

SASKATCHEWAN ADVANCED EDUCATION, EMPLOYMENT AND LABOUR SASKATCHEWAN WAGE SURVEY METHODOLOGY REPORT, 2009

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Government of
Saskatchewan



Report Compiled by
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SASKATCHEWAN WAGE SURVEY, 2009

Background Information

In December 2008, the Ministry of Advanced Education, Employment, and Labour (AEEL) contracted Insightrix Research, Inc. to conduct a wage survey of employers in Saskatchewan. Overarching objectives of this research were to include:

- Development of a research methodology which can accurately capture a large amount of variable wage data among employers in Saskatchewan.
- Provision of reliable, timely wage information for:
 - employers to enhance their competitiveness and attract and retain employees
 - students and job seekers to have career information; and,
 - researchers and policy analysts to inform policy development;
- Provision of wage information for the most common occupations in Saskatchewan; and
- Provision of sub-provincial wage data (defined as Regina, Saskatoon, and the remainder of the province) for comparability.

PROJECT MANAGEMENT

Insightrix and the Ministry held weekly and bi-weekly project meetings from the commencement of this project. Weekly meetings involved discussing project timelines, project assumptions, discussing the research methodology, data collection approaches, verification processes, and project updates. These meetings have been essential to ensure continuity of the project and to keep all parties aware of achieving various milestones and addressing any challenges faced by the Insightrix team. Additional communication between Insightrix and the Ministry allowed for the Ministry to follow the progress of the project reporting and to be directly involved in the creation and application of reporting rules.

Sample Approach

The purpose of this study is to collect employee wage data from businesses. The results are reported on by occupation using Statistics Canada's National Occupational Classification (NOC) codes. As such, the sampling approach was based on occupations, rather than employers. Therefore, to ensure there was a representative sample of occupations being reported on, it was essential to know the number of people employed in various occupations and to randomly select businesses to participate based on their employee counts (i.e. probability proportional sampling technique). This sampling technique reflects the probability of each employer being selected based on the number of employees they have; therefore, businesses with a large number of employees had a greater chance to be selected for their participation. This guiding philosophy was utilized throughout the study design and set-up.

Sample Generation

Insightrix was provided the Workers' Compensation Board's (WCB) database of employers in the province. This database contained contact and industry information for the employers as well as an estimated FTE (full time equivalent) count based on the total payroll. Because the employee count was estimated in this database, Insightrix purchased an additional database from Dun & Bradstreet which contained contact and industry information as well as employee counts. Both databases were used to determine the large employers that Insightrix contacted for an in-person interview.

Groups that were excluded from the sample are as follows:

- Employers with only one employee (presumably the owner); and
- Employers in the Agriculture sector with fewer than three employees (to eliminate small farming operations from the sample).

A probability proportional sampling approach was used to determine the sample for this study based on the number of employees. Companies with a higher employee count had a higher likelihood of being selected than those with lower employee counts; however, each company listed in the database had a chance of being selected. There were no quotas set by industry as this restriction would impede the random nature of the approach. When businesses were randomly selected from the database, the selected businesses were markedly close to the overall population of businesses in the entire database.

The following table displays the sampling approach breakdown of how each industry was represented in the sample used. The sample percentage represents the proportion of businesses in each industry within the sample itself while the Dun and Bradstreet (D&B) percentage represents the proportion within each industry in the entire province.

Industry	Sample Count	Sample %	D&B % (total population)	Difference
11 Agriculture, forestry, fishing and hunting	284	5.1%	7.2%	-2.1
21 Mining and oil and gas extraction	99	1.8%	2.5%	-0.7
22 Utilities	31	0.6%	0.9%	-0.3
23 Construction	270	4.8%	3.7%	1.1
31 - 33 Manufacturing	306	5.4%	6.0%	-0.6
41 Wholesale trade	333	6.0%	4.7%	1.3
44-45 Retail Trade	807	14.5%	11.8%	2.7
48 Transportation and warehousing	166	3.0%	2.7%	0.3
49 Transportation and warehousing	69	1.2%	1.0%	0.2
51 Information and cultural industries	83	1.5%	1.5%	0.0
52 Finance and insurance	224	4.0%	3.7%	0.3
53 Real estate and rental and leasing	109	2.0%	1.4%	0.6
54 Professional, scientific and technical services	247	4.4%	3.9%	0.5
55 Management of companies and enterprises	10	0.2%	0.2%	0.0
56 Administrative and support, waste management and remediation services	234	4.2%	3.2%	1.0
61 Educational services	414	7.4%	7.8%	-0.4
62 Health care and social assistance	442	7.9%	10.4%	-2.5
71 Arts, entertainment and recreation	135	2.4%	2.2%	0.2
72 Accommodation and food services	416	7.5%	6.2%	1.3
81 Other services (except public administration)	439	7.9%	5.2%	2.7
91 Public administration	459	8.2%	13.5%	-5.2
Grand Total	5577	100.0 %		

Because of the restrictions made in the agriculture sector, representation by region is different from D&B statistics when basing on business counts but is more accurate based on employee counts.

	Sample Count	Sample %	D&B Counts	D&B% (total population)	Difference
Saskatoon	1354	24.3%	3310	17.3%	7.0
Regina	1175	21.1%	1944	10.1%	10.9
Rest	3048	54.7%	13921	72.6%	-18.0
Estevan	108	1.9%	658	3.4%	-1.6
Lloydminster	63	1.1%	444	2.3%	-1.3
Moose Jaw	186	3.3%	1079	5.6%	-2.3
North Battleford	128	2.3%	720	3.8%	-1.5
Prince Albert	246	4.5%	1336	7.0%	-2.4
Swift Current	122	2.2%	914	4.8%	-2.6
Weyburn	69	1.2%	457	2.4%	-1.2
Yorkton	103	1.9%	797	4.2%	-2.3
Rural	2023	37.2%	7516	39.2%	-2.0
Grand Total	5577	100.0%	19175	100.0%	

Choosing Occupations

To make the survey easier to complete for respondents, Inshtrix preselected a list of NOCs for respondents in each industry. A list of 300 target occupations was generated using the occupations in the province with highest number of employed persons. Combined, these 300 occupations represent 95.8% of the provincial workforce.

For each industry, a list of targeted occupations was generated by looking at the top 30 occupations with the highest number of employed persons within the industry which were also contained on the list of top occupations in the province. Occupations which were in the top 300 but not within the top 30 occupations of any one industry were added to the targeted occupation list for select industries. These occupations tend to have a low number of individuals who are employed in any one organization but are common across many industries, such as personnel and recruitment officers, payroll clerks, records management and filing clerks, personnel clerks, etc.

QUESTIONNAIRE DEVELOPMENT & INSTRUCTIONS

A questionnaire was developed by Inshatrix, based largely on the 2006 Saskatchewan Wage Survey format used by the Ministry. However, a number of enhancements were made to simplify the process for respondents and improve response rates. To maintain quality of the responses and simplify the experience for respondents, the survey was developed in an Excel worksheet format. In this worksheet, respondents selected their industry (as listed above). Upon doing so, worksheets were automatically pre-filled with the most likely occupations the employer would have on staff. This was established to remove the requirement for employers to search out and classify their staff into specific NOCs. If the employer employed a large number of individuals who did not fall within one of the pre-selected NOCs, blank worksheets were provided so they could document these individuals as well. During the verification process, respondents were called back and Inshatrix staff verified these NOCs.

A thorough set of instructions were distributed to respondents to assist respondents in completing the Excel worksheet. This included elements such as:

- Instructions to complete the Excel sheet (5 easy step process);
- Alternate options for participating in the research (printing the work sheets and faxing, completing online, emailing the file, uploading the file to a secure FTP site or waiting for Inshatrix to contact them by phone); and
- Detailed instruction manual needed for more detailed inquiries.

All information was distributed via mail to the randomly selected respondents. The Excel file and detailed instruction guide were burned onto CD's that respondents could insert into their computers to load the files. The project cover letter approved by the Ministry and the easy five step instruction sheet were printed and included in the mail out package. Contact information was provided in the packages so respondents could talk directly to an Inshatrix staff member if there were questions or to ascertain the validity and confidentiality of the study.

Pre-testing

To ensure the Excel worksheet and supporting instructional information were sufficient for respondents to participate in the research, a selection of businesses were targeted to pre-test the survey instruments. A total of eight organizations completed the pre-tests, offering valuable information to assist with enhancing the process. Specifically, the feedback was that the information provided was overwhelming at first but once time was spent filling out the Excel worksheet, the process was straightforward and not overly complex. In light of this feedback, a file was created (the 5 Easy Steps file) to reduce the initial impression that the process was

complex. Several other refinements were also integrated such as clarifying language, alphabetizing the NOCs on the Excel worksheet, reducing repetition of information and enabling a printer-friendly format for respondents.

DATA COLLECTION

The Saskatchewan Wage Survey, 2009 went into the field on Monday, April 27th with 5,314 potential respondents (out of 5,577 in the sample) being contacted. A number of processes were established while the project was in the field in order to ensure the quality of data collection. Common errors in the process were discovered, addressed, and data was verified directly with respondents.

Reporting note: Minimum wage for the majority of the study was considered to be a calculated \$8.60 per hour. The provincial minimum wage adjusted on May 1st to \$9.25 per hour and all data collected after this date was verified to this minimum wage standard. Data collected prior to May 1st allowed for a minimum wage of \$8.60.

Data Collection Methods

Mail-outs

Insightrix mailed out over 4,000 packages to a random sample of businesses around the province. These mail-outs included an introductory cover letter, an abridged step-by-step instruction guide intended to be a quick reference, and a CD or DVD-rom disc which included the data form sheet in an excel file, industry classification information, and a detailed instruction guide.

Research note: Insightrix planned to include only CD-rom discs in the mail out packages in order to be compatible with the largest number of respondents. Due to a printing error, the first batch of discs was printed on DVD-rom discs. This subsequently made accessing the information difficult for a number of respondents. Many of these individuals contacted Insightrix asking for guidance, saying they could not open the files, and were provided with the relevant information through email instead.

A template email was created that could be sent to respondents in order to supplement those who received the package with the information in a digital format and to provide information to those respondents who did not receive the mail-out package.

Telephone

For smaller employers, completion of the survey over the telephone was a common option. Respondents were able to relay their information directly over the phone to one of Insightrix's

trained interviewers who would then enter the data into the database while receiving direction from the contact.

Faxing

Insightrix generated a set of documents intended exclusively for faxing, including specific instructions for those respondents who wished to both receive and submit their completed survey by fax. Documents were stripped of any colour and instructions were included. Reference numbers were included on the fax cover sheets to ensure proper entry into the results database.

Respondents who opted to receive the survey by fax were provided with a list of common NOCs for their industry. This allowed them to manually fill in the appropriate NOC code into their forms, maintaining consistency in data entry and eventual analysis.

Online Survey Link

A survey link provided to respondents allowed for the completion of the survey online through an internet browser. A unique survey link was automatically generated for each participant and directly tied to the specific respondent's contact information. Respondents were able to manually enter data into the online survey link at their discretion and could start, stop, and resume data entry at any time. When the respondent had completed the survey, the data would be automatically uploaded into the survey database. Any errors or data abnormalities were flagged for future data verification. An email was dispatched to Insightrix staff members working on the project to communicate the completion by the respondent.

Large Employers

Employers in the sample that had 300 or more employees were classified as large employers. These employers were taken out of the general sample and assigned to members of Insightrix's professional staff. Documentation and specialized instructions designed to appeal specifically to large employers were generated in order to make participation straightforward. Additionally, professional staff served as personal contacts and worked on a one on one basis with large employer contacts in order to provide additional assistance when required and to ensure participation.

Respondents who fit into this category were given the unique option to submit an export of their relevant wage information to Insightrix rather than manually completing the data form sheets. Insightrix staff then subsequently formatted and uploaded this data into the survey database. An example of a raw data export was created in order to assist large employers in formatting their data submission in a way that would be consistent with other results.

COMMUNICATION WITH RESPONDENTS

Emails from Respondents

All respondents were encouraged to contact Inshtrix professional staff directly through email with any questions, comments, or issues experienced while completing the survey. These emails were monitored daily by staff at Inshtrix and emails were responded to in a timely manner. Completed Excel files were emailed to Inshtrix, subsequently filed, and the data was then entered into the survey database.

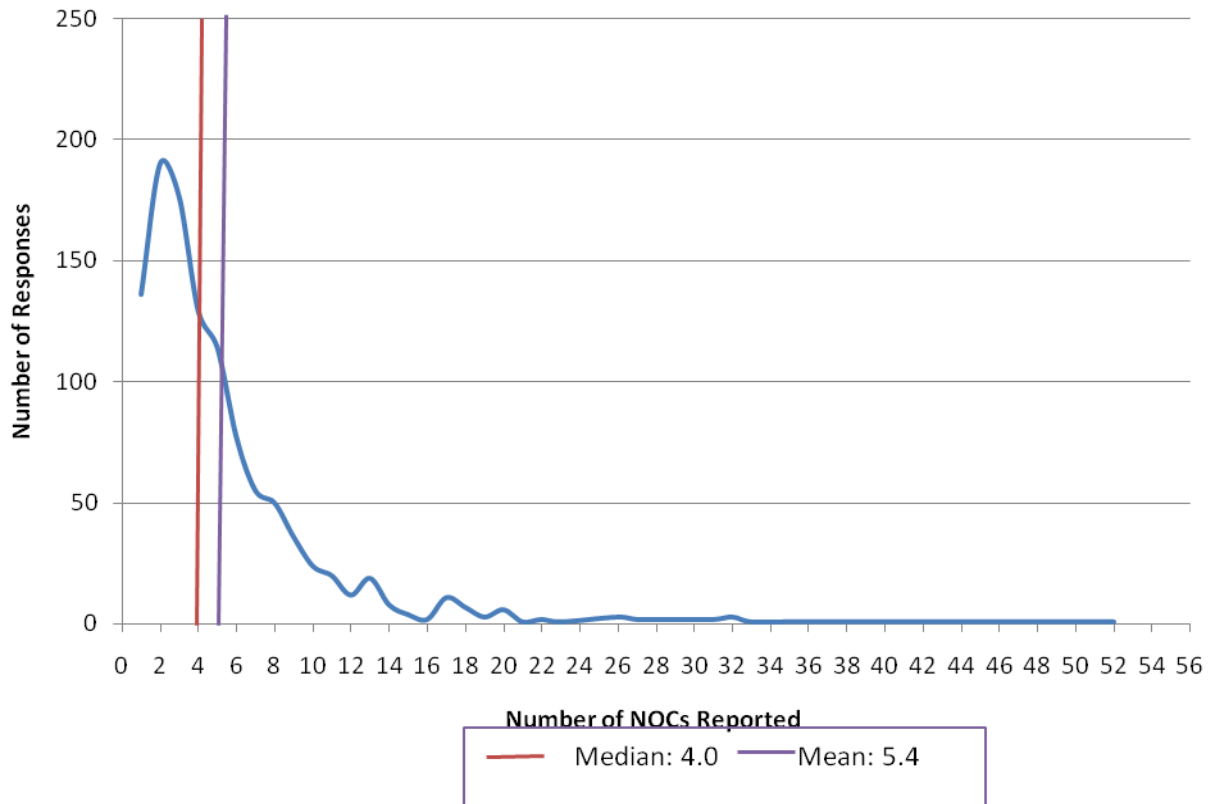
Phone Communication

A dedicated telephone number was established for wage survey communications. This phone was monitored and attended to on a daily basis during business hours and served to answer respondents' questions and address outstanding concerns.

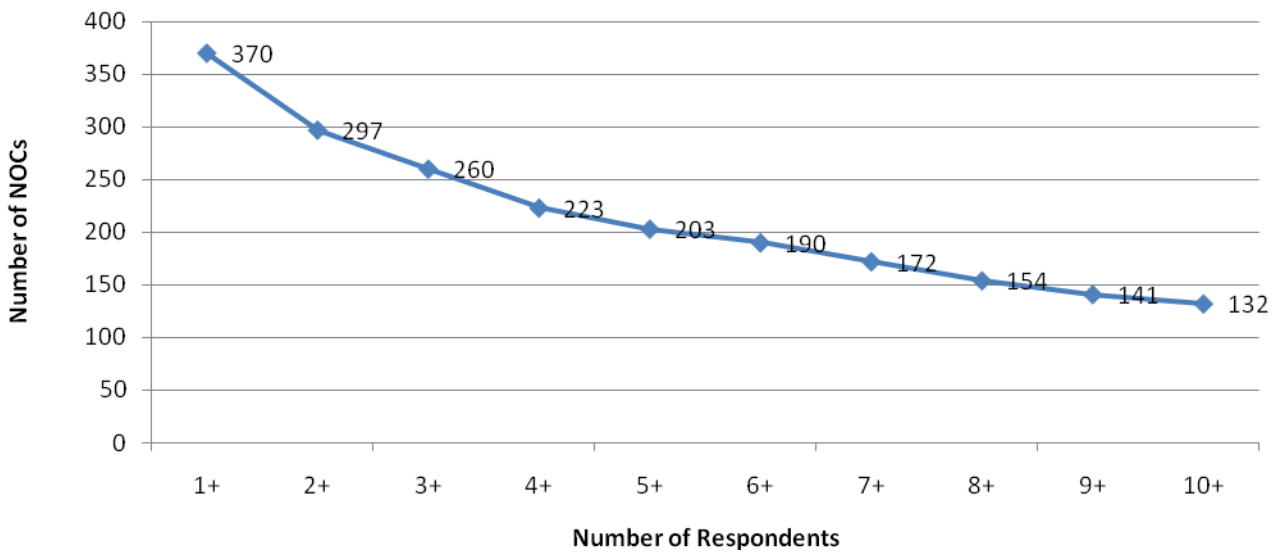
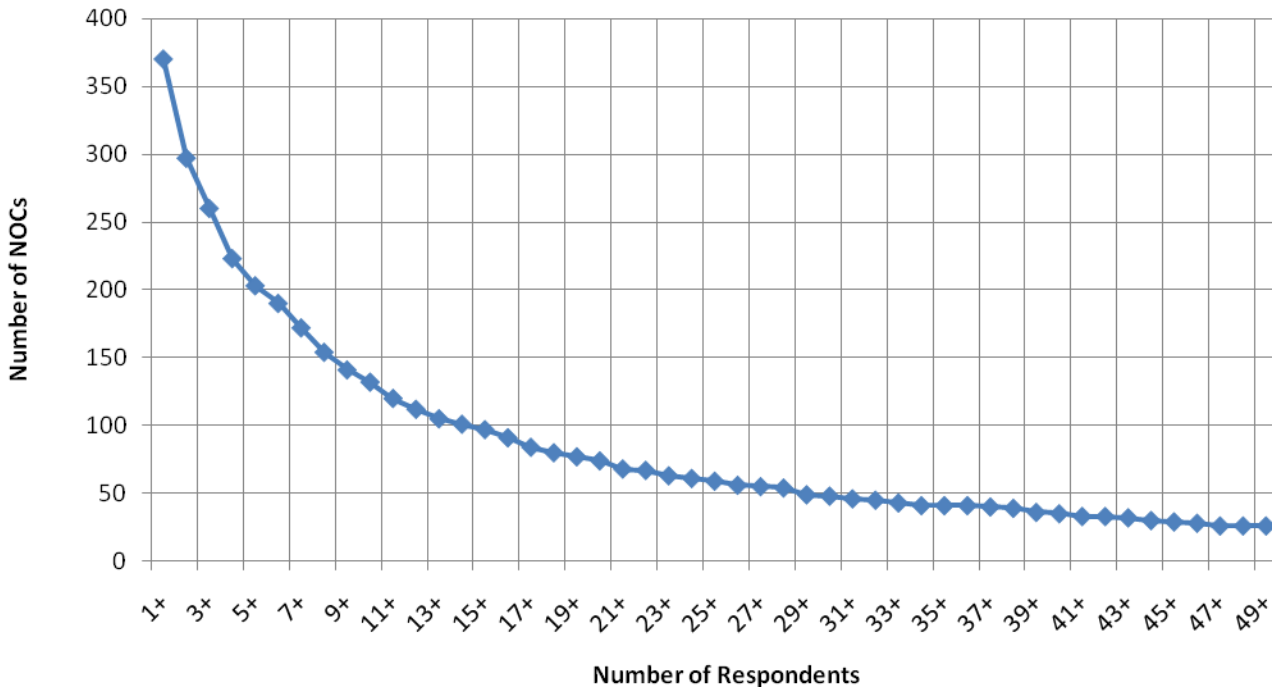
Respondents were also contacted by phone if any verification of response data was required.

Response Breakdown

In total, 1,100 unique respondents completed the wage survey in 2009. Data was collected on 89,724 employees in the province of Saskatchewan representing 370 unique occupations. The following chart shows the number of respondents that provided data for a particular number of NOCs. On average, respondents provided data on five NOCs.



The following charts display the number of unique responses related to the number of NOCS that are represented. The first chart displays the overall number of responses and the number of unique NOCs represented. The second chart displays the number of NOCs that have between one and ten unique responses. With a few data exceptions, NOCs with three or more unique responses are reported.



Data Verification

Data verification began on August 1st and continued until no data was left to verify on approximately September 16th. All responses were examined by staff at Inshtrix and compared to a validation document which outlined the common errors respondents made.

Two different approaches for the verification process were practiced on respondents' data based on the methodology of data collection.

Hard Copy Submissions:

For responses where a hard copy of the survey data was available (i.e. data sheets submitted by e-mail or FTP to Inshtrix), the hard copy was examined by hand for possible errors or omissions in consultation with the validation document. The respondent was subsequently contacted directly by an Inshtrix staff member and asked for verification relating to the specific errors. Once all errors had been corrected and the response fully verified, the survey was closed off as complete.

Online Survey Submissions:

For responses that were filled in by respondents via the online survey link, an email was automatically dispatched to Inshtrix staff outlining the completion of the survey and including the nature of any errors. These error emails were used in conjunction with a close examination of the survey responses to determine the nature of the errors and the appropriate verification processes that were required. Subsequent follow-up with respondents over the phone verified each individual response. Once all errors had been corrected and the response fully verified, the survey was closed off as complete.

Journeyperson

Inshtrix generated a list of all occupations in the province for which a journeyperson certificate is available based on the occupations provided by the Saskatchewan Apprenticeship and Trade Certification Commission. In consultation with the Ministry, this list was finalized for reporting and all journeyperson occupations display the available journeyperson data.

Large Employers

Large employers who submitted unformatted, raw data to Inshtrix had their data examined by Inshtrix staff to ensure no errors were present. Due to the enormity of the data files submitted and the complexity of collecting this data, omission of data was treated as null and empty fields were not included when calculating the results. Formal validation of each employee included in large employer submissions was minimal.

REPORTING

Insightrix and the Ministry considered the privacy and confidentiality of the individual responses in all of the reporting considerations. Structured reporting rules were developed and established in order to ensure the largest amount of data could be reported while maintaining confidentiality.

Reporting and Data Suppression Considerations

NOC data is reported where there is equal to or greater than three unique employer responses for each occupation.

Data Suppression Rules

In order to ensure confidentiality for respondents and in results, data suppression rules were established. These rules ensure that no single employee's wage will be able to be discerned within the greater data set.

In NOCs where less than 10 employees in total are represented, all data is suppressed.

All rows have similar suppressions rules applied in order to maintain consistency. Additional considerations are noted below. Rules for all rows (i.e. Male, Female, Industry, Region, etc) are:

- If a row has between 0 and 4 employees represented, only the total number of employees is displayed.
- If a row has between 5 and 9 employees represented, only the total, the median, and mean are displayed.
- If a row has between 10 and 19 employees represented, only the total, the high, the low, the median, and the mean are displayed.
- If a row has 20 employees or more represented then all fields are displayed (quartiles, high, low, median, mean, total).

All responses where the data provided was verified to be less than minimum wage are suppressed. Twelve employee records in total fit into this category and were removed in their entirety from the final results.

Industry

Industry data and comparisons within particular NOCs are included where three or more unique responses are reported within a specific industry. If there are less than three unique responses for a particular NOC, data for that industry is not displayed.

Union Considerations

In NOC cases with one or two unique respondents, where one of the unique respondents is classified as a large employer, data is reported in order to reflect the large proportion of employees within certain occupations in the province employed by single employers. In order to maintain confidentiality, responses which represent non-unionized employees in this category are suppressed. Only unionized information is reported due to the public nature of collective bargaining agreements. A minimum of fifty employees must be reported on to be displayed.

Journeyperson

A list of all NOCs in the province for which a journeyperson certificate is available was created and applied to the final data in order that:

- If a journeyperson certificate is available for a particular NOC, the number of journeyperson and the number of non-journeyperson fields will display.
- If no journeyperson certificate is available for a particular NOC, no journeyperson fields will display.

Region

Based on the location that respondents reported as their primary organization location, a region was assigned within Saskatchewan. For comparative purposes, Saskatoon, Regina, and the remainder of the province were considered the three regions. For certain large employers, a not-applicable region was assigned as these employers have employees based in all regions of the province.

Margin of Error Calculations

In order to represent the quality of the NOC data being reported on, a margin of error calculation was utilized to validate the results using a finite population factor. The formula for this calculation is expressed by the function:

$$E = \left(1.96 \sqrt{\frac{.25}{n}} \right) \left(\sqrt{\frac{N-n}{N-1}} \right)$$

Where:

E = the calculated margin of error

N = Population from 2006 census

n = sample population

This calculation was used to generate a margin of error percentage which was used to grade the reliability of the individual NOC data as it relates to the other data in the completed report.

Classification	Rating	Margin of Error Percentage
Excellent	A	0.0% – 4.9%
Good	B	5.0% - 9.9%
Fair	C	10.0% - 14.9%
Less Reliable	D	15.0% or more

Additional Considerations

A number of respondents report that they had to participate in a national wage survey for Statistics Canada during the time the study was in the field. This national study is mandatory for respondents to complete and some contacts refused to participate in the provincial study based on their participation in the national study.