University of Alberta

Understanding Absenteeism in Construction:
a Pilot Study on Industrial Construction in Alberta

by

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This thesis is dedicated to my mother, my father and my uncle
for their love, endless support
and encouragement.

Abstract

Absenteeism is a factor that adversely influences construction productivity. Construction employers in Alberta have been trying to address high levels of absenteeism on their projects but they have not been successful so far. This study aims at a better understanding of absenteeism on construction projects for its possible mitigation in the future.

A hierarchy of causes of absence and factors affecting it in construction projects were identified. A survey and an Absenteeism Tracking Tool designed to capture the causes of absence were piloted on an industrial multi-contractor project in Alberta. Different survey administration methods were tested to successfully administer the survey.

The study identified top ten causes of absence on the pilot project. Using statistical analyses (e.g., correlation with dummy variables), the study found that specific groups may have different absence cultures and attitudes toward absenteeism. Such findings can be used to improve the absence culture among the designated workforce.

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1. CHAPTER 1- Introduction

1.1 Background and Problem Statement

Absenteeism is a major problem in large industrial projects in Alberta (A Workforce Strategy for Alberta's Energy Sector 2007). Absenteeism creates detrimental impacts on construction projects, including the increase in manpower to meet staffing needs, the loss of revenues as a result of not meeting project schedules, the underutilization of capital investments (e.g., tools and equipment), the interruption of work flow and task accomplishment, increased overtime, and employee fatigue (Business Roundtable 1982). Rhodes and Steers (1981) argue that absenteeism results in productivity losses and loss of good will among employees. On the other hand, replacing highly skilled employees who are absent, with people of similar skills may result in performance and safety issues for the organization (Firns et al. 2006 referring to Ferguson et al., 2001). These mentioned negative outcomes are compounded by long-term harmful effects of absenteeism on job satisfaction, performance and organizational climate. (Firns et al. 2006 referring to Sagie 1998, Bycio 1992, Mason and Griffin 2003).

Thus, absenteeism is a viable threat to time and cost estimates for construction projects, which potentially could result in a significant loss of money for the construction company involved. As a result, different absence control programs and incentives have been utilized in an attempt to reduce absenteeism. While companies incur significant costs to implement these programs, absenteeism remains prevalent. Therefore, a better understanding of absenteeism in construction is required to mitigate this phenomenon.

Previous research on absenteeism in the construction industry provides valuable information about the major causes of absenteeism, the factors contributing to it, and its impact on construction productivity. However, these studies either were conducted in the 1980's or focus only on a specific trade (i.e., electricians) in construction. Also, no standard tool has been developed in construction industry to gather and analyze information about employee absence. In addition, different employee groups (e.g., apprentices, journeymen, different age groups and employees with different tenure) can be examined to gain a better understanding of this phenomenon in construction for proposing possible mitigation strategies in the future.

This research was conducted jointly with the Absenteeism Sub-Committee of the Construction Owners Association of Alberta (COAA). The Absenteeism Sub-Committee consists of the researchers and experts from large industrial construction projects in Alberta, who provided expert opinions for this study.

1.2 Purpose of the Study

This research aims to achieve a better understanding of absenteeism among a variety of trades and positions in industrial construction projects in Alberta and to identify the actual causes of absenteeism in those environments. Descriptive and statistical analyses are used to achieve this goal. Furthermore, this research includes the following sub-objectives:

- To develop a hierarchy of causes of absence and factors affecting it
- To design a comprehensive tool including a survey to identify the actual causes of absence, an absenteeism tracking tool to store and analyze the

collected information and a method to administer the survey on a construction jobsite

- To test the developed tool (i.e., the survey , the tracking tool and the administration method) on a construction project
- To analyze the survey responses obtained from the pilot study survey to validate the usefulness of the developed survey and to obtain an in-depth understanding of the causes of absence

1.3 Research Methodology

This research follows several steps, as shown in Figure 1-1. First, an extensive review of the relevant literature from the construction industry and other disciplines was conducted to examine previous research efforts on absenteeism. The definitions and classifications of absence suggested by previous researchers were reviewed and the causes of absence and the factors affecting it identified in previous research were examined. Second, a definition of absence for construction projects was developed to guide the direction of this study—some of the existing classifications of absence also were selected to be measured during this research. Third, the causes of absence and the factors affecting it that were identified in previous research were tailored to suit construction projects and a list of possible causes for absence and the factors affecting it was developed. This process was accomplished through a series of COAA Absenteeism Sub-committee meetings and a focus group session in the COAA Best Practices Conference XVI held on May 21, 2008 (with 20 industry experts) (The COAA conference is held annually in order to discuss significant issues facing the construction industry in Alberta).

Subsequently, the causes and the factors were classified into a hierarchy of categories. A survey to collect information about absence (e.g., factors) and its actual causes was designed, and the Absenteeism Tracking Tool was developed to keep track of the collected responses and to facilitate data analysis. The survey and the tracking tool then were piloted in a multi-contractor industrial construction project in Alberta. Since causes of absenteeism are personal and sensitive for respondents, obtaining an acceptable response rate was a challenge. Four different survey administration methods therefore were tested during the pilot study. After identifying the best administration method, descriptive and statistical analyses were conducted on collected responses (in the successful method) to obtain a better understanding of absenteeism.

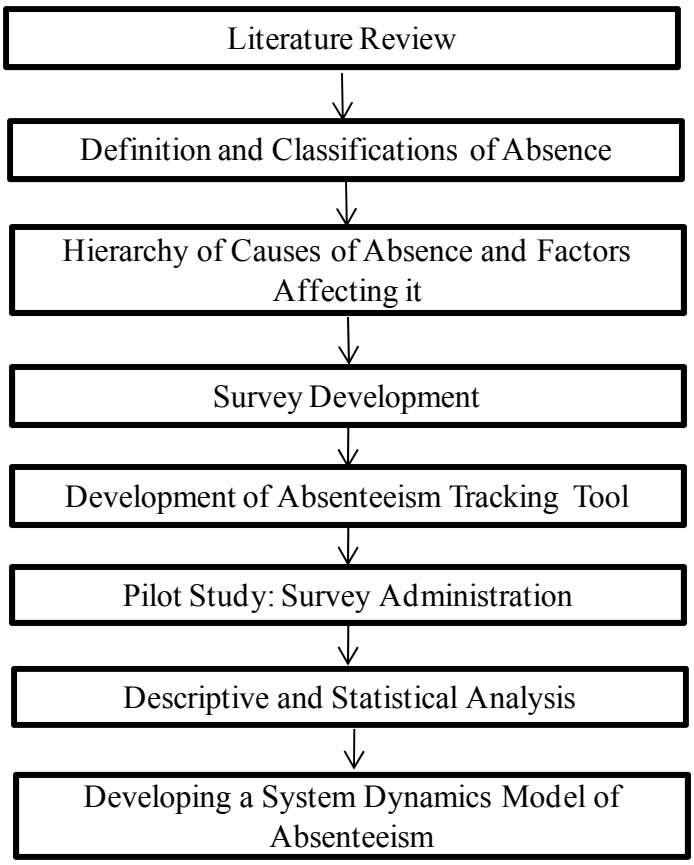


Figure 1-1 Overview of Research Methodology

1.4 Expected contributions

This study is expected to make contributions because of its attempts to:

a. Establish a replicable method to identify the main drivers of absence on construction projects (i.e., developing a standard survey and finding a way to successfully administer it).

b. Employ descriptive and statistical analyses (e.g.., dummy variables) on the obtained responses in order to obtain a better understanding of absenteeism on construction projects.

c. Taking a systematic approach to absenteeism research in construction by providing a comprehensive hierarchy of causes of absence specific

for construction projects as well as a hierarchy of factors that might have correlations with absence decisions.

1.5 Thesis Organization

Chapter 2 contains a literature review on absenteeism in the construction industry and other disciplines. It covers the existing definitions of absenteeism and its classifications. Throughout the review of literature from other disciplines, the individual and cultural approaches to absenteeism as well as their suggested mitigation strategies are covered.

Chapter 3 presents the process of developing the Absenteeism Tracking Tool. It elaborates the process for developing the hierarchies of causes of absence, the factors affecting absence, the work satisfaction survey, and the absence database. It also covers the benefits of the developed Absenteeism Tracking Tool.

Chapter 4 presents the methodologies tested to successfully administer the survey among construction trades in the pilot project. It also describes challenges faced and the lessons learned from each method and the reasons for the success of the chosen method.

Chapter 5 presents the results of descriptive and statistical data analysis performed on the returned responses. It provides a review of the dummy coding technique used for correlation analyses. Responses are analyzed using different classifications of absenteeism and respondents are analyzed by age group, position, and tenure.

Chapter 6 includes research conclusions, contributions, and the limitations of the study, as well as recommendations for future research.

2 CHAPTER 2- Literature Review

2.1 Introduction

Absenteeism is a recognized problem in widely diverse industries. Research has been conducted in different disciplines to explore this problem for its mitigation. This has resulted in a methodological diversity (Johns 2003).

This chapter reviews previous studies on absenteeism in the construction industry and other disciplines. It also covers the mitigation strategies proposed by each study. Furthermore, both individual-level and group-level approaches to absenteeism are covered in this chapter.

2.2 Absenteeism Research in Construction

There have been a few research efforts to address absenteeism in the construction industry. The Business Round Table (BRT) published a report on absenteeism in 1982. In this report, high absenteeism is identified as a factor that has a negative impact on construction productivity. The BRT (1982) report provides reasons for absenteeism and turnover. Over 1000 questionnaires from participants from different trades were collected. Participants were asked to rate the causes of absence on a scale of 1 to 10. As a result, the top six causes of absenteeism were reported as: 1) unsafe working conditions; 2) excessive rework; 3) travel distance; 4) poor supervision; 5) poor overall management; 6) personal and family illness. The BRT (1982) proposes a method to estimate the effects of absenteeism on direct labour costs.

They propose several mitigation strategies for contractors and owners to reduce absenteeism. First, contractors need to monitor employee attendance records and

to have a clear policy to deal with chronic absentees. They also must have good communication with their employees to identify employee concerns and to take appropriate actions to address those concerns, thus showing employees that their concerns have been heard. Further, contractors should train their supervisors in interpersonal and motivational skills, then create small work groups, which are given as much autonomy as possible, and effectively communicate the organizational and work unit goals. In addition, the BRT (1982) recommends that owners ask contractors to prepare periodic reports on absenteeism and to encourage and support them in their attempts to motivate employee attendance. Owners need to monitor contractor safety programs and to identify and mitigate the factors that affect absenteeism, such as poorly maintained or unreasonably located parking lots, that are within the control of the contractors.

Hinze et al. (1985) studied construction worker absenteeism by administering an anonymous questionnaire to workers from five construction projects. After conducting statistical analyses on the 100 received responses, the following main conclusions were derived: 1) absenteeism is lower in cohesive groups; 2) absenteeism is lower when management stresses its disapproval of absenteeism; 3) absenteeism is also lower when workers perceive their work as challenging; 4) the commuting distance to the jobsite adversely affects absenteeism; 5) management plays an important role in reducing absenteeism in the workplace.

Hinze et al. (1985) conclude that well performed teamwork with well-defined goals increases peer pressure for attendance: a cohesive group spirit reduces absenteeism. Foremen play an important role in creating an organized, goal

oriented group. Management thus should train foremen to be able to form a motivated, organized, and cohesive crew. Further, companies need to accept that voluntary absences can be decreased but cannot be eliminated (voluntary absences are influenced by the motivation for employees to attend; the employee thus has control. Involuntary absences, in contrast, are the inability of a worder to attend the job; the employee has little control (Steers and Rhodes (1978) and Hinze et al. (1985))). Actions therefore should be taken to address absences that occur due to workplace conditions.

Hanna et al. (2005) administered two separate qualitative and quantitative surveys on absenteeism in electrical construction and its impact on productivity. The qualitative survey asked respondents (i.e., union electricians and company managers) to rate the reasons for which electricians missed work. After analyzing the responses obtained from company managers and union electricians, the following were identified as the top five causes of absenteeism. From the electrician's perspective, they were: 1) personal and family illness; 2) injury; 3) doctor/dental appointments; 4) bad weather; 5) unsafe working conditions. From the managers' point of view, they were: 1) personal and family illness; 2) simply did not feel like working; 3) doctor/dental appointments; 4) drugs or alcohol; 5) lack of responsibility. A quantitative survey was administered to quantify the impact of absenteeism on productivity. The researchers developed a descriptive model to explain the relationship between absenteeism and productivity based on the responses. Table 2-1 compares the causes of absence identified in different studies.

Table 2-1 Comparison Between Causes of Absence Identified in Different Studies

BRT (1982)		Hanna et al. (2005), electricians' perspective		Hanna et al. (2005) , managers' perspective	
Causes of Absence	Relative strength	Causes of Absence	Average rating	Causes of Absence	Average rating
unsafe working conditions	9	personal and family illness	6.04	personal and family illness	6.37
excessive rework	8	Injury	5.15	simply did not feel like working	5.75
travel distance	8	doctor/dental appointments	4.8	doctor/dental appointments	5.61
poor supervision	6	bad weather	4.35	drugs or alcohol	4.76
poor overall management	5	unsafe working conditions	3.04	lack of responsibility	4.33

Building on the suggestions from the respondents, Hanna et al. propose strategies to reduce absenteeism. They suggest that contractors redefine overtime to prevent employees from missing a day of regular pay in favor of work that pays time-and-a-half. They also recommend that contractors offer bonus programs to promote teamwork. Hanna et al. (2005) also suggest modifying the 5-day, 40-hour workweek schedule to give more time for employees to conduct other business or to have time for recreational activities. For example, they suggest changing it to four days and 40 hours or to four 9-hour days with a half day on Fridays. Further, they recommend establishing a proactive safety program to reduce injuries and to increase the willingness of employees to attend a job that is considered safe. Overall, a company of choice that stimulates worker productivity and loyalty by treating employees with respect, which includes an open-door policy between

workers and management and provides employee training and assistance, needs to be created.

2.3 Absenteeism Research in Other Disciplines

Absenteeism has been examined extensively in different academic and professional disciplines, such as psychology, public health, management, industrial relations, etc. (Johns 2003). These efforts have tried to develop attendance models, to propose absence mitigation strategies, to examine employees' conception of their own and others' absence behavior, and to measure employee absence. They have focused on both individual-level and group-level aspects. Their findings may not be completely applicable to the construction industry (due to differences in working environments, the nature of the jobs, and the employment systems), yet their ideas can be applied to the construction industry to better understand absenteeism and to mitigate it.

Steers and Rhodes (1978) suggest a conceptual model of employee attendance based on a review of 104 empirical studies. Managers and researchers assume that job dissatisfaction is the primary cause of absenteeism; Steers and Rhodes (1978) argue that there is little support for that contention. Referring to Nicholson et al. (1976), they state that job satisfaction and absenteeism are unsubstantially related and conclude that findings show the existence of personal and organizational factors that have a greater influence on employee absence. They then introduce their attendance model and argue that their model should be tested using experimental methods.

In their model, Steers and Rhodes (1978) suggest that attendance is influenced by two main factors: the motivation and the ability to attend. The job situation (e.g., job scope, job level, role stress, work group size, co-worker relations, etc.) and employee values and expectations affect job satisfaction, which consequently affect the motivation to attend. The pressure to attend (e.g., economic/market conditions, work group norms, incentive/reward systems, etc.) also affects motivation. Further, personal characteristics, such as education, tenure, age, and sex, affect employee values and the ability to attend.

They also argue that a level of absenteeism might be healthy for an organization, since it allows employees a relief from stressful conditions and thus maintains their mental health. Efforts to enforce perfect attendance in fact may lead to reduced productivity.

Steers and Rhodes (1981) subsequently revisited and reviewed their model and discussed its implications regarding the reduction of absenteeism. They suggested the following strategies to mitigate absenteeism: 1) try to enhance employee satisfaction with the job by enriching their tasks to the highest possible extent; 2) reduce work stress by decreasing the workload; 3) reduce role vagueness by providing training and sets of clear instructions; 4) develop supervisors' and managers' skills to allow them to serve as counselors as well as directors and to decrease employee surveillance; 5) clarify company expectations of employees, which potentially reduces stress and role conflicts; 6) hire individuals with a strong work ethic; 7) design an appropriate incentive/reward system which is both attainable and tied directly to attendance (e.g., cash bonus for perfect attendance,

lottery reward system); 8) offer incentives that employees value, such as the option of a three day weekend instead of additional pay; 9) practice caution in applying punitive sanctions, since the results can be contrary to expectations; 10) form small work groups with considerable task interdependence and autonomy to increase group pressure to attend; 11) facilitate employee attendance by providing services such as day care for employees with young children; 12) provide shuttle busses to facilitate employee transportation; 13) provide counseling programs to assist employees with personal or family problems.

Johns (1994) attempted to examine employees' and managers' conceptions regarding how they perceive their own, other employees', and their work groups' absence behaviors. Referring to Ross (1977), Johns (1994) states that people tend to be egocentric with regard to their own absence behavior: they view their own behavior as reasonable, sensible, and legitimate compared to others.

After studying the employees and first level managers of a large utility company, Johns (1994) came to the following conclusions. Employees tend to underestimate their work groups' absenteeism in comparison to the general absenteeism in their occupation. Employees also underestimate personal absenteeism in comparison to an average member in their work group. Managers underestimate the absenteeism of their work groups in comparison to the company average. Further, managers estimate that the occupational absence norm is greater than their company's absence norm. The study also found that employees underestimate their self-reported absenteeism in comparison to their actual absenteeism. These findings

reveal a self-serving behavior by both employees and managers in terms of absence behavior.

Chadwick-Jones et al. (1982), Johns & Nicholson (1982), and Nicholson & Johns (1985) argue that most models of absence causation have been individual-level models; absenteeism likely is affected by social influences and can be a group-level phenomenon. According to Johns (2003), the effect of social influences and the existence of an absence culture has been proven in Johns (1997) and Kaiser (1998).

Johns and Nicholson (1982) defines absence culture as "the set of shared understandings about absence legitimacy… and the established custom and practice of employee absence behavior and its control." Culture may directly affect the pattern and level of absence for a group of workers. In fact, the culture includes tolerated levels of absence (Chadwick-Jones et al., 1982). Employees observe the absence behavior of their co-workers and the reactions to that behavior and adopt an absence behavior that reflects their observations (Nicholson & Johns, 1985 referring to Salancik & Pfeffer, 1978).

Absence culture functions indirectly to ease or to limit the extent to which individual-level variables affect absence. For example, some cultures may dictate good attendance norms regardless of how satisfied one is with the job. Other cultures may signal that absence is a legitimate response to dissatisfaction (Nicholson & Johns, 1985).

Martocchi (1994) found evidence for the impact of absence culture on individual absenteeism among employees within five clerical units. His analysis shows that

absence culture explains a significant amount of variance in individual absence beyond the effects of demographics and general work attitudes. Based on his findings, Martocchi (1994) suggests that managers focus on reducing absence proactively through the development of attendance-oriented cultures that establish norms that encourage attendance and discourage absence. Also, he recommends practicing group- or unit-level absence control interventions to modify individual absence. For example, awarding incentives to all members of a unit when the absence level of each member is less than the level set by the employer.

2.4 Conclusion

Previous research on absenteeism in construction has contributed to the body of knowledge in this area. However, the reasons for absenteeism identified in previous studies have been based on the perception of individuals (e.g., asking why workers are absent rather than determining actual reasons for specific absences). Further, Hanna et al. (2005) studied only the absenteeism of electricians in the construction industry; more groups (e.g., age groups, positions, etc.) need to be analyzed to examine attitudes and behaviors regarding absenteeism to develop appropriate mitigation strategies.

In addition, no tool has been developed in construction industry to track absenteeism for diverse comparisons; this prohibits a comprehensive understanding of absenteeism. Also, the ideas introduced in absenteeism research from other disciplines (e.g., absence culture) can be adopted in the construction industry to better understand and mitigate absenteeism.

This research attempts to address the aforementioned concerns. The next chapter describes the process to develop the work satisfaction survey and the Absenteeism Tracking Tool; these were designed to be a standard package to identify and analyze the causes of absenteeism on construction jobsites. Chapter 4 presents the methods used and the challenges faced to administer the survey successfully; Chapter 5 then describes the results of data analyses.

3 CHAPTER 3-Work Satisfaction Survey and Absenteeism Tracking Tool Development

3.1 Introduction

A survey was administered in this study to collect information about absence incidents. A tool then was designed to store and analyze the collected information. In this chapter, the steps taken to design the workplace satisfaction survey are described. These steps include: establishing a definition for absence to use throughout the study; determining the definition of different classifications of absence used in the survey; and identifying the main of causes of and the factors affecting absence. This chapter also introduces the Absenteeism Tracking Tool and its features and capabilities. The benefits of the survey and the tool are described.

3.2 Developing a Definition for Absence

A comprehensive review of absenteeism literature found a lack of consensus on the definition of absence (Durand 1986, as referred to in Kohler and Mathieu 1993); the existing definitions of absence in the literature are not standardized (i.e., they are arbitrary) (Martocchio and Harrison 1993). Martocchio and Jimeno (2003), referring to Fichman (1984), define absence as missing work for a single day. Martocchio and Harrison (1993) and Harrison and Price (2003) define absence as a "lack of physical presence at a given setting and time where there is a social expectation for the employee to be there." The Business Roundtable (1982) states that there is neither a universal understanding nor a definition of absenteeism in construction even though it takes place on every construction

jobsite. Hinze et al. (1985) suggest that it is fairly difficult to decide what comprises an absence.

Since absenteeism in construction is not clearly defined, the existing definitions of absence in other disciplines were utilized to develop a definition for absence and to have a clear understanding of what comprises an absence.

In this study, absenteeism is defined as missing scheduled work by tradespeople for a period of time equal to or greater than two consecutive hours. The definition does not include late starts and/or early quits that are less than two consecutive hours.

Our proposed definition is close to lateness behavior which is defined in some studies as arriving late at work or leaving before the end of the day (Shafritz 1980). These studies believe that absence is missing an entire day by workers while missing some hours does not comprise an absence (Koslowsky et al. 1997).

The basis for our proposed definition is that due to intense schedules in construction, missing two hours by an employee is almost equally disruptive to the workflow and productivity of the crew as missing/taking off an entire work day. The consensus on this proposed definition about the two hour timeframe was reached after several meetings with industry experts in the COAA Absenteeism Subcommittee. This definition is specific to this study and different timeframes for the definition of absenteeism can be chosen based on job site situations.

3.3 Classifications of Absence Used in the Survey

Absenteeism research distinguishes between different forms of absence to better understand the psychology of absence and to measure and analyze it for the

purpose of developing mitigation strategies (Nicholson 1977; Johns and Nicholson 1982; The Business Roundtable 1982; Chadwick-Jones, Nicholson, and Brown 1982; Hackett and Guion 1985; Martocccchio and Harrison 1993). For example, absences that are not planned by the employer (i.e., unplanned absences) significantly affect productivity; employers thus may monitor the proportion of unplanned absences among their employees to develop strategies to mitigate them. There is no universal definition or set of definitions for the existing forms of absence (Kohler and Mathieu 1993). This study incorporates two forms (i.e., planned-unplanned and approved-unapproved) in order to effectively capture the impact of absence on a project. They are used to analyze employee behavior in taking absences (i.e., planned-unplanned or approved-unapproved) and to explore the existing correlations between variables such as age, tenure, and trade.

3.3.1 Planned-unplanned

Absenteeism interrupts work flow and task accomplishment and increases overtime and employee fatigue (Business Roundtable 1982). The impact of employee absenteeism through the disruption of work flow and the reduction of productivity increases if the employee's absence is not planned by the supervisor. To capture this effect, absenteeism is classified as either a planned or unplanned absence by different researchers. The former represents a prior notice given to a supervisor, which allows the absence to be planned, while the latter indicates the lack of notice and prohibits planning. Based on multiple interviews with several project managers, the researchers determined that a supervisor's ability to plan for the absence largely depends on adequate notification time. Thus, the notification

time (e.g., 3-7 days before absence) provided by absentees is used as an indicator in planned and unplanned absences. This classification can be utilized to monitor employee behavior in providing notification time to the supervisors and to see whether or not their behavior is disruptive to productivity and to take corrective actions. Also, it can be used to examine whether a trend exists regarding notification times as the age or tenure of the employee increases.

3.3.2 Approved-unapproved

Another classification used by researchers is the employer's recognition of an absence as either approved or unapproved. It is referred to as excused-unexcused in some literature (Steers & Rhodes 1978). As with planned and unplanned absences, the definition of absence as approved or not lacks uniformity. Policies recognizing an absence as approved or unapproved differ from company to company. Kohler and Mathieu (1993), referring to Landy et al. (1984), indicate that an incident classified in one organization as an unapproved absence may be classified in another organization as approved. In this study, an absence is approved if it is recognized as legitimate by the company and unapproved if it is illegitimate. The number of approved and unapproved absences is useful to monitor the behavior of employees and to determine whether a trend exists that affects approved and unapproved absences as the age or tenure of the employee increases.

3.4 Hierarchy of Causes of Absence and Hierarchy of Factors Affecting Absence

In this study, the causes of absenteeism are defined as the reasons for an individual's absence (e.g., personal illness), while the factors are defined as details that may have a correlation with the absence (e.g., age and position).

After an extensive literature review, a long list of causes of and factors affecting absence was developed and customized for construction. Due to the diversity of these causes and factors, they were classified into different categories and subcategories. The result was a causal hierarchy consisting of three layers (i.e., category, subcategory, and cause) and a hierarchy of factors influencing absence (i.e., category and factor). The developed hierarchies were discussed and refined through several rounds of COAA Absenteeism Subcommittee meetings, then by the focus group at the COAA Best Practices Conference XVI. Five categories were determined for the causes of absence: 1) personal issues (e.g., child care); 2) work/job conditions (e.g., unsafe working conditions); 3) project management and supervision (e.g., lack of adequate resources); 4) interpersonal relationships (e.g., poor workplace relations); and 5) external issues (e.g., bad weather for working). Figure 3-1 shows these five categories and some examples of subcategories and causes. A complete inventory can be found in Appendix D. The factors that affect absenteeism were divided into three categories: 1) personal information (e.g., age, gender, position); 2) project information (e.g., work schedule); and 3) economic and market information (e.g., unemployment rate, volume of construction in the

province). Figure 3-2 shows these categories and some examples of the identified factors. A complete inventory of these factors can be found in Appendix E.

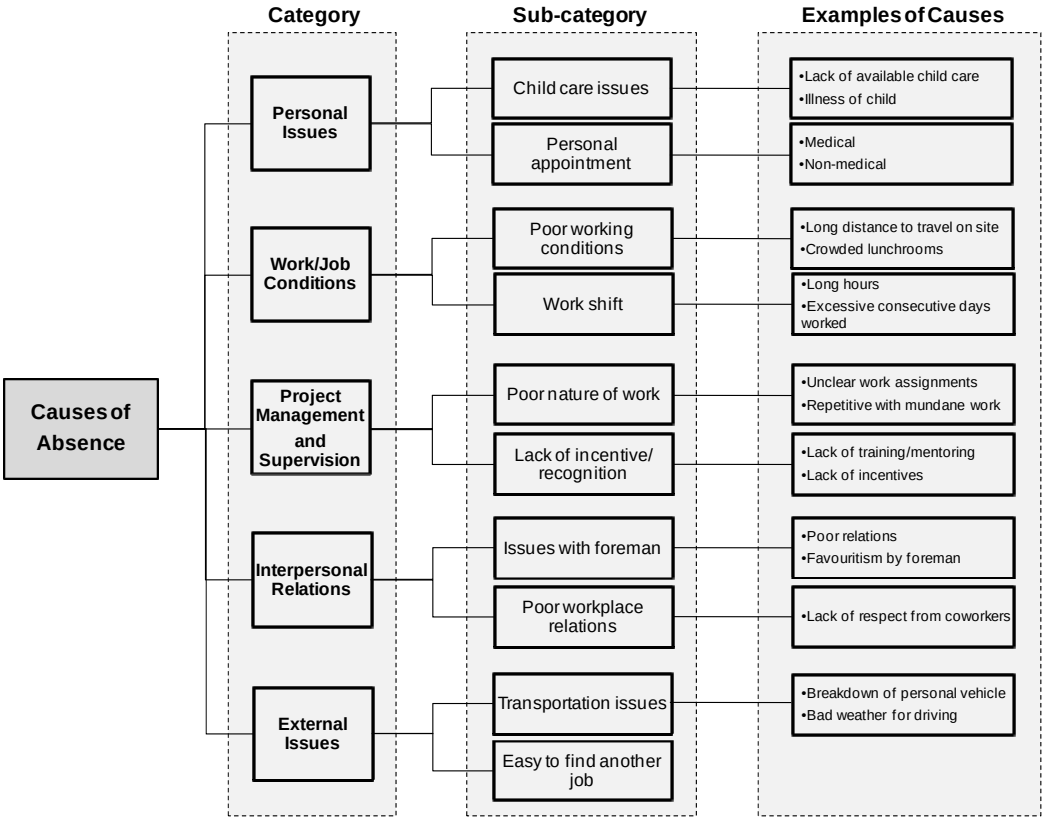


Figure 3-1 Example of the Hierarchy of Absenteeism Causes

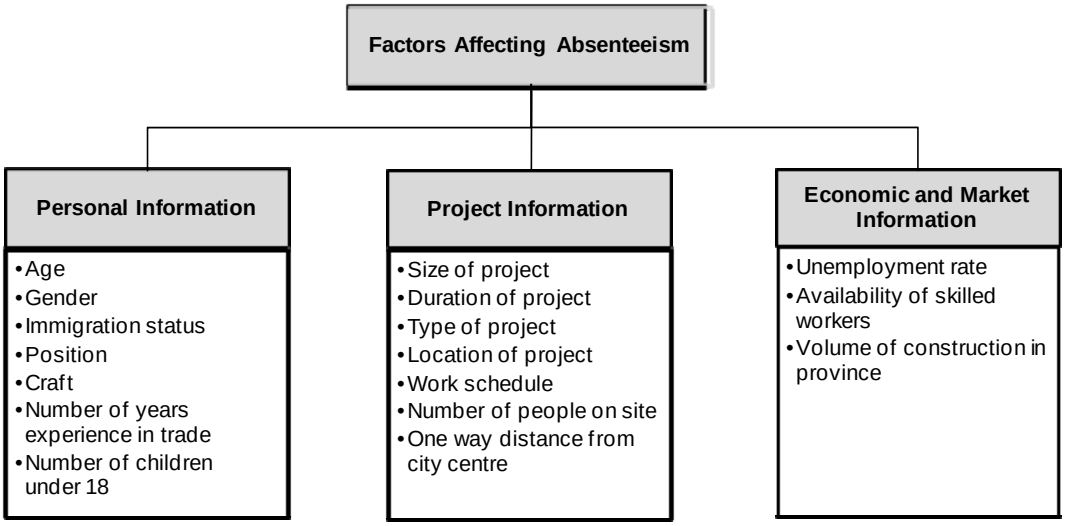


Figure 3-2 Example of the Factors Affecting Absenteeism

3.5 Workplace Satisfaction Survey

A survey (i.e., workplace satisfaction survey) was developed to identify the causes of and factors for absence. Respondents were asked to identify a maximum of three causes for their most recent absence and to rank each cause in terms of its importance (one being the most significant and three being the least significant). The intention was to capture possible multiple causes for a single absence. However, analyzing the results revealed that the second and third ranked causes did not disclose any significant information. Thus, only an analysis of the first ranked causes is presented in this thesis.

Beyond the causes of absence, additional information about absence and absentees was collected. The survey asked respondents to supply the length of their absence, whether it was approved or not, and the notification time (if any) that was provided to the supervisor. Respondents also were asked for comments regarding company policies, incentives, and reasons (if any) for job dissatisfaction, as well as for the factors that motivate them to attend the job. The

survey collected the factors that were suspected to correlate with absence, such as living arrangements/immigration status, personal information (e.g., age group, sex), family information (e.g., partnering status and number of children under 18), and work conditions (e.g., work schedule and commuting duration to the jobsite). In addition, information about how individuals perceive their own and other's absence behaviors (e.g., the number of scheduled days they think they and their co-workers missed per month) were collected.

3.6 Absenteeism Tracking Tool

To keep track of the data collected from the questionnaire and to facilitate analysis, the Absenteeism Tracking Tool was developed in Microsoft Office Access. Figure 3-3 shows the main screen of the tool. The tool has two main functions: data entry and data analysis. The tool was designed to be flexible (e.g., allowing for the creation of customized queries) to facilitate widespread data collection in the next phases of the study. The user has access to the license agreement, the user manual, and to definitions used in the tool from the main screen of the tracking tool.

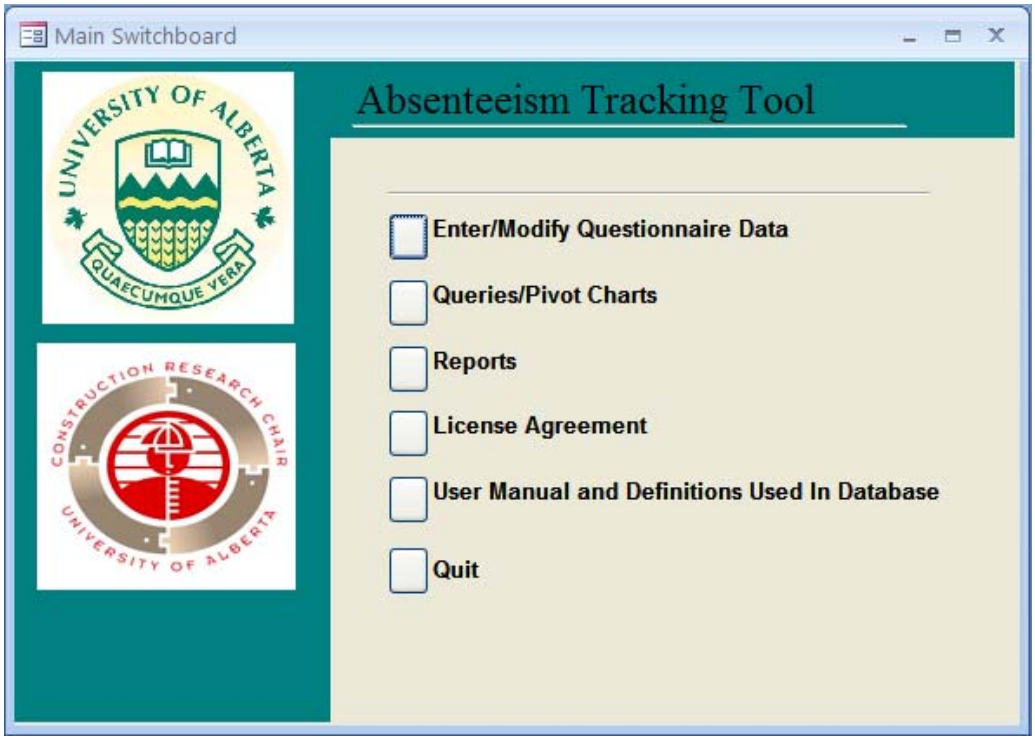


Figure 3-3 Main Screen of the Absenteeism Tracking Tool

3.7 Data Entry

First, the user enters the completed questionnaires into the tool as shown in Figure 3-4. To keep track of each questionnaire, the user assigns a unique database ID to each completed questionnaire and writes this ID number on the bottom right field of the questionnaire while entering it into the database. The data entry form is designed to be very user friendly and drop down lists are used where applicable. After entering each questionnaire, the user is able to create a new record by pressing the next record button on the bottom left side of the form; then, he/she can start entering the next questionnaire. The user can also move between the entered questionnaires by pressing the next record or previous record button on the bottom left side of the data entry form. If the user enters an item incorrectly, he/she is able to move between the records, find the specific record by date and

database ID, and modify it in the "Modify Data Entered" section (see Figure 3-4). The entered information will be used for analysis in the queries.

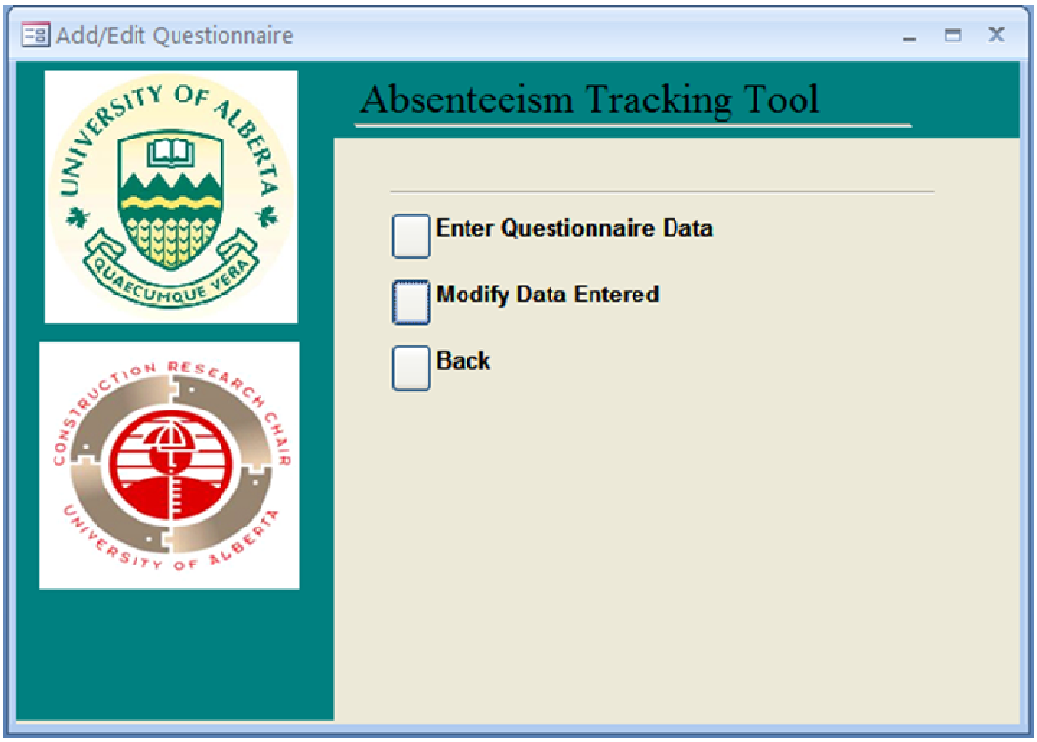


Figure 3-4 Enter/Modify Questionnaire Data

3.8 Data Analysis

Once the data entry is completed, the user can start viewing the results through queries and reports. Figures 3-5 and 3-6 show a sample query and corresponding analysis graphs (e.g., it could be a single graph like Figure 3-5 or a comparison with multiple graphs like Figure 3-6). The tool has 184 queries which can be viewed in the queries part of the database (see Figure 3). Also, additional and customized queries can be designed.

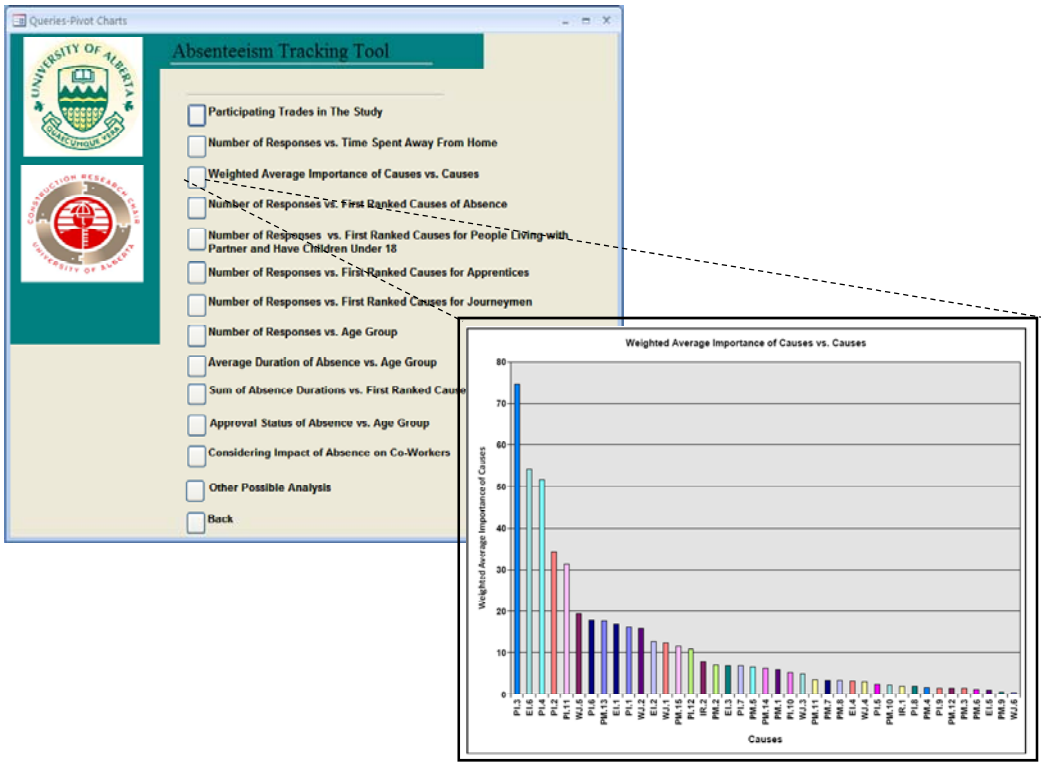


Figure 3-5 Query and Corresponding Graph

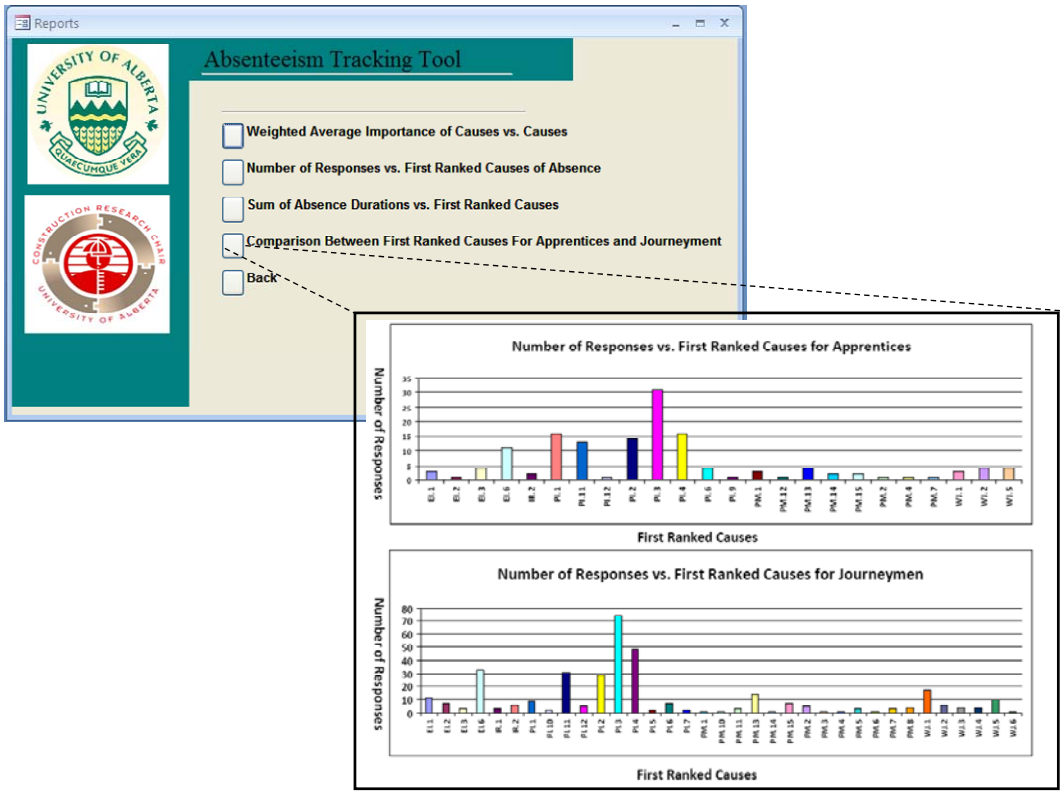


Figure 3-6 Query and Corresponding Graph for Comparison

3.9 Benefits of the Survey and Tracking Tool

The work satisfaction survey is a general tool that can be used to collect comprehensive information about absence incidents on different types of construction projects (i.e., different schedules, camp sites, etc.). This survey asks respondents to provide a maximum of three causes for their last recent absence; previous studies relied upon the memory of respondents and required them to rank a list of causes of absence in terms of importance. According to Tourangeau et al. (2000), "the greater the demands a question places on memory, the less accurate the respondents answers and all else being equal, the less accurate the survey estimates derived from them." This research therefore tried to reduce the reliance on memory by asking the respondents to identify the causes only of their last

absence incident. The researcher believes that using the frequency of real causes of absence better reflects the existing real main drivers of absence on jobsites; this information then can allow for immediate and necessary corrective actions.

Construction managers and researchers can benefit from the Absenteeism Tracking Tool in the following ways: 1) it provides diverse analyses of the causes of absence in terms of frequency and time lost; 2) in-depth (and customized) analyses of specific groups of interest can be obtained; and 3) additional, useful information for understanding absenteeism on the job site (e.g., comments and group perception) is provided.

3.10 Conclusion

In this chapter, the processes involved in designing the workplace satisfaction survey were described. Also, the Absenteeism Tracking Tool and its features and capabilities were detailed and the benefits of the survey and tracking tool were explained. The survey was utilized to collect information about absence incidents from tradespeople on a pilot project. However, since absence is a personal issue, administering the survey was challenging. The next chapter describes the different administration methods used and the lessons learned from each method.

4 CHAPTER 4- Data Collection and Processing

4.1 Introduction

In order to collect data about absence incidents, a survey was administered on a pilot project. Due to the personal and sensitive nature of the subject, the pilot study attempted to refine survey administration methods to maximize the quality and quantity of the data collected. This chapter describes the selected pilot project, the different administration methods tested to achieve an acceptable response rate, and the results and lessons learned from this process.

4.2 Pilot Project

To test the designed survey and tracking tool, to identify the causes of absence, and to collect information about absence incidents, a large multi-contractor industrial construction project with a 4-10 shift schedule near a major city in Alberta was selected. The pilot study took place between October 2008 and March 2009. Due to the multi-contractor nature of the project, the study was tested with three main contractors. Four different survey administration methods were tested to achieve an acceptable response rate.

4.3 Survey Administration Methods Used in Pilot Study

Given the sensitive nature of the subject, data confidentiality and the use of data are particularly important to obtain sufficient and candid responses. The researchers followed the University of Alberta ethics standards relating to research involving human subjects, which demands voluntary and anonymous participation (the respondent was able to withdraw at any time and to refuse to answer any of the questions), the confidentiality of responses and results, and the

procurement of written informed consent forms. The benefits of participation were emphasized in the written informed consent form (e.g., the opportunity to create a favorable work environment, the reduction of absenteeism, and the development of incentive programs to encourage attendance). By administering an anonymous, confidential and voluntary survey and explaining the benefits of the study (i.e., improving the workplace conditions for tradespeople), we were trying to obtain honest answers from the participants.

In the following sections, the different methods used in the pilot study are outlined and observations on how the survey was received at the jobsite are provided. The results of each method are presented in Table 4-1. In this table, the population size column shows the sample size of employees that were examined during each method. The completed questionnaires column shows the number of questionnaires received during the testing of each method. The valid completed questionnaires column shows the number of questionnaires that were valid and entered into the database (e.g., provided at least one cause and, at most, three ranked causes for an absence). Finally, the valid survey response rate is defined as the number of valid questionnaires divided by the population size.

4.3.1 Administration Method 1

With Contractor 1 (medium-size: 500 -1000 tradespeople) from October 2008 to November 2008

Announcements concerning the pilot study were made on a weekly basis in Contactor 1's safety meetings (the first announcement was on October 30, 2008). The questionnaires and envelopes were left in designated areas in the lunch

rooms. Workers returning from an absence were asked to pick up, fill out, and return a questionnaire to their foreman in a sealed envelope. The foremen then would return the envelopes to Contractor 1's main trailer at the end of the day.

Results

The response rate initially was high, but then decreased. At the end of the month of the pilot project, 30 questionnaires had been received for a population size of 599; only 22 were valid, yielding a 3.7% response rate (see Table 4-1). The invalid surveys included those in which every cause was ranked. The observed reasons for the low response rate include:

- Participation was left completely to the discretion of the individual without reminding him/her to complete a survey after returning from an absence.
- Even when the company started reminding workers, the foremen were busy with other tasks. This made it difficult for them to keep the survey going.
- As workers were already busy performing their jobs, they tended to forget that the study was ongoing.
- Some workers did not believe that the surveys would help improve jobsite conditions; therefore, they saw no value in participation.
- Absenteeism is a personal issue that many workers do not want to discuss. Especially when they are asked to fill out a survey right after an absence, they may feel that they are being put on the spot and therefore do not want to participate.

Table 4-1 Summary of Results of Different Administration Methods Used in the Study

Method No.	Dates	Population size surveyed (a)	Completed questionnaires	Valid completed questionnaires (b)	Valid survey response rate (%) (b/a)
1	Oct 08 - Nov 08	599	30	22	3.7
2	Jan 09	361	9	9	2.5
3	Jan 09	1652	48	40	2.4
4	Feb-09	1044	539	384	36.8
4	Mar-09	1044	480	227	21.7

4.3.2 Administration Method 2

With Contractor 2 (small-size: 0 -500 tradespeople) January 2009

Contractor 2 started the study on January 13th, 2009. As in method 1, announcements concerning the pilot study were made on a weekly basis during Contactor 2's safety meetings. A designated individual was selected to administer the questionnaire for Contractor 2 to relieve the foreman of the task. Every day, this individual walked around the site to find people returning from an absence and asked them to complete the survey if they so wished.

Results

The response rate to the questionnaires was low. As seen in Table 4-1, nine surveys were returned and the response rate within the sample size was 2.5%. The observed reasons are:

- The individual designated to administer the surveys had other jobs to do and could not distribute the survey every day. It takes at least 15-20 minutes to locate absentee workers, to explain the survey, and to ask them to fill it out and return it.

- On a large jobsite, it is difficult to locate workers returning from an absence. They might be in a different spot each day.
- There are workers who simply do not want to participate.
- Method 2 may work on a small jobsite but not on a large jobsite due to the time it takes to locate workers returning from an absence and to ask them to complete the survey. This method is time consuming and requires a full time employee to execute it.

4.3.3 Administration Method 3

With Contractor 3 (large-size: 1000 -2000 tradespeople) starting January 2009

Contractor 3 commenced the study on January 13th, 2009. The announcement of the study was made in the daily supervisor meetings attended by area managers, superintendents, and general foremen. The superintendents and general foremen distributed a sufficient amount of questionnaires to their foremen. Foremen were asked to give the surveys to their crew members who were returning from an absence. Individuals were asked to complete and return the questionnaires in a sealed envelope to the foremen, job stewards, or to labour relations.

Results

Similar to method 1, the response rate was initially high but decreased over time. As shown in Table 1, 48 surveys were returned and the response rate was 2.4%. Even though top management gave significant support to this study, only 38 out of 540 questionnaires were returned after one month. Possible reasons for this low response rate include:

- Foremen are busy trying to maintain their production level and fulfill their responsibilities; they either forget about the survey or do not prioritize it.
- As time passes, worker motivation to complete the survey decreases.
- The workers are busy performing their jobs and consequently may forget that the study is ongoing.
- Some workers do not believe that these surveys help to enhance jobsite conditions; they see no value in participating.

4.3.4 Administration Method 4

With Contractor 3 (large-size: 1000 -2000 tradespeople) from February 2009 to March 2009

Administration method 4 started on March 3rd, 2009. The researcher and a labour relations representative visited the trailers around the jobsite during breaks (e.g., coffee and lunch) and asked people to participate in the survey for their most recent absence in the past month. After filling out the survey, the respondents returned the surveys in envelopes to the researcher waiting in the trailer. There is a list of trailers that need to be visited and the researcher and labour relations representative thus were able to make a schedule for their visits. The schedule was sent to all area managers, who consequently informed their supervisory staff and the craftsmen about their specific survey times. With this approach, notices can be distributed to the trailers in advance. Also, the labour relations representative accompanying the researcher helped in distributing the survey and in achieving more cooperation from the craftsmen. Method 4 was tested twice in the same trailers and with the same workers (the first survey for the most recent absence

was conducted in February; the second survey for the most recent absence was conducted with the same trailer in March).

Result

As shown in Table 1, the response rate in this method is significantly higher than in previous methods (the valid response is 36.8% and 21.7%, respectively, for the different months). However, it was found that fewer workers were willing to participate in the second round, since they had participated previously. As a result, the response rate in March was lower than in February.

4.4 Lessons Learned From the Overall Administration Process

Based on the results from methods 1, 2, and 3, it appears that asking an individual returning from an absence to complete the questionnaire creates some discomfort and may make him/her unwilling to participate. Also, the continual administration of the survey for each absence may not work well over time since the survey is not part of the company's essential procedures. Since the survey is voluntary, it may be ignored by supervisors and the workers as time passes. The administration procedure needs to be as easy and quick as possible for the study to be practical for both contractors and tradespeople. In addition, a dedicated individual who does not have many other tasks (unlike the foremen) is required to help to administer the survey.

The good performance of method 4 can be explained as follows. Method 4 does not put workers on the spot by asking them individually to fill out the survey immediately following an absence; instead, it inquires about the most recent absence in the past month. In addition, method 4 does not require extra work from

the foremen and does not require workers to remember that the study is ongoing—the schedule is posted in the trailers, which are accessible at any time, in advance. Furthermore, the researcher, who can be considered to be "neutral", can explain the benefits of the study with the support of labour relations; this makes workers more comfortable. Unfortunately, the researcher may not always be available; this emphasizes the need for an additional, committed and objective individual who can assist in distributing the surveys.

To summarize, in order to perform the administration method successfully, the study should have the full support of management with a particular champion. Since the initially enthusiastic support from management tends to decrease over time, the champion's continuous support is essential to the study's success. He/she needs to create a comfortable and receptive environment in the information session held before administering the survey, emphasizing the study's benefits, such as the creation of a favorable work environment and the reduction of absenteeism. He/she needs to communicate with the area managers about the study and to take appropriate measures to ensure that the study runs smoothly. The researcher's observations show that supervisors and craftsmen are more cooperative when a representative from the labour relations department accompanies the dedicated neutral person (e.g., researcher) to the trailers. In addition, when the unions and job stewards support the study, better cooperation from the craftsmen can be achieved.

The process of administering the survey followed in method 4 is provided as a training package in Appendix A. The training package which can be used by

contractors and owners, describes the method of presenting the study to the participants and explains the steps that should be followed to administer the survey in a construction jobsite.

4.5 Conclusion

This chapter presented four different survey administration techniques tested to collect actual data about absence incidents; the results and lessons learned from each were provided. Only the fourth method resulted in an acceptable response rate. The developed survey and the successful administration method can be used in future studies in construction to identify the causes of absence. As a result, a training package is developed to explain and document the procedures followed, for future research (see Appendix A).

. As a result, the data collected in that method was used to perform statistical analysis and to develop a system dynamics model. The following chapter presents and describes the conducted analyses on the collected data.

5 CHAPTER 5- Data Analysis

5.1 Introduction

After identifying the successful administration method, the collected responses were entered in the Absenteeism Tracking Tool for descriptive and statistical analyses. Using dummy variables, correlation analyses were conducted between the qualitative and quantitative variables in the questionnaire. In this chapter, the limitations of this study and the method for creating dummy variables are described. The results of analyses performed in the Absenteeism Tracking Tool and SPSS software, as well as the analyses conducted using the existing company database and publicly available information, then are presented.

The data in this pilot study was obtained from a single industrial construction jobsite in Alberta. As a result, the findings outlined in this chapter cannot be generalized. Further, the relatively short duration of the pilot study did not allow the author to investigate the impact of economic conditions (e.g., the unemployment rate) on the absence rate (i.e., there were not enough points to perform a reliable correlation with absenteeism data and market indicators). However, the survey, the tracking tool, and the presented analyses set the basis for the collection of vast amounts of data and for the development of a better understanding of absenteeism in construction.

5.2 Correlation Analysis

5.2.1 Pearson Correlation

Correlation is a statistical technique that is used to measure and illustrate a relationship between two variables. A correlation measures how well the data fit

the specific form being considered (i.e., linear or curved). For example a linear correlation shows how well the data points fit on a straight line. The degree of relationship is measured by the numerical value of the correlation. A correlation of 1 indicates a perfect fit and a correlation of 0 specifies no fit at all. If two variables are known to be related it is possible that one variable can make precise predictions about the other. Correlation does not describe why the two variables are related. More importantly, correlation cannot be interpreted as proof of a cause and effect relationship between two variables. The most common correlation is the Pearson correlation. It measures the degree and direction of linear relationship between two variables (Gravetter and Wallnau 2007).

Since sample data are used to compute the correlation coefficient, one of the issues is that whether or not we can use the sample to draw conclusion about the population. The major question for this hypothesis test is whether or not a correlation exists in the population. The null hypothesis is "no, there is no correlation in the population" or "the population correlation is zero" and the sample correlation is merely due to chance. The alternative hypothesis is "yes, there is a real nonzero correlation in the population and the nonzero sample correlation precisely represents a real nonzero correlation in the population. This test is called a two tailed test (Gravetter and Wallnau 2007).

H_0: $\rho=0$

H_1: $\rho\neq0$

Another element in a hypothesis testing is the alpha level or level of significance. The alpha level presents a criterion for interpreting the test statistics. The alpha

level determines the probability of obtaining sample data in the critical region even though the null hypothesis is true (Gravetter and Wallnau 2007).

The Pearson correlation has a degree of freedom of df=n-2 in which "n" is the number of data points. Using the df and the alpha level for a two tailed test, the critical value (significance value) is determined. If the absolute value of "r" is more than the significance value, then H_0 is rejected and therefore the sample correlation accurately represents a real nonzero correlation in the population. On the other hand, if the absolute value of r is less than the critical value then the H_0 is accepted and there is no correlation in the population and the sample correlation is simply due to chance (Gravetter and Wallnau 2007).

5.2.2 Correlation with Dummy variables

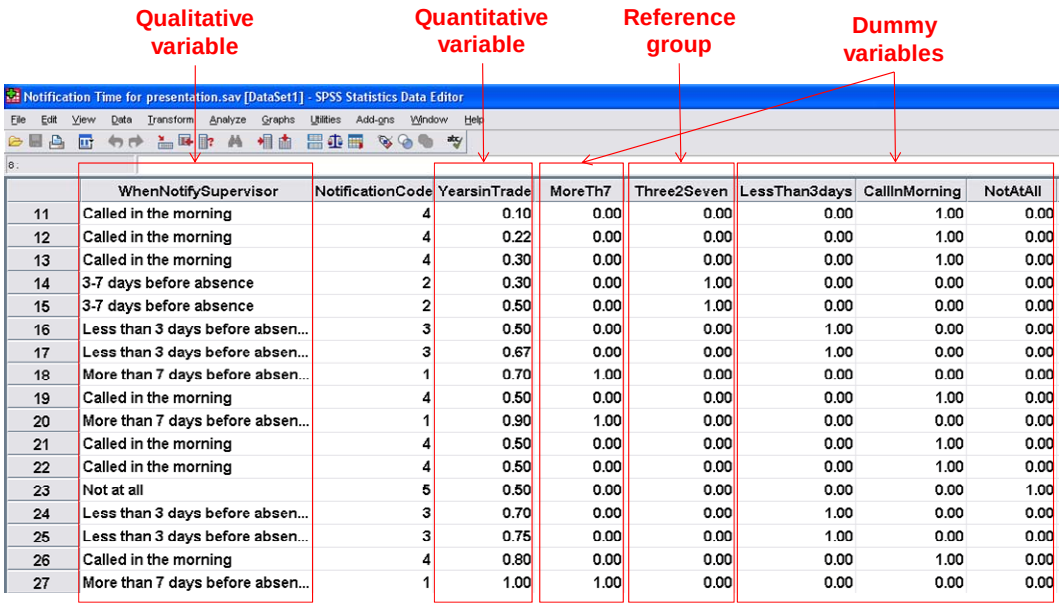
To conduct correlation analysis between qualitative variables (e.g., causes of absence, notification times, etc.) and quantitative variables (e.g., length of absence, self-reported absence, and perception of co-workers' absence) in the survey, the dummy coding technique is adopted. According to Hardy (1952), utilizing dummy variables allows researchers to demonstrate the qualitative variables in quantitative form without any unrealistic assumptions. It captures the information contained in a categorization scheme and uses this information in a standard regression estimate.

Dummy variable is a dichotomous variable made from an originally qualitative variable. If the number of original categories of a qualitative variable is G, then the number of dichotomies required is G-1. For example, the level of citizen interest in politics is measured in a survey in three categories (very interested,

somewhat interested, and not at all interested); two dichotomous variables should be created: X1 (scored 1 if very interested, 0 if otherwise) and X2 (scored 1 if somewhat interested, 0 if otherwise). Respondents who score 0 on both X1 and X2 are not at all interested. They then form a baseline or reference group to evaluate the regression coefficients of X1 and X2 (Hardy 1952).

In selecting a reference group, Hardy (1952) argues that on statistical grounds the choice of the reference group is arbitrary. She suggests the following guidelines to select the reference variable that may be useful to interpret the estimates. First, the reference group should be a well defined category. For example, a residual category (i.e., "other") may not be a good choice. Second, when there is an existing ordinality to the qualitative categories, researchers need to choose between the upper or lower boundary and a category in midrange. Third, she suggests that a reference group should contain a sufficient number of cases.

In this research, correlation between quantitative variables and created dummy variables has been conducted using the SPSS software.



	WhenNotifySupervisor	NotificationCode	YearsinTrade	MoreTh7	Three2Seven	LessThan3days	CallInMorning	NotAtAll
11	Called in the morning	4	0.10	0.00	0.00	0.00	1.00	0.00
12	Called in the morning	4	0.22	0.00	0.00	0.00	1.00	0.00
13	Called in the morning	4	0.30	0.00	0.00	0.00	1.00	0.00
14	3-7 days before absence	2	0.30	0.00	1.00	0.00	0.00	0.00
15	3-7 days before absence	2	0.50	0.00	1.00	0.00	0.00	0.00
16	Less than 3 days before absen...	3	0.50	0.00	0.00	1.00	0.00	0.00
17	Less than 3 days before absen...	3	0.67	0.00	0.00	1.00	0.00	0.00
18	More than 7 days before absen...	1	0.70	1.00	0.00	0.00	0.00	0.00
19	Called in the morning	4	0.50	0.00	0.00	0.00	1.00	0.00
20	More than 7 days before absen...	1	0.90	1.00	0.00	0.00	0.00	0.00
21	Called in the morning	4	0.50	0.00	0.00	0.00	1.00	0.00
22	Called in the morning	4	0.50	0.00	0.00	0.00	1.00	0.00
23	Not at all	5	0.50	0.00	0.00	0.00	0.00	1.00
24	Less than 3 days before absen...	3	0.70	0.00	0.00	1.00	0.00	0.00
25	Less than 3 days before absen...	3	0.75	0.00	0.00	1.00	0.00	0.00
26	Called in the morning	4	0.80	0.00	0.00	0.00	1.00	0.00
27	More than 7 days before absen...	1	1.00	1.00	0.00	0.00	0.00	0.00

Figure 5-1 Dummy Variable Coding for Notification Time Provided to the Supervisor

Figure 5-1 explains the dummy coding procedure used to perform correlation between the "notification time provided to the supervisor" (i.e., qualitative variable presented as "WhenNotifySupervisor" in Figure 5-1) and "number of years in trade" (i.e., quantitative variable presented as "YearsInTrade" in Figure 5-1). "notification time provided to the supervisor" variable has six categories (i.e., more than 7 days before absence, 3-7 days before absence, less than 3 days before absence, call in the morning, not at all). As a result, six columns are created in SPSS software to accommodate these categories (e.g., MoreTh7, Three2Seven, etc. shown in Figure 5-1). If one category is selected (e.g., call in the morning), the corresponding column (i.e., CallinMorning) receives a 1 code and the rest of the columns will receive 0 codes. Using this method codes are assigned to all the created columns. According to the guidelines explained before, one category (i.e., 3 to 7 days before absence) is selected as the reference group.

Then using the SPSS software the correlation is conducted between "years in trade" variable and the set of four dummy variables in Figure 5-1 (i.e., more than 7 days before absence, less than 3 days before absence, call in the morning, not at all) .

SPSS software presents the results in a tabular format (Table 5-1) and identifies the correlation coefficients that are significant using asterisk (e.g., -0.113**). It also provides the alpha level (e.g., *= p<0.01) and significance value (e.g., 0.006).

Table 5-1 Correlation Between Notification Time Categories and Absence Length

Variables		More Than 7 days	Less Than 3 days	Call in the morning	Not at all
Absence Length (days)	Pearson Correlation	.227**	-.017	-.113**	-.056
	Sig. (2-tailed)	.000	.685	.006	.183
	N	120 out of 578	51 out of 578	296 out of 578	41 out of 578

Note: reference variable: 3-7 days before absence; *=p<0.05 and **=p<0.01

5.3 Results of Data Analysis

5.3.1 Overview of the Population

In the fourth administration method a total of 611 valid responses were received. An overview of the population (i.e., characteristics of the population) can be inferred from the collected factors (e.g., age and trade) in the questionnaire. Of the received responses, 37% were from pipefitters, 13.5% were from carpenters, 10% were from carpenter/scaffolders, 9.5% were from laborers, 8.5% were from electricians, 7.3% were from ironworkers, 6.8% were from welders, 3% were from operating engineers, 1.5% were from ironworkers/reinforcing, and the rest were from other trades, including boilermakers, millwrights, and teamsters. Figure 5-1 shows the number of responses by each trade in this study.

Figure 5-2 shows the number of responses of tradespeople based on their hours away from home; it shows that the majority of workers who participated in this study were away from home between 12 to 14 hours. Figure 5-3 is another example, which shows the proportion of responses by age group in this pilot study. It reveals age distribution. Such information is useful for an in-depth understanding of the project.

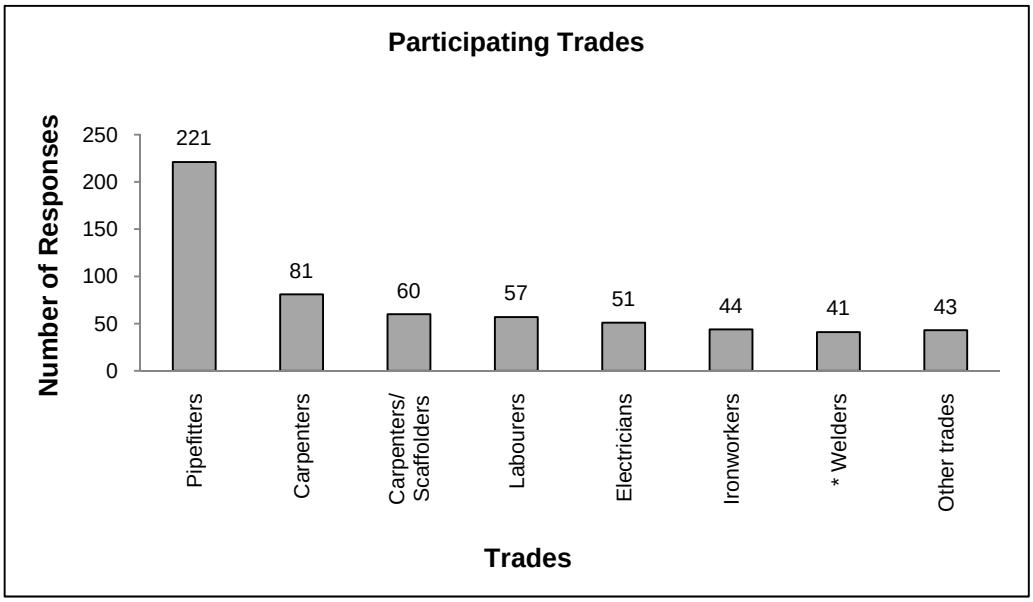


Figure 5-2 Frequency (i.e., Number of Responses) of Participating Trades

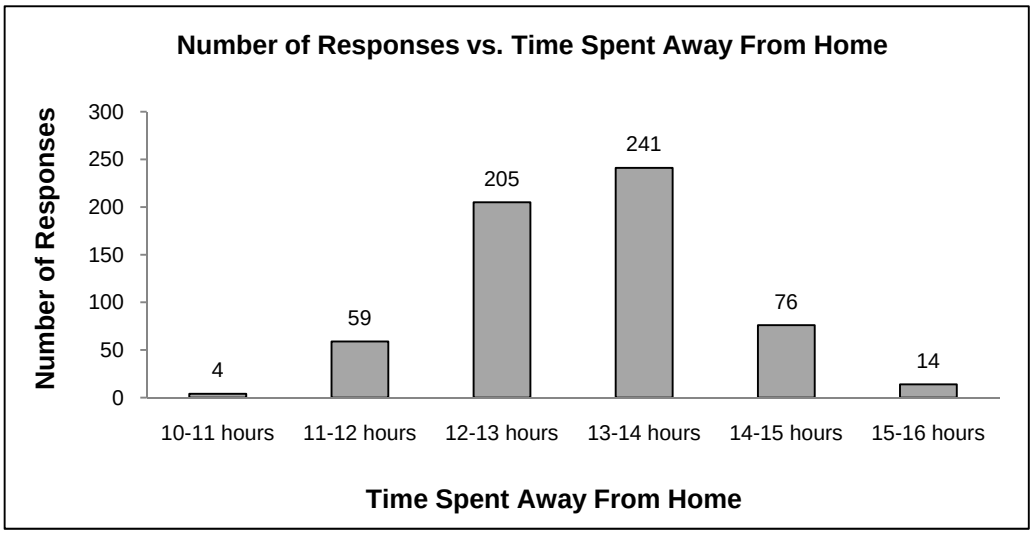


Figure 5-3 Frequency (i.e., Number of Responses) of Time Away from Home

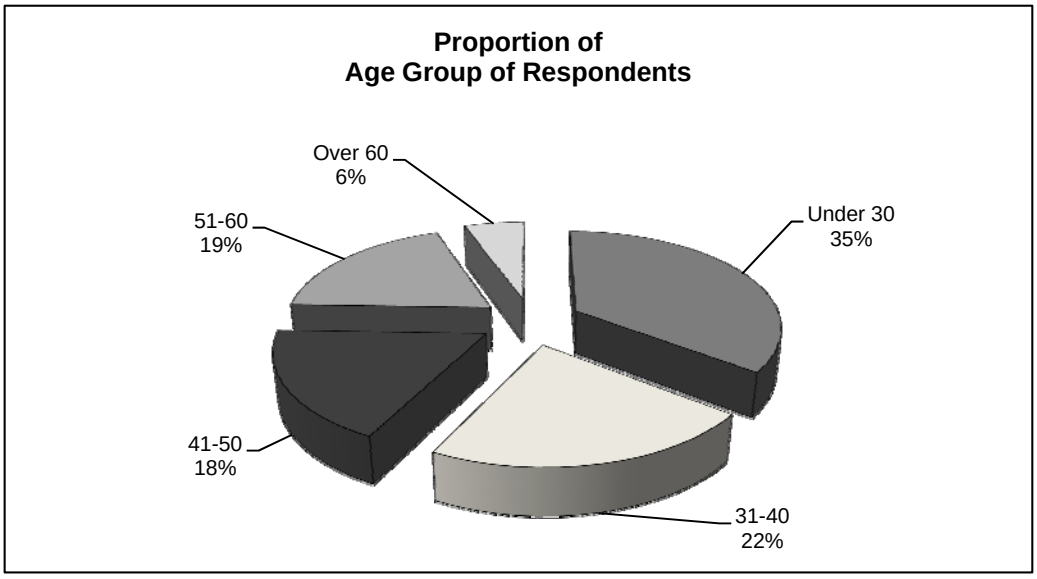


Figure 5-4 Proportion of Responses by Age Group

5.3.2 Top Causes of Absence

Figure 5-4 shows the proportion that each category of causes of absence contributed to missing work in this pilot project (see Figure 3-1). It demonstrates

that personal issues make up the majority (60%) of the causes of absence, while 12% and 11% of the absences are caused by work/job conditions and project management and supervision, respectively. It can be inferred that the improvement of jobsite conditions and project management practices could contribute to the reduction of absenteeism.

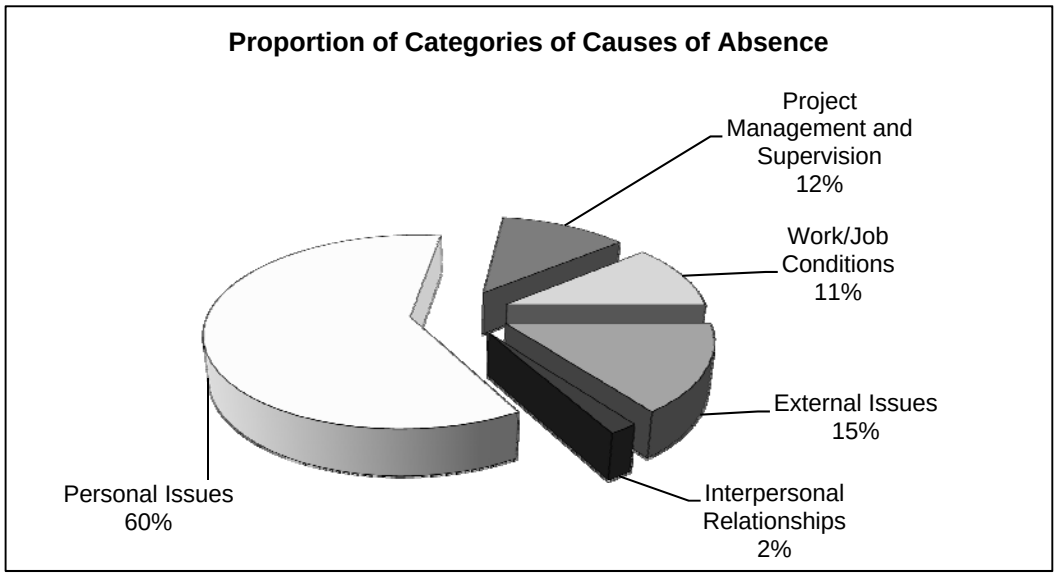


Figure 5-5 Proportion of Categories of Causes of Absence

The top ten causes of absence are listed in Figure 5-6. Two absence metrics were used in this study: frequency and time lost. These measures were used in previous research to measure employee absence (Chadwik-Jones et al. (1979)). Frequency was used to identify the top causes of absence. Time lost (i.e., length of absence) was used to show the average loss incurred by each of the main causes of absence and represents the severity of absence. The top ten causes of absence include personal illness/injury, personal appointment, bad weather for working, previously planned time off, and other family responsibilities. In addition, the average length (i.e., time lost) of the top ten causes of absence are shown in

Figure 5-7. The average length of previously planned time off absences, which are normally planned and approved by the company, is the longest (7 days); personal illness/injury, with 2.3 days, has the second highest absence length; and other causes of absence last less than 2 days. The majority of the main causes of absence thus have short lengths with high frequencies.

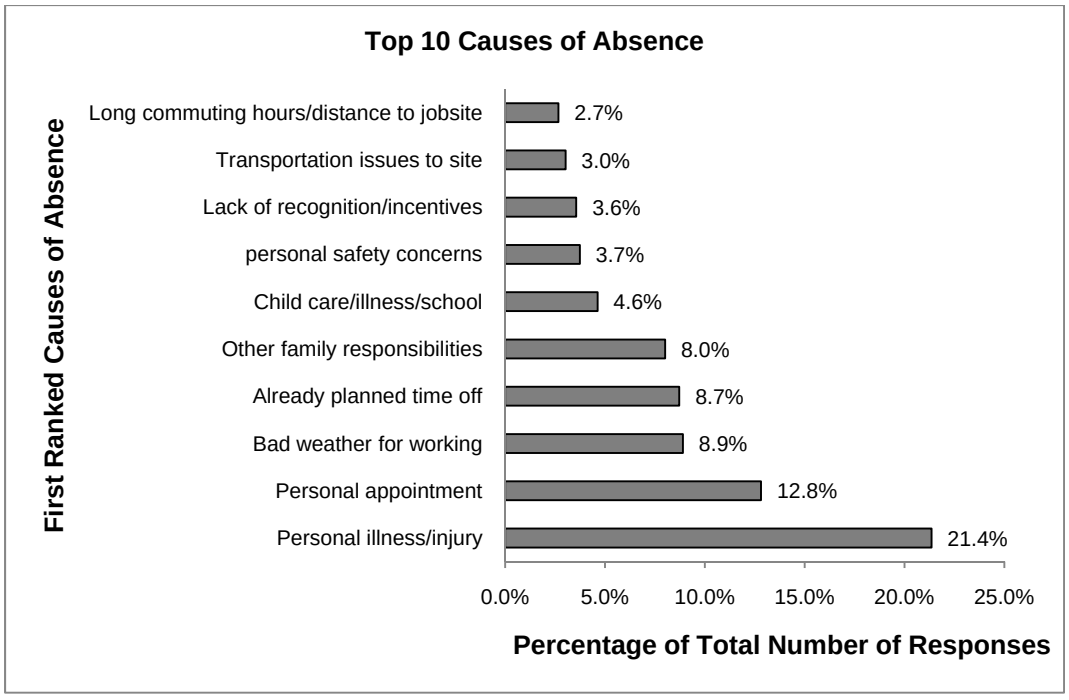


Figure 5-6 Top Ten Causes of Absence

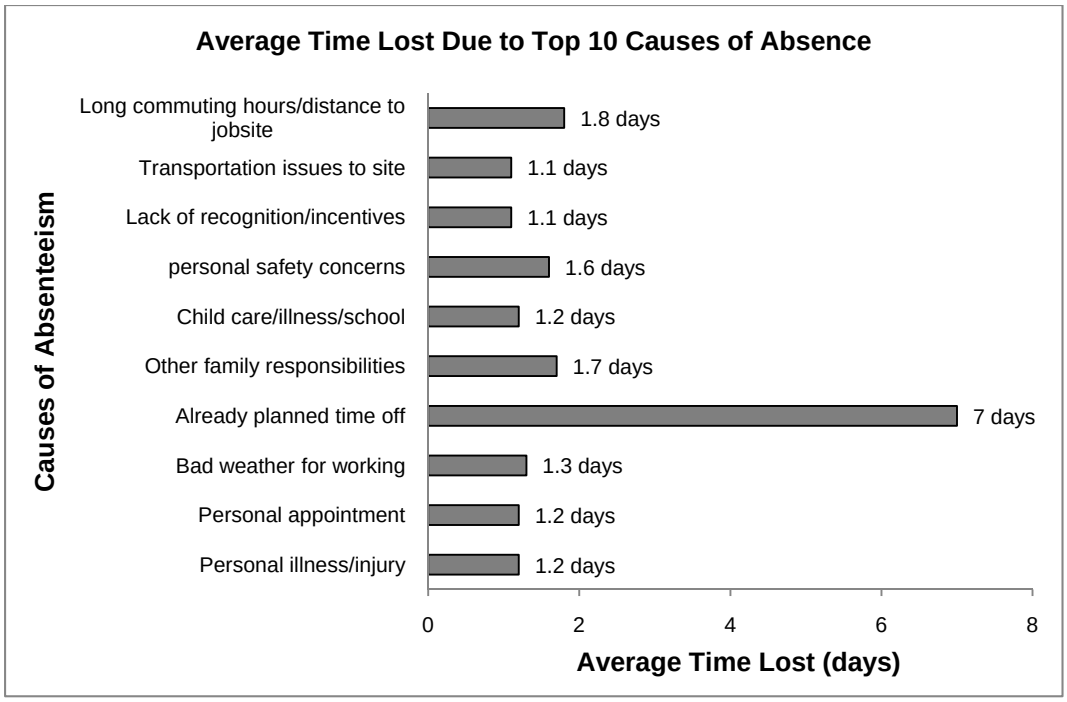


Figure 5-7 Average Time Lost Due to Top 10 Causes of Absence

5.3.3 Planned and Unplanned Absences

To examine the status of planned and unplanned absences, the survey asked respondents about the amount of notice that they provided to their supervisors for their absence, as discussed earlier. The notification categories used in this survey are: a) more than 7 days before absence; b) 3-7 days before absence; c) less than 3 days before absence; d) call in the morning; and e) not at all. As shown in Figure 5-8, 52% of respondents chose "call in the morning" (i.e., employees notified their supervisors the day of their absence). Another 7% of employees chose "not at all" (i.e., they did not provide notification). In either case, the supervisor, lacking advanced notice, was not able to plan for the absence. Thus, around 60% of the absences are unplanned. Reducing the number of these unplanned absences would greatly reduce their detrimental impact on both productivity and workflow. Table 5-1 identifies the top five causes both for "call in the morning" (Column A)

and “not at all” (Column B) categories. Column A in Table 5-1 reveals injury, bad weather for working, and child care/school responsibilities. Column B in Table 5-1 shows a lack of recognition or problems in relations with a foreman for the failure to notify a supervisor about an absence.

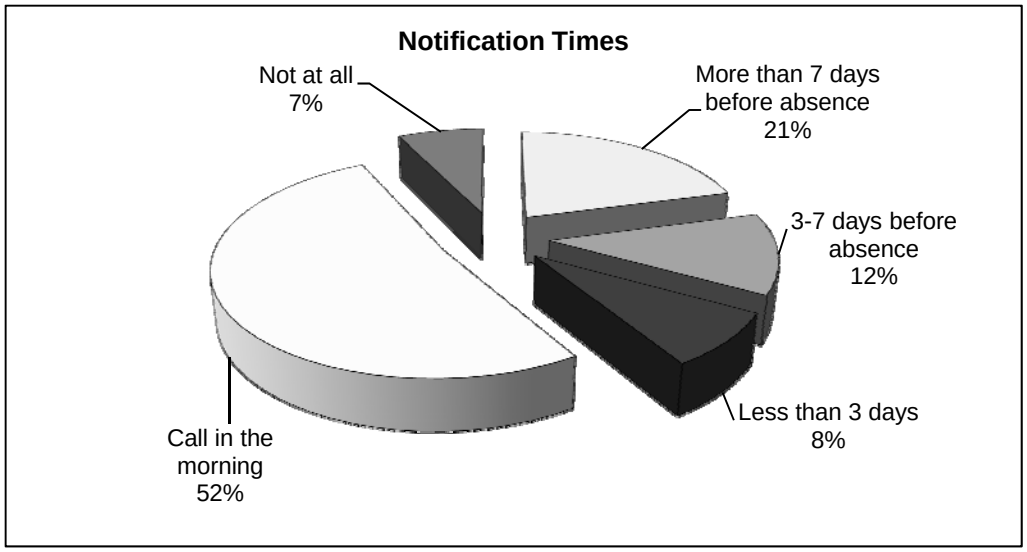


Figure 5-8 Notification Times

Table 5-2 Top 5 Causes of Absenteeism in Two Notification Categories

Rank	A. Causes for “call in the morning”	Frequency	B. Causes for “not at all”	Frequency
1	Personal illness/injury	100	Bad weather for working	9
2	Bad weather for working	27	Lack of recognition/incentives	7
3	Child care/illness of child/school responsibilities	17	Issues with foreman/supervisor	5
4	Other family responsibilities/issues	15	Personal illness/injury	4
5	Personal appointment	14	Personal safety concerns	3

Table 5-2 shows the results of a correlation analysis between notification time given to the supervisor and absence length; it reveals that absence length is positively correlated with the “more than 7 days before absence” notification category ($r=0.227$, $p<0.01$). The correlation coefficient in this case (i.e. 0.227) is

more than the significance value (i.e., 0.0). Therefore the H_0 hypothesis is rejected and the correlation accurately represents a real nonzero correlation in the population. In addition, absence length is negatively correlated with the "call in the morning" category (r=-0.113, p<0.01). The "3-7 days before absence" category is used as the reference variable. People who notify their supervisors more than seven days before an absence are thus absent longer on average than people in the other notification time groups. On the other hand, as shown in Table 5-3, absence the correlation between "less than 3 days" and absence length is not significant. This is due to the fact that the absolute value of correlation coefficient (i.e., 0.017) is less than the significance value (i.e., 0.685).As a result, the H_0 is accepted and there is no correlation in the population and the sample correlation is simply due to chance.

Table 5-3 Correlation Between Notification Time Categories and Absence Length

Variables		More Than 7 days	Less Than 3 days	Call in the morning	Not at all
Absence Length (days)	Pearson Correlation	.227**	-.017	-.113**	-.056
	Sig. (2-tailed)	.000	.685	.006	.183
	N	120 out of 578	51 out of 578	296 out of 578	41 out of 578

Note: reference variable: 3-7 days before absence; *=p<0.05 and **=p<0.01

A correlation analysis between tenure in trade and notification time categories reveals that "years in trade" is positively correlated with the "more than 7 days before absence" notification category (r=0140, p<0.01) (Table 5-3). People who have notified their supervisors more than 7 days before an absence have, on average, a longer tenure in their trade than people in other notification categories. This indicates that people with longer tenure give more notification time than people with less tenure.

Table 5-4 Correlation Between Notification Time Categories and Tenure

Variables		More Than 7 days	Less Than 3 days	Call in the morning	Not at all
Number of years in trade (tenure in trade)	Pearson Correlation	.140**	-.040	-.047	-.075
	Sig. (2-tailed)	.001	.352	.282	.086
	N	120 out of 533	51 out of 533	42 out of 533	293 out of 533

Note: reference variable: 3-7 days before absence; *=p<0.05 and **=p<0.01

5.3.4 Approved and Unapproved Absences

As shown in Table 5-4, personal illness/injury, which is the first ranked cause of absence identified by respondents in terms of frequency, is also first in the unapproved causes of absence. Interviews with selected labor relations managers of the company revealed a possible reason for this result. They believed that some employees frequently try to subvert the absence control program by trying to legitimize their absence with false documents, such as doctor's notes. Consequently, supervisors approve absence only after considering the employees' record of absenteeism to ensure that the individual is not deceiving the company. Unfortunately, due to this lack of trust, many absences due to illness do not get approved. Interviewed employees, in contrast, believed that relatively few people provided false excuses for their absence. In their opinion, many of the unapproved absences have been genuine; this has resulted in complaints and dissatisfaction about company absence policies.

Table 5-5 Top 5 Approved/Unapproved Causes of Absence

No.	Approved Causes of Absence	Frequency	Unapproved Causes of Absence	Frequency
1	Personal appointment	46	Personal illness/injury	55
2	Already planned time off	38	Bad weather for working	16
3	Personal illness/injury	31	Personal appointment	12
4	Other family responsibilities	27	Child care/illness/school	10
5	Bad weather for working	22	Transportation issues to site	8

Figure 5-9 shows the percentage of approved and unapproved cases in the top five causes of absence. It shows that personal illness/injury and child care/illness/school are more frequently unapproved by the company than approved. As mentioned, supervisors are most suspicious of these two causes. Previously planned time off, personal appointments, and other family responsibilities, in contrast, have a higher percentage of approved than unapproved cases, indicating either that more legitimate proof or enough notification time is being provided to explain their absence.

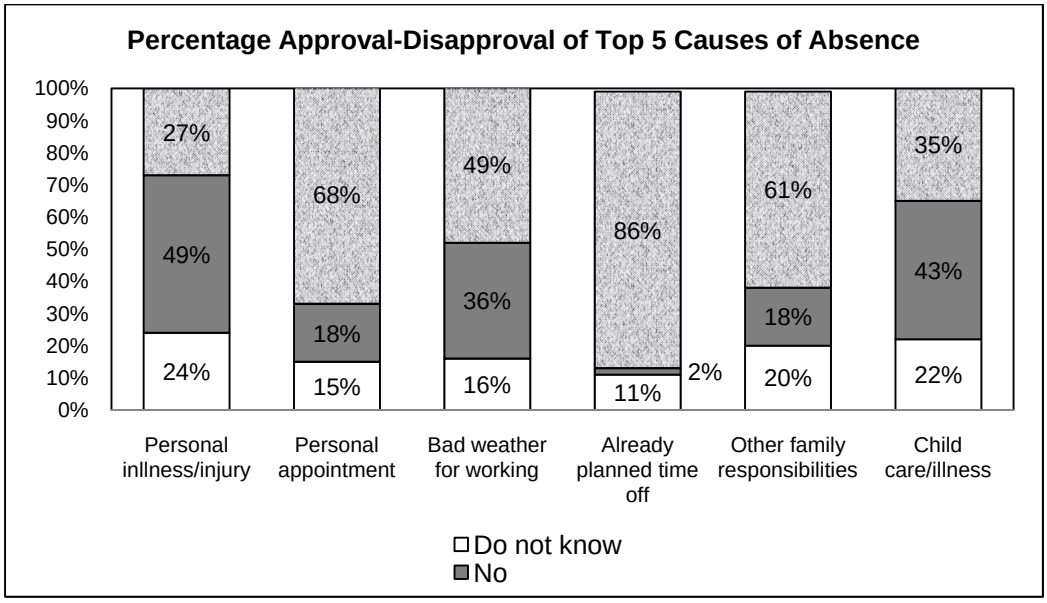


Figure 5-9 Percentage Approval-Disapproval of Top 5 Causes of Absenteeism

5.3.5 Correlation between Tenure with the Company and Causes of Absence

A correlation analysis between the tenure of an employee with the company and the causes of absence (Table 5-5) reveals that the "lack of recognition/incentives" and "need a day off" are correlated with the number of months the person has

worked with the company on this project (r=0.122, p<0.01; r=0.138, p<0.01). This shows that the average tenure with the company for people who have selected lack of recognition/advancement opportunities for the cause of their absence is higher than the average tenure with the company for people who have selected all other categories combined. In other words, people with longer tenure with the company are expected to miss work because of the lack of advancement opportunities. Also, the average tenure with the company for people who have selected "need a day off" as the cause of their absence is higher than people who have selected all other causes taken together. This shows that people who have been with the company longer feel that they have been working for a long time and thus require a day off. A labor relations manager in the company opines that, since industrial construction projects take a long time to complete, employees should be offered regular days off (as in manufacturing) to allow relief from the fatigue and stress caused by the long working hours and consecutive working days.

Table 5-6 Correlation Between Tenure with Company and Causes of Absence

Variables		lack of recognition/incentives	need a day off
Number of months (tenure) with company	Pearson Correlation	.122**	.138**
	Sig. (2-tailed)	.005	.001
	N	20 out of 538	15 out of 538

Note: reference variable: PI.11 (Already planned time off); *=p<0.05 and **=p<0.01

5.3.6 Causes of Absence for Specific Groups

Different groups of respondents (e.g., positions, age groups, trades, etc.) were analyzed to learn more about their attitudes toward absenteeism. The significant results are presented here. These results can help to achieve a better understanding

of these groups' priorities and absence trends and could be used to develop mitigation strategies that take these groupings into account.

5.3.6.1 Approval Status of Absences for Age Groups

As shown in Figure 5-10, there is a visual trend of increase in approval percentages and decrease in disapproval percentages as age increases. This fact can be shown using employee tenure, since people with more tenure are usually older. As presented in Table 5-6, a correlation analysis between tenure in the trade and the approval status of absence shows that the number of years in a trade is positively correlated with a "yes" approval status ($r=0.106$, $p<0.05$); also, it is negatively correlated with the "do not know" approval status ($r=-0.105$, $p<0.05$) (Table 5-6). "No" is the reference variable. People whose absences have been approved have, on average, longer tenures in trade; people who do not know if their absences have been approved or not have less tenure. These results may indicate that people increasingly tend to get their absence approved as their tenure in the trade increases.

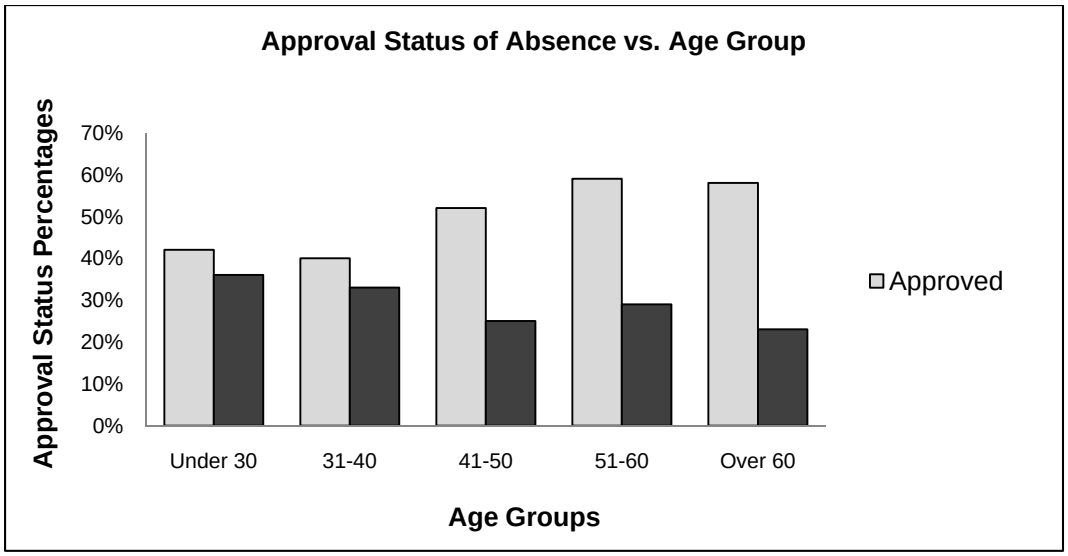


Figure 5-10 Approval Status of Absence versus Age Groups

Table 5-7 Correlation Between Approval Status and Tenure in Trade

Variables		Do not know	Yes
Number of years in trade (tenure in trade)	Pearson Correlation	-.105*	.106*
	Sig. (2-tailed)	.015	.014
	N	116 out of 533	263 out of 533

Note: reference variable: No; *=p<0.05 and **=p<0.01

5.3.6.2 Top Ten Causes of Absence for People Who Have Partners and Have Children under 18

An interesting group to study consists of people who live with a partner and have children under 18 years of age. As shown in Figure 5-11, child care/illness/school is the second most common cause of absence for this group. It shows that a specific group can have a dominant absence cause that reflects its own characteristics and situation.

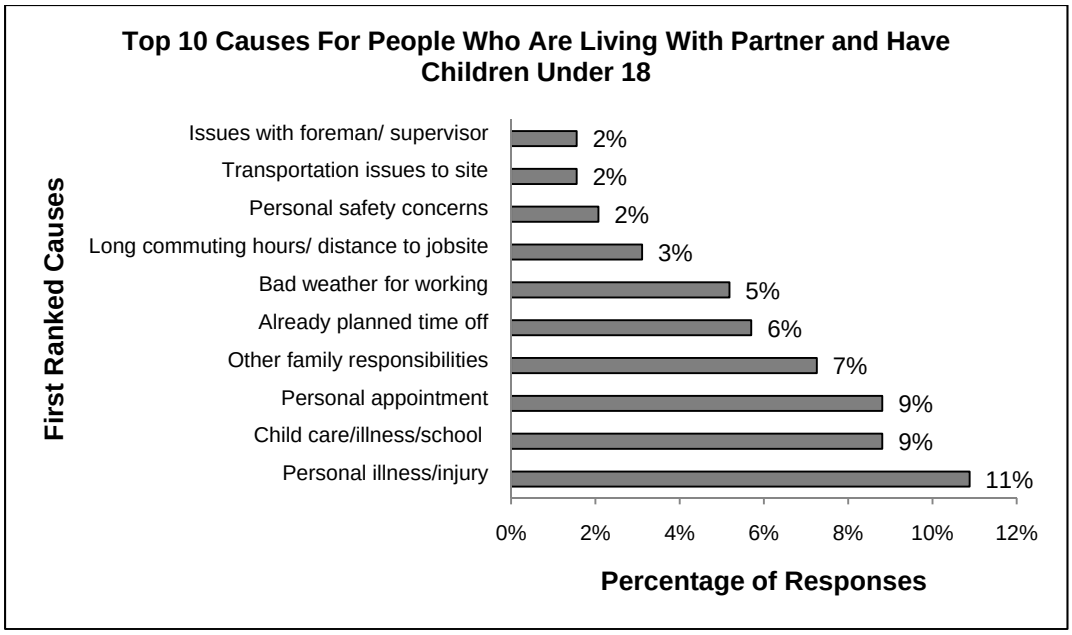


Figure 5-11 Top 10 Causes of Absence For People Who Are Living With A Partner and Have Children Under 18

5.3.7 Group Perception

Recent research on absenteeism has demonstrated that individual absence behavior can be affected by social context (Gellatly and Luchak 1998; Rentsch and Steel 2003). In other words, absence is not based solely on individual behavior but has a strong relationship with group perception. Thus, identifying how individuals perceive other workers' absence can enhance the overall understanding of absence behavior. In this survey, individuals were asked to provide the number of the days they missed from scheduled work per month and to estimate the number of scheduled days they thought other individuals missed. As shown in Table 5-7, individuals stated that they missed an average 1 scheduled day per month while their fellow workers missed an average of 2.8 scheduled days per month. This suggests that most workers believe their fellow workers to be absent more often than themselves. To justify this behavior, Johns (1994)

describes that people show egocentric behavior with regard to their own absence. This means that people tend to view their own behavior as reasonable, sensible, and legitimate compared with others. This belief helps employees to justify their own absences and to make them more comfortable in taking an unscheduled day off.

Table 5-8 Average Number of Days Workers Think Their Co-Workers and Themselves Miss Scheduled Days in A Month

	Average days perceived to be missed per month	Standard deviation of number of days perceived to be missed per month
By person[1]	1.0	1.1
By co-workers[2]	2.5	1.8

Note: 1: N=562, 2: N=453;

A correlation analysis between the unscheduled days people think their coworkers miss in a month and their different positions shows an existing perception about coworker absenteeism. The results, as shown in Table 5-8, reveal that perceived coworker unscheduled absence is positively correlated with apprentices and negatively correlated with journeymen ($r=-0.106$, $p<0.01$; $r=-0.096$, $p<0.01$) (foreman is the reference variable). The coefficients suggest that the average number of scheduled days apprentices think their coworkers miss in a month is higher than the average number of days people in other groups think their coworkers miss in a month. The existing perception amongst apprentices is that their coworkers miss more unscheduled days in a month than people in other groups think their coworkers miss in a month; this may lead the apprentices to take more absences themselves and to justify their higher level of absence. Also, our analyses of the company's database from July 2008 to March 2009 verifies that apprentices have a higher rate of absence compared to other positions (Figure

5-12). In contrast, the average number of days that journeymen think their coworkers miss in a month is lower than people in all other groups combined.

Table 5-9 Correlation Between Positions and Perception of Co-Workers' unscheduled Absence

Variables		Apprentice	Journeyman	Other
Perception of co-workers' unscheduled absence (days)	Pearson Correlation	.106*	-.096*	-0.005
	Sig. (2-tailed)	.028	.047	0.920
	N	133 out of 430	260 out of 430	7 out of 430

Note: reference variable: Foreman; *=p<0.05 and **=p<0.01

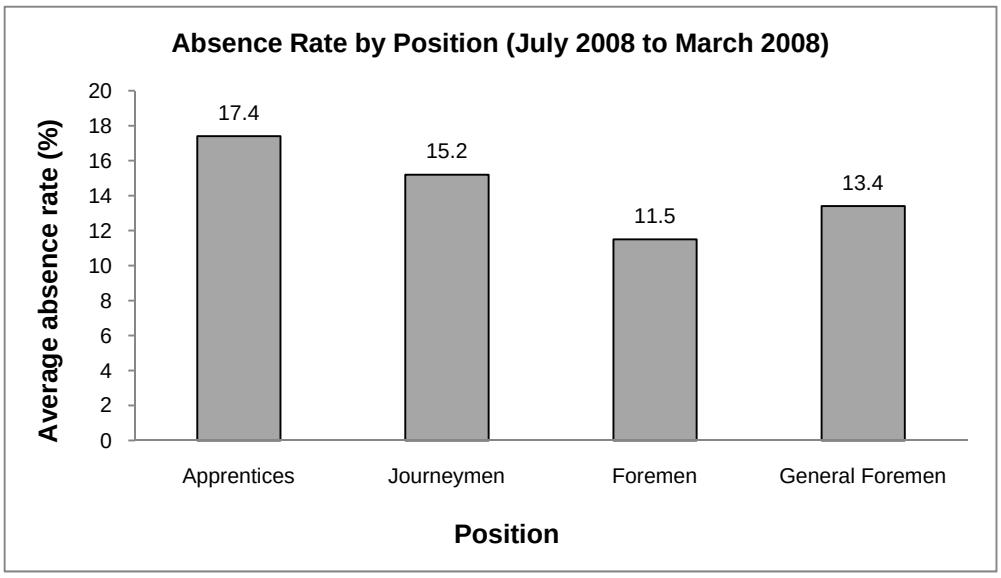


Figure 5-12 Absence Rate by Position

5.3.8 Analysis Utilizing Existing Company Attendance Database and Market Information

Further analysis was conducted using the existing company attendance database and publicly available information. This section introduces analysis examples.

5.3.8.1 Analysis with Company Attendance Database

Most companies keep track of their absence rate. For example, the daily force report used by one of the main contractor companies examined in the pilot project captures daily absence rates for different positions in different trades for payroll purposes (e.g., payment based on attendance). Further, the daily force report keeps track of excused (i.e., approved by supervisor) and unexcused (i.e., not approved by supervisor) absences. Figure 5-13 shows the monthly absence rates, including excused, unexcused, and total absences, from July 2008 to March 2009, by aggregating the daily records. This shows the trend of absences over time.

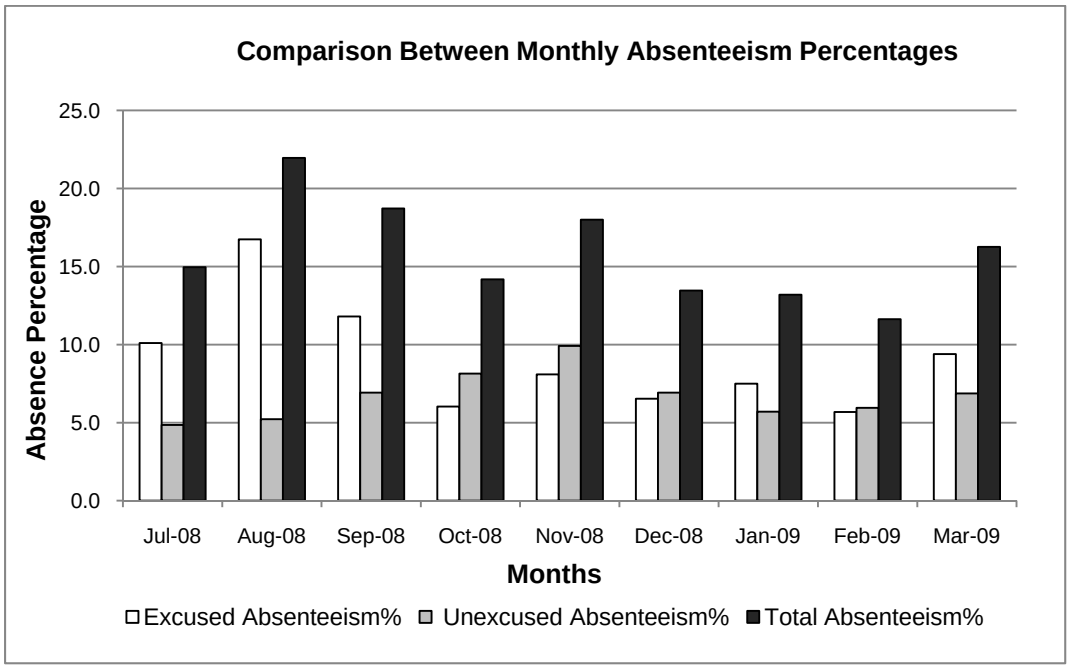


Figure 5-13 Monthly Absence Rate

5.3.8.2 Analysis with Publicly Available Information

Information obtained from the daily force report can be connected to publicly available information, such as economic and market indicators (note: due to the

lack of enough data points, a reliable correlation between these two variables could not be done). Figure 5-14 shows the total absenteeism percentage (for the pilot project from July 2008 to March 2009) versus the Alberta construction unemployment rate; this may show the relationship between the absence rate and market conditions. It shows that total absenteeism decreases when the construction unemployment rate increases. An informal interview with owners and project managers verifies these results. They had the opinion that favorable economic conditions (e.g., a low unemployment rate) result in an increased absence rate due to the abundance of job opportunities and vice versa.

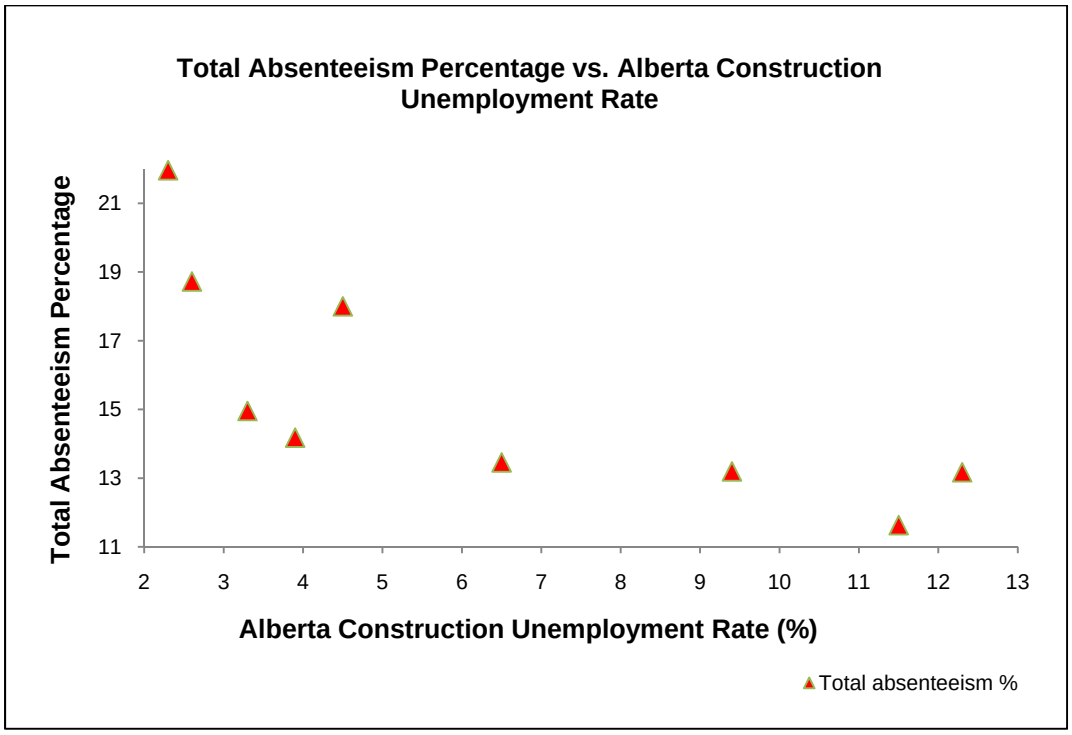


Figure 5-14 Total Absence Rate vs. Alberta Construction Unemployment Rate

5.4 Conclusion

This chapter presented the results of analyses conducted on the obtained responses in this pilot study. The top causes of absence were identified; the

notification times provided to supervisors and the approval status of the top causes of absence and their implications then were discussed. Different groups, such as age groups and employees who have children under 18 years of age, were analyzed and discovered to have different attitudes toward absenteeism. This finding can be used to design mitigation strategies that specifically target groups; these tailored strategies could be more effective than general mitigation strategies. The egocentric behavior of employees in their absence behavior also was presented and the existence of an absence culture among apprentices and journeymen was discussed Based on these findings, companies can try to improve the absence culture among their workforce by stressing attendance and by training their foremen to create cohesive work groups. In addition, the possible effects of market conditions on absenteeism were shown.

Using these results, along with findings from previous studies, comments received from participants, and interviews with tradespeople and managers, a system dynamics model for absenteeism is developed to show the causal relations between different factors that result in employee absenteeism. This model, which mainly focuses on strategies practiced by companies to reduce absenteeism, is described in the Appendix C.

6 CHAPTER 6- Conclusions and Future Research

6.1 Conclusions

This pilot study was designed to better understand absenteeism and to explore the real causes of absence in construction projects. To systematically approach this problem, a definition of absence in construction was developed and a hierarchy of causes of absence and the factors affecting it in construction were determined. The identified causes and factors were further refined and customized after several meetings with industry experts and a workshop in COAA Best Practices Conference XVI in 2008. Then, a survey was designed to identify the main causes of absence and a tracking tool was developed to analyze and maintain data. Due to the private and personal nature of causes of absence, administering the survey was challenging. As a result, different administration methods were tested to achieve the goal. After each administration method the lessons learned from that method were applied to design the next experiment. Four different methodologies were tested from October 2008 to February 2009 and statistical analyses were conducted on the received data in the fourth method.

After the data analyses, top ten causes of absence on the pilot project were identified and frequency of their occurrence and the average time lost due to each one was calculated. The results show that while personal issues comprise the majority of the causes of absence, improvement in job site conditions and project management practices could result in the reduction of absenteeism to a significant degree. In more than half of the absence cases, the employee either notified the supervisor of the absence in the morning or did not provide any notification. This

lack of adequate notification disrupts workflow and reduces productivity, since supervisors are unable to plan for these absences. People with more tenure tend to notify their supervisors more than 7 days before an absence, which indicates a more established work ethic. Respondents also had a shared perception that their coworkers missed more scheduled days in a month than themselves; according to Johns (1994), it is an egocentric tendency to view oneself as reasonable, sensible, and legitimate compared with others. Further, apprentices believe that their coworkers miss more scheduled days in a month, while journeymen think that their coworkers miss fewer scheduled days in a month, than others. This finding reveals a group perception within trade positions.

The preliminary analyses obtained from this pilot study demonstrate its great potential to increase the understanding of absenteeism and to suggest a means to mitigate the negative effects of absence. In particular, based on the results of correlation analyses, it seems that that specific groups have different attitudes toward absenteeism (e.g., tradespeople with longer tenure versus tradespeople with shorter tenure) and toward providing notification time for their supervisors. This could be used to design mitigation strategies that target certain groups: tailored strategies could be more effective than general mitigation strategies. Also, these findings may suggest the existence of an absence culture among different groups of employees (e.g., apprentices versus journeymen). As a result, companies can try to improve the absence culture among their workforce by stressing attendance and by training their foremen to create cohesive work groups. Further statistical analysis is required to vigorously prove these findings.

6.2 Contributions and Benefits

This study has made a number of contributions to academic research and for the construction industry, which are listed below.

a. Identifying the top ten causes of absence based on their frequency of occurrence on an industrial construction project along with providing the average duration lost due to each cause. Using the developed survey and tracking tool, this process is replicable for future research in construction.

b. Employing dummy variables to perform correlation analysis on the obtained responses. This method is a replicable process that can be used in future studies to correlate between qualitative and quantitative variables. Using dummy variables the absence behavior of different groups (e.g., age groups, employees with children, younger and older employees) was analyzed and differences in absence cultures and attitudes toward absence were revealed.

c. Taking a systematic approach to absenteeism research in construction by providing a comprehensive hierarchy of causes of absence specific for construction projects as well as a hierarchy of factors that might have correlations with absence decisions. Such a comprehensive list of causes and factors is not introduced in previous research on absenteeism in construction.

d. Testing four different administration methods to find a way to acquire data on the sensitive issue of absenteeism. The reasons that each

methodology did not work are discussed and a training package is provided to facilitate survey administration in future research. Also, in order to identify the actual causes of absence, respondents were asked to identify the causes of their most recent absence.

In addition to the academic contribution made in this study, the developed survey, the Absenteeism Tracking Tool, and the administration methods tested provide a basis for practitioners and academics to examine absenteeism on construction projects. These will be available on the COAA website for everybody to use.

6.3 Limitations and Recommendations for Future Research

There are some limitations affecting generalization; these need to be addressed to improve this research and to generalize the results. These limitations are identified below.

The findings outlined in this thesis cannot be generalized due to the limitations of the data in the pilot study (e.g., the small amount of data and the fact that the data comes from a single industrial construction project). In addition, the relatively short duration of the pilot study did not allow the investigation of the impact of economic conditions (e.g., the unemployment rate) on the absence rate.

Despite these limitations, this study provides very promising results for future research. The following are some recommendations for future research.

a) Illness/injury was the first identified cause of absence; however, it was not obvious whether the injury was occupational or non-occupational. As a result, the survey has been modified to differentiate between these causes. This will help identifying the possible safety issues on the jobsite. The

survey was also further modified to capture more data on employee work attitudes and perceptions (e.g., satisfaction with job, company policies, and supervision). This will allow for more statistical analyses on the obtained data (e.g., find possible correlations between job satisfaction and company policies and absenteeism). The modified survey is provided in Appendix G.

b) Comprehensive data collection should be performed on projects of diverse size and type in different regions to achieve reliable and general answers. The chosen administrative method also needs to be tested further and improved. In addition, data on employee absence should be gathered over a longer period to further explore the relationship between market conditions and absenteeism in construction.

c) The effects of social influences and absence cultures on absenteeism in construction (e.g., absence culture within a crew) should be further tested. Also, the absence behavior of different employee groups (i.e., age groups, groups with different marital status, positions and trades) should be examined to better understand their common problems and behaviors and to come up with specific mitigation strategies for them.

d) Absence mitigation strategies should be proposed based on the result of widespread data collection and statistical analyses.

This study is currently being extended into projects of diverse size and type in different regions of Alberta, Canada, in order to address the aforementioned limitations and recommendations.

Bibliography

Building & Educating Tomorrow's Workforce (2007). "Strategy for Alberta's Energy Sector, Government of Alberta." *Government of Alberta.*

Bycio P. (1992). "Job performance and absenteeism: a review and meta-analysis." *Human Relations,* 45(2): 193–221.

Chadwick-Jones, J. K., Brown, C. A., Nicholson, N., and Sheppard, C. (1971). "Absenteeism measures: Their reliability and stability in an industrial setting." *Personnel psychology*, 24, 463-470.

Chadwick-Jones, J.K. (1981). "Renegotiating absence levels." *Journal of Occupational Behaviour*, 2, 255-266.

Chadwick-Jones, J. K., Nicholson, N., and Brown, C. (1982). *Social Psychology of Absenteeism*, Praeger Publishers, New York.

Davis, M. (1971). "That's interesting!: Towards a phenomenology of sociology and a sociology of phenomenology." *Philosophy of the Social Sciences*, 1, 309 - 344.

Durand, M. V. (1986). "Employee absenteeism: A selective review of antecedents and consequences." *Journal of Organizational Behavior Management*, 7,135-167.

Fichman, M. (1984). "A theoretical approach toward understanding employee absence." *Absenteeism: new approaches to understanding, measuring, and managing employee absence*, P. S. Goodman and R. S. Atkin, eds., Jossey-Bass, San Francisco, 1–46.

Ferguson, TD, Ferguson, WL, Muedder K, Fitzgerald MP. (2001). "The case for Total Absence Management and Integrated Benefits." *Human Resource Planning,* 24(3): 36–46.

Forrester, J. W. (1990). "System Dynamics and the Lessons of 35 Years." *The Systemic Basis of Policy Making in the 1990s.*

Firns, Ian, Travaglione, Anthony and O'Neill, Grant (2006). "Absenteeism in times of rapid

organizational change." *Strategic Change*, 10.1002/jsc.757.

Gellatly, I.R. and Luchak, A.A. (1998). "Personal and organizational determinants of perceived absence norms." *Human Relations*, 51, 1085-1102.

Gravetter, Fredrick J and Wallnau, Larry B. (2007). *Statistics for the Behavioral Sciences*, Thomson Wadsworth, Balmont.

Hackett, R. D. and Guion, R. M (1985). "A Reevaluation of the absenteeism-job satisfaction relationship." *Organizational Behavior and Human Decision Processes*, 35, 340-381.

Hammer, T. H. and Landau, J. (1981). "Methodological issues in the use of absence data." *Journal of Applied Psychology*, 66(5), 574-581.

Hanna, A. S., Menches, C. L., Sullivan, K. T., and Sargent, J. R. (2005). "Factors affecting absenteeism in electrical construction." *J. Constr. Eng. Manage*., 131 (11), 1212–1218.

Harrison, D. A. and Price K. H. (2003). "Context and consistency in absenteeism: Studying social and dispositional influences across multiple settings." *Human Resource Management Review*, 13, 203–225.

Hinze, J., Ugwu, M., and Hubbard, L. (1985). "Absenteeism in construction industry." *J. Manage. Eng.*, 1(4), 188–200.

Johns, G. and Nicholson, N. (1982). "The meanings of absence: New strategies for theory and research." *Research in Organizational Behavior*, 4, 127-172.

Johns, G. (1994). "Absenteeism estimates by employees and managers: divergent perspectives and self-serving perceptions." *Journal of Applied Psychology*, 79(2), 229-239.

Johns, G. (2003). "How methodological diversity has improved our understanding of absenteeism from work." *Human Resource Management Review*, 13 , 157-184.

Kaiser, C. P. (1998). "What do we know about employee absence behavior? An interdisciplinary interpretation." *Journal of Socio-Economics*, 27, 79–96.

Kohler, S. S. and Mathieu, J. E. (1993). "Individual characteristics, work perceptions, and affective reactions influences on differentiated absence criteria." *Journal of Organizational Behavior*, 14, 515-530.

Koslowsky, Meni, Sagie, Abraham, Krausz, Moshe, and Dolman Singer, Ahuva (1997). "Correlates of Employee Lateness: Some Theoretical Considerations." *Journal of Applied Psychology,* 0021-9010/97.

Landy, F. J., Vasey, J. J., and Smith, F. D. (1984). "Methodological problems and strategies in predicting absence." *Absenteeism*, P. S. Goodman and R. S. Atkin, eds., Jossey-Bass, San Francisco.

Mason, C.M., Griffin M.A. (2003). "Group absenteeism and positive affective tone: a longitudinal study." *Journal of Organizational Behavior,* 24(6): 667.

Nicholson, N., Brown, C. A., and Chadwick-Jones, J. K. (1976). "Absence from work and job satisfaction." *Journal of Applied Psychology*, 61, 728-737.

Nicholson, N. and Johns, G. (1985). "The absence culture and psychological contract-Who's in control of absence?" *Academy of Management Review*, 10, 397-407.

Lee, S., Fayek, A. Robinson, and Salehi Sichani, M. (2009). "A Pilot Study to Develop an Absenteeism Tracking Tool for Alberta Industrial Construction Projects." *Technical Report Submitted to Construction Owners Association of Alberta, Absenteeism Subcommittee of Workforce Development Coordinating Committee*, Edmonton, Alberta.

Martocchio, J. J. and Harrison, D. A. (1993). "To be there or not to be there?: Questions, theories, and methods in absenteeism research." *Research in Personnel and Human Resource Management*, 11, 259-328.

Martocchio, J. J. and Jimeno, D. I. (2003). "Employee absenteeism as an affective event." *Human Resource Management Review,* 13, 227–241.

Nicholson, N. (1977). "Absence behavior and attendance motivation: A conceptual synthesis." *The Journal of Management Studies*, 14, 231-252.

Park, Moonseo, Ji, Sae-Hyun, Lee, Hyun-Soo, and Kim, Wooyoung (2009). "Strategies for Design-Build in Korea Using System Dynamics Modeling." *J. Constr. Eng. Manage*, 1943-7862.0000095.

Park, Moonseo, Lee, Man-hyung, Lee, Hyun-soo, and Hwang, Sungjoo (2009). "Boost, Control or Both of Korean Housing Market: 831 Countermeasures." *J. Constr. Eng. Manage,* 1943-7862.0000159.

Rentsch, J.R. and Steel, R.P. (2003). "What does unit-level absence mean?: Issues for unit-level absence research." *Human Resource Management Review*, *13*, 185-202.

Rhodes, S. and Steers, R. (1981). "A systematic approach to diagnosing employee absenteeism." *Employee Relations*, 3, 2.

Ross, L. (1977). "The intuitive psychologist and his shortcomings: Distortions in the attribution process." *Advances in Experimental Social Psychology*, 10, 173-220.

Sagie A. (1998). "Employee absenteeism, organizational commitment, and job satisfaction: another look." *Journal of Vocational Behavior,* 52(2):156–171.

Salancik, G. R. and Pfeffer, J. (1978). "A social information processing approach to job attitudes and task design." *Administrative Science Quarterly*, 23, 224-253.

Statistics Canada (2008). "Work absence rate." Catalogue no. 71-211-X, Ottawa.

Steers, R. M. and Rhodes, S. R. (1978). "Major Influences on Employee Attendance: a process model." *Journal of Applied Psychology*, 63 (4), 391-407.

Sterman, J. D. (2007). "Exploring the next great frontier: system dynamics at fifty." *System Dynamics Review*, 23, 89–93.

Sterman, J. (2000). *Business dynamics: System thinking and modeling for a complex world*, McGraw-Hill, New York.

The Business Roundtable (1982). "Absenteeism and turnover (Report C-6)." New York.

Tourangeau, Roger, Rips, Lance J., and Rasinski, Kenneth (2000). *The Psychology of Survey Response,* Cambridge University Press, Cambridge.

Appendix A- Survey Administration Training Package

1. Introduction

Since methodology was a great challenge to this study a package was developed to document the procedures followed in this study to successfully administer the survey. This training package is intended to share some of the experiences gained and lessons learned during the first phase of the absenteeism pilot study. Following these instructions will facilitate administration of the survey and cooperation from site personnel.

In order to execute the administration methodology successfully, the study should have full support from management, and in particular, there should be a "champion" from management (e.g., labour relations manager) who supports the study to a full extent. Indeed, as initial enthusiastic support from management tends to decrease as the study is continued over time, this individual's continuous support is essential to the study's success. For example, he/she should communicate with the area managers about the study and take appropriate measures to ensure that it runs smoothly. Finally, the most effective data collection strategy we have found to date involves participants completing the survey during paid working time. This will require project management approval. In addition, when the unions and job stewards support the study, better cooperation from the craft workers can be achieved.

2. Preparation to administer the survey

a) Obtain a list of all lunch trailers on the jobsite. Also, if possible, try to find out which trades are in each trailer.

b) Select a sample size of different trades and select the trailers you want to survey.

c) Make a survey schedule for the selected trailers. The surveys should be completed after lunch and coffee breaks.

d) Announce the schedule to the top supervisors of the selected trailers (e.g., area managers) at least one week in advance so that they can communicate to their direct supervisors (e.g., superintendents, general foremen, foremen). This announcement should be made by the champion of the study.

e) The champion of the study should announce the study to job stewards in order to obtain cooperation and trust from the tradespeople. Job stewards should pass this information on to their respective memberships.

f) On the survey day, ensure that all crucial information is communicated through the area managers. Inform the direct supervision of the selected trailers that the survey will be done and ask them to ensure that their workers remain in the trailer (after break) to complete the survey.

g) Supervisors may resist the survey if they are not notified by their supervision; therefore, it is very important that they are given a reminder.

h) Foremen, general foremen and superintendents usually have separate trailers. Attempt to have them also fill out surveys in order to obtain a diversity of responses from different positions.

3. Survey administration

a) It is best to be in the trailers during the break. Then, the person administering the survey can announce that the survey will be commencing after the break, before the workers leave to smoke or to attend to other affairs.

b) Let the workers know that they can stay after the break and participate in a voluntary and anonymous workplace satisfaction survey that is intended to improve jobsite conditions.

c) Begin to introduce the study immediately after the break, following the guidelines in Section 4 (next).

d) Do not use the break time to administer the survey, which will lead to a seriously negative response from participants.

e) Inform the workers that the survey will not take longer than 20 minutes, and let them know that supervision is aware that they will be participating and will be late after the break.

f) In case there are busses waiting to commute workers to different locations, make the appropriate arrangements to avoid any disruptions.

4. How to present the survey to participants

a) The workforce will more readily participate if they perceive that their participation is valuable, and if they are assured that their personal responses will not be tracked by the company.

b) Participants should be informed that the survey is anonymous and confidential. Therefore, their company cannot track the respondents, and there is no harm in filling out the survey. Also, indicate that a neutral party, the University of Alberta, will compile the data and analyze the results.

c) Participants should be told that the results will be used to identify the problematic areas of the jobsite, address these conditions, and improve them. Participants should also know that the results will be utilized to introduce appropriate incentives to improve worker motivation at their jobsite, in the province, and potentially in the country.

d) The results will be analyzed by a neutral party, the University of Alberta, and will be presented to the COAA and to jobsite personnel for their expert opinion.

e) Since absenteeism is a personal issue, many individuals become sensitive when they think that the survey is intended to track absenteeism. Therefore, it should be made clear that the survey is a "workplace satisfaction survey", which is intended to improve jobsite conditions by identifying the issues that cause workers to miss work. **Try to avoid using "absenteeism study" when introducing/explaining the survey.**

f) Participants should know that Building Trades of Alberta is a member of the COAA research committee, and that the unions are supportive of this research.

g) Participants should be assured that the survey is anonymous and be instructed to place the surveys in the envelopes after completion and seal the envelopes.

h) Participants should be notified that the results will be used to improve jobsite conditions and that their honesty is valuable and appreciated.

i) Participants should be notified that their comments are valuable to the study. However, if they do not remember something or do not want to fill out a question, they can leave any part of the survey blank.

5. Script

Hello, my name is (survey administrator's name), and I am here to administer a workplace satisfaction survey.

This survey is aimed at identifying aspects of this jobsite that cause you to miss work. Determining what these aspects are will help your employer create a better working environment.

This survey is anonymous, voluntary, and confidential. You only have to fill out the portions of the survey that you are comfortable with. If you would like to participate in the survey, please stay in the trailer; otherwise, you may return to work.

This survey is commissioned by the Construction Owners Association of Alberta (COAA) and is fully supported by the owner, contractors, and Building Trades of Alberta. The University of Alberta will compile the data and perform the data

analysis as a neutral party and will provide the results to the owner, contractors, and the COAA.

The survey has been arranged with your foremen and general foremen, and they are aware that you are participating in it. If you are taking a bus, the busses will wait for you. The survey will take 20 minutes to complete.

I will provide envelopes along with the surveys to ensure that your answers are anonymous and confidential. Please put your completed survey in a sealed envelope and return it to me.

The University of Alberta has strict guidelines regarding this research that disallows the sharing of information that might negatively impact a participant. Your anonymity and confidentiality are therefore completely assured, and you can be as honest as you like.

After handing out the surveys, remind the participants that: On the second page, from all of the provided causes of absence, please only select only **one** reason that caused your most recent absence in the last (period since last round of survey was conducted) weeks. An absence includes missing of scheduled work for 2 or more consecutive hours for unexpected reasons such as illness and personal issues, as well as already planned and/or approved absences for reasons such as holidays. Statutory holidays and the days that the jobsite is shut down are not considered as absences.

6. Entering the data in the database

To enter the data into the database, follow the Absenteeism Tracking Tool User Manual provided in Appendix B.

Appendix B- Absenteeism Tracking Tool User Manual

1. Purpose

The purpose of the Absenteeism Tracking Tool, which has been developed in Microsoft® Access 2003/2007, is to keep track of and analyze the absenteeism data gathered through Workplace Satisfaction Surveys.

The analysis performed by queries and reports falls into 4 different categories: 1) ***Analysis of the Causes of Absenteeism in General*** (i.e., analysis of the responses from the overall job site participants); 2) ***Causes of Absence for Specific Groups*** (i.e., in-depth analyses of the causes of absence for specific groups such as apprentices, journeymen, workers who live with a partner and have children under 18 years old, etc.); 3) ***Characteristics of Absence for Specific Groups*** (for example, approval status of absence for different age groups or the notification status of the supervisor or company of diverse groups); 4) ***Group Perception*** (i.e., identifying how individuals perceive other workers' absence behavior).

The tool is designed to be user friendly. The user can easily enter data using the drop down boxes wherever applicable, while the results are simple to access and understand. Also, the user can design customized queries and reports using Microsoft Access.

2. Content

The tool consists of 5 different parts: **License agreements and user manual, definitions used in the database, entering/modifying questionnaires, queries/pivot charts and reports** (see Figure B-1). In the next section of this manual, how to use the absenteeism tracking tool is explained step by step.

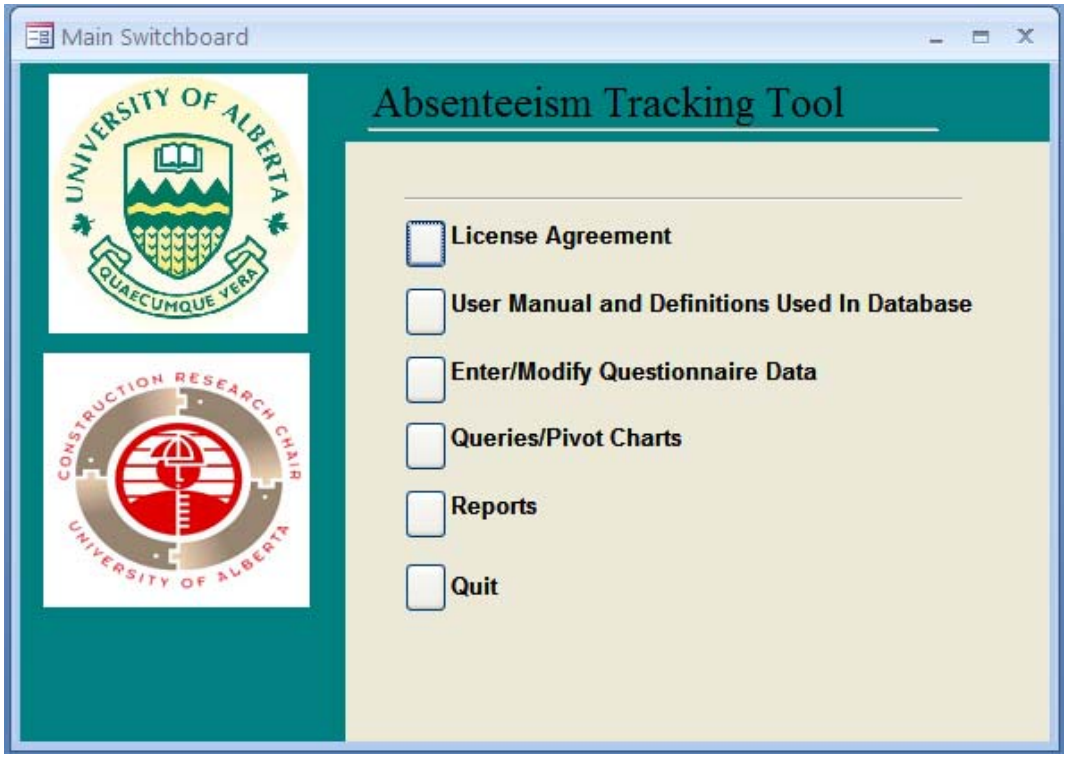


Figure B-1 Main Screen of the Absenteeism Tracking Tool

3. Instructions

Copy the tool onto your computer and run the database file. The main screen in Figure B-1 will be shown. Follow the instructions below to use the database.

3.1 Absenteeism Tracking Tool License Agreement

You must agree to these terms and conditions if you use this tool.

3.2 User Manual and Definitions Used in the Database

The Manual and Definitions used in the database can be found in this section. The definitions file provides the definition and formulas used in the database for analysis. Also, the manual explains how to use this tool.

3.3 Data Entry

Step 1. Click on the "Enter/Modify Questionnaire Data" option on the main screen; the switchboard seen in Figure B-2 will appear.

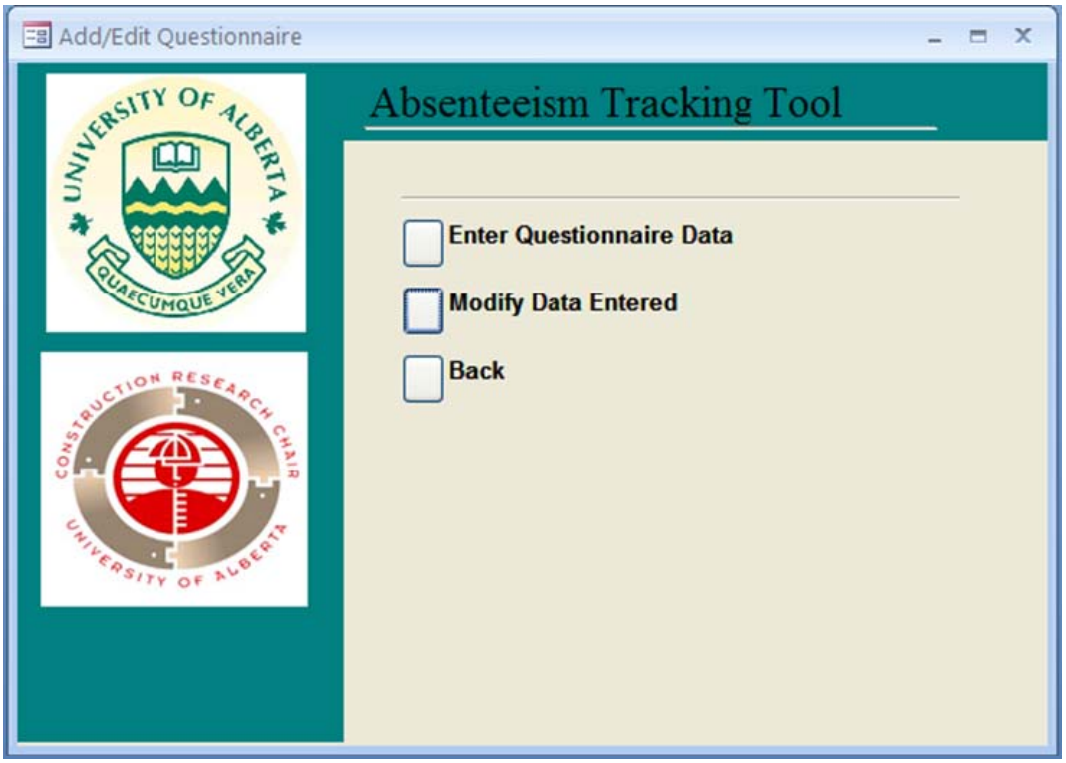


Figure B-2 Enter/Modify Questionnaire Data

Step 2. Click on "Enter Questionnaire Data" to open the Workplace Satisfaction Survey data entry form designed for entering data (see Figure B-3).

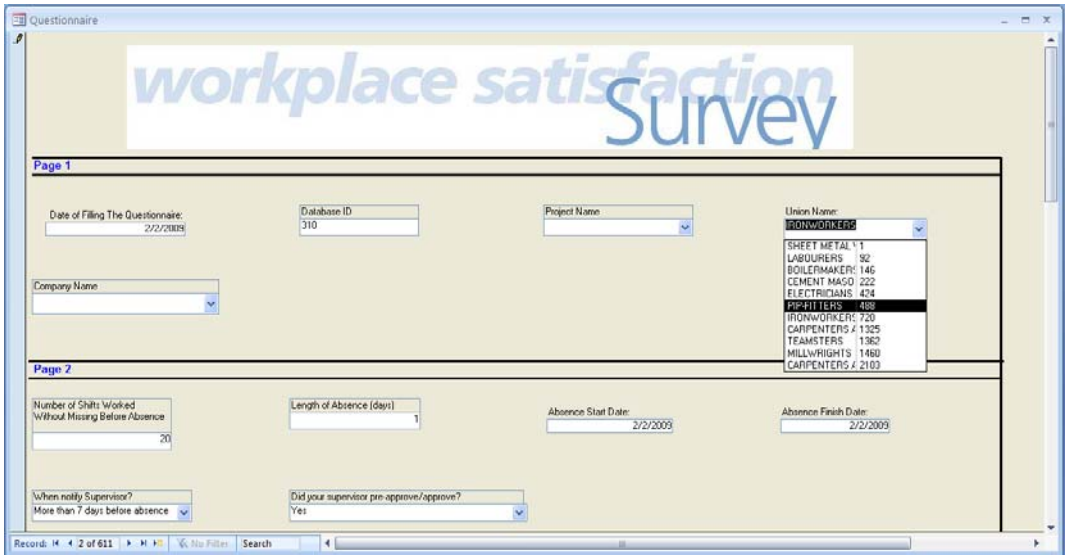


Figure B-3 Data Entry Form

Step 3. Assign a unique ID number to the questionnaire you want to enter in the database and write this number on the bottom right hand of the questionnaire in the designated "Database ID" box. This number can be used to track the questionnaire in case you make an error during data entry.

Step 4. Enter the questionnaire's data into the electronic form. Drop down boxes are applied in many fields in order to facilitate data entry.

Step 5. After the questionnaire is entered, save the database by (Ctrl+S) or by clicking on the save icon at the top left hand of the database. Then, create a new record to enter the next questionnaire. You can create a new record by clicking on the "next record" button at the bottom left side of the form.

Step 6. Repeat steps 3, 4 and 5 until you have entered all the questionnaires.

Step 7. Close the Data Entry form.

3.4 Data Modification

You are able to modify any data that was entered incorrectly into the database. To do so, follow the steps below.

Step 1. In the “Enter/Modify Questionnaire Data” switchboard (see Figure B-2), click on “Modify Data Entered” to open the data entry form.

Step 2. Move between the entered questionnaires by pressing the “next record” or “previous record” button at the bottom left side of the data entry form to find the questionnaire you need to correct. Identify the questionnaire using the Database ID assigned to that questionnaire.

Step 3. Save the database after the modifications and close the Data Entry Form.

3.5 Data Analysis: Queries/Pivot Charts

Once data entry is completed, the user can start viewing the results through queries and

reports. The list of analyses included in graphical form is provided in Table 1. In order to view the results of data analysis, follow the next steps.

Table B-1 List of Analysis Included in Graphical Form

Absenteeism Tracking Tool	**License agreement**	License Agreement	
	User manual and definitions used in the database	User Manual	
		Definitions Used in Database	
	Enter/modify questionnaire	Enter questionnaire	
		Modify questionnaire	
	queries/pivot charts	Queries-Pivot Charts	
		Participating Trades in The Study	
		Number of Responses vs. Time Spent Away From Home	
		Weighted Average Importance of Causes vs. Causes	
		Number of Responses vs. First Ranked Causes of Absence	
		Number of Responses vs. First Ranked Causes for People Living with Partner and Have Children Under 18	
		Number of Responses vs. First Ranked Causes for Apprentices	
		Number of Responses vs. First Ranked Causes for Journeymen	
		Number of Responses vs. Age Group	
		Average Duration of Absence vs. Age Group	
		Sum of Absence Durations vs. First Ranked Causes	
		Approval Status of Absence vs. Age Group	
		Considering Impact of Absence on Co-Workers	
		Other Possible Analysis	Causes of Absence vs. Work Schedule
			Causes of Absence vs. Local, LOA, or Travel Card
			Causes of Absence vs. Canadians, Temporary Foreign Workers, or Landed Immigrants
			Causes of Absence vs. Camp or Non-Camp Status
			Causes of Absence vs. Partnering Status
			Causes of Absence vs. Method of Transportation to Work
	Reports	Weighted Average Importance of Causes vs. Causes	
		Number of Responses vs. First Ranked Causes of Absence	
		Sum of Absence Durations vs. First Ranked Causes	
		Comparison Between First Ranked Causes For Apprentices and Journeyment	

Step 1. Click on the "Queries/Pivot Charts" option on the main screen to open the queries switchboard.

Step 2. Click on one of the queries to open that query.

Step 3. To see the chart that corresponds to that query, click on "Pivot chart view" under the view button (in Access 2007, the view button is under the "Home" tab).

To view additional queries, click on the "Other Possible Analysis" option. Figure B-4 shows a sample query and corresponding analysis. The tool has 184 queries that can be opened and viewed in the queries section of the database (see Figure B-4). Also, it is possible to design additional and customized queries.

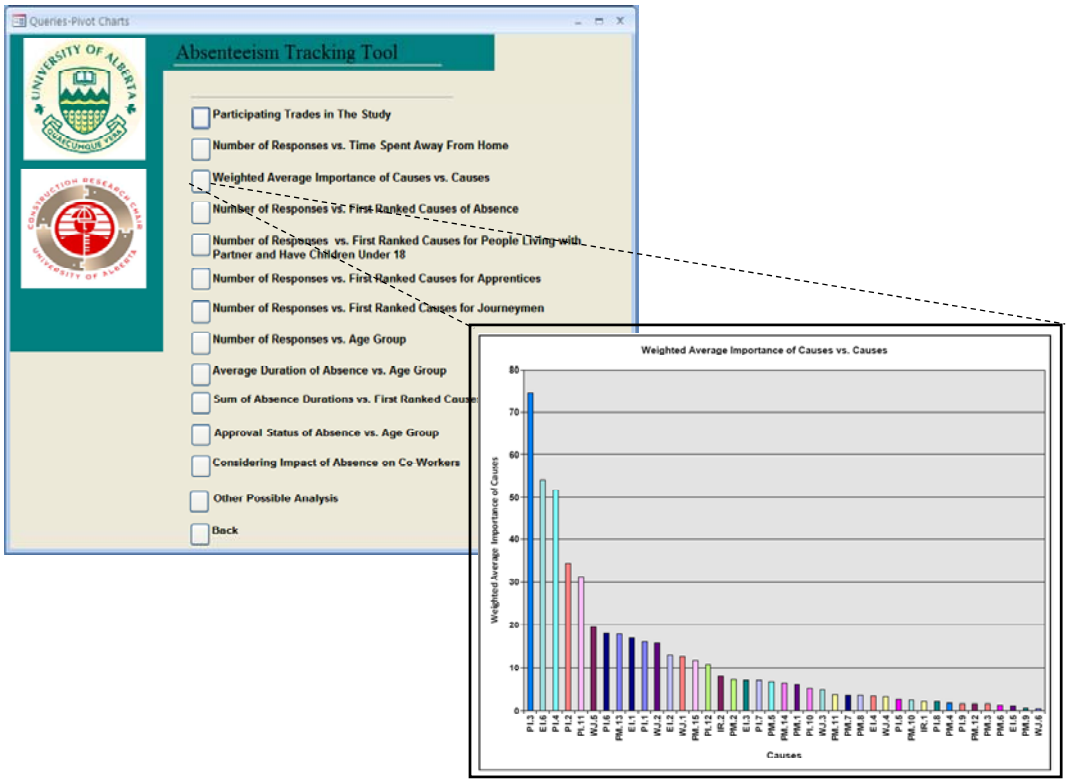


Figure B-4 Queries Switchboard and a pivot chart

3.6 Data Analysis: Reports

Reports are another way to show the results of analysis performed by queries. They are intended to show the results in a non-editable format or compare different queries with each other.

Step 1. Click on the "Reports" option on the main screen to open the reports switchboard.

Step 2. Click on one of the reports to open it.

Figure B-5 shows a report that compares the causes of absence for journeymen and apprentices.

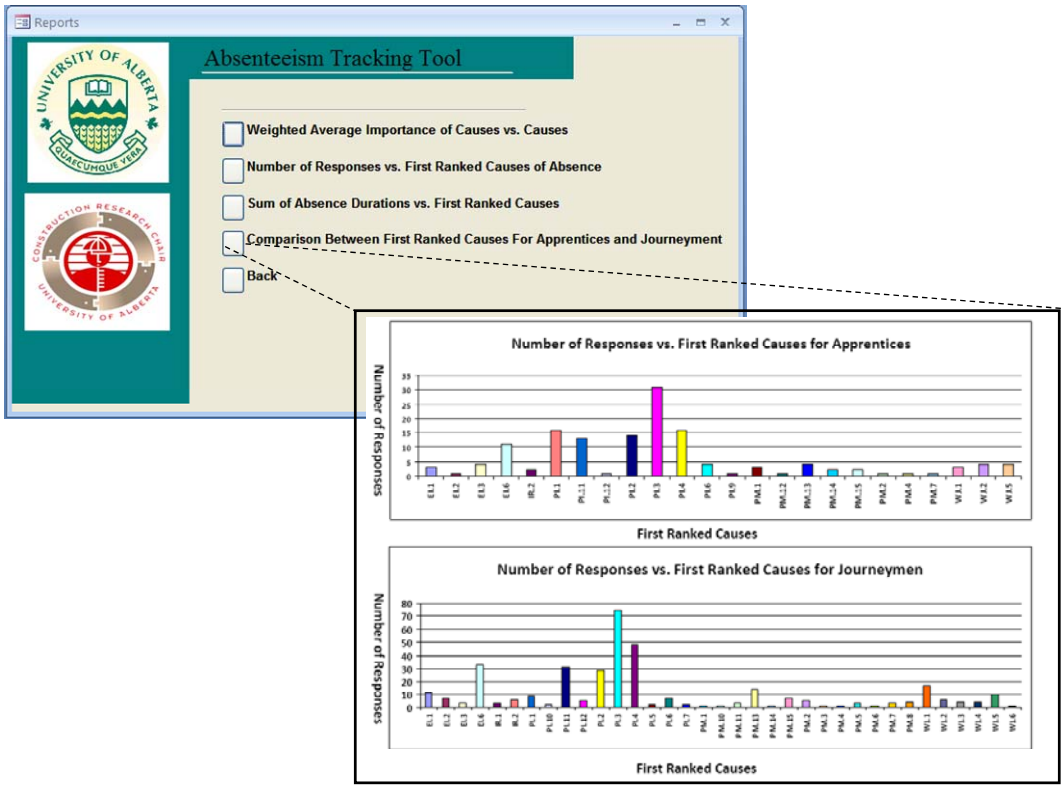


Figure B-5 Reports Switchboard and One of The Reports

Appendix C- Dynamics of Absenteeism: Effects of Company Policies on Employee Absence

1. Introduction

System dynamics is used in different disciplines, to analyze diverse industrial, economic, social, and environmental systems (Sterman 2000). It uses the concepts of feedback control and can assist policy makers to solve their problems (Forrester 1990).

This appendix briefly reviews system dynamics and its concepts. A causal loop diagram of absenteeism is developed to assess the effects of company policies (i.e., attendance incentives, disciplinary actions, and overtime) on absenteeism. This model is a graphical representation of what was observed on the jobsite during this pilot study. The reinforcing and balancing loops in the diagram are discussed and suggestions are made to mitigate the effects of reinforcing loops and to reduce absenteeism. It should be noted that the developed model is preliminary; it needs to be validated with company managers and further developed to become a qualitative system dynamics model.

2. Literature Review on System Dynamics

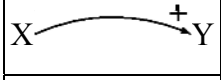
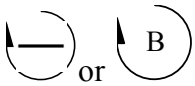
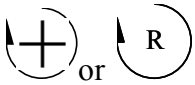
Jay W. Forrester is known as the pioneer in the system dynamics field (Sterman 2007). System dynamics uses ideas taken from the field of feedback control to organize available information into computer simulation models (Forrester 1990).

A system dynamics model is built based on a broad range of existing information. This information can be acquired from mental, written, and numerical databases. The amount and characteristics of information in each category differs. The

mental database contains far more valuable information in constructing a dynamic model than the written database and the written database contains much more information than the numerical database (Forrester 1990).

System dynamics employs causal loop diagrams to represent the feedback processes in the system. A causal loop diagram is comprised of variables connected by arrows (causal links) representing causal influence among the variables. A polarity is assigned to each causal link. The polarity can be either positive (+) or negative (-) to show how the dependent variable changes when the independent variable changes (Table 6-1). A positive link indicates that if the cause increases, the effect increases above what it would otherwise have been; if the cause decreases, the effect decreases below what it would have been. A negative link implies that if the cause increases, the effect decreases below what it would otherwise have been; if the cause decreases, the effect increases above what it would otherwise have been. The main loops in the model are highlighted by a loop identifier which shows whether the loop is positive (reinforcing) or negative (balancing). As shown in Table C-1, positive loops imply that if there is a change in one of the variables in the loop, they reinforce that change; negative loops oppose disturbance in the loops by balancing a change in a variable in the loop. In other words, they are self-correcting. (Sterman 2000)

Table C-1 Causal Loop Diagram Notation (Adopted from Sterman (2000))

Symbol	Interpretation
	All else equal, if X increases (decreases), then Y increases (decreases) above (below) what it would have been. In the case of accumulations, X adds to Y.
	All else equal, if X increases (decreases), then Y decreases (increases) above (below) what it would have been. In the case of accumulations, X abstracts from Y.
	Loop identifier: Negative (Balancing).
	Loop identifier: Positive (Reinforcing).

Qualitative System Dynamics in construction is used to understand complex systems, assess the existing policies and decisions in the system and propose guidelines to strengthen the desired effects and remove the negative effects. For example, Park et al. (2009) have developed a qualitative model of the housing market in Korea and tried to assess the effects of existing government policies on this market. Finally, they have proposed strategies to improve the positive housing structures and remove negative ones. Also, Park et al. (2009) have developed a qualitative model of the characteristics of design build (DB) delivery system in Korea. Based on this model, they have suggested DB policy alternatives to enhance the performance of this delivery system in Korea.

3. Model Development

Using the findings of previous research on absenteeism, interviews with tradespeople and managers, comments received from tradespeople about what motivates them to come to work and what makes them unwilling to attend the job,

and observations made on the jobsite during the 6 months of this study, a causal loop diagram of absenteeism was developed.

This diagram presents the structure of a system and facilitates the investigation of that system without requiring quantification of the relationships in the model. As a result, the model developed here does not include a numerical simulation; rather it shows the structure of the selected system. (because it is not validated and needs more time) The developed model only focuses on the effects of some of the strategies practiced by construction companies to control absence and its impacts (e.g., attendance incentives, disciplinary actions, and overtime). The loops created in response to these strategies that reinforce or balance absenteeism are discussed and suggestions are made to reduce the effects of reinforcing loops.

3.1 Main Variables Affecting Absenteeism

As shown in Figure C-1, absences are divided into planned and unplanned due to their different effects on construction productivity. The number of planned and unplanned absences are presented as stocks. Stocks are considered as accumulations and flows represent the rate of inflow and outflow to the stocks. According to Sterman (2000), stock and flow structures are used for variables whose behavior is important to explain the dynamics. Since these two variables are important in this model, they are shown as stocks. As shown in Table 6-2 in a system dynamic model stocks are represented by rectangles and flows are represented by pipes with valves that show the rate of flow. Clouds (also called sinks) in the model represent stocks outside the model boundary that are

incomplete or full and thus do not affect the flow inside the model (Sterman 2000).

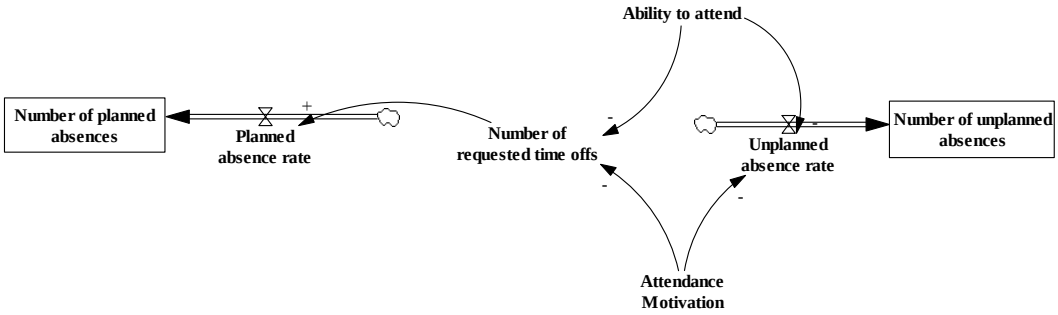
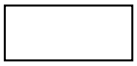
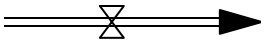


Figure C-1 Main Variables Affecting Absenteeism

According to the attendance model developed by Rhodes and Steers (1978), attendance is influenced by two main factors: attendance motivation and the ability to attend. These two are the main variables that affect absenteeism in the developed system dynamics model (Figure C-1). When the employees are unable to attend the job, they might follow either of the following two scenarios. Some may request time off from the company to plan for the absence in advance (e.g., personal/medical appointments). In these cases, an increase in the *number of requested time offs* increases the *planned absence rate* which eventually increases the *number of planned absences*. Other employees may take days off without prior notice. The lack of prior notice can be due to the occurrence of unexpected incidents, such as illness, child care, cold weather, a broken vehicle, etc., or due to previous experience with the company wherein absence was not approved, or due to a simple lack of willingness to notify the company. In such cases, the *unplanned absence rate* increases, which consequently increases the *number of unplanned absences*. Similarly, when *attendance motivation* among employees

decreases, they will either ask for time off from the company or take days off without prior notice.

Table C-2 Stock and Flow Diagramming Notation (Adopted From Sterman (2000))

Symbol	Notation
	Stock
	Flow and Valve
	Source/Sink

3.2 Effects of Attendance Incentives

As shown in Figure C-2, when the *number of unplanned absences* among employees increases, construction productivity decreases and, as a result, the *actual production rate* decreases. This, in turn, increases the *gap between planned and actual production rates* for the company. As a result, *the number of manhours to compensate the production* increases. A strategy that some companies practice to obtain the required man-hours and encourage employees to attend the job is to provide *attendance incentives*. Increasing or offering *attendance incentives* increases *attendance motivation* among workers and consequently decreases the *unplanned absence rate* and the number *of unplanned absences* (B1). As a balancing loop, B1 opposes any disturbance in the loop. For example, increase in the number of unplanned absences in this loop will be balanced through offering attendance incentives.

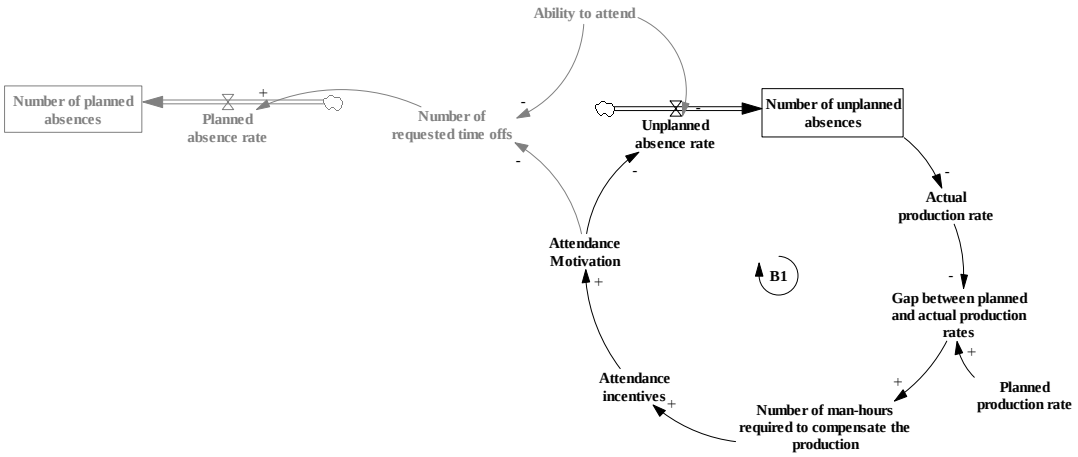


Figure C-2 Effects of Incentives

3.3 Effects of Disciplinary Actions

Another strategy practiced by companies to reduce unplanned absences and to obtain the required man-hours to ensure production is to apply company policies that discipline employees who have excessive unapproved absences (i.e., *enforcement of disciplinary actions*, as shown in Figure C-3). Disciplinary actions usually include warnings, followed by a suspension, and culminate in dismissal. These actions are intended to remind employees of the importance of their attendance for the company and to increase their *attendance motivation*. The hope is eventually to decrease the *number of unplanned absences* by enhancing their *anxiety of losing job.* This policy could be most effective when the *construction unemployment rate* is high. In strong economic conditions with a high construction employment rate, employees are confident of finding another job easily and thus may not be afraid of losing their job. Their anxiety decreases and disciplinary policies therefore would not increase the attendance motivation significantly (B2).

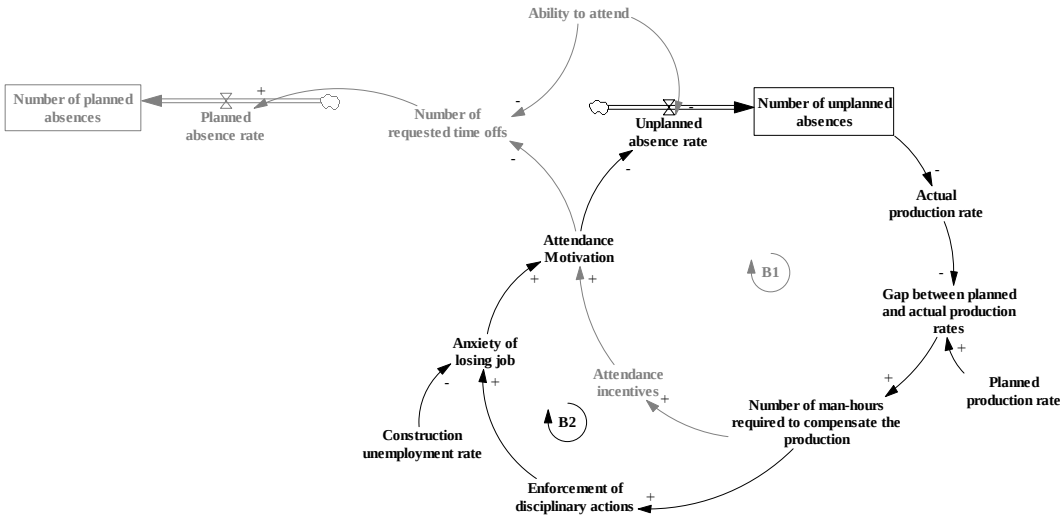


Figure C-3 Effects of Disciplinary Actions

3.4 Effects of Overtime Policies

Another strategy practiced by some companies to reduce unplanned absences and gain the required man-hours to compensate for production and schedule delays is to increase the *number of overtime hours* (Figure C-4). Company managers and tradespeople consider overtime attractive since it increases the size of a worker's *paycheque*. When a company offers overtime, many employees are willing to follow the company's conditions to be eligible for it. For example, the pilot project company allowed employees to work overtime on a weekend only if they had perfect attendance in regular time in that week. The increase in overtime hours thus increases *attendance motivation* among employees due to the potential to increase their *paycheque*. The *unplanned absence rate* and the *number of unplanned absences* decrease in turn (B3).

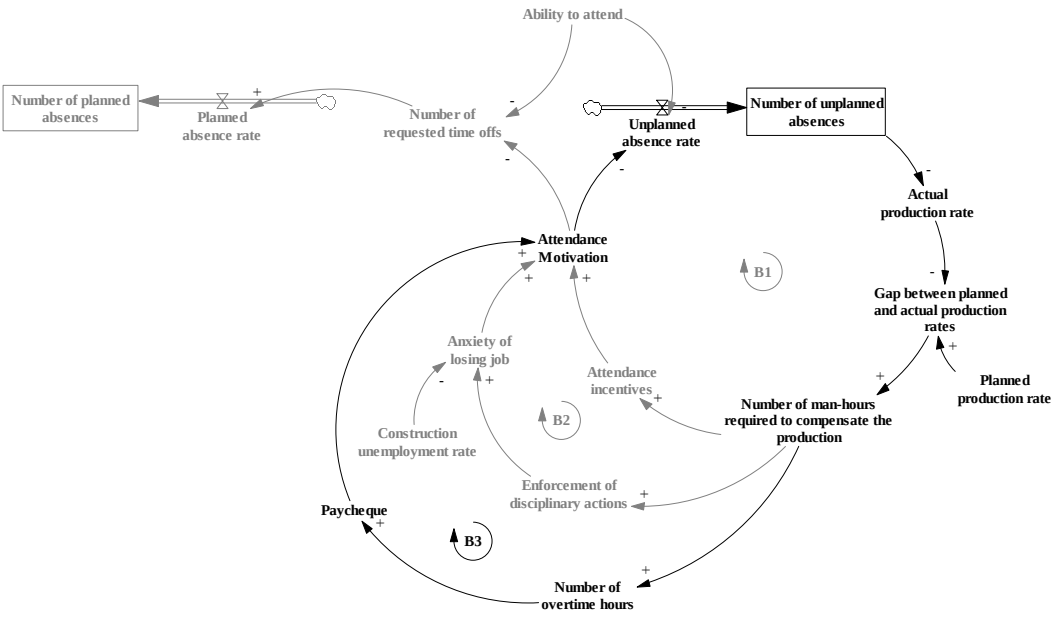


Figure C-4 Balancing Effect of Overtime

Overtime also can cause fatigue among employees and increase the *number of unplanned absences* (Figure C-5). After working a regular working week, employees become tired. Working overtime hours increases *employee fatigue*. The number of employees that need a day off to relax then increases. Their *attendance motivation* decreases and both the *unplanned absence rate* and the *number of unplanned absences* increase (R1). As a reinforcing loop, R1 implies that if there is a change in one of the variables in the loop (e.g., number of unplanned absences) the loop reinforces that change.

As discussed in loop B3, overtime increases attendance motivation by increasing employee paycheques. At the same time, it decreases attendance motivation by increasing employee fatigue (loop R1). Based on jobsite observations, the effect of fatigue is more significant than the effect of the paycheque. Employees take days off if they are very tired. On the pilot project, a common trend was to work for 6 days, from Monday to Saturday, and then to take Monday off to rest. In this

way, employees earned the overtime money and also rested due to fatigue. Based on company policies, employees who took Monday (i.e., a regular working day) off were not allowed to work overtime in the current week.

Figure C-5 shows another reinforcing effect of overtime. It shows that when a company increases the *number of overtime hours*, the *company allowance for time off* decreases because they do not want to lose their employees during regular hours nor to pay them more during overtime hours. This decreases the *planned absence rate* in the company. The *number of planned absences* and the *total number of absences* each decrease in turn (total number of absences is the sum of number of planned and unplanned absences). According to Steers and Rhodes (1978), absenteeism allows employees to find relief from stressful conditions and to maintain their mental health. When the *total number of absences* decreases, therefore, the level of *employee fatigue* due to work pressure and the high number of consecutive days worked increases. This leads to a larger number of people requiring a day off. The *attendance motivation* then goes down. This increases the *unplanned absence rate* among employees and consequently increases the *number of unplanned absences* (R2).

Loops B4 and B5 in Figure C-5 present the balancing effects of planned and unplanned absences on employee fatigue. It should be noted that even though, unplanned absences also reduce employee fatigue; they are detrimental to project productivity. As a result, it is better for companies to reduce these absences by having policies in place that allow employees to take legitimate and planned time offs after working a certain number of hours or days.

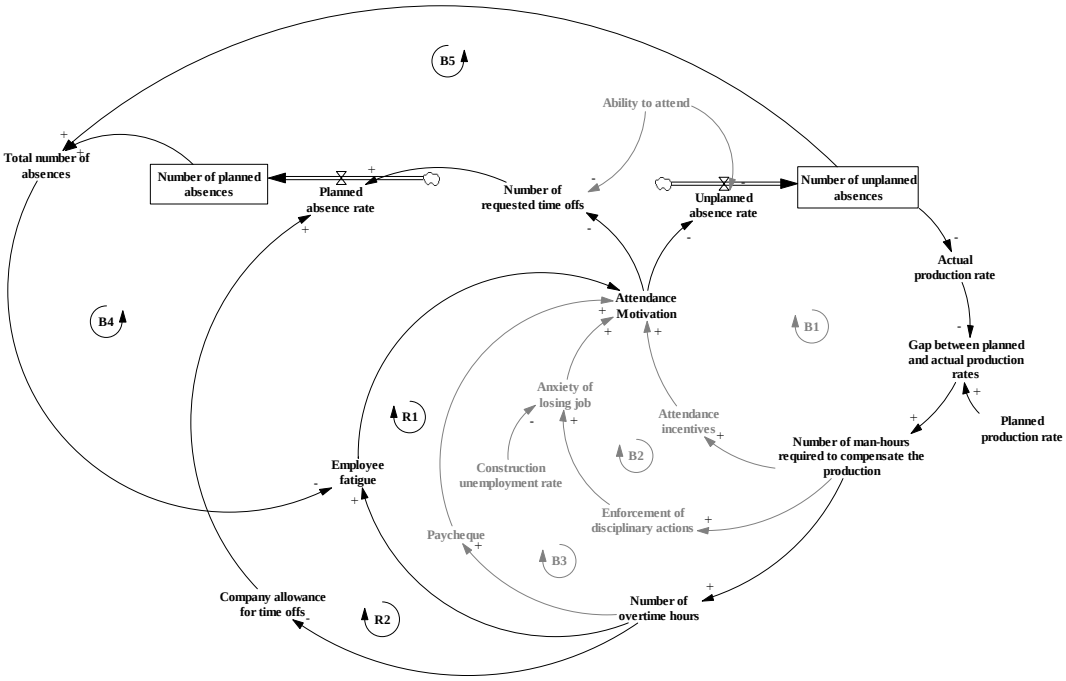


Figure C-5 Reinforcing Effects of Overtime

Based on jobsite observations and interviews with project labour relations managers, the following policy is suggested to reduce employee fatigue and eventually unplanned absences.

As shown in Figure C-6, to reduce employee fatigue due to overtime hours (R1), companies may put policies in place to control the number of consecutive hours/days worked by individuals (i.e., *company control on the number of consecutive hours worked by individuals).* Such policies can reduce employee fatigue (and consequently the *number of unplanned absences*) by allowing workers to take a break after working a certain number of overtime hours or by preventing them from working more overtime hours after working a set number of overtime hours (denoted by A in Figure C-6).

In addition, this policy allows employees to take regular time offs after working a certain number of hours/days. As mentioned in section 5.2.5, a jobsite labor relations manager suggested that, since industrial construction projects take a long time to complete, employees should be offered regular days off after working a certain number of days. Therefore, *Company control on the number of consecutive hours worked by individuals* may increases the *planned absence rate* (denoted by B in Figure C-6) and reduce *employee fatigue* and eventually may reduce the *number of unplanned absences.* If the company is overly strict regarding time off for tired employees, fatigue will increase and eventually cause an increase in the number of unplanned absences.

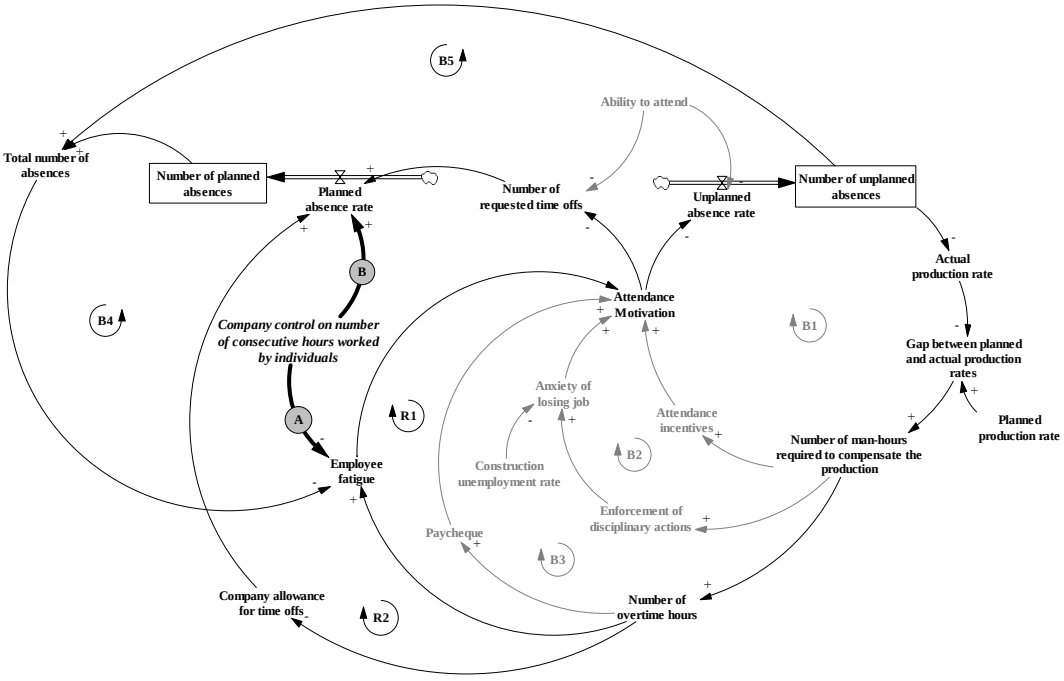


Figure C-6 Suggested Policy to Reduce Employee Fatigue

4. Conclusion

In the model presented in this Appendix, the effects of incentives, overtime hours, and disciplinary actions on absenteeism were discussed. According to the model, companies should not focus on only one of these policies (e.g., incentives) to control absenteeism. Instead, they should pay consistent and simultaneous attention to different policies. In this pilot project, the owner spent a large amount of money on attendance incentives to mitigate absenteeism levels; however, it was not very successful since other policies were not consistently attended to.

According to the model, disciplinary actions could be more effective in an economy with a higher construction unemployment rate. Further, the model shows that overtime can both increase and decrease attendance motivation: it both increases the size of paycheques and causes employee fatigue. A policy thus was suggested to reduce employee fatigue and eventually reduce unplanned absenteeism in construction.

Appendix D- Hierarchy of Causes of Absence

Personal Issues	
Sub-Category	**Causes**
Child care issues	Lack of available child care Illness of child
Other family care issues	Lack of available care (e.g., elder, adolescent) Illness of family member Conflict between long working hours and child care hours Family conflict (e.g., marital problem) Family schedule conflict Pet care
Personal illness	Occupational (e.g. food poisoning, disease spread, allergy) Non-occupational
Personal injury	Occupational Non-occupational
Personal appointment	Medical (e.g., doctor, dentist) Non-medical (e.g., legal, banking, moving homes)
Bereavement leave	
Chose not to work	Fatigue Stress Phobia (e.g., fear of height and etc.) Religious/cultural issues Depression Alcohol-related Drug-related Lack of job satisfaction Feeling overwhelmed/underwhelmed by demands of job Enough economic security Other:

Project Management and Supervision	
Sub-Category	**Causes**
Inadequate safety plans	
Excessive pressure from supervisors to meet targets	Schedule Deadlines Productivity Targets
Lack of adequate resources	Tools Equipment Material Information People on the job (i.e., under manning) Office equipment (i.e. computers, IT support)
Excessive rework/changes	
Poor nature of work	Lack of clear targets Unchallenging/repetitive/mundane work Unclear work assignments/instruction Inconsistent workload
Lack of incentive	Lack of availability of training/mentoring Lack of development/advancement opportunities Lack of incentives (e.g., time off, monetary) Lack of appreciation
Human Resources Policy Issues	Too high/ Too low wage level Overtime is paid without enforcing straight time attendance Lack of monitoring of and consequences for being absent Inability to get approved time off Lack of enforcement of fair policies for all Lack of flexibility of work shift
Surveillance by owner or project management	Excessive surveillance Lack of surveillance
Feeling invisible (e.g., seems	

Work/Job Conditions	
Sub-Category	**Causes**
Poor working conditions	Crowded lunch rooms Unsanitary facilities Lack of adequate bussing on site Long distances to travel on site Overcrowded job site Site congestion due to equipment and material Other:
Unsafe working conditions	Lack of personal protective equipments Lack of suitable equipments High risk work partners Other:
Work shift	Long hours Excessive consecutive days worked Excessive overtime Night shift
Poor transportation conditions	Poor transportation provisions to site Poor parking facilities on site Long travel time to site

Interpersonal Relationships	
Sub-Category	**Causes**
Personal conflicts	
Poor	
Poor crew dynamics/team spirit	
Poor workplace relationships	Lack of respect from fellow workers Bullying Harassment Discrimination Romance-related (e.g., new romance, failed romance)
Issues with foreman (e.g., poor	

External Issues	
Sub-Category	**Causes**
Easy to find another job	
Transportation issues	Traffic congestion/delays to site Bad weather for driving Lack/breakdown of personal transportation
Bad weather for working	

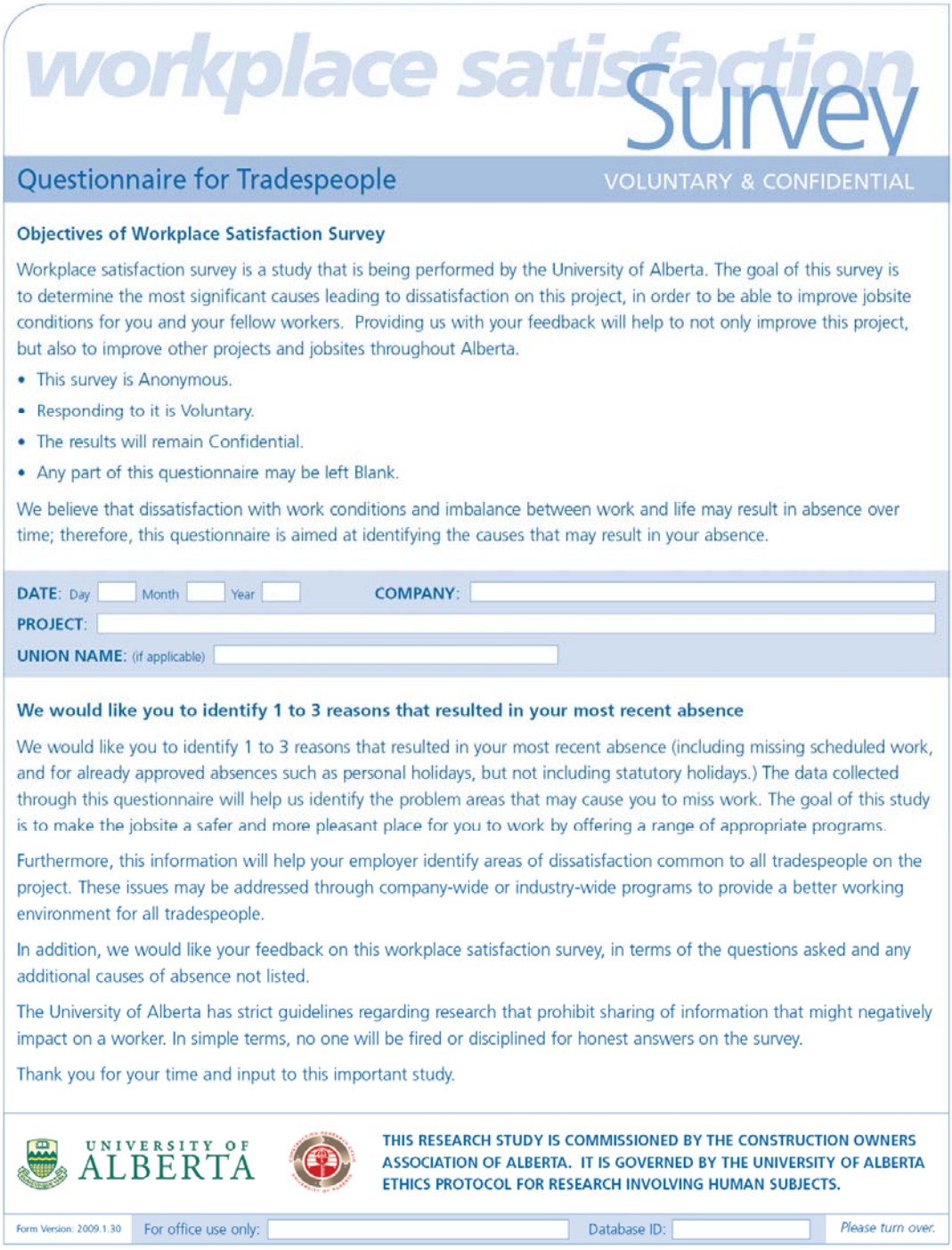
Appendix E- Factors Affecting Absenteeism

Personal Information	
Age	Under 20 20-30 31-40 41-50 Over 50
Gender	M F
Immigration Status	Canadian Citizen Landed Immigrant Temporary Foreign Worker
Position	Apprentice Journeyman Foreman Other:
Craft (specify):	
# of years of experience in trade (specify):	
# of years of experience with company (specify):	
Annual household gross income	Less than $50,000 $51,000 to $100,000 Over $100,000
Education level completed	High school Trade Other:
Partnering status	Single With partner
# of children under 18 living at home Full time parent at home?	 Yes No
# of consecutive days worked	
Work shift	Day Night
Work schedule (e.g., 4-10's, etc.) (specify):	
One-way commuting distance to work (specify in km):	
Method of transportation to work	Bus Own vehicle Car pool with others Other:
Are you staying in camp?	Yes No

Project Information	
Size of project ($)	
Duration of project (months)	
Phase of project (# of months completed)	
Number of people on site	
Type of project	Industrial Commercial Other:
Location of project	Ft. McMurray Edmonton Calgary Other:
Labour Group	Union CLAC Merit Other:
One-way distance of project from city center (km)	
Season of construction	Winter Spring Summer Fall
Location of majority of work	Indoor Outdoor Both
Work schedule for site (e.g., 4-10's, 5-8's, etc.) (specify):	
Amount of scheduled overtime per week (beyond 40 hours) (specify):	
Camp accommodation provided:	Yes No

Economic and Market Information	
Unemployment rate by trade	Provincial National
Volume of construction in province	Industrial sector Other sectors
Availability of skilled workers by trade	Provincial National

Appendix F- Workplace Satisfaction Survey



workplace satisfaction Survey

Questionnaire for Tradespeople — VOLUNTARY & CONFIDENTIAL

Objectives of Workplace Satisfaction Survey

Workplace satisfaction survey is a study that is being performed by the University of Alberta. The goal of this survey is to determine the most significant causes leading to dissatisfaction on this project, in order to be able to improve jobsite conditions for you and your fellow workers. Providing us with your feedback will help to not only improve this project, but also to improve other projects and jobsites throughout Alberta.

- This survey is Anonymous.
- Responding to it is Voluntary.
- The results will remain Confidential.
- Any part of this questionnaire may be left Blank.

We believe that dissatisfaction with work conditions and imbalance between work and life may result in absence over time; therefore, this questionnaire is aimed at identifying the causes that may result in your absence.

DATE: Day Month Year **COMPANY**:

PROJECT:

UNION NAME: (if applicable)

We would like you to identify 1 to 3 reasons that resulted in your most recent absence

We would like you to identify 1 to 3 reasons that resulted in your most recent absence (including missing scheduled work, and for already approved absences such as personal holidays, but not including statutory holidays.) The data collected through this questionnaire will help us identify the problem areas that may cause you to miss work. The goal of this study is to make the jobsite a safer and more pleasant place for you to work by offering a range of appropriate programs.

Furthermore, this information will help your employer identify areas of dissatisfaction common to all tradespeople on the project. These issues may be addressed through company-wide or industry-wide programs to provide a better working environment for all tradespeople.

In addition, we would like your feedback on this workplace satisfaction survey, in terms of the questions asked and any additional causes of absence not listed.

The University of Alberta has strict guidelines regarding research that prohibit sharing of information that might negatively impact on a worker. In simple terms, no one will be fired or disciplined for honest answers on the survey.

Thank you for your time and input to this important study.

UNIVERSITY OF ALBERTA

THIS RESEARCH STUDY IS COMMISSIONED BY THE CONSTRUCTION OWNERS ASSOCIATION OF ALBERTA. IT IS GOVERNED BY THE UNIVERSITY OF ALBERTA ETHICS PROTOCOL FOR RESEARCH INVOLVING HUMAN SUBJECTS.

Form Version: 2009.1.30 For office use only: Database ID: *Please turn over.*

Please complete the following table for your most recent absence (including missing scheduled work, and for already approved absences such as personal holidays, but not including statutory holidays.)

How many shifts (days/nights) did you work, prior to your most recent absence? _____ shifts

What was the length of your most recent absence? _____ days ***OR***, if less than one day: _____ hours

Date(s) of absence: from _____ d _____ m _____ y to _____ d _____ m _____ y

When did you notify your supervisor/company of your absence?

☐ More than 7 days before ☐ 3-7 days before ☐ Less than 3 days before ☐ Called in the morning ☐ Not at all

Did your supervisor/company pre-approve/approve the absence? ☐ Yes ☐ No ☐ Do not know

For the following list of factors, please choose ONLY UP TO 3 REASONS that contributed to your most recent absence and rank them in order of significance, 1 being the most significant and 3 being the least significant. Please do not choose more than 3 reasons.

Causes of Absence		Ranking: 1	2	3
WJ.1	Personal safety concerns			
WJ.2	Poor working conditions (e.g., crowded lunch rooms/unsanitary facilities, inadequate bussing on site, poor parking facilities, site congestion)			
WJ.3	Long working hours			
WJ.4	Tired from working overtime/many consecutive days worked			
WJ.5	Long commuting hours/distance to jobsite			
WJ.6	Tired from night shift			
PM.1	Unchallenging/repetitive/mundane work			
PM.2	Not having enough work to do (being idle)			
PM.3	Inability to get approved time off			
PM.4	Lack of flexibility of work shift			
PM.5	Lack of adequate resources (e.g., tools, material, information, equipment, sufficient crew members)			
PM.6	Lack of monitoring of and consequences for being absent (feeling invisible)			
PM.7	Excessive rework/changes			
PM.8	Excessive pressure from supervisors to meet schedule deadlines/productivity targets			
PM.9	Lack of clear targets (e.g., deadlines, productivity)			
PM.10	Unclear work assignments/instructions			
PM.11	Lack of development/advancement opportunities			
PM.12	Lack of availability of training/mentoring			
PM.13	Lack of recognition/incentives (e.g., time off, money) or appreciation			
PM.14	Lack of enforcement of fair policies for all			
PM.15	Too low wage level			
IR.1	Poor relations with coworkers (e.g., personal conflicts, poor team spirit, lack of respect, bullying, harassment, discrimination)			

Causes of Absence		Ranking: 1	2	3
IR.2	Issues with foreman/supervisor (e.g., poor relations with foreman/supervisor)			
PI.1	Child care/illness of child/school responsibilities			
PI.2	Other family responsibilities/issues (e.g., illness, elder care, family conflict)			
PI.3	Personal illness/injury			
PI.4	Personal appointment (medical/non-medical)			
PI.5	Bereavement leave			
PI.6	Need a day off			
PI.7	Personal distress (e.g., depression, divorce, phobia)			
PI.8	Alcohol/drug related			
PI.9	Have enough economic security			
PI.10	Good time/good weather for sudden time off (e.g., a long weekend)			
PI.11	Already planned time off (e.g., for vacation, trip, going home)			
PI.12	Lack of enough motivation to come to work			
EI.1	Transportation issues to site (e.g., traffic congestion/delays to site, bad weather for driving, breakdown of personal car)			
EI.2	Poor bussing system to site (e.g., crowded/overloaded busses, long waiting time for another bus)			
EI.3	Missed bus/car pool to site			
EI.4	Poor parking facilities on site			
EI.5	Not concerned about finding another job			
EI.6	Bad weather for working			
Other.	**Please provide and rank any other reasons not listed above:**			
OT.1				
OT.2				
OT.3				

Are you generally satisfied with working on this jobsite? ☐ Yes ☐ No

Please provide your comments for improvement in jobsite conditions:

What factors motivate you to come to work? What kinds of incentives or motivators would improve your desire to come to work?

Please provide us with any comments regarding the following:

Transportation system to jobsite.

Fairness and consistency of policies enforced by the company e.g., overtime policy, absence policy, etc.

What are the common causes that make you or other people unwilling to or not able to come to work on this jobsite?

What are the problems on the jobsite with the company or on your crew that cause you to be dissatisfied with your job?

The following information is being gathered anonymously to perform statistical analysis to relate the characteristics and situation of individuals with their causes of absence. We will not be using the data to identify you, and your responses will remain confidential. This analysis will help us to develop more specific and better workplace satisfaction strategies.

WORK/LIVING INFORMATION

Please select the trade you are in:

☐ Bricklayers	☐ Insulators/Heat and Frost	☐ Pipefitters
☐ Boilermakers	☐ Ironworkers	☐ Roofers
☐ Cement Finishers/Masons	☐ Ironworkers/Reinforcing	☐ Sheet Metal Workers
☐ Plasterers/Fireproofers	☐ Labourers	☐ Teamsters
☐ Carpenters	☐ Millwrights	☐ Tile-Setters
☐ Carpenters/Scaffolders	☐ Operating Engineers	☐ Welders
☐ Electricians	☐ Operating Engineers/Surveyors	☐ Other *(please specify)*:
☐ Glaziers	☐ Painters and Decorators	

Position: Apprentice ☐ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ Journeyman ☐ Foreman ☐ Other *(please specify)*:

Construction work experience:

Please specify your number of months or years of experience in the trade: _____ Month(s) _____ Year(s)

Please specify your number of months or years of experience with this company or on this project: _____ Month(s) _____ Year(s)

LIVING ARRANGEMENTS/IMMIGRATION STATUS

Please specify the one that applies to you. *You are:*

☐ Local ☐ Living Out Allowance (LOA) ☐ Travel card ☐ Travel Assistantship and Accommodation Program (TAAP)

Please specify the one that applies to you: ☐ Canadian Citizen ☐ Landed Immigrant ☐ Temporary Foreign Worker (TFW)

Are you staying in camp? ☐ Yes ☐ No

PERSONAL INFORMATION

Your age group: ☐ Under 20 ☐ 20-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ Over 60

Gender: ☐ Male ☐ Female

Education level(s) completed: *Please specify ALL that apply to you.* ☐ Less than High School ☐ High School

☐ Apprenticeship/Trade Program ☐ College ☐ University Other *(please specify)*:

FAMILY INFORMATION

Partnering status: ☐ Single ☐ With partner ☐ Divorced

Partner at home or working: *Does your partner work outside the home?* ☐ Yes ☐ No ☐ Not Applicable

Number of children under 18 living with you: _____ ***OR*** ☐ None

WORK/JOB CONDITIONS

Which of the following applies most often to you?:

☐ 4 days, 10 hours per day ☐ 4 days,10 hours per day, plus Fridays ☐ 4 days, 10 hours, plus Fridays and Saturdays

Work shift: *What has your work shift been in the last month?* ☐ Day shift ☐ Night shift ☐ Both

Commuting distance: *How far is your daily commute to the jobsite from home? (**i.e., one way distance**)*

☐ 1-29 km ☐ 30-59 km ☐ 60-99 km ☐ 100-129 km ☐ More than 130 km

Commuting duration: *How long does it take you to get to the jobsite (or get back home)? (**i.e., one way**)*

☐ 15-30 minutes ☐ 30-45 minutes ☐ 45-60 minutes ☐ 1 hour to 1 hour & 15 minutes ☐ More than 1 hour & 15 minutes

Time spent away from home:

How long are you away from home on a daily basis for work? (i.e., from the time you leave home in the morning until you return in the evening)

☐ 10-11 hours ☐ 11-12 hours ☐ 12-13 hours ☐ 13-14 hours ☐ 14-15 hours ☐ 15-16 hours

Method of transportation to work:

☐ Project provided busses ☐ Own vehicle ☐ Car pool with others ☐ Drop off ☐ Public transportation

Group perception:

How many days per month do you think you miss scheduled work?: _____

How many days per month do you think your co-workers miss scheduled work?: _____

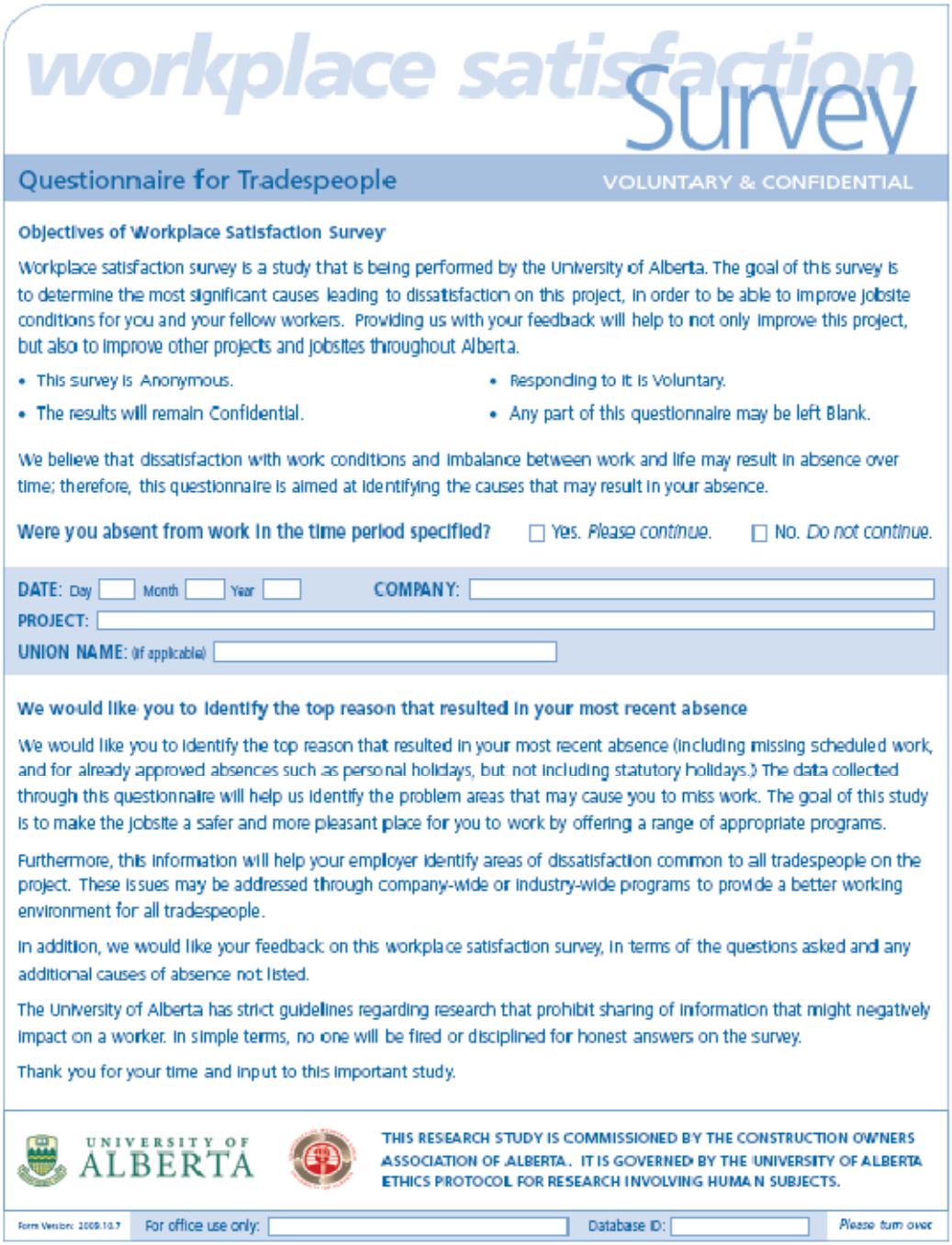
How many days would you like to work in a month?: _____

Do you consider the impacts of an unscheduled absence on your co-workers?: ☐ Yes ☐ No

Do you consider the impacts of an unscheduled absence on your employer?: ☐ Yes ☐ No

Does it bother you when your co-worker(s) miss scheduled work without notice?: ☐ Yes ☐ No

Appendix G- Modified Workplace Satisfaction Survey



workplace satisfaction Survey

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- This survey is Anonymous.
- The results will remain Confidential.
- Responding to it is Voluntary.
- Any part of this questionnaire may be left Blank.

We believe that dissatisfaction with work conditions and imbalance between work and life may result in absence over time; therefore, this questionnaire is aimed at identifying the causes that may result in your absence.

Were you absent from work in the time period specified? ☐ Yes. *Please continue.* ☐ No. *Do not continue.*

DATE: Day ☐ Month ☐ Year ☐ **COMPANY:** ☐

PROJECT: ☐

UNION NAME: (if applicable) ☐

We would like you to identify the top reason that resulted in your most recent absence

We would like you to identify the top reason that resulted in your most recent absence (including missing scheduled work, and for already approved absences such as personal holidays, but not including statutory holidays.) The data collected through this questionnaire will help us identify the problem areas that may cause you to miss work. The goal of this study is to make the jobsite a safer and more pleasant place for you to work by offering a range of appropriate programs.

Furthermore, this information will help your employer identify areas of dissatisfaction common to all tradespeople on the project. These issues may be addressed through company-wide or industry-wide programs to provide a better working environment for all tradespeople.

In addition, we would like your feedback on this workplace satisfaction survey, in terms of the questions asked and any additional causes of absence not listed.

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Form Version: 2009.10.7 — For office use only: ☐ — Database ID: ☐ — *Please turn over*

Please complete the following table for your most recent absence (including missing scheduled work, and for already approved absences such as personal holidays, but not including statutory holidays.)

How many shifts (days/nights) did you work, prior to your most recent absence? _____ shifts

What was the length of your most recent absence? ___ ___ days *OR*, If less than one day: _____ hours

Date(s) of absence: from _____ d _____ m _____ y to _____ d _____ m _____ y

When did you notify your supervisor/company of your absence?

☐ More than 7 days before ☐ 3-7 days before ☐ Less than 3 days before ☐ Called in the morning ☐ Not at all

Did your supervisor/company pre-approve/approve the absence? ☐ Yes ☐ No ☐ Do not know

For the following list of factors, please place an X beside the top reason that contributed to your most recent absence. Please do not choose more than 1 reason. If none of these factors apply, please indicate below another reason for your absence.

CAUSES OF ABSENCE

Work/Job Conditions:

1. Personal safety concerns
2. Occupational illness/injury
3. Poor working conditions (e.g., crowded lunch rooms/unsanitary facilities, inadequate bussing on site, poor parking facilities, site congestion)
4. Long working hours
5. Tired from working overtime/many consecutive days worked
6. Long commuting hours/distance to jobsite
7. Tired from night shift

Project Management and Supervision:

8. Unchallenging/repetitive/mundane work
9. Not having enough work to do (being idle)
10. Inability to get approved time off
11. Lack of flexibility of work shift
12. Lack of adequate resources (e.g., tools, material, information, equipment, sufficient crew members)
13. Lack of monitoring of and consequences for being absent (feeling invisible)
14. Excessive rework/changes
15. Excessive pressure from supervisors to meet schedule deadlines/ productivity targets
16. Lack of clear targets (e.g., deadlines, productivity)
17. Unclear work assignments/instructions
18. Lack of development/advancement opportunities
19. Lack of availability of training/mentoring
20. Lack of recognition/incentives (e.g., time off, money) or appreciation
21. Lack of enforcement of fair policies for all
22. Too low wage level

Interpersonal Relationships:

23. Poor relations with coworkers (e.g., personal conflicts, poor team spirit, lack of respect, bullying, harassment, discrimination)
24. Issues with foreman/supervisor (e.g., poor relations with foreman/supervisor)

Personal Issues:

25. Child care/illness of child/school responsibilities
26. Other family responsibilities/issues (e.g., illness, elder care, family conflict)
27. Non occupational illness/injury
28. Personal appointment (medical/non-medical)
29. Bereavement leave
30. Need a day off
31. Personal distress (e.g., depression, divorce, phobia)
32. Alcohol/drug related
33. Have enough economic security
34. Good time/good weather for sudden time off (e.g., a long weekend)
35. Already planned time off (e.g., for vacation, trip, going home)
36. Lack of enough motivation to come to work

External Issues:

37. Transportation issues to site (e.g., traffic congestion/delays to site, bad weather for driving, breakdown of personal car)
38. Poor bussing system to site (e.g., crowded/overloaded busses, long waiting time for another bus)
39. Missed bus/car pool to site
40. Poor parking facilities on site
41. Not concerned about finding another job
42. Bad weather for working

None of the above factors apply. The reason I was absent is:

For the factor that you selected as the reason for your absence, can you suggest something that the jobsite or company could do to address this factor so that you would not be absent?

Please complete the following table for your most recent absence (including missing scheduled work, and for already approved absences such as personal holidays, but not including statutory holidays.)

How many shifts (days/nights) did you work, prior to your most recent absence? _____ shifts

What was the length of your most recent absence? ____ days *OR*, If less than one day: _____ hours

Date(s) of absence: from _____ d _____ m ____ y to _____ d _____ m _____ y

When did you notify your supervisor/company of your absence?

☐ More than 7 days before ☐ 3-7 days before ☐ Less than 3 days before ☐ Called in the morning ☐ Not at all

Did your supervisor/company pre-approve/approve the absence? ☐ Yes ☐ No ☐ Do not know

For the following list of factors, please place an ✗ beside the top reason that contributed to your most recent absence. Please do not choose more than 1 reason. If none of these factors apply, please indicate below another reason for your absence.

CAUSES OF ABSENCE

Work/Job Conditions:

1. Personal safety concerns
2. Occupational illness/injury
3. Poor working conditions (e.g., crowded lunch rooms/unsanitary facilities, inadequate bussing on site, poor parking facilities, site congestion)
4. Long working hours
5. Tired from working overtime/many consecutive days worked
6. Long commuting hours/distance to jobsite
7. Tired from night shift

Project Management and Supervision:

8. Unchallenging/repetitive/mundane work
9. Not having enough work to do (being idle)
10. Inability to get approved time off
11. Lack of flexibility of work shift
12. Lack of adequate resources (e.g., tools, material, information, equipment, sufficient crew members)
13. Lack of monitoring of and consequences for being absent (feeling invisible)
14. Excessive rework/changes
15. Excessive pressure from supervisors to meet schedule deadlines/ productivity targets
16. Lack of clear targets (e.g., deadlines, productivity)
17. Unclear work assignments/instructions
18. Lack of development/advancement opportunities
19. Lack of availability of training/mentoring
20. Lack of recognition/incentives (e.g., time off, money) or appreciation
21. Lack of enforcement of fair policies for all
22. Too low wage level

Interpersonal Relationships:

23. Poor relations with coworkers (e.g., personal conflicts, poor team spirit, lack of respect, bullying, harassment, discrimination)
24. Issues with foreman/supervisor (e.g., poor relations with foreman/supervisor)

Personal Issues:

25. Child care/illness of child/school responsibilities
26. Other family responsibilities/issues (e.g., illness, elder care, family conflict)
27. Non occupational illness/injury
28. Personal appointment (medical/non-medical)
29. Bereavement leave
30. Need a day off
31. Personal distress (e.g., depression, divorce, phobia)
32. Alcohol/drug related
33. Have enough economic security
34. Good time/good weather for sudden time off (e.g., a long weekend)
35. Already planned time off (e.g., for vacation, trip, going home)
36. Lack of enough motivation to come to work

External Issues:

37. Transportation issues to site (e.g., traffic congestion/delays to site, bad weather for driving, breakdown of personal car)
38. Poor bussing system to site (e.g., crowded/overloaded busses, long waiting time for another bus)
39. Missed bus/car pool to site
40. Poor parking facilities on site
41. Not concerned about finding another job
42. Bad weather for working

None of the above factors apply. The reason I was absent is:

For the factor that you selected as the reason for your absence, can you suggest something that the jobsite or company could do to address this factor so that you would not be absent?

LIVING ARRANGEMENTS/IMMIGRATION STATUS

Please specify the one that applies to you. *You are:*

☐ Local ☐ Living Out Allowance (LOA) ☐ Travel card ☐ Travel Assistantship and Accommodation Program (TAAP)

Please specify the one that applies to you: ☐ Canadian Citizen ☐ Landed Immigrant ☐ Temporary Foreign Worker (TFW)

Are you staying in camp? ☐ Yes ☐ No

PERSONAL INFORMATION

Your age group: ☐ Under 20 ☐ 20-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ Over 60

Gender: ☐ Male ☐ Female

Education level(s) completed: *Please specify ALL that apply to you.* ☐ Less than High School ☐ High School

☐ Apprenticeship/Trade Program ☐ College ☐ University Other *(please specify)*:

FAMILY INFORMATION

Partnering status: ☐ Single ☐ With partner ☐ Divorced

Partner at home or working: *Does your partner work outside the home?* ☐ Yes ☐ No ☐ Not Applicable

Number of children under 18 living with you: _____ *OR* ☐ None

WORK/JOB CONDITIONS

Which of the following applies most often to you?:

☐ 4 days, 10 hours per day ☐ 4 days,10 hours per day, plus Fridays ☐ 4 days, 10 hours, plus Fridays and Saturdays

Work shift: *What has your work shift been in the last month?* ☐ Day shift ☐ Night shift ☐ Both

Commuting duration: *How long does it take you to get to the jobsite (or get back home)? (i.e., one way)*

☐ 15-30 minutes ☐ 30-45 minutes ☐ 45-60 minutes ☐ 1 hour to 1 hour & 15 minutes ☐ More than 1 hour & 15 minutes

Time spent away from home:
How long are you away from home on a daily basis for work? (i.e., from the time you leave home in the morning until you return in the evening)

☐ 10-11 hours ☐ 11-12 hours ☐ 12-13 hours ☐ 13-14 hours ☐ 14-15 hours ☐ 15-16 hours

Method of transportation to work:

☐ Project provided busses ☐ Own vehicle ☐ Car pool with others ☐ Drop off ☐ Public transportation

Group perception:

How many days per month do you think you take off or miss? _____

How many days per month do you think your co-workers take off or miss? _____

How many days would you like to work in a month? _____