SASKATCHEWAN WAGE SURVEY REPORT 2013: METHODOLOGY

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INTRODUCTION AND BACKGROUND

In September 2013, the Saskatchewan Ministry of the Economy contracted Insightrix Research Inc. to conduct a large-scale survey of employers in Saskatchewan. The data is used by various stakeholders such as businesses, employees, students, and researchers. The Ministry conducts the wage survey approximately every two years.

This report contains the full wage results for each occupation. Job vacancy rates and associated reliability grades are also provided for some occupations. Details regarding the methodology are outlined in the Saskatchewan Wage Survey Report 2013: Methodology.

MAIN OBJECTIVES

The purpose of the research is to determine detailed wage information and job vacancy rates about the most common occupations in Saskatchewan. The specific objectives were to

- Employ a research methodology which could accurately capture a large amount of variable wage data among employers in Saskatchewan while being random, statistically sound, and representative of the distribution of employees in the province.
- Determine vacancy rates province-wide on occupations and seek employers' perceptions on level of difficulty filling these occupations.
- Provide reliable, timely wage and job vacancy information for:
  - o employers to enhance their competitiveness and attract and retain employees;
  - o students and job seekers to use for job searches and career planning; and,
  - o researchers and policy analysts to inform policy development.
- Provide wage and job vacancy information for the most common occupations in Saskatchewan.
- Provide sub-provincial wage data (defined as Regina, Saskatoon, Regina CMA, Saskatoon CMA and the remainder of the province) for comparability.

METHODOLOGY SUMMARY

A total of 1,544 employers in Saskatchewan completed the 2013 Saskatchewan Wage Survey, providing wage data on 125,595 employees in the province. This represents nearly one quarter (22.7%) of the employees in the province using the estimated size of the Saskatchewan Labour Force from the Statistics Canada December 2013 Labour Force Survey. Of those who completed the survey, 1,497 employers (97.0%) also provided data on job vacancies within their organizations.

Within the established reporting rules, wage data is reported on for 346 unique National Occupational Classification (NOC) unit groups (2011). Job vacancy rates are reported for 280 unique NOC (2011) unit groups. The average wages for each occupation and vacancy rates at the occupational level can be found in the 2013 Saskatchewan Wage Survey Main Report.

The employer response distribution for the survey is as follows:

Survey Response Distribution	Count	Percent
Total Surveys distributed (total contacts)	6,412	100.0%
Wrong Number/Not in Service	783	12.2%
Not qualified/Not available[1]	1,064	16.6%
Duplicate Employer Entry	524	8.2%
Total Valid Sample	4,041	63.0%
Refusals	1,124	17.5%
Not Started or Not Complete	1,373	21.4%
Total Completed Surveys[2]	1,544	24.1%
Valid Response Rate	**38.2%**	

[1]This group consists of employers who did not have employees to whom they paid wages or who were not available during the data collection period.
[2]Employers who provided wage data for at least one employee are considered to have completed the survey.

Approximately one quarter of employers reported wages for less than five employees in their organizations and an additional one quarter reported on between five and nine employees. Please note that some employers elected to report wages for select occupations only.

Number of employees	Count	Percent
Less than 5	402	26.0%
5 to 9	361	23.4%
10 to 19	313	20.3%
20 to 49	261	16.9%
50 to 99	106	6.9%
100 to 199	48	3.1%
200 to 499	35	2.3%
500 or more	18	1.2%

The following table shows the distribution of total completed surveys by North American Industrial Classification System (NAICS) Industry Sector.

NAICS Code	NAICS Title	Count	Percent
11-33	Goods-Producing Sector	332	22%
11	Agriculture, Forestry, Fishing and Hunting	101	7%
21	Mining, Quarrying, and Oil and Gas Extraction	31	2%
22	Utilities	6	0%
23	Construction	106	7%
31-33	Manufacturing	88	6%
42-92	Services-Producing Sector	1212	78%
42	Wholesale Trade	41	3%
44-45	Retail Trade	329	21%
48-49	Transportation and Warehousing	56	4%
51	Information and Cultural Industries	21	1%
52	Finance and Insurance	59	4%
53	Real Estate and Rental and Leasing	30	2%
54	Professional, Scientific and Technical Services	67	4%
55	Management of Companies and Enterprises	1	0%
56	Administrative and Support, Waste Management and Remediation Services	18	1%
61	Educational Services	37	2%
62	Health Care and Social Assistance	123	8%
71	Arts, Entertainment and Recreation	33	2%
72	Accommodation and Food Services	117	8%
81	Other Services (except Public Administration)	205	13%
92	Public Administration	75	5%
11-92	All Industries	1,544	100%

The regional breakdown of employers is shown in the following table. Note that each employer may operate in multiple regions.

Region	Number of employers
City of Saskatoon	384
City of Regina	345
Elsewhere in Saskatchewan	996
CMA Region	Number of employers
Saskatoon CMA	410
Regina CMA	351
Elsewhere in Saskatchewan	962

METHODOLOGY

CHANGES TO THE SURVEY METHODOLOGY

Although the core survey and methodology remained the same as prior years, several important changes were implemented to improve the quality and quantity of data collected:

- Questions regarding job vacancies by occupation were added to the questionnaire.
- Participating businesses were asked to indicate if they are in the public or private sector so that wages could be analyzed by type of employer.
- USB sticks containing unique identifiers were included in the mail out survey package instead of CDs/DVDs.
- A dedicated toll-free number was set up to allow employers a direct line to contact Insightrix.
- The 2011 NOC system was used and the questionnaire was modified to ensure accurate concordance reporting with the 2006 NOC system.
- For the agriculture NAICS industry sector, respondents were asked to provide their subsector to enable aggregation of results using Statistics Canada Labour Force Survey industry categories.

SAMPLE SOURCE

Insightrix primarily used the Dun & Bradstreet (D&B) Selectory Database for the project sampling. This database includes an employee count for each organization, which is essential for the sampling methodology (described later in this document). The D&B database was also used in the 2009 and 2011 surveys as the primary sample source. Both incorporated and unincorporated businesses are included in this database.

As in prior years, the Saskatchewan Workers' Compensation Board (SWCB) also provided contact information on a majority of businesses in Saskatchewan. This database contained more up-to-date address information of Saskatchewan employers. The two databases were reconciled, which improved the effectiveness of the information package mail out. Both databases were used to identify large employers.

SAMPLING APPROACH

Large Employers

Large employers cover a large proportion of the labour market within the province and a great variety of occupations within the province. For this reason, their responses are important for inclusion in the research to capture more occupations and to increase the accuracy of the final results. All large employers in Saskatchewan were contacted and asked to participate in this research. To create the master list of large employers, Insightrix identified 228 businesses in the province with more than 200 employees based on the D&B database as well as the SWCB database (which provided employee estimates based on payroll information). To collect data regarding the job vacancies in their organizations, large employers were sent a separate vacancy survey containing the occupations for which they provided wage data. The two surveys were conducted separately because large organizations are likely to have different people responsible for completing the wage portion and the job vacancy portion.

Small- and Medium-Sized Employers

A probability proportionate to size (PPS) sampling technique was used to generate the sample for the small- and medium-sized employers. This sampling technique makes it more likely that businesses with a larger number of employees are included in the sample.

The following groups were excluded from the sample:
- employers with a single employee (presumably the owner)
- employers in the agriculture sector with fewer than three employees (to exclude small farming operations)

The sample was stratified by region (Saskatoon, Regina, elsewhere in the province) and then by NAICS industry sector to ensure that an appropriate mix of businesses was included in the sample.

SURVEY PROMOTION

As was done in 2009 and 2011, Insightrix worked with the Ministry and business organizations to promote the upcoming survey. In addition, business associations throughout the province were contacted and given a template email that they could use to inform their members about the upcoming survey and to encourage participation.

INITIAL CONTACT

Insightrix sent an information package to approximately 6,400 employers selected for participation in the study. The cover letter to this package included the following:

- information on the purpose of the survey
- details on the survey process: employers were informed that they would be contacted by telephone and then asked to participate either by fax, email/Excel, online, or via telephone with an Insightrix interviewer
- an outline of privacy policies
- phone numbers and email addresses that employers could use if they had questions about the study
- details regarding the personalized report that respondents would receive (a report with the results for occupations for which they submitted information)
- the dates over which the study would take place

In addition to the cover letter, the information package included a step-by-step instruction guide as well as a USB that included a data entry sheet, industry classification information, and a detailed instruction guide.

QUESTIONNAIRE DESIGN

The 2013 Saskatchewan Wage Survey was similar to that used in 2011, with several additions:

- Questions regarding job vacancies within each occupation were added.
- Responding businesses were asked to indicate if they operate in the public or private sector.
- The 2011 NOC system was used to classify occupations and the questionnaire was modified to ensure accurate concordance reporting with the 2006 NOC system to enable longitudinal analysis.
- Employers in the agriculture NAICS industry sector were asked to provide their subsector so that results could be aggregated within the Statistics Canada Labour Force Survey industry categories.

A thorough set of instructions were distributed to respondents to assist with completing the survey and included the following:

- instructions to complete the data entry sheet (6 Easy Steps)
- a list of options for participating in the research
- a detailed instruction manual for more detailed inquiries

Choosing Occupations

After respondents selected their industry sector and indicated whether their company has employees in Saskatoon, Regina, or elsewhere in the province, the data entry form was automatically pre-filled with the most likely occupations the employer would have on staff. Respondents were then asked to select which of these occupations existed within their organization. A full occupational description was given to respondents along with a list of other related occupations so that respondents could accurately classify their employees in the correct NOC occupations. Respondents were then shown the full wage sheets for those occupations that they had selected. They had the opportunity to use an additional sheet to list occupations that had not been included in the pre-selected list.

The list of targeted occupations was generated, using occupations in the province with the highest number of employed persons (top 300 occupations) according to Statistics Canada. For each industry, a list of targeted occupations was generated based on the top 80 occupations with the highest number of employed persons within the industry that were also contained in the list of top occupations in the province. Occupations in the top 300 but not within the top 80 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.

DATA COLLECTION

Type of Data Collected

For the purposes of data collection and reporting, all wages were collected in the form of an hourly rate, including pay period commissions. Bonuses, vacation pay, tips, retroactive payments, overtime, shift differentials, and any other special payments were excluded from the calculations. However, commissions

Employers were also asked to indicate the number of vacant positions in their organization for each occupation and to rate their difficulty in finding individuals to fill positions within each occupation.

Pre-testing

To ensure the data entry worksheet and supporting instructional information were easy to follow, a selection of businesses were targeted to pre-test the survey instruments. For the 2013 iteration of the research, the pre-test exercise also focused on respondents' understanding of
- the subclassification of the 2011 NOC codes
- the newly added vacancy questions

Seven pre-tests were conducted using an Excel version of the data entry form, 10 pre-tests were done with the online form, and 10 pre-tests were completed over the telephone.

Fieldwork

Fieldwork began on September 25th, 2013 and ended December 31st, 2013. Employers were given the following options to complete the survey:

- completing the Excel file and emailing it to Insightrix
- completing the survey online via a secure web link
- relaying the information to an Insightrix interviewer by telephone
- faxing or emailing a scanned document of the information to Insightrix for data input
- submitting the data in raw format (for employers with 200 or more employees)

Telephone Contact

All employers who did not respond within a few weeks of the mail out were contacted by a senior Insightrix telephone interviewer. If they chose to continue with the survey at that time, respondents relayed their information directly over the phone to one of Insightrix's trained interviewers who entered the data into the database. Advanced scripting validation was used to ensure that the data was logical. In cases where the data did not seem to be logical, the interviewer confirmed the answers with the respondent and noted anomalies, which were reviewed by a senior researcher.

If respondents declined to participate at the time of the call, they were reminded of the options available for participating.

Online Survey Link

A unique survey link was automatically generated for each participant and was directly tied to the specific respondent's contact information. Respondents were able to manually enter data into the online survey at their discretion and start, stop, and resume data entry at any time.

When the respondent completed the survey, the data was automatically uploaded into the survey database. After the respondent completed the survey, if there were any errors remaining, an email was automatically generated and sent to the Insightrix project team. The email communicated that the survey had been finished but contained data entry errors. These errors or data abnormalities were reviewed by the project team and verified with the employer to ensure that the data was accurate.

Data Entry Excel Form

A data entry form was generated in Excel allowing employers to enter their data and email the completed form to Insightrix. This data was then entered into the database by Insightrix staff.

Faxing/Mailing/Scanning & Emailing

Employers were also given the option to print the Excel forms, fill them out, and submit them by mail or by fax. These responses were then entered into the survey database.

DATA VERIFICATION

Once a survey was completed, Insightrix reviewed the response to ensure that all of the data were logical and that each occupation was assigned to an appropriate occupation using the 2011 NOC system. Those occupations for which the employer was unsure of the correct NOC were verified with the employer through a follow-up telephone call.

Salary Conversions

Respondents were asked to convert salaries to an hourly rate by dividing the annual salary by the annual hours worked in that position.

Minimum Wage

In 58 instances, reported wages were below the provincial minimum wage of $10 per hour. These wages were considered to be in error and removed from the final dataset.

PRIVACY AND CONFIDENTIALITY

The following structured reporting rules were established in order to ensure the largest amount of data possible is reportable, while maintaining employer and employee confidentiality.

Wage Rate Rules
- For NOC codes that have fewer than 10 represented employees, all data is suppressed.
- The rules for all rows (i.e., Male, Female, Full-time, Part-time, Region, etc.) are as follows:
    - If a row has between zero and four employees represented, only the total number of employees will be displayed.
    - If a row has between five and nine employees represented, only the total, the median, and mean hourly wages will be displayed.
    - If a row has between 10 and 19 employees represented, only the total, the high, the low, the median, and the mean wages will be displayed.

- If a row has 20 employees or more represented, all fields will be displayed (quartiles, high, low, median, mean, and total).
- In cases with one or two unique respondents where one of the unique respondents is classified as a large employer, data for that NOC will be reported on in order to reflect the large proportion of employees within certain occupations in the province employed by single respondents. In order to maintain confidentiality, responses which represent non-unionized employees in this category are suppressed. Only unionized information is reported on due to the public nature of collective bargaining agreements. A minimum of fifty employees must be reported on to display such wage data.
- A list of all NOC unit groups for which journeyperson certification was available was provided by the Saskatchewan Apprenticeship and Trade Certification Commission (SATCC). If a journeyperson certificate is available for a certain NOC unit group, the wages for those who hold journeyperson certification within that occupation is displayed. If a journeyperson certificate is not available for a certain NOC unit group, a journeyperson field is not displayed. Please note that if an individual with a journeyperson certificate is working in an occupation for which their journeyperson certificate does not apply, they are considered to be a non-journeyperson *in their present occupation*.
- Employers who are located outside of the cities but within the Census Metropolitan Area (CMA) of Saskatoon or Regina are included in the results for Saskatoon CMA or Regina CMA where applicable.

Job Vacancy Rules
- The job vacancy rate is suppressed if fewer than three employers provided data on their vacancies or if ten or fewer employees are represented within the occupation.

MARGIN OF ERROR AND DATA GRADING CALCULATIONS

In order to represent the quality of the wage data and vacancy rates being reported on, a margin of error calculation was utilized. This formula takes into account the number of employees reported on within each NOC. This calculation was used to grade the reliability of the individual NOC data as it relates to the other data in the completed report. The calculated grade is included on each NOC wage page in the main report. The formula used for the error calculation is $E = 1.96\sqrt{\frac{.25}{n}}$.

Note that the margin of error on each NOC was not corrected for finite population as no current data was available. This means that the reliability is understated for those occupations which are relatively uncommon in the province.

Data Grades (wage rates and vacancy results)

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% - 31.0%
Insufficient Data to Report		Greater than 31%

HOW TO INTERPRET THE WAGE REPORTS

The following term definitions are used to report on the occupational wage data contained in the full Wage 2013 report:

Label	Interpretation
Low	Lowest reported hourly wage for that occupation
High	Highest reported hourly wage for that occupation
Mean	Equally weighted mean (average) reported hourly wage for that occupation. The mean is calculated as the average of all employees reported on, regardless of the relative size of employers reporting within the category.
Median	Midpoint of observed values; 50% of reported hourly wages are below this value and 50% are above
Percentile 05	5% of hourly wages are below this value and 95% are above
Percentile 25	25% of hourly wages are below this value and 75% are above
Percentile 75	75% of hourly wages are below this value and 25% are above
Percentile 95	95% of hourly wages are below this value and 5% are above

The following graph illustrates the normal distribution of values relative to the median. The distribution of wage rates between each of the percentiles is also described.

HOW TO INTERPRET THE JOB VACANCY DATA

JOB VACANCY QUESTIONS

Job vacancies include an absolute count (not full-time equivalents) of employees needed in positions that meet all three of the following conditions:

    i. a specific position exists

    ii. work may commence within 30 days

    iii. the employer is seeking employees from outside of this organization to fill the position

The specific wording of the question was as follows:

- How many vacant positions do you currently have in this occupation, including both full and part-time positions?

If respondents did not hire any individuals in an occupation within the past two years, they were asked to indicate so.

VACANCY RATE CALCULATION

The vacancy rate for each occupation, R, is calculated using the formula $= \frac{V}{V+F}$, where V is the number of vacancies and F is the number of currently filled positions among all employers who completed the job vacancy section of the survey.

*Wages reported in the 2013 Saskatchewan Wage Survey are a reflection of the reported wages from participating employers at the time of the survey in September 2013 to December 2013. Other sources of wage information including the National Job Bank may list different wages for the same occupations. Employers applying for a Labour Market Impact Assessment (LMIA) in order to hire a Temporary Foreign Worker should use the National Job Bank wage rate in any application (*http://www.jobbank.gc.ca/home-eng.do?lang=eng*), and not the wages reported in the 2013 Saskatchewan Wage Survey.*

APPENDIX A: TERMS AND DEFINITIONS

OCCUPATION (NOC UNIT GROUP)

Occupations in the 2011 Saskatchewan Wage Survey are established by classifications established by the 2011 National Occupation Classification (NOC) system. Each occupation is reported at the unit group (four-digit) NOC level.

INDUSTRY

Industries in the 2011 Saskatchewan Wage Survey are established by classifications in the Canadian 2007 North American Industry Classification System (NAICS) and grouped according to the industry categories in the Statistics Canada Labour Force Survey.

REGION

Regional comparisons are provided for the City of Saskatoon, the City of Regina, and the rest of Saskatchewan. Based on the location of employers around Saskatoon or Regina, some employers were classified into Saskatoon and Regina Consolidated Metropolitan Areas (CMA). This CMA comparison was provided for Saskatoon CMA, Regina CMA, and the rest of Saskatchewan.

EMPLOYER

An employer is a private or public sector person or business that employs one or more persons for wage compensation. Employers with two or more employees were targeted for this survey during sample preparation.

EMPLOYEE

An employee is a person who works for another person or business. Employees in the 2013 Wage Survey must be receiving a wage from an employer to be included.

FULL-TIME EMPLOYEE

A full-time employee is an employee who works an average of 30 hours per week or more, excluding overtime.

PART-TIME EMPLOYEE

A part-time employee is an employee who works an average of less than 30 hours per week.

HOURLY RATE

The hourly rate is gross earnings, including pay period commission, before deductions, excluding bonuses, vacation pay, tips, retroactive payments, overtime, shift differentials, and other special payments.

JOURNEYPERSON

A journeyperson is a person who is working in a trade occupation and who holds a certification for this trade. Only a person working in the trade where a certification for his or her occupation was available as identified by the SATCC is counted as a journeyperson.

PRIVATE SECTOR

The private sector comprises all non-public employees, including self-employed owners of businesses (including unpaid family workers in those businesses) and self-employed persons without businesses.

PUBLIC SECTOR

The public sector is the public administration at the federal, provincial, territorial, municipal, First Nations, and other Aboriginal levels as well as in Crown corporations, liquor control boards and other government institutions such as schools (including universities), hospitals, and public libraries.

JOB VACANCY

Job vacancy is absolute counts (not full-time equivalents) of employees needed in positions that meet all three of the following conditions:

      i. a specific position exists

      ii. work may commence within 30 days

      iii. the employer is seeking employees from outside of this organization to fill the position

APPENDIX B: INDUSTRY CATEGORIES

LFS Code	Labour Force Survey Industry Title	NAICS Codes
0	All Industries	Sectors 11-91
1	Goods-Producing Sector	Sectors 11-33
2	Agriculture	Subsectors 111-112 Industry Groups 1151-1152
3	Forestry, Fishing, Mining, Quarrying, Oil and Gas	Subsectors 113-114 Industry Group 1153 Sector 21
4	Utilities	Sector 22
5	Construction	Sector 23
6	Manufacturing	Sector 31-33
7	Services-Producing Sector	Sectors 41-91
8	Trade	Sectors 41 and 44-45
9	Transportation and Warehousing	Sector 48-49
10	Finance, Insurance, Real Estate and Leasing	Sectors 52 and 53
11	Professional, Scientific and Technical Services	Sector 54
12	Business, Building and other Support Services	Sectors 55 and 56
13	Educational Services	Sector 61
14	Health Care and Social Assistance	Sector 62
15	Information, Culture and Recreation	Sectors 51 and 71
16	Accommodation and Food Services	Sector 72
17	Other Services	Sector 81
18	Public Administration	Sector 91