MECHANISMS OF VOICE-GRIEVANCE, INJURY REPORTING, ABSENCE, TURNOVER AND ADVERSE EVENTS AND THEIR ASSOCIATION WITH COLLECTIVE BARGAINING: AN ANALYSIS OF EASTERN HEALTH EMPLOYEES, ST. JOHN'S REGION

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Mechanisms of Voice-Grievance, Injury Reporting, Absence, Turnover and Adverse Events and their Association with Collective Bargaining: An Analysis of Eastern Health Employees, St. John's Region.

by

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Abstract

Absence, grievance, injury reporting, voluntary turnover and adverse events are mechanisms of voice that may be used by dissatisfied employees to voice their discontent. Of interest is whether the use of such mechanisms of voice is more prevalent during volatile periods of collective bargaining. This research study examined the use of these mechanisms of voice during periods of collective bargaining, for three unions who represent employees of the Eastern Health organization, St. John's region. Once approvals were reached, Eastern Health human resources data sets were obtained. Collective bargaining information was gathered from the Newfoundland and Labrador Health Boards Association, for each of the unions under study, and time frames were created representing the start and end dates for each collective bargaining event, unique to the collective bargaining cycles of each union. Counts of events were gathered utilizing these time frames. Descriptive analysis was performed to assess the rates of each mechanism of voice. Negative binomial regression analysis was performed to identify whether a significant relationship between the outcomes of interest and collective bargaining, could be identified. Results of the analysis were mixed, with some clear indications of statistical significance identified, indicating that there are times when certain voice mechanisms are utilized during particular collective bargaining events.

Key Words: Employee Voice, Mechanisms of Voice, Absenteeism, Grievance, Injury Reporting, Voluntary Turnover, Adverse Events, Collective Bargaining, Labor Relations, Industrial Relations, Employee Dissatisfaction.

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Chapter 1

1. Introduction

1.1 Workplace and Voice

The relationship between an employer and the union representing the interests of employees is extremely important to organizational culture, and can be highly influential upon the employees working within the organization (Freeman & Medoff, 1984; Hebdon & Brown, 2008). This relationship, or the labour relations climate, has been studied extensively; the workplace has been a source of interest and an area of study since before the 1960's (Becker, 1960; Hebdon & Brown; Zangaro, 2001).

Of interest in this current study, is whether the labour climate is sufficiently influential to encourage the use of employee voice, that is to create reason for employees to desire filing official complaints, reporting injuries, missing work, quitting their posts, and furthermore reducing the quality of overall work performance. The process of examining employee behaviors of grievance, injury reporting, absenteeism, voluntary turnover, and performance quality can be very enlightening and may help shed light upon the current internal stability within the organization (Gifford, Zammuto, Goodman, & Hill, 2002; Krueger, Brazil, Lohfeld, Edward, Lewis, & Tjam, 2002; Lum, Kervin, Clark, Reid & Sirola, 1998).

Grievance filing, injury reporting, absenteeism and voluntary turnover are costly, both financially and interpersonally, to any organization, and being aware of the degree

of their use is essential to maintaining a healthy, well-functioning and efficient workplace (Becker, 1960; Bennett, 2002; Buchan & Seccombe, 1995; Dunn & Wilkinson, 2002; Lum, Kervin, Clark, Reid, & Sirola, 1998; McHugh, 2001; McNeese-Smith and Crook, 2003; Taunton, Perkins, Oetker-Black, & Heaton, 1995; Upenieks, 2003; Zboril-Benson, 2000). To some degree, these behaviors will always occur; however, it is important to understand that their impact goes beyond the workplace, as they may indicate that an organization is not functioning at an optimal level, with employees who are showing lower levels of performance in their jobs, and are utilizing behaviors as mechanisms of voice (Becker; Bennett; Buchan & Seccombe; Dunn & Wilkinson; Lum, Kervin, Clark, Reid, & Sirola; McHugh; McNeese-Smith and Crook; National Steering Committee, 2002; Taunton, Perkins, Oetker-Black, & Heaton; Upenieks; Zboril-Benson).

Another way employee performance can be measured is to analyze rates of errors that are made within an organization, which may be a way to gauge performance quality (Freeman & Medoff, 1984; Gittell, Von Nordenflycht & Kochan, 2004; Katz, Kochan & Gobeille, 1983; Kleiner, Leonard & Pilarski, 2002; Krueger & Mas, 2004; Mas, 2008; Mas 2006). Adverse events are errors or "close calls" that occur in the workplace, and in the current study refers to those made within the health care sector (The Canadian Patient Safety Dictionary, 2003). They may be related to a multitude of causal factors associated with the care of patients such as: medication errors, injuries to patients, and procedural errors, amongst others; these errors range from minor to major in scope (The Canadian Patient Safety Dictionary; The National Steering Committee on Patient Safety, 2002). They may be the result of workplace issues, bringing forward the concept that unhappy or

unsatisfied employees care less about the level of effort they put into performing specific job tasks, thereby consciously or unconsciously reducing the overall quality of workmanship (Freeman & Medoff; Gittell, Von Nordenflycht & Kochan; Katz, Kochan & Gobeille; Kleiner, Leonard & Pilarski; Krueger & Mas; Mas, 2008; Mas, 2006).

Moreover, identifying areas that have higher levels of these behaviors could assist the organization in adopting a proactive approach, whereby potential or actual issues could be identified rapidly, enabling the organization to provide interventions, long before they become problematic. Organizations that encourage a satisfying workplace will motivate employees to become active participants who are stakeholders, rather than individuals with no concrete affection, who may rely upon negative worker behaviors to show their discontent (Cappelli & Chaurin, 1991; Cohen, 1993; Cox, Issa, & Koblegard, 2005; Havlovic, 1991; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies, 2002; Kuokkanen, Leino-Kilpi & Katajisto, 2003; Lewin & Peterson, 1999; Lum, Kervin, Clark, Reid & Sirola, 1998; Manion, 2004; McNeese-Smith & Crook, 2003; McNeese-Smith & Nazarey, 2001; Spence-Laschinger, Finegan, Shamian & Almost, 2001; Steltzer, 2001; Upenieks, 2003; Zangaro, 2001).

Demands placed on employees may influence how well motivated and satisfied they become with their organization, which in turn, may encourage the expression of employee voice (Cappelli & Chaurin, 1991; Cohen, 1993; Cox, Issa & Koblegard, 2005; Freeman & Medoff, 1984; Havlovic, 1991; Hebdon & Brown, 2008; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies, 2002; Kuokkanen, Leino-Kilpi & Katajisto, 2003; Lewin & Peterson, 1999; Lum, Kervin, Clark, Reid & Sirola, 1998; Manion, 2004;

McNeese-Smith & Crook, 2003; McNeese-Smith & Nazarey, 2001; Spence-Laschinger, Finegan, Shamian & Almost, 2001; Steltzer, 2001; Strahan, Watson & Lennon, 2008; Upenieks, 2003; Zangaro, 2001). Compounding this issue are other serious events that impact the level of job stress felt by healthcare employees, including: the current climate of cost control, downsizing, reorganization, the increasing use of casual employment, mandatory overtime, inability to utilize annual leave banks and heavy workload (Cappelli & Chaurin; Cohen; Cox, Issa & Koblegard; Havlovic; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies; Kuokkanen, Leino-Kilpi & Katajisto; Lewin & Peterson; Lum, Kervin, Clark, Reid & Sirola; Manion; McNeese-Smith & Crook; McNeese-Smith & Nazarey; Spence-Laschinger, Finegan, Shamian & Almost; Steltzer; Strahan, Watson & Lennon; Upenieks; Zangaro). While these issues can effect each employee differently, they have the power to add to their personal burdens, as well as impact overall job security, which may result in utilization of employee voice (Cappelli & Chaurin; Cohen; Cox, Issa & Koblegard; Havlovic; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies; Kuokkanen, Leino-Kilpi & Katajisto; Lewin & Peterson; Lum, Kervin, Clark, Reid & Sirola; Manion; McNeese-Smith & Crook; McNeese-Smith & Nazarey; Spence-Laschinger, Finegan, Shamian & Almost; Steltzer; Strahan, Watson & Lennon; Upenieks; Zangaro).

1.2 Industrial Relations

An important aspect of organizational culture is the concept of industrial relations, which is well represented in the literature. In essence, industrial relations examines the relationship between employers and employees with particular emphasis on unionization,

thus this field examines how well the employer and unions coexist together during both good times and bad (Freeman & Medoff, 1984; Hebdon & Brown, 2008). Difficult periods in their relationship may influence employees to create a rocky workplace, with increased usage of missed days from work, filing complaints, job quits and performance issues specifically related to injury reporting and level of quality (Becker, 1960; Bennett, 2002; Buchan & Seccombe, 1995; Clark, 1980; Dunn & Wilkinson, 2002; Fitzpatrick, 2001; Katz, Kochan & Gobeille, 1983; Kleiner, Leonard, & Pilarski, 2002; Krueger & Mas, 2004; Lum, Kervin, Clark, Reid & Sirola, 1998; Mas, 2008; Mas, 2006; McNeese-Smith & Crook, 2003; Steltzer, 2001; Taunton, Perkins, Oetker-Black & Heaton, 1995; Upenieks, 2003; Zboril-Benson, 2000).

This study will examine the levels of grievance, injury reporting, absenteeism, voluntary turnover, and adverse events behaviors within Eastern Health, a health care organization located in Newfoundland and Labrador.

> Eastern Health is the largest integrated health care organization in Atlantic Canada…formed on April 1, 2005 from the merger of seven health organizations…the new organization extends from the St. John's region west to Port Blanford, including all communities on the Avalon, Burin and Bonavista Peninsulas (Eastern Health, 2008, About/Quick Facts section, ¶ 1-3).

In particular, this study will examine the rates of these behaviors occurring in the St. John's region of Eastern Health, specifically involving the acute care portion of health services within the metro area.

Considering the expansive distance of Eastern Health's employment zones, coupled with the fact that it is the only health care organization on the east coast of the province, it is clear that a unique situation occurs for employees within this organization. The concern is that once employees are at the point where they are dissatisfied, they are unable to leave the organization to find other work, as there are no other major acute care organizations to find employment with (Cappelli & Chaurin, 1991; Cohen, 1993; Cox, Issa, and Koblegard, 2005; Hammer & Avgar, 2005; Havlovic, 1991; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies, 2002; Kuokkanen, Leino-Kilpi & Katajisto, 2003; Lewin & Peterson, 1999; Lum, Kervin, Clark, Reid & Sirola, 1998; Manion, 2004; McNeese-Smith & Crook, 2003; McNeese-Smith & Nazarey, 2001; Mitchell, Holtom, Lee, Sablynski & Erez, 2001; Spence-Laschinger, Finegan, Shamian & Almost, 2001; Steltzer, 2001; Upenieks, 2003; Zangaro, 2001). What happens to these employees? They are met with a massive dilemma: do they stay and become even more dissatisfied, or risk it all and quit the organization for other opportunities outside of St. John's or the province? If desperate enough, they must move away from a familiar home environment and start anew. For many, the idea of moving is a daunting prospect, and in some cases impossible to consider. For these individuals, the risk of leaving outweighs the unhappiness of staying (Hammer & Avgar). It is possible that they will stay within the organization, all the while feeling ever more desperate for change, but with nowhere else to turn. This may be a time when voice mechanisms are utilized within the organization.

1.3 Union Groups

Within Eastern Health, St. John's region, there are different unions, each with its own unique interests and representing a variety of employee groups who are employed in different areas within the organization. These unions represent employees with a diverse level of skill sets, education levels, professional responsibility/accountability, seniority, pay and experience. The unions include: the Association of Allied Health Professionals (AAHP), the Newfoundland and Labrador Association of Public and Private Employees (NAPE), and the Newfoundland and Labrador Nurses Union (NLNU). While these unions represent different employees, their ultimate function is the same: to use their collective power as a source of voice, representing the interests of their members, ultimately concerned with work conditions, as negotiated with the employer (Hebdon & Brown, 2008).

1.4 Collective Bargaining Cycle

The collective bargaining cycle is a period of time where unions become involved in the process of contract negotiation with the employer (Freeman & Medoff, 1984; Hebdon & Brown, 2008). Included in this time period are a variety of events that enable the process to evolve to the point where a contract is signed. These events include: meetings, negotiation, conciliation (an event whereby an outside expert acts as an intermediary to assist with overcoming an impasse in the negotiation process, with the hopes of influencing reconciliation between the parties), collective bargaining expiry date and signed date, strike vote, and strike activity, among others (Appendix 1; Newfoundland and Labrador Health Boards Association, 2007; Hebdon & Brown). Since this period can

be a highly charged time for employers and union groups, it is interesting to consider the overall effects that this process has upon employees, in particular the mechanisms of voice that are used in response (Freeman & Medoff; Hebdon & Brown). Collective bargaining events should be viewed over periods of time so as to see the true cycle effects taking place.

Each of the unions under study have different bargaining times for contract negotiation, and go through an evolving process to formulate an agreement and reach a final contract deal (Hebdon & Brown, 2008). The negotiation phase takes varying amounts of time, and may be considered successful or unsuccessful at the end of the process, by union members through a voting process, known as a ratification vote (Hebdon & Brown).

Understanding the influence that the collective bargaining process has on employees is a critical step in appreciating the weight that unions have with their members, and the degree of industrial conflict that occurs as a result of the collective bargaining process (Clark, 1980; Hammer & Avgar, 2005; Hebdon & Brown, 2008; Steltzer, 2001). The over-arching theme of this study is to examine whether union culture provides indirect influence on members, which is outwardly portrayed by the use of the behaviors under study: absence, grievance, injury reporting, voluntary turnover, as well as decreased quality of performance.

1.5 Problem Statement

Employee behaviors, including grievance, injury reporting, absenteeism, voluntary turnover and adverse events continue to challenge organizations (Becker, 1960; Bennett,

2002; Buchan & Seccombe, 1995; Clark, 1980; Dunn & Wilkinson, 2002; Fitzpatrick, 2001; Katz, Kochan & Gobeille, 1983; Kleiner, Leonard, & Pilarski, 2002; Krueger & Mas, 2004; Lum, Kervin, Clark, Reid & Sirola, 1998; Mas, 2008; Mas, 2006; McNeese-Smith & Crook, 2003; Steltzer, 2001; Taunton, Perkins, Oetker-Black & Heaton, 1995; Upenieks, 2003; Zboril-Benson, 2000). Discovering whether or not these behaviors are influenced by collective bargaining is critical to any organization. For a unionized environment, high levels of employee behaviors occurring around times of union involvement, such as during collective bargaining time, may highlight the level of influence that union representation has upon employees, manifested through the use of employee mechanisms of voice (Becker; Bennett; Buchan & Seccombe; Cappelli & Chaurin, 1991; Clark; Cohen, 1993; Cox, Issa & Koblegard, 2005; Dunn & Wilkinson; Hammer & Avgar, 2005; Havlovic, 1991; Hebdon & Brown, 2008; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies, 2002; Katz, Kochan, & Gobeille; Kleiner, Leonard, & Pilarski; Krueger & Mas; Kuokkanen, Leino-Kilpi & Katajisto, 2003; Lewin & Peterson, 1999; Lum, Kervin, Clark, Reid & Sirola; Manion, 2004; Mas, 2008; Mas, 2006; McNeese-Smith & Crook; McNeese-Smith & Nazarey, 2001; Spence-Laschinger, Finegan, Shamian & Almost, 2001; Steltzer, 2001; Taunton, Perkins, Oetker-Black & Heaton; Upenieks; Zangaro, 2001; Zboril-Benson). Finding ways to improve the industrial relations climate, and reduce the use of these costly employee behaviors is extremely important to the organization as a whole, as well as to employee groups and their respective unions alike.

1.6 Specific Aim

This study was designed to quantitatively examine and evaluate the behaviors of grievance, injury reporting, absenteeism, voluntary turnover, and adverse event occurrences and their relationship to the collective bargaining process. Utilizing Eastern Health, St. John's region, secondary administrative data sets, and detailed collective bargaining information from the Newfoundland and Labrador Health Boards Association (NLHBA), will facilitate this endeavor. Specifically, the goal of this study is to identify whether there is a change (and in particular an increase) in grievance, injury reporting, absenteeism, voluntary turnover as well as adverse events throughout the collective bargaining cycle.

1.7 Target Population

The target population for this study are employees of Eastern Health, St. John's region, who are represented by different unions, including: AAHP, NAPE, and the NLNU. Each union group has their own unique collective bargaining contract with the employer.

These employees have various levels of formal and informal training, and have differing job tasks, diverse skills sets, responsibility, years of service, and work in a variety of areas within acute care facilities of Eastern Health, St. John's region. The target population was chosen based on human resources administrative secondary data sets obtained from the human resources department of Eastern Health, specifically relating to acute care centers within the metro region.

1.8 Research Questions

1. What are the employee rates of grievance, injury reporting, absence, voluntary turnover and adverse event occurrences within the Eastern Health organization, St. John's region (acute care areas), around and throughout the collective bargaining cycle?

2. Is there a significant difference between rates of these behaviors with the three unions under study? Specifically, are any of the unions under study more responsive to the collective bargaining process than the others, through the use of grievance, injury reporting, absenteeism, voluntary turnover and adverse events?

3. Considering the collective bargaining events, are specific events within the collective bargaining process more influential upon employee behavior than others?

While it is understandable that none of the employee behaviors under study are completely avoidable, and are not always used as a way to indicate unhappiness and discontent, it is still extremely important to examine the various reasons why they occur, recognize their importance to industrial relations, and mitigate their impact upon an organization, other employees and the public. Examining these elements is critical to human resources management, as these behaviors are known to be quite destructive to the workplace when overused (Gifford, Zammuto, Goodman & Hill, 2002; Krueger, Brazil, Lohfeld, Edward, Lewis & Tjam, 2002; Lum, Kervin, Clark, Reid & Sirola, 1998).

Furthermore, high uses of these mechanisms of voice may be a further sign of poor communication between parties; placing emphasis away from jobs and required job tasks, and towards aspects of recrimination (Hebdon & Brown, 2008). These findings may generate useful results for a variety of stakeholders, including: Eastern Health, employee groups and their respective unions.

1.9 Outline

This thesis will include six chapters beyond the introduction, and will be used to support and detail study findings. Chapter two provides a thorough review of the empirical evidence related to the outcomes, variables and concepts under study. Chapter three outlines the description of the data being utilized, a detailed discussion of the statistical methods that will be used to achieve the desired data analysis, as well as the identification and discussion of main assumptions related to this study. Chapter four will fully describe the descriptive analysis results, while chapter five will describe the results of the negative binomial regression analysis. Chapter six will provide a discussion of the findings, identifying any relationship between the empirical evidence, and the descriptive and negative binomial regression analyses. Lastly, chapter seven will provide a conclusion of this work, identifying any limitations, and outlining future research needs.

Chapter 2

2. Literature Review

This literature review focuses on the evidence related to the concepts, variables and outcomes under study: employee voice, industrial relations and the collective bargaining cycle. Specifically, the literature chosen addresses grievance, injury reporting, absenteeism, voluntary turnover and adverse events. In addition, the relationship between mechanisms of voice and employee discontent is examined, in particular during times of union involvement. Empirical evidence utilized in this review draws upon valid findings from the fields of Industrial Relations and Health Services Research.

2.1 Exit-Voice Theory

The exit-voice theory is well studied in the industrial relations field (Freeman & Medoff, 1984). In essence, employees have two options when they become dissatisfied: they can exit (voluntarily quit employment) or use voice (either individual or collective representation) to announce discontent (Freeman & Medoff). Clearly, this theory provides a way to understand the inner workings of unionized environments. Of particular interest is how influential union culture is upon employees and union groups, as well as how this influence is expressed within the organization via mechanisms of voice (Freeman & Medoff).

Freeman and Medoff (1984) found that unionized employees had lower levels of satisfaction with their work yet did not resort to quit behavior as a method of avoidance as often as non-unionized workers. In their view, unionized employees were more likely to find ways to convey discontent through criticism about their jobs, and their work life

(Freeman & Medoff). It is interesting that this level of criticism did not transpose into encouraging more quit behavior. That being said, one must consider the overall "costs" of voluntarily quitting unionized employment, including pay, benefits, seniority, as well as having to start over often at a lower level of respect and favor (Freeman & Medoff).

Freeman and Medoff (1984) explained this finding as being related to union presence, participation in union activity, and collective voice. In other words, the fact that unionized workers have the ability to use forms of employee voice to indicate their discontent acts as a positive and protective factor on encouraging individuals to stay employed (Freeman & Medoff). Collective bargaining, in fact, was seen to be a favorable occurrence in the unionized environment, providing group influence on change where individual voice would be weak and not make a difference, groups, through collective bargaining, could band together and be facilitators of change (Freeman & Medoff). This process provides unionized employees with the ability to seek change in work issues, rather than giving up, walking away and quitting (Freeman & Medoff). Furthermore, this group mentality provides employees with anonymity and security, along the line of the old adage that there is safety in numbers (Freeman & Medoff).

In addition, unionized workers have methods of righting perceived wrongs, through the use of grievance activity (Freeman & Medoff, 1984). This reality restricts employers from using favoritism, and nepotism, instead demanding fairness and equality for all their workers (Freeman & Medoff). Each and every union worker is considered important to the union culture, and worker's long years of service are rewarded with higher levels of seniority, influencing levels of pay and other benefits (Freeman & Medoff).

Interestingly, it is these aspects of unionization that influence individuals to stay; union protection, freedom to utilize forms of grievance and years of service invested in the organization all encourage workers to remain employed (Freeman & Medoff).

Furthermore, individuals become less desiring of quitting and losing years of built seniority and skills, along with pay levels, and do not want to start over again somewhere new (Freeman & Medoff, 1984). This is very beneficial for the employer, through maintaining employment levels, and avoiding high associated costs of turnover (Freeman & Medoff). In addition, there is a connection between decreased turnover and improvement in levels of performance, part of which must be related to keeping higher skilled workers within the workforce, rather than losing them through attrition (Freeman & Medoff).

It should be noted, however, that Freeman and Medoff (1984) did discover that unionized workers were extremely dissatisfied with their work life, in particular with the work environment and management structure and influence. Part of this can be explained by the idea that unions "fire-up" individuals to recognize problems within their environment, adding to feelings of perceived unhappiness (Freeman & Medoff). During times when it is to the union's advantage to show a unified front, as is the case during collective bargaining, this may play into the unions hand, encouraging workers to identify and express feelings of frustration which may positively influence the formulation of better contract deals (Freeman & Medoff).

The question remains whether unionized individuals can brush off these feelings once the agreement is signed. Do employees continue to feel frustrated with their work lives

after collective bargaining is finished, and do these types of serious events act to influence an even higher use of the behaviors under study, in response? Freeman and Medoff (1984) found that during difficult periods between unions and employers, lower performance levels were noted. This certainly describes the industrial climate during collective bargaining, so it is of major interest to understand the influence that these collective bargaining events ultimately have upon employees within the workplace.

2.2 Employee Voice

The issue of how employees voice their discontent is extremely important to an organization, and to researchers interested in labor relations. When problems occur within the workplace, employees may be dissatisfied enough to utilize a variety of behaviors as a way to announce their displeasure (Becker, 1960; Cappelli & Chaurin, 1991; Cohen, 1993; Cox, Issa & Koblegard, 2005; Freeman & Medoff, 1984; Gittell, Von Nordenflycht & Kochan, 2004; Havlovic, 1991; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies, 2002; Katz, Kochan & Gobeille, 1983; Kleiner, Leonard & Pilarski, 2002; Krueger & Mas, 2004; Kuokkanen, Leino-Kilpi & Katajisto, 2003; Lewin & Peterson, 1999; Lum, Kervin, Clark, Reid & Sirola, 1998; Manion, 2004; Mas, 2008; Mas, 2006; McNeese-Smith & Crook, 2003; McNeese-Smith & Nazarey, 2001; Mittleman et al., 1945; Spence-Laschinger, Finegan, Shamian & Almost, 2001; Steltzer, 2001; Upenieks, 2003; Zangaro, 2001). The perpetual use of these voice mechanisms can be a sign that an organization has an unstable internal environment; even more informative is recurring trends of employee behaviors of voice, which may provide more evidence of a problematic industrial relations climate (Gifford, Zammuto, Goodman & Hill, 2002;

Krueger, Brazil, Lohfeld, Edward, Lewis & Tjam, 2002; Lum, Kervin, Clark, Reid & Sirola, 1998; National Steering Committee, 2002).

Employees who feel unheard in the workplace may ultimately find ways to express their concerns, through the use of a variety of employee voice mechanisms, including missing days from work, filing complaints, reporting injuries, quitting, and making more mistakes (Becker, 1960; Cappelli & Chaurin, 1991; Cohen, 1993; Cox, Issa & Koblegard, 2005; Freeman & Medoff, 1984; Gittell, Von Nordenflycht & Kochan, 2004; Havlovic, 1991; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies, 2002; Katz, Kochan & Gobeille, 1983; Kleiner, Leonard & Pilarski, 2002; Krueger & Mas, 2004; Kuokkanen, Leino-Kilpi & Katajisto, 2003; Lewin & Peterson, 1999; Lum, Kervin, Clark, Reid & Sirola, 1998; Manion, 2004; Mas, 2008; Mas, 2006; McNeese-Smith & Crook, 2003; McNeese-Smith & Nazarey, 2001; Mittleman et al., 1945; Spence-Laschinger, Finegan, Shamian & Almost, 2001; Steltzer, 2001; Upenieks, 2003; Zangaro, 2001). These behaviors are all extremely costly to an organization, both financially and interpersonally; being aware of how often they are used, and truly understanding their impact on organizational structure is key to maintaining a healthy, well-functioning and efficient workplace (Becker; Buchan & Seccombe, 1995; Dunn & Wilkinson, 2002; Lum, Kervin, Clark, Reid & Sirola; McHugh, 2001; McNeese-Smith & Crook; Taunton, Perkins, Oetker-Black & Heaton, 1995; Upenieks; Zboril-Benson, 2000).

Identifying areas which have higher levels of employee voice behaviors could assist the organization in adopting a proactive approach, whereby they could rapidly identify potential or actual issues, enabling intervention long before they become problematic

(Becker, 1960; Cappelli & Chaurin, 1991; Cohen, 1993; Cox, Issa & Koblegard, 2005; Havlovic, 1991; Ingersoll, Olsan, Drew-Cates, DeVinney & Davies, 2002; Kuokkanen, Leino-Kilpi & Katajisto, 2003; Lewin & Peterson, 1999; Lum, Kervin, Clark, Reid & Sirola, 1998; Manion, 2004; McNeese-Smith & Crook, 2003; McNeese-Smith & Nazarey, 2001; Mittleman et al., 1945; Spence-Laschinger, Finegan, Shamian & Almost, 2001; Steltzer, 2001; Upenieks, 2003; Zangaro, 2001). Organizations concerned with industrial relations have the opportunity to make a significant difference to their workforce, by facing these challenges head on, adopting a mindset of being "facilitators of change", rather than issuing authoritative reactions to employee behaviors, after the fact (Al-Assaf, Bumpus, Carter & Dixon, 2003; Baker et al., 2004; Coyle, 2005; Fleming & Wentzell, 2008; Hoffman, Beard, Greenall, U & White, 2006; Matlow, Stevens, Urmson & Wray, 2008; National Steering Committee, 2002).

2.3 Unions and Unionized Employees

Employees who are unionized have both support and protection by their union group and are represented by the union during a variety of situations, including contract negotiation (Freeman & Medoff, 1984; Guest & Conway, 2004; Hebdon & Brown, 2008). Guest and Conway suggest that unionized employees are not as content with their employment as those without union affiliation. Part of this reason, they feel, is the wide gap between the employer and the union, a distance which is difficult to bridge (Guest & Conway). This fosters distrust on both sides, further influencing worker discontent (Guest & Conway). Hammer and Avgar (2005) claim that while employees affiliated with organized unions are less content with their work lives, and are less likely to

voluntarily quit their jobs, they are more likely to utilize other forms of employee voice in response to their discontent. Freeman and Medoff (1984) broaden this argument, asserting that unionized workers are less content with their work and are more likely to be dissatisfied with aspects of employment and with managerial influence than non-union workers. However, this position is in direct contrast to other positive findings of unionized employment that Freeman and Medoff identified, including "...higher wages, better fringes, better seniority protection, better grievance systems and greater voice in determining conditions of employment..." than their non-union counterparts (p. 136).

Kelly (1998) suggests that union affiliation encourages response of unionized employees and helps stimulate their level of involvement. This helps to raise workers hope in the union system, but does not necessarily mean that change will occur (Guest & Conway, 2004). Likewise, Freeman & Medoff (1984) identify that unions encourage and incite worker unhappiness to benefit the collective bargaining process. Metcalf (1995) suggests a different view of unionization whereby the actual membership in the union begets contribution, allowing union representation itself to become a way for employees to be heard, thus taking part in maintaining the balance of equity between the employer and unionized employees, without galvanized action.

Employees who are experiencing workplace stressors, due to less than favorable working conditions may be sufficiently dissatisfied to become more active with their union or their particular bargaining group (Hebdon & Brown, 2008). These employees could be more willing to take part in using the worker behaviors under study, including grievance filing, injury reporting and missed days from work and are more likely to take

part in demonstration activity, including both legal and illegal strike activity (Hebdon & Brown). However, Chaulk and Brown (2008) found that adversarial union activities (strikes) greatly influenced a decline in satisfaction with both the union and employer. This suggests that while dissatisfied employees may be encouraged to take part in strike activity, strike action can add to the problem, by fostering further dissatisfaction in these employees, potentially increasing the use voice (Chaulk & Brown; Hebdon & Brown).

2.4 Collective Bargaining

Collective bargaining is defined as "the process by which management and labour negotiate the terms and conditions of employment in a unionized workplace" (Hebdon & Brown, 2008, p. 4). The collective agreement reached after the formal collective bargaining process "...includes issues related to work schedules, overtime, pay, health and welfare benefits (i.e., vacation, retirement, health plans, etc.), and layoff/termination of employment (including progressive discipline, probationary periods, and violations of company rules that can lead to termination)." (Hebdon & Brown, p. 248).

Collective bargaining is considered an essential component of unionized environments, and can greatly influence the conditions in which unionized employees must work (Freeman & Medoff, 1984; Hebdon & Brown, 2008; Klikauer, 2005). The process can be a lengthy one, involving the negotiation of issues towards developing a new contract. In most cases, this contract would be put forward to union members to vote upon and, when officially in place, given an expiry date from which the entire bargaining process will begin anew (Hebdon & Brown). There are two sides to every

collective bargaining process, each coming to the bargaining table with its own goals (Freeman & Medoff; Hebdon & Brown).

Considering the terms that are under discussion during contract negotiation, collective bargaining time can be a highly charged period for employees. Steltzer (2001) found that there is more discontent amongst staff prior to collective bargaining. However, Clark (1980) found no association between completed contract bargaining and improved employee behaviors. This suggests that a new contract does not impact the workplace environment enough to actually decrease the use of voice.

Union representation during the collective bargaining process, while definitely a protective force for unionized employees, may unknowingly provide negative influence upon members, and in turn, impact the level of satisfaction employees have for their jobs and how they react to issues that arise within its domain (Klikauer, 2005; Metcalf, 1995; Wagar & Rondeau, 2002). During problematic, sometimes volatile, periods between union and employer, there is regular communication and feedback between union representatives and employees to keep all those involved up to date with any progress or lack thereof (Iverson & Currivan, 2003). This may perpetuate the intensity of reaction by employees. Furthermore, workers frequently discuss issues amongst themselves, passing on both fact and rumor, providing additional pressure and persuasion (Iverson & Currivan). Additionally, the collective bargaining process, is frequently discussed and dissected within the media, enabling the general public to make both positive and negative judgments and take sides throughout the negotiation process (Hebdon & Brown, 2008).

Each of these factors provides additional, sometimes negative, influence upon employees during the bargaining process (Hebdon & Brown, 2008). It is fair to say that perceived difficulties with the negotiation process and/or with the final contract might negatively sway employees within the work environment and provide them with reason to make their individual feelings known. In addition, worker groups may also be disgruntled with the process, if not viewed favorably, leading to further problems within the workplace (Hebdon & Brown). The degree of impact is certainly an important question and one wonders whether it is possible for employees to be frustrated enough with the bargaining process to announce their discontent through the use of mechanisms of voice.

2.5 Employee Behaviors

2.5.1 *Grievance*

When unionized employees have problems within the workplace, they may utilize a formal complaint process from which to find resolution from conflict (Cox, Issa & Koblegard, 2005; Freeman & Medoff, 1984; Hebdon & Brown, 2008; Nelson & Reimann, 1983; Steltzer, 2001). Grievances, in their purest form, represent allegations that the collective agreement has not been properly followed (Hebdon & Brown). They represent an official avenue for an employee to utilize in order to right a perceived wrong, which has occurred within their work environment, and are a form of protection for the worker from heavy-handed managers and unfair decision making, affecting employment status (Cox, Issa & Koblegard; Freeman & Medoff; Hebdon & Brown; Nelson & Reimann; Steltzer).

The grievance process is one of the multitude of issues defined within the collective bargaining process, and is considered one of the benefits of unionized employment (Cox, Issa & Koblegard, 2005; Freeman & Medoff, 1984; Hebdon & Brown, 2008; Nelson & Reimann, 1983; Steltzer, 2001). For instance, if a unionized employee 'A' discovered another unionized employee 'B' was given a new post, contrary to the collective agreement seniority provision, and employee 'B' had less seniority than employee 'A', who had applied for the same position, a grievance could be filed in respect of this action. Once the grievance process was completed, and if a wrong was identified, the fair correct action would be applied (Hebdon & Brown). This helps avoid nepotism and encourages fairness and accountability within the workplace (Freeman & Medoff; Hebdon & Brown).

The literature shows that if employees are not committed, and feel dissatisfied with their employment situation, they may utilize the grievance process as a response to their environment (Cox, Issa & Koblegard, 2005; Nelson & Reimann, 1983; Steltzer, 2001). Thus, while grievances can be a legitimate process, they may also be a negative behavior that increases union involvement within the organization (Cox, Issa & Koblegard; Nelson & Reimann; Steltzer). It is when employees are feeling negatively about their workplace that they become more open to and reliant upon their union, and related union activities (Fitzpatrick, 2001; Freeman & Medoff, 1984).

Nelson and Reimann (1983) found that large organizations with varied units and employee levels, utilizing different skills, show the highest levels of grievance activity. This may be very significant in a large organization such as Eastern Health, as there are a

large number of employees, working in a variety of areas, using diverse skill sets with various levels of education, and who fall under the umbrella of different union affiliation.

Lewin and Peterson (1999) found that individuals who filed grievances were more likely to miss days of work than those who did not utilize the grievance process. The literature identifies that there were a higher number of complaints and missed days in response to conflict and increased demands, with an associated decrease in co-worker interaction (Cappelli & Chaurin, 1991; Cohen, 2003; Mittleman et al., 1945; Shader, Broome, Broome, West & Nash, 2001). Further, in workplaces where there were fewer complaints filed, there were less mistakes and more improved output amongst workers (Katz, Kochan & Gobeille, 1983; Kleiner, Leonard & Pilarski, 2002). Thus, strained and angry workers file more grievances, and are less satisfied with their jobs, organization and co-workers (Cappelli & Chaurin; Cohen; Hebdon & Brown, 2008). This supports the idea that grievance filing is utilized more often in areas with higher industrial conflict (Cappelli & Chaurin; Cohen; Hebdon & Brown; Mittleman et al.; Shader, Broome, Broome, West & Nash).

2.5.2 *Injury Reporting*

Historically unionized employees have every right to report an injury sustained at work, a process that is considered to be one of the benefits of unionized environments (Freeman & Medoff, 1984). More recently, through occupational health and safety legislation, all employees now have this right (Government of Newfoundland and Labrador, 2009). Without this provision, individuals could be forced to continue working despite having an injury, possibly worsening their condition, or potentially placing others

in jeopardy, as the worker may not be able to perform job tasks safely (MacEachen, Chambers, Kosny & Keown, 2009).

Injury reporting may be influenced by workplace difficulties and employee discontent (Mittleman et al., 1945). Mittleman et al. indicated that in areas with increased conflict and demands, there was a subsequent increase in injury reporting. It has been shown that this behavior may be used as a way for workers to speak out about workplace problems and issues (Mittleman et al.; Shamian, O'Brien-Pallas, Thomson, Alksnis & Kerr, 2003). In fact, Havlovic (1991) identified that satisfied employees were less likely to have, and report workplace injuries. Many workplace issues increased the likelihood of accidents, including workload, staffing levels, cutbacks and the mentality of "needing to do more with less"; however it has been shown that other issues including education level and quality of machinery upkeep also play an important part (Al-Assaf, Bumpus, Carter & Dixon, 2003; Cohen, 2003; Federal Aviation Administration, 2005; Peterson, Bergstrom, Samuelsson, Asberg & Nygren, 2008; Shamian, O'Brien-Pallas, Thomson, Alksnis, & Kerr).

Injuries have a significant impact on the workplace, through the loss of an employee for varying periods of time, creating higher demands on those left behind (Federal Aviation Administration, 2005). Furthermore, they are a significant expense to an organization, paying replacement workers while the injured worker is off, and when providing a reduced workload for the injured worker once the employee is deemed able to safely return to work (Shamian, O'Brien-Pallas, Thomson, Alksnis & Kerr, 2003).

2.5.3 *Absence*

Absenteeism is defined as "frequent absence from work without good reason" (Soanes [Oxford Dictionary], 2001, p.3). It is considered to be one of the most common and problematic employee behaviors in an organization (Bennett, 2002; Buchan & Seccombe, 1995; Cohen, 2003; McHugh, 2001; Rosenblatt & Shirom, 2005; Sanders, 2004; Taunton, Perkins, Oetker-Black & Heaton, 1995; Zboril-Benson, 2000). While absenteeism can be the result of true illness, it has been shown that high job expectations, overwork, and decreased support lead to feelings of worker dissatisfaction, resulting in increased absenteeism (Bennett; Buchan & Seccombe; Dionne & Dostie, 2007; McHugh; Savery, Travaglione & Firns, 1998; Shamian, O'Brien-Pallas, Thomson, Alksnis & Kerr, 2003; Taunton, Perkins, Oetker-Black & Heaton; Zboril-Benson). For these individuals, absenteeism becomes a way to respond to dire work circumstances (Sapsford & Turnbull, 1994).

Sapsford and Turnbull (1994) found that in areas with less employment opportunity and lower earnings, employees were more likely to be absent. They found absenteeism to be a way for employees to voice discontent and create strife in the workplace (Sapsford & Turnbull). Furthermore, this form of strife was seen to be as serious as other more formal forms of employee voice, such as strike (Sapsford & Turnbull).

In workplaces with higher employee satisfaction, there is notably less absenteeism (Bennett, 2002; Buchan & Seccombe, 1995; McHugh, 2001; Rosenblatt & Shirom, 2005; Savery, Travaglione & Firns, 1998; Zboril-Benson, 2000). This suggests that an organization that takes the issues of commitment seriously, and helps encourage and

motivate employees, will have less absenteeism. This type of organization would help motivate its workers, and in turn receive commitment and support from its employees (Bennett; Buchan & Seccombe; McHugh; Rosenblatt & Shirom; Savery, Travaglione & Firns; Taunton, Perkins, Oetker-Black & Heaton, 1995; Zboril-Benson).

There are a variety of costs associated with absenteeism. The most frequently cited is the financial burden that absences place upon the employer including paying the salary for both the absent employee and the substitute worker brought in to cover required time and tasks (Bennett, 2002; Buchan & Seccombe, 1995; Cohen, 2003; Dunn & Wilkinson, 2002; McHugh, 2001; Taunton, Perkins, Oetker-Black & Heaton, 1995; Zboril-Benson; 2000). The replacement worker may be current staff forced to work overtime (which is generally at a higher than normal wage), a transfer employee from another work area (who may or may not be used to the area he/she is being sent to work in) or a casual employee brought in from the replacement "pool" (Bennett; Buchan & Seccombe; Dunn & Wilkinson; Kosnik, Brown & Maund, 2007). Worse case scenario would be having no available replacement, therefore relying upon regular staff members to work above and beyond their regular duties to accommodate the staffing problem, potentially for the entire extra shift (Buchan & Seccombe). Furthermore, this could include the "call back" of additional regular staff members who are on their scheduled days off. Unfortunately, for these individuals, absenteeism becomes an easy way to respond to such dire work circumstances.

Other related costs and burdens, which may also be related to absenteeism, include: increased job anxiety and stress, increased fatigue, increased injury reporting, decreased

productivity and potential increase in the number of mistakes made by employees, possibly due to being required to act in roles in which they are unfamiliar (Bennett, 2002; Buchan & Seccombe, 1995; Cohen, 2003; Dunn & Wilkinson, 2002; Federal Aviation Administration, 2005; Kosnik, Brown & Maund, 2007; McHugh, 2001; Rosenblatt & Shirom, 2005; Shamian, O'Brien-Pallas, Thomson, Alksnis & Kerr, 2003; Strahan, Watson & Lennon, 2008; Taunton, Perkins, Oetker-Black & Heaton, 1995; Zboril-Benson, 2000). Many of these costs can greatly impact satisfaction and commitment, influencing the use of behaviors as a form of employee voice (Bennett; Buchan & Seccombe; Savery, Travaglione & Firns, 1998; Taunton, Perkins, Oetker-Black & Heaton; Zboril-Benson).

2.5.4 *Voluntary Turnover*

Another interesting facet of industrial relations is voluntary turnover, occurring when employees voluntarily quit the organization (Hebdon & Brown, 2008). Current thought is that unionized employees do not readily quit their jobs, due to a variety of reasons including: seniority based benefits (e.g. pay and promotion, which are often based on years of service with the organization); job security; and attachments to the workplace and community (Freeman & Medoff, 1984; Guest & Conway, 2004; Hammer & Avgar, 2005; Hebdon & Brown; Mitchell, Holtom, Lee, Sablynski & Erez, 2001). The review of the literature shows that while unionized employees are less likely to leave their jobs, they do report lower satisfaction with many aspects of their work (Freeman & Medoff; Guest & Conway; Hammer & Avgar; Hebdon & Brown; Iverson & Currivan, 2003; Mitchell, Holtom, Lee, Sablynski & Erez). The fact that employees stay within their

employment, despite low satisfaction, is an ironic contradiction, as one would expect that a dissatisfied worker would do everything in his/her power to find more satisfying work.

Where does this dissatisfaction come from? One idea is that unionized workers feel tied to their current workplace, which causes an increase in feeling trapped, and ever more frustration, leading to poor levels of satisfaction (Freeman & Medoff, 1984; Hammer & Avgar, 2005; Mitchell, Holtom, Lee, Sablynski & Erez, 2001). Another is that the unionized style of work creates division and strict work rules (defined and protected in collective agreements) from which workers cannot veer, without risk of complaint and grievance by other unions, which results in a divided workplace (Hammer & Avgar; Hebdon & Brown, 2008; McHugh, 2007). Both of these situations create feelings of frustration and may in fact influence how contented employees are with their work situation.

Why do unionized workers choose to continue working? There are a multitude of risks involved with quitting employment. Starting over is a frightening prospect to many individuals, in particular to unionized employees. Once the unionized worker leaves the workplace, there is a likelihood that there will be financial loss involved as they are leaving behind years spent building up levels of seniority, and pay raises over time (Freeman & Medoff, 1984). Further, an individual who has years invested in an organization will be walking away from time spent building experience, skill sets, and respect given to experienced workers, which may not be recognized in new positions (Freeman & Medoff; Hammer & Avgar, 2005). Frequently, these risks are too high for more experienced workers; however, an individual with less time invested in the

workplace does not have this attachment, and may in fact choose to depart the organization for good (Freeman & Medoff). Considering the risks involved with quitting unionized employment, it is no wonder that more unionized employees continue working (Freeman & Medoff; Hammer & Avgar; Mitchell, Holtom, Lee, Sablynski & Erez, 2001).

Iverson and Currivan (2003), in their study on unionized schoolteachers, found the degree of union involvement greatly influenced the desire to quit, rather than the actual level of dissatisfaction. To them, union involvement was a form of employee voice, and included such activities as: presence at union information sessions, exercising personal choice regarding whether to accept new contract deals; filing a grievance; discussing workplace issues and union ideas amongst colleagues; reading union updates online or in print; and even as far as working in some capacity for the union (Iverson & Currivan). An interesting finding in the Iverson and Currivan study was that while involvement influenced desire to quit, strangely it occurred in employees who were both happy and unhappy with their work life, which goes against conventional thinking on the subject that would suggest that only dissatisfied workers would want to quit (Freeman & Medoff, 1984; Iverson & Currivan).

Consideration must be given to the idea that participation in union activity influences employees to consider how bad their work situation is, or has become, and to this end acts as a form of persuasion to recognize things that are unacceptable (Bryson, Cappellari & Lucifora, 2004; Freeman & Medoff, 1984; Iverson & Currivan, 2003). This could lead to the expectation that these methods of participation, or voice, could lend itself to further

enticing workers to use additional expressions of voice through the use of absenteeism, injury reporting, grievance as well as affecting the quality of work performance (Bryson, Cappellari & Lucifora; Iverson & Currivan).

Turnover is quite costly to an organization given costs related to interviewing for a new employee; training; and the loss of overall experience and skill sets in a more experienced worker (Thatcher, Stepina & Boyle, 2003). It is certainly a problematic situation for any organization. That being said, turnover could be seen as more of a problem in areas where there is a lot of diversity in employment opportunities available within a community (Hammer & Avgar, 2005; Thatcher, Stepina & Boyle). When there is abundant employment available, workers become more appreciated, and employers do whatever they can to keep individuals working within the organization (Hammer & Avgar; Thatcher, Stepina & Boyle). Conversely, in times where there is high unemployment, or there is no other employer, this is not the case (Hammer & Avgar; Thatcher, Stepina & Boyle). In that environment, workers have little recourse and their lack of mobility may lend itself to a perceived lower value by their employing organization, resulting in less satisfaction, lower commitment and higher rates of quit behaviors (Hammer & Avgar; Thatcher, Stepina & Boyle).

These employees have to decide whether their best course of action is to stay with the organization or quit and find employment elsewhere. The concern is that with limited opportunity to leave, these individuals become backed into a corner with their only out being to rely upon the use of other ways to voice their discontent: missing days from work, reporting injuries, filing grievances, and being more likely to make workplace

errors, indicating a clear decrease in adverse events (Freeman & Medoff, 1984; Hammer & Avgar, 2005; Mitchell, Holtom, Lee, Sablynski & Erez, 2001). For many the idea of moving is a daunting prospect, and in some cases impossible to consider (Freeman & Medoff; Hammer & Avgar). For these individuals, the risk of leaving outweighs the unhappiness of staying (Hammer & Avgar).

Since job satisfaction is closely linked with turnover, the question arises whether the act of collective bargaining also negatively influences employees' satisfaction, leading to the increased use of the mechanisms of voice as well as higher quit outcomes (Hammer & Avgar, 2005). Iverson and Currivan (2003) found that it was not the actual presence of the union that affected quit behavior, but the degree of expression of voice identified through participation in union activities and that since workers have mechanisms for voice they do not need to resign. This certainly supports the idea that becoming involved in the collective bargaining process, through the activities of participation documented in the literature, such as: attending meetings; reading and discussing collective bargaining updates with colleagues, and watching things unfold in the media; and voting on whether to strike or accept a new collective agreement, all could synergistically work together to influence an individual, resulting in lower satisfaction and increased desire to quit (Fullagar, Gallagher, Gordon & Clark, 1995; Iverson & Currivan). If participation itself is a factor in determining whether an individual is happy with work, then the idea of increased participation during volatile collective bargaining periods certainly could have a significant influence on unionized workers behaviors.

2.5.5 *Adverse Events*

Industrial relations literature frequently examines employee and organizational performance (Freeman & Medoff, 1984; Gittell, Von Nordenflycht & Kochan, 2004; Katz, Kochan & Gobeille, 1983; Kleiner, Leonard & Pilarski, 2002; Krueger & Mas, 2004; Mas, 2008; Mas, 2006). The idea of quantifying performance can be a challenge as there are aspects of job performance that are extremely difficult to evaluate and analyze (Katz, Kochan & Gobeille; Krueger & Mas; Mas, 2008). Most times, changes in performance go unnoticed, with workers appearing to be working at acceptable levels, but in reality they are not (Katz, Kochan & Gobeille; Krueger & Mas; Mas, 2008).

Putting less effort into performing required skills, and caring less about the quality of performance is more of an internal action, one that may never be outwardly identifiable by others (Freeman & Medoff, 1984; Gittell, Von Nordenflycht & Kochan, 2004; Katz, Kochan & Gobeille, 1983; Kleiner, Leonard & Pilarski, 2002; Krueger & Mas, 2004; Mas, 2008; Mas, 2006). Often these changes in behavior go unnoticed; however this lower effort and lack of personal contribution may become apparent due to a decrease in levels of production, with an increase in adverse events (Freeman & Medoff; Gittell, Von Nordenflycht & Kochan; Katz, Kochan & Gobeille; Kleiner, Leonard & Pilarski; Krueger & Mas; Mas, 2008; Mas, 2006).

The study by Mas (2008), examined the resale value of machinery from the Caterpillar Company during a seven-year union/employer battle. This study found that during this highly volatile time of bargaining, machinery made during this time had more problems, and more importantly had lower resale value compared to machinery made

during more stable periods (Mas, 2008). This was linked to lower exertion and interest on the part of the employees while performing required tasks (Mas, 2008).

Likewise, Krueger and Mas (2004) analyzed the two-year labour relations conflict with Bridgestone/Firestone and the occurrence of faulty tires. These substandard tires were found to have more blowouts while in use, resulting in numerous deaths and injuries with individuals using their product (Krueger & Mas). These faulty tires were made during periods of intense labour conflict between the union and the Bridgestone/Firestone tire company (Krueger & Mas). The volatile collective bargaining process and negative labour relations climate greatly influenced unionized workers to work at a lower level of ability, leading to the production of an inferior quality product (Krueger & Mas).

Similarly, in a study by Katz, Kochan and Gobeille (1983), poor labour relations were shown to negatively impact the General Motors Company employees, whereby cars made during that difficult time had more problems with gaining a pass rate during their required examination process. This greatly influenced a lower sale and resale value of these cars (Katz, Kochan, & Gobeille). Union/employer clash was shown to have a high negative impact upon employees' desire to work hard, greatly affecting their workmanship during times of strife (Katz, Kochan & Gobeille).

Freeman and Medoff (1984) found similar findings, identifying that in periods of union/employer stability, workers were more efficient and effective with performance. Conversely, they found that during problematic periods of union/employer interaction, workmanship suffered (Freeman & Medoff). Likewise, in plants where airplanes were

made, poor union/employer relations, particularly those involved with collective bargaining, were found to lower employee output (Kleiner, Leonard, & Pilarski, 2002).

Mas (2006) also identified that police officers' productivity was impacted by negative collective bargaining outcomes such as a failed arbitration process, and noted an increase in reported crime rates, fewer arrests and less time spent in prison, in result. Further, there was a suggestion that police officers were less willing to help the court process of gaining serious jail time for criminals, following poor labor outcomes (Mas, 2006). This suggests that the collective bargaining process upset these employees to the degree that they were unwilling to participate in activities which would help guilty offenders receive jail time.

What do Caterpillar tractors, Bridgestone/Firestone tires, General Motor's vehicles, police officers, and airline production plants have to do with adverse events in a hospital setting? These examples provide concrete evidence that employees react strongly to periods of union/employer strife, and that these strong reactions greatly impact the work level willingly given by each employee. These findings are extremely helpful when considering the serious problem of adverse events in a healthcare environment, which may be considered a proxy for quality, or job performance (Cohen, 2003; Landrigan et al., 2004; National Steering Committee, 2002; Peterson, Bergstrom, Samuelsson, Asberg & Nygren, 2008; Strahan, Watson & Lennon, 2008; Wilkins & Shields, 2008)

Problems within the workplace environment can eventually become stressors that greatly impact the individual worker as well as the system, potentially influencing the quality of service provided (Cohen, 2003; Landrigan et al., 2004; National Steering

Committee, 2002; Peterson, Bergstrom, Samuelsson, Asberg & Nygren, 2008; Strahan, Watson & Lennon, 2008; Wilkins & Shields, 2008). Further along on this vein is the issue of adverse events and whether it is possible for employees to be so affected by the collective bargaining process that more errors occur (Cohen; Hebdon & Brown, 2008; National Steering Committee; Peterson, Bergstrom, Samuelsson, Asberg, Nygren; Wilkins & Shields).

Adverse events occurring within the health care environment are of major concern as human lives are ultimately at stake. Adverse events are defined as:

> an unexpected and undesired incident directly associated with the care or services provided to the patient; an incident that occurs during the process of providing health care and results in patient injury or death; an adverse outcome for a patient, including an injury or complication (The Canadian Patient Safety Dictionary, 2003, p. 54).

This definition is quite broad in its scope, as it can represent any episode related to patient care, regardless of whether any negative result occurs following the occurrence (Baker et al., 2004; The Canadian Patient Safety Dictionary).

The concept of adverse events has been extensively studied throughout the world for many years; however, Canada has been sluggish in recognizing and investigating this problem (Hoffman, Beard, Greenall, U & White, 2006; National Steering Committee, 2002). In more proactive countries (e.g., the United Kingdom, the United States and Australia), studies have shown that these errors are serious, and have far-reaching and occasionally grave consequences (Al-Assaf, Bumpus, Carter & Dixon, 2003; National Steering Committee).

The National Steering Committee on Patient Safety (2002) reports that, as in other countries, errors occur at alarming rates within the Canadian health care system. This was confirmed in a study by Baker et al. (2004) in which errors were approximated at over 180 000 with over 70 000 of these being of the type that could have been avoided. Note that Baker et al. only identified more serious errors, or errors that result "in disability at the time of discharge, death or prolonged hospital stay…[they] defined disability as temporary impairment of function lasting up to a year, permanent impairment of function or death" (p. 1679). One wonders how vast the rates of error would be had the statistics reflected less serious errors and "near-missed events", beyond those counted in the Baker et al. study. There is potential that the approximated rates would be well beyond those realized. Even minor errors are still very important to the health care system, as any error can affect patient safety, and can encourage mistrust in the health care system (Coyle, 2005; Matlow, Stevens, Urmson & Wray, 2008).

When investigating adverse events in the health care system, the literature identifies that these events can be related to a variety of workplace stressors, such as: the number of employees working per shift, mandatory overtime, organizational structure and cutbacks (Cho, Ketefian, Barkauskas & Smith, 2003; Cohen, 2003; Matlow, Stevens, Urmson & Wray, 2008; National Steering Committee, 2002; Peterson, Bergstrom, Samuelsson, Asberg, & Nygren, 2008; Wilkins & Shields, 2008). It is interesting to note that these stressors are all related to items examined by the union during the collective bargaining process (Hebdon & Brown, 2008). Furthermore, these stressors may influence employees to the degree that more errors are made and quality of performance is

decreased (Cho, Ketefian, Barkauskas & Smith; National Steering Committee; Peterson, Bergstrom, Samuelsson, Asberg, & Nygren; Wilkins & Shields). This may be even more prevalent during periods of high stress and discordance within an organization, a time when workplace issues are brought to the forefront, as is the case during collective bargaining (Cho, Ketefian, Barkauskas & Smith; National Steering Committee; Peterson, Bergstrom, Samuelsson, Asberg, & Nygren; Wilkins & Shields).

There are two issues to consider with these breaks in adverse events: one is the event itself, which, as mentioned above, can be influenced by a number of outside forces, while the other is the actual filing of the report (Cho, Ketefian, Barkauskas & Smith, 2003; Cohen, 2003; Hobbs, 2008; Matlow, Stevens, Urmson & Wray, 2008; National Steering Committee, 2002; Peterson, Bergstrom, Samuelsson, Asberg, & Nygren, 2008; Wilkins & Shields, 2008). The question remains whether an individual would always report such errors (despite the ethical duty to do so), especially those considered minor in nature that workers feel might not be discovered. The act of deciding to report an error, or not, may be another method for the employee to announce discontent, indicating increased frustration and conflict within the work environment. These employees may go forward with reporting errors as a way to ensure that the organization is held ultimately accountable for problems in the workplace, in particular during highly charged times such as the collective bargaining process.

In a study by Wilkins and Shields, errors were found to be higher among employees who were working beyond regular scheduled hours (2008). This finding suggests that working extra hours increases fatigue, thereby influencing the ability to safely provide an

adequate quality of performance (Wilkins & Shields). Staffing problems, routine mandatory overtime, workload, difficulty in getting time off from employment, and cutbacks influence dissatisfaction and affect quality of performance (Cho, Ketefian, Barkauskas & Smith, 2003; Cohen, 2003; Elfering, Semmer & Grebner, 2006; Matlow, Stevens, Urmson & Wray, 2008; National Steering Committee, 2002; Peterson, Bergstrom, Samuelsson, Asberg, & Nygren, 2008; Wilkins & Shields).

It is interesting to note that The National Steering Committee on Patient Safety (2002) reviewed airline policies and found that this industry had a maximum amount of time that employees were permitted to work each shift. Hobbs (2008) indicated that mishaps within the health care environment are closely related to those occurring in the aviation industry, as errors similarly impact public safety. According to Hobbs, many factors contribute to the occurrences of mistakes, including physically demanding work, high demands, and more importantly the way the person was thinking when the error occurred. That is to say, was the individual fatigued, emotional, under undue stress and were these factors influencing the employee's focus on the job at hand (Hobbs). This is a clear example of an industry concerned with maintaining quality workmanship, and protecting the consumers who access its services.

Overtime. The issue of overtime is a recurring theme in the adverse events literature. The Federal Aviation Administration (FAA) in the United States, has done much research into the issue of errors within the aviation industry, and identified that overtime increases the risk of an error occurring, and went as far as to say that "fatigue affects emotional,

physical and mental capabilities…[and]…causes performance decrements similar to those caused by alcohol" (2005, p.17, section 5.1).

The issue of overtime effecting error has also been found to be a problem within the Canadian Railway industry. Transport Canada (2006) reported changes within this employment sector, through union and organizational efforts to reduce the burden of error, through setting the amount of continuous hours that an employee was allowed to work each day (twelve hours); however, in specific situations employees could work up to eighteen hours with the provision that a break period had taken place. Furthermore, Transport Canada also determined that the maximum number of hours that each employee could safely work each week was sixty-four hours. These hours could be bypassed in times of crisis or emergency; however, they were direct with maintaining their stance that before an employee could be brought back to work, a break period of six to eight hours was required (Transport Canada).

The FAA (2006) broadened this argument by reporting that overtime was related to absenteeism and injuring oneself on the job, which, in turn, created more stress upon the employees continuing to work. This identifies that the well being of employees should be as important as the level of performance to an organization; placing extra burden on employees through overtime may influence the use of mechanisms of voice (FAA). Building organizational commitment and satisfaction of employees is well worth the effort. The more an organization pushes its employees to work beyond their capabilities, the more they are at risk of error (FAA; Transport Canada, 2006). These findings are

very applicable to the health care environment as mandatory overtime and high demands are a daily reality and stressor for those employed in this industry (Shamian, O'Brien-Pallas, Thomson, Alksnis & Kerr, 2003).

2.6 Conclusion

The evidence in this literature review provides a sound basis to link together the ideas concerning industrial relations, collective bargaining and employee dissatisfaction and their effects upon expression of voice. These behaviors include: missing time from work, filing complaints, reporting injuries, performing required job tasks at a lower level of quality (making more errors), and quitting jobs. Utilizing these behaviors as methods of voice is problematic to any organization and may impact the ability of the workplace to function at an optimal level, potentially leading to an even further decrease in quality and effectiveness (Bryson, Cappellari & Lucifora, 2004; Cappelli & Chaurin, 1991; Cohen, 2003; Fitzpatrick, 2001; Freeman & Medoff, 1984; Fullagar, Gallagher, Gordon & Clark, 1995; Gifford, Zammuto, Goodman & Hill, 2002; Iverson & Currivan, 2003; Krueger, Brazil, Lohfeld, Edward, Lewis & Tjam, 2002; Lum, Kervin, Clark, Reid & Sirola, 1998; Mittleman et. al., 1945; National Steering Committee, 2002; Sapsford & Turnbull, 1994; Shader, Broome, Broome, West & Nash, 2001).

Consistent support was given to the idea that there is an influential relationship between the union, the employer and the collective bargaining process, and that the effects of this relationship can greatly influence union members' satisfaction and, in turn, the use of mechanisms of voice. It is ever more prevalent when relations between the union and the employer are stalled and the bargaining process turns more negative in

focus. Extensive negative labor relation periods can have serious consequences upon the workplace, as employees were shown to be more likely to utilize methods of voice and have higher adverse events throughout this volatile time (Al-Assaf, Bumpus, Carter & Dixon, 2003; Cohen 2003; Freeman & Medoff; Gittell, Von Nordenflycht & Kochan; Katz, Kochan & Gobeille; Kleiner, Leonard & Pilarski; Klikauer; Krueger & Mas, 2004; Landrigan et al., 2004; Mas, 2008; Mas, 2006; National Steering Committee, 2006; Peterson, Bergstrom, Samuelsson, Asberg & Nygren, 2008; Strahan, Watson & Lennon, 2008; Wilkins & Shields, 2008). The issues of adverse events can have far reaching, and sometimes grave outcomes; therefore organizations should be cognizant of the effects that negative labor relations can have on employee groups (Baker et. al, 2004; Freeman & Medoff; Katz, Kochan and Gobeille; Krueger & Mas; Mas, 2008; Mas, 2006).

Chapter 3

3. Data Description and Methodology

3.1 Data Description

The goal of this study is to examine the use of employee voice behaviors, specifically grievance, injury reporting, absenteeism, adverse events, and voluntary turnover during collective bargaining for three unions employed within the Eastern Health organization, St. John's region, acute care sectors. Specifically, the intent of this study is to demonstrate the extent to which these potential voice mechanisms are associated with the collective bargaining cycle. To accomplish this, secondary, quantitative data sets were utilized. These secondary data sets have been compiled by Eastern Health human resources staff and represent actual counts or observances of behaviors occurring over time.

These data will be analyzed using descriptive and inferential statistical techniques, and through this process, relationships will be identified and conclusions formed regarding the rates of employee behaviors before and after specific events of collective bargaining, over time (Coxe, West & Aiken, 2009; Hilbe, 2007). This study will provide tangible evidence of how the industrial relations climate interacts to influence employee use of voice in a large health care organization.

3.2 Ethical Considerations

Once the specific variables of this study were identified and research hypotheses formed, the rigorous process of obtaining approvals was initiated. Specific ethical approval was sought and granted by both the Human Investigation Committee (HIC)

from Memorial University of Newfoundland, and the Research Proposal Approval Committee (RPAC) from Eastern Health. Access to data utilized in this study did not occur until required approvals were obtained. Once this process was complete, the data was released for use in this study.

Specific requirements of the approvals process included the protection of data used in this study, and these stringent rules of security were maintained. Data was not seen by anyone other than the principal investigator and the thesis supervisor. In addition, data did not contain any identifying information, or numerical identifiers that could link observations to individual employees, including names, employee numbers, or employee record identification codes. Along this vein, there was no way to cross-link data to identify use of multiple behaviors by any employee. Following Statistics Canada (2003) practice, no units or cells with fewer than five observations were identified, to ensure confidentiality of information. Further, data was kept on a personal computer, with password protection, which was always locked in a secure area when not in use. Confidentiality and security of data was maintained at all times.

3.3 Target Population and Sample

The target population for this study was unionized employees of Eastern Health, St. John's region acute care sectors. There was no sample size calculation performed, as the population was completely dependent upon the pre-existing secondary administrative data sets being utilized. Further, due to the use of secondary sources of data, no inclusion or exclusion criteria were formulated. Data represented daily counts of occurrences of the behaviors under study. In addition, the use of collective bargaining information

gathered from the Newfoundland and Labrador Health Boards Association (NLHBA) was also a pre-existing secondary data set containing specific collective bargaining events for each of the unions being studied.

3.4 General Features of the Data

The Eastern Health, St. John's region, human resources data sets utilized for this study were obtained for the particular behaviors under study, including grievance, reported injuries, absenteeism, adverse events and voluntary turnover. Each of these data sets was provided to the principal investigator in EXCEL spreadsheets. These data were compiled according to the date of occurrence and union affiliation. However, there were slightly different ways of data organization in each of these files, possibly due to the fact that different individuals were responsible for these data sets, and potentially more so due to a lack of an apparent unified way of entering and compiling data within the Eastern Health human resources environment.

This information was limited by the time that human resources began collecting and compiling each data set, and as such, data used in this study have different times when they became available. Furthermore, the end dates for each data set were constrained by the timeframe that the principal investigator requested its use. In particular, the absenteeism data sets were only available beginning in 1998 until 2004 since it was collected for another purpose and could not be easily updated for this current study. A timeline of availability of human resources data sets is identified in table 1.

Table 1: Timeline of Availability of Human Resources Data-All Unions

Union Group	Collective Bargaining Timeline	Grievance	Injury	Absence	Voluntary Turnover	Adverse Events
AAHP	February 98 To April 07	April 01 To April 07	April 01 To March 07	January 98 To December 04	January 97 To January 09	January 97 To November 08
NAPE HS	January 97 To April 08	January 01 To May 07	April 01 To March 07	January 98 To December 04	January 97 To December 08	January 97 To November 08
NAPE LX	January 97 To April 08	January 01 To May 07	April 01 To March 07	January 98 To December 04	January 97 To November 08	January 97 To November 08
NLNU	January 95 To July 08	January 01 To May 07	April 01 To March 07	January 98 To December 04	January 97 To February 09	January 97 To November 08

3.5 Union Groups

This study utilizes administrative data sets, compiled for each of the unions under study, including AAHP, NAPE, and the NLNU. While each union will be described in more detail in the next section, it is important to note that employees within these union groups have varying levels of education, training, experience, job requirements, pay grades, employment status, seniority, work hours (with some required to work twelve hour shifts, and some working both days and nights), as well as differing levels of professional responsibility. However, while they have these differences, they are similar in the fact that they are all represented by the union culture, and function under the unionized umbrella of solidarity, fairness and support.

These employees work for the largest health care organization in the province, with little to no recourse open to them for organizational change. There is only one health care organization on the Avalon Peninsula; therefore, if individuals felt the need to change organizations, they would face having to relocate with subsequent loss of

employment status, seniority, pay level and respect gained through years of service devoted to the same organization. This may be the prime opportunity for employees to utilize mechanisms of voice, including those under study: formal grievances, injury reporting, missing days from work, increased errors, and while quitting may be a difficult decision, it is still possible and warrants examination in its own right. The individual unions are described in the following sections.

3.5.1 *AAHP*

The Association of Allied Health Professionals (AAHP) is a union that represents a wide and varied group of health professionals including: physiotherapists; dieticians; occupational therapists; social workers; pharmacists; psychologists; respiratory therapists; audiologists; speech language pathologists; mental health counselors, among others (2004). AAHP union members have varied educational (with most being university educated) and clinical backgrounds, responsibilities, job tasks, and levels of expertise within their particular fields of practice (AAHP).

3.5.2 *NAPE HS and NAPE LX*

The Newfoundland and Labrador Association of Public and Private Employees (NAPE), is unique due to the fact that it has subgroups of employees who are categorized separately and utilize separate collective bargaining cycles. For this reason alone, NAPE data was separated into two distinct subgroups for this study, in order to more accurately link the process of collective bargaining to potential voice mechanisms. The two subgroups are NAPE HS and NAPE LX.

NAPE HS represents housekeeping (domestic and clinical areas) and support staff (Mr. E. Wade, personal communication, July 27, 2009; NAPE, 2009). Support staff includes: orderlies; clerical and medical records staff; food services staff; technicians from computer/dental and payroll areas; mail room employees and storekeeping/purchasing staff; assistants from occupational therapy, social work and physiotherapy areas; licensed practical nurses and personal care attendants (Mr. E. Wade; NAPE). NAPE LX includes laboratory and x-ray employees (NAPE; Mr. E. Wade). These separate groups, while being represented by the NAPE union, have the distinction of differing educational requirements, responsibilities, job tasks, as well as associated professional standing.

3.5.3 *NLNU*

The Newfoundland and Labrador Nurses Union (NLNU) represents registered nurses and nurse practitioners (2007). These nurses may be working within the nursing units located in city hospitals, or in a wide variety of areas under the Eastern Health umbrella, including: education, staff health, and in a number of outpatient clinics. NLNU members can have a variety of educational levels, may be diploma or degree prepared, and may have advanced levels of education and training (NLNU). In result, nurses will have differing levels of responsibilities, job tasks and expertise within their areas of professional practice.

3.6 Collective Bargaining

Collective bargaining information was obtained from the NLHBA (2007). This information contained a detailed list of specific collective bargaining events related to

each union's collective bargaining process, recorded by date and event (NLHBA). Each union was noted to have its own collective bargaining agenda and negotiation process, following a very unpredictable and evolving pattern (NLHBA).

Once the collective bargaining information was gathered from the NLHBA, time intervals were produced, by the principal investigator. These time intervals were based on the particular collective bargaining events, for each of the unions being studied. The start date was initiated on the actual day each collective bargaining event occurred, and each time interval ended the day prior to the next collective bargaining event. Since the start and end dates were completely dependent upon collective bargaining events, which occur at different times, each of these time intervals were variable in length. The time intervals were created to represent specific and important steps in the negotiation process, and include events, such as: opening proposals, meetings, negotiations, mediation, collective agreement signed/expired, strike vote, strike action, conciliation, tentative agreements, legislated agreements and ratified agreements (NLHBA, 2007).

Additional descriptive periods were created for this study as a way to delineate particular times of ebb and flow within a collective bargaining cycle, including periods of "calm", which were used to categorize the periods of time when there were no collective bargaining events occurring; periods of "heating up", which represent the "build-up" to potentially volatile collective bargaining events; as well as "cooling off" periods, which were periods of time after significant collective bargaining events took place. In addition, periods of "resolution" were created to signify events that indicated that an agreement was reached. These periods of "calm", "heating up", and "cooling off" as well

as "resolution" occurred frequently throughout the collective bargaining cycles for each of the unions under study. The time lines showing a visual account of collective bargaining events and their related descriptive periods, for each union under study, are located at the end of this chapter.

3.7 Outcomes of Interest

3.7.1 *Grievance*

Grievance is the process that unionized employees utilize to voice unfairness regarding the administration of the collective agreement by the management of an organization; in essence grievances are the way for employees to formally voice a violation of the collective agreement (Hebdon & Brown, 2008). The grievance data set used within this study contains all grievances from 2001 to 2007, for the AAHP, NAPE HS, NAPE LX, and NLNU union groups of Eastern Health, St. John's region, acute care sector (Eastern Health, 2007).

Daily counts of grievances were provided throughout this time frame, with each entry containing the date, type of grievance, and union affiliation. The grievance data set includes general complaints gathered from 2003-2007, harassment complaints from 2001-2006 and human rights complaints from 2001-2007 (Eastern Health, 2007). Each of these measures was combined to represent the overall "grievance rate" per union. Using the specific collective bargaining time intervals created for this study, counts and rates of grievances were calculated and results were used to populate tables created for each union. These results were used to identify whether there were any trends in using grievance behavior, surrounding the collective bargaining cycle.

3.7.2 *Injury Reporting*

The injury data set provides daily counts of reported injuries, occurring between 2001 and 2007 for each of the unions being studied (Eastern Health, 2007). Each entry indicates the date of the claim, and the union affiliation of the unnamed employee who submitted the claim (Eastern Health, 2007). These data were organized into one EXCEL file per union, including all dates, and years for each of the union groups. Once this was done, counts and rates of reported injuries were calculated based upon the collective bargaining time intervals formulated by the principal investigator and further were used to populate tables created for each union group. This enabled the investigator to identify the use of injury reporting, as well as any potential spikes in this behavior during the collective bargaining cycle.

3.7.3 *Absence*

The absenteeism data set includes daily counts of absences, or missed days from work, compiled from 1998 to 2004, for each union under study (Eastern Health, 2007). These data were organized into one EXCEL file per union, containing all observed counts and all years of data, for each union group. Results were then used to populate tables representing counts and rates of absences, based on the collective bargaining time frames created for this study, facilitating an examination of how absenteeism varies across the bargaining cycle for each union group.

3.7.4 *Voluntary Turnover*

The turnover data set provides daily counts of employee voluntary quit behavior, occurring between 1997-2008 (Eastern Health, 2009). Each entry indicates the date of

quit, and the particular union affiliation for each resignation (Eastern Health, 2009). These data were organized into one EXCEL file representing all dates and years of voluntary turnover behavior, for each union being studied. Once the data was organized appropriately, counts and rates of voluntary turnover were calculated based on the collective bargaining time intervals created for this current study, and these results were used to populate the tables created for each union group. This assisted the investigator in the assessment of the use of voluntary turnover behavior in relation to collective bargaining cycles.

3.7.5 *Adverse Events*

For this particular study, the investigation of workplace errors was completed through the use of adverse events data sets from the Eastern Health organization, St. John's region (Eastern Health, 2009). This large data set, contained a wide variety of events, including (among others): medication issues; personal property losses; equipment issues; specimen issues; treatment issues; cancellations; dietary problems; staffing availability; and patient and visitor accidents and injuries (Eastern Health, 2009).

The human resources data set provided daily counts of adverse events occurring within the Eastern Health organization, St. John's region, throughout the time period of 1997-2008, and was provided in two large EXCEL files (Eastern Health, 2009). Each occurrence included the date of event, the type of event, and outcome, if known (Eastern Health, 2009). This data set is the only one being utilized within this study that was not organized by union affiliation. In fact, this data set does not include any identification of union affiliation for any of the adverse events indicated. This is a significant issue with

this data set, as it is difficult to surmise a true relationship between collective bargaining events and the occurrence of these adverse events, without knowing union affiliation. However, it is quite likely that the omission of union affiliation was intentional, so as to encourage reporting of such events, rather than assigning blame, and increasing fear amongst staff.

Within the adverse events data set, each event could be related to a multitude of staff, employed by any of the unions under study. While a limitation to this current study, there is still great interest in how the rates of employee behaviors are influenced by collective bargaining events, regardless of union affiliation. As such, the same data is applied to each union's collective bargaining cycle. Clearly, data that could more accurately link adverse events to specific unions would be of more value; however evaluating the association between collective bargaining and adverse events, could help identify whether there is a relationship between these concepts. That being said, if a significant association can be found between this data and the collective bargaining process, it is likely that it will be an under-estimate of the true relationship between these concepts since accurate counts of events for each union are unknown, while the data set for this outcome is extremely large.

3.8 Methodology

This study utilized a descriptive, observational case-series design, whereby the effects of collective bargaining upon the employee behaviors of grievance, injury reporting, absenteeism, voluntary turnover and adverse events, were investigated in relation to

specific collective bargaining events, to examine whether particular union groups were more responsive to the collective bargaining process than others.

3.8.1 *Data Analysis*

The descriptive analysis was performed and graphs produced using EXCEL software. Broad trends and patterns of grievance, injury reporting, absenteeism, voluntary turnover and adverse events were identified and further compared and contrasted to the unique union collective bargaining time intervals created for this study.

The negative binomial regression analysis, discussed in detail in the next chapter, was performed using STATA software (2003). Negative binomial regression was chosen as the primary method of analysis, as it is a technique that is utilized to count events over varied periods of time, which is of prime importance to this current study, as well as being the favored technique when data is over-dispersed, which is the case of data used in this study (Coxe, West & Aiken, 2009; Hilbe, 2007; STATA). In particular, negative binomial regression will assess the trends and variances of the data, before and after an event over time (Coxe, West & Aiken; Hilbe; Jablin & Putnam, 2004; Kenyon and Dawkins, 1981; Mesch & Dalton, 1992). In this case, the desired event is collective bargaining and the measurements analyzed include the employee voice mechanisms of grievance, injury reporting, absenteeism, voluntary turnover and adverse events. The purpose of this analysis was to assess the rate at which employee behaviors occurred before and after each collective bargaining event.

3.8.2 *Variables*

The independent variable for this study is the various phases of the collective bargaining process. For this inquiry, the collective bargaining time frames that were created and utilized were specific to the particular collective bargaining events identified from the Newfoundland and Labrador Health Boards Association data. These collective bargaining events were then further broken down and categorized according to "broad themes" of collective bargaining, identified by the principal investigator. These broad themes were used to group similar collective bargaining events into categories that could better facilitate the regression analysis process.

Collective bargaining events occurring at the beginning of the bargaining cycle, including: opening proposals, meetings, conciliation, negotiations, requesting negotiations, deferring notice to bargain, being served notice to negotiate, not returning to the bargaining table, final offer, as well as final agreement, were grouped into the category of "heating up". Heating up represents the time frame that the union membership may become ready for further union action, and can also indicate increased union involvement and activity prior to particularly volatile events, such as strike votes. "Resolution" represents the category of events which signifies an agreement being reached, including: memo of understanding signed, tentative agreement reached, ratified agreement, ratification vote, negotiated settlement, and legislated agreement; times when the end of the bargaining cycle is near, and the union group has begun to prepare for the collective agreement to be signed.

"Cooling off" was denoted as the time when significant collective bargaining events had just ended with agreements reached. These periods occur throughout the collective bargaining cycle, representing times that the union membership may have come out of a particularly volatile period, such as a long collective bargaining cycle, job action, as well as periods following the collective agreement being signed. In addition, periods of "calm" occur throughout the collective bargaining cycle, always following periods of cooling off, signifying the length of time between the end of one collective bargaining cycle and the beginning of another, in which no collective bargaining events take place. It is during periods of "calm" where union membership settles down following the end of the collective bargaining cycle. These "calm" periods can be of varying lengths of time, and are completely dependent upon the particular collective bargaining cycles of each union group.

The only events that were not assigned to any of the above mentioned descriptive periods were "strike", "collective agreement expired" and "collective agreement signed". The reason for this is that these events were considered to be "stand-alone" events within the collective bargaining cycle, for data analysis purposes. Tables for each union, provided at the end of this chapter (Figures 2, 3, 4 and 5), identifies both the description of the collective bargaining event, as well as the broad category of collective bargaining. The voice mechanisms being studied, including: grievance, injury reporting, absenteeism, voluntary turnover and adverse events, were the dependent variables in this analysis. These mechanisms of voice were studied retrospectively in order to assess and identify how often employees of the Eastern Health organization, St. John's region, were utilizing

such behaviors, on a daily basis, in association with the collective bargaining cycles of their respective union groups.

3.8.3 *Assumptions*

There were numerous assumptions formed throughout this study. While union groups were analyzed separately, there may have been an indication of a relationship between these union groups where none may actually exist. These unions may have no similarities except for the fact that they are all union groups; their union culture may actually be extremely different.

There is also an assumption that these union members were aware of the different collective bargaining events occurring throughout each collective bargaining cycle, when they may realistically not be aware of when they take place, or whether the union executive is involved with the negotiation process. How informed union members are regarding particular collective bargaining activities, and how influenced they might be by them, may be quite different across union groups. Furthermore, different bargaining cycles may be more volatile than others, and it must also be said that other events occurring around previous collective bargaining events/cycles may have influenced the use of voice mechanisms, not the event itself. Obviously, the workplace climate may be an influencing factor upon the use of voice mechanisms, and should be considered as an important confounding factor when considering the reasons behind using employee behaviors as mechanisms of voice.

Aspects of the occupations of each group may also play a role in whether an individual utilizes voice mechanisms. The educational level and professional standing

amongst each group does differ, and as such may influence union members in different ways. Further to this is the idea that higher educated individuals may have less opportunity for change with fewer employers to choose from, such as those who are employed in the laboratory and x-ray setting, nursing, as well as other health professions.

3.9. Statistical Measurement

3.9.1 *Organization of Data*

Data were organized into one EXCEL file per outcome, for each union. "Counts" were considered to be the number of behaviors occurring each consecutive day. The collective bargaining time frames that were created were used as a framework to calculate the total number of count behaviors occurring within each of these periods. All counts occurring between the start and end dates of each collective bargaining time frame were added together, providing the "true count" of events for that particular time period. To ensure accuracy of the data, missing days, or days with no actual occurrences, were issued a date and given a count of "zero".

Once the true counts were determined, rates of the occurrences were then calculated, using the number of days in each particular collective bargaining time frame as the "exposure period" (or y), and the actual number of outcomes occurring within each of these time frames (or x). Rates were calculated using the equation x/y. Tables created indicating the true counts as well as the calculated rates for the outcomes of interest, for each union group, are provided in Appendix 1.

3.9.2 *Descriptive Analysis*

A descriptive analysis was performed to facilitate the organization and general summary of the data being studied. A variety of descriptive tests were performed on the data, including those related to dispersion, central tendency, and distribution, including: mean, median, mode, standard deviation, variance, range, sum as well as the minimum and maximum values of the data. Each of these tests helped to describe the data, and assisted with comprehending discrete events. In addition, calculation of rates of grievance, reported injuries, absenteeism, adverse events and voluntary turnover, allowed for comparison of findings across union groups through identification of obvious spikes in these calculations, related to the collective bargaining cycle.

3.9.3 *Negative Binomial Regression*

The negative binomial regression technique was the method utilized to measure the mechanisms of voice under study and the probability of such outcomes occurring over time, particularly when data is over-dispersed (Coxe, West & Aiken, 2009; Hilbe, 2007; STATA, 2003). This form of regression analysis allowed the principal investigator to establish if there were any significant relationships between the mechanisms of voice and collective bargaining events.

3.9.4 *Results*

Once the methodology was formulated, and the measures completed, results were generated. In chapter four the descriptive analysis will be presented and following this, in chapter five, the negative binomial regression analysis will be discussed. These analyses will assist the principal investigator to draw comparisons between the outcomes

of interest and the collective bargaining process, for the unions under study. Further, they will help the investigator identify conclusions regarding the significance of such events upon union groups from a large health care organization.

Table 2: Visual Account of Collective Bargaining Events and Associated Broad Categories of Collective Bargaining-AAHP

Union	Start Date	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining Event
AAHP	9-Feb-98	29-Mar-98	Opening Proposals	Heating Up
AAHP	30-Mar-98	18-Oct-98	Meetings	Heating Up
AAHP	19-Oct-98	17-Dec-98	Conciliation	Heating Up
AAHP	18-Dec-98	29-Apr-99	Meetings	Heating Up
AAHP	30-Apr-99	27-Jun-99	MOU Signed	Resolution
AAHP	28-Jun-99	28-Jul-99	Collective Agreement Signed	Collective Agree. Signed
AAHP	29-Jul-99	29-Aug-99	Cooling Off	Cooling Off
AAHP	30-Aug-99	4-Dec-00	Calm	Calm
AAHP	5-Dec-00	14-May-01	Union Requests Negotiations	Heating Up
AAHP	15-May-01	13-Jun-01	Opening Proposals	Heating Up
AAHP	14-Jun-01	30-Jun-01	Collective Agreement Expired	Collective Agree. Expired
AAHP	1-Jul-01	5-Sep-01	Heating Up	Heating Up
AAHP	6-Sep-01	25-Sep-01	Meetings	Heating Up
AAHP	26-Sep-01	10-Oct-01	Union Applied for Conciliation	Heating Up
AAHP	11-Oct-01	28-Oct-01	Conciliation	Heating Up
AAHP	29-Oct-01	7-Feb-02	Tentative Agreement	Resolution
AAHP	8-Feb-02	8-Mar-02	Collective Agreement Signed	Collective Agree. Signed
AAHP	9-Mar-02	9-Apr-02	Cooling Off	Cooling Off
AAHP	10-Apr-02	29-Jun-04	Calm	Calm
AAHP	30-Jun-04	7-Jul-04	Collective Agreement Expired	Collective Agree. Expired
AAHP	8-Jul-04	25-May-05	Union Deferred Notice to Bargain	Heating Up
AAHP	26-May-05	21-Mar-06	Gov't. Served Notice to Negotiate	Heating Up
AAHP	22-Mar-06	6-Jul-06	Negotiations	Heating Up
AAHP	7-Jul-06	20-Aug-06	Ratified Agreement	Resolution
AAHP	21-Aug-06	21-Sep-06	Collective Agreement Signed	Collective Agree. Signed
AAHP	22-Sep-06	22-Oct-06	Cooling Off	Cooling Off
AAHP	23-Oct-06	26-Apr-07	Calm	Calm

Table 3: Visual Account of Collective Bargaining Events and Associated Broad Categories of Collective Bargaining-NAPE HS

Union	Start Date	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining Event
NAPE HS	1-Jan-97	30-Nov-97	Calm	Calm
NAPE HS	1-Dec-97	31-Dec-97	Heating Up	Heating Up
NAPE HS	1-Jan-98	23-Feb-98	Negotiations	Heating Up
NAPE HS	24-Feb-98	1-Jun-98	Strike Notice	Heating Up
NAPE HS	2-Jun-98	2-Jul-98	Negotiated Settlement	Resolution
NAPE HS	3-Jul-98	3-Aug-98	Cooling Off	Cooling Off
NAPE HS	4-Aug-98	4-Sep-00	Calm	Calm
NAPE HS	5-Sep-00	5-Oct-00	Heating Up	Heating Up
NAPE HS	6-Oct-00	28-Jan-01	Opening Proposals	Heating Up
NAPE HS	29-Jan-01	5-Mar-01	Conciliation	Heating Up
NAPE HS	6-Mar-01	22-Mar-01	Strike Vote	Heating Up
NAPE HS	23-Mar-01	31-Mar-01	Collective Agree. Expired	Collective Agree. Expired
NAPE HS	1-Apr-01	5-Apr-01	Strike	Strike
NAPE HS	6-Apr-01	6-May-01	Cooling Off	Cooling Off
NAPE HS	7-May-01	14-May-01	Negotiated Settlement	Resolution
NAPE HS	15-May-01	5-Jun-01	MOU Signed	Resolution
NAPE HS	6-Jun-01	9-Jul-01	Ratification Vote	Resolution
NAPE HS	10-Jul-01	10-Aug-01	Collective Agree. Signed	Collective Agree. Signed
NAPE HS	11-Aug-01	11-Sep-01	Cooling Off	Cooling Off
NAPE HS	12-Sep-01	15-Jun-03	Calm	Calm
NAPE HS	16-Jun-03	31-Oct-03	Union Requests Negotiations in Oct. 2003	Heating Up
NAPE HS	1-Nov-03	9-Nov-03	Heating Up	Heating Up
NAPE HS	10-Nov-03	2-Dec-03	Opening Proposals	Heating Up
NAPE HS	3-Dec-03	14-Jan-04	Union Wrote NLHBA to Negotiate	Heating Up
NAPE HS	15-Jan-04	16-Feb-04	Union Requests Conciliation	Heating Up
NAPE HS	17-Feb-04	3-Mar-04	Strike Vote Commenced	Heating Up
NAPE HS	4-Mar-04	20-Mar-04	Strike Vote Conclude	Heating Up
NAPE HS	21-Mar-04	31-Mar-04	Collective Agree. Expired	Collective Agree. Expired
NAPE HS	1-Apr-04	3-May-04	Strike	Strike
NAPE HS	4-May-04	4-Jun-04	Collective Agree. Signed	Collective Agree. Signed
NAPE HS	5-Jun-04	5-Jul-04	Cooling Off	Cooling Off
NAPE HS	6-Jul-04	30-Mar-08	Calm	Calm
NAPE HS	31-Mar-08	30-Apr-08	Collective Agree. Expired	Collective Agree. Expired

Table 4: Visual Account of Collective Bargaining Events and Associated Broad Categories of Collective Bargaining-NAPE LX

Union	Start Date	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining Event
NAPE LX	1-Jan-97	16-Jun-97	Calm	Calm
NAPE LX	17-Jun-97	17-Jul-97	Opening Proposals	Heating Up
NAPE LX	18-Jul-97	8-Mar-98	Heating Up	Heating Up
NAPE LX	9-Mar-98	24-Nov-98	MOU Signed	Resolution
NAPE LX	25-Nov-98	25-Dec-98	Collective Agree. Signed	Collective Agreement Signed
NAPE LX	26-Dec-98	26-Jan-99	Cooling Off	Cooling Off
NAPE LX	27-Jan-99	12-Oct-00	Calm	Calm
NAPE LX	13-Oct-00	17-Oct-00	Opening Proposals	Heating Up
NAPE LX	18-Oct-00	24-Oct-00	Strike	Strike
NAPE LX	25-Oct-00	25-Dec-00	Mediated Return to Work	Cooling Off
NAPE LX	26-Dec-00	29-Mar-01	Heating Up	Heating Up
NAPE LX	30-Mar-01	31-Mar-01	Collective Agree. Expired	Collective Agreement Expired
NAPE LX	1-Apr-01	5-Apr-01	Strike	Strike
NAPE LX	6-Apr-01	18-Jul-01	Negotiated Settlement	Resolution
NAPE LX	19-Jul-01	19-Aug-01	Collective Agree. Signed	Collective Agreement Signed
NAPE LX	20-Aug-01	20-Sep-01	Cooling Off	Cooling Off
NAPE LX	21-Sep-01	6-Nov-03	Calm	Calm
NAPE LX	7-Nov-03	14-Jan-04	Opening Proposals	Heating Up
NAPE LX	15-Jan-04	25-Jan-04	Union Requests Conciliation	Heating Up
NAPE LX	26-Jan-04	29-Mar-04	Heating Up	Heating Up
NAPE LX	30-Mar-04	31-Mar-04	Collective Agree. Expired	Collective Agreement Expired
NAPE LX	1-Apr-04	3-May-04	Strike	Strike
NAPE LX	4-May-04	4-Jun-04	Collective Agree. Signed	Collective Agreement Signed
NAPE LX	5-Jun-04	5-Jul-04	Cooling Off	Cooling Off
NAPE LX	6-Jul-04	30-Mar-08	Calm	Calm
NAPE LX	31-Mar-08	30-Apr-08	Collective Agree. Expired	Collective Agreement Expired

Table 5: Visual Account of Collective Bargaining Events and Associated Broad Categories of Collective Bargaining-NLNU

Union	Start Date	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining Event
NLNU	1-Jan-95	12-Jan-95	Calm	Calm
NLNU	13-Jan-95	13-Feb-95	Collective Agreement Signed	Collective Agree. Signed
NLNU	14-Feb-95	14-Mar-95	Cooling Off	Cooling Off
NLNU	15-Mar-95	30-Dec-95	Calm	Calm
NLNU	31-Dec-95	31-Jan-96	Collective Agreement Expired	Collective Agree. Expired
NLNU	1-Feb-96	26-Nov-97	Heating Up	Heating Up
NLNU	27-Nov-97	27-Dec-97	Opening Proposals	Heating Up
NLNU	28-Dec-97	25-Jan-99	Heating Up	Heating Up
NLNU	26-Jan-99	15-Mar-99	Strike Vote	Heating Up
NLNU	16-Mar-99	23-Mar-99	Conciliation	Heating Up
NLNU	24-Mar-99	31-Mar-99	Strike	Strike
NLNU	1-Apr-99	1-May-99	Legislated Agreement	Resolution
NLNU	2-May-99	2-Jun-99	Cooling Off	Cooling Off
NLNU	3-Jun-99	4-Oct-01	Calm	Calm
NLNU	5-Oct-01	14-Nov-01	Opening Proposals	Heating Up
NLNU	15-Nov-01	26-Feb-02	Meetings	Heating Up
NLNU	27-Feb-02	5-Mar-02	Conciliation Requested by Union	Heating Up
NLNU	6-Mar-02	23-May-02	Conciliation	Heating Up
NLNU	24-May-02	21-Jul-02	Ratified Agreement	Resolution
NLNU	22-Jul-02	22-Aug-02	Collective Agreement Signed	Collective Agree. Signed
NLNU	23-Aug-02	23-Sep-02	Cooling Off	Cooling Off
NLNU	24-Sept-02	10-Jun-04	Calm	Calm
NLNU	11-Jun-04	29-Jun-04	Union Announces not Returning to Bargaining Table in 2004	Heating Up
NLNU	30-Jun-04	30-Jul-04	Collective Agreement Expired	Collective Agree. Expired
NLNU	31-Jul-04	25-May-05	Heating up	Heating Up
NLNU	26-May-05	23-Feb-06	Gov't Serves Notice to Negotiate	Heating Up
NLNU	24-Feb-06	13-Apr-06	Opening Proposals	Heating Up
NLNU	14-Apr-06	14-May-06	Meetings	Heating Up
NLNU	15-May-06	23-May-06	Employer Requests Conciliation	Heating Up
NLNU	24-May-06	3-Jul-06	Meetings	Heating Up
NLNU	4-Jul-06	5-Jul-06	Conciliation	Heating Up
NLNU	6-Jul-06	22-Oct-06	Final Offer	Heating Up
NLNU	23-Oct-06	3-Dec-06	Final Agreement	Heating Up
NLNU	4-Dec-06	25-Jan-07	Ratified Agreement	Resolution
NLNU	26-Jan-07	26-Feb-07	Collective Agreement Signed	Collective Agree. Signed
NLNU	27-Feb-07	27-Mar-07	Cooling Off	Cooling Off
NLNU	28-Mar-07	29-Jun-08	Calm	Cooling Off
NLNU	30-Jun-08	30-Jul-08	Collective Agreement Expired	Collective Agree. Expired

Chapter 4

4. Descriptive Results

The purpose of this study is to examine the relationship between collective bargaining events and employee use of voice mechanisms: grievance, injury reporting, absence, voluntary turnover and adverse events. This chapter will present the descriptive results separately for each voice mechanism and union group. It is important to note that rates of the behaviors under study are, in part, determined by the size of the union, therefore making absolute comparison of the rates across all union groups, impossible.

Rates of each voice mechanism will be visually represented in line graphs, which will correspond to the particular collective bargaining events occurring with each union group. In particular, each of these line graphs will clearly indicate collective bargaining events, and the date on which these events occurred. Twenty of these graphs have been produced for this study, and will be displayed within this chapter. It is important to note that any strike activity was taken out of these graphs, as the data was not clearly representative of these periods. The corresponding tables representing the underlying data are located in Appendix 1. The results of the negative binomial regression analysis will be presented separately in chapter five.

4.1 Calculation of Rates

The calculation of the rates utilized in both the tables and graphs correspond to each voice mechanism, per union group. These rates were performed using the x/y formula: with 'x' representing the counts of behaviors for each collective bargaining event time frame, and 'y' representing the number of days duration of each of these time

frames, or the "exposure period". In each calculation, the results were rounded to the second place, after the decimal. These rates can be found within the tables located in Appendix 1.

4.2 Grievance

4.2.1 *AAHP*

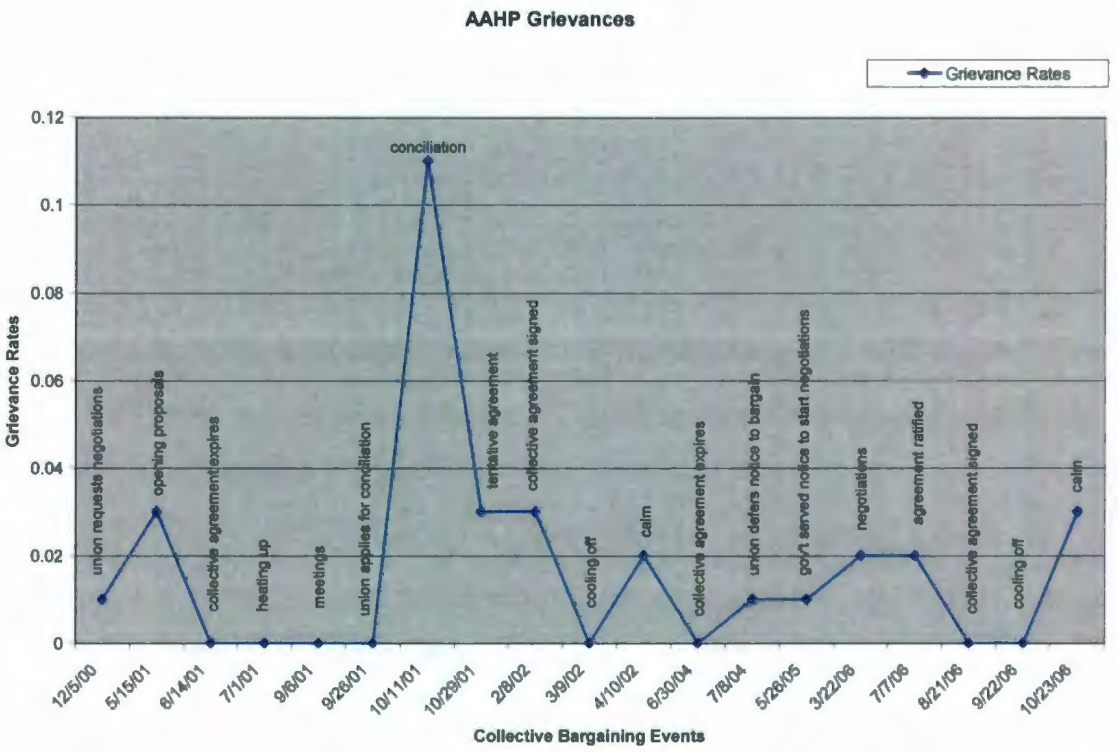

Figure 1: AAHP Grievance Rates during Collective Bargaining Events

AAHP grievance rates indicate a number of key increases of grievance behaviors within the data, in association with particular collective bargaining events. The first, albeit mild increase, was noted following the collective bargaining event where the union requested negotiations, between December 5, 2000 and May 14, 2001, when grievance

rates went from 0.01 to 0.03 between May 15, 2001 and June 13, 2001, when opening proposals were given. Following this slight increase, grievance rates fell to zero by the next collective bargaining event, between June 14, 2001 and June 30, 2001, when the collective agreement expired.

The most pronounced spike in grievances, for AAHP, occurred following the union requesting conciliation on September 26, 2001 (ending on October 10, 2001), when rates of grievance dramatically increased from zero to 0.11 within a 15-day period, when conciliation took place between October 11, 2001 and October 28, 2001. At this point in time, the collective agreement had been expired for almost 4 months, with ongoing negotiation through meetings, leading up to the application for conciliation by the AAHP union executive. It is interesting to note that leading up to the conciliation event, rates of grievance remained at zero.

Once conciliation took place, rates of grievances profoundly dropped to 0.03 by October 29, 2001 (between October 29, 2001 and February 7, 2002), when a tentative agreement was reached. Grievances remained at this level through the next event, between February 8, 2002 and March 8, 2002, when the collective agreement was signed. Once this agreement was finalized, grievance rates fell to zero, between March 9, 2002 and April 9, 2002, (during a cooling off period). Grievance rates increased to 0.02 between April 10, 2002 and June 29, 2004, when union members entered an extended period of calm, which lasted 812 days, during which no collective bargaining events took place.

The next collective bargaining cycle for the AAHP union began on June 30, 2004 (between June 30, 2004 and July 7, 2004), with a grievance rate of zero, when the collective agreement expired. Rates of grievance slightly increased from zero to 0.01 between July 8, 2004 and May 25, 2005, when the union deferred notice to bargain. It is interesting to note that when the union deferred notice to bargain on July 8, 2004, it was shortly after the long volatile strike with the NAPE union, which occurred between April 1, 2004 and May 3, 2004. It is possible that AAHP, fearing similar outcomes with bargaining, decided against approaching the bargaining table at that time. Grievance rates increasing within this time frame, suggest that union members may have been frustrated with this decision, and with the inflexibility of the government to reach a settlement with NAPE in a timely manner, as well as with their prospects for a fair collective bargaining process.

Grievance rates continued to be steady at 0.01 (between May 26, 2005 and March 21, 2006, when the government served notice to negotiate) until between March 22, 2006 and July 6, 2006, when grievances rose to 0.02, when negotiations took place between the union and the employer. Grievances remained steady at the rate of 0.02 through July 7, 2006 to August 20, 2006, when the agreement was ratified. Once this event occurred, grievances dropped to zero between August 21, 2006 and September 21, 2006, when the collective agreement was signed. Rates remained at zero through the cooling off period, between September 22, 2006 and October 22, 2006, until October 23, 2006, when grievances rose to 0.03, during the period of calm that lasted 186 days, between October

23, 2006 and April 26, 2007. This rise in grievances occurred when no collective bargaining activity had taken place.

Results indicate that for the most part, AAHP union members are not wholly responsive to the collective bargaining cycle, in so far as grievance patterns are concerned. However, the dramatic increase in grievance rates from zero, when the union requested conciliation between September 26, 2001 and October 10, 2001, to 0.11 during the event of conciliation, between October 11, 2001 and October 28, 2001, does suggest that employees may have been influenced by the labor relations environment at that time.

In addition, increases in grievance activity throughout periods of calm, also lend credence to the idea that union members might be swayed by the collective bargaining process, and that they may become more responsive once negotiations end and their working environments return to normal, following collective bargaining events. Grievances increased during two separate periods of calm: the first being April 10, 2002 (this calm period lasted until June 29, 2004), when grievance rates rose to 0.02, and the second period being on October 23, 2006 (this calm period lasted until April 26, 2007), when grievance rates rose to 0.03. These increases during periods of calm suggest that workers may be utilizing the grievance mechanism of voice more often during times when collective bargaining activity has ended.

4.2.2 *NAPE HS*

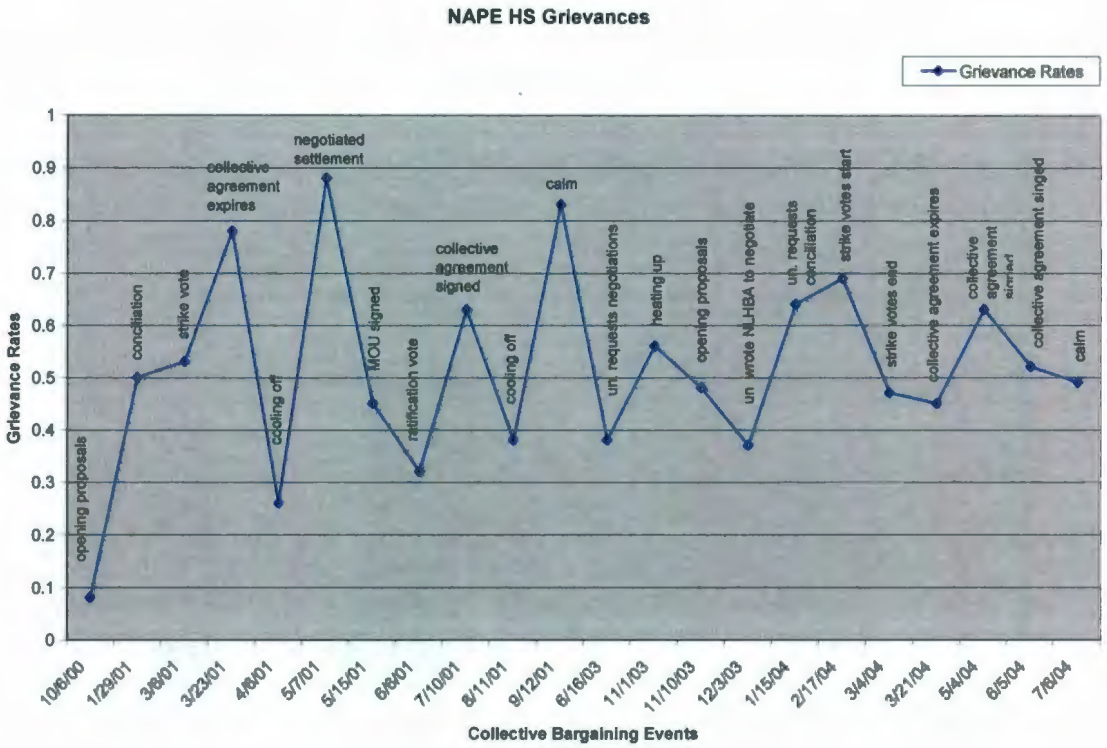

Figure 2: NAPE HS Grievance Rates during Collective Bargaining Events

NAPE HS grievance rates indicate a number of dramatic increases in grievance behaviors within the data, in association with particular collective bargaining events. October 6, 2000 was the first collective bargaining event indicated within the data, with a grievance rate of 0.08 (between October 6, 2000 and January 28, 2001), when the NAPE HS union initiated the negotiation process on behalf of their members, with opening proposals. Grievances rose dramatically in the following 36 days, to 0.50 between January 29, 2001 and March 5, 2001, when conciliation took place. Rates continued to increase to 0.53 between March 6, 2001 and March 22, 2001, when union members took

a strike vote. This rapid progression through collective bargaining events to a strike vote indicates high volatility within this union group, and with the negotiation process. This may have influenced members prior to the start of the collective bargaining cycle, as is suggested by the continual increases in grievance behaviors, throughout this short period.

Another profound increase occurred between March 23, 2001 and March 31, 2001, with an increase in grievances to 0.78 in a 9-day period, during which the collective agreement expired. Strike action took place on April 1, 2001 (between April 1, 2001 and April 5, 2001). This strike lasted 5 days, and once employees were back to work, grievances quickly rose again. Between April 6, 2001 and May 6, 2001 grievances rose rapidly to 0.26, during the period of cooling off that occurred after the volatile collective bargaining cycle ended. Rates continued to increase between May 7, 2001 and May 14, 2001 with grievances rising to the highest rate within the data set to 0.88, during which a negotiated settlement was reached. Considering that this collective bargaining cycle only began on October 6, 2000, and quickly involved strike action by April 1, 2001, it is questionable whether union members were dissatisfied with the negotiation process, or with the final settlement, encouraging individuals to express their feelings through grievance behavior, or perhaps increasing the members' decision to follow through with a formal report of grievance.

Following the negotiated settlement, between May 15, 2001 and June 5, 2001, grievances fell to 0.45, when the memo of understanding was signed between the union and employer. On June 6, 2001, rates of grievance continued to decrease to 0.32, during the period of time when the ratification vote took place, between June 6, 2001 and July 9,

2001. Following this event, rates rose to 0.63 when the collective agreement was signed (between July 10, 2001 and August 10, 2001); however, this increase was short-lived as rates dropped to 0.38 on August 11, 2001, during a cooling off period ending September 11, 2001, following the end of the collective bargaining cycle. Rates rose to 0.83 from September 12, 2001 to June 15, 2003, during 642 days of calm that followed, a time when no collective bargaining activities took place. It is interesting to note that throughout this bargaining period, rates of grievance remained at a comparatively high level, which supports the concept that individuals who are affected or influenced by collective bargaining events, may utilize grievance as a voice mechanism.

The next collective bargaining event for NAPE HS began on June 16, 2003, when the union requested that negotiations start, with an associated grievance rate of 0.38 between June 16, 2003 and October 31, 2003. This rate rose slightly to 0.56 between November 1, 2003 and November 9, 2003, during a period of heating up when the union was about to enter the collective bargaining cycle. This slight rise was short lived as rates of grievance fell to 0.48 between November 10, 2003 and December 2, 2003 (with opening proposals), and even further to 0.37 between December 3, 2003 and January 14, 2004, when the union wrote the NLHBA requesting negotiations.

Grievances rose to 0.64 between January 15, 2004 and February 16, 2004, when the union, on behalf of its members, requested conciliation. Rates of grievance continued to rise to 0.69 between February 17, 2004 and March 3, 2004, when a strike vote began, however, between the start and end of the strike vote between March 4, 2004 and March

20, 2004, rates of grievance fell to 0.47, and again to 0.45, between March 21, 2004 and March 31, 2004, when the collective agreement expired.

A 33-day strike occurred between April 1, 2004 and May 3, 2004. In the 32 days following the collective agreement being signed (between May 4, 2004 and June 4, 2004), there was an increase in grievance activity to 0.63. Following this large increase in grievance rates, there was a decrease in grievances to 0.52, between June 5, 2004 and July 5, 2004, during the cooling off period. Rates again decreased to 0.49 during the almost 3 years of calm that occurred, between July 6, 2004 and May 29, 2007.

It is important to remember that this strike action was a particularly long, drawn-out and negative campaign on both sides. Union members stayed on the picket line, receiving small monetary compensation throughout this period, impacting both their personal and professional lives; with little gain from the strike, given there was a legislated collective agreement. It is no wonder that following this lengthy event, grievance rates drastically increased throughout the time frame when the collective agreement was signed. It could have been the strike, the legislated agreement or details of this agreement, or even general dissatisfaction, that influenced individuals to utilize grievance behaviors.

Results show that the NAPE HS union members seem to be quite responsive to a variety of events occurring throughout collective bargaining activity, as rates of grievance were found to be quite unstable throughout the bargaining cycles. Dramatic spikes in grievance rates were identified at key periods in the negotiation process. In particular, this was noted prior to and following the strike action taken by NAPE HS, twice within

the data. When the collective agreement expired on March 23, 2001 (between March 23, 2001 and March 31, 2001), grievance rates were 0.78. Following the first strike, occurring between April 1 and April 5, 2001, grievances rose to 0.26 during the period of cooling off occurring between April 6, 2001 and May 6, 2001. Rates further increased to 0.88 between May 7, 2001 and May 14, 2001, when the negotiated settlement was reached.

Likewise, when the collective agreement expired on March 21, 2004, grievance rates were identified as 0.45 (between March 21, 2004 and March 31, 2004), and following the second strike, occurring on April 1, 2004 (ending May 3, 2004), grievances increased to 0.63, between May 4, 2004 and June 4, 2004, when the collective agreement was signed. These spikes in grievance rates occurring before and after a strike event highlight how union members are responsive to particularly volatile collective bargaining events.

In two of the three cooling off periods identified within the data, grievance rates increased. The first instance was between April 6, 2001 and May 6, 2001, corresponding to a cooling off period (and following strike action between April 1 and April 5, 2001), with rates of grievance at 0.26. Rates increased to 0.88 during the time frame when the negotiated settlement was reached, between May 7, 2001 and May 14, 2001.

The second period of cooling off occurred between August 11, 2001 and September 11, 2001, following the collective agreement being signed, on July 10, 2001. Rates of grievances, during this cooling off period, were at 0.38, however they increased to 0.83 during the 642 days of calm, occurring between September 12, 2001 and June 15, 2003.

Interestingly, the last cooling off period on June 5, 2004 (between June 5, 2004 and July 5, 2004), showed a decrease in grievances following the collective agreement being signed, on May 4, 2004. This cooling off period had a grievance rate of 0.52 (down from 0.63 in the previous period, when the collective agreement was signed, between May 4, 2004 and June 4, 2004). Rates once again fell to 0.49 during the almost 3-year period of calm, which followed this cooling off period, between July 6, 2004 and May 29, 2007. This finding is quite interesting as these events followed a particularly acrimonious strike event lasting 33 days (between April 1, 2004 and May 3, 2004). While there was a slight decrease, these grievance rates continued to be at a fairly high level, suggesting that union members may have utilized grievance as a method to voice their discontent.

4.2.3 *NAPE LX*

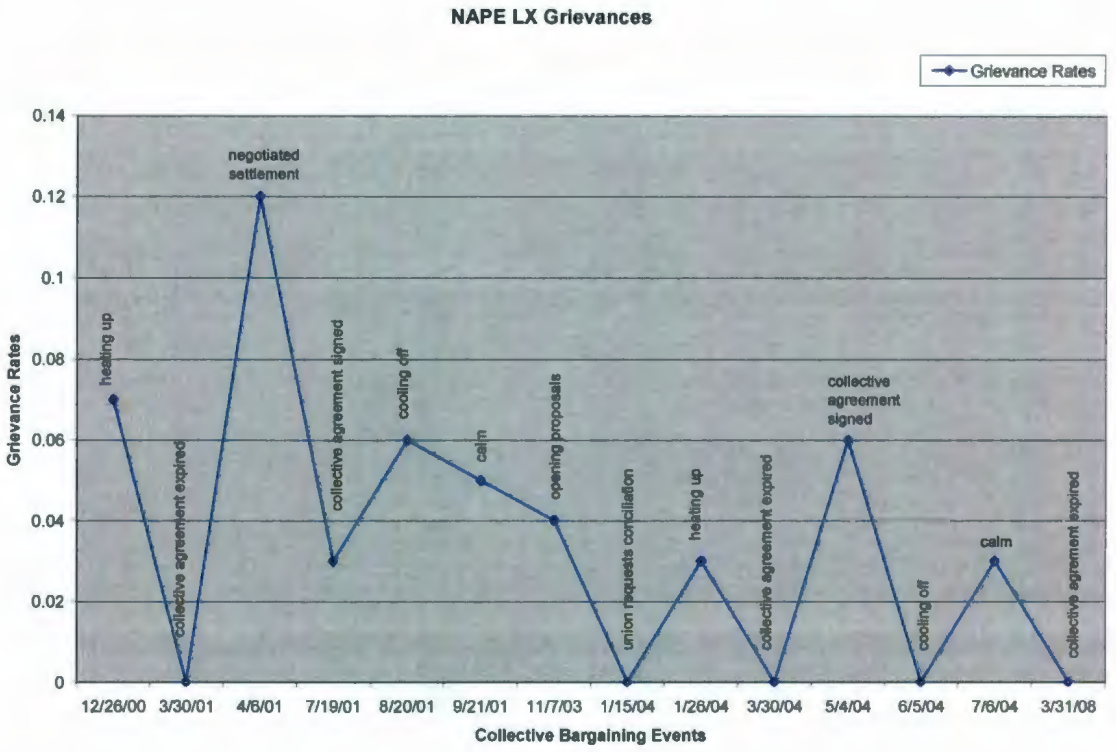

Figure 3: NAPE LX Grievance Rates during Collective Bargaining Events

NAPE LX grievance rates indicate a number of key increases and decreases in grievance activity within the data, in association with particular collective bargaining events. The first main decrease in activity occurred between December 26, 2000 and March 29, 2001, during a period of heating up, with grievance rates falling from 0.07 to zero when the collective agreement expired between March 30, 2001 and March 31, 2001. An increase in grievance occurred following a 5-day strike (between April 1 and April 5, 2001), with rates increasing to 0.12, when the negotiated settlement was reached, between April 6, 2001 and July 18, 2001.

Rates of grievance fell to 0.03 when the collective agreement was signed, on July 19, 2001 (between July 19, 2001 and August 19, 2001). However, these rates increased to 0.06, between August 20, 2001 and September 20, 2001, while members were in a period of cooling off. In addition, during the 777 days of calm, between September 21, 2001 and November 6, 2003, rates decreased to 0.05. It is interesting to note that these grievance rates decrease following a collective bargaining cycle that contained two strike actions, the first on October 18, 2000 (ending October 24, 2000) and the second on April 1, 2001 (ending April 5, 2001). These findings suggest that while the NAPE LX union group does utilize grievance activity, they are not wholly relying on this behavior as a way to voice their frustrations with the bargaining process.

Grievance rates continued to drop to 0.04 as NAPE LX union entered their next round of collective bargaining, starting with opening proposals on November 7, 2003 (between November 7, 2003 and January 14, 2004). Following this period of time, rates dropped to zero on January 15, 2004 (between January 15, 2004 and January 25, 2004) when the union, on behalf of their members, applied for conciliation. This decrease was short lived, as grievance rates rose to 0.03 by January 26, 2004, during a period of heating up (between January 26, 2004 and March 29, 2004), leading into a more volatile period of bargaining. That said, by the time the collective agreement expired on March 30, 2004, grievance rates were again at zero.

The next spike in grievances occurred following strike action on April 1, 2004, between April 1, 2004 and May 3, 2004. When the collective agreement was signed on May 4, 2004, rates of grievances rose to 0.06, in the 1-month period following the strike.

This increase was short lived, as rates of grievance fell to zero by June 5, 2004, during a period of cooling off occurring between June 5, 2004 and July 5, 2004. That said, by July 6, 2004, rates of grievance once again rose to 0.03 (between July 6, 2004 and March 30, 2008) when the NAPE LX group was in their almost 4-year period of calm. However, following this extended period of time (during which no bargaining activity was taking place), rates of grievances once again fell to zero, between March 31, 2008 and April 30, 2008, when the collective agreement expired.

Examination of the data shows that the NAPE LX union group is not particularly responsive to the collective bargaining process, in so far as grievance patterns are concerned. That said, there are a number of spikes in grievance rates surrounding particularly important collective bargaining events. The most obvious spike in data occurs when the negotiated settlement was signed on April 6, 2001 (following a strike, between April 1, 2001 and April 5, 2001). During this period of time, rates of grievance increased to 0.12. This spike in rates suggests that this collective bargaining cycle was potentially a highly charged period of time; the spike in grievances may help to shed light upon the temperament of NAPE LX workers, throughout that time.

4.2.4 *NLNU*

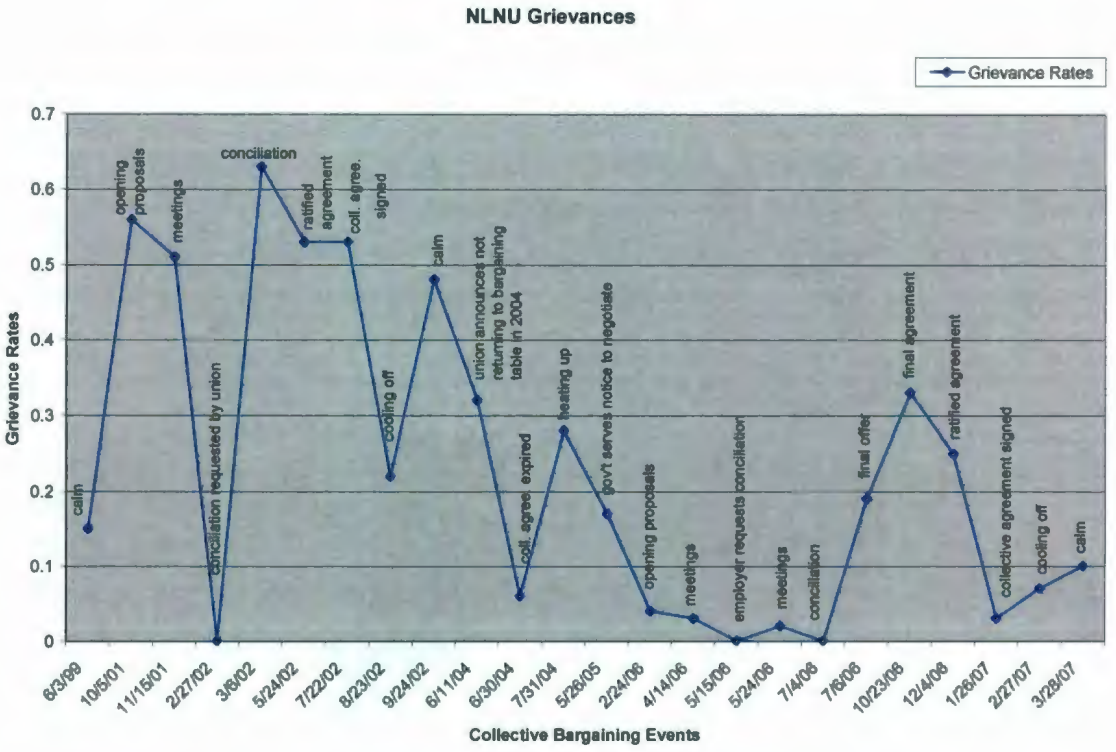

Figure 4: NLNU Grievance Rates during Collective Bargaining Events

NLNU grievance rates indicate a number of large increases and decreases in grievance behaviors, in association with particular collective bargaining events. The first increase in grievances occurred following the 855 days of calm, which occurred on June 3, 1999 (between June 3, 1999 and October 4, 2001), when grievance rates were at 0.15. Following this period, the union submitted opening proposals for the next round of bargaining on October 5, 2001 (between October 5, 2001 and November 14, 2001) and at this time rates of grievance rose to 0.56, with a slight decrease in rates to 0.51, between November 15, 2001 and February 26, 2002, during which the union was taking part in

meetings. Rates of grievance dropped to zero by February 27, 2002 (between February 27, 2002 and March 5, 2002), when the union requested conciliation. This decrease was very short lived, as rates of grievance made the most profound increase in the data set between March 6, 2002 and May 23, 2002, when rates rose to 0.63, when conciliation took place.

Following conciliation, grievance rates gradually decreased throughout the remainder of the collective bargaining cycle, initially maintaining a level of 0.53 when the agreement was ratified on May 24, 2002 (between May 24, 2002 and July 21, 2002), and on July 22, 2002 when the collective agreement was signed (between July 22, 2002 and August 22, 2002). Rates of grievance dropped significantly to 0.22 during the cooling off period that occurred between August 23, 2002 and September 23, 2002. This drop in grievance rates did not last throughout the 626 days of calm that followed this collective bargaining cycle, as rates of grievance rose to 0.48 between September 24, 2002 and June 10, 2004.

The next collective bargaining cycle began with the NLNU announcing on June 11, 2004 that they would not return to the bargaining table during the remainder of that year. This announcement preceded the collective agreement expiration on June 30, 2004. Rates of grievance during this time fell from 0.32 on June 11, 2004 (between June 11, 2004 and June 29, 2004), to 0.06 on June 30, 2004 (between June 30, 2004 and July 30, 2004). Following this period of time, union members entered into a 299-day period of heating up, whereby they were building up to the approaching negotiation process, between July 31, 2004 and May 25, 2005. During this period of heating up, rates of

grievance rose to 0.28. When the government served notice to the union to begin negotiations, on May 26, 2005, rates of grievance fell to 0.17 (between May 26, 2005 and February 23, 2006). No further collective bargaining event took place until February 24, 2006, when opening proposals were initiated, with rates of grievance decreasing to 0.04 between February 24, 2006 and April 13, 2006.

Rates of grievance continued to be extremely low during the next few events of this collective bargaining cycle: during meetings on April 14, 2006, grievances were 0.03 (between April 14, 2006 and May 14, 2006); when the employer requested conciliation on May 15, 2006, rates of grievance dropped to zero (between May 15, 2006 and May 23, 2006); during meetings, rates of grievance slightly rose to 0.02 (between May 24, 2006 and July 3, 2006); and when conciliation took place on July 4, 2006, grievances fell to zero (between July 4, 2006 and July 5, 2006). That said, rates rose to 0.19 between July 6, 2006 and October 22, 2006, when the final offer was given. When the final agreement was reached on October 23, 2006 (between October 23, 2006 and December 3, 2006), grievances again rose to 0.33; however following this event, rates consistently lowered to 0.25, when the agreement was ratified on December 4, 2006 (between December 4, 2006 and January 25, 2007) and the collective agreement being signed on January 26, 2007 (grievances decreased to 0.03, between January 26, 2007 and February 26, 2007). Once this collective bargaining period was finished and employees entered into the period of cooling off (between February 27, 2007 and March 27, 2007), rates again increased to 0.07, however they rose to 0.10 throughout the 41 days of calm, occurring between March 28, 2007 and May 7, 2007.

This data indicates that the NLNU grievance patterns are not especially responsive to collective bargaining events. That said, the period of profound increase in grievance rates to 0.63 between March 6, 2002 and May 23, 2002, during conciliation (which rose from zero grievances occurring between February 27, 2002 and March 5, 2002, when conciliation was requested by the union), indicates that certain events may play a part in the use of grievance activity for this union group. In addition, other significant increases in grievances occurred throughout the collective bargaining cycles, further lending support to the idea that some collective bargaining events seem to influence employees to utilize grievance as a voice mechanism, more than others.

4.3 Injury Reporting

4.3.1 *AAHP*

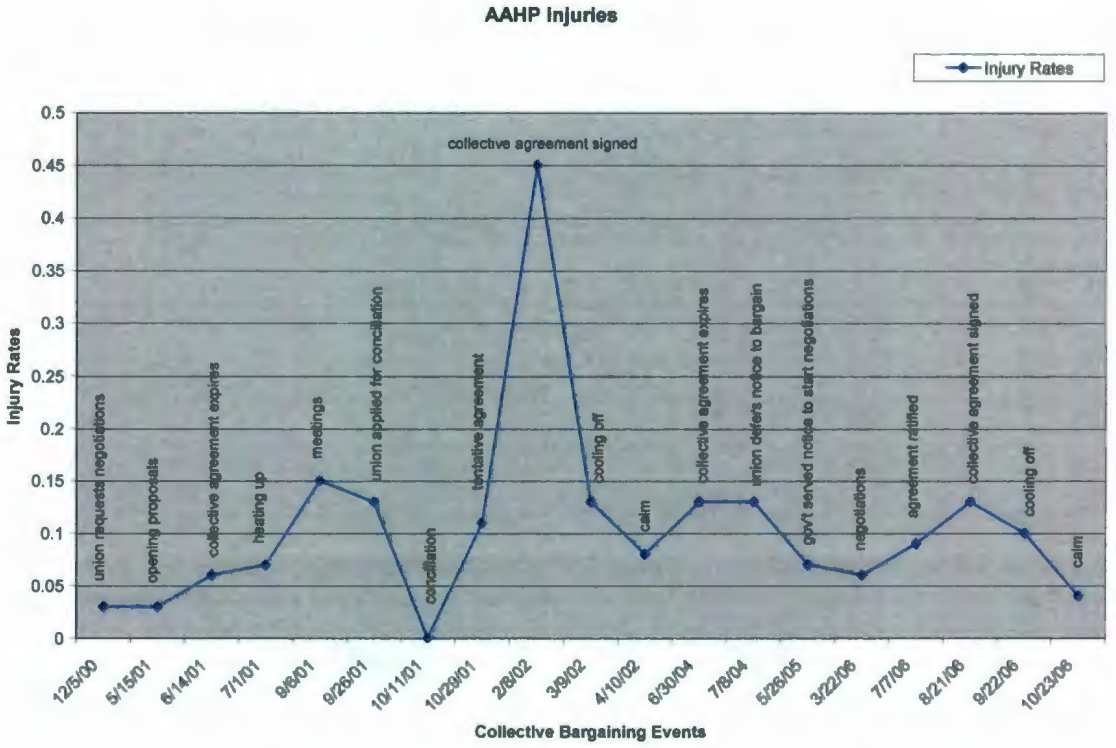

Figure 5: AAHP Injury Reporting Rates during Collective Bargaining Events

AAHP reported injury rates indicate that there was an obvious spike in injuries being reported after the tentative agreement was reached on October 29, 2001 (ending February 7, 2002), with a rate of 0.11. Between February 8, 2002 and March 8, 2002, reported injury rates rapidly increased to 0.45, when the collective agreement was signed. Once this occurred, rates decreased to 0.13 during the cooling off period, occurring between March 9, 2002 and April 9, 2002. This decline continued to 0.08, throughout the period of calm occurring between April 10, 2002 and June 29, 2004, which lasted for 812 days.

Interestingly, the collective agreement expired on June 30, 2004, and the rates of injuries being reported between this date and July 7, 2004 increased to 0.13, within this 8-day period.

Throughout the observation period, there were a number of minor spikes in rates of reported injuries that corresponded to times when the AAHP union became more involved in labor relations activities. The first spike occurred following opening proposals in the negotiation process, between May 15, 2001 and June 13, 2001, with a corresponding reported injury rate of 0.03. Between June 14, 2001 and June 30, 2001, the reported injury rate increased to 0.06, when the collective agreement expired. This slow, steady rise in reported injuries continued with union members entering a heating up period between July 1, 2001 and September 5, 2001, corresponding to a reported injury rate of 0.07, and further when meetings were taking place, between September 6, 2001 and September 25, 2001, with a rate of 0.15.

The other minor spike in rates of reported injuries occurred following negotiations occurring between March 22, 2006 and July 6, 2006, with a rate of 0.06. Rates of reported injuries increased following this event when the agreement was ratified on July 7, 2006 until August 20, 2006, with a rate of 0.09, and further rose to 0.13 when the collective agreement was signed, between August 21, 2006 and September 21, 2006. Once again, there was a continual and steady increase in rates of reported injuries, which suggests that temperaments remained elevated throughout this period.

Likewise, there were a number of minor drops of injuries being reported within the observation period. The first decline in rates occurred following the union applying for

conciliation, between September 26, 2001 and October 10, 2001, with a rate of 0.13. After this event occurred, rates of injury reporting dropped to zero when conciliation took place between October 11, 2001 and October 28, 2001. In addition, there was a second minor drop in rates of reported injuries following the union deferring notice to bargain, between July 8, 2004 and May 25, 2005, with a rate of 0.13, with a decrease in rates occurring between May 26, 2005 and March 21, 2006, with a rate of 0.07, when the government was served notice to negotiate. These rates dropped further between March 22, 2006 and July 6, 2006, when negotiations were taking place, with a corresponding rate of reported injuries at 0.06.

Finally, the last minor decline in reported injury rates occurred after the collective agreement was signed on August 21, 2006, with a rate of 0.13 occurring between August 21, 2006 and September 21, 2006. Rates of reported injuries dropped to 0.10, between September 22, 2006 and October 22, 2006, during which union members entered a cooling off period. This decreasing trend continued through the period of calm, lasting 186 days, between October 23, 2006 and April 26, 2007, when reported injury rates dropped to 0.04.

These results indicate that the AAHP union may not be overtly influenced by collective bargaining events, at least when considering reported injuries. That said, there were spikes and declines in reported injuries surrounding particularly disruptive collective bargaining events, which could be an indication that collective bargaining did provide some sort of influence upon members to utilize the reporting of injuries as a mechanism of voice.

4.3.2 *NAPE HS*

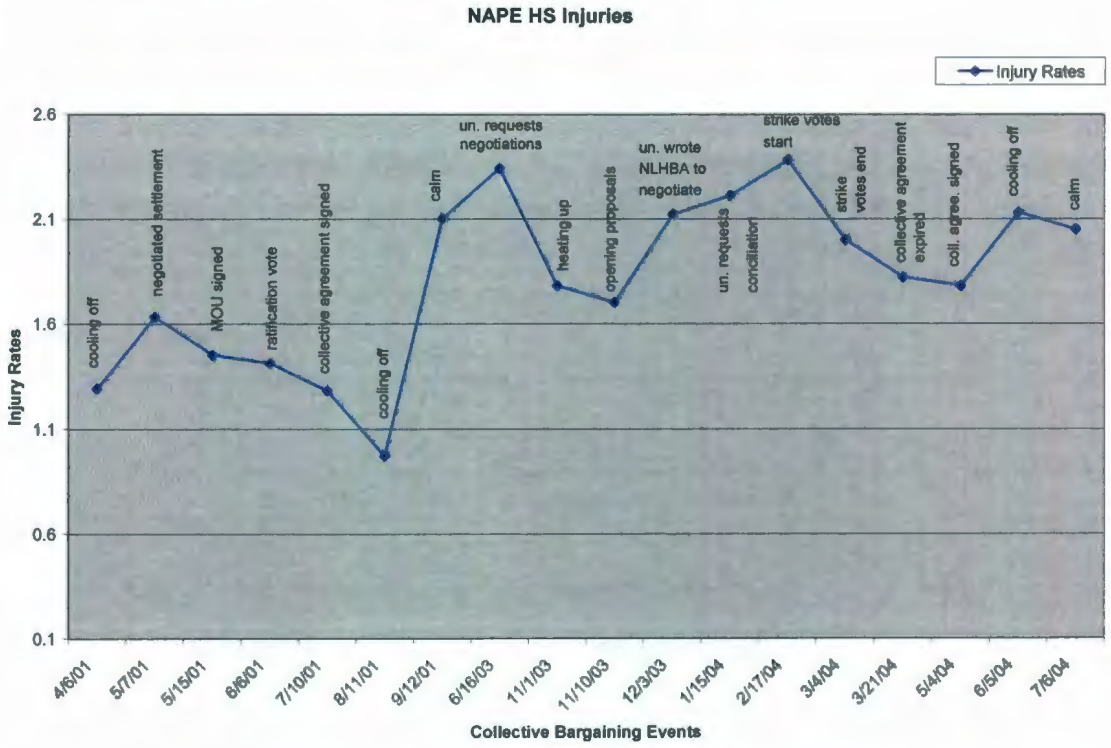

Figure 6: NAPE HS Injury Reporting Rates during Collective Bargaining Events

NAPE HS data indicates spikes in rates of injury reporting that correspond to collective bargaining events. The first major spike in rates of reported injuries occurred following a 5-day strike (between April 1, 2001 and April 5, 2001), with a reported injury rate of 1.29, between April 6, 2001 and May 6, 2001, during a period of cooling off, which followed the volatile strike activity. This increase continued to 1.63, between May 7, 2001 and May 14, 2001, with a negotiated settlement.

Following this negotiated settlement, rates of reported injury began its decline, between May 15, 2001 and June 5, 2001, when a memo of understanding was signed. At this point, reported injury rates were 1.45. Rates dropped to 1.41 when the ratification vote was taken, between June 6, 2001 and July 9, 2001, and once the collective agreement was signed between July 10, 2001 and August 10, 2001, rates had decreased to 1.28. Rates of reported injuries continued downward to 0.97, while members were in a cooling off period, from August 11, 2001 to September 11, 2001.

The next major increase in rates of reported injury for NAPE HS occurred during a period of calm, between September 12, 2001 and June 15, 2003, with a rate of 2.10. It is interesting to note that this calm period, which lasted for 642 days, had an extremely high rate of injury reporting, during a period of time when no active collective bargaining took place. This pattern of increased injury reporting continued to 2.34, between June 16, 2003 and October 31, 2003, when the union requested negotiations.

Following this collective bargaining event, rates of injury reporting declined to 1.78 when the membership was in a period of heating up, prior to the start of the negotiations between November 1, 2003 and November 9, 2003. Rates continued to fall to 1.70 when the union was providing opening proposals, between November 10, 2003 and December 2, 2003.

The third spike in rates occurred between December 3, 2003 to January 14, 2004, with rates increasing to 2.12, when the union wrote the NLHBA, requesting negotiations. These rates continued to gradually increase, rising to 2.21, between January 15, 2004 and February 16, 2004, when the union requested conciliation. Rates increased again to 2.38

between February 17, 2004 and March 3, 2004, when a strike vote took place. Once the strike vote occurred, rates of injury reporting began to decline and between March 4, 2004 and March 20, 2004, rates were at 2.00. This decrease continued to 1.82, between March 21, 2004 and March 31, 2004, when the collective agreement expired.

After the strike occurred, between April 1, 2004 and May 3, 2004, and workers were legislated back to work, rates of reported injuries rose to 1.78 between May 4, 2004 and June 4, 2004, during which the collective agreement was signed. This increase continued through a period of cooling off, between June 5, 2004 and July 4, 2004, with rates of injury reporting increasing to 2.13. These increased rates of injuries being reported suggest that this period of time may have been volatile enough for workers to want to report injuries due to increased frustration from the collective bargaining cycle, and with the legislated agreement. While rates of injury reporting did slightly decline to 2.05, during the 1055 days of calm (between July 6, 2004 and March 30, 2007), rates were still quite high in comparison to the rest of the study period. It is interesting to note that during the two periods of calm, between September 12, 2001 and June 15, 2003 and between July 6, 2004 and March 30, 2007, rates of reported injury appear to be quite high, at 2.10 and 2.05, respectively.

The data shows that the NAPE HS union group appears to be somewhat responsive to collective bargaining events, when considering injury reporting as a mechanism of voice. Spikes in rates of injury reporting occurred following key collective bargaining events, most notably their two strikes: on April 1, 2001 (ending April 5, 2001) and April 1, 2004 (ending May 3, 2004). Both of these volatile events resulted in a rapid increase in rates

of injuries being reported throughout the period of time, following the strikes. These findings provide credibility to the suggestion that union members could be influenced by collective bargaining events, or quite possibly the outcomes of such events, and utilize the reporting of injury, as a form of response.

4.3.3 *NAPE LX*

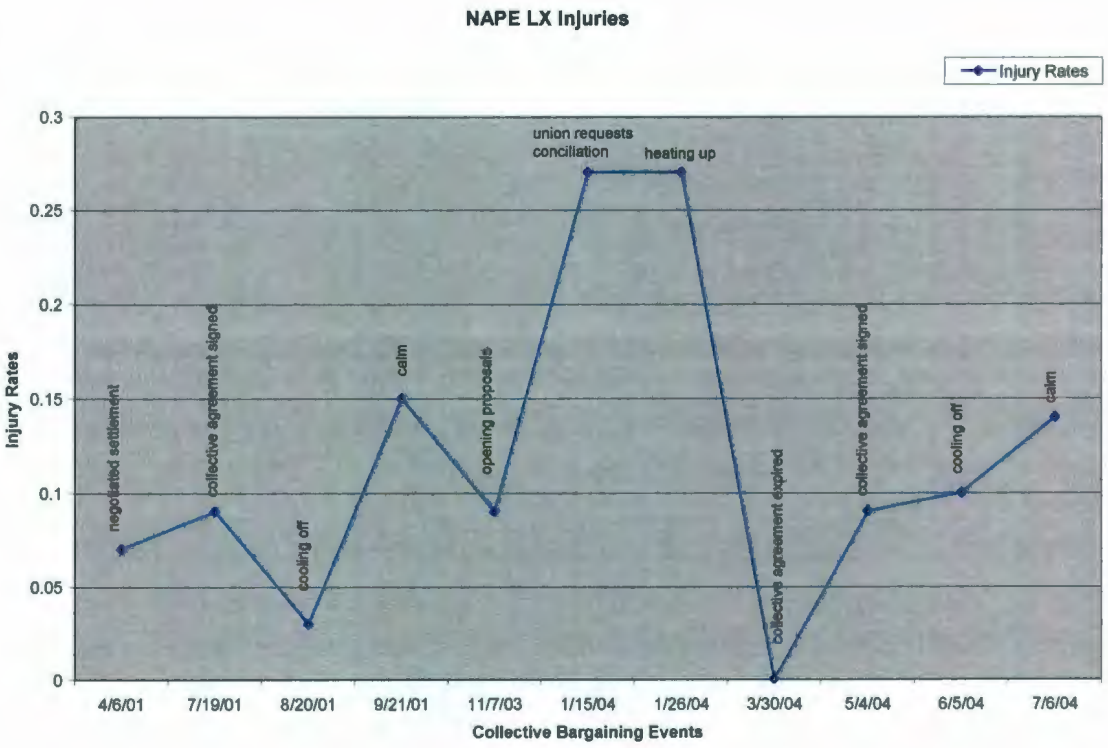

Figure 7: NAPE LX Injury Reporting Rates during Collective Bargaining Events

NAPE LX data identifies multiple spikes in rates of reported injury corresponding to numerous collective bargaining events. The first spike in rates of reported injuries began following a 5-day strike action that occurred between April 1, 2001 and April 5, 2001.

When the negotiated settlement was reached, between April 6, 2001 and July 18, 2001, injury-reporting rates increased to 0.07.

Following the collective agreement being signed on July 19, 2001, reported injury rates lowered to 0.09, between July 19, 2001 and August 19, 2001. Rates lowered further to 0.03, during the cooling off period, between August 20, 2001 and September 20, 2001. However, this period of decrease was short lived, as rates of reported injuries once again rose to 0.15 during the period of calm, occurring between September 21, 2001 and November 6, 2003.

Following this lengthy period of calm, the next collective bargaining cycle began between November 7, 2003 and January 14, 2004, with opening proposals. The corresponding reported injury rates for this time period were 0.09; however, there was a large spike in injury reporting during the next event, when the union requested conciliation, with a reported rate of injury at 0.27, between January 15, 2004 and January 25, 2004. This rate was maintained throughout the next event, when a period of heating up occurred, between January 26, 2004 and March 29, 2004.

Once the collective agreement expired, rates of injury reporting dropped to zero, between March 30, 2004 and March 31, 2004. Following the strike that occurred between April 1, 2004 and May 3, 2004, rates of injury reporting rose to 0.09, between May 4, 2004 and June 4, 2004, during which the collective agreement was signed. Rates of injury reporting continued to increase to 0.10, during the cooling off period, occurring between June 5, 2004 and July 5, 2004. Rates of reported injury further increased to 0.14, during the 1362 days of calm, occurring between July 6, 2004 and March 28, 2007.

These results indicate that the NAPE LX union group appears to be responsive to particular collective bargaining events, most notably when the union requested conciliation on January 15, 2004 (between January 15, 2004 and January 25, 2004) and the period of heating up on January 26, 2004 (between January 26, 2004 to March 29, 2004), with rates of reported injuries within both of these time frames, at 0.27. Both of these rates preceded the collective agreement expiring on March 30, 2004. In addition, following periods of heated strike action on April 1, 2001 (ending April 5, 2001) and again on April 1, 2004 (ending May 3, 2004), rates of injury reporting increased to 0.07 (between April 6, 2001 and July 18, 2001, with a negotiated settlement) and 0.09 (between May 4, 2004 and June 4, 2004, with the collective agreement being signed), respectively. In addition, it was noted that during two periods of calm, injury reporting rates increased: the first occurring between September 21, 2001 and November 6, 2003, with an injury reporting rate of 0.15 (an increase from 0.03 in the preceding cooling off period), and the second occurring between July 6, 2004 and March 30, 2008, with an injury reporting rate of 0.14 (an increase from 0.10 from the preceding cooling off period).

Likewise, drops in injury reporting occurred following key events, with the most profound decrease following the period of heating up, between January 26, 2004 and March 29, 2004, which found rates of reported injuries falling from 0.27, to zero, when the collective agreement expired on March 30, 2004 (between March 30, 2004 and March 31, 2004). These events lead into the 33-day strike action by the NAPE union, including the NAPE LX group, beginning on April 1, 2004 (and ending May 3, 2004). These

results indicate that the NAPE LX union group may be responsive to collective bargaining events, in so far as injury reporting is concerned.

4.3.4 *NLNU*

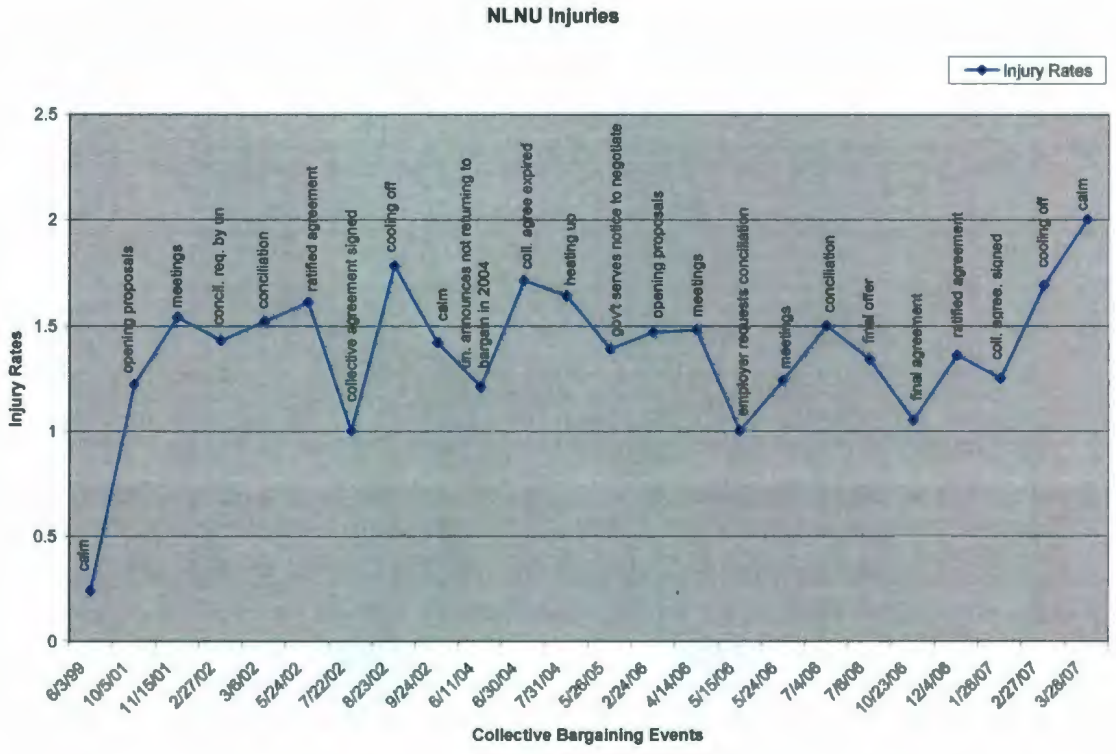

Figure 8: NLNU Injury Reporting Rates during Collective Bargaining Events

The NLNU data indicates spikes in injury reporting rates, which correspond to key collective bargaining events. The first spike was noted following a calm period occurring between June 3, 1999 and October 4, 2001, with rates of injury reporting during this quiet period, at 0.24. These rates quickly increased to 1.22, between October 5, 2001 and November 14, 2001, during the time that opening proposals were being given to the start

the collective bargaining cycle. Injury reporting continued to rise to 1.54, following this event, when meetings occurred, between November 15, 2001 and February 26, 2002.

The next prominent spike in reported rates of injury occurred following the time frame when the collective agreement was signed between July 22, 2002 and August 22, 2002, with a corresponding rate of 1.00. The cooling off period occurring between August 23, 2002 and September 23, 2002, indicated a corresponding rise in injuries reported to 1.78. This could be a sign of dissatisfaction with the collective bargaining process, or with the agreement that was reached.

Another increase in rates of reported injuries was observed following the announcement by the union on June 11, 2004, that they would not return to the bargaining table in that year. During this time, between June 11, 2004 and June 29, 2004, rates of reported injury were 1.21. Following this, rates of reported injury increased to 1.71 between June 30, 2004 and July 30, 2004, when the collective agreement expired. It is interesting to note that the decision by the union to not follow through with negotiations occurred just shortly after the heated NAPE strike, which occurred between April 1, 2004 and May 3, 2004. The spike in these rates could have been influenced by frustrations with this decision, or could have been an indication to the employer that while negotiations would not take place, their voice could still be heard.

When the employer requested conciliation during the May 15, 2006 to May 23, 2006, time frame, rates of reported injury were at 1.00, however, these rates rose to 1.24 between May 24, 2006 and July 3, 2006, when meetings between the parties took place, and further to 1.50, between July 4, 2006 and July 5, 2006, when conciliation took place.

This increase in injuries reported, from 1.24 to 1.50, took place within a very short period of time (43 days) from May 24, 2006 to July 5, 2006, suggesting that these particular collective bargaining events may have been significant enough, on union members, to influence them to use injury reporting as a voice mechanism.

The last spike in data occurred once the final agreement was reached on October 23, 2006 through December 3, 2006, with a rate of 1.05 (down from 1.34 in the period prior to this, when the final offer was given, between July 6, 2006 and October 22, 2006). Rates of reported injuries once again rapidly increased to 1.36 between December 4, 2006 and January 25, 2007, when the agreement was ratified. Following a minor drop in rates to 1.25, between January 26, 2007 and February 26, 2007 (when the collective agreement was signed), rates once again rose during the cooling off period, between February 27, 2007 and March 27, 2007, to 1.69. Reported injuries further increased to 2.00 (between March 28, 2007 and March 30, 2007). These continual increases in rates of reported injury around this time, suggests that the concurrent NAPE strike beginning on April 1, 2004, and subsequent legislated return to work, on May 4, 2004, may have served to encourage members to utilize injury reporting as a form of voice.

There were also frequent declines in rates of injury reported associated with collective bargaining events. The first minor decrease followed the ratified agreement, which occurred May 24, 2002 to July 21, 2002, with a corresponding rate of injuries reported at 1.61. Rates quickly dropped to 1.00, when the collective agreement was signed on July 22, 2002, (between July 22, 2002 to August 22, 2002). In addition, following the period of cooling off from August 23, 2002 to September 23, 2002, rates of reported injuries fell

from 1.78 to 1.42, during a period of calm, between September 24, 2002, and June 10, 2004. Rates fell further to 1.21, between June 11, 2004 and June 29, 2004, when the union announced it would not be returning to the bargaining table within that year.

An additional minor and gradual decline in reported injuries occurred between June 30, 2004 and February 23, 2006. A number of collective bargaining events occurred through this time, and rates fell consistently from 1.71 (between June 30, 2004 and July 30, 2004 when the collective agreement expired), to 1.64 (between July 31, 2004 and May 25, 2005, when heating up occurred), and further to 1.39 (between May 26, 2005 and February 23, 2006), during which the government served notice that negotiation should begin. Following meetings involving the union and government (between April 14, 2006 and May 14, 2006), rates of reported injuries fell from 1.48 to 1.00, when the employer requested conciliation, between May 15, 2006 and May 23, 2006.

The last minor drop in rates of reported injury occurred following conciliation (between July 4, 2006 and July 5, 2006) with a rate of 1.50, lowering to 1.34 when the final offer was given (between July 6, 2006 and October 22, 2006), and to 1.05 when the final agreement was reached (between October 23, 2006 and December 3, 2006). It is interesting to note that this gradual decline (between July 4, 2006 and December 3, 2006), occurred during events that could be identified as being potentially emotional or volatile, in particular conciliation, and reaching of a final agreement. Further, once the agreement was ratified on December 4, 2006 (within the time frame ending January 25, 2007), with a rate of reported injury at 1.36, rates fell to 1.25 when the collective agreement was signed (between January 26, 2007 and February 26, 2007).

This analysis suggests that the NLNU union is somewhat responsive to collective bargaining, in relation to the use of reporting injury as a voice mechanism. There were a number of spikes identified throughout the data, at times when the union was actively involved in more volatile collective bargaining events.

4.4. Absence

4.4.1 *AAHP*

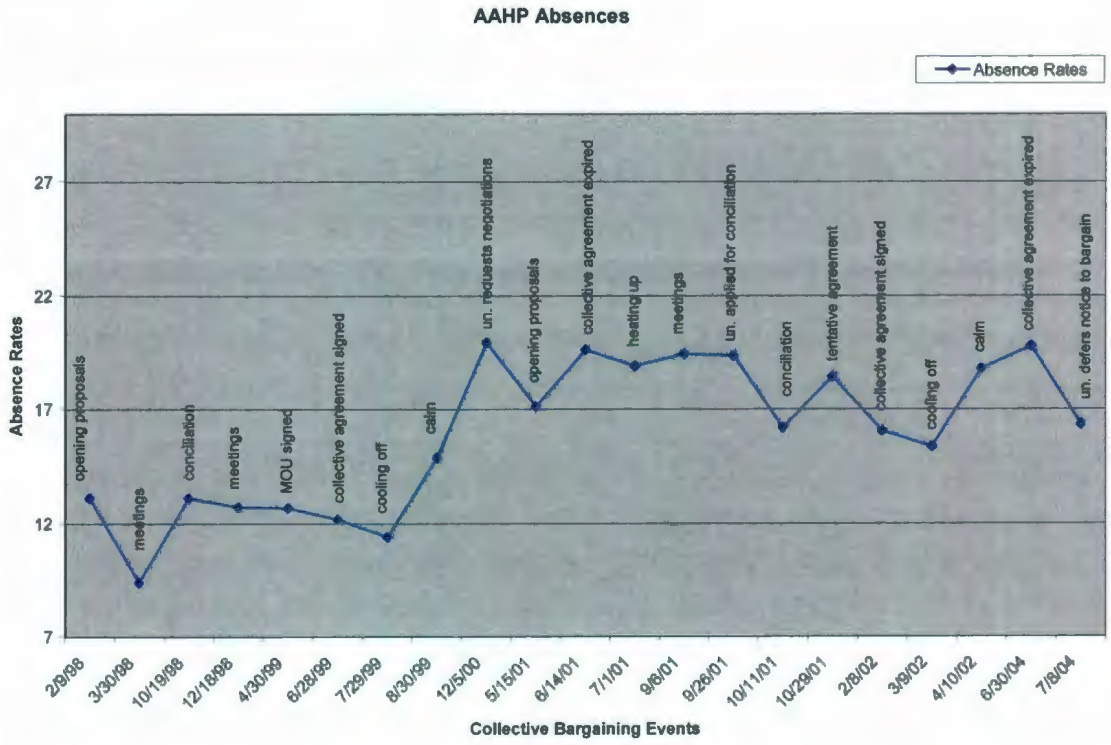

Figure 9: AAHP Absence Rates during Collective Bargaining Events

Evaluation of AAHP absence data identified that counts and rates of absence remained very high, throughout the entire data set. A number of spikes in absence rates were noted, corresponding to collective bargaining events. The first minor increase in

absence rates occurred following meetings that took place between March 30, 1998 and October 18, 1998, with a corresponding absence rate of 9.37. Following this event, a slight increase in absence rates was noted during conciliation, between October 19, 1998 and December 17, 1998, with a rate of 13.08. It is interesting to note that this increase took place during a very short period of time, and during a particularly volatile event (conciliation).

The most profound spike in the data occurred gradually, following a period of cooling off, between July 29, 1999 and August 29, 1999, when the rates of absence were found to be 11.38. These rates increased to 14.87, during the 462 days of calm that occurred between August 30, 1999 and December 4, 2000, during which no collective bargaining activity had taken place. Absence rates again increased to 19.90 on December 5, 2000 throughout May 14, 2001, during which the union requested negotiations begin for the next round of collective bargaining. It is interesting to note that the increase in absence occurs mainly during very quiet periods of time, beginning shortly after the collective agreement had been signed on June 28, 1999 (ending July 28, 1999), which may indicate possible disenchantment with how the previous collective bargaining cycle had ended, and with the particular results of the agreement, which was reached.

The next spike in data was once again a minor one, where rates of absence went from 17.10, between May 15, 2001 and June 13, 2001 (during opening proposals), to 19.59 between June 14, 2001 and June 30, 2001, (when the collective agreement expired). This, albeit small increase in absence rates, occurred when the union was actively involved in the negotiation process, and when union members were aware of their

agreement coming to its end; a time when individuals might be more susceptible to problems within their work environment, and may be more likely to utilize mechanisms of voice.

An additional minor spike in absence rates occurred following conciliation, between October 11, 2001 and October 28, 2001, with a corresponding absence rate of 16.17. Following this event, a tentative agreement was reached, with absence rates increasing to 18.40 (between October 29, 2001 and February 7, 2002). This could possibly be in response to how union members felt with the outcome of conciliation, or with the new agreement.

The gradual increase in absences following the end of a collective bargaining cycle occurs again within the AAHP data set. During the cooling off period, occurring between March 9, 2002 and April 9, 2002, rates of absences were at 15.34. The 812 days of calm that occurred between April 10, 2002 and June 29, 2004, found a small spike in absences to 18.76, and when the collective agreement expired June 30, 2004 (ending July 7, 2004), rates of absences increased to 19.75. These absences gradually increased, and mainly occurred throughout the period when no collective bargaining events were taking place, once again indicating that there may have been negative feelings towards the outcome of the collective bargaining cycle. Further, the short spike in absences building up to the expiration of the collective agreement, could be in response to the new collective bargaining cycle that was soon to begin.

There were a number of decreases in absence rates within the AAHP data. The first decrease occurred following opening proposals that were given between February 9,

1998, and March 29, 1998, with an associated absence rate of 13.10. Absences quickly fell to 9.37 from March 30, 1998 to October 18, 1998, when meetings were taking place between the negotiating parties.

Following a short lived minor spike, rates once again fell gradually between October 19, 1998 to August 29, 1999, through five collective bargaining events: conciliation, occurring on October 19, 1998 (ending December 17, 1998), with a rate of 13.08; meetings, occurring on December 18, 1998 (ending April 29, 1999), with a rate of 12.69; a memo of understanding being signed on April 30, 1999 (ending June 27, 1999), with a rate of 12.66; the collective agreement being signed on June 28, 1999 (ending July 28, 1999), with a rate of 12.16; and through the cooling off period occurring on July 29, 1999 (ending August 29, 1999), with a rate of 11.38.

An additional decline was noted following the AAHP union requesting negotiations between December 5, 2000 and May 14, 2001, when rates were at 19.90. Rates dropped slightly to 17.10 during the period between May 15, 2001 and June 13, 2001, when opening proposals were exchanged. This particular drop in absence rates occurred, as this collective bargaining cycle was about to begin.

Following the union applying for conciliation on September 26, 2001 (between September 26, 2001 and October 10, 2001), and the conciliation event occurring on October 11, 2001 (ending October 28, 2001), absence rates fell from 19.33 to 16.17. Shortly following this drop, another decline was identified following the tentative agreement being signed on October 29, 2001 (ending February 7, 2002), with rates falling from 18.40 to 16.03, when the collective agreement was signed on February 8, 2002

(with this time frame ending on March 8, 2002). The decline in absence rates continued through the cooling off period that occurred on March 9, 2002 (ending April 9, 2002), with rates at 15.34.

The last decrease noted within the data occurred following the expiration of the collective agreement on June 30, 2004 (ending July 7, 2004), with a corresponding absence rate of 19.75. Following this event, rates dropped slightly to 16.32, on July 8, 2004 (ending December 10, 2004 and corresponding to the end of the AAHP absence data set), during which the union announced they were deferring the notice to bargain. It is interesting to note that this event took place just following the NAPE strike between April 1, 2004 and May 3, 2004.

Results of this data show the AAHP membership appears not to be overly responsive to the collective bargaining process, at least with respect to absenteeism. Of particular interest is that following two cooling off events, rates of absence increased: during cooling off, between July 29, 1999 and August 29, 1999, absence rates were 11.38 (absence rates increased to 14.87 between August 30, 1999 and December 4, 2000, during the period of calm); during cooling off, between March 9, 2002 and April 9, 2002, absence rates were 15.34 (with rates of absence increasing to18.76 between April 10, 2002 and June 29, 2004, during the period of calm). This effect is particularly interesting as the increases in absence occurred during the time when no collective bargaining events were taking place.

4.4.2 *NAPE HS*

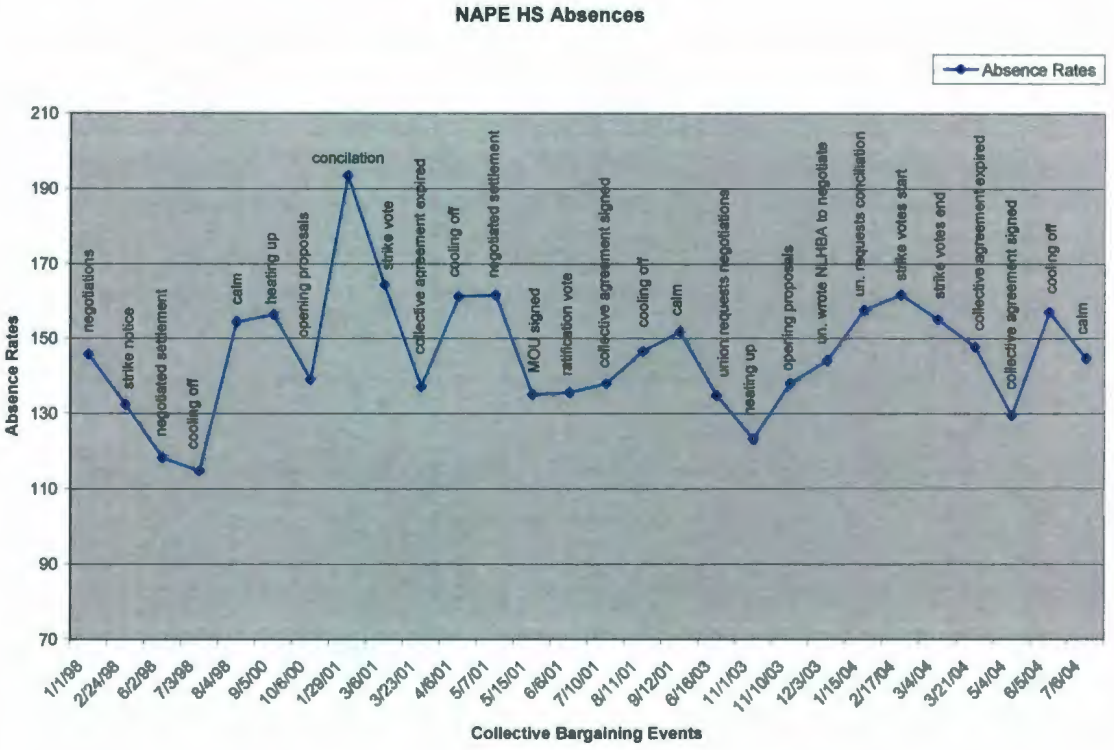

Figure 10: NAPE HS Absence Rates during Collective Bargaining Events

Due to the sheer size of the NAPE HS absence data set, rates of absences were calculated to represent the average number of absences each day during each of the defined collective bargaining time frames. Of interest is that absence rates were consistently high across the entire NAPE HS data set.

Between July 3, 1998, and August 3, 1998, during the period of cooling off, following the end of a collective bargaining cycle, absence rates were 114.66. These rates increased to 154.32, during the 763 days of calm occurring between August 4, 1998 and September 4, 2000. Rates continued to increase to 156.29 between September 5,

2000 and October 5, 2000, when union members were in a heating-up period, prior to the start of the new collective bargaining cycle.

Following opening proposals that took place between October 6, 2000 and January 28, 2001, rates of absences were 138.94. These rates spiked to 193.47 during the event of conciliation, which took place between January 29, 2001 and March 5, 2001. Talks during this period of time were not going well, as directly after conciliation took place, a strike vote was taken on March 6, 2001 (ending on March 22, 2001), and a strike occurred on April 1, 2001 (ending April 5, 2001). This short bargaining period, leading to heated strike action, indicates a volatile bargaining cycle, which may have influenced the use of absence as a voice mechanism.

An interesting spike in absences occurred before and after the strike (occurring between April 1, 2001 and April 5, 2001). The collective agreement expired on March 23, 2001, and during this time frame (ending March 31, 2001), there was an associated absence rate of 137.11. Following the strike, during the period of cooling off occurring between April 6, 2001 and May 6, 2001, absences rose to 161.90. This spike in absences occurred during a short period of time, further suggesting this was a volatile period upon union membership.

The next increase in absence rates occurs following the ratification vote between June 6, 2001 and July 9, 2001, with rates of absence during this period at 135.50. Absence rate increased to 137.88 when the collective agreement was signed between July 10, 2001 and August 10, 2001. Gradually, the absence rate continued to increase to 146.53, during the next collective bargaining event, which was a cooling off period from August 11,

2001 and September 11, 2001, signifying the end of the collective bargaining cycle. Absence rates continued to increase to 151.67, between September 12, 2001 and June 15, 2003, during 642 days of calm, when no collective bargaining activities took place. It is interesting to note that this gradual increase in absence rates occurred following a yearlong collective bargaining cycle, between September 5, 2000 and September 11, 2001, including strike action on April 1, 2001 (ending April 5, 2001). This increase might further highlight the frustration in the workplace, following this particular collective bargaining cycle.

The next increase in absences occurs following a period of heating up, between November 1, 2003 and November 9, 2003, with an absence rate of 123.11. This event is followed by opening proposals during November 10, 2003 and December 2, 2003, with absence rates increasing to 137.91. The event of the union writing the NLHBA requesting negotiations, between December 3, 2003 and January 14, 2004, corresponded to an absence rate of 144.05. This increase continued with the union requesting conciliation, between January 15, 2004 and February 16, 2004, as absence rates increased to 157.55. The start of strike votes between February 17, 2004 and March 3, 2004, had a further increase in absence rates to 161.63. Of particular interest is that these collective bargaining events were the precursor to a particularly grueling strike action, occurring between April 1, 2004 and May 3, 2004. Therefore, the gradual increases in absence noted during this time, may further highlight workers frustrations with the collective bargaining cycle.

Following the collective agreement being signed, and workers being legislated back to work on May 4, 2004 (with the time period ending June 4, 2004), rates of absence rose from 129.38 to 156.97, during the cooling off period occurring between June 5, 2004 and July 5, 2004. This sudden increase in absence, following the long and heated strike, between April 1, 2004 and May 3, 2004, could certainly be a sign of member dissatisfaction with both the strike activity and the legislated outcome.

The first decline in absence rates occurred following the strike notice given by NAPE HS between February 24, 1998 and June 1, 1998, where rates went from 132.21 down to 118.13, with the negotiated settlement being made between June 2, 1998 and July 2, 1998. Following this negotiated agreement, rates again fell to 114.66 during the cooling off period from July 3, 1998 and August 3, 1998.

During the next collective bargaining cycle, heating up, beginning September 5, 2000 (between September 5, 2000 and October 5, 2000), and leading into the approaching negotiations, rates of absence fell from 156.29 to 138.94, when opening proposals were given on October 6, 2000 (with the period ending January 28, 2001). Following conciliation taking place between January 29, 2001 and March 5, 2001, rates once again fell from 193.47 to 164.29, when the strike vote was being taken on March 6, 2001 (ending on March 22, 2001). Rates fell to 137.11 prior to the strike (beginning on April 1, 2001), when the collective agreement expired, on March 23, 2001 (ending on March 31, 2001). There is no surprise that rates of absence fell during this time, as a strike was approaching and workers may have been preparing for a period of time at decreased wages, encouraging them to arrive at work for scheduled shifts.

Additional periods with decreases in absence rates occurred throughout the remaining data. Following the negotiated settlement taking place on May 7, 2001 and ending May 14, 2001, rates of absence fell from 161.50 to 135.00 between May 15, 2001 and June 5, 2001, when a memo of understanding was signed. Following the period of calm (occurring between September 12, 2001 and June 15, 2003), absence rates decreased from 151.67 to 134.71 (between June 16, 2003 and October 31, 2003), when the union requested negotiations. The decrease in rates continued through the period of heating up, between November 1, 2003 and November 9, 2003 with rates at 123.11, which was the precursor into the negotiation cycle.

When the strike votes occurred on February 17, 2004, (with the associated time frame from February 17, 2004 to March 3, 2004), absence rates decreased from 161.63 to 155.00, when the strike votes ended (between March 4, 2004 and March 20, 2004) and further to 147.73, between March 21, 2004 and March 31, 2004, when the collective agreement expired. Following strike action between April 1, 2004 and May 3, 2004, when the collective agreement was signed and workers were legislated back to work, between May 4, 2004 and June 4, 2004, rates of absence lowered to 129.38. The last decrease in absences occurred following a cooling off period, between June 5, 2004 and July 5, 2004, with rates decreasing from 156.97 to 144.58 during the 138 days of calm occurring between July 6, 2004 and December 10, 2004.

Examination of the absence data indicates that the NAPE HS union group appears to be responsive to particular collective bargaining events in relation to absence; however, while this seems to be the case, it is important to note that rates of absence remained at a

high level throughout the entire data set. This was partly due to the size of the data set, as well as the size of the union group itself.

4.4.3 *NAPE LX*

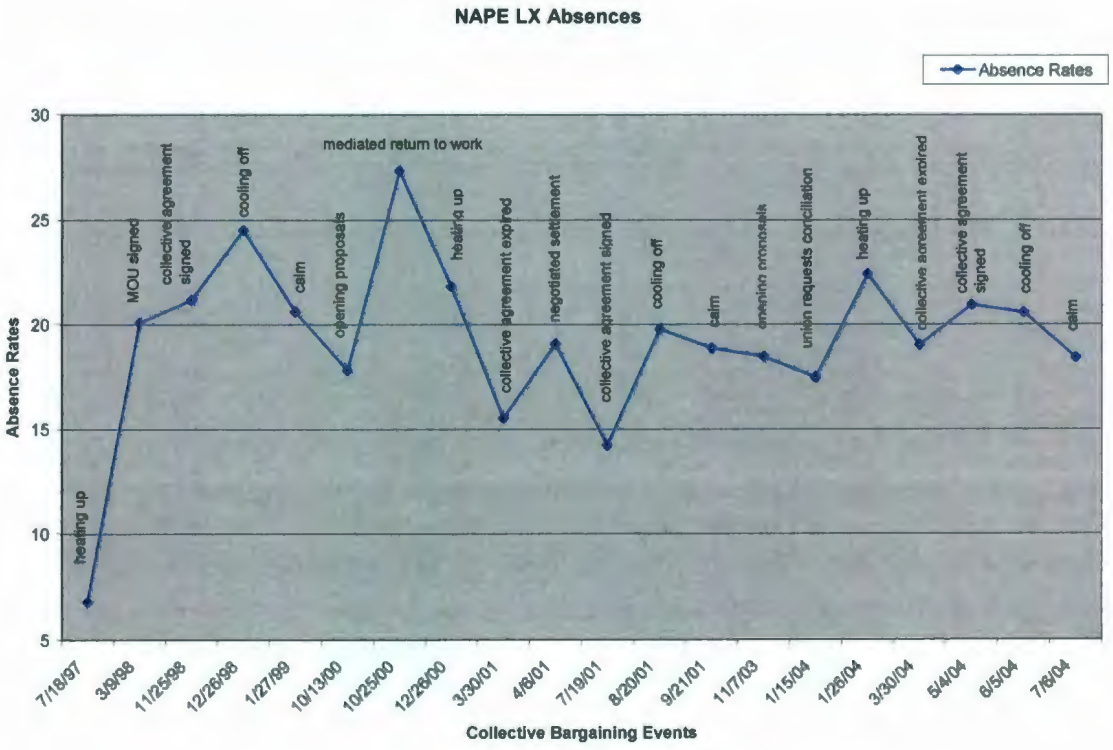

Figure 11: NAPE LX Absence Rates during Collective Bargaining Events

NAPE LX absence data identifies a number of increases in absence rates in association with collective bargaining events throughout the data. Following a heating up period between July 18, 1997 and March 8, 1998, absence rates increased from 6.79 to 20.07, between March 9, 1998 and November 24, 1998, when the memo of understanding was signed. This increase continued as rates rose to 21.16 when the collective agreement was signed, between November 25, 1998 and December 25, 1998. Rates further

increased to 24.50 between December 26, 1998 and January 26, 1999, during a cooling off period.

The next spike occurred following the collective agreement being signed between July 19, 2001 and August 19, 2001, when absence rates increased from 14.19 to 19.75 during the cooling off period, between August 20, 2001 and September 20, 2001. It is interesting to see an increase in absences following the end of that particular collective bargaining cycle, during a period of time when employees were decreasing tensions revolving around particularly volatile collective bargaining events.

During the next collective bargaining cycle, rates of absences increased from 17.45, (when the union requested conciliation between January 15, 2004 and January 25, 2004) to 22.39, during the heating up period occurring between January 26, 2004 and March 29, 2004. In addition, a slight increase in rates occurred following the collective agreement being signed, between May 4, 2004 and June 4, 2004, with rates increasing from 20.19 to 20.55 during the cooling off period, between June 5, 2004 and July 5, 2004.

There were many instances of decreases in absence rates throughout the data. The first decline occurred during a period of cooling off, between December 26, 1998 and January 26, 1999, when rates decreased from 24.50 to 20.60 between January 27, 1999 and October 12, 2000, during a period of calm. Rates continued to decrease to 17.80 between October 13, 2000 and October 17, 2000, when opening proposals were issued. Following the strike activity between October 18, 2000 and October 24, 2000, absence rates decreased from 27.31 (during the mediated return to work, between October 25, 2000 and December 25, 2000), to 21.80 between December 26, 2000 and March 29,

2001, during heating up, and further down to 15.50 when the collective agreement expired, between March 30, 2001 and March 31, 2001.

Following the strike activity occurring between April 1, 2001 and April 5, 2001, absence rates decreased from 19.05 between April 6, 2001 and July 18, 2001 (when the negotiated settlement was reached), to 14.19 between July 19, 2001 and August 19, 2001, when the collective agreement was signed. The cooling off period occurring between August 20, 2001 and September 20, 2001, had absence rates decreasing from 19.75 to 18.84, between September 21, 2001 and November 6, 2003, during 777 days of calm. Rates continued to decrease to 18.43 between November 7, 2003 and January 14, 2004, when opening proposals were given. Continuing on in this vein, absence rates continued to decrease to 17.45, when the union requested conciliation, between January 15, 2004 and January 25, 2004. From January 26, 2004 to March 29, 2004, absence rates decreased from 22.39 (when the heating up period occurred) to 19.00, when the collective agreement expired, between March 30, 2004 and March 31, 2004. The final decrease in absences occurred following the period of cooling off, between June 5, 2004 and July 5, 2004, where rates decreased from 20.55 to 18.40 between July 6, 2004 and December 10, 2004, during 138 days of calm.

An interesting finding surrounds the periods of cooling off and calm, at the end of the three different collective bargaining cycles within the data. In each of these situations, there is a decrease in absences during the calm periods. This was first identified following the cooling off period, occurring December 26, 1998 to January 26, 1999, when rates fell from 24.50 down to 20.60, during the period of calm between January 27,

1999 and October 12, 2000. The second time this occurred was following the cooling off period, occurring between August 20, 2001 and September 20, 2001, when absence rates fell from 19.75 to 18.84, during the period of calm between September 21, 2001 and November 6, 2003. Finally, this was once again identified following the cooling off period, occurring between June 5, 2004 and July 5, 2004, with rates falling from 20.55 to 18.40 during the period of calm, between July 6, 2004 and December 10, 2004. These decreases, following periods of calm, suggest that union members normalize absence behavior following the signing of an agreement.

This NAPE LX data indicates that members, for the most part, do not seem to be particularly influenced by the collective bargaining process, as far as absence rates are concerned. That being said, there are a number of increases and decreases of absence rates, which may indicate the influence of collective bargaining events on voice mechanisms.

4.4.4 *NLNU*

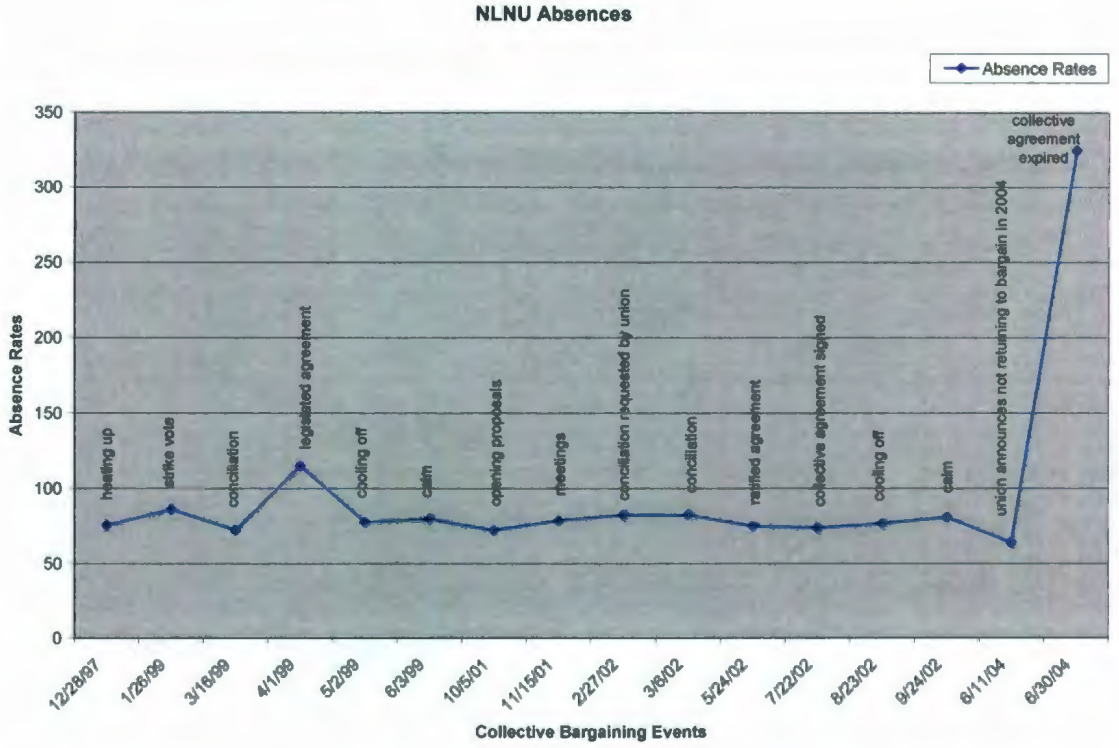

Figure 12: NLNU Absence Rates during Collective Bargaining Events

The NLNU absence data indicates a number of spikes in absence rates, coinciding with collective bargaining events. Of particular note is a profound spike in absence rates occurring following the union announcing they would not be returning to the bargaining table in 2004, between June 11, 2004 and June 29, 2004, with rates increasing from 63.79 to 324.52, between June 30, 2004 and July 30, 2004, when the collective agreement expired. Leading up to the union announcing they would not bargain in 2004, no collective bargaining activity had taken place (with periods of cooling off and calm preceding the NLNU announcement), which suggests that union members might have

been responding to this situation. It is interesting to note that the NLNU announcement followed the long and negative strike of the NAPE union (occurring between April 1, 2004 and May 3, 2004). During this time, there was a common perception that the agreement legislated for the NAPE union, established what other unions could expect through their own collective bargaining efforts. This volatile situation could potentially have influenced the union group to be leery of entering into a bargaining position with the employer at that time, and further may have encouraged union members to utilize absence as a mechanism of voice.

Throughout the data there are also a number of minor spikes in absence identified. The first occurred following a heating up period, whereby union members were building up into a particularly volatile collective bargaining event, which in this case was a strike vote on December 28, 1997. During the event of heating up, occurring between December 28, 1997 and January 25, 1999, the absence rate was 75.22. These rates increased to 85.76 between January 26, 1999 and March 15, 1999, when the strike vote was taken.

During the next collective bargaining cycle, rates of absence increased from 71.76, during opening proposals at the start of the negotiation process (occurring between October 5, 2001 and November 14, 2001), to 78.28 during meetings taking place between November 15, 2001 and February 26, 2002. Absences further increased to 81.86 between February 27, 2002 and March 5, 2002, when the union requested that conciliation take place. During the conciliation event (between March 6, 2002 and May 23, 2002), rates of absence increased further to 81.97. These increases occurred during a period of time of

just over four-months in duration, when there was intensive involvement of the union in collective bargaining activity.

In the quiet period of cooling off and calm, following the collective agreement being signed on July 22, 2002, rates of absence again increased. Absence rates increased from 76.28 between August 23, 2002 and September 23, 2002, during the cooling off period, to 80.61 during the period of calm, which occurred between September 24, 2002 and June 10, 2004. Once again, there was an increase in absences following the end of a collective bargaining cycle, which suggests that union members may have been dissatisfied with the outcome of the negotiation process, giving them encouragement to use absence as a mechanism of voice.

There were also increases in absence occurring throughout the data, in relation to strike activity, occurring between March 24, 1999 and March 31, 1999. Preceding the strike, the collective bargaining event was conciliation, which occurred between March 16, 1999 and March 23, 1999, with an absence rate of 72.13; following the strike activity, absence rates were noted to be 114.58, when the legislated agreement was made (between April 1, 1999 and May 1, 1999). The spike in absences following strike action, suggests that it might have influenced workers to utilize absence as a method of voice, either through dissatisfaction from the strike, or with frustrations from the final agreement reached.

There were also decreases in absence rates noted throughout the data. Following the strike vote between January 26, 1999 and March 15, 1999, absence rates decreased from 85.76 to 72.13 during conciliation between March 16, 1999 and March 23, 1999.

Following the formation of the legislated agreement, between April 1, 1999 and May 1, 1999, absence rates fell from 114.58 to 77.31 during a cooling off period, between May 2, 1999 and June 2, 1999. This decrease continued following the period of calm that took place between June 3, 1999 and October 4 2001, with rates of absence falling from 79.36 to 71.76 during opening proposals that occurred between October 5, 2001 and November 14, 2001. Following conciliation, between March 6, 2002 and May 23, 2002, rates decreased from 81.97 to 74.71, when the agreement was ratified, between May 24, 2002 and July 21, 2002. Absence rates fell to 73.50 between July 22, 2002 and August 22, 2002, when the collective agreement was signed.

At the end of this particular collective bargaining cycle, and following the quiet periods of cooling off and calm, absence rates once again decreased. Absences fell from 80.61, during the calm period that took place between September 24, 2002 and June 10, 2004, to 63.79 when the union announced it was not returning to bargain within 2004, between June 11, 2004 and June 29, 2004. As previously mentioned, this period of time was highly charged, as it was the event which followed the heated NAPE strike that occurred on April 1, 2004 (ending May 3, 2004). Other unions must have been very sensitive to the bad timing of bargaining around this time, particularly when the government had indicated that no better deals were on the horizon, for any union entering the bargaining process at that time.

This data suggests that the NLNU membership may be responsive to particular collective bargaining events throughout the bargaining cycle. Absence rates increased in response to the buildup into the collective bargaining process during the strike vote taken

on January 26, 1999 (ending March 15, 1999). Furthermore, during periods of intensive union activity within a short period of time, such as was identified between October 5, 2001 and May 23, 2002, absences were found to consistently increase throughout these time frames, involving a variety of collective bargaining events, including: opening proposals, negotiation meetings, the union requesting conciliation and conciliation.

In addition, following the announcement (on June 11, 2004) that the union would not return to the bargaining table in 2004, absence rates increased from 63.79 (between June 11, 2004 and June 29, 2004), to 324.52 between June 30, 2004 and July 30, 2004, when the collective agreement expired (the largest spike in rates noted throughout the absence data set, for this union group). This indicates that while the union was not going to participate in bargaining, union members may have believed that their fortunes were tied to a previous negotiation, thus heightening their frustration. However, it must be considered whether this increase could also indicate that members were upset with the results of the difficult NAPE strike, occurring between April 1, 2004 and May 3, 2004. In this respect, if members felt that their union was not going to take a stand at that time, their response could have been to utilize this mechanism of voice to announce their discontent.

4.5 Voluntary Turnover

4.5.1 *AAHP*

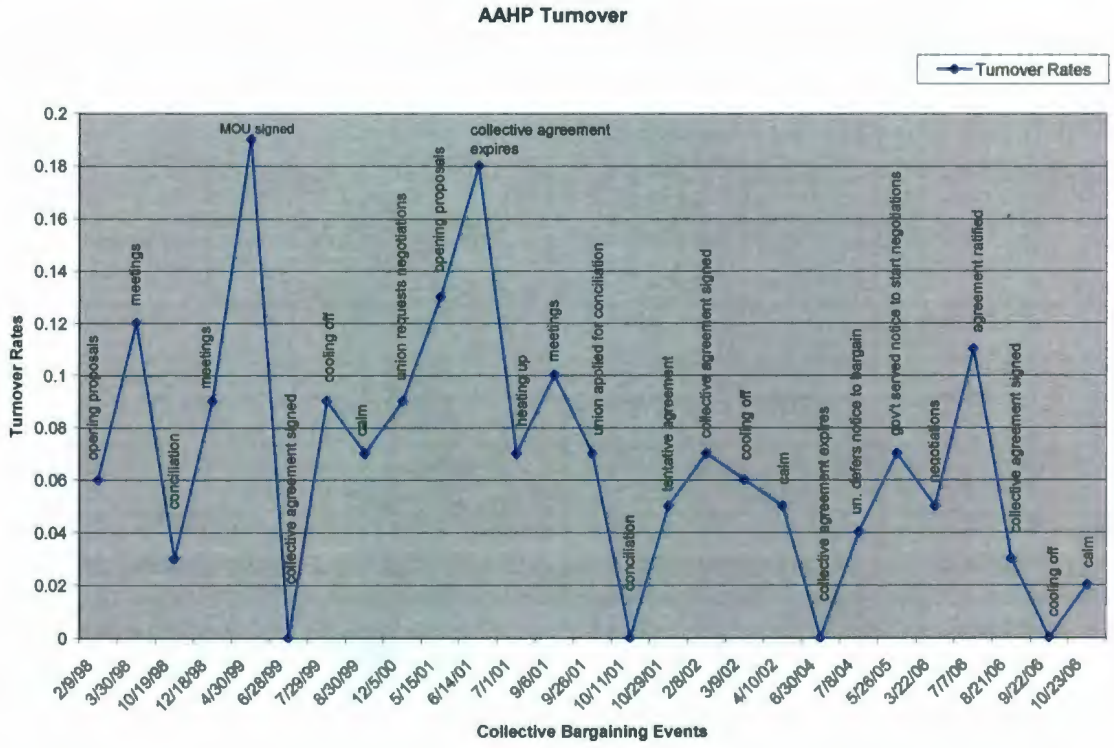

Figure 13: AAHP Voluntary Turnover Rates during Collective Bargaining Events

Investigation of rates of voluntary turnover of AAHP employees associated with collective bargaining, indicate a number of spikes within the data that correspond to particular bargaining events. This being said, these rates are quite small throughout the entire data set.

The first spike in voluntary turnover rates occur following opening proposals between February 9, 1998 and March 29, 1998, where turnover rates increased from 0.06 to 0.12

during meetings, that took place between March 30, 1998 and October 18, 1998. Following a decline in rates to 0.03, when conciliation took place between October 19, 1998 and December 17, 1998, rates once again went into a gradual increase from 0.09, when negotiation meetings took place between December 18, 1998 and April 29, 1999, to 0.19, with the memo of understanding being signed between April 30, 1999 and June 27, 1999. An interesting finding is that turnover rates rapidly fell to zero during the time frame when the collective agreement was signed, occurring between June 28, 1999 and July 28, 1999. However, this decline was short lived. During the cooling off period between July 29, 1999 and August 29, 1999, rates of turnover increased to 0.09. Following this, turnover decreased to 0.07 during the 462 days of calm occurring between August 30, 1999, and December 4, 2000.

The spikes and drops in turnover rates throughout this particular collective bargaining cycle are very telling of the labor relations climate during this period, in that during multiple union activities, occurring over short periods of time, rates of turnover increased. In addition, during the cooling off period, a time when members got back to their daily routine following the end of a collective bargaining cycle, rates also increased, indicating that union members may have been very responsive to both the process and the outcome. Likewise, a very small decline in turnover rates during the calm period further identified a number of individuals that were still utilizing this behavior, which was particularly interesting as this was the time when no collective bargaining events occurred.

Turnover rates once again increased, following the calm period between August 30, 1999 and December 4, 2000, from 0.07 to 0.09 between December 5, 2000 and May 14, 2001, when the union requested that negotiations begin. Rates continued to increase to 0.13, between May 15, 2001 and June 13, 2001, when opening proposals occurred. These rates continued to rise to 0.18, when the collective agreement expired, between June 14, 2001 and June 30, 2001, however following this increase, rates decreased to 0.07 when the union group was in a heating up period, leading into a number of collective bargaining events (between July 1, 2001 and September 5, 2001). Following this period of heating up, rates of turnover again increased to 0.10, when meetings between the union and employer were taking place (between September 6, 2001 and September 25, 2001).

Turnover rates decreased to 0.07 when the union applied for conciliation, between September 26, 2001 and October 10, 2001, and further dropped to zero when the conciliation event occurred, between October 11, 2001 and October 28, 2001. This decrease did not last, as turnover rates again increased to 0.05 with the tentative agreement being reached, between October 29, 2001 and February 7, 2002, and increased further to 0.07, when the collective agreement was signed between February 8, 2002 and March 8, 2002. Turnover rates fell to 0.06 during cooling off, between March 9, 2002 and April 9, 2002, and further to 0.05 during the 812 days of calm occurring between April 10, 2002 and June 29, 2004. Rates continued to drop to zero between June 30, 2004 and July 7, 2004, when the collective agreement expired. The AAHP union deferred notice to bargain on July 8, 2004 (with the corresponding time frame being from July 8, 2004 and May 25, 2004), with a turnover rate of 0.04 during this period.

Interestingly enough, rates of turnover increased to 0.07, between May 26, 2005 and March 21, 2006, when the government served notice to start negotiations. That said, during the negotiation period, rates of turnover fell to 0.05, between March 22, 2006 and July 6, 2006. When considering why rates of turnover decreased with negotiations, it may have been in response to the union and employer finally coming together to start the negotiation process, causing union members to step back and wait out the process before making drastic moves to voluntarily leave the organization. It is important to remember that at the time negotiations took place, the collective agreement had been expired since June 30, 2004, and the AAHP group had been working without a contract since that time. In addition, the July 8, 2004 announcement by the AAHP union that they would defer bargaining, may have played a role in creating higher anxiety in members, encouraging them to voluntarily seek employment elsewhere.

This decline in turnover rates did not last, as when the agreement was ratified, between July 7, 2006 and August 20, 2006, rates increased to 0.11. This might have been in response to the agreement that was formed, or with the collective bargaining process, as a whole. However, rates of turnover once again decreased following ratification, to 0.03, when the collective agreement was signed between August 21, 2006 and September 21, 2006. Continuing with this trend, turnover rates lowered to zero during the cooling off period, occurring between September 22, 2006 and October 22, 2006. In contrast, during the 186 days of calm, between October 23, 2006 and April 26, 2007, rates of voluntary turnover increased to 0.02.

When considering AAHP turnover data, while the rates of turnover are quite low, as expected, there were particular spikes in turnover rates that suggest that there could be some relationship between turnover behavior and collective bargaining events. Spikes in turnover for AAHP most often occurred in a gradual fashion, that is, rates increased gradually over time, through many collective bargaining events. Continual and gradual increases in turnover rates suggests that employees may have maintained their level of frustration and dissatisfaction over extended periods of time, which may have served to impact the amount of turnover utilized.

Noteworthy is the gradual increase in turnover, following conciliation on October 19, 1998, with rates going from 0.03 (between October 19, 1998 and December 17, 1998), to 0.09 (between December 18, 1998 and April 29, 1999), when meetings took place. Turnover decreased further to 0.19, when the memo of understanding was signed on April 30, 1999 (between April 30, 1999 and June 27, 1999). In addition, a gradual increase occurred in turnover rates from 0.07 on August 30, 1999 (between August 30, 1999 and December 4, 2000), during a period of calm, to 0.09 when the union requested negotiations on December 5, 2000 (between December 5, 2000 and May 14, 2001), to 0.13 with opening proposals on May 15, 2001 (between May 15, 2001 and June 13, 2001). Rates continued to rise to 0.18 when the collective agreement expired on June 14, 2001 (between June 14, 2001 and June 30, 2001). These increases in turnover occurred over a longer period of time and may have influenced members to feel more uncertain with their work environment, encouraging voluntary turnover as a mechanism of voice.

The final, gradual increase in turnover rates occurred following conciliation on October 11, 2001 (between October 11, 2001 and October 28, 2001), with a rate of zero, which increased to 0.05 with the tentative agreement being reached on October 29, 2001 (between October 29, 2001 and February 7, 2002). These rates continued to rise to 0.07 with the collective agreement being signed on February 8, 2002 (between February 8, 2002 and March 8, 2002). Likewise, rates again increased from zero with the collective agreement expired on June 30, 2004 (between June 30, 2004 and July 7, 2004), to 0.04 when the union deferred notice to bargain on July 8, 2004 (between July 8, 2004 and May 25, 2005), and to 0.07 on May 26, 2005 (between May 26, 2005 and March 21, 2006) when the government served notice to start negotiations.

Evaluating turnover data for the AAHP union group, in relation to collective bargaining events, finds that there may be some influence on members to utilize turnover as a mechanism of voice, as there were many instances of increases in voluntary turnover during and following collective bargaining cycles where there was a lot of union involvement. Furthermore, the trend to have recurring instances of gradual increases in turnover, also suggests that there is some correlation between collective bargaining events and voluntarily turnover.

4.5.2 *NAPE HS*

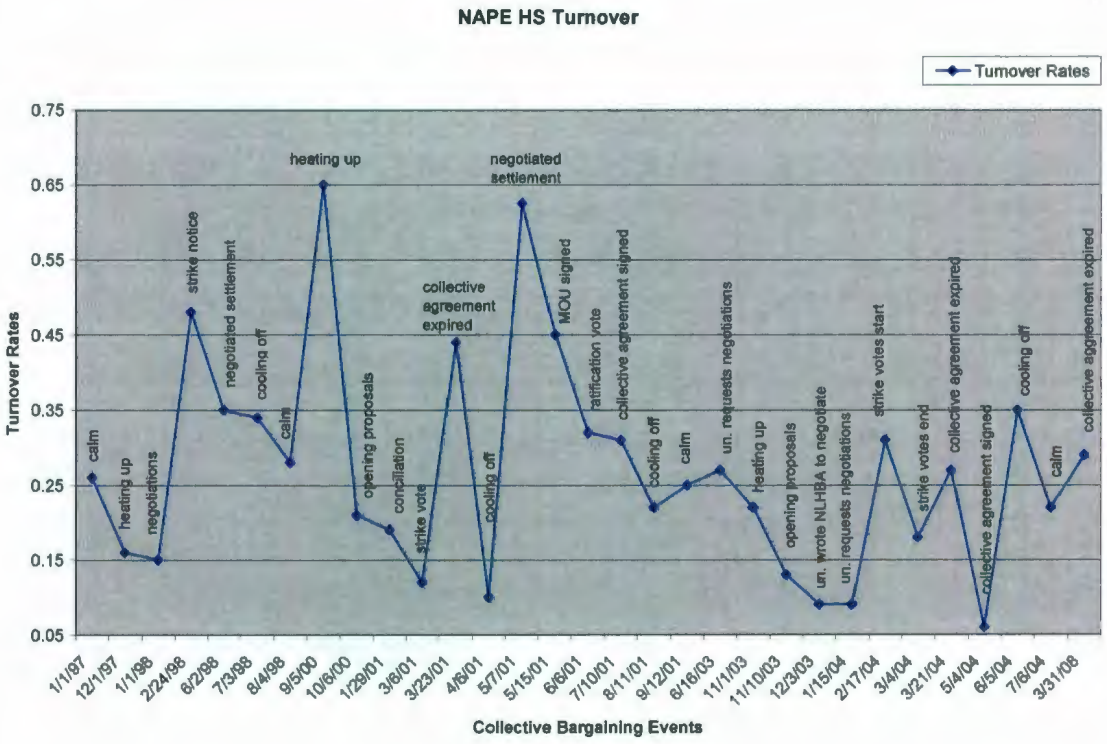

Figure 14: NAPE HS Voluntary Turnover Rates during Collective Bargaining Events

NAPE HS voluntary turnover data identifies a number of spikes in turnover rates in relation to collective bargaining events. The first increase occurred following negotiations between January 1, 1998 and February 23, 1998, with a rate of 0.15 rising to 0.48 during the period of time when strike notice occurs, between February 24, 1998 and June 1, 1998. This sudden and rapid increase in turnover rates does not last, as rates decline to 0.35 (between June 2, 1998 and July 2, 1998), when a negotiated settlement is reached, and further down to 0.34 during the cooling off period (between July 3, 1998

and August 3, 1998). This decreasing trend continues through the period of calm that occurs between August 4, 1998 and September 4, 2000, with a turnover rate of 0.28. These decreasing rates suggest that the agreement may have been viewed favorably, by union membership.

Turnover rates once again increased to 0.65 during a heating up period, which occurred between September 5, 2000 and October 5, 2000. Following this, rates of turnover dropped to 0.21, with opening proposals (between October 6, 2000 and January 28, 2001), and further to 0.19 during conciliation (between January 29, 2001 and March 5, 2001). This decreasing trend continued with a strike vote that took place on March 6, 2001 (between March 6, 2001 and March 22, 2001), with turnover rates decreasing to 0.12. This is an interesting outcome as these events were more heated in nature, and involved a strike vote. Following this, rates increased to 0.44, (between March 23, 2001 and March 31, 2001), when the collective agreement expired, prior to strike action (between April 1, 2001 and April 5, 2001). This increase suggests that union members were more responsive to these events and utilized more turnover behavior around these periods. Interestingly, rates of turnover decreased to 0.10 during the cooling off period (which occurred following the strike between April 6, 2001 and May 6, 2001), further suggesting that NAPE HS union members were influenced by such "quiet periods" to decrease the use of turnover as a mechanism of voice.

The negotiated settlement occurring between May 7, 2001 and May 14, 2001, again supports the concept that union members respond to collective bargaining events, as rates of turnover quickly rose to 0.63 during this time frame. This sudden rise in rates, within

a relatively short period of time, is further indication that members might not have been as content with the outcome following the collective bargaining cycle, and in particular with aspects of the agreement that was reached between the union and employer.

Once the negotiated settlement was reached, rates of turnover began a gradual decrease, with rates falling to 0.45 when the memo of understanding was signed (between May 15, 2001 and June 5, 2001). Rates continued to decrease to 0.32 with the ratification vote (between June 6, 2001 and July 9, 2001), and again to 0.31 when the collective agreement was signed (between July 10, 2001 and August 10, 2001). The period of cooling off, between August 11, 2001 and September 11, 2001, found turnover rates decreasing to 0.22.

During the 642 days of calm (occurring between September 12, 2001 and June 15, 2003), rates increased slightly to 0.25, and again up to 0.27 (between June 16, 2003 and October 31, 2003), when the union requested negotiations. Although these slight increases do occur, they do not continue as turnover rates go into a gradual decline to 0.22, when heating up occurs (from November 1, 2003 to November 9, 2003). Rates continued on this decreasing trend to 0.13, during opening proposals (between November 10, 2003 and December 2, 2003), and down further to 0.09 when the union wrote the NLHBA requesting to negotiate (between December 3, 2003 and January 14, 2004). This rate was maintained throughout the next event, when the union requested conciliation on January 15, 2004 (with the time frame ending on February 16, 2004).

Following the request for conciliation, strike votes began on February 17, 2004 (between February 17, 2004 and March 3, 2004), with turnover rates increased to 0.31.

This increase, does not last, as rates decrease to 0.18 when strike votes end on March 4, 2004 (with the time frame ending on March 20, 2004), a turnover rate which is significantly lower than those reported during the time frame when strike votes began. This is an interesting finding, as this period is leading into more volatile union activity, a time when increases in turnover as a voice mechanism, could be expected.

With the expiration of the collective agreement, between March 21, 2004 and March 31, 2004, rates of turnover increased to 0.27. However, following strike action taking place between April 1, 2004 and May 3, 2004, rates of turnover significantly decline to 0.06, with the collective agreement being signed between May 4, 2004 and June 4, 2004. An interesting finding occurred in the cooling off period that took place between June 5, 2004 and July 5, 2004, with respect to turnover rates. It was noted that rates of turnover during this period increased dramatically to 0.35. This sudden increase from 0.06 to 0.35 (within 63 days) may have been in response to the heated strike action that occurred, as well as with the legislated agreement that was formed. There appears to be a relationship between the cooling off period, following a difficult strike action, and turnover as a voice mechanism.

The period of calm occurring between July 6, 2004 and March 30, 2008, lasting 1364 days, found a decline in turnover rates to 0.22. However, the expiration of the collective agreement between March 31, 2008 and April 30, 2008, shows an increase in turnover to 0.29, which suggests union members appear to be influenced by collective bargaining, as rates of turnover increased in such a short period of time. In comparison, throughout the 1364 days of calm, in the period preceding the expiration of the collective agreement,

turnover rates were lower than during the 31 days in the period corresponding to the collective agreement expiring.

When considering the turnover data and collective bargaining events associated with the NAPE HS union group, the spikes in turnover rates do seem to be associated quite often with heated collective bargaining events. This does suggest that the NAPE HS union group appears to be influenced by the collective bargaining cycle, potentially encouraging union members to utilize turnover as a mechanism of voice.

4.5.3 *NAPE LX*

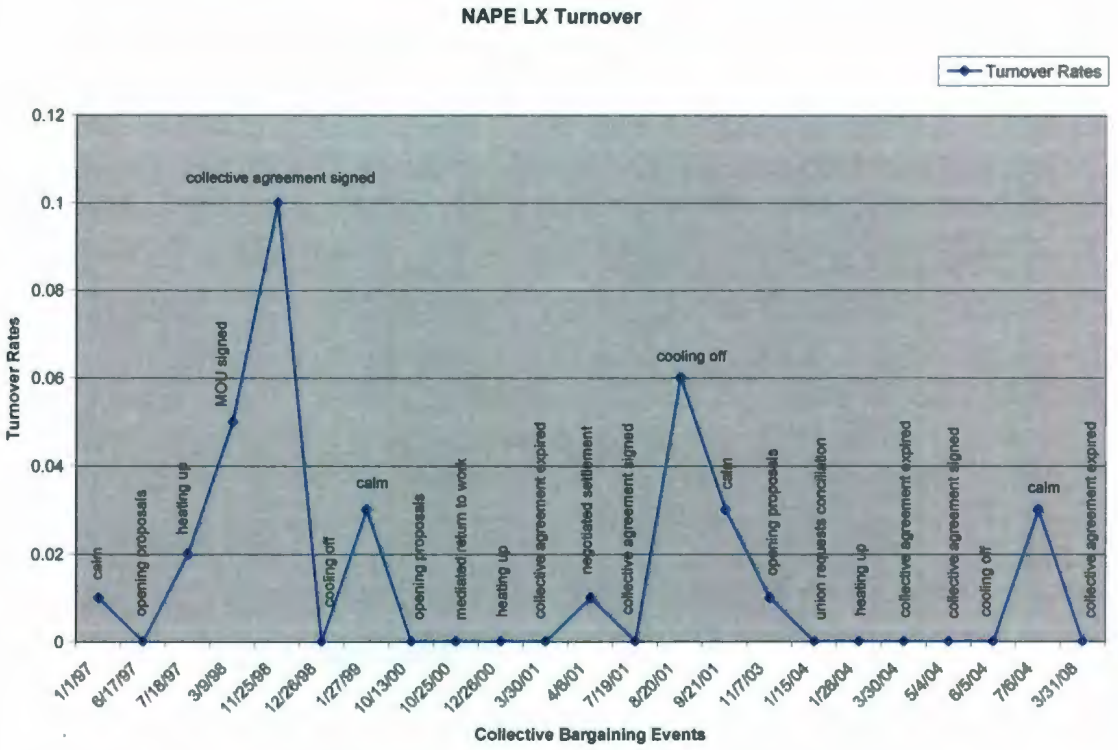

Figure 15: NAPE LX Voluntary Turnover Rates during Collective Bargaining Events

When examining voluntary turnover data, it is important to know that the NAPE LX union is a small union group, therefore one must understand the limitations of this data. Voluntary turnover is considered an infrequent event; therefore rates of turnover will be quite small. Furthermore, this may also reflect that the NAPE LX members have a more difficult time securing work elsewhere within the area, outside of Eastern Health.

When comparing the NAPE LX turnover data with collective bargaining information, there were a number of spikes in turnover rates identified. The first spike occurs

following a period of heating up occurring between July 18, 1997 and March 8, 1998, with turnover rates increasing from a rate of zero to 0.02. Rates continue to increase to 0.05 when the memo of understanding was signed, between March 9, 1998 and November 24, 1998. Continuing on in this trend, turnover rates increased to 0.10 when the collective agreement was signed, between November 25, 1998 and December 25, 1998. These increases in voluntary turnover occurred throughout the collective bargaining cycle, and continued onwards through to the collective agreement being signed, which may have been in response to the negotiation process or the final agreement that was reached between the parties.

Following the collective agreement being signed, rates of turnover suddenly decreased to zero during the cooling off period between December 26, 1998 and January 26, 1999. This decrease did not last long, as turnover rates slightly increased to 0.03 during 625 days of calm, between January 27, 1999 and October 12, 2000.

Following a long and stable period of time where turnover rates remained at zero, between October 13, 2000 and April 5, 2001, (a period of time which included two strike periods), rates did slightly increase following the negotiated settlement formed between April 6, 2001 and July 18, 2001, to 0.01. Rates once again fell to zero when the collective agreement was signed, between July 19, 2001 and August 19, 2001. During the cooling off period that occurred at the end of this collective bargaining cycle, (between August 20, 2001 and September 20, 2001), rates fell from 0.06 down to 0.03 during the 777 days of calm, between September 21, 2001 and November 6, 2003. Rates further decreased to 0.01 between November 7, 2003 and January 14, 2004, when

opening proposals were made. Following this event, there was a long period of stability, with respect to turnover rates remaining at zero (between January 15, 2004 and July 5, 2004), a time that included many collective bargaining events, including the volatile strike action of the NAPE union between April 1, 2004 and May 3, 2004. It is interesting to note that following this difficult strike activity, associated turnover rates remained at zero, indicating that employees may have been greatly affected by this long period of struggle and possibly could have had less desire to voluntary leave their positions due to an extended period of time with low strike pay.

Turnover rates increase from zero to 0.03, during the period of calm, occurring between July 6, 2004 and March 30, 2008, close to 4 years in duration. However, following this event, rates once again fell to zero when the collective agreement expired, between March 31, 2008 and April 30, 2008. This is an important finding, as employees may have been less likely to utilize turnover as a mechanism of voice due to the previous strike action starting on April 1, 2004, as well as the legislated agreement on May 4, 2004. This situation might have made union members leery of voluntary turnover, instead keeping job security as a mediating factor (along with regular income following 33 days of strike pay).

When examining voluntary turnover rates of the NAPE LX union group and their correlation to collective bargaining events, it is quite possible that this union utilized turnover as a mechanism of voice at times, most notably during the collective bargaining cycle occurring between July 18, 1997 and December 25, 1998. However, it must be noted that these turnover rates (and associated true counts) were never extremely high

throughout the entire data set, and this increase certainly was not a profound spike, by any means.

4.5.4 *NLNU*

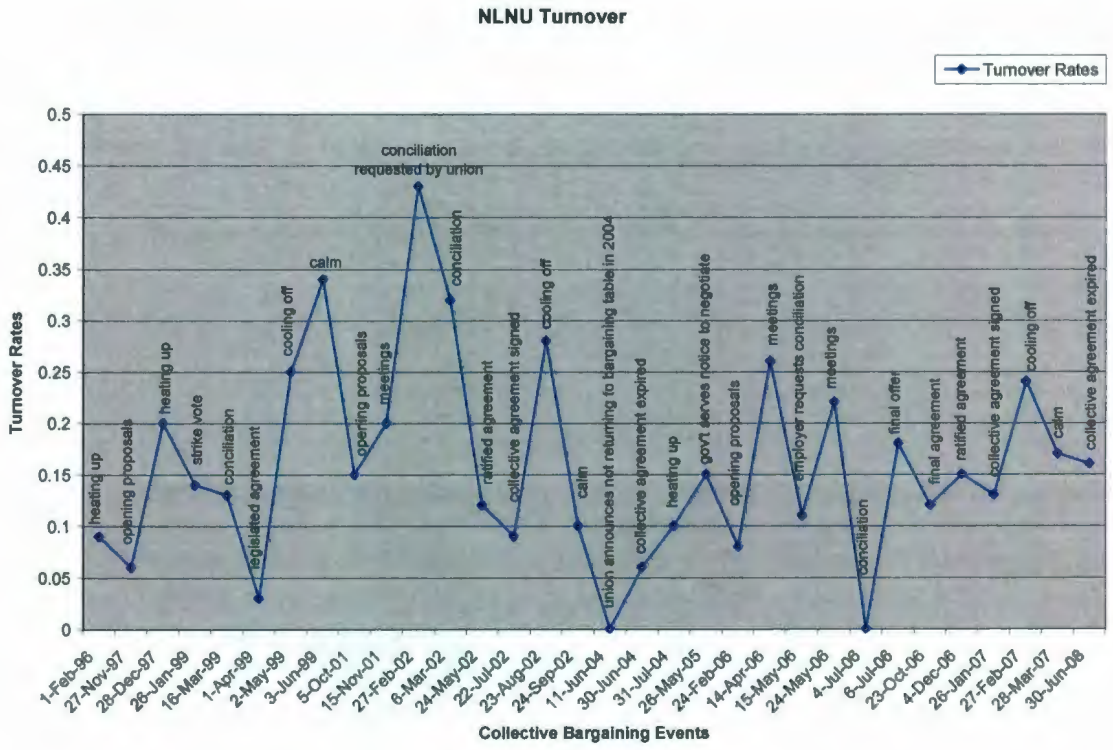

Figure 16: NLNU Voluntary Turnover Rates during Collective Bargaining Events

The NLNU voluntary turnover data indicates several spikes in turnover rates associated with collective bargaining events. The first spike follows opening proposals occurring between November 27, 1997 and December 27, 1997, with a turnover rate of 0.06 rising to 0.20, during the heating up period between December 28, 1997 and January 25, 1999. This lengthy period of time was the lead-in to a strike vote occurring on

January 26, 1999 (with the time frame ending March 15, 1999), however with this event, turnover rates decreased to 0.14. Rates continued to fall to 0.13 with conciliation occurring between March 16, 1999 and March 23, 1999, with strike activity occurring between March 24, 1999 and March 31, 1999. Voluntary turnover continued to decline to 0.03 with the legislated agreement occurring between April 1, 1999 and May 1, 1999.

These are quite interesting findings as it indicates that throughout heated collective bargaining events, NLNU members do not appear to utilize turnover as effective means of voicing discontent, and having these rates gradually and consistently decrease, also supports this idea. However, it must be reiterated that voluntary turnover is an extreme form of voice, and unlike other forms, is associated with major life change. Employees who exercise turnover as a form of voice, would only do this at one time, therefore the decreasing rates of turnover throughout the more volatile bargaining events, is ultimately not surprising. Furthermore, it may indicate that individuals who choose to utilize turnover, will do so well after the volatile period has ended.

Voluntary turnover rates increased from 0.03, following the legislated agreement reached on April 1, 1999 (between April 1, 1999 and May 1, 1999), to 0.25, during the period of cooling off, which occurred between May 2, 1999 and June 2, 1999, with rates continuing to increase to 0.34 during the 855 days of calm, occurring between June 3, 1999 and October 4, 2001. These increasing rates of voluntary turnover suggests that following heated collective bargaining events, and during more quiet periods of time, NLNU members possibly found reason to voice their discontent with increasing turnover

activity. However, these rates may also be related to the idea that there is a time-delay between workers deciding to look elsewhere for a job, and actually doing so.

Directly after these quiet periods, turnover rates decreased to 0.15 during opening proposals occurring between October 5, 2001 and November 14, 2001, however following this, rates increased slightly to 0.20 when meetings took place between November 15, 2001, and February 26, 2002. Turnover rates continued to rise to 0.43, between February 27, 2002 and March 5, 2002, when the union requested that conciliation begin.

These rates gradually decreased to 0.32, with conciliation occurring between March 6, 2002 and May 23, 2002, and further to 0.12 when the agreement was ratified between May 24, 2002 and July 21, 2002. Rates continued to decrease to 0.09 when the collective agreement was signed, between July 22, 2002 and August 22, 2002. These decreases in turnover rates occur at a time when there is a lot of union activity; however the interesting finding within this data is that while rates are decreasing during union involvement, during the cooling off period between August 23, 2002 and September 23, 2002, rates actually increase to 0.28.

Turnover rates decrease to 0.10 during the 626 days of calm occurring between September 24, 2002 and June 10, 2004, and further to zero, between June 11, 2004 and June 29, 2004, when the union announced that they would not return to the bargaining table in 2004. Rates slightly increased to 0.06 when the collective agreement expired, between June 30, 2004 to July 30, 2004, and further to 0.10 during a period of heating up which occurred between July 31, 2004 and May 25, 2005. Turnover rates again

increased to 0.15, between May 26, 2005 and February 23, 2006, when the government served notice to the union that negotiation should take place.

Opening proposals that occurred from February 24, 2006 to April 13, 2006, found turnover rates decreased to 0.08. That said, rates once again increased to 0.26, when meetings occurred between April 14, 2006 and May 14, 2006. When the employer requested conciliation on May 15, 2006 (between May 15, 2006 and May 23, 2006), rates of turnover fell to 0.11. Once again, during meetings, rates increased to 0.22 (between May 24, 2006 and July 3, 2006), however they decreased quickly to zero on July 4, 2006 (between July 4 and July 5, 2006), when conciliation took place.

Turnover rates again increased to 0.18 when the final offer was given between July 6, 2006 and October 22, 2006, however when the final agreement was made, between October 23, 2006 and December 3, 2006, rates decreased to 0.12. When this agreement was ratified, between December 4, 2006 and January 25, 2007, rates increased slightly to 0.15. However, when the collective agreement was signed between January 26, 2007 and February 26, 2007, rates fell slightly to 0.13. This collective bargaining cycle lasted for quite a long time, as the collective agreement actually expired on June 30, 2004, and the new agreement was not signed until January 26, 2007. This prolonged period between contracts certainly may have played a part in why these rates demonstrated a slight increase at the end of this particular collective bargaining cycle.

During the cooling off period occurring between February 27, 2007 and March 27, 2007, turnover increased to 0.24. The spike in turnover rates, following this cooling off period, could be in response to the long negotiation period, possibly indicating an

increase in frustration following the resolution of this contract dispute. During the lengthy calm period between March 28, 2007 and June 29, 2008 (lasting 460 days), rates of turnover decreased to 0.17, and lowered further to 0.16 when the collective agreement expired between June 30, 2008 and July 30, 2008.

When considering the NLNU voluntary turnover data and the correlation between collective bargaining, it appears that NLNU members may be influenced by collective bargaining events, as far as voluntary turnover behaviors are concerned. In addition, some of the spikes of rates occur during, or following more heated collective bargaining events, which supports the idea that this union group may be influenced by more contentious collective bargaining events.

4.6 Adverse Events

For this study, the term "adverse events" was used as a proxy for performance quality. The indicator is measured by counting the number of adverse events that occurred in the data set. Adverse events, in this case, are viewed as a key indicator of whether workers are giving their best work, energy and performance within the workplace. In particular, the interest with this mechanism of voice is whether collective bargaining events influence this level of performance through increased errors, near errors, or reporting of events. In this respect, an increase in adverse events around collective bargaining could signify lowered performance quality by union members. However, it is not necessarily true that increased adverse events equals lowered performance quality. In fact, it may be the more insidious side of adverse events that is related to lowered quality, with the loss of individual desire to keep working at a high,

professional level, influencing errors (or near errors) being made. Additionally, it may also be that workers are less likely to report adverse events during more contentious negotiation periods, suggesting that these rates might actually be higher than what is seen within the adverse events data. Likewise, workers might be more inclined to report adverse events in order to highlight problems within their work environment, around more volatile bargaining events/periods.

A major issue with this data set is that while it counted overall adverse events, it did not include union affiliation as a variable of data collection. Due to this major information gap, it was impossible to accurately identify, with any certainty, which union each error was related to. For the purposes of this study, the adverse events data was divided into different units of time to directly correspond with the collective bargaining events for each union group. While this was an obvious limitation of this data set, it was still deemed important to consider adverse events rates in relation to each of the collective bargaining cycles for the union groups under study, to determine whether there were spikes in rates around particular collective bargaining events.

4.6.1 *AAHP*

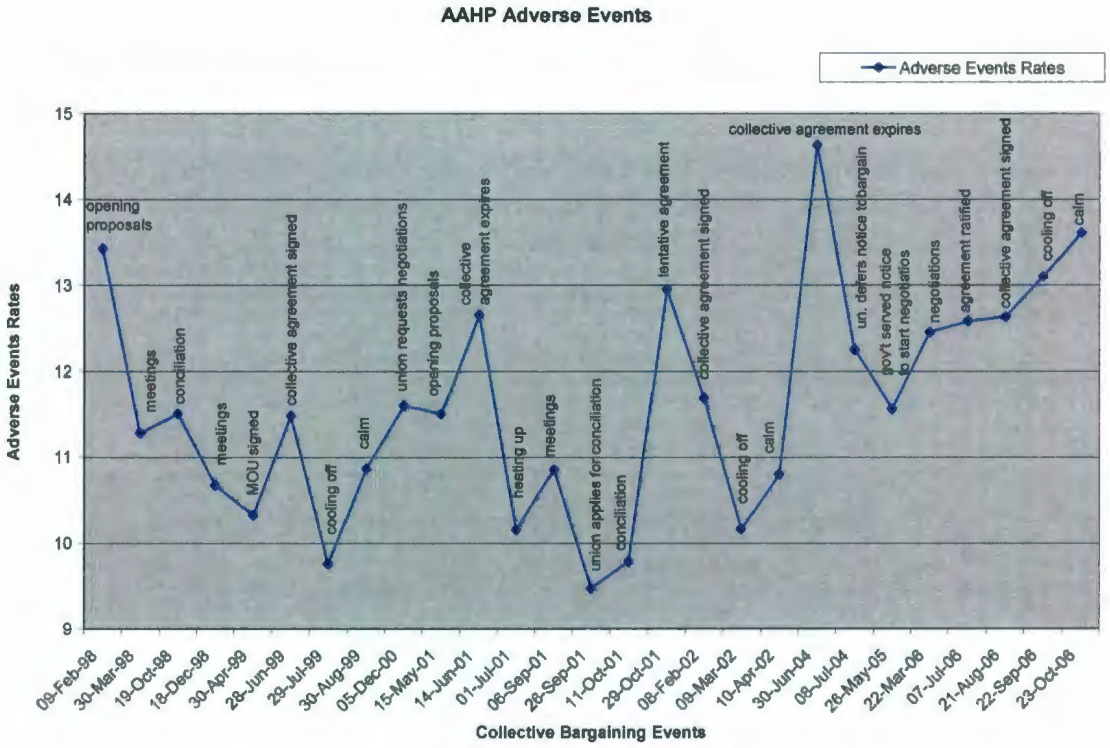

Figure 17: AAHP Adverse Events Rates during Collective Bargaining Events

When examining adverse events data in relation to the AAHP collective bargaining information, it is apparent that a number of spikes and declines in rates occur throughout the bargaining cycle. The first event, opening proposals, occurring between February 9, 1998 and March 29, 1998, identified a rate of adverse events at 13.43, which declined to 11.28 when meetings between the union and the employer took place (between March 30, 1998 and October 18, 1998). Adverse events increased to 11.50 when conciliation took place between October 19, 1998 and December 17, 1998. This increase was short lived

as rates decreased to 10.67, when meetings took place between December 18, 1998 and April 29, 1999, dropping further to 10.32 when the memo of understanding was signed between April 30, 1999 and June 27, 1999.

Once the collective agreement was signed, between June 28, 1999 and July 28, 1999, rates again increased to 11.48. Following this increase, rates declined to 9.75 during the period of cooling off which took place between July 29, 1999 and August 29, 1999. This decrease in adverse events did not continue throughout the 462 days of calm occurring between August 30, 1999 and December 4, 2000, as rates of adverse events increased to 10.86 during this time frame.

During the next bargaining cycle, when the union requested negotiations begin, between December 5, 2000 and May 14, 2001, rates of adverse events increased to 11.60, however, when opening proposals took place between May 15, 2001 and June 13, 2001, adverse events declined to 11.50. When the collective agreement expired, between June 14, 2001 and June 30, 2001, adverse events increased to 12.65. Rates decline to 10.15 through the period of heating up (occurring between July 1, 2001 and September 5, 2001), a time when members could be getting worked up over the approaching collective bargaining cycle.

Adverse events do slightly increase to 10.85 when meetings took place, between September 6, 2001 and September 25, 2001, however rates once again decreased to 9.47 when the union applied for conciliation between September 26, 2001 and October 10, 2001. Following this slight decline, adverse events increased to 9.78 during conciliation, between October 11, 2001 and October 28, 2001.

A spike in adverse events occurs following conciliation, with rates dramatically increasing to 12.95 when the tentative agreement was reached (between October 29, 2001 and February 7, 2002). Once the collective agreement was signed on February 8, 2002, rates of adverse events decrease to 11.69 (between February 8, 2002 and March 8, 2002), continuing down to 10.16 during the cooling off period, occurring between March 9, 2002 and April 9, 2002. Following this event, a long period of calm occurs between April 10, 2002 and June 29, 2004, when adverse events increased to 10.80, during these 812 days of calm.

This increase continues throughout the next collective bargaining time frame when the collective agreement expired, between June 30, 2004 and July 7, 2004, with adverse events increasing to 14.63. This spike in adverse events was short lived, as rates lowered to 12.25, when the union deferred notice to bargain (between July 8, 2004 and May 25, 2005). Adverse event rates continue to decline to 11.56, when the government served notice to begin negotiations on May 26, 2005 (between May 26, 2005 and March 21, 2006).

Following this notice to begin negotiations, adverse events began to increase, from 12.45 with negotiations (between March 22, 2006 and July 6, 2006), to 12.58 when the agreement was ratified (between July 7, 2006 and August 20, 2006). Continuing on in this pattern, rates rose to 12.63, when the collective agreement was signed between August 21, 2006 and September 21, 2006. The period of cooling off occurring between September 22, 2006 and October 22, 2006, found the rates of adverse events continuing

to increase to 13.10, and between October 23, 2006 and April 26, 2007, rates continue to increase to 13.61, throughout a period of calm lasting 186 days.

When examining the adverse events data, it is possible that the spikes and declines noted in adverse events rates could be related to AAHP collective bargaining events. Despite being unable to identify such a relationship with any certainty, it is worth noting these obvious spikes in the data, and recognizing that they occur during more volatile periods of the collective bargaining process.

4.6.2 *NAPE HS*

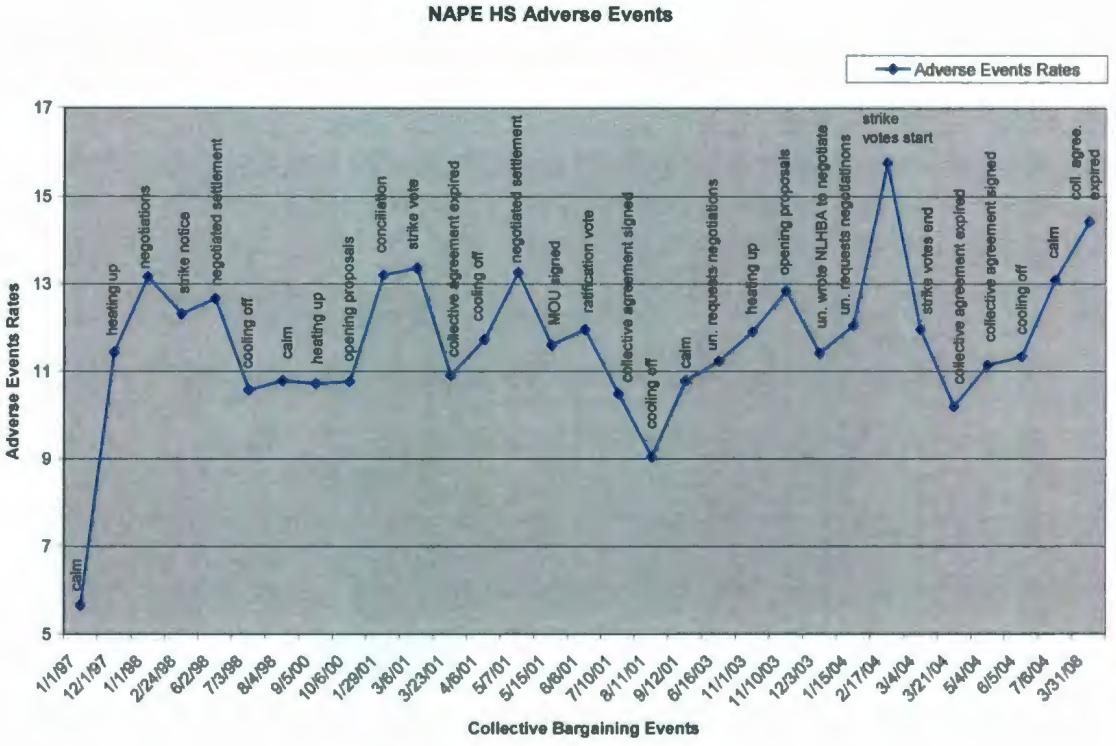

Figure 18: NAPE HS Adverse Events Rates during Collective Bargaining Events

When evaluating NAPE HS adverse events rates in relation to collective bargaining events, it is apparent that there are a number of spikes in the data. The first spike occurs following 333 days of calm (between January 1, 1997 and November 30, 1997), with rates of adverse events increasing from 5.65 to 11.42 during the period of heating up that occurs between December 1, 1997 and December 31, 1997. These rates continue to rise to 13.15 throughout negotiations occurring on January 1, 1998 (between January 1, 1998 to February 23, 1998). Following these negotiations, the union announced a strike notice,

on February 24, 1998 (between February 24, 1998 and June 1, 1998), with an associated decrease in adverse events to 12.30. However, with the negotiated settlement occurring on June 2, 1998 (between June 2, 1998 and July 2, 1998), rates once again increased to 12.65.

The next group of collective bargaining found a lowered rate of adverse events, beginning with a cooling off period between July 3, 1998 and August 3, 1998, with corresponding adverse events at 10.56. A small spike in rates to 10.77 occurs throughout the 763 days of calm, between August 4, 1998 and September 4, 2000. Rates declined slightly to 10.71, when the union group was involved in a heating up period between September 5, 2000 and October 5, 2000. Following along this trend, rates slightly increased to 10.75 (between October 6, 2000 and January 28, 2001), when opening proposals were given. Further, rates increase to 13.19 during conciliation, which took place between January 29, 2001 and March 5, 2001. Following this, a strike vote occurs between March 6, 2001 and March 22, 2001, with adverse events throughout this period rising slightly to 13.35. When the collective agreement expired between March 23, 2001 and March 31, 2001, adverse events decreased to 10.89.

Following strike action (between April 1, 2001 and April 5, 2001), and during the cooling off period (between April 6, 2001 and May 6, 2001), adverse events rates increased to 11.71. In addition, the negotiated settlement being reached between May 7, 2001 and May 14, 2001, saw rates spike to 13.25. When the memo of understanding was signed between May 15, 2001 and June 5, 2001, rates declined to 11.59, although a slight

spike in rates did occur following this event, when a ratification vote was taken, with rates increasing slightly to 11.94 between June 6, 2001 and July 9, 2001.

This slight increase was short lived, as when the collective agreement was signed on July 10, 2001, rates of adverse events (between July 10, 2001 and August 10, 2001), decreased to 10.47, and further down to 9.03 during the cooling off period between August 11, 2001 and September 11, 2001. However, throughout the period of calm, lasting 642 days, rates of adverse events rose to 10.77 between September 12, 2001 and June 15, 2003. These rates gradually increased to 11.22 between June 16, 2003 and October 31, 2003, during which the union requested negotiations. A period of heating up into the collective bargaining process occurred between November 1, 2003 and November 9, 2003, with rates increasing further to 11.89. Continuing on in this trend, rates again increased to 12.83 when opening proposals were given, between November 10, 2003 and December 2, 2003.

Adverse events decreased slightly to 11.40 when the union wrote the NLHBA requesting negotiations, between December 3, 2003 and January 14, 2004. However, these rates increased to 12.03 when the union requested conciliation between January 15, 2004 and February 16, 2004. When strike votes began, on February 17, 2004, rates of events increased further to 15.75 between February 17, 2004 and March 3, 2004. When strike votes ended, between March 4, 2004 and March 20, 2004, rates declined to 11.94, and again lowered to 10.18 when the collective agreement expired between March 21, 2004 and March 31, 2004.

It is interesting to note that adverse events rates lowered throughout the buildup into this volatile strike action. This does lend itself to the idea that workers, aware that a strike may be looming, may not consider reporting errors as being as important a process when major strike activity will soon begin.

When the collective agreement was signed on May 4, 2004 (between May 4, 2004 and June 4, 2004), rates of adverse events begin to gradually increase to 11.13 and further to 11.32, during the cooling off period between June 5, 2004 and July 5, 2004. Rates again increased to 13.08 during the extended period of calm occurring between July 6, 2004 and March 30, 2008, a period of time lasting close to four years. These rates continued to spike to 14.42, between March 31, 2008 and April 30, 2008, when the collective agreement expired.

When examining the adverse event data, it is possible that many of these spikes and decreases in adverse events rates are correlated to collective bargaining events. While it is impossible to identify a cause and effect relationship, it is worth nothing that rates spike during particularly volatile periods of collective bargaining. In addition, inadvertent involvement may also have been occurring, whereby less quality put forth by workers throughout particular collective bargaining events, placed more emphasis and responsibility on other employees within the health care environment, thereby increasing the risk of adverse events occurring.

4.6.3 *NAPE LX*

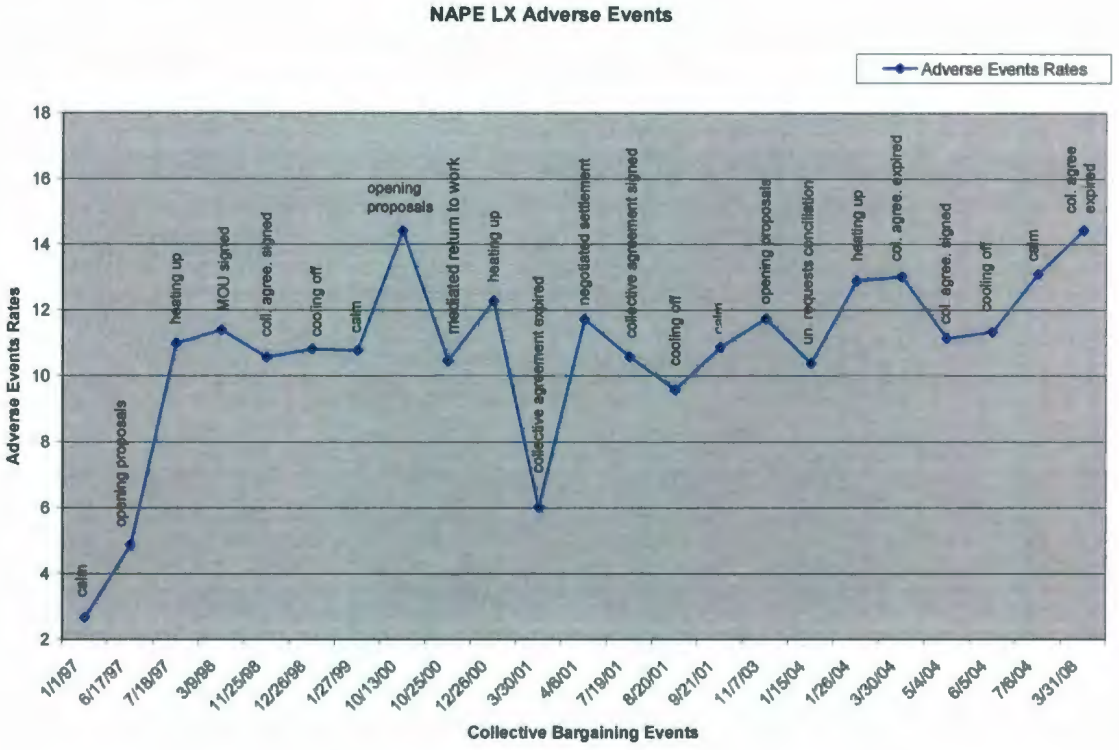

Figure 19: NAPE LX Adverse Events Rates during Collective Bargaining Events

When examining the NAPE LX adverse events data and the collective bargaining information for this union group, it is obvious that there are a number of spikes in data occurring throughout the collective bargaining cycle. The first spike in adverse events rates occurs following a period of calm taking place between January 1, 1997 and June 16, 1997, with rates increasing from 2.66 to 4.86 during opening proposals between June 17, 1997 and July 17, 1997. This bargaining cycle was quite short lived, and involved very few collective bargaining events, however during a period of heating up between

July 18, 1997 and March 8, 1998, rates increased to 10.97 and again to 11.38 when the memo of understanding was signed, between March 9, 1998 and November 24, 1998. When the collective agreement was signed on November 25, 1998, rates of adverse events declined to 10.55 (between November 25, 1998 and December 25, 1998). The cooling off period between December 26, 1998 and January 26, 1999, found rates increasing slightly to 10.81, however this slight spike was short lived as rates lowered to 10.75 during the 625 days of calm occurring between January 27, 1999 and October 12, 2000.

At the beginning of the next collective bargaining cycle, adverse events rates increased to 14.40, when opening proposals for the negotiation period were given between October 13, 2000 and October 17, 2000. This particular period of bargaining included a quick response by the union, involving strike action, between October 18, 2000 and October 24, 2000.

The mediated return to work that occurred on October 25, 2000 (within the time frame from October 25, 2000 and December 25, 2000), had a corresponding adverse event rate of 10.45. During the heating up period occurring between December 26, 2000 and March 29, 2001, adverse events increased to 12.26. When the collective agreement expired, on March 30, 2001, rates of adverse events lowered to 6.00 during the time frame between March 30, 2001 and March 31, 2001. Following a 5-day strike between April 1, 2001 and April 5, 2001, rates increased to 11.70 during the negotiated settlement reached between April 6, 2001 and July 18, 2001.

When the collective agreement was signed on July 19, 2001 (between July 19, 2001 and August 19, 2001), rates of adverse events decreased to 10.56, and further to 9.56 throughout the cooling off period between August 20, 2001 and September 20, 2001. This decrease in rates did not continue, as during the 777 days of calm, occurring between September 21, 2001 and November 6, 2003, rates increased to 10.86.

Adverse events continued to increase to 11.72, during the period when opening proposals were given, between November 7, 2003 and January 14, 2004. When the union requested conciliation (between January 15, 2004 and January 25, 2004), rates lowered slightly to 10.36, however they increased once again to 12.88 when a heating up period occurred (between January 26, 2004 and March 29, 2004). When the collective agreement expired on March 30, 2004, rates increased to 13.00 (between March 30, 2004 to March 31, 2004).

With the collective agreement being signed on May 4, 2004 (between May 4, 2004 and June 4, 2004 and following strike action between April 1 and May 3, 2004), rates of adverse events decreased to 11.13. Rates increased to 11.32 during the cooling off period between June 5, 2004 and July 5, 2004, and continuing on in this pattern, throughout the extended period of calm lasting 1364 days (between July 6, 2004 and March 30, 2008), rates increased to 13.08. As the collective agreement expired on March 31, 2008, adverse events increased to 14.42 (within the time frame March 31, 2008 to April 30, 2008), which was the highest adverse event rate identified within the entire data set. This continual increase in adverse events is quite informative when trying to understand the impact that collective bargaining has upon the performance of union members,

particularly, as in this case, following a heated, drawn-out strike that occurred with this union group.

When examining the NAPE LX data, it appears possible that spikes in adverse events rates could be related to the collective bargaining cycle. Despite the fact that a true relationship cannot be reached with any certainty, it is interesting to note that spikes in adverse events do occur during more volatile periods of collective bargaining for this union group.

4.6.4 *NLNU*

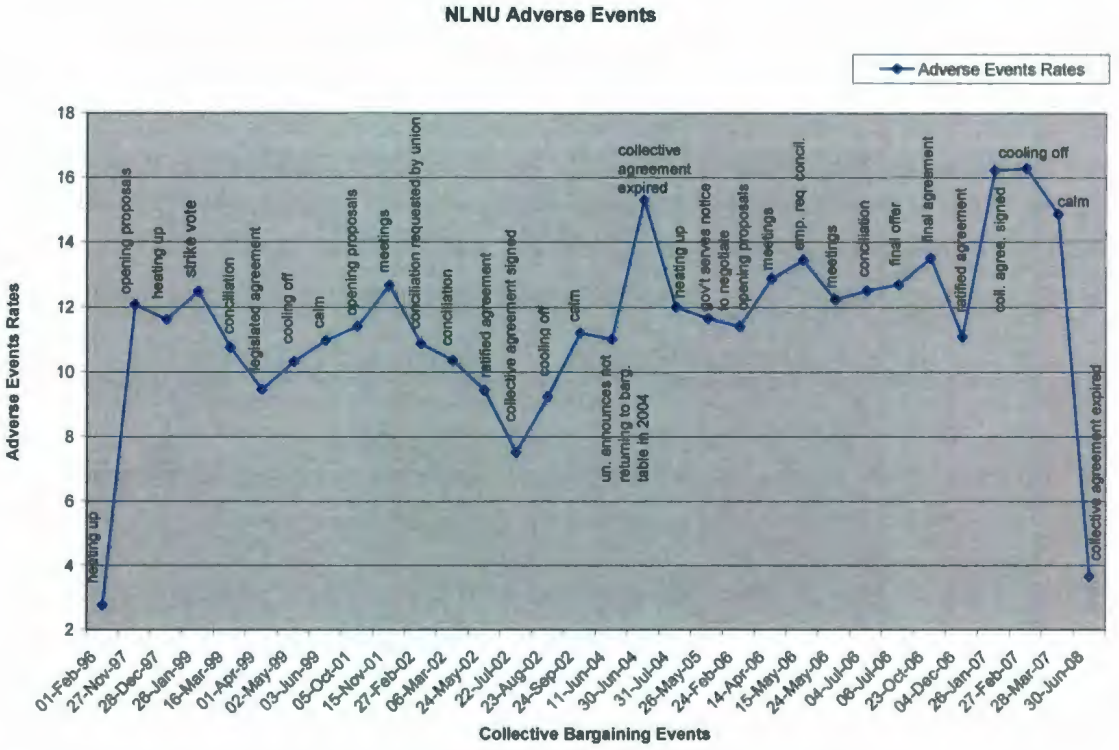

Figure 20: NLNU Adverse Events Rates during Collective Bargaining Events

When examining the adverse events data and collective bargaining information for the NLNU group, there are a number of spikes in adverse events identified in relation to key collective bargaining events. The first spike follows a period of heating up, between February 1, 1996 and November 26, 1997, when the union was entering a collective bargaining cycle, with rates going from 2.76 to 12.06 when opening proposals were made between November 27, 1997 and December 27, 1997. Following a slight decrease in rates to 11.61, when an additional heating up period occurred between December 28,

1997 and January 25, 1999, rates increased to 12.47, when a strike vote was taken between January 26, 1999 and March 15, 1999. Following this strike vote, rates declined to 10.75 when conciliation was taking place between March 16, 1999 and March 23, 1999.

Once the strike occurred on March 24, 1999 (between March 24, 1999 and March 31, 1999), adverse events rates gradually increased, which may indicate how the collective bargaining event, as well as the outcome of the strike and agreement reached, could have influenced union members. Adverse events increased to 9.45 when the legislated agreement was made between April 1, 1999 and May 1, 1999. These rates increased to 10.31 during the cooling off period occurring between May 2, 1999 and June 2, 1999, and further to 10.96, throughout the 855 days of calm occurring between June 3, 1999 and October 4, 2001.

Adverse event rates continued to increase to 11.39 at the start of the next collective bargaining cycle, occurring between October 5, 2001 and November 14, 2001, during which opening proposals took place. Following this, meetings between the parties occurred between November 15, 2001 and February 26, 2002, with an associated increase in adverse events to 12.66.

Following this gradual increase, there was a subsequent gradual decline in adverse events, from 10.86 when the union requested conciliation, between February 27, 2002 and March 5, 2002. Rates continued to decline further to 10.34 when conciliation took place between March 6, 2002 and May 23, 2002, and lowered again to 9.42 when the agreement was ratified, between May 24, 2002 and July 21, 2002. When the collective

agreement was signed on July 22, 2002 (between July 22, 2002 and August 22, 2002), rates again decreased to 7.50.

Following the period of cooling off which occurred between August 23, 2002 and September 23, 2002, rates of adverse events began to increase to 9.22, and again to 11.19 throughout the 626 days of calm occurring between September 24, 2002 and June 10, 2004. The union announcing that it would not return to the bargaining table in 2004 found adverse events decreased slightly to 11.00 (during the time frame of June 11, 2004 to June 29, 2004). That said, when the collective agreement expired on June 30, 2004, adverse events rates spiked to 15.29 (between June 30, 2004 to July 30, 2004).

Following the expiration of the collective agreement, rates of adverse events lowered to 11.99, when the union entered a period of heating up between July 31, 2004 and May 25, 2005. Rates continued to decrease to 11.64, between May 26, 2005 and February 23, 2006, when the government served notice to the union to negotiate. When opening proposals were made, between February 24, 2006 and April 13, 2006, rates of adverse events declined further to 11.39.

This decrease in adverse events was short lived as when meetings took place between April 14, 2006 and May 14, 2006, rates of adverse events increased to 12.87, and further to 13.44, when the employer requested conciliation, between May 15, 2006 and May 23, 2006. When the next group of meetings took place between May 24, 2006 and July 3, 2006, rates of adverse events decreased to 12.22, and when conciliation took place, between July 4, 2006 and July 5, 2006, rates increased slightly to 12.50. With the final offer being placed on the table on July 6, 2006 (between the time frame July 6, 2006 and

October 22, 2006), rates of adverse events increased slightly to 12.69. When the final agreement was reached, between October 23, 2006 and December 3, 2006, rates again increased to 13.50. These increases in adverse events did not last, and with the ratified agreement on December 4, 2006, rates decreased to 11.08 (between December 4, 2006 and January 25, 2007).

When the collective agreement was signed on January 26, 2007 (between January 26, 2007 and February 26, 2007), rates of adverse events spiked to 16.22, and during the cooling off period (between February 27, 2007 and March 27, 2007), rates increased further to 16.28. During the 460 days of calm occurring between March 28, 2007 and June 29, 2008, rates of adverse events dropped very quickly to 14.87, and profoundly decreased down to 3.65 once the collective agreement had expired on June 30, 2008 (between June 30, 2008 and July 30, 2008).

These results show that NLNU members appear to be responsive to collective bargaining, with respect to adverse events. The expectation from this data set is that the majority of adverse events are related to nurses; however, it is impossible to directly link adverse events to any one particular union group as no union affiliation was recorded for each entry in the data set.

An interesting finding with the spikes in rates of adverse events noted is that they seem to be related to collective bargaining events that are considered to be less volatile in scope, in particular with cooling off periods, and in all but one calm period throughout the data set. This suggests that while union members may be upset with the negotiation process, it is when the situation "gets back to a normal routine" when rates seem to spike.

This could certainly be related to the bargaining process, with the agreement that was reached, or with issues around reporting adverse events. Likewise, when events that could be termed more volatile do occur, rates of adverse events seem to decrease. These events include conciliation, ratified agreement, and the collective agreement being signed. This contradiction is a fascinating aspect of the NLNU adverse events data set, and it raises many questions as to why this phenomenon occurs.

The last collective bargaining cycle, beginning on February 24, 2006, does not proceed in this pattern. This bargaining cycle appears to be much more volatile throughout the entire process, with rates of adverse events remaining high throughout this period. This is another intriguing facet of this data set, suggesting that union members were more influenced by collective bargaining events, during this time.

It is worth noting that this was the first bargaining cycle, which occurred following the long, drawn out and heated NAPE strike beginning April 1, 2004. Following this, on June 11, 2004, the NLNU stated that it would not return to bargain within that year. It is interesting to consider whether the negative collective bargaining process (experienced by the NAPE union), influenced NLNU members to the degree that they went into this cycle with more desire for change, but expecting that the government would do nothing. This situation could have encouraged members to be more frustrated with their work environment, leading them to possibly report adverse events more often (to officially identify problems within the workplace), or to distance themselves from going beyond the call of duty within their work life, leading to lowered performance quality. In this

regard, adverse events could be viewed as a mechanism of voice that union members utilized, to announce their discontent.

4.7 Conclusion

Rates of voice mechanisms were identified within this chapter, and a detailed discussion of the spikes and declines noted within the data sets were provided, and linked to the union group and collective bargaining event time frames. This data helped to identify if there was a relationship between the concepts under study and whether there was increased use of the mechanisms of voice, including: grievance, injury reporting, absenteeism, voluntary turnover and adverse events, during collective bargaining events.

Results identified that there appears to be peaks and decreases in rates of these voice mechanisms correlated to particular collective bargaining events. This process helped to identify if there were particular events that were more volatile than others, in respect to the use of the mechanisms of voice. This being said, it is clear that a more detailed statistical evaluation is required to provide evidence of whether a significant relationship can be identified between the spikes in the data and the collective bargaining process, the union groups and employee behaviors. The negative binomial regression analysis is the statistical technique that will be utilized to assist with this endeavor. The results of this regression analysis will be discussed, in detail, within chapter five.

Chapter 5

5. Regression Analysis

5.1 Negative Binomial Regression

The negative binomial regression was used to estimate whether the observed differences in incidence rates of the various outcomes were statistically significant (Coxe, West & Aiken, 2009; Hilbe, 2007; STATA, 2003).[1] Negative binomial tests the number of events which occur during a time period, adjusting for observed differences in the durations of each collective bargaining cycle; allowing for the determination of whether the potential indicators of "voice" were significantly higher or lower during various phases of the bargaining process (Coxe, West & Aiken; Hilbe; STATA).

The collective bargaining events were categorized as: collective agreement expired (cb exp), which is the predetermined period of time when the contract for a particular union group ends; collective agreement signed (cb signed), which is the time frame when the new contract has been reached, following a collective bargaining cycle; cooling off (cool off), which is the period of time following the end of a bargaining cycle, when individuals begin to "let go" of difficult or frustrating negotiation periods; heating up (heat up), a period of time where the union is heading into a collective bargaining cycle or event, appearing as a "build-up" into union involvement; and resolution (resolved), a period of time when settlements are reached, and the environment of the workplace eventually returns to "normal". It is important to note that any strike activity was taken

[1] Initial attempt was made to utilize the Poisson regression technique in the statistical analysis. Data diagnostic tests revealed overdispersion of the data, making negative binomial regression the appropriate statistical method.

out of this analysis, as striking workers are unable to exercise these voice mechanisms if they are not on the job.

The results calculated for these procedures are all compared to the final outcome, "calm", a period of time when no collective bargaining events occur. Calm is considered the reference category against which all outcomes are measured in the regression analysis.

5.1.1 *Statistical Power*

Due to the relatively limited statistical power, with small numbers of bargaining phases being utilized within this study, a p-value of 0.10 was used in the analysis of the data. It is important to note that near misses, up to 0.15, will be highlighted; however, these results should be interpreted with caution.

5.2 Regression Analysis, All Union Groups

The first part of the regression analysis, for this particular study, involved examining all the unions, and comparing the results for each outcome, or voice mechanism. This allowed for a view of the overall use of mechanisms of voice. A table was created to display the summary regression analysis data, and is located below (Table 6). For each mechanism of voice, and each collective bargaining event (excluding the calm period), the incident rate ratio (IRR) is indicated, with the p-value located within parentheses. An incident rate ratio examines the impact that a particular variable has on the outcome of interest (Hilbe, 2007). Incident rate ratios are centered at 1, with values greater than 1 indicating higher incidence during this time period, and values less than 1 indicating lower incidence during this time period, as compared to the reference point (Hilbe). The

following table will be discussed in the order of collective bargaining event, providing a description of the regression analyses for the outcomes of interest, related to the collective bargaining events. All IRRs marked with an asterisk, identify cases where the p-value is less than 0.10.

Table 6: Summary (All Unions) for Negative Binomial Regression (with p values located in parentheses).

	Grievance	Injury	Absence	Turnover	Adverse Events
cb exp	0.712 (.425)	1.105 (.764)	1.759 (.101)	1.206 (.456)	1.123 (.123)
cb signed	0.994 (.899)	1.054 (.794)	0.957 (.748)	0.607* (.000)	1.091* (.000)
cool off	0.610* (.054)	1.138 (.544)	1.278* (.037)	1.103 (.415)	1.081 (.129)
heat up	0.908 (.582)	1.458 (.171)	1.339 (.149)	1.039 (.845)	1.112* (.078)
resolved	1.268 (.229)	1.326 (.274)	1.457* (.001)	1.407 (.328)	1.107 (.179)

During the collective agreement expired period, the IRR for grievances is 0.712, indicating a lower incidence rate for all unions combined during this time period, as compared to calm. However, the p-value is .425, which is not statistically significant. Injury reporting rates for this time period, has an IRR of 1.105, indicating an increase in incidence of injuries reported compared to the reference period (calm); the p-value is .764, which indicates there is no statistical significance.

Absences associated with the collective agreement expired period, has an IRR of 1.759, with the p-value at .101, which narrowly misses being statistically significant at the 10% level. Turnover associated with this outcome, has an IRR of 1.206, which

indicates higher rates of turnover during this period, as compared to calm. The p-value is .456, which again indicates that this result is not significant. The final outcome related to this bargaining phase, adverse events, was associated with an increase in incidence rates of errors, with an IRR of 1.123; the p-value at .123 indicates this result is not significant, however it does narrowly miss being statistically significant at the 10% level.

Throughout the period when the collective agreement was signed, it was noted that results indicated a slight association with a lowered incidence rate of grievances, as compared to calm, with an IRR of 0.994, with a p-value at .899, indicating this finding is not significant. Injuries reported during this time period had an IRR of 1.054, indicating that it is associated with an increase in incidence rates for this outcome, however with a p-value of .794, it is not significant. Absences during this period had an IRR of 0.957, indicating a reduction in absence, compared with the reference period (calm). However, with a p-value of .748, the reduction is not significant.

The IRR for turnover is 0.607, which is associated with lower incidence rates during this period, as compared to calm; the p-value for this analysis, is .000, which is statistically significant, suggesting that turnover is significantly lower during this phase of the bargaining cycle, as compared to calm. During this same time period, the IRR for adverse events is 1.091, which is associated with a higher rate of incidence of errors, as compared to calm; the p-value associated with this analysis is .000, which again is statistically significant, suggesting that there are more adverse events occurring during this phase of the bargaining cycle, compared to the period of calm.

During cooling off periods, the IRR for grievances is 0.610, indicating there are lower incident rates of grievances for this period, as compared to calm. The associated p-value is .054, which is considered marginally significant, suggesting that grievance is utilized somewhat less during this phase of bargaining, as compared to calm. The IRR for reported injuries is 1.138, which indicates there is an increase in injuries reported during this bargaining period, as compared to calm. However, the p-value is .544, which indicates this is not a significant increase.

During cooling off, the IRR for absences is 1.278, indicating higher absences during this period, as compared to calm. The p-value for this statistic is .037, which is statistically significant, suggesting that absences are higher during this phase of bargaining. Turnover had an IRR of 1.103, indicating an association with higher rates of turnover during this time period, as compared to calm. However, the p-value is .415, suggesting that it is not a significant effect. The IRR examining the association between cooling off and adverse events is 1.081, indicating higher rates of adverse events, during this period of time, as compared to calm. The p-value of .129, indicates this is not a significant increase, although it should be noted that additional statistical power may have yielded a significant IRR.

The IRR for grievances associated with the heating up phase, is 0.908, indicating lower rates of this outcome occurring during this particular time period, as compared to calm. However, the p-value at .582, indicates that this result is not significant. Injury reporting, during the same period, has an IRR of 1.458, indicating a higher incidence rate of this outcome during this particular time period, as compared to calm; the p-value for

this statistic is .171, which identifies that this is not a significant effect. Absences during this bargaining phase has an IRR of 1.339, indicating a higher rate of missed days during this phase of bargaining; the p-value at .149, is not a significant finding, however it does meet our criteria of qualifying as a "near miss".

Turnover rates during this time period, has an IRR of 1.039, indicating an association between heating up and a higher rate of turnover, as compared to calm. However, the p-value for this statistic is .845, which indicates it is not a significant effect. In contrast, adverse events during the heating up period, has an IRR of 1.112, which indicates an association between higher rates of adverse events during this phase of bargaining, as compared to calm. The p-value at .078, identifies a marginal significant finding, suggesting that errors are more frequent during the heating up period, as compared to calm periods.

During the period immediately following resolution, grievance activity had an IRR of 1.268, indicating higher rates of grievance activity during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .229, which is not significant. The IRR for injury reporting is 1.326, which indicates higher rates of injuries reported during this phase of bargaining, as compared to calm. However, the p-value at .274 indicates this is not a significant effect.

The IRR for absences during the period of resolution is 1.457, which is associated with a higher incidence of absences during this phase of bargaining, as compared to calm. The p-value is .001, which is statistically significant, suggesting a spike in absences during the resolution phase. The IRR for turnover is 1.407, which indicates a higher

incidence of adverse events during periods of resolution, as compared to calm. However, the p-value is .328, indicating that this result is not significant. Adverse events rates have an IRR of 1.107 during resolution, indicating an increase in adverse events, during this phase of bargaining, as compared to calm. However, the p-value of .179, indicates that this finding is not significant.

5.3 Individual Union Groups

It is important to realize that each union group will have a different union culture, and therefore may respond and behave differently to each of the collective bargaining events and furthermore may have different patterns of voice utilization during different phases of the collective bargaining cycle. To examine this, the analysis presented in the previous section is replicated for each union, separately. The results are presented in the next four sections. The first to be examined is the AAHP union.

5.3.1 *AAHP*

The table created to display the summary regression analysis data, for the AAHP union group, is displayed below.

Table 7: Negative Binomial Regression for AAHP Union (with p values located in parentheses)

	Grievance	Injury	Absence	Turnover	Adverse Events
cb exp	0.000 (.998)	1.192 (.823)	1.170 (.497)	2.358 (.183)	1.147 (.148)
cb signed	0.962 (.970)	4.160* (.001)	0.838 (.439)	0.657 (.506)	1.018 (.815)
cool off	0.000 (.998)	1.637 (.327)	0.794 (.313)	1.057 (.914)	0.937 (.387)
heat up	0.733 (.399)	1.138 (.670)	0.899 (.539)	1.479 (.107)	0.969 (.572)
resolved	1.597 (.399)	1.485 (.353)	0.924 (.729)	2.162* (.024)	1.020 (.781)

During the collective agreement expired period, the IRR for grievances is 0.000, indicating lower rates of grievances (in fact none were observed) during this particular bargaining phase, as compared to calm, for the AAHP union group. The p-value for this statistic is .998, which indicates it is not statistically significant. The IRR on incidence of reported injuries is 1.192, suggesting higher rates of injuries being reported during this period of time, as compared to calm. However, the p-value for this statistic is .823, which suggests it is not significant.

During this same period, the IRR for absence is 1.170, indicating higher incidence of this outcome for AAHP union members during this period, as compared to periods of calm. The p-value for this statistic is .497, which suggests it is not significant. Similarly,

the IRR for turnover is 2.358, indicating that it is associated with higher rates of this outcome, during the time when the collective agreement expired, as compared to calm. However, the p-value for this statistic is .183, which suggests it is not significant. Likewise, the IRR for adverse events is 1.147, suggesting that during this period there were higher rates of errors identified, as compared to calm periods. The p-value for this statistic is .148, which suggests it is not statistically significant; however we would classify this as a "near miss".

When the collective agreement is signed, the IRR for grievances in the AAHP union group is 0.962, indicating lower rates for the outcome during this particular period. However, the p-value for this statistic is .970, which indicates it is not significant. The IRR for reported injuries is 4.160, indicating higher rates of injury reported during this time period. The p-value for this statistic is .001, which indicates that this is a statistically significant effect, which suggests that there are more injuries being reported for AAHP union members, during this period, as compared to calm periods during the bargaining cycle.

The IRR for absence of AAHP union members is 0.838, indicating that there is an association between lower rates of absence immediately after the collective agreement is signed. However the p-value for this statistic is .439, with indicates that this is not a significant decline. Similarly, the IRR for turnover for AAHP, during this period of time, is 0.657, which indicates that there is a lower incidence of individuals choosing to leave their posts, immediately following the signing of the collective agreement, as compared to calm. However, the p-value for this statistic is .506, which identifies that this is not a

significant decline. When considering the rates of adverse events occurring during this particular period of time, the IRR is 1.018, which indicates a higher rate of errors during this period. However the p-value for this statistic is .815, which indicates that this is not significant.

During the collective bargaining period of cooling off, the IRR for grievance is 0.000, which suggests that there are fewer grievances (in fact none) filed by AAHP union members, during this period, as compared to calm. However the p-value for this statistic is .998, which indicates this is not a significant effect. The IRR for injury reporting during cooling off is 1.637, suggesting that there are higher rates of injuries reported during this period of time, as compared to calm. However, the p-value for this statistic is .327, which indicates that this is not a significant effect.

The IRR for absence for the AAHP union group during the cooling off period is 0.794, indicating lower rates of absence during this event, as compared to calm. However, the p-value for this statistic is .313, which indicates this is not a significant effect. Continuing on with the cooling off period, turnover for AAHP members during this period has an IRR of 1.057, indicating a higher association between turnover rates and this time period, as compared to calm. However, the p-value for this statistic is .914, indicating that this is not a significant effect. The IRR for adverse events is 0.937, which indicates that there are lower rates of errors during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .387, which indicates that this is not a significant decline.

During heating up, the IRR for grievance is 0.733, indicating there are lower rates of grievance during this period of time, as compared to calm. However the p-value for this statistic is .399, indicating that this is not a statistically significant effect. Injury reporting rates for this same bargaining period has an IRR of 1.138, suggesting higher rates of injuries reported during this bargaining period, as compared to a period of calm. However, the p-value for this statistic is .670, which identifies that this is not a significant increase. The IRR for absence during heating up is 0.899, suggesting lower rates of absence for this bargaining period, as compared to calm. However, the p-value for this statistic is .539, indicating that this is not a significant decline.

The IRR for heating up on turnover is 1.479, which indicates that there are higher rates of voluntary resignations during this phase of bargaining, as compared to calm. The p-value for this statistic is .107, indicating this is not a significant effect, however it does narrowly miss achieving significance at the 10% level. The IRR for adverse events is 0.969, suggesting that there are lower rates of errors during this collective bargaining event. However, the p-value for this statistic is .572, indicating that this is not a significant decline.

During resolution, the IRR for grievance is 1.597, indicating that there are higher rates of this outcome during this bargaining phase, as compared to periods of calm. However the p-value for this statistic at .399, indicates that this is not significant. The IRR of resolution on reporting injury is 1.485, indicating higher rates of injury reporting during this phase, as compared to calm. However, the p-value for this statistic is .353, indicating that this is not a significant effect.

The IRR for absence during resolution for the AAHP union group is 0.924, suggesting that there is lower rates of absence following resolution, as compared to calm. The p-value for this statistic is .729, which indicates that this is not a significant effect. The IRR for turnover is 2.162, suggesting that there are higher rates of voluntary turnover, during this particular phase of bargaining. The p-value for this statistic is .024, which indicates statistical significance. This identifies that there are more cases of voluntary turnover during the resolution phase of bargaining for AAHP union members, as compared to periods of calm. Finally, the IRR for adverse events, during the resolution phase of bargaining, is 1.020, indicating there are higher rates of errors, during this period of time, as compared to calm. However the p-value for this statistic is .781, indicating that this is not a significant increase.

5.3.2 *NAPE HS*

Next, the NAPE HS union will be examined, with the table created to display the summary regression analysis data, for this particular union group, displayed below.

Table 8: Negative Binomial Regression for NAPE HS Union (with p values located in parentheses)

	Grievance	Injury	Absence	Turnover	Adverse Events
cb exp	1.007 (.989)	0.990 (.969)	1.333 (.320)	1.278 (.483)	1.193 (.130)
cb signed	1.037 (.926)	0.834 (.244)	1.250 (.439)	0.749 (.456)	1.071 (.590)
cool off	0.635 (.212)	0.795* (.097)	1.355 (.208)	1.013 (.962)	1.057 (.590)
heat up	0.725 (.270)	1.157 (.177)	1.400* (.096)	0.971 (.881)	1.215* (.017)
resolved	0.806 (.573)	0.796 (.137)	1.287 (.297)	1.616* (.082)	1.221* (.058)

During the collective agreement expired period, the IRR for grievance is 1.007, suggesting that there are slightly higher rates of grievances, in this bargaining phase, as compared to calm. However, the p-value for this statistic is .989, indicating that this result is not significant. The IRR for injury reporting during this period is 0.990, suggesting that there are slightly lower rates of this outcome for this period of bargaining, as compared to calm. The p-value for this statistic is .969, indicating that this is not a significant result. The IRR for absence is 1.333, suggesting that there is an increase in absence during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .320, indicating that this is not a significant effect.

The IRR for turnover, for this bargaining phase, is 1.278, suggesting that there are higher rates of voluntary turnover when the collective agreement expires, as compared to calm. The p-value for this statistic is .483, which indicates that this is not significant. The IRR for adverse events, following agreement expiration is 1.193, which indicates higher rates of adverse events during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .130, which indicates that this is not statistically significant, however it does narrowly miss significance at the 10% level.

During the phase when the collective agreement is signed, the IRR for grievance is 1.037, which suggests higher rates of grievance during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .926, which indicates that this is not significant. The IRR for injury reporting is 0.834, during the period following the signing of the collective agreement. This indicates an association with lower rates of injuries reported during this phase of bargaining, as compared to the reference period

(calm). However, the p-value for this statistic is .244, which is not significant. The coefficient for absence is 1.250, during this phase, suggesting higher rates of absence following the signing of an agreement, as compared to calm. However, the p-value for this statistic is .439, which is not significant.

The IRR for turnover is 0.749 immediately following the signing of the collective agreement, suggesting that there are lower rates of voluntary turnover during this bargaining phase, as compared to calm. However, the p-value for this statistic is .456, which indicates that this is not a significant effect. The IRR for adverse events is 1.071, suggesting higher rates of errors during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .590, which indicates that this effect is not significant.

During the cooling off phase, the IRR for grievance is 0.635, suggesting an association between lower rates of this outcome during this event, compared to calm; the p-value for this statistic is .212, which indicates that this is not significant. The IRR for injury reporting during the cooling off phase of bargaining is 0.795, which suggests that there is an association between lower rates of injuries reported and this event; the p-value for this statistic is .097, which is marginally significant. This indicates that there are fewer injuries reported during periods of cooling off, as compared to periods of calm, for the NAPE HS union group.

The IRR for absence rates during the cooling off period is 1.355, suggesting that there are higher rates of absence during this bargaining phase, as compared to calm. However, the p-value for this statistic is .208, which indicates that this is not a significant effect.

The IRR for turnover is 1.013, suggesting that there are higher rates of voluntary turnover during the cooling off period of the bargaining cycle, as compared to calm. However, the p-value for this statistic is .962, which indicates that this is not statistically significant. The IRR for adverse events is 1.057, suggesting that there are higher rates of adverse events during this particular phase of bargaining, as compared to calm. However, the p-value for this statistic is .590, which indicates that this is not a significant increase.

The heating up phase of bargaining for the NAPE HS union group indicates a variety of interesting findings in the regression analysis. The IRR for grievance is 0.725, suggesting lower rates of grievance activity during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .270, which indicates that this is not a significant decline. The IRR for injury reporting is 1.157, suggesting higher rates of injuries reported during this bargaining period, as compared to calm. The p-value for this statistic is .177, which is not statistically significant.

The IRR for absence during the heating up phase of bargaining, is 1.400, suggesting higher rates of absence during this bargaining phase. The p-value for this statistic is .096, which is marginally significant and identifies that there is more absenteeism during periods of heating up, as compared to periods of calm, for this particular union group. In comparison, the IRR for turnover for the NAPE HS union group during the heating up phase of bargaining is 0.971, which suggests lower rates of voluntary turnover for union members during this period of time, as compared to calm. However, the p-value for this statistic is .881, which indicates that this is not a significant effect. The IRR for adverse events is 1.215, which indicates higher rates of adverse events, during this particular

phase of bargaining. The p-value for this statistic is .017, which is statistically significant, and identifies that there are more incidents of adverse events during the heating up phase of bargaining, as compared to periods of calm.

The resolution phase of bargaining also indicates a number of interesting effects. The IRR for grievance, during this period, is 0.806, suggesting lower rates of grievance activity during this particular phase of bargaining, as compared to periods of calm. However, the p-value for this statistic is .573, which is not significant. The IRR for injury reporting, during this phase, is 0.796, indicating lower rates of injuries reported during the resolution phase of bargaining, as compared to calm. The p-value for this statistic is .137, which is not statistically significant, however it does narrowly miss achieving significance at the 10% level.

The IRR for absence for the NAPE HS union group during the phase of resolution, is 1.287, suggesting higher rates of absence during this particular phase of bargaining, as compared to calm. However, the p-value for this statistic is .297, which is not significant. The IRR for turnover for this union group is 1.616, which indicates higher rates of voluntary turnover during this phase of bargaining. The p-value for this statistic is .082, which is marginally significant. This indicates that there is more voluntary turnover for NAPE HS employees during the collective bargaining phase of resolution, as compared to periods of calm. The IRR for adverse events is 1.221, indicating higher rates of adverse events following contract resolution. The p-value for this statistic is .058, which is marginally significant. This indicates that there are somewhat more adverse events

occurring during the resolution phase of bargaining, as compared to calm, for NAPE HS union employees.

5.3.3 *NAPE LX*

Next, the NAPE HS union will be examined, with the table created to display the summary regression analysis data, for this particular union group, displayed below.

Table 9: Negative Binomial Regression for NAPE LX Union (with p values located in parentheses)

	Grievance	Injury	Absence	Turnover	Adverse Events
cb exp	0.000 (.994)	0.000 (.995)	1.253 (.574)	0.000 (.991)	1.236 (.392)
cb signed	1.369 (.606)	0.647 (.292)	1.362 (.367)	1.090 (.884)	1.150 (.550)
cool off	0.927 (.918)	0.439 (.101)	1.673 (.108)	0.440 (.251)	1.127 (.579)
heat up	1.461 (.269)	1.247 (.280)	1.267 (.426)	0.341* (.019)	1.178 (.392)
resolved	3.370* (.001)	0.465* (.045)	1.421 (.359)	1.324 (.331)	1.235 (.423)

During the collective agreement expiring phase of bargaining, the IRR for grievance for the NAPE LX union group is 0.000, which suggests there are lower rates of grievance (and in fact, no grievances were filed) during this particular phase of bargaining, as compared to calm. However, the p-value for this statistic is .994, which is not significant. The IRR for injury reporting is 0.000, which suggests there are lower rates of injuries reported (and in fact no injuries were reported) during this phase, as compared to calm. However, the p-value for this statistic is .995, which indicates that this is not statistically significant. The IRR for absence is 1.253, which suggests there are higher rates of

absence during this particular phase of bargaining, as compared to calm. The p-value for this statistic is .574, indicating that this is not statistically significant effect.

The IRR for turnover is 0.000, suggesting that there are lower rates of voluntary turnover (and in fact none occurred) during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .991, suggesting this is not a significant decline. The IRR for adverse events incidence is 1.236, suggesting there are higher rates of adverse events during this phase of bargaining. However, the p-value for this statistic is .392, which indicates this is not a significant increase.

During the period of collective agreement signed, the IRR for grievance for this union group is 1.369, suggesting higher rates of grievance activity during this particular phase of bargaining, compared to calm. However, the p-value for this statistic is .606, which is not significant. The IRR for injury reporting is 0.647, which suggests lower injury reporting rates during this period of bargaining, as compared to periods of calm. However, the p-value for this statistic is .292, which is not significant. The IRR for absence following the signing of the collective agreement is 1.362, which suggests higher rates of absences during this period, as compared to calm. However, the p-value for this statistic is .367, which again is not statistically significant.

The IRR for turnover is 1.090, suggesting higher rates of voluntary turnover during this particular phase of the bargaining cycle, as compared to calm. However, the p-value for this statistic is .884, which is not significant. The IRR for adverse events is 1.150, which suggests higher rates of adverse events during this period of time, as compared to calm. However, the p-value for this statistic is .550, which is not statistically significant.

Turning to the cooling off phase, the IRR for grievance is 0.927, suggesting lower rates of grievance during this period, as compared to the reference period (calm). However, the p-value for this statistic is .918, which is not statistically significant. The IRR for injury reporting is 0.439, which suggests that there are lower rates of injuries reported during this phase of bargaining, as compared to calm. The p-value for this statistic is .101, which is not statistically significant, however it does narrowly miss achieving significance at the 10% level. The IRR for absence is 1.673, suggesting that there are higher rates of absenteeism, during this particular phase of bargaining, as compared to calm; the p-value for this statistic is .108, which is not statistically significant, however it does narrowly miss achieving significance at the 10% level.

The IRR for turnover, during cooling off, is 0.440, suggesting an association between lower rates of voluntary turnover, during this period, as compared to calm. However, the p-value for this statistic is .251, which is not significant. The IRR for adverse events is 1.127, suggesting higher rates of adverse events during this particular phase of bargaining, as compared to calm. However, the p-value for this statistic is .579, which is not significant.

When analyzing the heating up period for the NAPE LX union group, the IRR for grievance is 1.461, which suggests higher rates of grievance during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .269, which is not significant. The IRR for reported injuries is 1.247, which suggests an association between higher rates of injuries reported during this period of bargaining, as compared the reference period (calm). However, the p-value for this statistic is .280, which is not

significant. The IRR for absence is 1.267, suggesting higher rates of absence during the heating up periods of the bargaining cycle, as compared to calm. However, the p-value for this statistic is .426, which is not significant.

The IRR for turnover, during this bargaining phase, is 0.341, suggesting lower rates of turnover. The p-value for this statistic is .019, which is statistically significant. This indicates that there is less voluntary turnover for the NAPE LX union group during the heating up phase of bargaining, as compared to periods of calm. The IRR for adverse events for the NAPE LX union group is 1.178, suggesting higher rates of adverse events during the heating up phase of bargaining, as compared to calm. However, the p-value for this statistic is .392, which is not significant.

The final period of collective bargaining is the resolution phase. The IRR for grievance with the NAPE LX union group is 3.370, which suggests that there are higher rates of grievance activity during this particular phase of bargaining. The p-value for this statistic is .001, which is statistically significant. This indicates that there is more grievance activity during the resolution phase of bargaining, than occurring in periods of calm. The IRR for injury reporting is 0.465, which suggests there is an association between lower rates of injuries reported during this bargaining period. The p-value for this statistic is .045, which is statistically significant. This indicates that there are fewer injuries reported during the resolution phase of the bargaining cycle, as compared to periods of calm.

The IRR for absence during the resolution phase is 1.421, suggesting higher rates of absence during this particular period of bargaining, as compared to calm. However, the

p-value for this statistic is .359, which is not significant. The IRR for turnover is 1.324, suggesting higher rates of voluntary turnover during this bargaining period, as compared to calm. However, the p-value for this statistic is .331, which is not statistically significant. Finally, the IRR for adverse events is 1.235, which suggests higher rates of adverse events, during this phase of bargaining, as compared to periods of calm. However, the p-value for this statistic is .423, which is not significant.

5.3.4 *NLNU*

Next, the NLNU union will be examined. The table created to display the summary regression analysis data, for this particular union group, is displayed below.

Table 10: Negative Binomial Regression for NLNU Union (with p values located in parentheses)

	Grievance	Injury	Absence	Turnover	Adverse Events
cb exp	0.204 (.206)	2.059 (.329)	4.057* (.000)	0.504 (.178)	0.855 (.605)
cb signed	0.890 (.895)	1.355 (.616)	0.919 (.478)	0.488 (.159)	1.071 (.821)
cool off	0.276 (.129)	1.364 (.573)	0.960 (.675)	0.984 (.961)	1.145 (.603)
heat up	0.784 (.707)	1.637 (.276)	0.955 (.547)	0.699 (.183)	1.034 (.880)
resolved	1.221 (.816)	1.788 (.332)	1.181* (.085)	0.484* (.071)	0.902 (.707)

The IRR for grievance, during the collective agreement expiring phase, is 0.204, suggesting lower rates of grievance, as compared to calm. However, the p-value for this statistic is .206, which is not significant. The IRR for injury reporting is 2.059,

suggesting a higher rate of injuries being reported during this period, as compared to calm. However, the p-value for this statistic is .329, which is not significant.

The IRR for absence is 4.057, suggesting an increase in absence during this phase of bargaining. The p-value for this statistic is .000, which is statistically significant. This indicates that there are higher rates of absence for NLNU members when the collective agreement expires, as compared to periods of calm. The IRR for turnover is 0.504, which suggests lower rates of voluntary turnover during this period of the bargaining cycle, as compared to calm. However, the p-value for this statistic is .178, which is not statistically significant. Finally, the IRR for adverse events is 0.855, suggesting lower rates of adverse events during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .605, which is not significant.

During the period when the collective agreement is signed, the IRR for grievance is 0.890, suggesting lower rates of grievance activity during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .895, which is not significant. The IRR for injury reporting is 1.355, which suggests higher rates of injury reporting following the signing of the collective agreement, as compared to periods of calm. However, the p-value for this statistic is .616, which is not significant. The IRR for absence is 0.919, suggesting a lower rate of absence following the signing of the collective agreement, compared to calm. However, the p-value for this statistic is .478, which is not statistically significant.

The IRR for turnover is 0.488, suggesting a lower rate of turnover during this particular bargaining period, as compared to calm. However, the p-value for this statistic

is .159, which is not statistically significant. The IRR for adverse events during this phase of bargaining is 1.071, suggesting higher rates of adverse events during this period, as compared to calm. However, the p-value for this statistic is .821, which is not significant.

During the collective bargaining phase of cooling off, the IRR for grievance is 0.276, which suggests an association between lower rates of grievance activity during this phase of bargaining, as compared to calm. The p-value for this statistic is .129, which is not significant, however it does narrowly miss achieving significance at the 10% level. The IRR for injury reporting is 1.364, suggesting that there are higher rates of injury reporting during this period of the collective bargaining cycle, as compared to calm. However, the p-value for this statistic is .573, which is not significant.

Turning to absence among NLNU members, the IRR for this outcome is 0.960, suggesting lower rates of absence during this particular phase of bargaining, as compared to calm. However, the p-value for this statistic is .675, which is not significant. The IRR for turnover is 0.984, suggesting lower rates of voluntary turnover during this phase of bargaining, as compared to calm. However, the p-value for this statistic is .961, which is not significant. The IRR for adverse events is 1.145, suggesting higher rates of adverse events during this particular period of time, as compared to calm. However, the p-value for this statistic is .603, which is not statistically significant.

Turning to the period of heating up, the IRR for grievance among NLNU members is 0.784, suggesting lower rates of grievance activity during this phase of the bargaining cycle, as compared to calm. However, the p-value for this statistic is .707, which is not

significant. The IRR for injury reporting is 1.637, suggesting higher rates of injury reporting during this particular period of bargaining, as compared to calm. However, the p-value for this statistic is .276, which is not significant. The IRR for absence is 0.955, suggesting lower rates of absence during heating up, as compared to calm. However, the p-value for this statistic is .547, which is not significant.

Turning to turnover, the IRR is 0.699, which indicates lower rates of voluntary turnover during the heating up phase of bargaining, as compared to calm. However, the p-value for this statistic is .183, which is not statistically significant. The IRR for adverse events during heating up is 1.034, suggesting higher rates of adverse events during this bargaining phase, as compared to calm. However, the p-value for this statistic is .880, which is not significant.

During the period of resolution, the IRR for grievance is 1.221, suggesting there is higher rates of grievance activity during this phase of the bargaining cycle, as compared to calm. However, the p-value for this statistic is .816, which is not statistically significant. The IRR for injury reporting is 1.788, which suggests higher rates of injury reporting during this bargaining period, as compared to calm. However, the p-value for this statistic is .332, which is not significant.

Turning to absence, the IRR is 1.181, suggesting higher rates of absence during the period immediately following resolution. The p-value for this statistic is .085, which is marginally significant. This suggests the NLNU union members utilize more absenteeism during resolution, than compared to periods of calm. The IRR for turnover during this phase is 0.484, suggesting lower rates of voluntary turnover during this period

of bargaining. The p-value for this statistic is .071, which is statistically significant at the 10% level. This indicates that the NLNU membership utilize less voluntary turnover during the period of resolution, as compared to periods of calm. Finally, the IRR for adverse events is 0.902, suggesting lower rates of adverse events during this phase of the bargaining cycle, as compared to calm. However, the p-value for this statistic is .707, which is not statistically significant.

5.4 Conclusion

The results of the negative binomial regression analysis indicate several key instances of statistical significance, within the data, which signify times when there is a significant relationship between the mechanisms of voice and collective bargaining events; furthermore there are also numerous situations where there is near miss significance, at the 10% level. The full meaning of such statistical results will be discussed in detail within the next chapter, when the descriptive and regression analyses for each union group will be intertwined and the relationships identified.

Chapter 6

6. Discussion

This chapter will discuss the results of the statistical analysis, as well as highlight any important trends that emerge from the results. Emphasis will be placed upon linking the findings to the relevant literature. Through this process, further knowledge will be gained in the use of grievance, injury reporting, absence, and voluntary turnover, as well as adverse events, during key collective bargaining periods, as mechanisms of voice. Tables have been created to highlight the regression analyses for each of the outcomes of interest, grievance, injury reporting, absence, voluntary turnover and adverse events. These tables are located throughout this chapter.

6.1 Grievance

According to Freeman and Medoff (1984), unionized workers have grievance activity at their disposal, to right perceived wrongs. Nelson and Reimann (1983) discovered that large organizations with varied units and employee levels, and different skills, show the highest grievance activity. This is certainly the case with Eastern Health, as an organization of this size has a wide variety of services, with varying levels of employees, all of whom have differing skills sets, education levels and responsibilities (Eastern Health, 2008).

Table 11: Negative Binomial Regression for Grievances (with p values located in parentheses)

	AAHP	NAPE HS	NAPE LX	NLNU	All Unions
cb exp	0.000 (.998)	1.007 (.989)	0.000 (.994)	0.204 (.206)	0.712 (.425)
cb signed	0.962 (.970)	1.037 (.926)	1.369 (.606)	0.890 (.895)	0.994 (.899)
cool off	0.000 (.998)	0.635 (.212)	0.927 (.918)	0.276 (.129)	0.610* (.054)
heat up	0.733 (.399)	0.725 (.270)	1.461 (.269)	0.784 (.707)	0.908 (.582)
resolved	1.597 (.399)	0.806 (.573)	3.370* (.001)	1.221 (.816)	1.268 (.229)

AAHP. The graph representing injury reporting rates for the AAHP union identified a number of minor spikes and one profound spike within the data, related to grievance activity. However, there were no statistically significant relationships identified with any of the collective bargaining periods through the regression analysis, as related to grievance activity.

NAPE HS. NAPE HS descriptive analysis definitely identified volatility throughout the data, related to grievance activity and collective bargaining events. However, there were no statistically significant findings related to this outcome and collective bargaining in the regression analysis that was performed.

NAPE LX. NAPE LX did identify one area of statistical significance in the regression analysis, with the period of resolution, indicating an association with higher rates of grievance activity during this bargaining period, as compared to periods of calm. When examining the graph associated with this voice mechanism, there is a large spike in grievance rates at a point in the collective bargaining process when the negotiated

settlement was reached between April 6, 2001 and July 18, 2001, as compared to periods of calm throughout the grievance data set. Interestingly, this collective bargaining event followed a five-day strike occurring between April 1 and April 5, 2001. Results suggest that this union group could have been utilizing grievance as a mechanism of voice during volatile periods of time, such as following strike activity, as well as when agreements were reached.

NLNU. The NLNU union group does not show any statistically significant periods of higher or lower rates of grievance activity, when compared to periods of calm, despite periods of varying spikes seen in the graph associated with this outcome. That being said, the regression analysis did identify that during the cooling off phase, there was lower rates of grievance, narrowly missing statistical significance, indicating that this could be associated with lower rates of grievance, as compared to calm. When examining the graphic representation of this outcome, associated with the cooling off phase of bargaining, it appears that there was a sizeable decline in grievances to 0.22, between July 22, 2002 to August 22, 2002, during this cooling off period, between on August 23, 2002, and September 23, 2002, which occurred following the end of the collective bargaining cycle when the collective agreement was signed. This same period, when compared to calm, does indicate lower levels of grievance activity. This narrowly missed significance suggests a weak correlation between the collective bargaining activity of cooling off and grievance behavior.

6.2 Injury Reporting

Employees have every right to report an injury sustained at work, a process that is considered to be one of the fringe benefits of unionized environments (Freeman & Medoff, 1984). Mittleman et al. (1945) found that in areas with increased conflict and demands, there was a subsequent increase in injury reporting. More recently, Havlovic (1991) identified that satisfied employees were less likely to have and report workplace injuries, possibly suggesting that negative feelings surrounding collective bargaining events, could be less of an influencing factor upon these individuals.

Table 12: Negative Binomial Regression for Injury Reporting (with p values located in parentheses)

	AAHP	NAPE HS	NAPE LX	NLNU	All Unions
cb exp	1.192 (.823)	0.990 (.969)	0.000 (.995)	2.059 (.329)	1.105 (.764)
cb signed	4.160* (.001)	0.834 (.244)	0.647 (.292)	1.355 (.616)	1.054 (.794)
cool off	1.637 (.327)	0.795* (.097)	0.439 (.101)	1.364 (.573)	1.138 (.544)
heat up	1.138 (.670)	1.157 (.177)	1.247 (.280)	1.637 (.276)	1.458 (.171)
resolved	1.485 (.353)	0.796 (.137)	0.465* (.045)	1.788 (.332)	1.326 (.274)

AAHP. When considering the AAHP injury reporting rates, and comparing them to periods of calm, the most profound spike in injuries reported occurred when the collective agreement was signed on February 8, 2002 (between February 8 and March 8, 2002). Examining the regression analysis for this outcome, there is a statistically significant result, following the signing of the collective agreement, identifying an association between this event and higher rates of injuries reported, as compared to

periods of calm. These combined results indicate that AAHP members tends to utilize more injury reporting activity during times when the collective agreement is signed, which is interesting as it is the end of the active collective bargaining cycle.

When comparing these results to the periods of calm within the data set, one "agreement signed" event, indicated higher rates of reported injuries, compared to calm. These results indicate that AAHP membership may to utilize this outcome as a mechanism of voice.

NAPE HS. The regression analysis identified one statistically significant result associated with lower rates of reported injuries and the collective bargaining period of cooling off, as compared to calm. The most notable decline in the graphic representation of the descriptive data, took place between August 11 and September 11, 2001, with injury reporting rates decreasing during this bargaining period. However, one period of cooling off had injury reporting rates higher than both of the calm periods. Since this appears to occur at only one point in the observation period, this may indicate that other events surrounding this particular period may influence the use of injury reporting as a mechanism of voice.

NAPE LX. The regression analysis for NAPE LX, indicated a marginally significant result with the period of resolution, associated with lower levels of reported injuries, than found in periods of calm. However, the descriptive results indicate that the rates of reported injury, occurring during the period of resolution, are lower in only one of the two periods of calm, occurring in the data set. This may indicate that events surrounding

this particular bargaining period influenced the use of injury reporting as a mechanism of voice.

The regression analysis also identified lower rates of injury reporting during cooling off, as compared to calm, although this narrowly missed achieving significance at a 10% level. In examining the graph of injury reporting rates, there are two periods of cooling off, which have rates of reported injury lower than those within the calm period.

NLNU. The graph representing injury reporting rates associated with collective bargaining events for NLNU, finds a number of spikes in rates throughout the data. However, the regression analysis indicates that none of these spikes are statistically significant, compared to periods of calm. These findings suggest that NLNU membership tends not to utilize injury reporting as a mechanism of voice.

6.3 Absence

Sapsford and Turnbull (1994) found that absenteeism could be a way to respond to dire work circumstances and to voice discontent and create strife in the workplace. It has also been shown that in workplaces with higher levels of individual satisfaction, there were less absent days used (Bennett, 2002; Rosenblatt & Shirom, 2005).

Table 13: Negative Binomial Regression for Absences (with p values located in parentheses)

	AAHP	NAPE HS	NAPE LX	NLNU	All Unions
cb exp	1.170 (.497)	1.333 (.320)	1.253 (.574)	4.057* (.000)	1.759 (.101)
cb signed	0.838 (.439)	1.250 (.439)	1.362 (.367)	0.919 (.478)	0.957 (.748)
cool off	0.794 (.313)	1.355 (.208)	1.673 (.108)	0.960 (.675)	1.278* (.037)
heat up	0.899 (.539)	1.400* (.096)	1.267 (.426)	0.955 (.547)	1.339 (.149)
resolved	0.924 (.729)	1.287 (.297)	1.421 (.359)	1.181* (.085)	1.457* (.001)

AAHP. When viewing the graph representing AAHP absence rates, throughout the collective bargaining cycle, there are a number of identified ebbs and flows in the data, when compared to periods of calm. However, there were no statistically significant results found with respect to absence rates and collective bargaining events. This suggests that AAHP membership does not utilize absence as a voice mechanism.

NAPE HS. The graph representing absence rates for the NAPE HS union indicates periods of spikes and decreases in rates associated with the collective bargaining cycle, as compared to periods of calm. The regression analysis identified one interesting result with respect to absences. In periods of heating up (a time when involvement in the bargaining cycle is beginning, or leading into more volatile events), there was a statistically significant result found in absence rates for this union group, specifically an association between higher rates of absence, in relation to this collective bargaining event, compared to periods of calm.

When comparing regression and descriptive results, it is clear that there is not always an association between higher rates of absence in the heating up period, compared with calm. Results indicate that the absence rates for the two periods of calm were higher in one of two heating up periods. These findings indicate that NAPE HS union members may use absence as a mechanism of voice; however it may depend upon the collective bargaining cycle as well as the volatility within the cycle and surrounding the particular collective bargaining event.

NAPE LX. The regression analysis for NAPE LX union group, demonstrates that cooling off, narrowly missed achieving significance at the 10% level, where it would have been associated with higher rates of absence during this bargaining period, when compared to calm. When examining the graph representing the rates of absence for NAPE LX, it is noted that the rates of absence are higher in all of the cooling off periods, compared with calm. These results indicate that NAPE LX members could use absence as a mechanism of voice; however the results are not consistent.

NLNU. The NLNU regression analysis reveals two interesting results. The "collective agreement expired" as well as "resolved periods of bargaining" were both statistically significant, and were associated with higher rates of absence, than in periods of calm. When viewing the graphic representation of the absence data for NLNU, the most profound spike in absence data occurs with the collective agreement expiring on June 30, 2004, with rates increasing five-fold. It is interesting to note that this profound spike occurred following the union announcing it would not return to bargain in 2004, and followed the long and contentious strike of the NAPE union from April 1, 2004 and May

3, 2004. This dramatic increase in such a small period of time corresponds to the regression analysis findings, specifically that the results are higher than the calm periods.

As mentioned above, the broad collective bargaining period following resolution was statistically significant and associated with an increase in absence rates. The graphical representation of absence rates identifies two periods of collective bargaining which are categorized under the broader title of resolution for the regression analysis: legislated agreement, and ratified agreement. The legislated agreement occurred on April 1, 1999, and this period clearly identifies a spike in absence rates during this period, corresponding to the regression analysis results, with rates of absence higher than those found in periods of calm.

It is interesting to note that a strike had occurred between March 24 and March 31, 1999, indicating that this union group had just gone through a more contentious bargaining period, which could have influenced the use of absence as a mechanism of voice during the period of resolution. The ratified agreement occurred on May 24, 2002. It was not associated, however, with an increase in absence; in fact this event was associated with a decrease in absence rates.

These results indicate that NLNU membership tends to use absence, as a mechanism of voice, when the collective agreement expires. During the period of resolution, results show no clear pattern of changing absence rates, and as such it is unclear whether NLNU uses absence as a voice mechanism during this particular collective bargaining event.

6.4 Voluntary Turnover

Numerous studies have demonstrated that unionized workers are less content with their work lives than individuals who are non unionized; however due to years of service, higher scale of pay, job security, and community attachments, they do not resort to quit behaviors as a voice mechanism (Freeman & Medoff, 1984; Guest & Conway, 2004; Hammer & Avgar, 2005; Mitchell, Holtom, Lee, Sablynski, & Erez; 2001). In comparison, Iverson and Currivan (2003), found that desire to quit occurred in employees who were both happy and unhappy with their work life, which goes against conventional thought that only dissatisfied workers quit their jobs. Furthermore, they found that unionized employees, have ways to provide voice, simply from being a part of a union, and when getting involved in union activities, therefore they do not need to resign from their positions to demonstrate voice (Iverson & Currivan).

Table 14: Negative Binomial Regression for Voluntary Turnover (with p values located in parentheses)

	AAHP	NAPE HS	NAPE LX	NLNU	All Unions
cb exp	2.358 (.183)	1.278 (.483)	0.000 (.991)	0.504 (.178)	1.206 (.456)
cb signed	0.657 (.506)	0.749 (.456)	1.090 (.884)	0.488 (.159)	0.607* (.000)
cool off	1.057 (.914)	1.013 (.962)	0.440 (.251)	0.984 (.961)	1.103 (.415)
heat up	1.479 (.107)	0.971 (.881)	0.341* (.019)	0.699 (.183)	1.039 (.845)
resolved	2.162* (.024)	1.616* (.082)	1.324 (.331)	0.484* (.071)	1.407 (.328)

AAHP. A number of interesting results are identified in the AAHP analysis, in relation to voluntary turnover rates. The collective bargaining periods of resolution identified a

statistically significant relationship associated with high rates of voluntary turnover during these periods of time, as compared to periods of calm. When examining the descriptive results, it is apparent that there is considerable volatility in the voluntary turnover rates for this union group, and when comparing rates to periods of calm, it is clear that rates of turnover are higher in all but one period of resolution (in which the rates are the same in both periods). These results indicate that AAHP union group tends to use voluntary turnover as a mechanism of voice during resolution, perhaps suggesting that members waited to see the outcome of the bargaining process and ultimately found it to be unsatisfactory, encouraging them to resign (or quit) their posts.

In addition, heating up narrowly missed being significant at a 10% level and is associated with higher rates of voluntary turnover during this period, as compared to periods of calm. The graphic representation of this data indicates many occurrences when heating up was associated with higher voluntary turnover rates, than noted in periods of calm.

NAPE HS. The analysis indicates that the period of resolution has a statistically significant relationship associated with increased rates of voluntary turnover, when compared to periods of calm. The descriptive results reveal spikes in voluntary turnover rates in all four periods of resolution. When comparing rates found in the resolution phase with those in the calm period, rates for periods of resolution are higher than periods of calm, which corresponds to the results of the regression analysis. These results suggest that NAPE HS members tend to use voluntary turnover as a mechanism of voice during times when the collective bargaining period is coming to an end.

NAPE LX. The period of heating up in the regression analysis showed a statistically significant relationship between lower rates of voluntary turnover and this period of collective bargaining, as compared to periods of calm. When examining the graphic representation of the data, there are three periods of heating up identified, however, only one of these periods show an increase in voluntary turnover rates, which suggests that this may have been an anomaly of this particular bargaining phase.

NLNU. Resolution was identified in the analysis to have a significant result, associated with lower rates of turnover, as compared to periods of calm. When viewing the descriptive results, it is clear that during two of the three events related to resolution, legislated agreement occurring on April 1, 1999, and ratified agreement occurring on December 4, 2006, show a decrease in voluntary turnover rates when compared to rates within the calm periods. The other event related to resolution (ratified agreement, occurring on May 24, 2002) shows a slight increase in rates of turnover, compared to calm. These results show NLNU membership tend to use voluntary turnover as a mechanism of voice during particular periods associated with resolution. Since results are not consistent in all periods of resolution, it may be other events surrounding this particular period, which provide influence on union members to utilize voluntary turnover as a mechanism of voice.

There were three periods within the analysis which revealed interesting findings for the NLNU group, including: collective agreement expired, collective agreement signed, and heating up, each of which were close to being associated with lower rates of voluntary turnover, when compared to periods of calm. In each of these periods, $p < .20$,

but is > .15, so while it is not a near miss by the definition used in the current study, having three findings so close to a near miss, suggests there may be something of interest happening. In the descriptive results, both periods where the collective agreement expired, had lower rates of voluntary turnover compared to periods of calm. Likewise, both periods where the collective agreement was signed had lower rates of voluntary turnover, compared to periods of calm. The three periods of heating up were associated with lower voluntary turnover rates; however the third heating up event had a higher rate of turnover, compared to calm.

6.5 Adverse Events

It is important to recall that the adverse events are a proxy for performance quality, in this current study. The adverse events data file did not organize these events by union group, rather they were counted purely based on the event, or near miss, which was reported.

Freeman and Medoff (1984) found that during difficult periods between unions and employers, lowered performance levels were identified. Likewise, Mas (2008), found that machinery made during a seven-year union/employer battle, had more problems, and more importantly had lower resale value compared to machinery made during more stable periods, which was linked to lower exertion and interest on the part of employees, while performing required job tasks. Similarly, Kruger and Mas (2004), found during a two-year labor relations conflict between Bridgestone/Firestone and employees, tires made during this time were faulty, leading to numerous deaths and injuries.

Additionally, Mas (2006) found that negative collective bargaining involving police officers, found higher crime rates, fewer arrests, and less time spent in prison, as well as police officers being not as willing to help the court process after contentious collective bargaining. Kochan and Gobeille (1983) found that union/employer clash was shown to have a high negative impact upon employees desire to work hard, greatly affecting their workmanship during times of conflict. In comparison, Freeman and Medoff (1984) found that in periods of union/employer stability, workers were more efficient, and effective with tasks.

Table 15: Negative Binomial Regression for Adverse Events (with p values located in parentheses)

	AAHP	NAPE HS	NAPE LX	NLNU	All Unions
cb exp	1.147 (.148)	1.193 (.130)	1.236 (.392)	0.855 (.605)	1.123 (.123)
cb signed	1.018 (.815)	1.071 (.590)	1.150 (.550)	1.071 (.821)	1.091* (.000)
cool off	0.937 (.387)	1.057 (.590)	1.127 (.579)	1.145 (.603)	1.081 (.129)
heat up	0.969 (.572)	1.215* (.017)	1.178 (.392)	1.034 (.880)	1.112* (.078)
resolved	1.020 (.781)	1.221* (.058)	1.235 (.423)	0.902 (.707)	1.107 (.179)

AAHP. The analysis identified that the period following the expiry of the collective agreement nearly missed being associated with higher rates of adverse events, compared to a period of calm, at the 10% level. During both periods represented in the descriptive analysis, increases in adverse events occurred, as compared to rates of adverse events in the periods of calm occurring throughout the data. It appears that any AAHP employees may utilize adverse event reporting as mechanisms of voice.

NAPE HS. The regression analysis identified two significant results: heating up and resolution, both associated with higher rates of adverse events when compared to periods of calm. In the descriptive analysis, when comparing the heating up periods to periods of calm, heating up was associated with higher rates of adverse events in one period of calm. In comparison, both of the periods of resolution were associated with higher rates of adverse events, when compared to calm. These results indicate that NAPE HS employees appear to use adverse events reporting as a mechanism of voice.

In addition, there was a narrow miss of statistical significance for the collective agreement expired phase being associated with higher levels of adverse events, when compared to calm. When examining the descriptive results, three of these events occurred, with two showing higher rates of adverse events, when compared to calm. These results indicate that NAPE HS employees may utilize adverse events as a mechanism of voice, depending on the collective bargaining cycle and surrounding events.

NAPE LX. When viewing the descriptive analysis results for NAPE LX, it is clear that there are a number of increases and decreases in adverse events rates, related to particular collective bargaining events for this union group. That being said, through the regression analysis, there were no statistical significant relationships found, compared to periods of calm. Therefore, NAPE LX members do not appear to utilize adverse events as a voice mechanism.

NLNU. It is important to note that nurses likely report the majority of adverse events. When viewing the graphs representing adverse events rates, and the collective bargaining

events of the NLNU, it is obvious that many spikes and decreases have occurred throughout the data. However, the regression analysis did not identify any statistically significant results for adverse events, compared to periods of calm. Therefore, it appears that adverse events do not appear to be influenced by the bargaining process, and that NLNU members do not utilize this outcome as a mechanism of voice.

6.6 Summary

This chapter links together results from the descriptive and regression analysis, with supporting documentation from relevant literature sources. Findings were compared and contrasted, and relationships were identified based on visual findings in the graphs, as well as statistical significance brought forward from the regression analysis process.

The results identify that some union members do utilize certain behaviors under study as mechanisms of voice, that is, as a way to announce their frustrations with the collective bargaining process. However, there are many instances when expected relationships were not clearly identified. These are interesting findings, as understanding the relationship and influence collective bargaining has on employee groups is extremely important to the overall health of a workplace. Identifying periods where increased use of voice mechanisms occur and identifying their relationship to the collective bargaining process, will further allow stakeholders to better understand the effects of workplace dynamics.

Of interest is that the majority of significant findings were associated with periods of resolution. This is very surprising as resolution is a time when collective bargaining events are ending, and agreements are formed. Furthermore, these periods occur just

prior to the cooling off and calm periods in the collective bargaining cycle, when no active bargaining takes place. Obviously, based on study results, this period of time is when union members show their frustration or disappointment with the negotiation process, or with the agreement reached.

Likewise, the period of heating up was an identified area where a number of statistically significant results were identified. This is the period that builds up into the collective bargaining cycle, the period of time before collective bargaining events begin. These results indicate that this point in the collective bargaining process may stir up individuals to utilize outcomes as mechanisms of voice.

It is through this form of study when organizations can begin to identify periods of collective bargaining that may be more influential on their employees, thereby encouraging them to utilize voice mechanisms more often, including: grievance activity, injury reporting, absenteeism, voluntary turnover and adverse events. This endeavor can provide organizations with the ability to formulate clear plans, strategies and goals towards keeping employees motivated, eager to work, and impervious to the effects of collective bargaining.

Chapter Seven

7. Conclusion

This thesis examined the relationship between collective bargaining events and mechanisms of voice, including: grievance, injury reporting, absence, voluntary turnover, and adverse events. To examine these concepts, a thorough literature review was performed, and ethical approvals sought from the Human Investigation Committee (HIC) at Memorial University of Newfoundland, and Research Proposal Approval Committee (RPAC) at Eastern Health, to obtain human resources data. Once all approvals were in place, data was obtained from Eastern Health, St. John's region, relating to the outcomes of interest for the four union groups, employed in acute care sectors. In addition, collective bargaining information was obtained from the NLHBA, relating to the unique collective bargaining cycles for each union group: AAHP, NAPE HS, NAPE LX, and NLNU.

Data was organized in EXCEL files, and counted based on timelines created for each union group, based on unique collective bargaining events. These time frames varied in length, as they were strictly related to each collective bargaining event, specifically when each event began and when they ended.

Once the data was organized, and counted, a descriptive analysis was performed to assess the rates of each of these events, which were then utilized to generate graphs used to give visual depiction of the rates of each outcome, associated with each collective bargaining event, per union. These descriptive results demonstrated considerable volatility in rates of each outcome. To clearly identify a relationship, regression analysis

was performed using negative binomial regression, since it is the appropriate technique to utilize for over dispersed count data covering variable lengths of exposure (Coxe, West & Aiken, 2009; Hilbe 2007; STATA, 2003).

Prior to doing the regression analysis, broad categories of collective bargaining events were developed, based on the collective bargaining events initially formulated at the beginning of the study. These broad categories helped organize the collective bargaining events into "themes" which facilitated the regression analysis. These broad categorical themes included: collective agreement expired (cb exp); collective agreement signed (cb signed); cooling off (cool off); heating up (heat up); resolution (resolved) and calm. Each of the main categories of collective bargaining fit into one of the five broad categories for the regression analysis procedure.

Results were mixed, in that there were some clear indications where outcomes of interest were statistically significant, suggesting an association between voice and collective bargaining, while others clearly were not. Furthermore, there were several periods where statistical significance was narrowly missed, suggesting that with additional statistical power, statistical significance may have been achieved.

Following the regression analysis, the results were ranked in order of the number of significant findings identified per outcome. Based on these results, the most oft used voice mechanism appears to be voluntary turnover, utilized by AAHP, NAPE HS and NLNU employees during periods of resolution, as well as by NAPE LX employees during heating up periods. Injury reporting and absence were next in significance, with injuries being reported by AAHP employees during collective agreement signed periods,

by NAPE HS employees during cooling off periods, and by NAPE LX employees during periods of resolution; absences were used by NAPE HS employees during heating up, and by NLNU employees during collective agreement signed and resolution. Adverse events were next in significance; appearing to be associated with NAPE HS employees during heating up and resolution periods. Grievances were last in significance, utilized by NAPE LX employees during resolution.

Adverse events was a difficult outcome to assess, as the data did not provide any information to identify which union was related to each adverse event. However, in the effort to have events and near-events freely reported, this was probably a conscious decision to not identify specific union groups. Therefore, all results related to adverse events are very difficult to formulate into conclusive results. That being said, analysis did suggest that there was an increase in adverse events during heating up and resolution events, for NAPE HS employees.

When considering the individual union groups, NAPE HS members appeared to utilize the outcomes most often, with five significant results revealed: injury reporting (during cooling off), absence (during heating up), voluntary turnover (during resolution) and adverse events (during heating up and resolution). It is interesting to note that they appear to utilize voice more often during resolution. NAPE LX and NLNU are next, having three significant results revealed: for NAPE LX, significant results were found with grievance (during resolution), injury reporting (during resolution) and voluntary turnover (during heating up); for NLNU, significant results were found with absence (during collective agreement signed and resolution) and with voluntary turnover (during

resolution). AAHP is last, with only two significant findings identified: injury reporting (during collective agreement signed) and voluntary turnover (during resolution).

These results are quite interesting, and one might question why NAPE HS utilizes the majority of voice outcomes, and likewise, why AAHP utilizes the least. Part of this question might be answered by considering they may have differing union culture and individual involvement in union activity. However, there are core differences that can be identified between these groups, in particular with different levels of education (most of the AAHP members have undergraduate and many would have graduate level university education), pay level, employment status, and professional responsibility. As well, a key factor of this group is that many of AAHP members are not required to work shift work. That being said, the differences in these groups and reasons why they have appeared to utilize mechanisms of voice differently is likely to be more complex then can be identified within this current study. Each of the unions under study has different collective bargaining cycles, with differing events occurring within each cycle, lasting for varying lengths of time, some being more volatile than others. Therefore, further qualitative research into the differing culture between union groups and their response to collective bargaining, would help shed light on this interesting phenomenon.

When examining the broad categories of collective bargaining, it is interesting to note that the majority of significant findings (in fact seven of them) occurred during periods of resolution, a time when settlements are reached, and the workplace milieu gradually returns to "normal". This is surprising, as this period of time is one, which would appear to be less volatile than others in the collective bargaining cycle. However, it could be a

reflection of dissatisfaction or disappointment with the bargaining outcome. Heating up was the next most oft noted broad category, with significant findings identified three times within the regression analysis. This result is less surprising as it is the period of time when a union is heading into a collective bargaining cycle or event, and is a "build up" into union involvement or activity, therefore it is a time when more volatility may be expected or observed.

Another interesting finding is that many "near miss" results occurred in periods of cooling off (by NAPE LX members in relation to injury reporting and absence, and NLNU members in relation to grievance); cooling off is a time when the bargaining cycle has ended, and individuals (hopefully) "let go" of difficult or frustrating negotiation periods. These close results lend support to the idea that this period of time can be problematic, and members might utilize mechanisms of voice as a way to work through their frustrations or discontent. Collective agreement expired period is associated with two near missed results (by AAHP and NAPE HS members in relation to adverse events); this period is associated with the predetermined time when union contracts expire. Heating up is another period where near missed results occur (by AAHP members in relation to voluntary turnover). This period of time might be considered more volatile as employees become heightened to the build up into bargaining. The final near miss occurs during resolution (by NAPE HS employees in relation to injury reporting), a time when settlements are reached.

There were limitations identified throughout this study. The data obtained was limited by the end dates for each data set, which was constrained by the timeframe that

the principal investigator requested its use. In particular, the absence data set was limited by the fact that it had been compiled for another purpose and could not be easily updated for the current study, and ended in 2004. Furthermore, much of the data was not gathered at the same point in time, which was further influenced by the transition from the old Health Care Corporation to the current Eastern Health organization. In addition, various departments and individuals within the human resources department were data holders for these data sets, and responsible for the collection and compilation of the information, with no uniform process of data collection used.

Furthermore, the relationship between mechanisms of voice and collective bargaining may actually be more complex than is assumed within this study. Additionally, the relationship between injury reporting and the rates of adverse events delves into the larger issue of organizational safety, which when relating to the collective bargaining process, may also be more complex than can be captured with administrative data. Further research is needed to examine these concepts and explore their particular complexities to gain additional insight into these relationships.

Further research should delve deeper into the themes identified in this current study, including the use of voluntary turnover being statistically significant for all unions, with the majority being utilized during the bargaining period of resolution. In addition, it would be beneficial to examine adverse events indicators once again, to try to find more conclusive results regarding their use during collective bargaining.

There would be value in examining this subject matter in a qualitative and quantitative manner to try to investigate the degree of awareness union members have

about collective bargaining events, and their personal views on their use, to broaden the richness of information gleaned from this study. Additionally, examining the same relationships in a different context, within the broad public sector, including government and manufacturing organizations would be beneficial to identify if there are similarities or differences with the current study.

Despite these limitations and observations that many phases of the bargaining cycle did not exhibit significant variation in voice behavior, a number of significant associations were found, which suggests that voice behaviors are associated with collective bargaining. Furthermore, many of the strongest results appear following resolution, suggesting that voice mechanisms are being used to express discontent, likely the outcome of the bargaining process and, perhaps, a lack of employment opportunities elsewhere.

Results of this study are relevant to this health care organization as well as others similar in size and structure. Furthermore, they may be applicable to others with multiple union groups and levels of staff with varying education levels, responsibilities and skill sets, within its mix. These results indicate that organizations need to be cognizant of the influence that collective bargaining events have upon their employees. Perhaps more importantly, they need to discover ways to engage and motivate them to be loyal workers who are not as susceptible to the changing union/employer environment and who are willing to continue working at a high level of skill, regardless of the volatility of the negotiation cycle.

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Appendix 1

Table 16: AAHP: Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Table17: NAPE HS: Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Table 18: NAPE LX: Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Table 19: NLNU: Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Table 16: AAHP: Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Union	Start Date	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining Event	Grievance	Injury	Absence	Turnover	Adverse Events	Exposure Period
AAHP	9-Feb-98	29-Mar-98	Opening Proposals	Heating Up	--	--	642 (13.10)	3 (0.06)	658 (13.43)	49
AAHP	30-Mar-98	18-Oct-98	Meetings	Heating Up	--	--	1903 (9.37)	24 (0.12)	2290 (11.28)	203
AAHP	19-Oct-98	17-Dec-98	Conciliation	Heating Up	--	--	785 (13.08)	2 (0.03)	690 (11.50)	60
AAHP	18-Dec-98	29-Apr-99	Meetings	Heating Up	--	--	1688 (12.69)	12 (0.09)	1419 (10.67)	133
AAHP	30-Apr-99	27-Jun-99	MOU Signed	Resolution	--	--	747 (12.66)	11 (0.19)	609 (10.32)	59
AAHP	28-Jun-99	28-Jul-99	Collective Agreement Signed	Collective Agreement Signed	--	--	377 (12.16)	0	356 (11.48)	31
AAHP	29-Jul-99	29-Aug-99	Cooling Off	Cooling Off	--	--	364 (11.38)	3 (0.09)	312 (9.75)	32
AAHP	30-Aug-99	4-Dec-00	Calm	Calm	--	--	6868 (14.87)	33 (0.07)	5017 (10.86)	462
AAHP	5-Dec-00	14-May-01	Union Requests Negotiations	Heating Up	2 (0.01)	5 (0.03)	3224 (19.90)	15 (0.09)	1879 (11.60)	162
AAHP	15-May-01	13-Jun-01	Opening Proposals	Heating Up	1 (0.03)	1 (0.03)	513 (17.10)	4 (0.13)	345 (11.50)	30
AAHP	14-Jun-01	30-Jun-01	Collective Agreement Expired	Collective Agreement Expired	0	1 (0.06)	333 (19.59)	3 (0.18)	215 (12.65)	17
AAHP	1-Jul-01	5-Sep-01	Heating Up	Heating Up	0	5 (0.07)	1264 (18.87)	5 (0.07)	680 (10.15)	67
AAHP	6-Sep-01	25-Sep-01	Meetings	Heating Up	0	3 (0.15)	388 (19.40)	2 (0.10)	217 (10.85)	20
AAHP	26-Sep-01	10-Oct-01	Union Applied for Conciliation	Heating Up	0	2 (0.13)	290 (19.33)	1 (0.07)	142 (9.47)	15
AAHP	11-Oct-01	28-Oct-01	Conciliation	Heating Up	2 (0.11)	0	291 (16.17)	0	176 (9.78)	18
AAHP	29-Oct-01	7-Feb-02	Tentative Agreement	Resolution	3 (0.03)	11 (0.11)	1877 (18.40)	5 (0.05)	1321 (12.95)	102
AAHP	8-Feb-02	8-Mar-02	Collective Agreement Signed	Collective Agreement Signed	1 (0.03)	13 (0.45)	465 (16.03)	2 (0.07)	339 (11.69)	29
AAHP	9-Mar-02	9-Apr-02	Cooling Off	Cooling Off	0	4 (0.13)	491 (15.34)	2 (0.06)	325 (10.16)	32
AAHP	10-Apr-02	29-Jun-04	Calm	Calm	12 (0.02)	68 (0.08)	15235 (18.76)	38 (0.05)	8773 (10.80)	812
AAHP	30-Jun-04	7-Jul-04	Collective Agreement Expired	Collective Agreement Expired	0	1 (0.13)	158 (19.75)	0	117 (14.63)	8
AAHP	8-Jul-04	25-May-05	Union Deferred Notice to Bargain	Heating Up	3 (0.01)	43 (0.13)	2530 (16.32) *	13 (0.04)	3943 (12.25)	322
AAHP	26-May-05	21-Mar-06	Gov't. Served Notice to Negotiate	Heating Up	3 (0.01)	22 (0.07)	--	22 (0.07)	3467 (11.56)	300
AAHP	22-Mar-06	6-Jul-06	Negotiations	Heating Up	2 (0.02)	6 (0.06)	--	5 (0.05)	1332 (12.45)	107
AAHP	7-Jul-06	20-Aug-06	Ratified Agreement	Resolution	1 (0.02)	4 (0.09)	--	5 (0.11)	566 (12.58)	45
AAHP	21-Aug-06	21-Sep-06	Collective Agreement Signed	Collective Agreement Signed	0	4 (0.13)	--	1 (0.03)	404 (12.63)	32
AAHP	22-Sep-06	22-Oct-06	Cooling Off	Cooling Off	0	3 (0.10)	--	0	406 (13.10)	31
AAHP	23-Oct-06	26-Apr-07	Calm	Calm	5 (0.03)	8 (0.04)	--	4 (0.02)	2531 (13.61)	186

*Absence data set ends December 10, 2004 (exposure period=155). Source: NLHBA Collective Bargaining Information; AAHP HR data sets, Eastern Health

Table 17: NAPE HS: Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Union	Start Date	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining Event	Grievance	Injury	Absence	Turnover	Adverse Events	Exposure Period
NAPE HS	1-Jan-97	30-Nov-97	Calm	Calm	--	--	--	87 (0.26)	1887 (5.65)	334
NAPE HS	1-Dec-97	31-Dec-97	Heating Up	Heating Up	--	--	--	5 (0.16)	354 (11.42)	31
NAPE HS	1-Jan-98	23-Feb-98	Negotiations	Heating Up	--	--	7869 (145.72)	8 (0.15)	710 (13.15)	54
NAPE HS	24-Feb-98	1-Jun-98	Strike Notice	Heating Up	--	--	12957 (132.21)	47 (0.48)	1205 (12.30)	98
NAPE HS	2-Jun-98	2-Jul-98	Negotiated Settlement	Resolution	--	--	3662 (118.13)	11 (0.35)	392 (12.65)	31
NAPE HS	3-Jul-98	3-Aug-98	Cooling Off	Cooling Off	--	--	3669 (114.66)	11 (0.34)	338 (10.56)	32
NAPE HS	4-Aug-98	4-Sept-00	Calm	Calm	--	--	117746 (154.32)	214 (0.28)	8214 (10.77)	763
NAPE HS	5-Sept-00	5-Oct-00	Heating Up	Heating Up	--	--	4845 (156.29)	20 (0.65)	332 (10.71)	31
NAPE HS	6-Oct-00	28-Jan-01	Opening Proposals	Heating Up	9 (0.08)	--	15978 (138.94)	24 (0.21)	1236 (10.75)	115
NAPE HS	29-Jan-01	5-Mar-01	Conciliation	Heating Up	18 (0.50)	--	6965 (193.47)	7 (0.19)	475 (13.19)	36
NAPE HS	6-Mar-01	22-Mar-01	Strike Vote	Heating Up	9 (0.53)	--	2793 (164.29)	2 (0.12)	227 (13.35)	17
NAPE HS	23-Mar-01	31-Mar-01	Collective Agreement Expired	Collective Agreement Expired	7 (0.78)	--	1234 (137.11)	4 (0.44)	98 (10.89)	9
NAPE HS	1-Apr-01	5-Apr-01	Strike	Strike	0	1 (0.20)	7769 (1553.80)	3 (0.60)	45 (9.00)	5
NAPE HS	6-Apr-01	6-May-01	Cooling off	Cooling Off	8 (0.26)	40 (1.29)	4997 (161.19)	3 (0.10)	363 (11.71)	31
NAPE HS	7-May-01	14-May-01	Negotiated Settlement	Resolution	7 (0.88)	13 (1.63)	1292 (161.50)	5 (0.63)	106 (13.25)	8
NAPE HS	15-May-01	5-Jun-01	MOU Signed	Resolution	10 (0.45)	32 (1.45)	2970 (135.00)	10 (0.45)	255 (11.59)	22
NAPE HS	6-Jun-01	9-Jul-01	Ratification Vote	Resolution	11 (0.32)	48 (1.41)	4607 (135.50)	11 (0.32)	406 (11.94)	34
NAPE HS	10-Jul-01	10-Aug-01	Collective Agreement Signed	Collective Agreement Signed	20 (0.63)	41 (1.28)	4412 (137.88)	10 (0.31)	335 (10.47)	32
NAPE HS	11-Aug-01	11-Sept-01	Cooling Off	Cooling Off	12 (0.38)	31 (0.97)	4689 (146.53)	7 (0.22)	289 (9.03)	32
NAPE HS	12-Sept-01	15-Jun-03	Calm	Calm	530 (0.83)	1347 (2.10)	97369 (151.67)	158 (0.25)	6914 (10.77)	642
NAPE HS	16-Jun-03	31-Oct-03	Union Requests Negotiations	Heating Up	52 (0.38)	323 (2.34)	18590 (134.71)	37 (0.27)	1549 (11.22)	138
NAPE HS	1-Nov-03	9-Nov-03	Heating Up	Heating Up	5 (0.56)	16 (1.78)	1108 (123.11)	2 (0.22)	107 (11.89)	9
NAPE HS	10-Nov-03	2-Dec-03	Opening Proposals	Heating Up	11 (0.48)	39 (1.70)	3172 (137.91)	3 (0.13)	295 (12.83)	23
NAPE HS	3-Dec-03	14-Jan-04	Union wrote NLHBA to Negotiate	Heating Up	16 (0.37)	91 (2.12)	6194 (144.05)	4 (0.09)	490 (11.40)	43
NAPE HS	15-Jan-04	16-Feb-04	Union Requests Conciliation	Heating Up	21 (0.64)	73 (2.21)	5199 (157.55)	3 (0.09)	397 (12.03)	33
NAPE HS	17-Feb-04	3-Mar-04	Strike Votes Start	Heating Up	11 (0.69)	38 (2.38)	2586 (161.63)	5 (0.31)	252 (15.75)	16
NAPE HS	4-Mar-04	20-Mar-04	Strike Votes End	Heating Up	8 (0.47)	34 (2.00)	2635 (155.00)	3 (0.18)	203 (11.94)	17
NAPE HS	21-Mar-04	31-Mar-04	Collective Agreement Expired	Collective Agreement Expired	5 (0.45)	20 (1.82)	1625 (147.73)	3 (0.27)	112 (10.18)	11
NAPE HS	1-Apr-04	3-May-04	Strike	Strike	1 (0.03)	14 (0.42)	5325 (161.36)	3 (0.09)	306 (9.27)	33
NAPE HS	4-May-04	4-Jun-04	Collective Agreement Signed	Collective Agreement Signed	20 (0.63)	57 (1.78)	4140 (129.38)	2 (0.06)	356 (11.13)	32
NAPE HS	5-Jun-04	5-Jul-04	Cooling Off	Cooling Off	16 (0.52)	66 (2.13)	4866 (156.97)	11 (0.35)	351 (11.32)	31
NAPE HS	6-Jul-04	30-Mar-08	Calm	Calm	522 (0.49)*	2160 (2.05)**	19952 (144.58)***	295 (0.22)	17839 (13.08)	1364
NAPE HS	31-Mar-08	30-Apr-08	Collective Agreement Expired	Collective Agreement Expired	--	--	--	9 (0.29)	447 (14.42)	31

*Grievance data set ends May 29, 2007 (exposure period=1056) ** Injury data set ends March 30, 2007 (exposure period=1055) ***Absence data set ends December 10, 2004 (exposure period=138)
Source: NLHBA Collective Bargaining Information; NAPE HS HR data sets, Eastern Health

Table 18: NAPE LX Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Union	Start Date	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining Event	Grievance	Injury	Absence	Turnover	Adverse Events	Exposure Period
NAPE LX	1-Jan-97	16-Jun-97	Calm	Calm	--	--	--	2 (0.01)	444 (2.66)	167
NAPE LX	17-Jun-97	17-Jul-97	Opening Proposals	Heating Up	--	--	--	0	141 (4.86)	29
NAPE LX	18-Jul-97	8-Mar-98	Heating Up	Heating Up	--	--	1590 (6.79)	4 (0.02)	2566 (10.97)	234
NAPE LX	9-Mar-98	24-Nov-98	MOU Signed	Resolution	--	--	5238 (20.07)	13 (0.05)	2969 (11.38)	261
NAPE LX	25-Nov-98	25-Dec-98	Collective Agreement Signed	Collective Agreement Signed	--	--	656 (21.16)	3 (0.10)	327 (10.55)	31
NAPE LX	26-Dec-98	26-Jan-99	Cooling Off	Cooling Off	--	--	784 (24.50)	0	346 (10.81)	32
NAPE LX	27-Jan-99	12-Oct-00	Calm	Calm	--	--	12875 (20.60)	16 (0.03)	6717 (10.75)	625
NAPE LX	13-Oct-00	17-Oct-00	Opening Proposals	Heating Up	--	--	89 (17.80)	0	72 (14.40)	5
NAPE LX	18-Oct-00	24-Oct-00	Strike	Strike	--	--	1494 (213.43)	0	75 (10.71)	7
NAPE LX	25-Oct-00	25-Dec-00	Mediated Return to Work	Cooling Off	--	--	1693 (27.31)	0	647 (10.45)	62
NAPE LX	26-Dec-00	29-Mar-01	Heating Up	Heating Up	7 (0.07)	--	2049 (21.80)	0	1152 (12.26)	94
NAPE LX	30-Mar-01	31-Mar-01	Collective Agreement Expired	Collective Agreement Expired	0	--	31 (15.50)	0	12 (6.00)	2
NAPE LX	1-Apr-01	5-Apr-01	Strike	Strike	0	0	1603 (320.60)	0	45 (9.00)	5
NAPE LX	6-Apr-01	18-Jul-01	Negotiated Settlement	Resolution	12 (0.12)	7 (0.07)	1981 (19.05)	1 (0.01)	1217 (11.70)	104
NAPE LX	19-Jul-01	19-Aug-01	Collective Agreement Signed	Collective Agreement Signed	1 (0.03)	3 (0.09)	454 (14.19)	0	338 (10.56)	32
NAPE LX	20-Aug-01	20-Sept-01	Cooling Off	Cooling Off	2 (0.06)	1 (0.03)	632 (19.75)	2 (0.06)	306 (9.56)	32
NAPE LX	21-Sept-01	6-Nov-03	Calm	Calm	35 (0.05)	115 (0.15)	14636 (18.84)	22 (0.03)	8439 (10.86)	777
NAPE LX	7-Nov-03	14-Jan-04	Opening Proposals	Heating Up	3 (0.04)	6 (0.09)	1272 (18.43)	1 (0.01)	809 (11.72)	69
NAPE LX	15-Jan-04	25-Jan-04	Union Requests Conciliation	Heating Up	0	3 (0.27)	192 (17.45)	0	114 (10.36)	11
NAPE LX	26-Jan-04	29-Mar-04	Heating Up	Heating Up	2 (0.03)	17 (0.27)	1433 (22.39)	0	824 (12.88)	64
NAPE LX	30-Mar-04	31-Mar-04	Collective Agreement Expired	Collective Agreement Expired	0	0	38 (19.00)	0	26 (13.00)	2
NAPE LX	1-Apr-04	3-May-04	Strike	Strike	0	0	1085 (32.88)	0	306 (9.27)	33
NAPE LX	4-May-04	4-Jun-04	Collective Agreement Signed	Collective Agreement Signed	2 (0.06)	3 (0.09)	669 (20.91)	0	356 (11.13)	32
NAPE LX	5-Jun-04	5-Jul-04	Cooling Off	Cooling Off	0	3 (0.10)	637 (20.55)	0	351 (11.32)	31
NAPE LX	6-Jul-04	30-Mar-08	Calm	Calm	36 (0.03)	195 (0.14)*	2539 (18.40) **	45 (0.03)	17839 (13.08)	1364
NAPE LX	31-Mar-08	30-Apr-08	Collective Agreement Expired	Collective Agreement Expired	0	--	--	0	447 (14.42)	31

*Injury data set ends March 28, 2007 (exposure period=1362) ** Absence data set ends December 10, 2004 (exposure period=138)
Source: NLHBA Collective Bargaining Information; NAPE LX HR data sets, Eastern Health

Table 19: NLNU: Collective Bargaining Events, Associated Broad Categories and Outcomes, with Rates in Parentheses.

Union	Start Sate	End Date	Description of Collective Bargaining Event	Broad Description of Collective Bargaining	Grievance	Injury	Absence	Turnover	Adverse Events	Exposure Period
NLNU	1-Jan-95	12-Jan-95	Calm	Calm	--	--	--	--	--	12
NLNU	13-Jan-95	13-Feb-95	Collective Agreement Signed	Collective Agreement Signed	--	--	--	--	--	32
NLNU	14-Feb-95	14-Mar-95	Cooling Off	Cooling Off	--	--	--	--	--	29
NLNU	15-Mar-95	30-Dec-95	Calm	Calm	--	--	--	--	--	291
NLNU	31-Dec-95	31-Jan-96	Collective Agreement Expired	Collective Agreement Expired	--	--	--	--	--	32
NLNU	1-Feb-96	26-Nov-97	Heating Up	Heating Up	--	--	--	60 (0.09)	1836 (2.76)	665
NLNU	27-Nov-97	27-Dec-97	Opening Proposals	Heating Up	--	--	--	2 (0.06)	374 (12.06)	31
NLNU	28-Dec-97	25-Jan-99	Heating Up	Heating Up	--	--	29636 (75.22)	77 (0.20)	4573 (11.61)	394
NLNU	26-Jan-99	15-Mar-99	Strike Vote	Heating Up	--	--	4202 (85.76)	7 (0.14)	611 (12.47)	49
NLNU	16-Mar-99	23-Mar-99	Conciliation	Heating Up	--	--	577 (72.13)	1 (0.13)	86 (10.75)	8
NLNU	24-Mar-99	31-Mar-99	Strike	Strike	--	--	5450 (681.25)	1 (0.13)	62 (7.75)	8
NLNU	1-Apr-99	1-May-99	Legislated Agreement	Resolution	--	--	3552 (114.58)	1 (0.03)	293 (9.45)	31
NLNU	2-May-99	2-Jun-99	Cooling Off	Cooling Off	--	--	2474 (77.31)	8 (0.25)	330 (10.31)	32
NLNU	3-Jun-99	4-Oct-01	Calm	Calm	132 (0.15)	209 (0.24)	67851 (79.36)	293 (0.34)	9368 (10.96)	855
NLNU	5-Oct-01	14-Nov-01	Opening Proposals	Heating Up	23 (0.56)	50 (1.22)	2942 (71.76)	6 (0.15)	467 (11.39)	41
NLNU	15-Nov-01	26-Feb-02	Meetings	Heating Up	53 (0.51)	160 (1.54)	8141 (78.28)	21 (0.20)	1317 (12.66)	104
NLNU	27-Feb-02	5-Mar-02	Conciliation Requested by Union	Heating Up	0	10 (1.43)	573 (81.86)	3 (0.43)	76 (10.86)	7
NLNU	6-Mar-02	23-May-02	Conciliation	Heating Up	50 (0.63)	120 (1.52)	6476 (81.97)	25 (0.32)	817 (10.34)	79
NLNU	24-May-02	21-Jul-02	Ratified Agreement	Resolution	31 (0.53)	95 (1.61)	4408 (74.71)	7 (0.12)	556 (9.42)	59
NLNU	22-Jul-02	22-Aug-02	Collective Agreement Signed	Collective Agreement Signed	17 (0.53)	32 (1.00)	2352 (73.50)	3 (0.09)	240 (7.50)	32
NLNU	23-Aug-02	23-Sept-02	Cooling Off	Cooling Off	7 (0.22)	57 (1.78)	2441 (76.28)	9 (0.28)	295 (9.22)	32
NLNU	24-Sept-02	10-Jun-04	Calm	Calm	299 (0.48)	887 (1.42)	50460 (80.61)	65 (0.10)	7005 (11.19)	626
NLNU	11-Jun-04	29-Jun-04	Union Announces Not Return to Bargain in 2004	Heating Up	6 (0.32)	23 (1.21)	1212 (63.79)	0	209 (11.00)	19
NLNU	30-Jun-04	30-Jul-04	Collective Agreement Expired	Collective Agreement Expired	2 (0.06)	53 (1.71)	10060 (324.52)	2 (0.06)	474 (15.29)	31
NLNU	31-Jul-04	25-May-05	Heating up	Heating Up	84 (0.28)	490 (1.64)	--	30 (0.10)	3586 (11.99)	299
NLNU	26-May-05	23-Feb-06	Government Serves Notice to Negotiate	Heating Up	47 (0.17)	380 (1.39)	--	40 (0.15)	3188 (11.64)	274
NLNU	24-Feb-06	13-Apr-06	Opening Proposals	Heating Up	2 (0.04)	72 (1.47)	--	4 (0.08)	558 (11.39)	49
NLNU	14-Apr-06	14-May-06	Meetings	Heating Up	1 (0.03)	46 (1.48)	--	8 (0.26)	399 (12.87)	31
NLNU	15-May-06	23-May-06	Employer Requests Conciliation	Heating Up	0	9 (1.00)	--	1 (0.11)	121 (13.44)	9
NLNU	24-May-06	3-Jul-06	Meetings	Heating Up	1 (0.02)	51 (1.24)	--	9 (0.22)	501 (12.22)	41
NLNU	4-Jul-06	5-Jul-06	Conciliation	Heating Up	0	3 (1.50)	--	0	25 (12.50)	2
NLNU	6-Jul-06	22-Oct-06	Final Offer	Heating Up	21 (0.19)	146 (1.34)	--	20 (0.18)	1383 (12.69)	109
NLNU	23-Oct-06	3-Dec-06	Final Agreement	Heating Up	14 (0.33)	44 (1.05)	--	5 (0.12)	567 (13.50)	42
NLNU	4-Dec-06	25-Jan-07	Ratified Agreement	Resolution	13 (0.25)	72 (1.36)	--	8 (0.15)	587 (11.08)	53
NLNU	26-Jan-07	26-Feb-07	Collective Agreement Signed	Collective Agreement Signed	1 (0.03)	40 (1.25)	--	4 (0.13)	519 (16.22)	32
NLNU	27-Feb-07	27-Mar-07	Cooling Off	Cooling Off	2 (0.07)	49 (1.69)	--	7 (0.24)	472 (16.28)	29
NLNU	28-Mar-07	29-Jun-08	Calm	Calm	4 (0.10) *	6 (2.00) **	--	77 (0.17)	6840 (14.87)	460
NLNU	30-Jun-08	30-Jul-08	Collective Agreement Expired	Collective Agreement Expired	--	--	--	5 (0.16)	113 (3.65)	31

*Grievance data set ends May 7, 2007 (exposure period=41) **Injury data set ends March 30, 2007 (exposure period=3). Source: NLHBA Collective Bargaining Information; NLNU HR data sets, Eastern Health