

Why Do Canadian Employees Quit? Results from Linked Employee-Employer Data

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

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ABSTRACT

Employee turnover is a fairly common phenomenon across organizations throughout the globe, which creates both direct and indirect costs to companies (Lambert et al., 2012). Though numerous authors have investigated the problem, only a small number have studied the Canadian labour market. Furthermore, few have examined how various hiring or screening tests during the hiring process affect worker attrition. The thesis aims to complement existing research about employee voluntary turnover (vs. involuntary turnover) and retention by further investigating some of the root causes and potential solutions from a Canadian perspective.

Using longitudinal data from the Workplace and Employee Survey (WES) supplied by Statistics Canada through an 8-year period, it explores 5 hypotheses relating to the initial hiring process (ten screening tests), the gender and marital status of employees, compensation, and employees' seniority in the company. The survey datasets are based on respondents of, on average, 6,268 companies and 20,387 corresponding workers from 1999 to 2006. Logit and probit regression models are employed for the empirical tests. The results are surprising, and seem to differ from most studies in other countries. In Canada, it appears wage has no effect on workers' turnover at all, employee engagement programs negatively affect workers' decisions to stay, women are more likely to quit than men are, married employees are no more likely to quit than anyone else, children seem to have no impact on employee attrition, and workers with lower status in the company are more likely to stay.

The concluding chapter discusses implications of these findings and how they might help Canadian organizations deal with employee voluntary turnover.

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DEDICATIONS

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Chapter 1

Introduction

1.1 The cost of employee turnover

In OECD¹ countries, about 10 to 15% of workers quit their jobs every year (Brown, Garino, & Martin, 2009). This means millions of people every month leave one company and take a job with another. By the age of 30, people with no college education have already worked for eight different bosses (Ahituv & Lerman, 2011). Every six years employees generally switch employers (Kransdorff, 1996). Clark and Perry (1999) report that one out of seven workers are expected to leave annually. Topical evidence from the Bureau of Labour Statistics (2006) indicates that annual voluntary turnover ratio is 30% or higher among visible minorities and in some industries, such as social work (Mor Barak et al., 2001; Smith, 2005).

Hiring and firing is costly and can create frustration with employees (Parrish, 2006). It can be a severe managerial problem. Lambert et al. (2012) argue that turnover has both direct and indirect costs. Separation, recruitment, replacement, training, and lost productivity are direct costs (Mor Barak et al., 2001). Indirect costs include lost colleagues' productivity², the time and resources it takes for management or HR to tackle vacant positions, fatigued workers, inadequate staffing, decline of morale, and inferior productivity as a new employee learns the vacant position (Iglehart, 1990; Mor Barak et al., 2001). Given an anticipated cost of over \$10,000 per employee exit (Survey Confirms High Cost of Turnover, 1998)—a cost that may rise for upper-level positions—excessive

¹ The “OECD” stands for the Organization for Economic Co-operation and Development, an international organization helping governments tackle the economic, social, and governance challenges of a globalized economy.

² “Lost colleagues’ productivity” means a worker’s productivity decreases because his or her colleague leaves the company.

turnover rates can have devastating bottom-line consequences. When employees quit during the transition phase³ (6 months) costs are even higher. Besides losing a potentially productive employee, the organization has not yet recovered the investment associated with their hiring and training (Barrick & Zimmerman, 2000).

There are two major types of turnover. One is voluntary, which occurs when the employee quits, and the other is involuntary, which takes place due to employer dismissal. Voluntary exits are the most common, costly, and destructive to organizations, yet they are often avoidable (Price, 1977).

Nevertheless, a few researchers wonder if it is worth the trouble to avoid voluntary turnover. In a study of British workplaces, Brown, Garino, and Martin (2009) argue that newly-hired workers might be more driven, more educated, and better qualified, and employees' resignation may virtually boost organization growth. Their study shows that a company's profit can actually increase due to turnover, as long as wages are set in negotiations with the candidate or through trade union negotiations.

1.2 Gaps in the literature

The gaps in the literature lie in the following aspects. A fairly small number of previous studies investigate selection and assessment tests during the hiring process in detail, other than telephone, in-person, or video-conference interviews (Scholarios & Lockyer, 1999; Griffeth et al., 2000; Parrish, 2006; Barrick & Zimmerman, 2009; Fisk & Skatterbo, 2010). Some researchers investigate the effects of marital status on attrition⁴(Ahituv & Lerman, 2011; Lambert et al., 2012; Griffeth, Hom, & Gaertner, 2000), or how promotions affect employee exits (Samuel & Chipunza, 2009; Lambert et al., 2012). Few papers focusing on employee attrition are found in the Canadian literature, especially

³ A "transition phase" refers to a pre-contract or probationary period.

⁴ "Attrition" is used interchangeably with "Turnover" as well as "Resignation".

empirical research with longitudinal/panel data (Haines et al., 2010; Kerby & Blidook, 2011).

To fill these gaps, this paper aims to further investigate root causes for the turnover problem, from a Canadian perspective. Overall, five of the claims that have been supported by research are tested to see if they stand up to Canadian statistics. Where the evidence on a topic conflicts among researchers, I choose one claim to test. Using this approach, I propose five hypotheses which are discussed in Chapter 4, Theoretical and Empirical Models.

1.3 How this study is unique

This paper is one of the few Canadian research papers conducting empirical studies with longitudinal or panel data. It is the first to investigate the effects of ten different hiring tests that employees are required to take when first hired. These ten tests range from general or job-related skill/knowledge tests, safety tests (medical examination, drug test, and security check), and personal interviews, to staffing agency tests.

On the topic of promotion, previous studies (Samuel & Chipunza, 2009; Griffeth, Hom, & Gaertner, 2000) investigated whether promotion should be performance or seniority based. None of them examined how a number of promotions, and the timing of those promotions, would affect workers' turnover intent.

Finally, thanks to the nationwide Workplace and Employee Survey of 1999-2006 from Statistics Canada and its research data centers (RDCs), this paper is able to provide an overview of the employee attrition problem in the Canadian labour market. It compares, justifies, and tests the reasons illustrated in previous studies from Canada and abroad. Based on the correlations found, the thesis will discuss implications and recommendations for employers as well as researchers.

1.4 Result summary and thesis organization

Through both logit and probit regression analyses, this study intends to show the correlations between voluntary turnover and 5 categories of predictors as 5 hypotheses. Results from three sets of regression estimations across three consecutive intervals not only confirmed previous research findings, but also provided some new outcomes.

Hypothesis 1 was partially supported: Personal interviews can work either way for employees' voluntary turnover intent. The results for the ten hiring tests are three-fold: medical examinations negatively affect workers' exit; tests for specific skills could work either way for workers' intent to quit; and the remaining seven tests all have positive effect on turnover intent, differing in significance.

Hypothesis 2 was rejected: results showed that women are more likely to quit than men are.

Hypothesis 3 predicted that married employees are more likely to resign, especially those who have children. However, it turned out that married employees are more likely to stay, and having dependent kids has no significant effect on voluntary turnover.

Hypothesis 4 prompted some thought-provoking results about how employers should treat workers. Are employees more committed and more likely to stay if they are shown appreciation for their work through decent wages, good benefits, and employee engagement programs? Surprisingly, wage has no effect on workers' turnover. Employee engagement programs were found to negatively affect workers' decisions to stay, workers in larger-sized firms are more likely to quit, benefits could work either way, and workers become less likely to quit when they are promoted more times.

Hypothesis 5 projected that workers with lower-level positions are more likely to stay than managers. The data support this. Managers and executives are more likely to quit than the people they manage.

The remainder of the thesis consists of five parts. Chapter 2 reviews previous related studies. Data description and how the linked employee-employer data were created are illustrated in the third chapter. Theoretical model (including how the five hypotheses are developed) and regression models are discussed in Chapter 4. The fifth chapter discusses hypothesis results based on regression outcomes. Chapter 6 concludes and provides some implications for companies, especially their human resources departments.

Chapter 2

Literature Review

A considerable amount of work has been done in the area of employee attrition and retention from around the globe. Much research has been done regarding both the causes and solutions for employee turnover across different nations, industries, and fields. Some researchers have studied the causes from a recruitment perspective, while others discuss turnover in relation to occupational levels. Some study gender differences in worker attrition, employees' number of children, as well as age. A great deal of research focuses on how companies pay and engage with their workers. They discuss the companies' reward system, promotion criteria (seniority vs. performance based), employees' perception of organizational support, engagement programs, incentives, and reward systems.

This chapter organizes previous studies according to five general topics in the existing literature relating to the workforce in the U.S., Britain, Scotland, South Africa, Pakistan, Zimbabwe, and Canada:

- hiring or recruiting
- gender
- marriage and children
- how firms reward workers
- occupational level.

2.1 Hiring or recruiting

According to the existing literature, personal interviews are connected with better hiring decisions and longer periods of employment with one company. Scholarios and Lockyer (1999), as well as Fisk and Skatterbo (2010) emphasize that “face-to-face interviews”

result in more fruitful decisions than do telephone or video-conference interviews. Smaller studies in specific industries confirm the importance of interviews. In a recent nursing magazine, one American administrator describes the simple art of interviewing as involving open-ended, close-ended, and probing questions that not only help the recruiter to make a final decision but also allow the candidate to learn enough about the organization and position that they too can make an informed decision (Parrish, 2006).

Griffeth, Hom, and Gaertner (2000) add that employees with high turnover propensity can be identified before they are actually hired and that job tenure could be discreetly predicted by interviews. They claim that a telephone interview can accurately forecast tenure. When Scholarios and Lockyer (1999) studied small Scottish professional firms, they discovered that methods like the personal interview, conventionally criticized for their low dependability and validity, actually play an important role in strengthening the relationship between future employees and the company. During the interview process, candidates can assess how their own values correspond to those of the organization.

Some previous studies suggest that a thorough hiring process is an opportunity for mutual discovery that seems to enhance the candidate's longevity. It generates a sense of confidence and belonging in the company. Griffeth, Hom, and Gaertner (2000) argued that workers with high turnover tendency can be identified even before they enter the organization. However, according to Fisk and Skattebo (2010), recruitment is typically not treated as a priority compared to other HR functions, and retention can suffer as a result. They claim that a thorough recruitment process allows both employer and candidate to assess a "fit," which ends up benefitting both parties, since people who share similar perspectives and goals will tend to stay with the organization.

Fisk and Skattebo (2010) add, however, that the initial recruitment process need not aim towards a perfect fit in order to achieve a high retention rate. In their study of the Canadian civil service, they note that when recruiters are always trying to match similar

values, the organization can suffer from a level of homogeneity that actually undermines productivity and longevity. To counteract this trend, recruiters can use the hiring process to find individuals with knowledge, skills and abilities (KSAs) that are missing and needed in the organization, while trying to maximize compatibility. They suggest that, rather than inflating or embellishing the positive aspects of an organization, recruiters need to “be realistic.” Failing to provide realistic information can actually be counterproductive and result in undesirable surprises during the post-hire stage.

In their two-year analysis of 354 candidates at one large American credit union, Barrick and Zimmerman (2009) demonstrate that organizations can avoid voluntary turnover by basing hiring decisions on specific information collected during the interviewing stage. Since past behaviour is the best predictor of future behaviour, it makes perfect sense for interviewers to learn as much as they can about the longevity of candidates’ previous work experience. The results of their study suggest that employers can expect greater corporate commitment once they learn that applicants tend to be compatible with their companies.

Barrick and Zimmerman (2009) argue that the hiring process must also furnish the candidate with ample information on which to base their own decision to join the company. They state that job performance—and with it, retention—is positively affected by the confidence of the candidate in their decision. If they waffle in their decision, they can much more easily doubt their decision soon after they start working.

All of these researchers seem to agree that, the more information that is exchanged during the recruitment and selection process, the better the chances that the candidate will make an informed decision to join the company, and the more likely they are to stay.

2.2 Gender

According to Griffeth, Hom, and Gaertner (2000), women have a similar resignation rate to men. Challenging common stereotypes regarding women’s instability on the job, they

point out that men possess higher vulnerability to corporate downsizing pressures. As they age, women are more likely to stay on the job than men are, perhaps because domestic duties⁵ for women decrease as they age. However, according to Lambert et al. (2012), the relationship between gender and turnover intent varies by the occupation being studied. In his study of social workers, gender had no significant effect on attrition.

Fisk and Skatterbo (2010) argue that based on their personal conditions, individuals may assign different levels of importance to job characteristics. Women tend to weigh job-related information more heavily than men. Male candidates tend to give fairness a higher score than women do. Frequent job movement by men may signal a low level of reliability, thus lowering their attractiveness to wives and the quality of marital offers (Ahituv & Lerman, 2011).

2.3 Marriage and children

Using a large sample over 27 years, Lambert et al. (2012) discovered that leaving a job may be positively or negatively related to marriage. Though single workers are considered more likely to quit due to fewer family obligations, marital status had no significant bearing whatsoever on the turnover statistics in his recent study of 255 social work employees working at public and non-profit organizations in Northern Ohio.

In their study of marriage and job turnover, Ahituv and Lerman (2011) state that job instability is growing among young male workers. They base their findings on a national sample of almost 13,000 people aged from 14 to 21 who were interviewed every year or every other year over a 27-year period from 1979 to 2006. The sample is divided almost equally between males and females. Married men have higher wages than single men, and having high wage rates or a stable job may increase a man's willingness to share income and his attractiveness to a potential spouse, while changing jobs may add to the

⁵ "Domestic duties" are household duties, the work that has to be done in a house such as cleaning, washing, cooking, and ironing.

uncertainty of income flows. They also report that getting or staying married may increase the man's risk aversion and lead to less job change. A divorce, on the other hand, can lead to job instability. However, a new marriage reduces the probability of changing jobs by only 5%; and the impact of a continuing marriage is only about 6%.

According to the same study by Ahituv and Lerman (2011), children also have a very small impact: having three or more children increases the probability that a man will change jobs, but only by 3% over other groups. Nonetheless, Griffeth, Hom, and Gaertner (2000) came to the opposite conclusion: of demographic characteristics, only company tenure and number of children meaningfully projected turnover.

2.4 How employers reward workers

Lambert et al. (2012) believe increases in compensation may reduce the costs associated with turnover, as long-term savings may offset the short-term expenses. They emphasize that employers have the power to shift employees' intent to leave by focusing on wages, benefits, and employee engagement.

Some researchers seem to agree that companies need to be doubly creative in offering meaningful compensation packages to optimize retention. Fisk and Skatterbo (2010) draw attention to double whammy⁶ for today's recruiters regarding the age factor. On the one hand, the younger generation brings with it an extraordinary sense of entitlement. Their expectations for salary, benefits, and duties are irrationally high. As a result, recruiters may find themselves having to entice younger candidates with benefits and responsibilities previously offered only to senior management.

Meanwhile, as Fisk and Skatterbo (2010) report, Canada's workforce is rapidly aging, bringing with it impending labour shortages. This would seem to shift the negotiating leverage in the candidate's favour, whether they are hard-working immigrants or young

⁶ "Double whammy" happens when something causes two problems at the same time, or when two setbacks occur at the same time.

Canadians. Recruiters are under pressure to develop non-traditional work arrangements and flexible benefits to keep their employees from looking elsewhere for better opportunities.

Chiboiwa, Samuel, and Chipunza (2010) provide some thoughts regarding salary and benefits. They argue that management should rely not only on “intrinsic variables” to influence employee retention, but also extrinsic. They note that the use of money as a motivator has generated a lot of debate from researchers. In the case of Zimbabwe, money may be the most critical factor in retention.

Maertz and Boyar (2012) utilize two samples of unskilled or semiskilled workers from a furniture manufacturing plant and from a poultry processing plant in the southern United States, for a total of about 600 surveys. They agree with Lambert et al. (2012) about the power of intervention. If employees are attracted to competitive employment offers, and management learns about it early enough, they can make creative counteroffers, such as improved work assignments or increased compensation. For many workers, salary is the most important factor determining whether they will accept a job offer, stay on the job, or move on. Chiboiwa, Samuel, and Chipunza (2010) studied one company in Zimbabwe involving 2240 respondents. The company’s high rate of employee turnover was attributed largely to a poor reward system. They make an interesting note about perception that employees are often likely to resign if they perceive they are not being sufficiently rewarded.

Anis et al. (2011) reiterate this claim in their study of 330 respondents in Lahore, Pakistan, where results demonstrated a positive relationship between compensation and employee retention. In the field of social work, employees who are satisfied with their pay and benefits are probably less likely to leave the job (Lambert et al., 2012).

Samuel and Chipunza (2009) studied employee turnover in public and private sector organizations in South Africa. They recommend that government organizations could

retain more employees if they instituted a performance-based rather than seniority-based promotion system. They base these recommendations on survey results showing that young and innovative professionals could leave the government job for the private sector due to this difference alone. Lambert et al. (2012) found that among a large contingent of social workers, promotions and even organizational fairness had virtually no impact on employee retention.

Griffeth, Hom, and Gaertner (2000) say that “just procedures⁷” have as much—if not more—to do with encouraging employees to stay as fair pay amounts. They show the importance of merit-based reward systems for retention, as long as those reward systems are based on individual rather than collective merit. Resignation rates among high performers may virtually increase under collective reward programs.

In a study of 145 small American businesses of 10 to 100 employees, Patel and Conklin (2012) claim that engagement programs may not obtain return on investment. Although the goal of employee engagement is to improve workers’ responsiveness to the organization by making them more accountable for their jobs, the results of their study indicate it does not actually increase retention. Employers often institute engagement programs as a reaction to depressed productivity and accelerated turnover, but the best time to start an engagement program is immediately after training. Barrick and Zimmerman (2009) draw a direct connection between employees’ “social and psychological support” and their intent to quit. They claim that developmental programs with these supports should be designed to moderate workers’ hesitation and ambiguity shortly after they start their work.

According to Maertz and Boyar (2012), employee engagement programs improve the relationship between workers and management, as well as between workers. When these programs are well organized, workers can see exactly how their contributions can

⁷ “Just procedures” mean that organizational rules and procedures of a company for reward allocation are justified and fair.

improve the company's bottom line over the long term. As a result, they have a greater emotional investment in staying because they want to continue seeing how they are integral to the bigger picture.

Lambert et al. (2012) seem to back this up. "Organizational commitment" had a higher impact on social workers' decisions to stay with their organization than pay and benefits. When workers are allowed a voice in the organization, their commitment increases, and so does their intent to stay.

According to Mowday, Steers, and Porter (1979), "organizational commitment" means a worker's desire to continue as part of the organization, and is categorized into three types. The first is "affective commitment" with emotion-based reasons: employees remain a member of an organization because of emotional attachment and involvement (Meyer & Allen, 1997). Those, who are affectively committed with the organization, agree with the organizational goals and values and are willing to represent the organization.

The second is "continuance commitment", and is cost-based: a worker stays in the firm due to the costs of leaving (Colquitt, LePine, & Wesson, 2009). Two common factors increase continuance commitment. One is the worker's total investment (Rusbult & Farrell, 1983) that has helped them achieve their current position. The other is lack of job alternatives (Meyer & Allen, 1997). The fewer alternatives, the more likely they are to stay. More importantly, continuance commitment involves more with personal and family concerns than the other two kinds. The concept of "embeddedness" (Levering & Moskowitz, 2005) explains this well. An employee is embedded with the current employer due to personal relations or connections to the company and local community and what he or she will have to sacrifice if changing the job

The last type of organizational commitment is "normative commitment", which refers to a feeling of obligation (Colquitt, LePine, & Wesson, 2009). Employees have a sense of

moral duty when deciding to stay or quit, especially if the company hired them during labour market downturn.

2.5 Occupational level

Chiboiwa, Samuel, and Chipunza (2010) discovered that in one large Zimbabwean medical company, turnover was much higher among non-managerial employees among 2,240 respondents. Griffeth, Hom, and Gaertner (2000) point out that during company downsizing burdens, high-paid workers are discouraged to stay. When high performers are not sufficiently rewarded, they leave. In their recent study of social workers, Lambert et al. (2012) agree.

Chapter 3

Data

3.1 Workplace and Employee Survey (WES)

This study uses datasets of the Workplace and Employee Survey (WES) from Statistics Canada. The WES consists of two surveys: Workplace Survey (1999-2006) and Employee Survey (1999-2005). This generates two separate sets of data. Each year (except 2006 which only has workplace dataset) has two datasets, i.e. workplace dataset and employee dataset.

The survey is designed to explore a broad range of issues relating to employers and their employees. On the employer side, it aims to explore the relationships among competitiveness, innovation, technology use, and human resource management. On the employee side, the survey looks at the correlations among technology use, training, job stability and earnings. Companies and personnel are connected at the “micro data” level: workers are sampled from each selected workplace location (Statistics Canada, 2005).

TABLE 1 WES Sample Sizes and Response Rates

Year	<i>Workplace</i>		<i>Employee</i>	
	Sample Sizes	Response Rates (%)	Sample Sizes	Response Rates (%)
1999	6,322	95.2	23,540	82.8
2000	6,068	90.8	20,167	82.9
2001	6,207	85.9	20,352	86.9
2002	5,818	84.0	16,813	90.9
2003	6,565	83.1	20,834	82.7
2004	6,159	81.7	16,804	85.7
2005	6,693	77.7	24,197	81.2
2006	6,312	74.9	N/A ⁸	N/A
<i>Average</i>	6,268	84.0	20,387	85.0

Source: Statistics Canada, Workplace and Employee Survey

⁸ Employee survey was not conducted in year 2006, only from 1999 to 2005.

The WES was conducted for the first time during the summer and fall of 1999, and each year for 8 years. An average of 6,268 companies responded to the workplace survey, and 20,387 corresponding workers responded to the employee survey. Both surveys generate longitudinal datasets. Employer surveys are conducted in sample workplace locations each year, with new samples added periodically. However, employees are kept in the survey for two years only because it was difficult to recruit corresponding workers or respondents for newly added employers, and a portion of workers changed companies and jobs. The major expenditure of the survey goes to experienced and well-trained interviewers. As a result, new sets of employees are sampled every two years—Year 1, 3, and 5 (Statistics Canada, 2005).

3.2 Reasons for choice of dataset

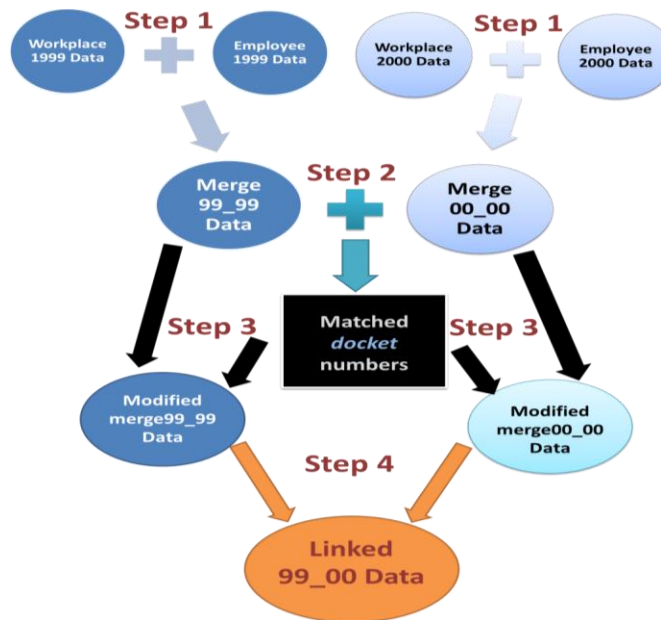
Both employee and employer datasets, which are of perfect panel nature, are used in the current research. Unless they quit, workers are kept in the data throughout the two year period. The same sets of questions are asked to each worker each year.

Furthermore, each employee is linked with a corresponding employer, as they are sampled within each selected workplace location. As a result, if datasets from both surveys are linked, they can provide abundant information regarding how each worker changes on the measurements over time and whether the variations are resulting from his or her corresponding workplace. The same applies to how each company changes. Thus, linked employee-employer data would be ideal to examine unobserved heterogeneity both across and within employees and employers. Data analyses can be done to investigate how employees change and differ from others within the same and other companies over time.

3.3 Data linkage

To inspect employees' unobserved heterogeneity, employees need to be linked to their corresponding employers. As employees are followed every two years, investigations are restricted to two-year durations. As a result, every two consecutive years' datasets are linked, resulting in three intervals: 1999 – 2000, 2001 – 2002, and 2003 – 2004. Datasets in 2005 and 2006 are thus omitted as they cannot be matched with correspondents. The linked datasets are created by common variables: *docket* (workplace number, unique identifier for each firm), *seq_no* (sequence number of employees in a workplace, not unique), and *year* (dummy variable for sample year). Each interval includes the same set of workers after eliminating unmatched ones. A detailed process of creating these three linked datasets is illustrated in the following figure, using the first interval as an example.

FIGURE 1 Example of Creating Linked 99_00 Dataset



There are five steps to create the Linked 99_00 Data:

1. Create merged employee-workplace dataset in 1999 (named “Merged 99_99 Data” in the figure) by linking employee dataset and workplace dataset based the mentioned common variables.

2. Create merged employee-workplace dataset in 2000 (named “Merged 00_00 Data” in the figure) by linking employee dataset and workplace dataset based the mentioned common variables.
3. Find the matched *docket* numbers in the two merged datasets. A *docket* number is matched if it exists in both datasets.
4. Modify the two merged datasets attained from Step 1 by eliminating unmatched records based on common the *docket* numbers. As a result, “Modified Merge99_99 Data” and “Modified Merge00_00 Data” are created.
5. Append the two modified merged datasets to create the targeted dataset, i.e. “Linked 99_00 Data.”

The same process is used to create “Linked 01_02 Data” and “Linked 03_04 Data” for the intervals of 2001-2002 and 2003-2004 respectively. All variables are kept from both employee and workplace datasets.

3.4 Dependent variable (DV) construction

As can be seen from the following table, the binary dependent (DV) variable *Quit* is defined based on the variable *xleftjob* (this variable is from the survey data). *Quit*=1 if *xleftjob*=1, meaning that an employee leaves or quits a job; *Quit*=0 if *xleftjob*=2, 3, or -4, denoting that the job came to an end due to external reasons such as seasonal work or dismissal by the employer.

TABLE 2 <i>Quit</i> Construction		
<i>Quit</i>	<i>xleftjob</i>	Variable Label
=1	1	Employee quit the position
=0	2	Job came to an end
=0	3	Both 1 and 2
=0	-4	Not asked

Source: Statistics Canada, WES 2004

Employees' average exit rates are around 7.77% based on Year 1999 employee dataset.

Details are shown in the following table.

TABLE 3 WES Employee Exit Rates

<i>Year</i>	<i>Sample Sizes</i>	<i>1 (Left job)</i>	<i>2 (Job came to an end)</i>	<i>3 (Both)</i>	<i>-4 (Not asked)</i>
1999	23,540	0	0	0	100%
2000	20,167	6.70% (1351)	2.34% (472)	0.39% (79)	90.57%
2001	20,352	0	0	0	100%
2002	16,813	8.96% (1506)	4.07% (684)	0.34% (57)	86.63%
2003	20,834	0	0	0	100%
2004	16,804	7.64% (1284)	3.21% (539)	0.26% (44)	88.89%
2005	24,197	0	0	0	100%

Source: Statistics Canada, WES 1999

3.5 Summary statistics for all variables (population-weighted)

As there is no identifier for each employee, the dummy variable *IDENT* was created by grouping the two variables: *docket* and *seq_no* (sequence number of each employee in a particular workplace, which can be identified by *docket*). Summary statistics of all variables are presented in the following two tables in the next two pages.

TABLE 4 Variable Summary (A)

<i>Waves</i>		<i>1999-2000</i>			<i>2001-2002</i>			<i>2003-2004</i>		
<i>variable</i>	<i>label</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>
Quit	Dependent variable: binary, 1 denotes a worker quits, 0 otherwise	39776	0.066	0.247	32052	0.076	0.264	32796	0.068	0.252
hire_1	Tests for specific skills	39776	2.552	1.414	32052	2.474	1.599	32796	2.461	1.568
hire_2	Aptitude or other personality testing	39776	2.597	1.395	32052	2.509	1.589	32796	2.508	1.553
hire_3	Security check	39776	2.564	1.409	32052	2.485	1.596	32796	2.418	1.579
hire_4	Medical examination	39776	2.481	1.439	32052	2.429	1.612	32796	2.414	1.580
hire_5	Drug test	39776	2.705	1.344	32052	2.609	1.553	32796	2.622	1.511
hire_6	Tests administered by a recruitment agency	39776	2.728	1.332	32052	2.630	1.545	32796	2.634	1.506
hire_7	Other type of testing or screening	39776	2.712	1.340	32052	2.620	1.549	32796	2.621	1.511
hire_8	Personal interview	39776	1.294	1.343	32052	1.225	1.477	32796	1.153	1.397
hire_9	Test on job-related knowledge	39776	2.631	1.380	32052	2.537	1.579	32796	2.518	1.549
hire_10	Test on general knowledge or literacy skills	39776	2.686	1.354	32052	2.583	1.563	32796	2.568	1.532
docket	The location number	39776	3595.832	2206.418	32052	4341.108	2899.332	32796	5431.821	4812.126
seq_no	Employee sequence number ⁹	39776	3.019	2.063	32052	7.662	4.524	32796	12.703	8.909
IDENT	Dummy variable: employee number	39776	10601.610	5506.575	32052	8691.106	4377.843	32796	8460.508	4341.537
year	Dummy variable: sample year	39776	1999.543	0.498	32052	2001.551	0.497	32796	2003.558	0.497

Source: Statistics Canada, Workplace and Employee Survey (WES) 1999-2004.

(Continued)

⁹ For “Employee sequence number”, it is because employees within each location (*docket*) are numbered (from 1 to 100) in sequence. Workers in different locations might have the same sequence number.

TABLE 5 Variable Summary (B)

<i>Waves</i>		<i>1999-2000</i>			<i>2001-2002</i>			<i>2003-2004</i>		
<i>variable</i>	<i>label</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>
gender	Gender	39776	1.532	0.499	32052	1.514	0.500	32796	1.533	0.499
marital	Marital status	39776	2.425	1.799	32052	2.491	1.809	32796	2.473	1.804
dpnd_kid	Do you have any dependent children?	39776	2.026	1.000	32052	2.053	0.999	32796	2.063	0.998
emp_sal	Employee declared wage	39776	18388.480	27312.940	32052	18887.590	31029.750	32796	14460.920	29288.940
non_wage	Non-wage benefits provided by employer	39776	1.369	1.380	32052	1.272	1.501	32796	1.248	1.450
no_prmtd	Times promoted	39776	-0.963	2.998	32052	-0.957	3.189	32796	-0.945	2.941
involve	Percentage variable created by using the sum of the 7 employee participation variables ¹⁰ to divide by 7	39776	0.590	0.325	32052	0.661	0.314	32796	0.685	0.292
ocp_grp	WES six occupation groups	38983	3.107	1.416	32052	3.167	1.379	32796	3.113	1.377
f_size1	Dummy variable: firm size of 1-19 employees	39776	0.328	0.470	32052	0.321	0.467	32796	0.301	0.459
f_size2	Dummy variable: firm size of 20-99 employees	39776	0.298	0.457	32052	0.325	0.468	32796	0.310	0.462
f_size3	Dummy variable: firm size of 100-499 employees	39776	0.202	0.402	32052	0.201	0.401	32796	0.212	0.409
f_size4	Dummy variable: firm size of 500 or more employees	39776	0.172	0.377	32052	0.153	0.360	32796	0.177	0.382

Source: Statistics Canada Workplace and Employee Survey (WES) 1999 – 2004.

¹⁰ In the survey have seven (7) variables for each type of employee participation program. See details of the programs in the appendix.

Chapter 4

Theoretical and Empirical Models

This chapter presents a simple theoretical model, along with five developed hypotheses, for examining employee voluntary turnover intent. For empirical models, panel estimators are used due to the longitudinal nature of the linked data. The thesis employs logistic and probit regression models to investigate the relationships between voluntary turnover and five sets of predictors.

4.1 Theoretical model

Given the perfect panel nature of the linked data created based on the survey datasets, this paper aims to examine the correlation between employee attrition and the factors emerging in the literature. They include screening tests used during recruitment and selection processes, workers' marital status, gender, occupational levels, compensation and reward systems, and employee engagement programs. The theoretical model is expressed in the equation as follows:

$$\text{Quit} = F(\text{potential factors}) \quad (1)$$

The dependent variable *Quit* denotes whether or not an employee quits a job. The potential factors refer to the five developed hypotheses.

4.2 Five hypotheses relating to voluntary turnover

After reading some of the studies conducted in other countries as well as Canada, several trends emerged that I felt deserved more attention, which will be tested using Canadian data. I decided to test several claims in the Canadian data. This paper presents 5 hypotheses relating to voluntary turnover based on my literature review.

Hypothesis 1: Employees are more likely to stay if, during the hiring process, they attend a personal interview.

According to most existing research, the more information exchanged during the recruitment and selection process (Parrish, 2006), the better the chances that the candidate will make an informed decision to join the company, and the more likely they will stay. Scholarios and Lockyer (1999) back this up and argue that interviews help improve companies' relationships with their future workers. According to Griffeth, Hom, and Gaertner (2000), a telephone interview could predict job tenure.

Hypothesis 1 predicts that employees are more likely to stay if, during the hiring process, they attend a personal interview. A good way to learn the candidate's personality, knowledge, skill, and attitude is to conduct an interview, and carefully analyze the results. Whether a worker's personality can fit into the company's culture is important. Common situational and behavioural interview questions about specific situations can allow recruiters to see if the candidate employee's personality, attitude, and skills are suitable for the position.

Hypothesis 2: Women are more likely to stay on the job than men.

Griffeth, Hom, and Gaertner (2000) claim that turnover rates are similar among male and female workers, and argue that the latter are more likely to stay. However, no difference is found according to Lambert et al. (2012), as it varies by the position being investigated. They actually report that gender has no noteworthy impact on employee resignation among social workers.

Hypothesis 2 proposes that men are less stable on their jobs than women. While both men and women try to fit into the workplace and find the perfect jobs, men tend to be more ambitious. They feel greater pressure to support their families—even if they are not yet married—and hence often look for positions with higher salaries and better opportunities for advancement. Female workers may be considered more likely to quit

because they need to attend their kids. However, not all families have dependent children. Mothers do not have to spend much time with their kids when they grow older. Moreover, women who prefer to mother full-time may not want to get hired in the first place.

Hypothesis 3: Married employees are more likely to stay, regardless of having dependent children or not.

Lambert et al. (2012) point out that unmarried workers are considered more likely to quit their jobs due to less family obligations. However, they find that marital status has no noticeable effect on employee exit among their recent study of 255 social workers. According to Ahituv and Lerman (2011), getting or staying married may increase the man's risk aversion and lead to less job change, job instability is growing among young male workers, and having children has an insignificant impact on attrition. In contrast, Griffeth, Hom, and Gaertner (2000) conclude that the number of kids projects employee turnover.

Hypothesis 3 forecasts that married employees are more likely to stay. Having dependent kids will not affect workers' turnover decisions. Marriage normally brings some stability to a person's life, especially when the family is "embedded" (Levering & Moskowitz, 2005) with the current employer due to personal relations or connections to the company and local community and what he or she will have to sacrifice if changing jobs.

Hypothesis 4: Companies could retain workers by improving and managing employees' organizational commitment. Employees will stay if they are shown appreciation for their work through decent wages, good benefits, and employee engagement programs.

Almost all researchers agree that compensation is the Number One factor in employee retention. Fisk and Skatterbo (2010) conclude that younger generations tend to have

unreasonably high expectations for salary and benefits. Chiboiwa, Samuel, and Chipunza (2010) add that workers may quit if they feel they are not being sufficiently rewarded: in the case of Zimbabwe, money may be the most critical factor in retention. In their study in Pakistan, Anis et al. (2011) agree. For many workers, salary is the most important factor determining whether they will accept a job offer, stay on the job, or move on (Maertz & Boyar, 2012). Wages are thus proposed to negatively affect employee exit intention.

The subject of benefits draws much attention in previous studies. According to Fisk and Skatterbo (2010), flexible benefits are required to keep current workers from looking elsewhere for better opportunities. In the social work field, Lambert et al. (2012) claim that employees are more likely to stay if satisfied with the pay and benefits. Therefore, it is hypothesized that benefits are negatively related to employees' turnover intents. Non-wage benefits can represent far greater value than a substantial increase in salary. Dental benefits, for example, could represent thousands of dollars a year. However, benefits need to be tailored to the specific needs of each worker if they are to have retention value. Administrative employees who work fixed schedules may need regular vacations, while sales representatives may want a trip, prize or bonus when a sales target has been met.

Engagement programs are also indispensable to retention. Although Patel and Conklin (2012) claim that engagement programs may not obtain investment return, Barrick and Zimmerman (2009) report that employer-provided "social and psychological support" directly prevents workers from quitting. According to Maertz and Boyar (2012), employee engagement programs improve the relationship between workers and management, as well as between workers. This study proposes that well-organized employee engagement programs can help retain workers.

Lambert et al. (2012) emphasize that employers have the power to shift employees' turnover intent by focusing on wages, benefits, and employee engagement. They also

report that organizational commitment is of greater value than wage and benefits, in determining social workers' decisions to stay. Organizational commitment refers to a worker's desire to continue as part of the organization (Mowday, Steers, & Porter, 1979). Colquitt, LePine, and Wesson (2009) further discuss the positive effects of the three types¹¹ of organizational commitment on employee retention.

Accordingly, it is hypothesized that organizations could retain workers by improving and managing employees' organizational commitment through decent wages, good benefits, and employee engagement programs.

Hypothesis 5: Workers on lower-level positions are more likely to stay.

Studies conducted outside Canada demonstrate that managerial or white-collar employees are more likely to quit their jobs than the people they are managing. In their study among 2,240 respondents in Zimbabwe, Chiboiwa, Samuel, and Chipunza (2010) found that turnover was much higher among non-managerial employees. According to Griffeth, Hom, and Gaertner (2000), high-paid employees are less liable and more likely to leave. The same result is found in a study among social workers (Lambert et al., 2012).

Consequently, the paper predicts that workers on lower-level positions are more likely to stay on their jobs. With higher levels of skills and experience, managers or white-collar workers have more employment opportunities and options. They probably need much higher job satisfaction where they are to keep them from moving on. Constant motivation is required from the company to maintain their performance. Many are always looking for challenges and new ways of doing work. They probably demand much more from the company as a result of their increased ambition and desire for self-fulfillment. More creative and competitive white-collar professionals constantly entertain requests or

¹¹ The three organizational commitment types include affective, continuance, and normative commitments, which can be found in Chapter 2, Literature Review.

distractions from executive hunters or competitors. The chances of getting new and even better positions are high for them.

Operational workers are not as demanding. They may not have the time or opportunity to explore, or even identify other employment.

4.3 Regression models

Though negative binomial regression analyses could have been used for the examination, this study uses logistic and probit regressions instead. Negative binomial regression is for modeling count variables. A count variable, for example, summarizes how many employees quit in each workplace location. However, the only relevant variable $x_{leftjob}$ from the survey data, which can be used to create the dependent variable $Quit$, is numerical instead of count. As numerical variables can be used to create dummy binary variables, logit and probit regressions are thus adopted.

4.3.1 Logistic regression model

Logistic regression (also called the logistic or logit model) is a type of regression analysis used for predicting the outcome of a binary/dichotomous dependent variable (a variable which can take only two possible outcomes) based on one or more predictor variables.

The logistic regression model actually combines all independent variables with the dependent variable $Quit$ into the following equation:

$$L_i = \log [P/(1-P)] = Z_i = \beta_0 + \sum \beta_i X_i \quad (2)$$

L_i is called the logit. P is the probability that $Quit$ takes value 1, meaning a worker quits his job. $(1-P)$ is the probability that $Quit$ takes value 0, meaning a worker stays on his job. $P/(1-P)$ is the odd ratio, the log of it becomes not only linear in X , but also linear in the parameters. β_0 is the value when all β_i 's are equal to zero. The coefficients β_i indicate how much percent of log odd would change for a one percent change in X_i .

Estimation process

As the datasets are longitudinal, the *xtlogit* command in statistical software STATA will be used for logit regression estimations. The *xtlogit* command provides three model options: (1) FE, conditional fixed-effects; (2) RE, random-effects; (3) PA, population-averaged.

FE is concerned with variations within the group. FE regressions are unbiased. However, they are not efficient. The characteristics that do not change over the course of the panel cannot be taken into account.

RE and PA regressions look at variations within as well as among clusters. RE models assume a distributional form of the errors between observations. PA models are meant to look at the outcome of the average result and do not make assumptions about the distribution of the error between observations. RE models are more efficient than FE models because the standard errors of corresponding coefficients can be smaller. However, they may be biased. Their point estimates may be wrong. As a result, Hausman tests need to be done to ensure that the model is correctly specified in order to proceed with using a RE model.

The procedure of the regression analysis includes three steps:

Step 1: Hausman specification test

Given a model and data in which FE estimation would be appropriate, a Hausman specification test, or Hausman test in short, will be required to examine whether RE estimations would be almost as acceptable (The Hausman Test, 2012).

For FE models, the Hausman test is a test of the null H_0 that RE models would be consistent and efficient; versus the alternative hypothesis H_1 that RE models would be inconsistent. The result of the test is a vector of dimension $k(\dim(\beta))$ which will be distributed chi-square(k). So if the Hausman test statistic is large, FE models must be used; otherwise, RE models should be used. The greater the differences between FE and

RE coefficients, the less similar the two sets of coefficients are, and the more significant the Hausman statistic will be.

Both FE and RE estimations will be done and stored during the test. Only one of them will be used to proceed for further estimations after the test.

Step 2: Proceed with RE or FE models

Either RE or FE models will be decided to move forward after Hausman tests based on the test statistics.

Step 3: Improve estimation results

In order to improve the estimation results, bootstrap weights will be included. As the default number of repetitions in STATA is relatively small (usually 50), more iterations will be run along with the weight variable.

4.3.2 Probit regression model

A probit regression model is a type of regression where the dependent variable can only take two values, such as married or not married. A probit model is a popular specification for an ordinal or a binary response model that employs a probit link function. This model is most often estimated using standard maximum likelihood procedure.

According to Nagler (1994), a probit model deals with only the values of zero and one for the variable Y . There is a latent, unobserved continuous variable Y^* that determines the value of Y_i . Furthermore, assume that Y^* can be specified as follows:

$$Y_i^* = X_i\beta + u_i \quad (3)$$

and that

$$Y_i = 1 \quad \text{if } Y_i^* > 0$$

$$Y_i = 0 \quad \text{otherwise}$$

where X represents a vector of random variables, and u represents a random disturbance term. Now from Equation (3), do the following:

$$P_i = \text{Probability}(X_i \beta + u_i > 0) \quad (4)$$

Rearranging terms,

$$P_i = \text{Probability}(u_i > (-X_i \beta)) \quad (5)$$

$$= 1 - F(-X_i \beta) \quad (6)$$

where F is the cumulative density function (CDF) of the variable u .

Now the marginal effect on P_i for a change in X_k is given as follows:

$$\begin{aligned} \delta P_i / \delta(X_k) &= \delta [1 - (F(-X_i \beta))] / \delta(X_k) \\ &= f(-X_i \beta) \beta_k \end{aligned} \quad (7)$$

The impact of changes in a variable X_k on the likelihood of a particular individual choosing option number 1 will depend not only on β_k (the variable's coefficient), but also on the value of $X_i \beta$, and in particular $f(-X_i \beta)$. Since $\delta P_i / \delta(X_k)$ will depend upon the choice of F , the true F must be known in order to know the true impact of changes in any independent variable upon different individuals. Or, the shape of the true $F(u)$, and $f(u)$, will depend upon which individuals are most sensitive to changes in the independent variables (Nagler, 1994).

Estimation process

As all three linked datasets are longitudinal, the command *xtprobit* from statistical software STATA will be used for probit regression analysis. However, unlike the *xtlogit* command, *xtprobit* fits only random-effects (RE) and population-averaged (PA) models. As a result, both models will be estimated and marginal effects will be computed thereafter.

Similar to logit estimations, bootstrap weight variables will be included and more repetitions will be run in order to improve regression results.

4.3.3 Computation of marginal effects

After both logistic and probit estimations, marginal effects need to be computed. Marginal effects measure the expected instantaneous change in the dependent variable as a function of a change in a certain explanatory variable while keeping all the other covariates constant. The marginal effect measurement is required to interpret the effect of the regressors on the dependent variable (SAS/ETS Web Examples, 2012).

In STATA, the command *mf* numerically calculates the marginal effects or the elasticities and their standard errors after estimations. The command *mf* works after *xtlogit*, *xtprobit*, *ologit*, *oprobit*, and *mlogit*. However, due to the multiple-outcome feature of these three commands, one has to run *mf* separately for each outcome (Ronna, 2001).

Chapter 5

Results and Discussions

This chapter presents major issues arising during the regression processes, as well as results against the five hypotheses. It discusses every significant point from the estimations. Conclusions about each proposition are discussed and compared with previous studies, after analyzing corresponding regression results. Implications are discussed in Chapter 6.

5.1 Issues of regression processes

For logistic regressions, conditional fixed-effects (FE) models are used for all the three linked datasets, as the corresponding Hausman tests reject random-effects (RE) models. As for probit models, both RE and population-aveaged (PA) regressions are estimated.

5.1.1 Logit regression analysis

According to Hausman specification tests, the differences between FE and RE coefficients turn out to be fairly significant for all the three intervals. As a result, FE models are used to proceed for further steps. Detailed statistics regarding the tests are shown in TABLE 6.

The FE option of *xtlogit* in STATA 10.1¹² simply runs a default number of 50 repetitions. As a result, 500 repetitions along with bootstrap weights are estimated to improve the results. Marginal effects are also computed after each of the estimations for all the three intervals (see results in the appendix). Only improved results will be presented to discuss the hypotheses.

¹² The workstations in the South-Western Ontario Research Data Center (SWORDC), Statistics Canada, provide Version 10.1 of the statistical software STATA.

TABLE 6 Hausman Test Results

Test: Ho: difference in coefficients not systematic.

<i>Waves</i>	1999-2000	2001-2002	2003-2004
<i>chi2(20) values</i>	146.40	112.75	139.81

Note: $\chi^2(20) = (b-B)'[(V_b - V_B)^{-1}](b-B)$, Prob> $\chi^2 = 0.0000$

b = consistent under Ho and Ha; obtained from *xtlogit*

B = inconsistent under Ha, efficient under Ho; obtained from *xtlogit*

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004

5.1.2 Probit regression analysis

Both RE and PA models are estimated for probit regression analyses. Results turn out to be rather significant, compared to logistic FE estimations. However, due to the limitation of the workstations, the analyses were not able to include bootstrap weights and more repetitions to perfect the results. Marginal effects are also computed after each of the estimations for both RE and PA models across the three intervals.

5.2 Results and discussions

Regression results corresponding with five hypotheses are illustrated in tabular form, together with some important results without corresponding predictions. Non-standard format is used for these summary tables, which help analyze the results against the propositions. The tables present the details of both logit and probit regression results.

5.2.1 A thorough testing on candidates may not reduce turnover rates

Are Canadian employees more likely to stay with a company if, during the hiring process, they are required to attend a personal interview? Logit and probit estimations partially support Hypothesis 1.

TABLE 7
Regression Results for *Hiring Tests – Hypothesis 1*

Var.	Label	Models	Waves					
			1999-2000		2001-2002		2003-2004	
			Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
hire_1	Tests for specific skills	FE	-0.259*	0.121	0.264*	0.129	-0.139	0.126
		RE	-0.012	0.027	0.059*	0.03	-0.072*	0.029
		PA	-0.011	0.027	0.057*	0.029	-0.071*	0.029
hire_2	Aptitude or other personality testing		0.002	0.143	-0.324	0.149	-0.084	0.14
			-0.048	0.03	-0.068*	0.031	-0.023	0.033
			-0.049	0.03	-0.066*	0.031	-0.023	0.033
hire_3	Security check		-0.323*	0.132	-0.422***	0.116	-0.231*	0.098
			-0.11***	0.025	-0.207***	0.025	-0.144***	0.024
			-0.109***	0.025	-0.205***	0.024	-0.143***	0.024
hire_4	Medical examination		0.202	0.132	0.165	0.146	-0.111	0.161
			0.111***	0.028	0.109***	0.03	0.115***	0.033
			0.111***	0.028	0.109***	0.03	0.116***	0.033
hire_5	Drug test		-0.266	0.236	-0.753*	0.321	-0.242	0.219
			-0.196***	0.05	-0.211***	0.048	-0.147**	0.049
			-0.197***	0.049	-0.208***	0.047	-0.146**	0.048
hire_6	Tests by a recruitment agency		-0.782	1.775	-0.882	0.92	-0.068	0.239
			-0.197**	0.064	-0.244***	0.056	-0.046	0.055
			-0.195**	0.064	-0.241***	0.055	-0.047	0.054
hire_7	Other type of testing or screening		-0.422	0.256	-0.522	0.285	-0.073	0.213
			-0.113*	0.053	-0.237***	0.051	0.002	0.054
			-0.111*	0.053	-0.234***	0.051	0.003	0.054
hire_8	Personal interview		0.402***	0.079	-0.015	0.076	0.085	0.091
			0.013	0.018	-0.056**	0.021	-0.004	0.022
			0.01	0.018	-0.057**	0.02	-0.005	0.022
hire_9	Test on job-related knowledge		-0.117	0.153	-0.262	0.139	-0.219	0.136
			-0.043	0.033	-0.095**	0.032	-0.079**	0.03
			-0.042	0.032	-0.094**	0.032	-0.079**	0.03
hire_10	Test on general knowledge or literacy skills		-0.132	0.195	-0.239	0.191	0.03	0.189
			-0.122**	0.04	-0.106**	0.039	0.04	0.04
			-0.12**	0.04	-0.106**	0.039	0.041	0.04

Note: ***p-value<0.001; **p-value<0.01; *p-value<0.05

***1% level of significance; **5% level of significance; *10% level of significance

Source: Statistics Canada, WES 1999-2004

According to the summary table, logistic conditional fixed-effects (FE) estimation from the wave 1999-2000 indicates fairly significant negative correlation between *hire_8* (personal interview) and the dependent variable (DV) *Quit*. If not required to attend a personal interview when first hired (the *hire_8* variable took a value of 3, which means No), the worker is more likely to resign. In other words, having taken face-to-face

interviews when hired would make workers stay. This is consistent with what Scholarios and Lockyer (1999) find. They point out that interviews strengthen the relationship between future employees and the company, since candidates can compare their values with those of the firm.

However, although no previous studies report this: interviews could work the other way around according to probit regression outcomes. Both random-effects (RE) and population-averaged (PA) models from the interval 2001-2002 generate negative coefficients, although the significance levels were not quite strong. This indicates that if in-person interviews are conducted during the hiring process, employees might still leave the firm. Potential reasons may be because the worker does not enjoy the corporate culture or the position after working sometime in the organization.

Results relating to the remaining nine hiring tests are discussed as follows. Some of them were found to be strongly related to whether or not an employee resigns. Specifically, logit FE results indicate no significant relation between *hire_2* (aptitude or other personality testing) and the dependent variable *Quit* (whether or not a worker quits his job or leaves the company); while both probit RE and PA models show slightly negative correlation between *hire_2* and *Quit*: if the value of *hire_2* increases from 1 (Yes) to 3 (No), the probability of quitting will decrease. In other words, if required to do aptitude or other personality testing when first hired, a worker will more likely quit. The same applies to *hire_10* job-related knowledge tests. According to the table, workers who are required to do security checks have a high probability of quitting their jobs, supported by regression outcomes across all three intervals.

Medical examinations (*hire_4*) are the only tests found to be strongly positively related with employees' quitting: workers are less likely to quit if required to do the test when first hired.

In conclusion, results for the ten hiring tests fall in three categories: medical examinations negatively affect workers' exit; tests for specific skills and personal interviews could work either way for employee attrition; and the remaining seven tests all have positive effects on turnover intent. To sum up, a thorough testing on candidates with all these ten tests may not reduce turnover rates.

5.2.2 Women are more likely to quit than men

Griffeth, Hom, and Gaertner (2000) claim that resignation rates are similar among women and men. As they age, female workers have higher probability of staying on the job, as a result of a decline in household duties. Lambert et al. (2012) found that gender has no essential impact on turnover intents. However, probit RE and PA results from the current research illustrate that female workers are more likely to quit their jobs. If the value of gender increases from 1 (male) to 2 (female), the probability of quitting will increase. Thus, Hypothesis 2 is rejected.

TABLE 8
Regression Results for *Gender - Hypothesis 2*

Var.	Label	Models	Waves					
			1999-2000		2001-2002		2003-2004	
			Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
gender	1 male,	RE	0.067*	0.032	0.088*	0.034	-0.063	0.037
	2 female	PA	0.066*	0.032	0.087*	0.034	-0.064	0.036

Note: *gender* was omitted in logit FE model due to no within-group variance

***p-value<0.001; **p-value<0.01; *p-value<0.05

***1% level of significance; **5% level of significance; *10% level of significance

Source: Statistics Canada, WES 1999-2004

Perhaps Canadian women do have to pay attention to their children and value their kids more than careers. Married women may believe they could rely on their husbands for family earnings. They hence probably do not have to think twice when quitting or switching jobs.

5.2.3 Marriage could work either way; Kids have no effect

Hypothesis 3 is partially supported: marital status can have either positive or negative effect on Canadian employee retention. Having dependent children does not seem to have any impact on employee turnover, which confirms my prediction.

The hypothesis that married workers are more likely to stay is supported by probit regression outcomes. The variable *marital* (marital status) is constructed as follows: 1 legally married and not separated, 2 legally married and separated, 3 divorced, 4 widowed, and 5 single (never married). Both probit RE and PA results demonstrate that if the value of *marital* increases from 1 (married) to 5 (single), the probability of quitting will rise. This means legally married (and not separated) workers would have the lowest of chance of quitting their jobs, which supports the proposition. Lambert et al. (2012) pointed out similar result that single individuals are more likely to leave an organization, since they have fewer family obligations. Moreover, according to Ahituv and Lerman (2011), getting or staying married may increase the man's risk aversion and result in less employment change.

TABLE 9
Regression Results for *Marriage and Children – Hypothesis 3*

Var.	Label	Models	Waves					
			1999-2000		2001-2002		2003-2004	
			Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
marital	Marital status	FE	-0.395***	0.111	-0.503**	0.152	-0.754***	0.152
		RE	0.067*	0.032	0.088*	0.034	-0.063	0.037
		PA	0.066*	0.032	0.087*	0.034	-0.064	0.036
dpnd_kid	Dependent kids		0.162	0.163	0.014	0.239	0.062	0.175
			0.032	0.017	0.012	0.018	0.003	0.019
			0.032	0.016	0.011	0.018	0.002	0.019

Note: ***p-value<0.001; **p-value<0.01; *p-value<0.05

***1% level of significance; **5% level of significance; *10% level of significance

Source: Statistics Canada, WES 1999-2004

Although Lambert et al. (2012) report that marital status has no noteworthy effect on employee attrition, results from our logit regression indicate that single Canadians are more likely to stay than married Canadians. The significance levels from all three intervals are rather high. This might be because unmarried young Canadian workers are striving to be financially independent. Staying on the same job may help increase their salary faster and increase the likelihood of speedy promotions, if the company rewards employees based on both performance and seniority.

However, having dependent kids seems to have no significant effect on whether workers quit. None of the regressions show important results. This echoes from Ahituv and Lerman's study (2011), in which having children had a rather small impact (3% over the control group), and differs from Griffeth, Hom, and Gaertner (2000), who concluded that the number of children projected employee turnover. The difference in findings may reflect the political and economic environment. In Canada, dependent kids may not affect attrition because of the social welfare system where parents do not have to pay for tuition fees for their children before universities. In some provinces, governments financially support families with their newborn kids.

5.2.4 Compensation and engagement programs do not affect turnover

Hypothesis 4 is partially supported by the regression outcomes. Canadian workers do not seem any more likely to stay based on decent wages, good benefits, or employee engagement programs. In fact, in some cases, engagement programs actually correspond to higher attrition. However, timely promotions do seem to enhance an employee's loyalty and longevity, which is consistent with Hypothesis 4.

Surprisingly, wage has no effect on Canadian workers' turnover at all, supported by all three intervals and regressions. The coefficients from both logit and probit regressions across all three waves are zero (0). This rejects my prediction, as well as previous findings (Fisk & Skatterbo, 2010; Anis et al., 2011; Lambert et al., 2012). The result

maybe because Canadian workers consider more about a combination of the compensation package, including wage, benefits, promotion, and corporate culture.

TABLE 10
Regression Results for *How Employers Reward Workers - Hypothesis 4*

Var.	Label	Models	Waves					
			1999-2000		2001-2002		2003-2004	
			Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
emp_sal	Employee declared wage	FE	0**	0	0*	0	0	0
		RE	0	0	0	0	0	0
		PA	0	0	0	0	0	0
non_wage	Non-wage benefits provided by employer (1 Yes, 3 No)		-0.249**	0.084	-0.193*	0.088	-0.197*	0.086
			0.039*	0.019	0.061**	0.02	0.078***	0.022
			0.042*	0.019	0.064**	0.021	0.081***	0.022
no_prmtd	Times promoted		-0.308***	0.035	-0.173***	0.034	-0.237***	0.036
			-0.135***	0.008	-0.11***	0.008	-0.125***	0.009
			-0.135***	0.008	-0.11***	0.008	-0.125***	0.009
involve	Employee participation program		0.851**	0.314	1.187***	0.292	1.198***	0.34
			0.075	0.06	0.038	0.061	0.024	0.068
			0.071	0.059	0.032	0.06	0.019	0.067
f_size1	Dummy variable: firm size of 1-19 employees		0.665	0.8	0.292	3.017	-0.598	6.114
			0.353***	0.07	0.237***	0.067	0.379***	0.074
			0.353***	0.071	0.236***	0.067	0.376***	0.074
f_size2	Dummy variable: firm size of 20-99 employees		0.36	0.774	-0.85	2.7	-1.315	6.148
			0.429***	0.063	0.259***	0.06	0.402***	0.067
			0.429***	0.063	0.258***	0.06	0.4***	0.067
f_size3	Dummy variable: firm size of 100-499 employees		0.867	0.693	-0.566	2.637	-1.303	6.12
			0.335***	0.064	0.162**	0.062	0.222**	0.071
			0.335***	0.063	0.162**	0.061	0.22**	0.07

Note: ***p-value<0.001; **p-value<0.01; *p-value<0.05

***1% level of significance; **5% level of significance; *10% level of significance

Source: Statistics Canada, WES 1999-2004

Even more surprising, employee engagement programs were found to negatively affect workers' decisions to stay in their positions, which is inconsistent with the hypothesis. The values of the variable *involve* are in percentages, which is constructed by dividing the seven employee participation programs by seven (detailed information about each program can be found in the appendix). Higher percentages denote that workers are more involved with the company. Only logit results are noteworthy: all coefficients are positive and highly weighty. This indicates that more involved workers are less likely to stay,

which conflicts with Barrick and Zimmerman (2009), Lambert et al. (2012) and Maertz and Boyar (2012), who argue that social and psychological support retains workers. It agrees with the findings of Patel and Conklin (2012), who claim that engagement programs may not deliver investment return. Employees did not stay perhaps because engagement programs lost the original purpose, or irritated the workers by taking much of their working. Some workers may have stayed after hours, for instance, to complete an employee feedback survey. When an organization fails to respond to feedback or suggestions, employees may become disillusioned or resentful, leading to turnover intent.

Nevertheless, the rest of the assumptions from Hypothesis 4 are supported. Non-wage benefits can work either way for workers' attrition intents. Probit results indicate that the probability of resignation will rise if no non-wage benefits are provided by employers. This is consistent with findings from Fisk and Skatterbo (2010), Chiboiwa, Samuel, and Chipunza (2010), and Lambert et al. (2012). Canadians seem to value vacations, dental or other health plans, and registered plans for retirement (RRSP). However, if the value of *non-wage* increases from 1 (Yes) to 3 (No), logit estimation results show that the probability would drop, which is not supported by any previous studies. Some physical or production workers may prefer benefits to be monetary, or they may not like certain respects of the company's reward system or culture.

Even though the paper did not hypothesize on it, some important outcomes regarding promotions have been found. The number of times an employee gained promotions has a strong influence on quitting. With more promotion, workers are more likely to stay, which fully supports the hypothesis. Samuel and Chipunza (2009) did not study this aspect of promotion, but on promotion criteria. They argue that performance-based promotion system can better retain employees than a combination of seniority and performance. The effect of promotions found by the current research is different from what Lambert et al. (2012) discovered in their study of social workers, that the number of

promotions has no effect on retention. Promotion is important even if not accompanied with a raise in pay. A rise in stature, with perhaps some fanfare to go with it, combined with increased levels of trust and responsibilities, will motivate people to stay on the job and give it their best. They feel movement and opportunity like a shot of adrenalin. On the other hand, if there seems to be opportunity and rationale for promotion, and a worker is passed over rather than promoted, they can quit just for spite.

Although not in the hypothesis, outcomes regarding firm size are presented. Based on results from the independent variables f_size1 , f_size2 , and f_size3 , workers in larger-sized firms are more likely to quit, supported by two of all three intervals from both probit RE and PA results. Workers in large-sized companies may not feel as valued as in smaller companies. Firms with large number of employees may not be able to give attention to every worker, compared to relatively smaller workplaces. In sum, Hypothesis 4 is partially supported by the evidence.

5.2.5 Blue-collar workers are more likely to stay than white-collar

Hypothesis 5 is confirmed. Lower-level Canadian employees are not as likely to quit their jobs.

Var.	Label	Models	Waves					
			1999-2000		2001-2002		2003-2004	
			Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
ocp_grp	WES six occupational levels	FE	-0.215***	0.058	0.022	0.07	-0.139*	0.067
		RE	-0.046***	0.012	-0.019	0.014	-0.017	0.014
		PA	-0.046***	0.012	-0.02	0.014	-0.016	0.014

Note: ***p-value<0.001; **p-value<0.01; *p-value<0.05
 ***1% level of significance; **5% level of significance; *10% level of significance

Source: Statistics Canada, WES 1999-2004

The survey divides employees into six occupational levels. Each value of the variable *ocp_grp* denotes a specific group:

1. Managers
2. Professionals
3. Technical/Trades
4. Marketing/Sales
5. Clerical/Administrative
6. Production workers

As can be seen from the table, if the value of *ocp_grp* rises from 1 to 2, the probability of quitting will drop, supported by all regression results in the 1999-2000 wave as well as logistic outcome from 2003-2004. In other words, lower-level workers, like blue-collar or operational level, would be less likely to quit their positions. This is different from what Chiboiwa, Samuel, and Chipunza (2010) found. Managers and executives may get more restless because they have more lucrative job offers and opportunities that are frequently presented to them. Thus, the hypothesis is confirmed: lower level workers are more likely to stay.

Chapter 6

Conclusion

The objective of the thesis is to examine the problem of employee voluntary turnover (vs. involuntary turnover) in the Canadian labour market. After reviewing existing literature, I developed five major hypotheses under my theoretical model. Empirical results from both logistic and probit regressions supported some of my predictions regarding Canadian worker resignations. Employee turnover is a fairly common phenomenon across organizations throughout the globe, which creates both direct and indirect costs to companies (Lambert et al., 2012). The costs of losing and hiring new employees, especially highly qualified ones, are considerable. Thus, research on voluntary turnover is of great significance due to its adverse consequences.

6.1 Main contributions

This study has been conducted to fill a void in the employee attrition literature. The topic of worker turnover and retention has not been sufficiently examined in the Canadian context, not to mention research with longitudinal or panel data. Though some researchers investigate the impact of inadequate hiring processes, they only look at telephone, in-person, or video-conference interviews, or the recruitment system as a whole. They seem to ignore the effects of initial screening tests in the hiring process. Others explore promotion systems (performance or seniority based), but no studies explore the influence of promotion frequencies on attrition.

This paper contributes to the existing studies in the following three respects. First, it justifies the Canadian employee turnover statistics. Based on sample sizes of over 6,000 companies and over 20,000 corresponding workers from 1999 to 2006, the datasets from Workplace and Employee Survey (WES) supplied by Statistics Canada are of perfect

longitudinal nature. Furthermore, we test the same five hypotheses through three waves of linked datasets and three types of regression models. While conditional fixed-effects (FE) models provide within-group results, that is how each worker changes over time, random-effects (RE) and population-averaged (PA) models compare employees in all aspects through the independent variables. These features help generate results of high validity, and the data analyses offers an overview of Canadian workers on the subject of voluntary turnover.

The second contribution of this paper stems from the ten hiring or screening tests. The effects of nine other important tests during the hiring process are examined, besides personal interviews which were examined before.

Third, this paper examines how the number of promotions relates to workers' turnover decisions.

The findings of the thesis are summarized as follows. Hypothesis 1 is partially supported. While logit FE estimation suggests a negative relationship between personal interviews during the hiring process and employees' intentions to quit, both probit RE and PA models indicated the opposite. Implications for the remaining nine tests fall into three categories: medical examinations negatively affect workers' exit; tests for specific skills could work either way for employee attrition; and the remaining seven tests all had positive effects on turnover intent, differing in significance levels.

That women are more likely to stay on the job than men contradicts Hypothesis 2. In fact, the data show that women are more likely to quit than men are.

It is predicted in Hypothesis 3 that married employees are more likely to resign, especially those who have children. However, it turns out that married employees are more likely to stay and that having dependent kids has no significant effect on voluntary turnover.

Hypothesis 4 prompts some thought-provoking results about how employers treat workers. Are employees more committed and more likely to stay if they are shown appreciation for their work through decent wages, good benefits, and employee engagement programs? Surprisingly, wage has no effect on workers' turnover at all, employee engagement programs negatively affect workers' decisions to stay, workers in larger-sized firms are more likely to quit, benefits could work either way, and workers become less likely to quit when they are promoted more times.

Finally, Hypothesis 5 is supported. Managers are more likely than lower-level workers to quit.

6.2 Key message to scholars

By focusing on employee retention, we have perhaps been ignoring the benefits of employee attrition. In a study of British workplaces, Brown, Garino, and Martin (2009) argue that newly-hired workers might be more driven, more educated, and better qualified, and employee resignation may virtually boost organization growth. In fact, their study shows that a company's profit can increase due to turnover, as long as wages are set in negotiations with the candidate or labour union. As a result, reducing total turnover rate might not be necessary: companies need to evaluate the overall benefit of employee retention and re-hiring. Every coin has two sides. For small- and medium-sized firms, high turnover rates can be an invaluable warning sign to identify and solve potential organizational problems. If companies respond to attrition by solving those problems, they could be more successful in the long run. It is also interesting to note that, according to Maertz and Boyar (2012), the many difficulties and significant effort involved in changing jobs could deter employees from resigning. Therefore, more research could be done to investigate turnover and retention from different perspectives

6.3 Limitations and future studies

The current research is not without limitations. This paper uses archival data, which to some extent is out-of-date compared to data from surveys and interviews. While archival data from the Workplace and Employee Survey possess a perfect panel nature with a much longer period (seven to eight consecutive years), recently conducted surveys or interviews could provide more current information for investigation. Thus, future studies could use data from interviews with HR departments and HR consulting firms. They could help researchers verify the findings and discover more recent problems and creative corresponding solutions. Moreover, joint research involving researchers and corporate HR departments might generate much more practical and customized results.

With regard to the data analysis, I was not able to run more than 500 repetitions and include weight variables due to the limitation of the workstations for probit regression estimations. Instead of logistic and probit regression models, future studies could attempt to use other models, such as negative binomial regression models, to compare the findings.

As for the causes of turnover, future studies may inspect the correlation between age and turnover to find other compelling reasons for the findings. For example, by looking into how the variable was designed, they could study why female workers are more likely to quit. Interactions between related factors on turnover could be studied, such as

- marital status and occupational level
- marital status and gender
- wages and benefits

Furthermore, grouping the ten screening tests into four or five categories—putting medical examinations, drug tests, and security checks into one category, for instance—may generate different results.

Regarding the scope of research, future studies could focus on smaller fields in the area of turnover and retention, like a specific industry, firm size, or how turnover and retention could contribute to the firm's growth and success. Customized implications could be more effective and practical. Researchers could also look at different types of turnover and how employers could effectively fire workers.

6.4 Implications and managerial insights

Companies need to evaluate the overall benefits of employee retention and re-hiring. They can identify the most valuable employees to keep in terms of loyalty, organizational commitment, and how much they contribute to the company's success/profit. They can focus on ways to retain the best or most crucial employees, and perhaps pay less attention to contract or hourly workers who simply want to be paid for the work done. Employees who are perfectly matched with their positions and the company culture would be the top ones to keep.

While companies cannot control employees' marital status, children, or age, they can focus on areas within their control, such as hiring, reward systems, and even employee support for personal or family problems. Lambert et al. (2012) point out employers can still save the workers who have turnover intents. They can recognize warning signs such as absenteeism, lateness, severe fatigue, emotional change, lowered productivity, and reduced engagement on the job. They can hence find ways to save these workers.

The following pages discuss detailed implications that I believe stem from the results of this study, as they relate to the five hypotheses.

Install better systems for selection and assessment

I originally propose that employees are more likely stay if required to attend a personal interview when first hired. This is partially rejected by the regression outcomes. Whether it is because the tests themselves or the way they are conducted, they prove to be

ineffective in finding the best candidates for each position. This results in a mismatch between workers and jobs, regardless of other turnover factors such as seasonal work, lay-offs, or economic crisis. In this context, employees may voluntarily quit due to low satisfaction with the position and company. Perhaps employees' expectations are not met, as companies did not state explicitly the drawbacks of the position during the hiring process. Furthermore, candidates often camouflage themselves in selection and assessment processes, and companies need better tools to identify the real from the posed, such as a probationary or pre-contract period.

Companies and their HR departments specifically, need to develop more comprehensive mechanisms to test, select, assess, and finally determine which candidates to hire. They can consider three options: outsource their hiring processes, improve their internal hiring systems, or retain outside consultants.

Large or international corporations could hire a third party to do testing and selection to obtain recommended candidates. They can then assess the candidates using probationary/pre-contract period with their own HR departments: if satisfied with the workers, they can pay full amount to the agencies; otherwise, simply provide the agreed percentage of commissions. In this way, companies can not only hire better qualified employees, but may also be able to save recruitment costs.

Secondly, firms can try improving their internal hiring systems. Recruitment approaches vary from company to company. For small firms and startups, since recruitment systems have not been well developed, Chief Executive Officers (CEOs) may be the only individuals in charge of the full process. This could be time-consuming and ineffective. Large- and medium-sized firms, who have already established recruitment systems, need to continuously improve and customize their hiring schemes to adapt to various positions and assess different types of job seekers. For example, HR departments could take into account how to do security checks and medical examinations during the

hiring process. Recall that security checks were found to make workers less likely to stay, while medical examinations achieved the opposite.

A third option is to improve internal hiring systems through consulting services. It is critical to gain advice from experts, both periodically and as needed.

Pay more attention to female workers

Employers might want to give more time to female workers as they are more likely to quit, especially if they cannot afford to lose them. Some of the best performers and leaders are female. Depending on how companies value these workers, they can then decide whether and how to support and retain them. If the answer is positive, HR departments may look into some common problems for female employees. Gender discrimination in terms of wages and abilities could be a persistent problem for them, as well as sexual assault and breastfeeding periods. Companies may need to establish ground rules and continuously monitor and identify potential problems confronted by their female workers.

Focus on promotion, customize benefits, and improve engagement

Based on the results of this study, it appears that workers are more likely to stay where promotions are timely and more frequent, even without corresponding wage increases. Companies who fail to notice this may need to identify potential causes from their promotion policies. Human resources departments could conduct interviews and surveys with some or even all levels of employees to find out their current problems, concerns, and needs. Based on these, better promotion systems, salary and benefit packages can be customized to each department, levels of workers, even to each individual in the company.

On the topic of engagement programs, some workers might consider them as a waste of time. When asked to do surveys, provide suggestions on certain topics, or participate

in a job rotation or cross-training program, workers might think the company is loading them with extra work that does not add to their personal values. It may generate negative feelings instead of appreciation. Some workers might prefer simply getting their own job done and going home. In other words, engagement programs may not actually engage employees. It makes sense that engaging workers would keep them from quitting, but engagement programs need to actually engage workers rather than exhaust them.

Encourage workers to enjoy their work and the organization

Married employees could stay or quit. Newly married employees, especially women, might have higher chances of quitting. The husband may want his wife to simply stay home, particularly if she is pregnant. This in turn would make the husband work harder and stay loyal to the company if he indeed enjoys his work and the organizational culture. However, as females are playing important roles in corporations, some of them might have a strong desire to continue working if they truly enjoy their job. Considering the high divorce rate nowadays, women may want to be financially independent.

Having dependent children does not seem to have a strong influence on turnover intention. Parents do not seem to consider their children a relevant factor when it comes to turnover decisions, especially when the children are older. The main issue would be whether they like their work and the company as a whole. Even if their young children do need financial and caring support, they can usually find day care centers or ask their parents for help. They thus would probably work even harder for more savings. And if the company can provide certain benefits for their kids, these employees would become rather loyal. To sum up, married workers vary in turnover intent depending on how much they like their job. Work and family balance, as well as parenting duties, may be manageable for those who like their careers and organizations.

Motivate managers and executives to stay

According to the regression outcomes, workers on lower-level positions are more likely to stay than managers or executives. Companies may need to learn ways to keep their management happy and committed.

Firms could investigate the reasons for manager attrition and find appropriate solutions. White-collar workers may need higher job satisfaction. Higher levels of skill and experience make them expect more promotions and other potential opportunities internally as well as externally. It is critical for employers to constantly communicate with their managers and high-level professional workers to know their current problems, concerns, and needs. HR departments could then find customized approaches to continually satisfy and hence retain these employees.

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Appendix

TABLE 12 Weighted New Hires by Year

<i>Year</i>	<i>New Hires</i>		Total
	1 (Yes)	3 (No)	
1999	415,241	322,715	737,956
2000	378,015	308,297	686,312
2001	398,334	335,405	733,739
2002	382,052	286,446	668,498
2003	409,243	341,300	750,543
2004	367,098	293,612	660,710
2005	385,551	285,049	670,600
2006	352,674	257,177	609,851
Total	3,088,208	2,430,001	5,518,209

Source: Statistics Canada, WES 1999-2006

TABLE 13
Frequency Table of Screening Tests

Variable	Label	Year	1999	2000	2001	2002	2003	2004	2005
		N*	23,540	20,167	20,352	16,813	20,834	16,804	24,197
hire_1	Tests for specific skills	N/A*	0	3.98	0	6.8	0	5.89	0
		Yes (1)	11.85	11.71	11.77	11.32	12.89	12.46	13.47
		No (3)	88.15	84.31	88.23	81.88	87.11	81.65	86.53
hire_2	Aptitude or other personality testing	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	8.52	8.57	8.34	8.54	10.38	10.12	11.12
		No (3)	91.48	87.45	91.66	84.66	89.62	83.99	88.88
hire_3	Security check	N/A	0	3.98	0	6.8	0	0	0
		Yes (1)	9.42	9.5	8.92	9.11	14.5	14.26	17.16
		No (3)	90.58	86.52	91.08	84.09	85.5	85.74	82.84
hire_4	Medical examination	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	14.53	14.51	13.86	13.75	15.65	15.53	15.73
		No (3)	85.47	81.51	86.14	79.45	84.35	78.58	84.27
hire_5	Drug test	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	1.71	1.71	2.01	2.05	3.17	3.03	3.6
		No (3)	98.29	94.31	97.99	91.15	96.83	91.08	96.4
hire_6	Tests by a recruitment agency	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	0.73	0.79	0.88	1.04	2.16	2.16	2.26
		No (3)	99.27	95.23	99.12	92.16	97.84	91.95	97.74
hire_7	Other types	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	1.42	1.44	1.21	1.27	2.28	2.31	2.35
		No (3)	98.58	94.58	98.79	91.93	97.72	91.8	97.65
hire_8	Personal Interview	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	75.94	73.21	73.99	70.02	78.08	74.03	78.13
		No (3)	24.06	22.81	26.01	23.18	21.92	20.08	21.87
hire_9	Job related knowledge	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	5.56	5.54	5.73	5.86	9.16	8.95	10.44
		No (3)	94.44	90.48	94.27	87.34	90.84	85.16	89.56
hire_10	General knowledge or literacy skills	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	3.12	3.21	3.7	3.79	6.5	6.46	7.28
		No (3)	96.88	92.81	96.3	89.41	93.5	87.65	92.72
hire_11	None	N/A	0	3.98	0	6.8	0	5.89	0
		Yes (1)	21.3	20.08	22.52	19.69	17.42	15.79	17.2
		No (3)	78.7	75.94	77.48	73.51	82.58	78.32	82.8

Note: N = sample size
 "N/A" = "not asked"
 Numbers are all in percentages

Sources: Statistics Canada, Workplace and Employee Survey, Employee 1999 Data

TABLE 14
Weighted New Hires by Industry

YEAR	1999		2000		2001		2002		2003		2004		2005		2006	
	1 (YES)	3 (NO)	1 (YES)	3 (NO)	1 (YES)	3 (NO)	1 (YES)	3 (NO)	1 (YES)	3 (NO)	1 (YES)	3 (NO)	1 (YES)	3 (NO)	1 (YES)	3 (NO)
<i>INDUSTRY</i>																
01 Business services	6,740	7,099	5,861	6,777	6,037	5,444	4,270	4,790	4,727	3,017	3,866	2,714	5,601	2,297	4,358	2,687
02 Capital intensive tertiary manufacturing	13,911	8,909	13,943	7,972	13,232	10,292	12,970	7,840	15,087	6,716	11,621	8,183	12,532	7,323	11,170	7,509
03 Communication and utilities	4,926	2,562	4,768	2,339	6,416	2,407	6,193	2,325	5,622	2,246	4,436	2,238	4,788	2,222	4,269	1,662
04 Construction	7,773	5,065	7,913	4,493	8,623	5,142	5,919	6,858	6,837	6,182	7,212	6,523	7,313	3,314	6,941	3,118
05 Education and health services	10,902	6,199	9,804	6,663	11,885	5,809	10,781	5,975	11,430	5,143	10,046	5,644	9,353	4,297	8,056	4,885
06 Finance and insurance	26,396	30,523	19,221	29,835	27,990	23,465	27,690	20,708	40,372	21,013	27,711	28,234	33,300	19,462	26,534	21,318
07 Forestry, mining, oil, and gas	45,933	43,383	42,268	39,826	42,818	36,714	41,927	29,284	47,504	31,811	46,041	33,634	39,543	32,073	39,680	24,491
08 Information and cultural service	5,567	3,760	4,969	3,708	7,148	3,959	5,676	4,201	6,144	4,040	5,001	3,747	5,696	3,762	5,945	3,006
09 Labour intensive tertiary manu	157,343	77,251	141,640	80,392	129,173	93,564	138,548	72,499	130,694	102,945	123,847	79,404	128,830	82,392	113,406	73,723
10 Primary product manufacturing	21,363	17,050	18,871	17,094	18,261	19,508	19,046	15,293	20,466	15,119	17,838	16,759	21,750	11,469	19,631	10,600
11 Real estate, rental and leasin	10,778	21,050	11,151	15,565	15,098	17,733	11,792	16,876	14,551	18,217	10,179	19,966	10,275	21,339	9,799	19,037
12 Retail trade and consumer service	41,284	42,060	43,108	35,976	50,437	55,327	40,591	47,304	44,394	45,542	42,791	37,810	47,852	37,762	46,071	31,684
13 Secondary product manufacturing	52,071	51,776	45,423	51,840	50,962	48,297	47,400	46,131	51,071	45,622	48,935	41,674	49,913	50,930	49,178	46,969
14 Transportation, warehousing, wholesale	10,254	6,028	9,075	5,817	10,254	7,744	9,249	6,362	10,344	6,687	7,574	7,082	8,805	6,407	7,636	6,488
Total	415,241	322,715	378,015	308,297	398,334	335,405	382,052	286,446	409,243	314,300	367,098	293,612	385,551	285,049	352,674	257,177

Source: Statistics Canada, Workplace and Employee Survey (WES)

TABLE 15 Other Related Variables

<i>Waves</i>		<i>1999-2000</i>			<i>2001-2002</i>			<i>2003-2004</i>		
<i>variable</i>	<i>label</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>	<i>N</i>	<i>mean</i>	<i>standard deviation</i>
Energy	01 Forestry, mining, oil, and gas extraction	39776	0.016	0.127	32052	0.017	0.130	32796	0.013	0.114
Labour_manu	02 Labour intensive tertiary manufacturing	39776	0.051	0.220	32052	0.050	0.219	32796	0.047	0.212
Pri_manu	03 Primary product manufacturing	39776	0.036	0.187	32052	0.035	0.185	32796	0.030	0.171
Sec_manu	04 Secondary product manufacturing	39776	0.034	0.182	32052	0.036	0.187	32796	0.041	0.198
Capi_manu	05 Capital intensive tertiary manufacturing	39776	0.048	0.214	32052	0.050	0.218	32796	0.050	0.217
Constr	06 Construction	39776	0.038	0.191	32052	0.044	0.205	32796	0.044	0.204
Trans	07 Transportation, warehousing, wholesale	39776	0.103	0.303	32052	0.100	0.300	32796	0.107	0.310
Commu_uti	08 Communication and other utilities	39776	0.019	0.136	32052	0.020	0.139	32796	0.018	0.133
Retail	09 Retail trade and consumer services	39776	0.233	0.423	32052	0.250	0.433	32796	0.224	0.417
Finance	10 Finance and insurance	39776	0.049	0.215	32052	0.046	0.210	32796	0.047	0.211
Real_estate	11 Real estate, rental and leasing operations	39776	0.017	0.131	32052	0.019	0.136	32796	0.018	0.133
Bus_service	12 Business services	39776	0.095	0.293	32052	0.102	0.302	32796	0.103	0.304
Edu_health	13 Education and health services	39776	0.228	0.419	32052	0.199	0.400	32796	0.225	0.417
IT	14 Information and cultural industries	39776	0.032	0.177	32052	0.032	0.175	32796	0.034	0.180
blma	Standard Size based on Business Labour Market Analysis (BLMA) definition	0	0	0	0	0	0	0	0	0
dom_ind	WES Industry Aggregation	0	0	0	0	0	0	0	0	0
school_yrs	Number of school years	39776	9.893	6.818	32052	9.826	6.755	32796	10.422	6.572
vm	Visible minority	39776	0.127	0.333	32052	0.150	0.357	32796	0.181	0.385

Source: Statistics Canada, Workplace and Employee Survey (WES) 1999 – 2004.

TABLE 16
Employee Participation Program

<i>Variable</i>	<i>Label</i>	<i>WES question</i>	<i>Answers</i>
circle	Team or circle concerned with quality	How frequently do you participate in a team or circle concerned with quality or workflow issues?	1 Never 2 Occasionally 3 Frequently 4 Always
feed	Employee feedback	How frequently are you asked to complete employee surveys?	1 Never 2 Occasionally 3 Frequently
jrot	Job rotation	How frequently do you participate in a job rotation or cross-training program where you work or are trained on a job with different duties than your regular job?	1 Never 2 Occasionally 3 Frequently
seldir	Self-directed workgroup	How frequently are you a part of a self-directed work group (or semi-autonomous work group or mini-enterprise group) that has a high level of responsibility for a particular product or service area? In such systems, part of your pay is normally related to group performance. (Self-directed work groups: - Are responsible for production of a fixed product or service, and have a high degree of autonomy in how they organize themselves to produce that product or service. - Act almost as "businesses within businesses". - Often have incentives related to productivity, timeliness and quality. - While most have a designated leader, other members also contribute to the organization of the group's activities).	1 Never 2 Occasionally 3 Frequently 4 Always
sugg	Employee suggestion	How frequently do you participate in an employee suggestion program or regular meetings in which you offer suggestions to your superiors regarding areas of work that may need improvement?	1 Never 2 Occasionally 3 Frequently
tasktea	Task team workplace issues	How frequently do you participate in a task team or labour-management committee that is concerned with a broad range of workplace issues? (Task teams and labour-management committees make recommendations to line managers on such issues as safety, quality, scheduling, training and personal development programs)	1 Never 2 Occasionally 3 Frequently 4 Always
wrkperf	Workplace performance newsletter	How frequently are you informed (through meetings, newsletters, e-mail or Internet) about overall workplace performance, changes to workplace organization or the implementation of new technology?	1 Never 2 Occasionally 3 Frequently

Source: Statistics Canada, WES 2004

TABLE 17
Logistic Regression Results (xtlogit FE model, bootstrap, 500 reps)

<i>Waves</i>		1999-2000		2001-2002		2003-2004	
<i>Variable</i>	<i>Label</i>	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
hire_1	Tests for specific skills	-0.259*	0.121	0.264*	0.129	-0.139	0.126
hire_2	Aptitude or other personality testing	0.002	0.143	-0.324	0.149	-0.084	0.14
hire_3	Security check	-0.323*	0.132	-0.422***	0.116	-0.231*	0.098
hire_4	Medical examination	0.202	0.132	0.165	0.146	-0.111	0.161
hire_5	Drug test	-0.266	0.236	-0.753*	0.321	-0.242	0.219
hire_6	Tests administered by a recruitment agency	-0.782	1.775	-0.882	0.92	-0.068	0.239
hire_7	Other type of testing or screening	-0.422	0.256	-0.522	0.285	-0.073	0.213
hire_8	Personal interview	0.402***	0.079	-0.015	0.076	0.085	0.091
hire_9	Test on job-related knowledge	-0.117	0.153	-0.262	0.139	-0.219	0.136
hire_10	Test on general knowledge or literacy skills	-0.132	0.195	-0.239	0.191	0.03	0.189
marital	Marital status	-0.395***	0.111	-0.503**	0.152	-0.754***	0.152
dpnd_kid	Do you have any dependent children?	0.162	0.163	0.014	0.239	0.062	0.175
emp_sal	Employee declared wage	0**	0	0*	0	0	0
non_wage	Non-wage benefits provided by employer	-0.249**	0.084	-0.193*	0.088	-0.197*	0.086
no_prmtd	Times promoted	-0.308***	0.035	-0.173***	0.034	-0.237***	0.036
involve	Employee participation program	0.851**	0.314	1.187***	0.292	1.198***	0.34
f_size1	Dummy variable: firm size of 1-19 employees	0.665	0.8	0.292	3.017	-0.598	6.114
f_size2	Dummy variable: firm size of 20-99 employees	0.36	0.774	-0.85	2.7	-1.315	6.148
f_size3	Dummy variable: firm size of 100-499 employees	0.867	0.693	-0.566	2.637	-1.303	6.12
school_yrs	Dummy continuous variable: number of school years	1.013	5.245	0.498	0.273	0.282**	0.087
ocp_grp	WES six occupation groups	-0.215***	0.058	0.022	0.07	-0.139*	0.067

Note: Only results from including bootstrap weight and more repetitions are presented, as they are more accurate.

Variables *gender* and *vm* were omitted due to no changes within groups.

***p-value<0.001; **p-value<0.01; *p-value<0.05

*10% level of significance

**5% level of significance

***1% level of significance

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.

TABLE 18
Marginal Effects Results (xtlogit FE model)

<i>Waves</i>		1999-2000		2001-2002		2003-2004	
<i>Variable</i>	<i>Label</i>	<i>dy/dx</i>	<i>Standard Error</i>	<i>dy/dx</i>	<i>Standard Error</i>	<i>dy/dx</i>	<i>Standard Error</i>
hire_1	Tests for specific skills	-0.001	0.079	0.003	0.016	-0.009	0.049
hire_2	Aptitude or other personality testing	0.000	0.001	-0.004	0.019	-0.006	0.030
hire_3	Security check	-0.002	0.098	-0.005	0.025	-0.016	0.080
hire_4	Medical examination	0.001	0.062	0.002	0.010	-0.008	0.040
hire_5	Drug test	-0.001	0.081	-0.010	0.044	-0.016	0.084
hire_6	Tests administered by a recruitment agency	-0.004	0.238	-0.011	0.047	-0.005	0.027
hire_7	Other type of testing or screening	-0.002	0.128	-0.007	0.030	-0.005	0.028
hire_8	Personal interview	0.002	0.122	0.000	0.001	0.006	0.029
hire_9	Test on job-related knowledge	-0.001	0.036	-0.003	0.016	-0.015	0.075
hire_10	Test on general knowledge or literacy skills	-0.001	0.040	-0.003	0.014	0.002	0.016
marital	Marital status	-0.002	0.120	-0.006	0.029	-0.051	0.259
dpnd_kid	Do you have any dependent children?	0.001	0.049	0.000	0.003	0.004	0.024
emp_sal	Employee declared wage	0.000	0.000	0.000	0.000	0.000	0.000
non_wage	Non-wage benefits provided by employer	-0.001	0.076	-0.002	0.011	-0.013	0.068
no_prmtd	Times promoted	-0.002	0.094	-0.002	0.010	-0.016	0.082
involve	Employee participation program	0.005	0.259	0.015	0.070	0.081	0.417
f_size1	Dummy variable: firm size of 1-19 employees	0.003	0.180	0.004	0.056	-0.037	0.170
f_size2	Dummy variable: firm size of 20-99 employees	0.002	0.106	-0.010	0.041	-0.085	0.113
f_size3	Dummy variable: firm size of 100-499 employees	0.004	0.221	-0.006	0.028	-0.066	0.137
school_yrs	Dummy continuous variable: number of school years	0.006	0.279	0.006	0.031	0.019	0.099
ocp_grp	WES six occupation groups	-0.001	0.065	0.000	0.002	-0.009	0.048

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004

TABLE 19**Marginal Effects After xtlogit (bootstrap weight)**

<i>Waves</i>	1999-2000	2001-2002	2003-2004
<i>Marginal effects after bootstrap: xtlogit</i>	0.9944488	0.0130692	0.07286333

Note: $y = \text{Pr}(\text{Quit}|\text{fixed effect is 0})$ (predict, pu0)

Source: Statistics Canada, WES 1999-2004

TABLE 20
Probit Regression Results (xtprobit RE model)

<i>Waves</i>		1999-2000		2001-2002		2003-2004	
<i>Variable</i>	<i>Label</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>Coefficient</i>	<i>Standard Error</i>
hire_1	Tests for specific skills	-0.012	0.027	0.059*	0.03	-0.072*	0.029
hire_2	Aptitude or other personality testing	-0.048	0.03	-0.068*	0.031	-0.023	0.033
hire_3	Security check	-0.11***	0.025	-0.207***	0.025	-0.144***	0.024
hire_4	Medical examination	0.111***	0.028	0.109***	0.03	0.115***	0.033
hire_5	Drug test	-0.196***	0.05	-0.211***	0.048	-0.147**	0.049
hire_6	Tests administered by a recruitment agency	-0.197**	0.064	-0.244***	0.056	-0.046	0.055
hire_7	Other type of testing or screening	-0.113*	0.053	-0.237***	0.051	0.002	0.054
hire_8	Personal interview	0.013	0.018	-0.056**	0.021	-0.004	0.022
hire_9	Test on job-related knowledge	-0.043	0.033	-0.095**	0.032	-0.079**	0.03
hire_10	Test on general knowledge or literacy skills	-0.122**	0.04	-0.106**	0.039	0.04	0.04
gender	1 male, 2 female	0.067*	0.032	0.088*	0.034	-0.063	0.037
marital	Marital status	0.063***	0.009	0.068***	0.01	0.067***	0.01
dpnd_kid	Do you have any dependent children?	0.032	0.017	0.012	0.018	0.003	0.019
emp_sal	Employee declared wage	0	0	0	0	0	0
non_wage	Non-wage benefits provided by employer	0.039*	0.019	0.061**	0.02	0.078***	0.022
no_prmtd	Times promoted	-0.135***	0.008	-0.11***	0.008	-0.125***	0.009
involve	Employee participation program	0.075	0.06	0.038	0.061	0.024	0.068
vm	visible minority	0.024	0.047	-0.078	0.052	-0.11*	0.051
f_size1	Dummy variable: firm size of 1-19 employees	0.353***	0.07	0.237***	0.067	0.379***	0.074
f_size2	Dummy variable: firm size of 20-99 employees	0.429***	0.063	0.259***	0.06	0.402***	0.067
f_size3	Dummy variable: firm size of 100-499 employees	0.335***	0.064	0.162**	0.062	0.222**	0.071
school_yrs	Dummy continuous variable: number of school years	0.011***	0.003	0.013***	0.003	0.01**	0.003
ocp_grp	WES six occupation groups	-0.046***	0.012	-0.019	0.014	-0.017	0.014
_cons	constants (model parameter)	-0.839**	0.29	0.174	0.27	-1.814***	0.273

Note: ***p-value<0.001; **p-value<0.01; *p-value<0.05
 *10% level of significance
 **5% level of significance
 ***1% level of significance

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.

TABLE 21
Probit Regression Results (xtprobit PA model)

<i>Waves</i>		1999-2000		2001-2002		2003-2004	
<i>Variable</i>	<i>Label</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>Coefficient</i>	<i>Standard Error</i>
hire_1	Tests for specific skills	-0.011	0.027	0.057*	0.029	-0.071*	0.029
hire_2	Aptitude or other personality testing	-0.049	0.03	-0.066*	0.031	-0.023	0.033
hire_3	Security check	-0.109***	0.025	-0.205***	0.024	-0.143***	0.024
hire_4	Medical examination	0.111***	0.028	0.109***	0.03	0.116***	0.033
hire_5	Drug test	-0.197***	0.049	-0.208***	0.047	-0.146**	0.048
hire_6	Tests administered by a recruitment agency	-0.195**	0.064	-0.241***	0.055	-0.047	0.054
hire_7	Other type of testing or screening	-0.111*	0.053	-0.234***	0.051	0.003	0.054
hire_8	Personal interview	0.01	0.018	-0.057**	0.02	-0.005	0.022
hire_9	Test on job-related knowledge	-0.042	0.032	-0.094**	0.032	-0.079**	0.03
hire_10	Test on general knowledge or literacy skills	-0.12**	0.04	-0.106**	0.039	0.041	0.04
gender	1 male, 2 female	0.066*	0.032	0.087*	0.034	-0.064	0.036
marital	Marital status	0.063***	0.009	0.069***	0.01	0.068***	0.01
dpnd_kid	Do you have any dependent children?	0.032	0.016	0.011	0.018	0.002	0.019
emp_sal	Employee declared wage	0	0	0	0	0	0
non_wage	Non-wage benefits provided by employer	0.042*	0.019	0.064**	0.021	0.081***	0.022
no_prmtd	Times promoted	-0.135***	0.008	-0.11***	0.008	-0.125***	0.009
involve	Employee participation program	0.071	0.059	0.032	0.06	0.019	0.067
vm	visible minority	0.025	0.046	-0.077	0.051	-0.109*	0.05
f_size1	Dummy variable: firm size of 1-19 employees	0.353***	0.071	0.236***	0.067	0.376***	0.074
f_size2	Dummy variable: firm size of 20-99 employees	0.429***	0.063	0.258***	0.06	0.4***	0.067
f_size3	Dummy variable: firm size of 100-499 employees	0.335***	0.063	0.162**	0.061	0.22**	0.07
school_yrs	Dummy continuous variable: number of school years	0.011***	0.002	0.013***	0.003	0.01**	0.003
ocp_grp	WES six occupation groups	-0.046***	0.012	-0.02	0.014	-0.016	0.014
_cons	constants (model parameter)	-0.862**	0.288	0.145	0.269	-1.82***	0.272

Note: ***p-value<0.001; **p-value<0.01; *p-value<0.05
*10% level of significance
**5% level of significance
***1% level of significance

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.

TABLE 22 Hiring Tests – Hypothesis 1

<i>Variable</i>	<i>Label</i>	<i>Sign*</i>	<i>Overall Result</i>	<i>Logit FE Result</i>	<i>Probit RE Result</i>	<i>Probit PA Result</i>
hire_1	Tests for specific skills	N/A	Tests for specific skills could work either way	2 of the 3 intervals* showed "-" significance	2 of the 3 intervals showed significance: one "-", the other "+"	2 of the 3 intervals showed significance: one "-", the other "+"
hire_2	(1 Yes; 3 No) Aptitude or other personality testing (1 Yes; 3 No)	+	If required to do <i>aptitude or other personality testing</i> when first hired, workers were MORE likely to quit.	No significance	Only 2001-02 interval showed "-" significance	Only 2001-02 interval showed "-" significant
hire_3	Security check (1 Yes; 3 No)	+	If required to do <i>security check</i> when first hired, workers were MORE likely to quit.	All 3 intervals indicated "-" significance	All 3 intervals indicated "-" significance	All 3 intervals indicated "-" significance
hire_4	Medical examination (1 Yes; 3 No)	-	If required to do <i>medical examination</i> when first hired, workers were LESS likely to quit	No significance	All 3 intervals displayed "+" significance	All 3 intervals indicated "+" significance
hire_5	Drug test (1 Yes; 3 No)	+	If required to do <i>drug test</i> when first hired, workers were MORE likely to quit	Only 2001-02 interval showed "-" significance	All 3 intervals indicated "-" significance	All 3 intervals indicated "-" significance
hire_6	Tests administered by a recruitment agency (1 Yes; 3 No)	+	If required to do <i>agency tests</i> when first hired, workers were MORE likely to quit	No significance	All 3 intervals indicated "-" significance	2 of the 3 intervals showed "-" significance
hire_7	Other type of testing or screening (1 Yes; 3 No)	+	If required to do <i>other tests</i> when first hired, workers were MORE likely to quit	No significance	2 of the 3 intervals showed "-" significance	2 of the 3 intervals showed "-" significance
hire_8	Personal interview (1 Yes; 3 No)	N/A	Personal interview could work either way	Only 1999-00 displayed "+" significance	Only 2001-02 interval showed "-" significance	Only 2001-02 interval showed "-" significance
hire_9	Test on job-related knowledge (1 Yes; 3 No)	+	If required to do test for <i>job-related knowledge</i> when first hired, workers were MORE likely to quit	No significance	All 3 intervals indicated "-" significance	All 3 intervals indicated "-" significance
hire_10	Test on general knowledge or literacy skills (1 Yes; 3 No)	+	If required to do test for <i>general knowledge or literacy skills</i> when first hired, workers were MORE likely to quit	No significance	2 of the 3 intervals showed "-" significance	2 of the 3 intervals showed "-" significance

Note: “-“ sign denotes negative effect on turnover; “+” sign means positive effect on turnover
The word *interval* refers to two-year durations including 1999-2000, 2001-2002, and 2003-2004.

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.

TABLE 23 Gender – Hypothesis 2

<i>Variable</i>	<i>Label</i>	<i>Sign</i>	<i>Overall Result</i>	<i>Logit FE Result</i>	<i>Probit RE Result</i>	<i>Probit PA Result</i>
gender	1 male; 2 female	+	Female workers are MORE likely to quit	Variable omitted because of no within-group variance	2 of the 3 intervals showed "+" significance	2 of the 3 intervals showed "+" significance

Note: “-“ sign denotes negative effect on turnover; “+” sign means positive effect on turnover
The word *interval* refers to two-year durations including 1999-2000, 2001-2002, and 2003-2004.

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.

TABLE 24 Marriage and Children – Hypothesis 3

<i>Variable</i>	<i>Label</i>	<i>Sign</i>	<i>Overall Result</i>	<i>Logit FE Result</i>	<i>Probit RE Result</i>	<i>Probit PA Result</i>
marital	Marital status: 1 Legally married (and not separated); 2 Legally married and separated; 3 Divorced; 4 Widowed; 5 Single (never married)	N/A	N/A	All 3 intervals displayed "-" significance	All 3 intervals displayed "+" significance	All 3 intervals displayed "+" significance
dpnd_kid	Do you have any dependent children?	N/A	No effect on quitting	No significance	No significance	No significance

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.

TABLE 25 Other Results – Race & Education Level

<i>Variable</i>	<i>Label</i>	<i>Sign</i>	<i>Overall Result</i>	<i>Logit FE Result</i>	<i>Probit RE Result</i>	<i>Probit PA Result</i>
vm	Visible minority: 1 white, 0 non-white	+	White workers are LESS likely to quit	Variable Omitted because of no within-group variance	Only 2003-04 interval showed "-" significance	Only 2003-04 interval showed "-" significance
school_yrs	Years of schooling	-	More years of education, MORE likely to quit	Only in 2003-04 interval showed "+" significance	All 3 intervals indicated "+" significance	All 3 intervals indicated "+" significance

Note: “-“ sign denotes negative effect on turnover; “+” sign means positive effect on turnover

Source: Statistics Canada, Workplace and Employee Survey (WES) 1999-2004

TABLE 26 How Employers Reward Workers – Hypothesis 4

<i>Variable</i>	<i>Label</i>	<i>Sign</i>	<i>Overall Result</i>	<i>Logit FE Result</i>	<i>Probit RE Result</i>	<i>Probit PA Result</i>
emp_sal	Employee declared wage	N/A	Wage has no effect on quitting	Coefficients all equal to 0	Coefficients all equal to 0	Coefficients all equal to 0
non_wage	Did employer provide non-wage benefits: 1 Yes; 3 No	N/A	Non-wage benefits could be either way	All 3 intervals displayed "-" significance	All 3 intervals indicated "+" significance	All 3 intervals indicated "+" significance
no_prmtd	Times promoted: how many times workers got promoted	–	More promotions prevent turnover	All 3 intervals displayed "-" significance	All 3 intervals indicated "-" significance	All 3 intervals indicated "-" significance
involve	% variable. How frequently involved with employee participation programs	+	If companies care more about their workers, the workers will MORE likely to quit	All 3 intervals indicated "+" significance	No significance	No significance
f_size1	Dummy variable: firm size of 1-19 employees			No significance within employees	All 3 intervals indicated "+" significance	All 3 intervals indicated "+" significance
f_size2	Dummy variable: firm size of 20-99 employees	+	Workers in larger-sized firms are MORE likely to quit	No significance within employees	All 3 intervals indicated "+" significance	All 3 intervals indicated "+" significance
f_size3	Dummy variable: firm size of 100-499 employees			No significance within employees	All 3 intervals indicated "+" significance	All 3 intervals indicated "+" significance

Note: “-“ sign denotes negative effect on turnover; “+” sign means positive effect on turnover

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.

TABLE 27 Occupational Level – Hypothesis 5

<i>Variable</i>	<i>Label</i>	<i>Sign</i>	<i>Overall Result</i>	<i>Logit FE Result</i>	<i>Probit RE Result</i>	<i>Probit PA Result</i>
ocp_grp	WES six occupation groups: 1 Managers; 2 Professionals; 3 Technical/Trades; 4 Marketing/Sales; 5 Clerical/Administrative; 6 Production workers	–	Workers on lower-level positions are LESS likely to quit	2 of the 3 intervals showed "-" significance	Only 1999-00 interval showed "-" significance	Only 1999-00 interval showed "-" significance

Note: “-“ sign denotes negative effect on turnover; “+” sign means positive effect on turnover

Source: Statistics Canada, Workplace and Employee Survey (WES), 1999-2004.