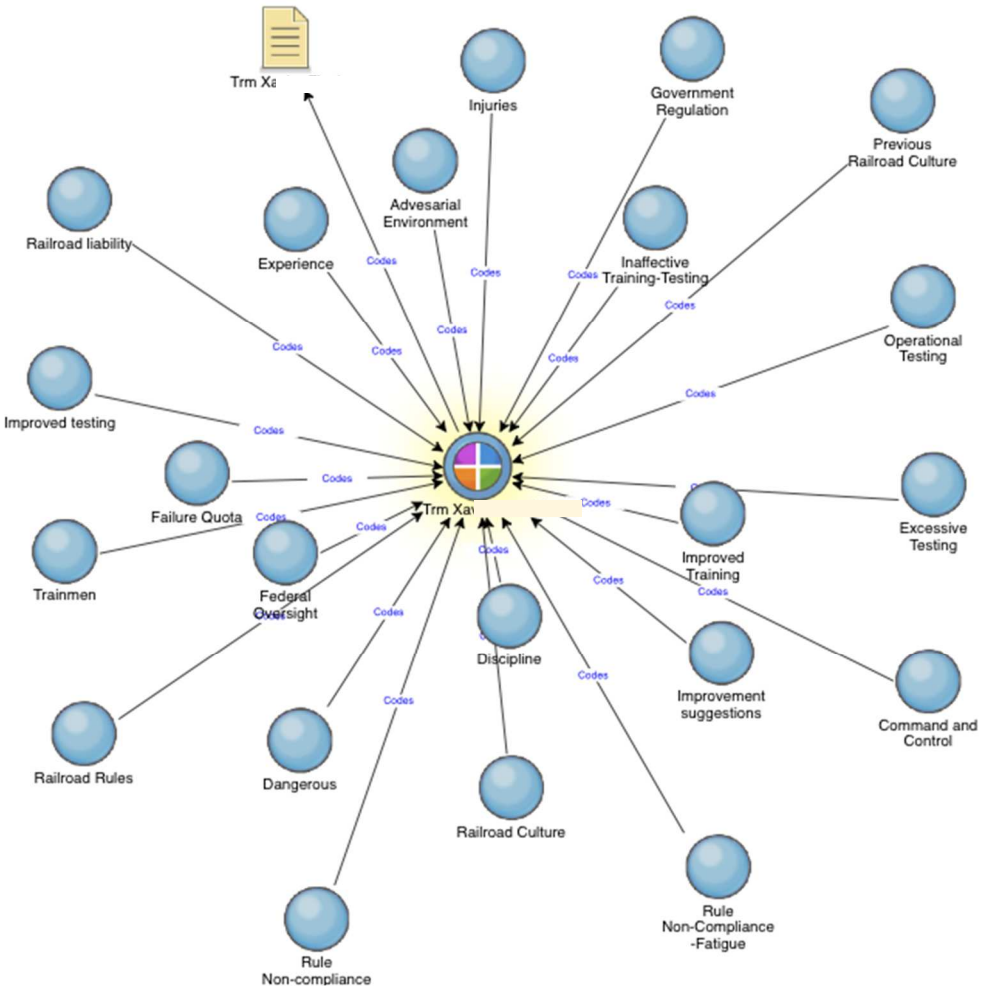


Figure 4. A trainman node. This figure illustrates a node created after analyzing a transcription of a trainman's interview.

After each interview was transcribed, nodes were created to categorize phrases, sentences, and words (see Figure 4). The transcribed data was then classified with these nodes. The purpose of the nodes was to determine patterns and trends. Nodes of negative, positive, and supportive feelings were arranged, then the interviews were categorized accordingly. As seen above, the strength and frequency of the trigger-words of greater emphasis have longer extended nodes. Lesser emphasized words and phrases have shorter node extensions. Study participant X, whose node is pictured above stated, "The testing

has increased 100% since I hired out. But I think it's redundant and counter-productive. They preach safety but they distract the younger employee with the constant testing. It's not safe practice, as the distraction can lead to incidents or accident."

Improving worker safety is critical in every industry, and the railroad industry demonstrates this by following up each incident with a new rule. However, excessive testing does not result in fewer injuries. Data demonstrates that Class I railroads in the Western Region have nearly a similar number of accidents (see Figure 5), but where one railroad tests significantly less and their company culture is different, the other railroad insists on finding failure in the laboring of its workforce. Participating managers from one railroad describe their trainmen as equal partners in work completion, while participants C and J from another railroad stated, "all the rule changes are reactionary, and attempt to shift blame away the company."

Upper management from one Western Region rail carrier shared many of the safety concerns of their field managers. This correspondent interest is important for employee cohesiveness, which improves safety in the long run. However, as expressed by interviewees from another railroad, when one operating area is unaware of what occurs in other operating areas, the lack of awareness can lead to mistakes, incidents, and ineffective operations. Table 3 demonstrates how many references some managers and trainmen made during their individual interviews.

Data discussed earlier highlights that Class I railroads in the Western Region have nearly a similar number of accidents despite if the company applies operational rule testing. Trainmen view operating rules as oversight created by the industry and

government to oversee their daily work without their input. The perceptions of the labor force frame a socially constructed view of an adversarial environment on the railroad, which permeates in the uncertain and fearful beliefs trainmen hold regarding safety testing and discipline practices.

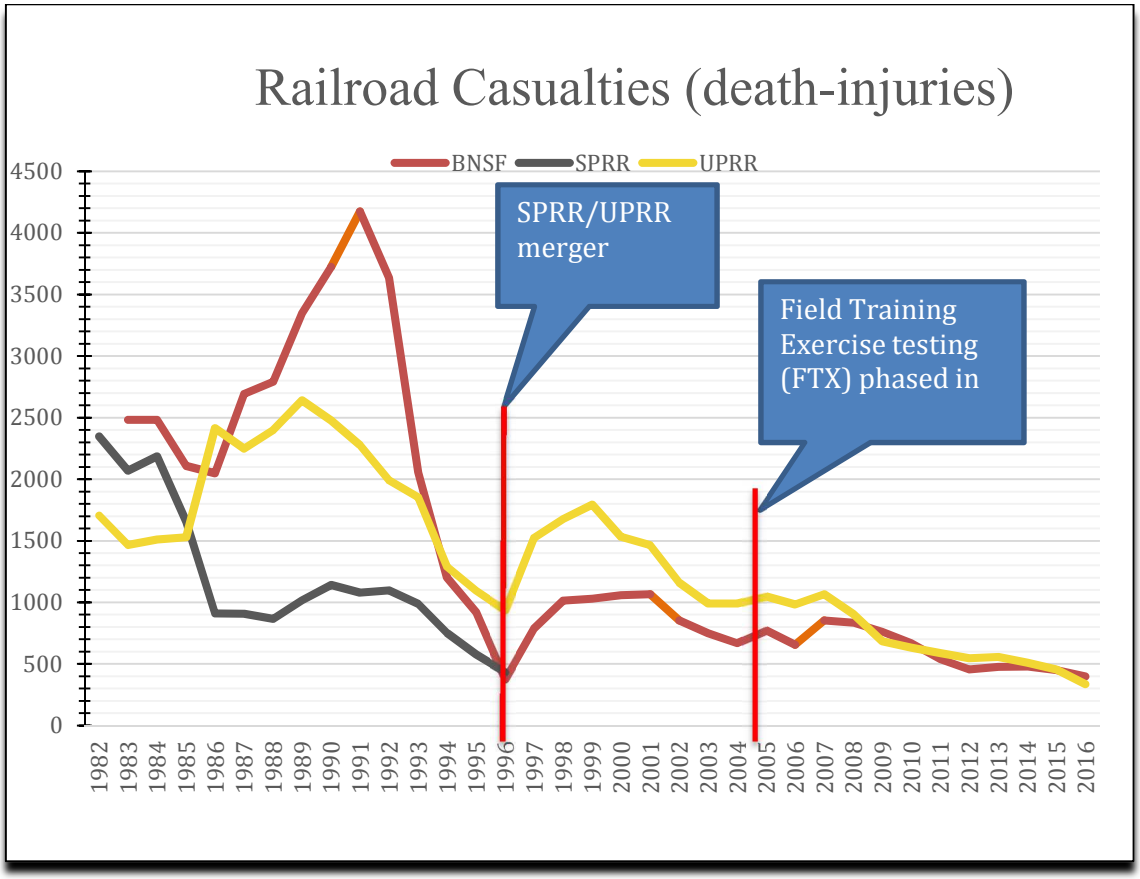


Figure 5. Railroad Casualties from 1982 to 2016, resulting in deaths and non-fatal injuries, *casualties per 1 million train miles traveled-Western Region data. Adapted from "Casualties (deaths and nonfatal injuries and illnesses)", by Federal Railroad Administration, Department of Transportation. fra.dot.gov. http://safetydata.fra.dot.gov/officeofsafety/publicsite/query/casualties.

From the themes identified, *testing* and *discipline* occurred most frequently across all interviews, and the feelings attached to these themes were very negative. The positive

patterns among the trainmen interviews were enjoyment for their work, and an accepted understanding for the need for safety, training, and with some even testing. Insomuch that these elements are necessary to better educate employees in the function of their job. However, when *discipline* was attached to *testing*, the trend turned 180 degrees to the negative side, where *anguish*, *disappointment*, *anger*, and *disenfranchisement* were clearly significant. It is here where the threshold for safety becomes affected and injury or incident can occur. Fearing discipline distracts the employee from attending to their work.

The knowledge that managers need to find failure in operating practices to satisfy their company's testing quotas, worsens the working conditions of the trainmen. Manager participant K concluded, "So the demand for testing, were ever increasing, and subsequently decreased the quality of the test that I felt were necessary to keep the trainman safe. I hate to admit this, but the quality of my test has significantly dropped due to the increase of quantity of the test that I have to do every month." This participant went on to say, "The amount of testing that I had to do in this service unit was unrealistic, way too many tests were required of the management team. I failed to see what they were attempting to accomplish by the excessive test. What is unrealistic to actually do any quality testing with the amount of testing that was required, which left the potential for managers to falsify, or smoke a test."

Table 3
Frequency of Themes Identified in Managers' and Trainmen's Interview Responses.

Common Themes from Interviews	Managers	Trainmen
Adversarial Environment	82	176
Command and Control	29	59
Discipline	30	55
Excessive Testing	42	112
Operational Testing	57	84
Failure Quota	37	111
Rules Violation	14	38
Government Regulation	10	71
Federal Oversight	5	37
Improved Testing	32	20
Improved Training	22	33
Improvement Suggestions	38	91
Ineffective Training-Testing	59	137
Experience	6	41
Previous Railroad Culture	20	42
Railroad Culture	45	120
Railroad Liability	7	63
Lawsuits	1	24
Railroad Rules	34	66
Rule Noncompliance-Fatigue	1	19
Dangerous	8	78
Injuries	8	42
Rule Noncompliance	11	20
Union Influence	6	13

Following the node classification, word clouds were created to highlight the recurring themes that were present. The trainmen interviews were analyzed and the responses were grouped into word clouds to determine primary or trigger words in the interviews. Greater reference to a particular word, the greater the size. This can help determine where the study participants' feelings are mainly focused. The relationships within these word clouds are derived from the analysis of the interviews as overarching

themes. From the government interviews, themes such as oversight, regulation, and safety were principal areas of focus for this group.

The managers interviewed produced a distinct overview of the relationship between industry and government. Themes such as regulatory compliance, operational testing obligations, testing failure quotas, company testing standards were revealed during these interviews. Manager participant S states, "I feel that both railroad and government, as well as the employee, have a big stake in any potential changes to improve the railroad. The railroad employee, only does as best as he is trained. I feel there is a lack of training on the railroad today, for the amount of perfection the company requires of the employee."

Throughout the interview process, the participants shared throughout this investigation that it was their employing company, forced by the government, who instigated constant change in order to implement safety modifications. According to the trainmen, these changes originated from the employing companies as a result of its limited knowledge of operating rules set forth by the government. Consequently, this lack of knowledge reduced the threshold for trainmen safety. However, not all of the trainmen participants and operating practice managers felt the same way about this issue. This study has illuminated that there is a great divide between the employees and managers from one company to the next, and this is where subsequent discussions begin.

The views of the trainmen and field managers from one company expressed great distress with their employer and the methods implemented to keep the employee working safely. It was this subgroup of trainmen that used words such as *discipline*, *testing*, and

firing more often than any other word. These trainmen maintained a strong belief that their employer was out to *fire* them, by testing them at high intervals. The trainmen interviewed assembled a collection of subject matter arguments that led to fear of discipline, disenfranchisement, discontentment, stress, and paranoia to name a few. Participant S tells us that the trainmen aren't exaggerating these feelings and states,

> He'll (the trainman) get tested at his originating terminal, tested through wireless downloads by an operations manager, and tested at the final terminal by that manger. The crux of this is that every test has the potential to discipline the employee. The excess of testing plays on the morale of the employee. There are employees complaining that they get tested several times a day every day, I think they are being harassed. This may sound like an exaggeration but we have documentation demonstrating how often a railroad employee gets tested.

According to government officials, field managers, and trainmen, some companies are progressive in how they address operational testing; while others, retain antiquated safety procedures and protocols heavily focused on excessive testing, failure quotas, and discipline. Participant S states, "It seems as though the company does not want to clarify them because then everyone would comply to the letter and nothing would get done."

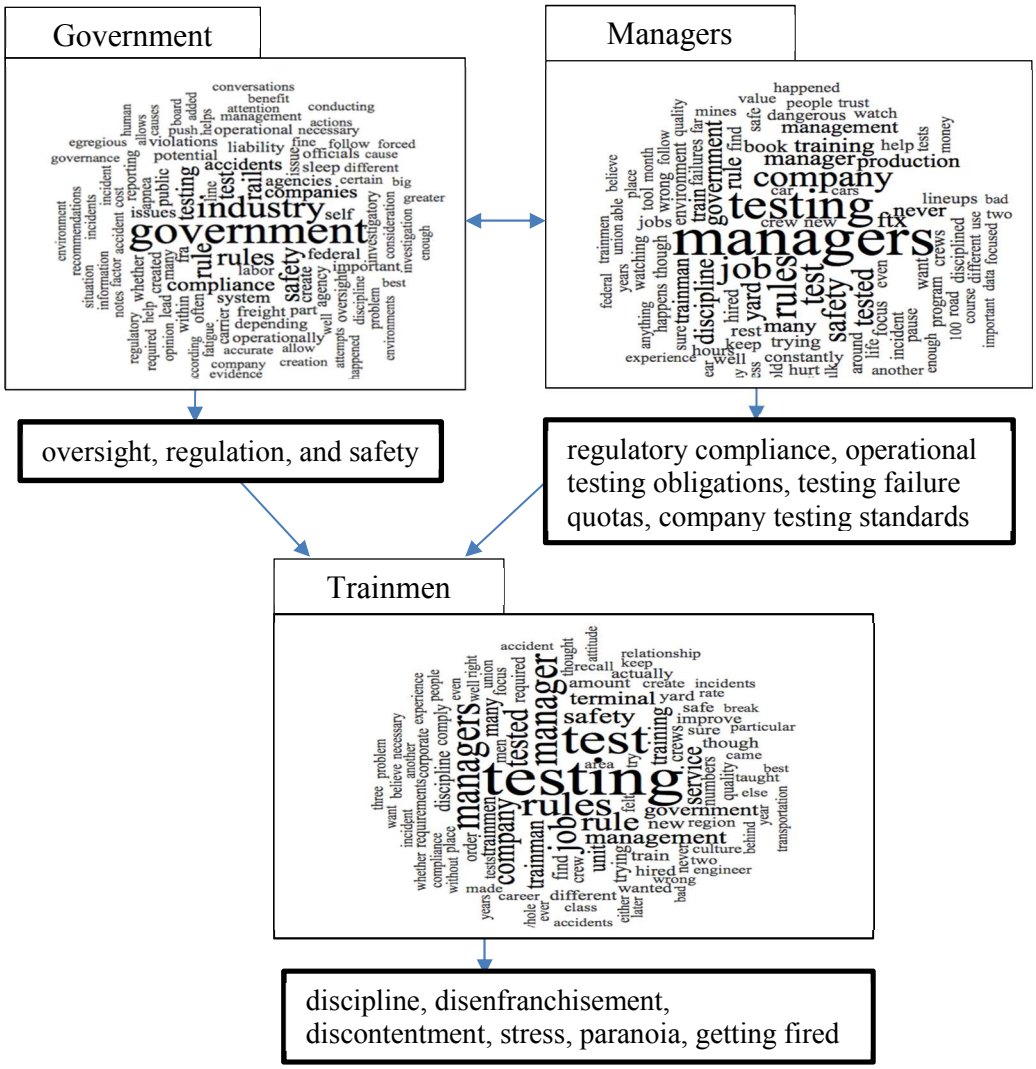


Figure 6. Word clouds produced from interview transcriptions using NVivo.

To accurately address the results of this investigation, it is essential to identify the principal actors in this study who represented the government, the rail industry, the operation testing managers, and the trainmen. The outcome of the interviews resulted in some unforeseen data. The trainmen are under intense scrutiny by operating managers. Government agencies, such as the FRA, remain vigilant over the operating practices of rail employees and the safety practices within the rail industry. The purpose of this monitoring is to ensure that the trainman operate according to the rules set forth by the government and their employer.

However, it was hypothesized in earlier chapters that the government scrutiny on rule compliance draws the trainman's attention away from the tasks at hand; and causes the trainman to overly focus on the operational tester in his desire to avoid discipline. This led to the theory that the government upset the balance in safe rail operations. Yet, the results of this study have introduced a different conclusion: that the rail companies themselves have caused this impact, rather than the government. This discovery now challenges the views and beliefs that have been accepted for years in the rail industry concerning the governments' influence on operational testing and as the instigator for testing and discipline.

Modern business principles argue that working with the employee base, open communication, sharing common goals, and business outcomes are essential for a cooperative, cohesive, and productive workforce, to a greater extent, which is key to safe operations.

Therefore, the interview questions which were asked attempted to determine how a Western Region trainman felt about his work and safety. Yet, a recurring theme that arose during the interviews was focused principally around the testing that takes place. Participant R adds, "the conductor today can get fired for not looking at the switch lock, or if he doesn't look at something. And in these cases, the railroad goes to extremes to discipline the employee. There is no negotiation of this grey area to determine if the trainman made a mistake or if he intended to be negligible in not following the rules." This leads to severe morale issue of the employee.

The overarching concern within this study is the outcome of testing, the discipline that takes place, and the requirement to find failure in the trainman's performance. It is here where change is not only necessary but imperative in order to reduce injury or accident on the job. The focus of this study was to address how government rules and regulations affect the safety thresholds of railroad trainmen. What was discovered through this investigation is that government regulation does not affect safety. Instead, what came to light, is that the rail industry itself is the principal party that influences safety.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Following the discussion of the results of this study, the demographics, the analysis, and the collection of data, the findings herein are noteworthy to the rail industry. This section conveys an interpretation of the findings, conclusions, and implications for the future, as well as recommendations that may help improve the conditions that railroad trainmen currently experience. In this phenomenological study, I investigated how Western Region trainmen felt about the operational testing they undergo and how this testing impacts their safety.

The interviews yielded interesting results, many of which can be implemented today on some of the nation's railroads. All of the trainmen from one rail company expressed their frustration with the amount of testing they encountered daily, sometimes being tested as much as four times in one day. On the other hand, trainmen from another Western Region railroad company described how little they were tested, and how their work goals were similar to those of their managers. The other groups interviewed in this study were retirees who discussed their experience during the infancy of the FRA oversight, and what testing was like for them during these early years. Railroad managers I interviewed shared their perceptions of how their employers require them to test. In addition to this mandated testing, some companies require managers to find performance failures in the trainmen's daily work, while other companies have no such constraint. Rounding out the study were interviews with government officials, which resulted in the discovery of how they ensure safety in the rail industry.

Interpretation of Findings

In this study, I sought to explain how Western Region trainmen view their workplace safety, as well as how they perceived the influences of federal regulation and rule compliance in their work environment. In order to understand this phenomenon, the investigation was grounded in SCT. In previous chapters, I explained that SCF would be the strongest theoretical foundation to understand the views of trainmen on safety and how discipline plays a role in their job security and morale.

SCF can be used to create an understanding and framing of the social environment where people work (Creswell, 2013; Guba & Lincoln, 1990; Patton, 2002). For example, the nature of the railroad requires trainmen to spend most of their day in one another's company. This environment places trainmen in a position to have conversations to break up the monotony and quiet of their daily work. It is in this way that trainmen frame their perception of their craft and that of the organization through conversation and examples of lived experiences. As rules testing continues at an explosive pace and some managers seek specific failure rates amongst their employees, railroaders create a socially constructed frame about their craft and perceive the railroad to institute an adversarial environment, resulting in the uncertain and fearful beliefs trainmen shared regarding safety testing and discipline practices.

Berger and Luckmann (1966) explained that "reality is socially constructed . . . [and] man's consciousness is determined by his social being." For the men and women laboring on the railroad, their professional growth is interconnected with their peers. Many of the participants shared how they began their careers on the railroad through

apprenticeships, during which they learned about their individual crafts and their role in the organization from the experienced railroaders they shadowed. For each trainman new to the craft, their identity as a railroader is constructed as they listen to and absorb the stories and conversations from the tenured trainmen around them. These older trainmen express their perceptions of observed and lived experiences with the company's discipline practices. When senior trainmen embrace a belief that managers are focused on firing employees, they provide the frame for young trainmen who accept the experiences of their peers as a reality of laboring on the railroad.

Lastly, SCF helps to examine how public policy affects specific groups, especially when policies appear to benefit particular groups (Cairney & Heikkila, 2014). This is an instance where industry enacts policies that benefit an organization by giving the appearance that a company acts responsibly and encourages safe operational practices. However, trainmen view the adoption of enormous and competing rules as a way for railroads to protect their bottom line because railroads are self-insured. This is the underlying perception trainmen hold toward their employing company—that the industry has established policies to make financial gains at the expense of its employees by placing undue influence on the workforce through numerous rules.

The findings of this phenomenological study unveiled new evidence about an industry that is divided on how to address safety. The government contends that it is important to regulate the railroads only when safety incidents repeat themselves, or when the industry shows no inclination for change. Moreover, government officials maintain that only 5% of railroad rules are federally mandated, the rest of the rules are created by

the railroad industry itself, in contrast to what Hovland (2013) argued. Hovland stated that the government creates rules in an attempt to make the railroad industry safer, yet the interviews determined otherwise. However, for the most part, current research (Stich & Miller, 2012; Sussman & Rasler, 2008) is in line with data collected in this study, that adversarial work conditions contribute to low morale and stressed employees on the railroad.

When the government seeks to change or create regulation, they sometimes seek the input of the companies and labor force in this industry. This perspective was revealed after interviewing government officials and reading reports issued by the federal agency. However, according to the railroad managers and Western Region trainmen I interviewed, this method of rulemaking is not fully understood by most who work on today's railroads. Communication is imperative to safety, and being available to listen to what the workforce has to say is key to understanding the challenges and needs of the rail industry. However, some railroad companies create rules based on past incidents to avoid potential injuries and lawsuits, as well as to keep the FRA from further investigating the companies' procedures and protocols.

Many of the railroad managers interviewed shared information about how their company's operating rules often change, sometimes weekly, without any input from the labor force, leaving it up to the employee to independently seek out the changes to the operational rules.

Interestingly, Western Region trainmen interviewed from one railroad company did not express such discontent, fear, adversity, or uncertainty. Surprisingly, one

particular major railroad carrier appears to have aligned their long-term business goals with their employees' goals, allowing their labor force to work safely while improving productivity. According to several trainmen interviewed, the privately-owned rail company initiated a profit sharing program which incentivized employees to feel the consequences of operating mistakes; thus, with employees working more safely and reporting issues, there appears to be a diminished need for operational testing of trainmen working in this company.

"Having skin in the game changes the dynamics of how we could do business and how the employee works" reported one participant. This participant contends that if his employer changed their business plan and included the employee in the profits [profit-sharing], they would be a strong competitive force in the railroad industry. He went on to say, "Unfortunately, our business culture stresses a high amount of operational testing and to find failures to ensure employee compliance."

Such a draconian business view prevents some large railroad companies from making greater profits as this practice does not encourage the employee to have greater care and diligence while laboring on the rails. Another manager interviewed reasoned that railroads are self-insured and when accidents occur the railroads must pay out-of-pocket to compensate the party for any losses; which is why excessive supervision is insisted upon. Any payouts the railroads make affects profitability and the bottom line. However, one railroad company appears to be more focused on placing blame on their workforce for poor performance than on changing the company culture, meanwhile their competition does not engage in this practice.

Safety is key to any industry's profitability, but many managers in the Western Region find themselves overworked, underpaid, and incessantly testing employees into compliance. Many of the new rules created by the railroads are not discussed with employees because, according some managers, there is very little time to disseminate the information. Recently, one railroad company has been reducing their management staff, but requiring those that remain to shoulder the responsibilities of the departing managers. This has the potential to result in less testing of the employee, but still does not address the frequent changes in the trainmen's operating rules. This lack of communication about new rules on some railroads appears to be part of the culture within the companies themselves.

Operating rules are created by the industry mainly without employee input. This process puts trainmen in a precarious position of needing to continually learn new additions to their operational rules, which currently stand in the hundreds. As a result of working excessively long hours and shouldering multiple responsibilities, railroad managers can miss potential opportunities to inform and instruct their employees on rule changes. This results in some employees not complying with company rules, albeit unknowingly. The railroad operational testing managers who participated in this study acknowledged many of the shortcomings of their industry. They shared that they felt they had no hand in rule creation, and only serve as test proctor and disciplinarian. More revealing here was that the managers interviewed demonstrated a true yearning to educate and keep their employees safe but struggle to find the time to do this.

Railroad managers agreed that their operational testing has increased exponentially since 2005. Each manager, in addition to overseeing production and customer requirements, is tasked with operational testing of employees. Sometimes the 18-hour day of a railroad manager leaves little time for the mandated testing of employees, and many admitted that their tests were hollow and only done to appease their superiors. This participant states, "Operational tests are not so much to educate and improve safety, but was more of a numbers game. Although safety education was the intended outcome of the tests."

When new rules are created, the trainmen are tested on them by managers. Some trainmen fail these operational tests and are subjected to discipline after multiple failures, yet reaching the entire employee base equally is a greater challenge. For example, in the engineering and signal departments, daily briefings are held focusing on safety and rules. However, these departments tend to go on duty at specific times of the day, Monday through Friday; and this permits manager of these departments the opportunity to reach all of their employees. Unfortunately, train service is unique in that there is no set schedule for the road freight trainmen. This unit's operational process prevents managers from being able to have department wide meetings with their employees in order to disseminate new or changed rules.

Unlike employees that cover yard vacancies and road-freight jobs, the men and women who work in the rail yards do not have set work schedules and are summoned for duty at any moment. These employees, like the road-freight trainmen, can get called out at any given time, day or night, making it difficult to interact and have briefings with a

manager. Moreover, a number of managers interviewed shared that their collective work requirements do not afford them ample time to educate their employees thoroughly. The education appears to fall on the shoulders of the employees themselves. A few railroad companies mandate that their managers operationally test employees, sometimes daily, to meet the company's quota for testing and failure rate.

The testing requirements of the railroad transportation manager are unique in that some companies require their managers to fulfill a testing quota and failure rate. Some managers drew parallels to motorcycle patrolmen who issue tickets to fill their department's quota. According some of the managers who participated in the study, "This is bad business." Another manager stated, "Operational tests should be used to educate the employee and make him a safer employee, but this is not what we are doing here … many of us managers just test to keep ourselves out of the hot-seat during the morning conference calls with our directors."

Some managers shared that having a 16 to 20% failure rate in operational testing is not a true reflection of how employees operate. According to government sources, there are no requirements for failure, there are no quotas. The FRA only requires the railroads to adhere to government regulations and operate safely. Out of a desire to achieve a zero-injury rate, "some companies in the rail industry appear to be overzealous in their testing," stated participant C. However, as long as there are humans laboring, there will always be the potential for an incident to occur. Managers from one railroad company shared that if they do not demonstrate that they are finding opportunities for

employee coaching, or *failures*, it is insinuated they are not meeting their managerial objectives.

In this instance, the government allows the railroads to govern themselves accordingly, as long as they do not pass below the minimum allowable standards. However, the government does not stand for harassment, but many employees feel just that when they get tested multiple throughout their shift. Moreover, as many of the participants mentioned, some companies take on operational testing like a crusade. Below is data obtained from the FRA demonstrating the incident rate from the Western Region Class I railroads.

The FRA provided data, starting in 1982, on railroad casualties and non-fatal injuries. The data for the Western Region major freight railroads was analyzed, with the Southern Pacific Railroad (SPRR) merging with the Union Pacific Railroad (UPRR) in 1996 noted. According to the data from 1982 to 1996, the SPRR experienced 2,347 casualties in 1982. In 1996, the casualty rate dropped to 436, which constitutes a decrease of about 18.6%. Comments compiled by the FRA noted that former SPRR employees experienced very little testing by management, and that there were fewer injuries and accidents; yet overall, managers were comprehensive about safety education.

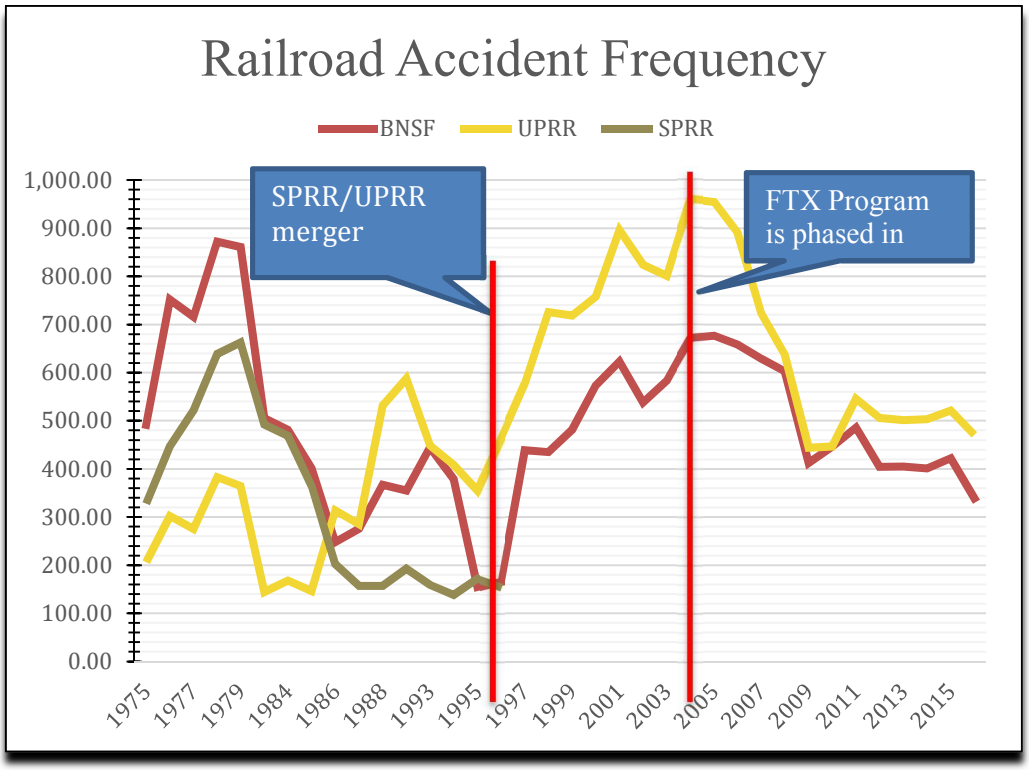


Figure 7. Railroad Accident Frequency from 1975 to 2015, per 1 million train miles traveled-Western Region data. Adapted from "Accidents in descending frequency by cause (by calendar year)", by Federal Railroad Administration, Department of Transportation. fra.dot.gov. http://safetydata.fra.dot.gov/officeofsafety/publicsite/query/trainaccidents.

The UPRR, who acquired the SPRR in 1996, experienced 1,706 casualties in 1982. By 1996, the casualty rate fell to 936. However, this rate increased to 1,048 in 2005, which coincides with intensifying operational testing protocols as a result of the Field Training Exercise (FTX) being phased in. This casualty rate change from 1996 to 2005, reflects a 12% increase. In addition, by 2016, this rail carrier managed to reduce their casualty rate by about 32 %, reporting 337 casualties for the year. This appears to be a result of the extensive testing program that the carrier adopted.

Another Class I railroad data provided by the FRA noted that in 1982 the BNSF had 2,481 casualties, decreasing this number to 379 in 1996 and 337 in 2016. The employees and staff from this company that were interviewed agreed that communication is key to safety. Their operational testing requirements appear to be far lower that of their competitor; yet, it seems to be producing the same results in reducing casualties. Moreover, the employees shared that they are far less apt to take short cuts in their work, due to their stake in the company's profitability. This speaks volumes about how to employees can be motivated to take safety into their own hands, encouraging responsible behavior in the field. According to research participants in this study, giving the employees a say in their safety program through ownership will not only improve safety and morale, but it will also improve production and reduce injuries.

Employees from one railroad company mentioned that profit sharing was a great incentive to improve safety and production. Many employees believed that their company trusted them to act responsibly and gave them the impetus to police themselves more thoroughly. Reducing employee casualty, while also improving relationships and lives, is essential to bringing positive social change to the railroad community. Study participants from another major railroad stated their desire for just that, and cited a dire need for organizational change. Participant B stated,

> If I work without any issues, why are they still wasting their time testing me? It would make me feel relieved if they didn't do this, because when you're out there working, you know you're gonna be tested, you just don't know from what direction it will be coming from. We are always looking

> for that white company vehicle. Your head is on a swivel, and not really in the game, and managers test a lot to keep up with their quota.

Participant D stated, "Today, the testing is out of control … the managers are watching us closely just to find the smallest infraction." Moreover, Participant T argues,

> …and the management can't get the data that shows that the incident rate supports their excessive testing. The guys are doing so well the managers are nitpicking the small things, because that's all they can get. Like they have to have some sort of failure. I think they are nitpicking because they are not getting the failures they need?

The trainmen from one company, who were interviewed during this study, lamented that the operational testing at their company is excessive and many claimed it to be bordering on harassment. The managers who participated in this study concurred that their operational testing program was intensive. Consequently, many of these managers stated that the increase in the amount of operational testing led to fewer quality tests and a breakdown in employee relations. All of the managers from one company, who participated in this investigation, felt truly passionate about their responsibility for safe operations, and expressed their desire to improve the relationship between labor and management.

Social Change Implications

Now, working a job that has different start times every day, with no scheduled time off, no holidays that can be taken, and if you choose to take a day off, you're

chastised for *laying off*, is almost impossible to imagine, but this is the world of the railroader. A handful of positions keep regular daytime or night time hours; however, the vast majority of trainmen report for duty at all times of the day or night on any given day in the year, without a schedule. The struggle of most railroaders begins at this moment and snowballs into disenfranchisement. Scrutiny and discipline follow every trainman as he performs his daily job functions. Subjugated to constant management oversight, an employee experiences feelings of condemnation and scrutiny. It is here that social change has great potential to not only improve working conditions for trainmen, but of all rail employees as a whole.

Policy Recommendations

Safety is everyone's concern, and as the data demonstrates, excessive testing is not the answer. Railroad companies, labor unions, and government can have a greater outcome in rule compliance and safety if there exists a general understanding and approach from all sides. Liem and Mendiratta (2011) argue the need for direct channels of communications between all within the railroad for added security. If railroads can create rules, using government data and suggestions, in conjunction with input from the employee, operational rules will be easier to apply. This translate into a more cohesive workforce, ready to adapt to changes.

Furthermore, if government policy can be created that would allow the rail industry tax deductions to achieve a level of employee-ownership, this could address employee participation concerns and morale. Also, there appears to be a need to address the FRA's concerns surrounding the issues of sleep apnea and how it relates to fatigue.

Here, both the government and rail industry the can work together to create policy that would screen future applicants, and help those that may have apnea.

Areas for Future Research

Future research that can add to this study could focus on how fatigue influences rule noncompliance. Perhaps, what measures are being taken to improve relationships with employees? Or maybe even, how might the company open dialogues with the labor force to address their employees' concerns regarding safety and intensive testing practices? Also, by asking the question, what is the purpose of *failure quotas,* the current practice of setting quotas for failures among the labor force which managers observe? What is the company's perspective regarding setting quotas for failure? And, how does this operational design for seeking out failure improve labor practices and increase safety? All of these questions seem to add relevance to increase safety, and should be asked and answered.

Forming a cohesive safety and business plan, which includes the voice of the employee, railroads stand to benefit far beyond what their shareholders anticipate. Many examples of this can be seen within the top ten companies in the United States who established policies and practices that seemingly *care for* the employees', and respect their perceptions and input. Working in close association with employees has the potential for great social change and the basic dynamics of safety to the positive end of the spectrum. As companies are always looking to improve their bottom-line, this can be accomplished by making the employee a partner in production, and not the adversary.

By giving the employees a greater say in their safety and productivity through a profit-sharing partnership, employees will require less vigilance, as their successes will be equal to their performance. Disciplining the laborer is a draconian method to ensure compliance, it is antiquated and needs to be eliminated. Making the employee part of the business plan will not only ensure a productive workforce, but one that is safe and supervises itself, making the railroad a safer place to work.

Conclusions

Imagine if you will, that from the minute you arrive at work until the time you leave, you are scrutinized and evaluated at every moment, and that anytime a manager tests you there will be discipline involved. In addition, whenever railroad employees from some companies attempt to collect pay for contractual arbitraries (additional work performed beyond their assignment), the company will often deny the claims filed. According to union officials, this motivates the employee to engage the power of the trainmen's union to obtain compensation from the company. An excessive testing culture underscored by pay and communication issues is what is happening on many railroads today. It appears the organizational philosophy is that incessant testing will result in safer employees or zero incidents. A philosophy such as this, overlooks that materials are impermanent: rails will break, switches will fail, and incidents will occur as long as humans and equipment are a factor.

When this study began, looking at the federal government as the center of the intensified operational testing on railroad systems, was misplaced. The federal government, through the FRA, currently oversees the rail industry and makes regulation

with input from legislators, the NTSB, unions, and the railroads themselves, as well as through their own investigations. When regulations are created, they take into consideration input from industry and labor. In most instances, the process for establishing new regulation is long and prescribed. If an incident warrants regulation, the federal agency acts accordingly. But the FRA does fulfill its objective of keeping the public and railroads safe, without reducing the safety thresholds for trainmen.

Evidence produced by this investigation suggests that the government not only acts responsibly and within its realm, but conscientiously. The FRA gives the rail industry ample room to self-regulate, and attempts to keep regulation at a minimum, in order for the railroads to operate at their own capacity and efficiency. In other words, the government allows the rail industry to govern itself, and to make necessary changes when it needs to improve safety and reduce casualties through their general code of operating rules (GCOR). How often railroads operationally test their employees on the GCOR is at the discretion of the railroad companies. Therefore, current government railroad regulations and oversight appear to not intrude to the extent of diminishing the safety threshold for trainmen.

However, it does appear that any diminished safety issues affecting Western Region trainmen are a product of the railroad companies intensified operational testing protocols and practices. Whether rail carriers testing practices are in place to justify a proactive step toward safety, to ensure managers are testing the GCOR, or simply to keep the employee in line, the motivation for disproportionate testing is not clearly understood. When an employee feels threatened or intimidated, they will more than likely pushback.

This pushback is not only a problem, it amplifies other issues when employees are focused on avoiding discipline than performing their job safely and productively. One injury or fatality is not only costly to a railroad company, but the mental anguish suffered by coworkers, and the changed lives of the trainman's family is immeasurable.

Conversely, trainmen and managers working for a railroad with a completely different business plan, responded very differently in respect to other company employees. The participants from the one Class I railroad company shared similar concerns about safety and productivity; yet, their colleagues from the railroads feared discipline much more than they did. Moreover, the managers from one company seemed to agree with their operational testing plan, and felt they performed quality tests. They are not subjected to finding a predetermined failure rate like some companies implement. Overall, the operational plan of one railroad seems to be generally accepted by labor and management, as opposed to their competitors, where both managers and trainmen appear to be overly concerned about their performance.

In the previously reported data, it was revealed that Class I railroad companies experience nearly the same number of incidents. Yet, one company operationally tests far less than their competitor, without predetermined failure percentages that their managers must achieve. As this study and government data demonstrates, excessive operational testing does not have a proven impact on safety, but does effectively marginalize, demoralize, and antagonize managers and trainmen. One can hypothesize that when managers and employees disagree with company policy very little will be accomplished than if you agreed and supported company policy.

Adherence to safety does not have to be forced upon the employee, but it should be generally accepted and embraced by all who labor within the industry. Depending on what approach is taken to achieve safety, one can either be forced into it or readily accept its concept. Transactional leadership and top-down management will result in pushback. Subsequently, productivity will be lost, as well as any potential help that might come from the employee in the form of collaboration. Working with an organization's employees allows for greater feedback and cooperation.

Now, a scenario where industry works in conjunction with the employee and its representative union, this is where implications for social change can be most effective. By listening to the voice of the employees, not only can a better work environment be attained, but one that is safer and less stressful. Working in low stress atmosphere, where the men in the field will look out for each other and the best interests of their company is idyllic. No one person comes to work with the intent of getting killed, maimed, or to cause damage to his employer; or seeking to cause a safety incident that would affect the community, but incidents happen. However, when industry and labor mutually create operational rules and processes from a shared approach, much can be gained for both sides. Positive rule implementation, and a safer more rule cognizant and compliant workplace will emerge. Thus, policy should be driven from within the railroad organizations in order to affect the changes desired by both regulatory agencies and the railroad itself.

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Appendix A: Interview Questions

Interview questions presented to railroad employees:

1. Describe your railroad experience when you hired on, expressing your feelings during your first years to today (or since separation, if retiree).
2. How do you feel about the rules testing by railroad managers?
3. What do you believe is the single most harmful element while working on the railroad?
4. Why do you think the railroads test as much as they do?
5. What role do you think the government plays in the testing of rail employees'?
6. How would you propose to improve current testing procedures, and enhance collaboration between industry, employees, and government, as it pertains to safety?

Interview questions presented to railroad managers:

1. How do you feel about testing trainmen?
2. Why do you think the Western Region requires you, as a manager, to test as much as you do?
3. How would you propose to improve current testing procedures, and enhance collaboration between industry, employees, and government, as it pertains to safety?

Appendix B: Invitation to Participate in a Study

Railroad conductors and trainmen with the Western Region SMART union, you are invited to participate in a doctoral study analyzing the relationship between the railroad industry testing of trainmen, federal government regulation, and safety. Railroad workers who have been with the company at least 5 years in working status, and between the ages of 23 and 65 are invited to participate. Your participation is completely voluntary thus no thank you gift(s), compensation, or reimbursement (for travel cost, etc.) will be given. You have the option of discontinuing participation at any point in the study. The interview should take no longer than one hour, at which point, you may continue at your discretion.

Your rights will be protected during the doctoral study process. If interested, please contact Carlos M. Mendoza, who can be reached at XXXXXXXXXX, or at XXX-XXX-XXXX. If there are any questions about your rights as a participant, please contact a Walden University representative at XXX-XXX-XXXX.