

# Injury Rate as an Indicator of Business Success

Theresa HOLIZKI\*, Larry NELSON and Rose McDONALD

Workers' Compensation Board of B.C., British Columbia, Canada

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**Abstract:** Health and safety professionals and organizations have often suggested that promoting and improving health and safety in the workplace will improve business success. We conducted a study of all new small businesses that registered with the Workers' Compensation Board of British Columbia (WCB of BC) in the years 1993, 1995, 1996 and 1997, assessing their injury rate in the first 5 complete years of business. The data set represents 53,913 new businesses and 19,332 claims. Businesses were grouped by the number of years between registering for WCB coverage and termination of coverage. Injury rates were determined for each calendar year for each industry sector as injuries per 100 person-years, based on payroll information provided by the businesses. Across all industries, businesses that failed between 1 and 2 yr of start-up had an average injury rate of 9.71 while businesses that survived more than 5 yr had an average injury rate of only 3.89 in their first year of business ( $p < 0.000001$ ). The WCB of BC demonstrated a statistical correlation between health and safety in the workplace and the survival of a small business.

**Key words:** Small-scale industry, Small business, Injury rates, Occupational health

## Introduction

Health and safety professionals and organizations often suggest that promoting and improving health and safety in the workplace will also benefit a business. However there are few data to support this contention and employers suggest that it is their ability to "take risks" that allows them to stay in business<sup>1</sup>). Although few small businesses can afford the absence or disability of a trained employee without negatively affecting performance<sup>2</sup>), the cost of prevention of illness or injury is seen as prohibitive.

We hypothesized that small businesses in some high risk sectors such as construction and forestry that had low injury rates would stay in business longer than those with high injury rates.

## Materials and Methods

We assessed the injury rate in the first 5 complete years of business for all new small businesses (those with fewer than 20 full-time equivalents of employees on payroll) that registered with the WCB of BC in the years 1993 to 1997, and that remained in business for a least 1 complete year.

Data were therefore obtained from 1993 through 2002. Data from companies registered in 1994 were excluded, due to legislative changes of coverage.

Businesses were grouped by the number of full years they remained registered with the WCB, i.e. at least 1 year but less than 2 yr, between 2 and 3 yr, etc. Injury rates were calculated for each relative year of being in business as the incidence of non-healthcare only-claims per 100 person-years.

The correlation between injury rates for small businesses compared with injury rates for businesses overall (which declined over the study period) was determined (Pearson's  $r$ ). Since it was shown that there was a high correlation between the overall and small business injury rates, the remainder of the data analysis focused on the injury rates during the first year of business. The Poisson distribution test was used to compare injury rates during the first years of business.

If there were enough data within a group to support valid data points (minimum 5 claims per group per year), similar analysis was done at the sector (e.g. Construction), subsector (e.g. General Construction) and classification unit (e.g. Painting & Wallpapering) levels.

Data were also analyzed across sectors to determine whether there was a correlation between injury rates had shorter business survival duration.

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\*To whom correspondence should be addressed.

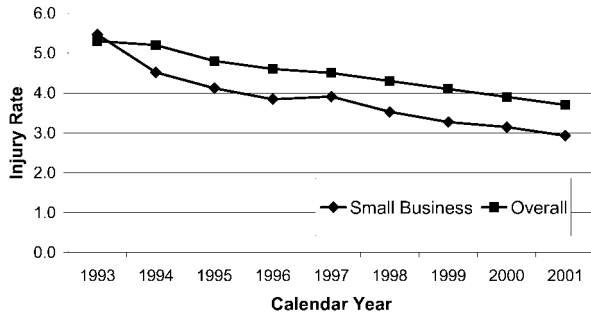


Fig. 1. Annual injury rate by survival duration of businesses.

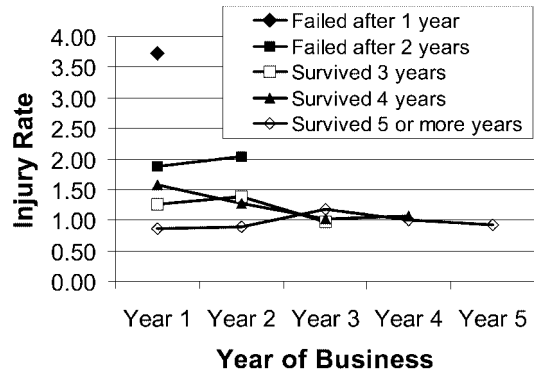


Fig. 4. Injury rates by duration of business survival for retail.

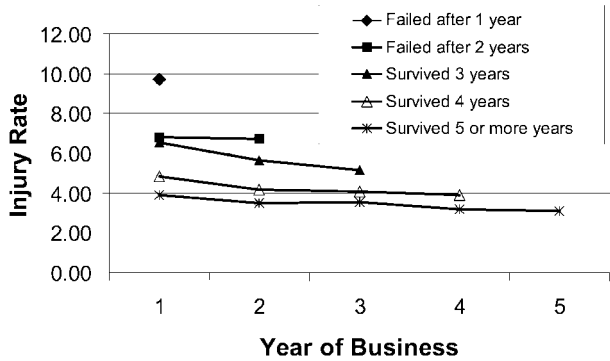


Fig. 2. Comparison of overall and small business injury rates over the study period.

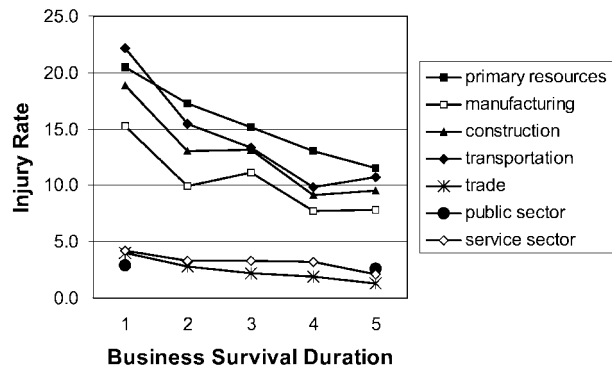


Fig. 5. Year 1 injury rates for sectors by business survival over 5 yr.

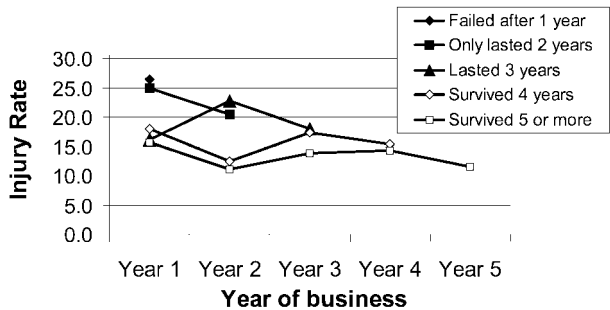


Fig. 3. Injury rates by duration of business survival for couriers.

**Results**

Complete data were obtained on 53,913 new employers and 19,332 claims. Sixteen percent (16%) of businesses failed after 1 yr, 10% after 2 yr, 7% after 3 yr, and 19% after 4 yr; 47% survived 5 yr or more.

The injury rates among small businesses (mean 3.9, range 2.9 to 5.5) were significantly lower than injury rates overall (in all businesses) (mean 4.5, range 3.7 to 5.3) ( $p < 0.05$ ) (paired t-test,  $\alpha < 0.05$ ,  $\beta = 0.8$ ) over the period studied.

However, the injury rates followed the same decreasing pattern over the study period (correlation coefficient 0.95) (Fig. 1).

Across all industries, businesses that failed between 1 and 2 yr of start-up had an average injury rate of 9.71 while businesses that survived more than 5 yr had an average injury rate of only 3.89 in their first year of business.

Injury rates during the first year of business were significantly different between each pair of groups ( $p < 10^{-6}$ ).

All groups showed improved injury rates with each year of business, but this was not statistically different from the overall improvement in injury rates over the period studied.

The injury rate trend between unsuccessful and successful business was relatively consistent at the sector, subsector and CU levels even though they varied significantly from high hazard (e.g. Couriers, Fig. 3) to low hazard industries (e.g. Retail, Fig. 4).

Injury rates are up to 4 times higher in similar businesses that only survive 1 to 2 yr compared with businesses that survive 5 or more years.

Within all sectors except the public sector for which there were low injury rates and few data (and for which  $p = 0.60$ ),

differences between the injury rate in businesses that survive 1 yr and businesses that survive 5 yr were highly statistically significant ( $p < 10^{-6}$ )

There was a positive correlation between percentage of businesses by industry sector that survived only one year and injury rate in that industry sector ( $r = 0.69$ ).

## Discussion

We have demonstrated a correlation between injury rate and length of time a business remains in business. The roles of cause and effect cannot be determined from the data in this study. It is possible that injury rate is an indicator of how well a business is managed. It may be that injuries, particularly in one or two person businesses, result in sufficient loss of business continuity and causes business failure. Industry sectors with higher injury rates (for example, construction (injury rate 19) or transportation and warehousing (injury rate 22)) had higher business failure rates in between years 1 and 2 (25% and 18% compared with 12 to 17% for other industry sectors).

A search of databases including MedLine, Canadian Centre for Occupational Health and Safety, and the internet in general produced only one citation of a study correlating small business success and occupational health and safety. A German study<sup>3</sup>, which compared craft trade businesses applying for a prize for promotion of health and safety with the general population of craft trade businesses, found a positive correlation between business success and industrial health and safety effort, such as use of consultants and implementation of health and safety measures.

Small businesses do not choose to fail. The people who initiate them are risk-takers who often perceive that risk-taking is necessary to their business success<sup>2</sup>. The internal resources (time and funding) for small businesses are very limited, and the time and funding required to implement health and safety measures may be seen as unavailable or not justified. In addition, small business owners may be unaware of sources of potential injury in their business<sup>2</sup>.

There are many information resources available for small businesses to guide them in achieving increased health and safety in the workplace (e.g. NIOSH<sup>4</sup>), OSHA<sup>1</sup>), WorkSafeBC<sup>5</sup>), and Solbase<sup>6</sup>) (a European database of solutions found by individual companies). Almost all of the resources initially require access via the Internet, which may not be available to many small businesses.

The cost of creating and maintaining an occupational health of safety program is considerably higher for small businesses than for larger ones due to the absence of economies of scale<sup>2</sup>. However, our study strongly suggests that the cost of ignoring workplace safety is even higher—the survival of the business may depend on it.

Future studies should evaluate the contribution of other factors such as differences between industry sectors and number of employees.

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