Human Resources and Skills Development Canada

Access to Information and Privacy
140 Promenade du Portage
Phase IV, Level 1, Mail stop 112
Gatineau, Québec K1A 0J9

Ressources humaines et Développement des compétences Canada

Accès à l'information et
Protection des renseignements personnels
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OCT 1 - 2012

Our file - Notre référence
A-2012-00185 / JL
A-2012-00186 / JL
A-2012-00187 / JL
A-2012-00188 / JL
A-2012-00189 / JL

Mr. Jacobus Kriek
Matrixvisa Inc.

Dear Mr. Kriek:

This is in response to your requests submitted under the *Access to Information Act* (the Act), received at Human Resources and Skills Development Canada on July 17, 2012, and which read as follows:

A-2012-00185: *"Pease provide copies of all pages, emails, labour market research and information on Service Canada/HRSDC computer information system about the wage research used to determine the median wage of CAD 26,44 for NOC 4211 for Toronto ON as provided on the website www.workingincanada.gc.ca. See enclosed website printout please. Please also provide the names, tel. numbers and email addresses of the persons within HRSDC/ Service Canada that is responsible for providing the market research for the wages on the website www.workingincanada.gc.ca for NOC 4211 at Toronto ON. Time period: January 1, 2012 to July 19, 2012."*

A-2012-00186: *"Please provide copies of all pages, emails, labour market research and information on Service Canada/HRSDC Computer information system about the wage research used to determine the median wage of CAD 20,00 for NOC 1242 for Toronto ON as provided on the website www.workingincanada.gc.ca. See enclosed website printout please. Please also provide the names, tel. numbers and email addresses of the persons within HRSDC/Service Canada that is responsible for providing the market research for the wages on the website www.workingincanada.gc.ca for NOC 1242 at Toronto ON. Time period: January 1, 2012 to July 19, 2012."*

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A-2012-00187: *"Please provide copies of all pages, emails, labour market research and information on Service Canada/HRSDC computer information system about the wage research used to determine the median wage of CAD 23,08 for NOC1223 for Toronto areas provided on the website www.workingincanada.gc.ca. Please also provide the names, tel. numbers and email addresses of the persons within HRSDC/Service Canada that is responsible for providing the market research for the wages on the website www.workingincanada.gc.ca for NOC 1223 for Toronto ON area, See enclosed website printout please made on 13 July 2012. Time period: January 1, 2012 to July 19, 2012."*

A-2012-00188: *"Please provide copies of all pages, emails, labour market research and information on Service Canada/HRSDC computer information system about the wage research used to determine the median wage of CAD 30,08 for NOC 8231 for Campbell River British Columbia as provided on the website www.workingincanada.gc.ca. See enclosed website printout please. Please also provide the names, tel. numbers and email addresses of the persons within HRSDC/Service Canada that is responsible for providing the market research for the wages on the websites www.workingincanada.gc.ca for NOC 8231 at Campbell River, BC. Time period: January 1, 2012 to July 19, 2012."*

A-2012-00189: *"Please provide copies of all pages, emails, labour market research and information on Service Canada/HRSDC computer information system about the wage research used to determine the median wage of CAD 11,32 for NOC 6435 for Pincher Creek Alberta as provided on the website www.workingincanada.gc.ca. See enclosed website printout please. Please also provide the names, tel. numbers and email addresses of the persons within HRSDC/Service Canada that is responsible for providing the market research for the wages on the website www.workingincanada.gc.ca for NOC 6435 at Pincher Creek Alberta. Time period: January 1, 2012 to July 19, 2012."*

Please be advised that the records provided in response to these requests have been combined for ease of processing. You will find attached the information you have requested. You will note that some pages qualified for partial or total exemption pursuant subsection 19(1) and 68(a) of the *Act*. A copy of these provisions is enclosed.

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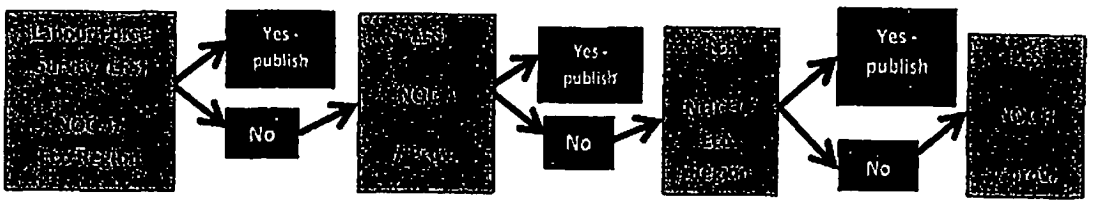
DRAFT

DECISION PROCESS FOR DETERMINING WAGES TO BE PUBLISHED ON THE WORKING IN CANADA WEBSITE

In determining the wage to be published for a particular occupation, various data sources were considered. A decision tree approach was used to determine the order of the data sources based on six fundamental principles that are characteristic of good quality data for wages to be comparable across Canada i.e. relevance, accuracy, timeliness, accessibility, interpretability and coherence.

Among all the data sources, the Labour Force Survey (LFS) was identified as the most inclusive, timely and unbiased wage providing information source by occupational group. When LFS data was not available or reliable, other sources were considered hierarchically. These data sources included: Employment Insurance (EI) data; provincial surveys such as the Alberta Wage Survey, Saskatchewan Wage Survey, Census 2006 data, Collective Bargaining Agreements (CBA's); and, Job bank data. LFS and EI data was based on 2 year sample i.e. LFS 2010-11 and EI 2010-11 which increased the number of data points and allowed for a more reliable and comprehensive coverage at the economic region.



In determining the prevailing wage rate for an occupation, a median wage was used as the prevailing wage rate. The median is the middle observation for a set of data that has been arranged in order of increasing magnitude while the mean (or average) is equal to the sum of all the values in the data set divided by the number of values in the data set. The median wage is preferred to the average as it is less sensitive to extreme wage values and is representative of the "average worker's salary". The low and high wage rate for a particular occupation generally refers to the 10th decile and 90th decile respectively with the exception of the Alberta wage survey and the Saskatchewan wage survey where it refers to the 5th and 95th percentile respectively. Where applicable, wage rates that were below the minimum wage rate have been adjusted to meet the minimum wage rate requirements of the province for which the occupation is found.

For most occupations, the prevailing wage rate is reported as an hourly rate. However, there are occupations that have a high proportion of people who are self-employed (50% or more). For this reason, wages for these occupations are presented at an annual rate to better represent earnings for these occupations. These occupations include: *Specialist Physicians; General Practitioners and Family Physicians; Dentists; Veterinarians; Optometrists; Chiropractors; Other Professional Occupations in*

Health Diagnosing and Treating; Pharmacists; Denturists; Lawyers and Quebec Notaries; and, *Conductors, Composers and Arrangers.*

There are 81 occupations (Economic Region and Provincial level) in the Atlantic Region that have a high percentage of unionized workers (50% or more). For this reason CBA is a more reliable data source. Wages for these occupations will be reported as a range i.e. low and high wage rate. No median wage rate will be reported.

Wages are displayed in the Working in Canada website at the economic region level; provincial and territorial level; and, at the national level. Below is the logic used to determine wages for the geographic levels mentioned.

Economic Region (ER) Wages

Wage rate not published at the ER level if:

If there was no LFS NOC 4 ER level data, EI Wage NOC 4/ER level data was less than 30 observations and Census 2006 Sample size was less than 25 observations then the wage for that particular occupation was not published at ER level.

LFS 2010-11 ER NOC 4

Median, low and high wage is available and CV is less than 33.3%. (Note: no erratic jump in the data from year to year; fluctuations may occur due to current/past local market conditions however a jump in the data may also be the result of sampling variation.)

LFS 2010-11 PR NOC 4 (As a proxy for ER NOC4 wage)

LFS 2010-11 ER NOC 4 wage is not available or CV is greater than 33%.

LFS 2010-11 PR NOC 4 wage is available and CV is less than 33%. (Note: no erratic jump in the LFS historical data.)

The Census ER NOC4 2006 median wage is close to Census PR NOC4 2006 median wage i.e. median wages are with a 10% variation.

LFS 2010-11 ER NOC 3 (As a proxy for ER NOC4 wage)

There is no LFS 2010-11 ER NOC 4 and LFS 2010-11 PR NOC4 data or the CV's are greater than 33%.

LFS 2010-11 ER NOC 3 wage is available and CV is less than 33%. (Note: no erratic jump in the LFS historical data.)

The percentage variation between Census ER NOC3 2006 median wage and Census ER NOC4 2006 median wage is no more than 10%.

LFS 2010-11 PR NOC 3 (As a proxy for ER NOC4 Wage)

There is no LFS 2010-11 ER NOC 4 data, LFS 2010-11 PR NOC 4 and LFS 2010-11 ER NOC 3 data or the CV's are greater than 33%.

LFS 2010-11 PR NOC 3 is available and CV is less than 33%.

Census PR NOC3 2006, Census ER NOC 3 2006 and Census ER NOC 4 2006 median wage variation is no more than 10%.

Provincial Wage Survey (Saskatchewan Wage Survey and Alberta Wage Survey)
IF there is no reliable LFS data source then the provincial wage survey at the ER level was used if the CV wage reliability was level "A" (high reliability – CV of 6% or less) or "B" (good reliability- CV between 6.01% and 15%).

Provincial Wages

LFS 2010-11 PR NOC 4
Median, low and high wage is available and CV is less than 33.3%. (Note: no erratic jump in the data from year to year; fluctuations may occur due to current/past local market conditions however a jump in the data may also be the result of sampling variation.)

Provincial Wage Survey (Saskatchewan Wage Survey and Alberta Wage Survey)
If there is no reliable LFS data source then the provincial wage survey at the PR level was used if the CV wage reliability was level "A" (high reliability – CV of 6% or less) or "B" (good reliability- CV between 6.01% and 15%).

EI 2010-11 PR NOC 4
No LFS NOC4 PR data available or data source is unreliable and there are at least 30 or more EI observations at the NOC 4 provincial level. Census as a data source was also used for occupations that have a low number of employees in general and using other data sources would make it impossible to provide a wage.

Census PR 2006
As mentioned earlier, Census 06 as a data source was used for occupations that have a high proportion of people who are self-employed (50% or more).

CBA
As mentioned earlier there are some occupations in the Atlantic region that have a high unionization rate. The most reliable data source recommended was the CBA. Wage data using this data source is currently being verified.

No reliable data available
If no wage was published at the provincial level then the wage for that particular occupation would not be published for all ER levels for that particular province.

National Wages

In most cases, LFS data at the four digit level was used in selecting wages at the national level. This is because most of the data was available and reliable i.e. low coefficient of variation, large sample size and LFS historical data was consistent throughout the years. There were a few cases where Census data was used as a data source at the national level either because wages were supressed for a particular occupation when using LFS or EI data (because the sample size was too small) or because the wage being reported for that particular occupation had a high proportion of self-employed individuals (in such cases wages were reported as annual earnings).

2012 HR-NHQ 015084

MEMORANDUM FOR THE MINISTER'S OFFICE OF HRSD

UPDATE: NEW LABOUR MARKET INFORMATION WAGE METHODOLOGY AND IMPLICATIONS FOR THE TEMPORARY FOREIGN WORKER PROGRAM

Issue

- The Skills and Employment Branch (SEB), in partnership with Service Canada and Statistics Canada, has developed a new methodology for calculating prevailing wages, which are also the wages that employers are required to pay temporary foreign workers (TFW). The posting of the new wages is planned for May 16, 2012. In the interim, the Temporary Foreign Worker Program (TFWP) has continued to use current prevailing wages, and is now allowing employers greater flexibility to pay TFW the same wages they pay to Canadian workers.

Background

- The new methodology is based primarily on Statistics Canada's Labour Force Survey (LFS), which provides for both consistency and defensibility. However, in the process of validating wages, officials have identified instances where there will be dramatic increases or decreases from currently posted wages that could have an impact on employers' wage structures, and affect the affordability of TFW.

- Prevailing wages and the manner in which they were previously calculated have been a serious point of contention with employers, who argued that they were frequently forced to pay TFW more than their Canadian employees. A review of prevailing wages confirmed the legitimacy of many of these complaints, and identified a number of problems including irregular wage updates, varying sample sizes, blending of data sources of unequal quality, and unnecessary rounding of estimates. In response, the new methodology was developed in close cooperation with regional Labour Market Information (LMI) staff. An information memo was provided to the Minister on this topic (Annex A).

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- SEB, in cooperation with regional LMI staff, conducted an analysis of the new wages and found some significant increases due to how wages were calculated in the past (e.g. unrepresentative data sources, irregular updates and changes in geographic regions), and in some instances inadequate data from the LFS. For example, analysis shows wages for Financial Managers in Northeast Ontario will increase by 45% from $21.58/hr to $31.28/hr. However, for Food Counter Attendants in Athabasca-Grande Prairie-Peace River area, in Alberta, wages will decrease by 15% from $11.71/hr to $10.00/hr. One of the primary objectives of developing the new methodology was to ensure that the LMI wages that are published reflect labour market realities. Dramatic increases and decreases in wages will undermine that objective.

- In order to mitigate the impact of large wage increases resulting from the new methodology, employers will continue to be required to pay TFW the same wage that they pay to Canadian workers doing the same job in the same location. Under the old wage structure, employers were required to pay TFW at least the average wage for an occupation in a specific region, regardless of what they were paying their Canadian employees. This resulted in employers paying TFW more than Canadians in many cases. The old structure was often unfair to Canadians and did not reflect labour market realities. The previous method of determining the average wage was also inconsistent from region to region.

- Under the new wage structure, employers can pay wages that are **up to 15% below the average wage for a high-skill occupation**, and **5% for a low-skill occupation**, in a specific region. However, employers must be able to provide documentation that clearly demonstrates that the wage being paid to a temporary foreign worker is the same as that of their Canadian employees in the same job and in the same location. The wage for a low-skill occupation cannot be below minimum wage and the wage range is set at 5% because these jobs pay less, and there is likely to be less variation from the average wage. A wage range has been implemented in recognition that different wages are paid to employees in different situations. The new wage structure is based on Statistics Canada's data.

- In addition, where wages increase by **more than 15% in occupations/regions that are in high demand for TFW**, those wages will not be immediately published (Annex B). Instead TFW-LMI Directorate will further verify wages. In this way we will be able to validate the proposed wages to ensure the information is accurate and reliable.

- The new LMI wage methodology and the TFWP measures do not apply to the Seasonal Agricultural Workers Program, the National Occupation Classification (NOC) C and D Agricultural stream, and the Live-in Caregiver Program. Wages for these streams of the TFWP are developed through separate methodologies, and these sectors are primarily occupied by TFWs.

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- As per the operational agreement signed between Human Resources and Skills Development Canada (HRSDC) and the Province of Quebec in 2012, the Ministère de l'Immigration et des Communautés culturelles is responsible for setting prevailing wage rates based on a methodology developed by Emploi Québec. In all other provinces and territories, the TFWP will assess wages according to the new LMI wage methodology.

Considerations

- The TFWP will continue to monitor and respond to employer concerns about prevailing wages. However, we expect that the mitigation strategy proposed will allow for more consistency in rates of pay between Canadians and TFW.

Next Steps

- In order to allow sufficient time to prepare for the implementation of the mitigation strategy, the posting of the new wages is planned for May 16, 2012. In the interim, the TFWP will continue to use current prevailing wages; however, employers will be able to take advantage of the 15% and 5% margins regardless.

- A communication strategy has been developed that includes a new web page on the HRSDC web site specific to prevailing wages that provides detailed explanations of the wage structure and scenarios. The strategy also explains that the goal of the wage flexibility is to ensure TFW are paid the same wage as Canadian employees in the same job and in the same location. Detailed processing instructions for employers will be available on the TFWP web site.

Andrew Kenyon, 819-994-1021

Attachments: 2

Ressources humaines et Développement des compétences Canada
Human Resources and Skills Development Canada

National Guidelines for Labour Market Information Wages

A Consistent Approach to Wage Collection, Calculation and Dissemination

December, 2011

Skills and Employment Branch
Temporary Foreign Workers and Labour Market Information Directorate
Labour Market Information Division
Labour Market Information Intelligence, Trends Analysis and Innovation Unit

Canada

Table of Contents

List of Acronyms

CA	Census Agglomeration
CAPSS	Computer Assisted Product Specification System
CBA	Collective Bargaining Agreement
CMA	Census Metropolitan Area
CPI	Consumer Price Index
CV	Coefficient of Variation
EI	Employment Insurance
ER	Economic Region
HRSDC	Human Resources and Skills Development Canada
NHQ	National Headquarters
NOC	National Occupational Classification
NLMIS	National Labour Market Information System
LMI	Labour Market Information
LFS	Labour Force Survey
TFWP	Temporary Foreign Worker Program
WiC	Working in Canada
WWG	Wage Working Group

1 Acknowledgements

We would like to thank all those who contributed to this report and provided valuable support and input along the way. This report was developed by the Labour Market Information Intelligence, Trends and Analysis, and Innovation team, within the Labour Market Information Division of Human Resources and Skills Development Canada (HRSDC), under the leadership of Ginette Gervais. This small but dedicated team worked hard to ensure the smooth operation of the research and analysis and the production of a quality and comprehensive report.

The team who produced this report was supported by a Wage Working Group (WWG), including statistical experts from HRSDC, Service Canada and Statistics Canada who met on a regular basis, to discuss in great detail, the issues related to the calculation and posting of wage estimates in Canada. In total, the working group met six times where it had the opportunity to analyze, review and comment on the wage collection, calculation and dissemination which will be addressed in this document.

Finally, special thanks go to the peer reviewers[1] at HRSDC as well as Lori Stratychuk, Senior Methodologist at Statistics Canada. Their extensive contribution to the research and valuable expertise throughout this project were critical to its development.

2 Introduction

HRSDC/Service Canada is the Federal government department entrusted with disseminating reliable Labour Market Information (LMI) to Canadians. Wages are a key piece of information that could influence the labour market decisions of many Canadians and one of the most necessary products of LMI.

For example:

- Employers use wage information to keep their salary structure current and competitive, and to avoid market imbalances such as underpaying or overpaying their workers;
- Workers and unions need to know prevailing wages and potential wage tendencies to help them in their wage negotiations with employers;
- Individuals, including students and workers in transition use occupational wages as a career choice criterion to take training or change careers;
- Analysts use wage information to determine income distribution in society and to monitor structural changes in the economy, such as emerging skills and labour shortages; and
- Provincial compensation boards and the insurance industry require accurate wage information in settling wage loss claims.

Currently, in most provinces, wages are calculated at the provincial and sub-provincial level by occupational group. In total, wages are produced for ten Provinces and in 73 Economic Regions

[1] Benoit Delage, Chief, Labour Market Policy, SPR, HRSDC. Jean Dumais, Statistician, Statistics Canada.

(ERs). Each Service Canada region has their own particular approach to wage calculation, which means wages can be difficult to reproduce and are not necessarily comparable across Canada. In addition, wage estimation techniques can differ within offices. Labour Market Information analysts are responsible for the collection, calculation and dissemination of wage estimates that are posted on the Working in Canada (WiC) website.

Posting wages that are not consistent and defensible can misinform labour market users and have significant ramifications for HRSDC/Service Canada programs, especially for the Temporary Foreign Worker Program (TFWP). The Forum of Labour Market Ministers and the Advisory Panel on LMI have indicated the need for high quality data (including wages), at the National and Provincial level, as a top priority.

The new wage estimation methodology aims to:

- Establish a rigorous methodology and common framework for determining posted wages on the WiC website;
- Produce wage information that is consistent, up-to-date, and comparable across regions;
- Strengthen the quality and accuracy of published wage data; and
- Provide analysts with the tools needed to analyze and interpret wage estimates to ensure that they accurately reflect the population from which they were drawn.

3 Guidelines for Wage Calculation

This section highlights 11 key guidelines for the collection, calculation and dissemination of wages. These guidelines are based on a number of Statistics Canada guiding principles that introduce characteristics of "quality" data. The *Statistics Canada Quality Guidelines 2009*[2] were presented and discussed during the WWG consultations. It was agreed that these concepts be heavily considered, especially when analysts are working with administrative data—one of the most common data sources used for calculating wages.

The following six fundamental principles are characteristics that good quality data must embody for LMI wages to be comparable across Canada. These indicators are described in greater detail in Appendix A.

- **Relevance:** Statistical information should meet the needs of its users.
- **Accuracy:** Statistical information should correctly describe what it was designed to measure.
- **Timeliness:** Statistical information should be made available within a reasonable time period in order to maintain its *relevance*.
- **Accessibility:** Statistical information should be easily attainable by users.

[2] Statistics Canada (2009). *Statistics Canada Quality Guidelines*, Fifth Edition, Catalogue no. 12-539-X

- **Interpretability:** Statistical information should have transparent underlying concepts, variables and classifications

- **Coherence:** Statistical information should be able to be brought into a broad analytical framework that is applicable and *relevant* over time.

Wage information produced and published by HRSDC is posted on government websites. As such, it should meet the needs of LMI users and be produced, managed and disseminated to high standards. Wage statistics should be well explained and easily replicated. In the same vein, they should be derived using statistical methods that are consistent with scientific principles and recognized best practices. Therefore, when applying the LMI wage methodology, analysts should adopt quality assurance procedures, including the consideration of each statistical product against users' requirements, and of their coherence with other statistical products to achieve continuous improvement in statistical processes.

It is imperative that the methodology used to calculate wages for public dissemination is consistent from region-to-region. The following section outlines best practices used for calculating wages.

Data Collection

Decision Tree Approach to Calculating Wage Estimates

Analysts should follow the single source approach to collecting wage information for the purposes of producing wage estimates. This approach should follow the decision tree (Appendix B) which clearly guides the analyst through a set of data sources, logically ordered in terms of the aforementioned guiding principles.

The purpose of the decision tree approach is to decide on a *single* source of data when calculating wages. Decision tree rankings imply an order of use that guides analysts on which data sources to consult before others. The order of the data sources is based on the quality elements, specifically the relevance, accuracy, timeliness, accessibility, interpretability and coherence.

As the decision tree approach uses a single data source, a logical consequence is that multiple data sources are not to be blended together. Appendix B outlines the approach for determining a single data source for calculating wages. Appendix C provides an assessment of the various data sources in this section. Note that data sources are always to be consulted at the most specific level of geographic and occupational detail first (ER, 4-digit NOC). After data sources at that level have been exhausted, a broader level of geographic/occupational detail may be used, and so on.

The decision tree data source rankings are as follows:

i. **Labour Force Survey (LFS)**

The LFS is the highest-ranked data source because of its relevance to working Canadians, accuracy, timeliness in results, accessibility, interpretability and coherence. Since the LFS is under the purview of Statistics Canada, and therefore subject to its rigorous data quality

standards, it is to be used as the first source of wage information when calculating estimates for publication.

The LFS provides estimates of employment and unemployment which are among the most timely and important measures of performance of the Canadian economy. The survey is done on a monthly basis and results are released 13 days after its completion. LFS data are used to produce the well-known unemployment rate as well as other standard labour market indicators such as the employment rate and the participation rate. The LFS also provides employment estimates by industry, occupation, public and private sector, hours worked, etc., all cross-classifiable by a variety of demographic characteristics. Estimates are produced for Canada, the provinces, the territories and a large number of sub-provincial regions. Most importantly, it provides data by ER, the new sub-provincial boundaries for which LMI statistics are released.

LFS data are available by two, three and four-digit National Occupational Classification (NOC), by ER, province, and for all of Canada. LFS estimates are released on the first Friday of every month. Although the LFS is released on a monthly basis, for the purpose of wage calculation, only annual LFS data should be considered to ensure sample sizes for wage estimates are sufficient.

ii. Employment Insurance (EI) Administrative Data

EI administrative data are collected by HRSDC/Service Canada from EI applicants when applying for benefits. On the application, there is a voluntary question which asks what the person's occupation was, and how much they earned while working in that occupation. The earnings and occupational information are self-reported, and are not a requirement to receive EI benefits. The earnings information can be reported as an hourly wage, or non-hourly format (e.g., weekly, monthly, annually). These data are available on a quarterly basis.

In the past, EI administrative data has been a popular and productive source for calculating wages, largely due to the vast volume of data available. However, the significant limitation of these data is that they are only available for those who have applied for EI, meaning workers in occupations that traditionally do not go on EI are underrepresented in the data.

However, to better align LMI wages with the new guiding principles, it is recommended that these data be consulted only after the LFS has been reviewed. EI administrative data contain significant challenges with respect to representing employed workers and providing a sample that considers all occupations in the labour market.

iii. Provincial Surveys

Provincial Surveys can be very beneficial sources of wage information, especially if they are done by a respected, neutral party such as Statistics Canada or a recognized survey consultant. Because these surveys tend to have good quality data, high response rates, and are often more recent than census data, it is recommended that analysts and economists consult these sources when LFS and EI data are not available.

iv. 2006 Census

The Census is conducted every 5 years, compiling information for all Canadians. Like administrative data sources, the key advantage of the Census is the volume of information available. The major disadvantage of the Census is that it is only conducted once every 5 years,

which for wage data, usually requires the use of an inflator to bring estimates closer to current price levels. Furthermore, as of 2011, the mandatory long form of the census was eliminated and replaced with the voluntary National Household Survey, which is now the source for detailed occupation and wage information.

The Census includes every person living in Canada, as well as Canadians who are abroad, either on a military base, attached to a diplomatic mission, or at sea or in port aboard Canadian-registered merchant vessels. Persons in Canada including those holding a temporary resident permit, study permit or work permit, and their dependents, are also part of the Census. Since the Census is a very comprehensive survey that is reflective of observed wages, it is to be used as the fourth most important data source for analysts to consult when calculating wages. One major caveat of the census is that the scope of the estimates from its replacement, the National Household Survey, will be unknown until they are released in 2012. As well, census data are derived variables, based on earnings and hours worked from the reference week in which the data were collected.

v. Job Bank Data

Since Job Bank data contains duplicate postings, wage ranges in lieu of specific wage points, issues with miscoding, and estimates that represent job offers (and unpaid wages), this source is not recommended unless the LFS, EI data, the Census and provincial surveys have been consulted first.

vi. Collective Bargaining Agreements (CBA)

CBAs, as a source of wage information, are only recommended under rare circumstances. These agreements can be reliable data sources because they represent wages that are negotiated in good faith and are agreed to by both employers and workers (market wage). However, CBAs only give information on earnings and not sample size. Additionally, they only exist for select occupations with select employers—they do not apply to all workers.

vii. Stakeholder Surveys

While surveys commissioned by stakeholders can provide very timely, industry-specific wage data, they are inherently biased. Therefore, it is recommended that analysts refer to these sources only after the LFS, EI administrative data, the Census, provincial surveys, Job Bank data, and CBA data have been consulted.

viii. Consultations with Individual Employers

While stakeholder consultation can be very useful in validating other data sources, it should be noted that employers do not necessarily follow the NOC system, the sample size is usually too small to be suitable for any statistical purposes, and most importantly, employer-submitted data are inherently biased. These data should be used as a last resort, only when all other data sources have been exhausted. Also, in order to ensure data comparability and accuracy, a consistent survey protocol should be applied and strictly followed.

Data Calculation

2. Mean versus Median Wages

Directive

Data set trimming to produce a truncated mean should not be used since the *median wage* is a more robust statistic that is not influenced by extreme outliers in the dataset. From this point forward, the median will be the primary measure of central tendency.

A measure of central tendency is the value that describes a set of data by identifying a central position within a set of data. The mean, median and mode are three recognized statistical measures of central tendency but, under different conditions, specific measures of central tendency are more appropriate to use than others.

The mean (or average) is equal to the sum of all the values in the data set divided by the number of values in the data set, while the median is the middle observation for a set of data that has been arranged in order of magnitude. Contrary to the mean, when the data distribution is skewed, the median is the most statistically recognized representation of the central position and is not as strongly influenced by the skewed distribution and outlier data.

If wage data were normally distributed, analysts could legitimately use either the mean or the median as measure of central tendency. In fact, in any symmetrical distribution the mean, median and mode are equal. However, when a data distribution is skewed, the mean is dragged in the direction of the skew. In these situations, the median is generally considered to be the best representation of the central location of the data. Income and salary is a classic example of the right-skewed distribution, where higher-earners provide a false representation of the typical income if expressed as a mean and not a median. The more skewed the distribution, the greater the difference between the median and mean, and the greater emphasis should be placed on using the median.

Median NB

3. Data Source Blending and Weighting

Data source blending and weighting should not be used, due to, among other factors, the inability to compare and match the characteristics of distinct data sources.

Blending medians does not produce statistically sound results. Unless the observations are evenly distributed, the average of two medians (from two different data sets) can be significantly different from the median of the combined observations. Taking the average of multiple medians is not a statistical measure consistent with scientific principles and recognized best practices.

No reputable statistical organisation in the world would condone the blending of medians/trimmed means. Considering that wage and income data are generally right skewed, the most appropriate option to calculate the wage of the "average worker" is to use the median from a single data source using the data sources in the specified hierarchical order of quality.

4. Sample Size and Data Quality Indicator Guidelines

Directive

Minimum sample size thresholds across data sources are as follows:

- **Labour Force Survey:** Follow sample size and coefficient of variation (CV)[3] guidelines conveyed in Tables 1, 2 and 3 of Appendix E.

[3] The *coefficient of variation* is statistical measure of dispersion of data points in a data set, around the mean.

- **Employment Insurance administrative data:** 30 observations and a CV<30%
- **Job Bank data:** 30 observations and a CV<30%
- **Census:** 250 observations and a CV<30%

Evaluating the sample size and assessing the data quality indicator (the CV) are important to ensure that wage data reliability is optimized. Different measures are available to analysts to gauge the quality of the available wage information from diverse data sources. When disseminating wage data, analysts should ensure the confidentiality of respondents' information.

Survey data are sample observations—a subset of the true population—and are subject to both sampling and non-sampling errors. It is important for analysts to be familiar with the methodology of a survey and its documentation that usually recommends data quality publishing criteria. Nevertheless, as a general guideline, one should only consider a wage estimate with a CV<30% as okay to publish.[4]

Coefficient of Variation	Instruction
CV ≤ 15%	okay to publish
15% ≤ CV ≤ 30%	publish with caution
CV ≥ 30%	do not publish

Administrative data are one of the most commonly used wage sources, and are available through the Employment Insurance program, or the Job Bank. It is recommended that EI and Job Bank administrative data be used only when there is a minimum of 30 observations. This threshold was developed by calculating the CVs for various four-digit NOCs across Canada using EI administrative data to ensure that the data were of "reasonable quality". It was found that using less than 30 observations yielded less reliable data that could jeopardize the confidentiality of program participants' information.

It is difficult to estimate a sample size with Collective Bargaining Agreements and employer consultations; therefore, these data sources should be consulted as a last resort, and only be used to validate, rather than establish wage estimates.

If wage earnings estimates are not available in hourly form, then refer to the National Labour Market Information conversion tool. If a given CBA does not convey hours of work information, analysts should refer to the conversion table in Appendix D.

When any earnings information is placed into the NLMIS, it must be converted to an average hourly wage. Currently, analysts have access to *hours of work* data from the LFS (at the national level), and the NLMIS calculator that does the conversion automatically, although this function is typically limited to Job Bank data. The conversion formulas used by this tool are outlined in Appendix D.

In many occupations, employees are not paid a straight hourly wage; rather, they are compensated according to:

[4] These guidelines are based on the guidelines originally used by the Labour Force Survey.

- An annual salary, with or without non-wage benefits (which can be a significant component to compensation);
- Monthly, bi-weekly, weekly, or daily earnings;
- Commission-based sales; and
- Piece rates, or per unit of production, which are typical in farming and trucking.

These earnings structures represent a significant component of all paid employees in Canada. Therefore, converting to an hourly wage can be an oversimplification of a very complex payment structure which could misrepresent true compensation.

Finally, if after wages are converted to an hourly rate they fall below the provincial minimum wage, those wages are to be adjusted to the minimum wage.

Data Dissemination

Minimum Wages

To ensure that posted wage estimates reflect the most current provincial legislation, it is recommended that final wage estimates be automatically or manually adjusted when they fall below provincial minimum wages to the provincial minimum wage. To clarify, this does not mean adjusting individual wage *observations* that feed into the estimates themselves, rather, computing the unadjusted (raw) wage estimates, and adjusting upwards to the provincial minimum wage if the estimates are not sufficiently high. Adjusting individual wage observations to the minimum wage would introduce bias into the final estimates.

If the wage estimate is below the minimum wage, increase the estimate to the minimum wage with a note in the wage comment box indicating that the final wage has been adjusted to meet the provincial minimum wage.

In some instances, wage estimates can be lower than the provincial minimum wage. Because one cannot earn a wage that lies below the provincially legislated minimum wage[5], it is necessary to define the approach to adjusting final wage estimates to at least match the minimum wage.

Provincial minimum wages are updated on an annual or semi-annual basis across Canada. These increases come into effect on different dates, and increase by different amounts. A schedule of minimum wage increases and the amount they will increase by can be found online in HRSDC's Minimum Wage Database.

When calculating average or median wages, it was found that several Service Canada regions adjusted individual wage observations to the provincial minimum wage. Analysts should remove data points that are submitted in error (for example, $2.00/hr was submitted on an application for EI instead of $20.00/hr); however, it is not the best practice to remove or adjust wages that are slightly below the minimum wage to compute the average or median. Doing so would leave the final estimate as biased upwards.

[5] There are some exceptions to this rule.

Thus, pre-adjusted or pre-omitted wage observations can bias estimates upwards. To avoid this, leaving the individual wages unadjusted and adjusting the final estimate to the provincial minimum wage (should it lie below) would be the best practice.

7. Annual Salaries

Directive:

Gradually converting hourly wages to annual salaries will require some amendments to the WiC interface. Consequently, these occupations will be converted in phases. The first phase will include the following list of occupations that were identified by Quebec as jobs that almost always compensate their workers with an annual salary:

NOC 2224- Conservation and Fishery Officers
NOC 3112- General Practitioners and Family Physicians
NOC 4131- College and Other Vocational Instructors
NOC 4141- Secondary School Teachers
NOC 4142- Elementary School and Kindergarten Teachers
NOC 6462- Correctional Service Officers

When calculating wage estimates for these occupations, do so in terms of annual earnings.

For some occupations, members of the WWG identified that earnings information should be at the annual level, as the norm for these occupations is to earn a salary and not an hourly wage. Typically, these occupations are public sector jobs that are unionized and covered by a CBA.

8. Rounding

Directive:

Round hourly wage estimates to the nearest cent ($0.01). Rounding to a broader level will create data accuracy errors. Do not round annual earnings estimates to a level broader than the nearest $100.

As with the blending of data sources, there are also a variety of practices used by Service Canada regions for rounding of wages. Rounding practices range from the rounding to the nearest penny, up to the nearest $0.25. If wages are around the minimum wage of approximately $10.00/hour, this translates into an error of approximately 2.5%.

Statistics Canada does not round hourly wage data published in the LFS, Census, the Survey of Income and Labour Dynamic, or data from the Survey of Employment, Payrolls and Hours. For annual wage estimates, the current central statistics practice is to round the estimates to the nearest $100. In order to facilitate data verification and comparability across data sources, a best practice would be to publish the wage estimates as they are reported.

Finally, rounding should not be used as a method of inflating out-dated wages (more appropriate cost of living adjustment techniques are explored later in this document). The implementation of an annual update cycle and increased monitoring for adjusting wages to meet the minimum wage for each province will address the issue of sub-minimum wage estimates being posted in the future.

9. Wage Ranges

Directive: **Continue to post 10th and 90th deciles on wages. When the 10th decile is**

[redacted]	**below the minimum wage, increase to the minimum wage with a note in the wage comment box indicating that the final wage has been adjusted to meet the provincial minimum wage.**

Currently, the wage range posted on the WiC website includes the 10th decile and 90th decile. This is to account for a starting or entry-level wage (10th decile), and a wage that would be earned by a more experienced worker (90th decile). WWG consultations have determined that this range is appropriate and suits the needs of clients.

10. Reference Period and Date of Publication	
[redacted]	**When wage estimates are posted, indicate a reference period and date of publication in the comment box.** **For example, suppose a set of wages was extracted from the LFS in December, 2010, referring to 2008-2009 data. Subsequently, it was then posted on the WiC website in January, 2011. In this case, the *reference period* is 2008-2009 and the *date of publication* is 2011.**

Hourly wages are currently posted for public consumption on the Working in Canada website. These data are freely available to the public once they have been posted. Operational considerations surrounding format changes to the website are discussed in greater detail in Section 5.

In the past, some users have misinterpreted the timeliness of the data because the *reference period* (as opposed to the *publication date*), appears beside each wage on the WiC website. This has led users to mistakenly consider the information to be "out of date". Therefore, to avoid confusion and promote transparency, it is recommended that when wage estimates are posted both the reference period and the date of publication be presented to the user. The reference period may be entered into the adjacent, pre-existing column, where the date of publication may be entered into the wage comment box.

[redacted]	**Wages estimates will be reviewed and updated on an annual basis, starting at the beginning of each calendar year. The review will be conducted by National Headquarters, in collaboration with Service Canada regions. This process is to ensure that wage estimates are reasonable, that they fit within employers' pay scales and are aligned with regional labour market trends.**

In an evolving labour market, wages can change as frequently as from week-to-week. In a world of perfect information, wage estimates would be updated on the WiC website just as frequently. However, to allow for sufficient time to receive the most recent wage data (from the various data sources portrayed in the decision tree), review updated wage estimates, and post the new information on the WiC website, wages will be updated on an annual basis, starting at the beginning of each calendar year.

4 Key Benefits of the New Methodology

The following section will provide analysis on how the new wage methodology is an improvement over the previous one by highlighting how the National Guidelines represent consistency, transparency and relevance—three critical concepts which were lacking in the previous methodology. As well, the new methodology's ability to produce reliable wage estimates will be explored, and its data accuracy will be examined in greater detail.

Consistency, Transparency and Relevance

The new methodology is based on a rigorous approach that is consistent, transparent, and relevant across Canada. At the onset of the WWG meetings, Statistics Canada and HRSDC analysts identified major issues with the previous wage methodology that could significantly impact its results. Following extensive discussions and rigorous analysis, the WWG and Statistics Canada identified a new methodology that would be consistent across Canada; transparent for analysts, users and stakeholders; and would produce relevant information that is more reflective of working Canadians. Concrete principles on data collection, calculation and dissemination were established.

Following the development of the National Guidelines, the methodology was circulated internally for an extensive peer review that addressed any final concerns regarding its approach, theoretical principles, and feasibility.

Coverage

Since 2005, there have been several attempts to secure consensus on a new, consistent approach to calculating wages that would address the problem of significant variation from province-to-province, and enable HRSDC/Service Canada to provide a reasonable and consistent justification to stakeholders. The decided approach was to follow a *decision tree* and focus on a single data source to calculate a wage estimate for a given ER and occupation. Using the decision tree, one would consult data at the most specific geographic and occupational level, and then expand the criteria to a broader level of geography or occupation, if reliable data was not available at the most detailed level.

Moving from a multi-source to a single source approach provides some unique challenges, particularly with respect to the level of data coverage in sparsely populated regions, such as the Atlantic Provinces. Accordingly, the following section will analyze and assess HRSDC/Service Canada's ability to access wage information required by the new decision tree approach for calculating wages across Canada.

Data Feasibility Summary Findings (all occupations)

Overall, data feasibility testing found that the LFS and EI administrative data together were capable of providing reliable wage estimates {with a Coefficient of Variation ≤ 30%} no less than 90% of the time for all 3 and 4-digit NOCs at the ER level[6]. The table below lists the provinces in order of highest degree of coverage, to the lowest.

[6] Prince Edward Island was the only exception, due to its atypically small population.

Not surprisingly, the most populated provinces (Ontario, Quebec and Alberta) experienced the best results in terms of coverage. In each case, the LFS was able to produce wage estimates by detailed ER around 90% of the time. Coverage significantly improved when the parameters were expanded from 4, to 3-digit NOCs. The provinces with the least degree of LFS coverage were Prince Edward Island, Saskatchewan and New Brunswick. Nevertheless, at the 3 and 4-digit level combined, Saskatchewan and New Brunswick were able to provide reliable estimates 83% and 74% of the time, respectively.

Summary Results of Data Coverage Testing (LFS 2009/2010 & EI 2010)								
Region	LFS Data			EI Data			Summary	
	% NOC4 ER	% NOC4 ER/PR	% NOC3/4	% EI NOC4 ER	% EI NOC4 ER/PR	% EI NOC3/4	% Coverage LFS & EI	% Not covered
ON	11.2%	55.8%	95.2%	0.3%	3.1%	4.2%	99.4%	0.6%
QC	2.6%	44.6%	91.9%	0.6%	6.0%	7.3%	99.2%	0.8%
AB	5.0%	37.9%	89.0%	0.3%	7.0%	9.4%	98.4%	1.6%
NL	3.6%	13.8%	58.8%	10.6%	37.9%	37.9%	96.7%	3.3%
BC	5.2%	36.3%	89.8%	1.6%	2.5%	4.4%	94.2%	5.8%
MB	4.8%	34.6%	86.5%	0.1%	1.3%	6.3%	92.9%	7.1%
NS	4.4%	25.4%	76.2%	0.3%	5.0%	16.5%	92.7%	7.3%
SK	7.5%	34.2%	82.9%	0.1%	1.3%	9.2%	92.1%	7.9%
NB	4.7%	23.7%	73.7%	0.2%	4.0%	17.7%	91.3%	8.7%
PE	0.0%	12.3%	55.2%	0.0%	1.0%	6.0%	61.2%	38.8%
Canada	5.4%	37.8%	85.9%	1.0%	5.9%	9.8%	95.7%	4.3%
Results shown are for CV<= 30%								

After the data for the LFS were examined, EI administrative data were consulted to find estimates for occupations and regions for which the LFS could not provide reliable estimates. These data were most helpful in regions of the country where EI claims were the highest, and the sample was too small to yield LFS results with a sufficient CV (Newfoundland, New Brunswick and Nova Scotia). On the whole, when LFS data were not available, EI data were available at the 3 or 4-digit NOC level for an additional 10% of occupations.

Overall, EI administrative data were very useful to fill in the gaps where LFS estimates were not available. For example, while the LFS was able to cover 89% of 3 and 4-digit NOCs by ER in Alberta, when supplementing with EI data, a reliable wage estimate was available over 98% of the time.

Top TFWP and WiC Priority Occupations

The following table presents the top 20 TFWP low-skilled occupations, the top 20 TFWP high-skilled occupations, and top 20 WiC occupations visited on the website. The tests revealed that 98.1% of occupations can yield a wage estimate using the LFS or EI at the 3 or 4-digit level, while only 1.9 % of occupations were not publishable. A CV $\leq$ 30% was used as the standard for data quality.

The table is ordered from the province with the highest coverage to the one with lowest. The new methodology was able to cover all priority occupations in Ontario, Quebec and Alberta—three heavy users of the TFWP. Even in Nova Scotia—a province which experiences sample

size and data quality issues—roughly 95% of priority occupations were covered. Canada's smallest province, Prince Edward Island, produced the worst coverage at 84.5%; nevertheless, wage requests for this region are minimal.

Summary Results of Data Coverage Testing for Top TFW and WiC Occupations (LFS 2009/2010 & EI 2010)								
Region	LFS Data			EI Data			Summary	
	% NOC4 ER	% NOC4 ER/PR	% NOC3/4	% EI NOC4 ER	% EI NOC4 ER/PR	% EI NOC3/4	% Coverage LFS & EI	% Not covered
ON	37.1%	81.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%
QC	14.3%	77.6%	96.6%	0.0%	3.4%	3.4%	100.0%	0.0%
AB	19.0%	70.7%	91.4%	0.0%	6.9%	8.6%	100.0%	0.0%
NL	17.2%	44.8%	77.6%	4.7%	12.1%	20.7%	98.3%	1.7%
BC	17.9%	74.1%	96.6%	0.0%	0.0%	0.0%	96.6%	3.4%
MB	17.0%	67.2%	96.6%	0.0%	0.0%	0.0%	96.6%	3.4%
SK	31.6%	65.5%	91.4%	0.0%	0.0%	5.2%	96.6%	3.4%
NB	22.4%	63.8%	89.7%	0.0%	0.0%	6.9%	96.6%	3.4%
NS	21.4%	63.8%	87.9%	0.3%	1.7%	6.9%	94.8%	5.2%
PE	51.7%	51.7%	79.3%	1.7%	1.7%	5.2%	84.5%	15.5%
Canada	22.1%	70.8%	93.8%	0.3%	2.4%	4.3%	98.1%	1.9%
Results shown are for CV<= 30%.								

In summary, when exploring the two major elements of the decision tree, LFS and EI were able to produce reliable wage estimates at the 3 and 4-digit NOC level by ER, at best, 99% of the time (Ontario), and at worst, 61% of the time (Prince Edward Island) for all occupations. When targeting the test to TFW and WiC priority occupations, the data coverage results improved significantly. Thus, the evidence shows that referring to a single source for wage estimation even at the detailed occupational and geographic level is feasible. In situations where these data are not available, one could still refer to the Census, provincial wage surveys, stakeholder surveys, the Job Bank, CBAs or individual employer contacts, which were outside the scope of this exercise.

Accuracy

Based on statistical principles, Statistics Canada consultation, WWG analysis and an extensive peer review, it is clear that the new methodology is more reflective of real wages. The NLMIS average wage is a trimmed mean, which could include several distinct data sources as old as 2008, not to mention blended data sources that are indiscriminately weighted to reflect the analysts' subjective assessment of the data's quality.

The previous methodology commits two critical errors that have a severe impact on the accuracy of the estimates it produces.

1) The trimming procedure—when the analyst removed the top and bottom 10% of observations—removes key observations, which skews the estimates.

2) When the data sources were blended to create the trimmed mean, more weight could have been attached to data sources that yielded higher wages, thereby, adding upward bias to the results.

Originally, this document was intended to produce concrete empirical evidence to demonstrate that the new methodology is an improvement over the previous one because it produces wage estimates that are more reflective of real-world wages. However, this test could not be completed, as historical data from the previous methodology were poorly archived, and were significantly inconsistent across regions in terms of their reference periods. Therefore, comparing old estimates to the new methodology would have been an unfair exercise. Wages across regions were sporadically updated for different occupations, rather than at a single point in time. For example, the comparison could have been between the 2010 LFS median wage to the 2009 trimmed mean for one region/occupation, but when a different geographical region would be examined, the data would be for 2008, or earlier. Thus there was no consistent basis for comparison, and the test could not be completed.

Instead, a rigorous review of the median wage estimates will be conducted once the new methodology is implemented, and those data will be compared to the previous data to ensure all statistical anomalies have been addressed. As well, the new estimates will be verified by comparing them to other data sources such as CBAs, provincial surveys, the Job Bank, stakeholder surveys, and individual employer contacts. At this time, HRSDC senior management is confident that the theoretical and statistical foundation of the new methodology will produce estimates that more accurately reflect the Canadian labour market.

5 Implementation

Three important steps will be required in the implementation process of this new methodology.

First, before publishing wage estimates using the new methodology, system enhancements will be required and coordinated at the national level to facilitate the calculation and dissemination of wages in WiC.

Second, wages will be updated on an annual basis. The analysis and revision of all wages based on the new methodology will be part of the LMI National Work-Plan 2012-13.

Third, once the new methodology has been approved by Senior Officials at NHQ, a communication strategy will be developed and an announcement will be made on the WiC website to inform the various LMI users including Canadians, Governments, Non-Governmental Organisations and employer stakeholder groups about the new methodology.

6 Conclusions

The new wage methodology described in this report will provide wage estimates that are transparent, sound, consistent and timely across Canada. While efforts were made to minimize inherent bias, the new estimation methodology will be assessed on an annual basis and HRSDC/Service Canada regions will have the opportunity to consider the experiences of users and stakeholders to ensure that wages are accessible and reflective of working Canadians.

Appendix A – Statistics Canada Data Quality Indicators

The following represent six fundamental characteristics that "good quality data" must embody. These indicators are described in greater detail in *Statistics Canada's Data Quality Guidelines.*

1. The **relevance** of statistical information reflects the degree to which it meets the real needs of users. It is concerned with whether the available information sheds light on the issues of most importance to users. The assessment of relevance needs to take into account the varying needs of users.

2. The **accuracy** of statistical information is the degree to which the information correctly describes the phenomena it was designed to measure. It is usually characterized in terms of error in statistical estimates and is traditionally decomposed into bias (systematic error) and variance (random error) components. It may also be described in terms of the major sources of error that potentially cause inaccuracy (e.g., coverage, sampling, nonresponse, response).

3. The **timeliness** of statistical information refers to the delay between the reference point (i.e. or the end of the reference period) to which the information pertains, and the date on which the information becomes available, typically involving a trade off with *accuracy*. The *timeliness* of information influences its *relevance.*

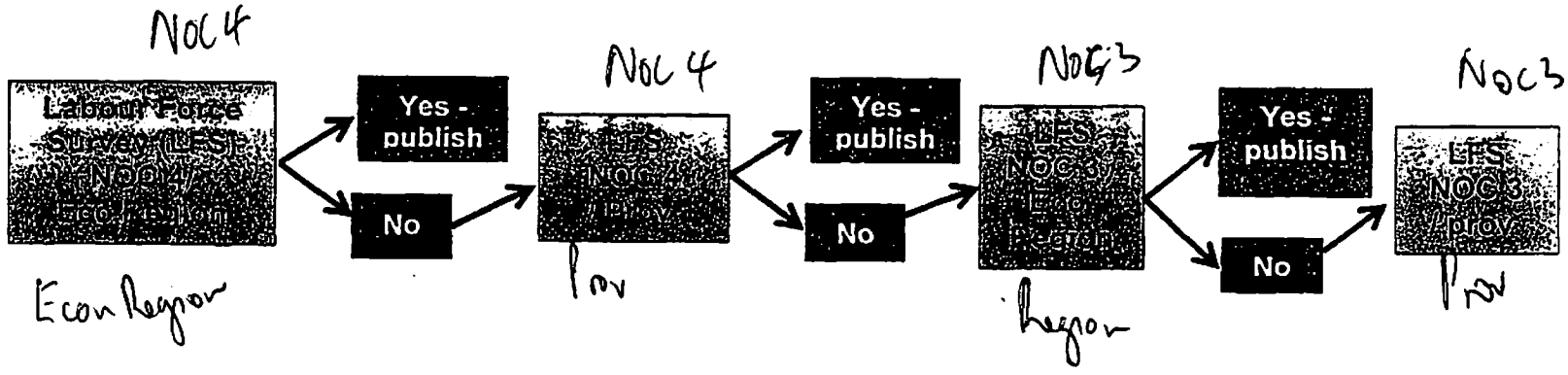
4. The **accessibility** of statistical information refers to the ease with which it can be obtained by users. This includes the ease with which the existence of information can be ascertained, and how easily the information can be accessed. The cost to obtain the information may also be an aspect of *accessibility*.

5. The **interpretability** of statistical information reflects the availability of the supplementary information and metadata necessary to interpret and utilize it appropriately. This information normally covers the: underlying concepts, variables and classifications used, the methodology of collection, and the indicators of the accuracy of the statistical information. This policy aims to ensure the interpretability of our information.

6. The **coherence** of statistical information reflects the degree to which it can be successfully brought together with other statistical information within a broad analytic framework and over time. The use of standard concepts, classifications and target populations promotes coherence, as does the use of common methodology across surveys. *Coherence* does not necessarily imply full numerical consistency.

Appendix B – Decision Tree

The following decision tree (based on consultations with Service Canada and Statistics Canada), outlines the approach for determining a single data source for calculating wages.



Note: The LFS is the most inclusive, timely and unbiased source of wage data source by occupational group. When the LFS data are not available other sources will be considered hierarchically based on a number of data quality indicators. Other data sources include employment insurance data, provincial surveys, census, collective bargaining agreements, etc.

Appendix C – Data Source Analysis

Labour Force Survey

Benefits	
Data Integrity/Validity	LFS data are thoroughly cleaned—discrepancies, logical inconsistencies and missing information are identified and reconciled before estimates are released. Wage data on people who are currently working are provided.
Accessibility	LFS historical tables are collected by HRSDC data development teams and shared for internal dissemination. As well, ad-hoc tables can be produced by Statistics Canada at a reasonable cost.
Timeliness	Data are received from Statistics Canada and are very timely—estimates are available on a monthly basis, only 13 days after the data are collected. However, for the purposes of the WWG, only annual data will be used.
Consistency	Data collection techniques are homogeneous across provinces/territories.
Occupational and Geographic Detail	Estimates are available by four-digit NOC at the provincial and ER levels. This provides added flexibility to move to the urban/rural or provincial level in instances when ER data are not reliable. There is also the possibility of using Census Metropolitan Area (CMA) and Census Agglomeration (CA) data to create a proxy for a "rural" and "urban" wage. Additionally, one can amalgamate smaller regions in New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland to create one large "Atlantic region".
Exhaustiveness/Thoroughness	Data are collected directly from survey respondents and responding to the survey is mandatory. The monthly survey covers all of Canada, while the territories are surveyed once every three months. In situations when territorial data is needed but not available through the LFS, an alternate data source should be considered.
Wage Measurement	Median and mean wages are available by four-digit NOC.
Sample Size	Sample size is very large compared to most other data sources (other than the census). Since July 1995, the monthly LFS sample size has been approximately 54,000 households, resulting in the collection of labour market information for approximately 100,000 individuals. Estimates with low sample sizes are suppressed. In larger provinces such as Ontario and Quebec, sample sizes must be at least 1,500 for publication, while in smaller provinces such as Nova Scotia and Newfoundland, the publication threshold is 500 respondents.
Geography	Boundaries that Service Canada uses to define provincial sub-regions are in the process of being aligned with LFS ERs.

Challenges	
Geographical Detail	Due to sample size constraint, reliable data are not always available by ER and four-digit NOC. There is always a trade-off between level of detail and data reliability. Specifically, Atlantic and Maritime provinces are grouped into one "Atlantic" region, due to the limited number of observations available by four-digit NOC.
Occupational Detail	Due to the nature of the survey, there is some miscoding when observations are converted to the four-digit NOC.
Data Integrity/Validity	The LFS does not collect earnings information for self-employed workers; therefore, it may be somewhat unrepresentative of the true population.

Mitigation Strategies

- Arrange for ongoing contracts with Statistics Canada analysts who have access to LFS data.
- When ER or urban/rural data are not available, consult the broader provincial level data, or the even broader multi-province level (e.g. an Atlantic region).
- The ER LFS data by four-digit NOC can be averaged over a two year period to increase the number of observations and strengthen data integrity.

EI Administrative Data

Benefits	
Accessibility	EI data are readily available in a database housed within the Department.
Timeliness	Data are available on a quarterly basis throughout the year.
Occupational Detail	Data are available at the four-digit NOC level.
Geographical Detail	Relative to other data sources, data are available at a high level of geographical detail.
Geography	Data are captured by postal code, from which (Statistics Canada) ERs can be created.
Wage Measurement	Wages can be expressed as a median or mean.
Sample Size	Depending on the occupation and region, sample sizes are usually adequate.
Consistency	Data is collected in a homogeneous manner throughout provinces and territories.

Challenges	
Data Integrity/Validity	EI administrative data are not subject to the same level of verification as Statistics Canada survey data, which accounts for discrepancies, logical inconsistencies and missing information. Wages captured in the EI database may be inherently biased for several reasons. Firstly, EI claimants self-report income on the application which may not be factual. Applicants sometimes state their income as a salary ($/year), or weekly, which would require a conversion step (to hourly wages) that could be inaccurate if "hours worked" is unknown.
Occupational Detail	Due to the nature of the survey, there is some miscoding when observations are converted to the four-digit NOC.
Exhaustiveness/Thoroughness	EI claimants, although active in the Labour Force, are not required to report their income. Therefore, observations from this sample do not necessarily represent current wages.
Representation	Occupations that traditionally qualify for EI may not necessarily be the same occupations that Canadians consult for information on the WiC website, nor are they necessarily the most common occupations that employ temporary foreign workers. For example, several Canadians and temporary foreign workers work as Food Counter Attendants (NOC 6641), and yet, there are limited EI administrative data on this occupation because it traditionally employs part-time workers who do not always qualify for EI.

Mitigation Strategies

- Only EI data with a predetermined sample size should be used to ensure data integrity is optimal.

- In cases where earnings must be converted to hourly wages, a consistent "hours of work" measure should be used as the divisor—for example, using the LFS hours worked estimates, or using 40 hours per week (2080 hours per year).

Provincial Surveys

Benefits	
Data Integrity/Validity	Some provincial wage and salary surveys are conducted by Statistics Canada and are subject to the agency's data quality standards.
Accessibility	Aggregate survey results and methodologies are usually made available to the public and include data quality indicators. The costs associated with provincial wage and salary surveys are typically covered by the province conducting the survey, and sometimes sponsoring employers/industry associations.
Timeliness	Surveys are often done in between census years, and results are usually made available shortly after the data are collected.
Geographic Detail	Provincial surveys available in each province generally provide a sufficient level of geographic detail within the province.
Sample Size	Some Provinces employ a methodology to ensure an adequate sample size.
Representation	Some provincial surveys are mandatory and therefore are a good representation of the population. However, survey methodologies vary across Provinces.

Challenges	
Data Integrity/Validity	While some provincial wage and salary surveys are conducted by Statistics Canada (and held to their standards), some provincial surveys may present collection processes issues, response rates, coverage and data processing. Stakeholders often have vested interest in reporting a wage that achieves a specific goal, which may not be true to the population. Furthermore, surveys are often done by third parties, which can vary significantly in terms of statistical approach and rigour.
Occupational Detail	Some surveys may collect information on occupations whose coding and duties do not agree with the NOC System.
Consistency	These surveys are often done for specific provinces, or occupations. Some Service Canada regions may not have access to specialized wage surveys, which can be problematic for LMI users who operate across several provinces.
Wage Measurement	Wage measurement may vary across provinces. Some surveys may not meet HRSDC's standards with respect to survey methodology.
Sample Size	Depending on the province, some sample sizes may not meet Statistics Canada standards.
Geography	Geographical representation is only within the province. Methodology used for geographical boundaries may vary between surveys.

Mitigation Strategies

- Provincial Survey methodologies should be thoroughly reviewed to ensure that they follow HRSDC's Stakeholder Survey Guide.
- Analysis should be done on a case-by-case basis for provincial surveys that could contain some bias that works toward their mandate. Wages could be compared to similar Statistics Canada surveys as a test for reasonableness.

Census

Benefits	
Data Integrity/Validity	Census data are thoroughly processed—discrepancies, logical inconsistencies and missing information are identified and reconciled before estimates are released. Provides wage data on people who are currently working during the reference period.
Occupational and Geographic Detail	Estimates are available by four-digit NOC, at the provincial and ER levels. This provides added flexibility to move to the provincial level in instances when ER or urban/rural data are not reliable.
Wage Measurement	Median and mean wages are available by four-digit NOC.
Representation	As stated above, the Census is very comprehensive and includes every person living in Canada. Consequently, the Census is very inclusive and representative.
Geography	Census data can be analyzed at many different geographic levels.
Sample Size	The sample size for Census data is generally large enough to be reliable.
Consistency	Data collection and processing techniques are homogeneous across provinces/territories.
Exhaustiveness/Thoroughness	The Census is the most comprehensive survey performed in Canada. It includes every person living in Canada, as well as Canadians who are abroad, either on a military base, attached to a diplomatic mission, at sea or in port aboard Canadian-registered merchant vessels. Persons in Canada including those holding a temporary resident permit, study permit or work permit, and their dependents, are also part of the census.

Challenges	
Timeliness	The most significant barrier to using census data is that by the time it is released, the data are already two years old. For example, census data are collected during a reference period in year X, when respondents are asked to report their income (or other personal characteristic) from the year before (year X-1). However, the income reported in year X-1 may be out of date, or not representative of the job and job duties being performed in year X.
Data Integrity/Validity	Census data contain *derived variables*. The occupation and hours of work reported are from the reference week in year X, whereas the income reported relate to the reference year (year X-1). Therefore the hours of work and job duties may not have been associated with the income that was reported from an earlier time period. Due to the nature of the survey, there is some miscoding when observations are converted to the four-digit NOC. The census questionnaire asks respondents to report their total income from the reference year, which could include several different occupations. Nevertheless, this is a minor concern, as occupational coding is still of good quality.

Mitigation Strategies

- Wage data from the Census can be adjusted with an inflator to ensure that wages consider (upward) movements in the cost of living between when the wages were collected, and the most recent reference period. There are several indexing techniques that can be used; however, the Statistics Canada's Consumer Price Index (CPI) is regarded as the most accurate and reliable source for measuring inflation in Canada. When adjusting wage estimates from the Census to reflect the most recent CPI information, analysts should consult

Bank of Canada's Inflation Calculator which is readily available online, or Statistics Canada's website.

Job Bank

Benefits	
Accessibility	Job Bank data are readily available in a database housed within the Department.
Timeliness	Data are provided on a monthly basis.
Occupational Detail	Data are available at the job title level, which can provide even more detail than the four-digit NOC.
Geography	Data are available Canada-wide. The level of coverage is dependent on the province.
Consistency	Methodology used to collect data is consistent throughout the dataset.
Representation	Job Bank data is the only data source that is taken from the demand side of the labour market. Therefore, it is useful in identifying what employers are willing to pay for various occupations.

Challenges	
Data Integrity/Validity	Although data reflect actual job offers, they do not represent wages that workers have accepted. i.e., data are demand-side only. Some positions are duplicated on the system. Also, one posting does not necessarily correspond to one job vacancy. Multiple job openings for the same position are often counted as only one observation.
Occupational Detail	In some cases, job postings are incorrectly miscoded to the wrong four-digit NOC code.
Wage Measurement	Wage ranges are often posted, rather than specific wages. In these instances, it difficult to determine a single wage observation for a given job vacancy.
Representation	An extremely small subset of job vacancies is advertised on the Job Bank and low-skilled positions tend to be overrepresented on this platform. Based on consultations between the TFWP and its stakeholders, many employers are not aware Job Bank exists.
Geographic Detail	Geographic coverage is inconsistent across Canada and is very limited in certain parts including the Territories.
Sample Size	The sample size using only full-time observations is often inadequate at many geographical levels. EI administrative data often has a much more reliable sample size.

Mitigation Strategies

- Analysts could contact employers on the Job Bank to ensure that the job duties outlined in the advertisement agree with the duties defined in the NOC System.
- Job Bank data should be cross referenced with other data sources to ensure accuracy.

Collective Bargaining Agreements

Benefits	
Accessibility	CBAs are typically made available to the general public. How quickly they are available varies across CBAs.
Occupational Detail	Many CBAs can be consulted to obtain wages for specialized occupations but may not always follow the NOC structure.
Market Wages	CBA wages are voted on and agreed to by the majority of the wage earners. Thus, these wages are very close to true market wages.

Challenges	
Central Tendency	It is difficult to derive measures of central tendency such as mean or median due to the fact that the number of observations is not available.
Exhaustiveness/Thoroughness	Not all occupations are part of a CBA.
Data Integrity/Validity	Wages are often conveyed in tiers or levels, making it difficult to associate a single wage with an occupation.
Occupational Detail	Wages are rarely associated with a four-digit NOC code.
Sample Size	It is difficult to know how many workers are earning the wages outlined in CBAs.
Consistency	CBAs vary in methodology and therefore may not be the most consistent data source.

Mitigation Strategies

- Consultative data should be cross-referenced with other data sources to ensure accuracy.
- Due to its inherent stakeholder bias, this data should only be used in special circumstances and instances where no other data sources are available.
- CBA data can be used to produce a range using a minimum and maximum when no other data sources are available.

Stakeholder Surveys

Benefit	
Data Integrity/Validity	Some of these surveys collect data in targeted occupations and regions in Canada that are not always covered by Statistics Canada surveys.
Accessibility	Aggregate survey results and methodologies are usually made available to the public. Costs associated with industry wage and salary surveys are typically covered by the stakeholder conducting the survey.
Timeliness	Surveys are often done in between census years, and results are usually made available shorty after the data are collected.

Challenge	
Data Integrity/Validity	Stakeholders often have a vested interest in reporting a wage that achieves a specific goal, which may not be true to the population. Furthermore, surveys are often done by third parties, which can vary significantly in terms of statistical approach and rigour. Some surveys may not meet HRSDC standards with respect to survey methodology.
Wage Measurement	While some stakeholder wage and salary surveys are conducted by Statistics Canada (and held to their standards), some third party surveys may have issues with collection processes, response rates, coverage and data processing.
Occupational Detail	Some surveys may collect information on occupations whose coding and duties do not correspond with the NOC System. Specifically, stakeholders often argue for a more detailed 5-digit NOC which usually reflects a lesser amount of job duties and therefore a lower wage.
Consistency	These surveys are often done for specific provinces, industries or occupations. Some Service Canada regions may not have access to specialized wage surveys. This can be problematic for LMI users who operate across several provinces.
Methodology	Some surveys may not meet HRSDC standards with respect to survey methodology.

Mitigation Strategies

- Survey methodologies should be thoroughly reviewed to ensure that they follow HRSDC's Stakeholder Survey Guide.
- Analysis should be done on a case-by-case basis for stakeholder-submitted surveys that could contain some bias. Wages could be compared to similar Statistics Canada surveys as a test for reasonableness.

Individual Employer Contacts

Benefits	
Accessibility	Employers are usually willing to provide information on an ad-hoc basis, which is very useful when all other data sources have been exhausted.
Timeliness	Data would reflect employers' most recent wage offers.
Geography	Any analyst has the ability to do this research for any provincial sub-region.
Geographic Detail	Since any analyst is capable of doing this research, wages in very precise areas can be determined.

Challenges	
Data Integrity/Validity	When consulting an employer, there is no way to confirm accuracy of reported wages. Although data reflects actual salaries, they do not represent wages that workers have accepted. I.e., data are demand-side only.
Occupational Detail	Employers rarely define jobs within their firm that completely agree with the job duties outlined in the NOC system.
Consistency	It is difficult to determine the methodology an employer uses when reporting wages and impossible to ensure consistency across employers. For example, PEI collects information on people employed, but they collect the most frequent wage instead of the mean or median. The best and most consistent way to collect data would be to have a job title, number of employees, and the payroll so that the mean, median, and deciles could all be calculated.
Sample Size	Sample sizes can be relatively small when using the employer consultation technique.

Mitigation Strategies

- Consultative data should be cross-referenced with other data sources to ensure accuracy.
- Due to its inherent stakeholder bias, this data should only be used in special circumstances and instances where no other data sources are available.

Appendix D – Conversion Formulas for Hourly Wages

CONVERSION FROM	CONVERSION TO	CONVERSION FORMULA	CONVERTED NUMERICAL VALUE
Monthly (8hr)	Monthly (8hr)	*1	1
Monthly (8hr)	Weekly (40hr)	/8/(260/12)*40	0.230769230769231
Monthly (8hr)	Hourly	/(260/12)/8	0.00576923076923077
Monthly (8hr)	Annually (8hr)	*12	12
Monthly (8hr)	Daily (7.5hr)	/8/(260/12)*7.5	0.0432692307692308
Monthly (8hr)	Weekly (37.5hr)	/8/(260/12)*37.5	0.216346153846154
Monthly (8hr)	Bi-weekly (8hr)	/(260/12)*10	0.461538461538462
Monthly (8hr)	Semi-monthly (8hr)	/2	0.5
Monthly (8hr)	13 pay periods	*12/13	0.923076923076923
Monthly (8hr)	Daily (8hr)	/(260/12)	0.0461538461538461
Monthly (8hr)	Monthly (7.5hr)	/8*7.5	0.9375
Monthly (8hr)	Bi-weekly (7.5hr)	/8*7.5/(260/12)*10	0.432692307692308
Monthly (8hr)	Semi-monthly (7.5hr)	/8*7.5/2	0.46875
Monthly (8hr)	Annually (7.5hr)	/8*7.5*12	11.25
Weekly (40hr)	Monthly (8hr)	/5*(260/12)	4.33333333333333
Weekly (40hr)	Weekly (40hr)	*1	1
Weekly (40hr)	Hourly	/40	0.025
Weekly (40hr)	Annually (8hr)	*52	52
Weekly (40hr)	Daily (7.5hr)	/40*7.5	0.1875
Weekly (40hr)	Weekly (37.5hr)	/40*37.5	0.9375
Weekly (40hr)	Bi-weekly (8hr)	*2	2
Weekly (40hr)	Semi-monthly (8hr)	/5*(260/12/2)	2.16666666666667
Weekly (40hr)	13 pay periods	*4	4
Weekly (40hr)	Daily (8hr)	/5	0.2
Weekly (40hr)	Monthly (7.5hr)	/5*(260/12)	4.33333333333333
Weekly (40hr)	Bi-weekly (7.5hr)	/40*37.5*2	1.875
Weekly (40hr)	Semi-monthly (7.5hr)	/8*7.5/5*(260/12/2)	2.03125000000000
Weekly (40hr)	Annually (7.5hr)	/40*37.5*52	48.75
Hourly	Monthly (8hr)	*(260/12)*8	173.333333333333
Hourly	Weekly (40hr)	*40	40
Hourly	Hourly	*1	1
Hourly	Annually (8hr)	*260*8	2080
Hourly	Daily (7.5hr)	*7.5	7.5
Hourly	Weekly (37.5hr)	*37.5	37.5
Hourly	Bi-weekly (8hr)	*40*2	80
Hourly	Semi-monthly (8hr)	*(260/12/2)*8	86.6666666666667
Hourly	13 pay periods	*40*4	160

Hourly	Daily (8hr)	*8	8
Hourly	Monthly (7.5hr)	*(260/12)*7.5	162.5
Hourly	Bi-weekly (7.5hr)	*37.5*2	75
Hourly	Semi-monthly (7.5hr)	*(260/12/2)*7.5	81.25
Hourly	Annually (7.5hr)	*260*7.5	1950
Annually (8hr)	Monthly (8hr)	/12	0.0833333333333333
Annually (8hr)	Weekly (40hr)	/52	0.0192307692307692
Annually (8hr)	Hourly	/260/8	0.000480769230769231
Annually (8hr)	Annually (8hr)	*1	1
Annually (8hr)	Daily (7.5hr)	/260/8*7.5	0.00360576923076923
Annually (8hr)	Weekly (37.5hr)	/52/40*37.5	0.0180288461538462
Annually (8hr)	Bi-weekly (8hr)	/26	0.0384615384615385
Annually (8hr)	Semi-monthly (8hr)	/24	0.0416666666666667
Annually (8hr)	13 pay periods	/13	0.0769230769230769
Annually (8hr)	Daily (8hr)	/260	0.00384615384615385
Annually (8hr)	Monthly (7.5hr)	/8*7.5/12	0.078125
Annually (8hr)	Bi-weekly (7.5hr)	/26/8*7.5	0.0360576923076923
Annually (8hr)	Semi-monthly (7.5hr)	/8*7.5/24	0.0390625
Annually (8hr)	Annually (7.5hr)	/8*7.5	0.9375
Daily (7.5hr)	Monthly (8hr)	/7.5*8*(260/12)	23.1111111111111
Daily (7.5hr)	Weekly (40hr)	/7.5*8*5	5.3333333333333
Daily (7.5hr)	Hourly	/7.5	0.133333333333333
Daily (7.5hr)	Annually (8hr)	/7.5*8*260	277.333333333333
Daily (7.5hr)	Daily (7.5hr)	*1	1
Daily (7.5hr)	Weekly (37.5hr)	*5	5
Daily (7.5hr)	Bi-weekly (8hr)	/7.5*8*10	10.6666666666667
Daily (7.5hr)	Semi-monthly (8hr)	/7.5*8*(260/12/2)	11.5555555555556
Daily (7.5hr)	13 pay periods	/7.5*8*20	21.3333333333333
Daily (7.5hr)	Daily (8hr)	/7.5*8	1.0666666666667
Daily (7.5hr)	Monthly (7.5hr)	*(260/12)	21.6666666666667
Daily (7.5hr)	Bi-weekly (7.5hr)	*10	10
Daily (7.5hr)	Semi-monthly (7.5hr)	*(260/12/2)	10.8333333333333
Daily (7.5hr)	Annually (7.5hr)	*260	260
Weekly (37.5hr)	Monthly (8hr)	/37.5*(260/12)*8	4.62222222222222
Weekly (37.5hr)	Weekly (40hr)	/37.5*40	1.06666666666667
Weekly (37.5hr)	Hourly	/37.5	0.0266666666666667
Weekly (37.5hr)	Annually (8hr)	/37.5*40*52	55.4666666666667
Weekly (37.5hr)	Daily (7.5hr)	/5	0.2
Weekly (37.5hr)	Weekly (37.5hr)	*1	1
Weekly (37.5hr)	Bi-weekly (8hr)	/37.5*40*2	2.13333333333333
Weekly (37.5hr)	Semi-monthly (8hr)	/37.5*8*(260/12/2)	2.31111111111111

Weekly (37.5hr)	13 pay periods	/37.5*40*4	4.266666667
Weekly (37.5hr)	Daily (8hr)	/37.5*8	0.213333333333333
Weekly (37.5hr)	Monthly (7.5hr)	/5*(260/12)	4.33333333333333
Weekly (37.5hr)	Bi-weekly (7.5hr)	*2	2
Weekly (37.5hr)	Semi-monthly (7.5hr)	/5*(260/12/2)	2.16666666666667
Weekly (37.5hr)	Annually (7.5hr)	*52	52
Bi-weekly (8hr)	Monthly (8hr)	/10*(260/12)	2.16666666666667
Bi-weekly (8hr)	Weekly (40hr)	/2	0.5
Bi-weekly (8hr)	Hourly	/10/8	0.0125
Bi-weekly (8hr)	Annually (8hr)	*26	26
Bi-weekly (8hr)	Daily (7.5hr)	/8*7.5/10	0.09375
Bi-weekly (8hr)	Weekly (37.5hr)	/8*7.5/2	0.46875
Bi-weekly (8hr)	Bi-weekly (8hr)	*1	1
Bi-weekly (8hr)	Semi-monthly (8hr)	/10*(260/12/2)	1.0833333333333300
Bi-weekly (8hr)	13 pay periods	*2	2
Bi-weekly (8hr)	Daily (8hr)	/10	0.1
Bi-weekly (8hr)	Monthly (7.5hr)	/8*7.5/10*(260/12)	2.03125
Bi-weekly (8hr)	Bi-weekly (7.5hr)	/8*7.5	0.9375
Bi-weekly (8hr)	Semi-monthly (7.5hr)	/8*7.5/10*(260/12/2)	1.015625
Bi-weekly (8hr)	Annually (7.5hr)	/8*7.5*26	24.375
Semi-monthly (8hr)	Monthly (8hr)	*2	2
Semi-monthly (8hr)	Weekly (40hr)	/(260/12/2)*5	0.461538461538462
Semi-monthly (8hr)	Hourly	/(260/12/2)/8	0.0115384615384615
Semi-monthly (8hr)	Annually (8hr)	*24	24
Semi-monthly (8hr)	Daily (7.5hr)	/8*7.5/(260/12/2)	0.0865384615384615
Semi-monthly (8hr)	Weekly (37.5hr)	/(260/12/2)/8*37.5	0.432692307692308
Semi-monthly (8hr)	Bi-weekly (8hr)	*10/(260/12/2)	0.923076923076923
Semi-monthly (8hr)	Semi-monthly (8hr)	*1	1
Semi-monthly (8hr)	13 pay periods	*24/13	1.84615384615385
Semi-monthly (8hr)	Daily (8hr)	/(260/12/2)	0.0923076923076923
Semi-monthly (8hr)	Monthly (7.5hr)	/8*7.5*2	1.875
Semi-monthly (8hr)	Bi-weekly (7.5hr)	/(260/12/2)*10/8*7.5	0.865384615384615
Semi-monthly (8hr)	Semi-monthly (7.5hr)	/8*7.5	0.9375
Semi-monthly (8hr)	Annually (7.5hr)	/8*7.5*24	22.5
13 pay periods	Monthly (8hr)	*13/12	1.08333333333333
13 pay periods	Weekly (40hr)	/4	0.25
13 pay periods	Hourly	/(260/13)/8	0.00625
13 pay periods	Annually (8hr)	*13	13
13 pay periods	Daily (7.5hr)	/8*7.5/20	0.046875
13 pay periods	Weekly (37.5hr)	/8*7.5/4	0.234375
13 pay periods	Bi-weekly (8hr)	/2	0.5

13 pay periods	Semi-monthly (8hr)	/20*(260/12/2)	0.541666666666667
13 pay periods	13 pay periods	*1	1
13 pay periods	Daily (8hr)	/20	0.05
13 pay periods	Monthly (7.5hr)	/8*7.5*13/12	1.015625
13 pay periods	Bi-weekly (7.5hr)	/8*7.5/2	0.46875
13 pay periods	Semi-monthly (7.5hr)	/8*7.5/20*(260/12/7)	0.5078125
13 pay periods	Annually (7.5hr)	*13/8*7.5	12.1875
Daily (8hr)	Monthly (8hr)	*(260/12)	21.6666666666667
Daily (8hr)	Weekly (40hr)	*5	5
Daily (8hr)	Hourly	/8	0.125
Daily (8hr)	Annually (8hr)	*260	260
Daily (8hr)	Daily (7.5hr)	/8*7.5	0.9375
Daily (8hr)	Weekly (37.5hr)	/8*37.5	4.6875
Daily (8hr)	Bi-weekly (8hr)	*10	10
Daily (8hr)	Semi-monthly (8hr)	*(260/12/2)	10.8333333333333
Daily (8hr)	13 pay periods	*20	20
Daily (8hr)	Daily (8hr)	*1	1
Daily (8hr)	Monthly (7.5hr)	/8*7.5*(260/12)	20.3125
Daily (8hr)	Bi-weekly (7.5hr)	/8*7.5*10	9.375
Daily (8hr)	Semi-monthly (7.5hr)	/8*7.5*(260/12/2)	10.15625
Daily (8hr)	Annually (7.5hr)	/8*7.5*260	243.75
Monthly (7.5hr)	Monthly (8hr)	/7.5*8	1.06666666666667
Monthly (7.5hr)	Weekly (40hr)	/7.5*8/(260/12)*5	0.246153846153846
Monthly (7.5hr)	Hourly	/(260/12)/7.5	0.00615384615384615
Monthly (7.5hr)	Annually (8hr)	/7.5*8*12	12.8
Monthly (7.5hr)	Daily (7.5hr)	/(260/12)	0.0461538461538461
Monthly (7.5hr)	Weekly (37.5hr)	/(260/12)*5	0.230769230769231
Monthly (7.5hr)	Bi-weekly (8hr)	/7.5*8/(260/12)*10	0.492307692307692
Monthly (7.5hr)	Semi-monthly (8hr)	/7.5*8/2	0.533333333333333
Monthly (7.5hr)	13 pay periods	/7.5*8*12/13	0.984615384615385
Monthly (7.5hr)	Daily (8hr)	/7.5*8/(260/12)	0.0492307692307692
Monthly (7.5hr)	Monthly (7.5hr)	*1	1
Monthly (7.5hr)	Bi-weekly (7.5hr)	/(260/12)*10	0.461538461538462
Monthly (7.5hr)	Semi-monthly (7.5hr)	/2	0.5
Monthly (7.5hr)	Annually (7.5hr)	*12	12
Bi-weekly (7.5hr)	Monthly (8hr)	/7.5*8/10*(260/12)	2.311111
Bi-weekly (7.5hr)	Weekly (40hr)	/7.5*8/2	0.533333333333333
Bi-weekly (7.5hr)	Hourly	/10/7.5	0.0133333333333333
Bi-weekly (7.5hr)	Annually (8hr)	/7.5*8*26	27.7333333333333
Bi-weekly (7.5hr)	Daily (7.5hr)	/10	0.1
Bi-weekly (7.5hr)	Weekly (37.5hr)	/2	0.5

Bi-weekly (7.5hr)	Bi-weekly (8hr)	/7.5*8	1.06666666666667
Bi-weekly (7.5hr)	Semi-monthly (8hr)	/7.5*8/10*(260/12/2)	1.15555555555556
Bi-weekly (7.5hr)	13 pay periods	/7.5*8*2	2.13333333333333
Bi-weekly (7.5hr)	Daily (8hr)	/7.5*8/10	0.106666666666667
Bi-weekly (7.5hr)	Monthly (7.5hr)	/10*(260/12)	2.16666666666667
Bi-weekly (7.5hr)	Bi-weekly (7.5hr)	*1	1
Bi-weekly (7.5hr)	Semi-monthly (7.5hr)	/10*(260/12/2)	1.083333333
Bi-weekly (7.5hr)	Annually (7.5hr)	*26	26
Semi-monthly (7.5hr)	Monthly (8hr)	/7.5*8*2	2.13333333333333
Semi-monthly (7.5hr)	Weekly (40hr)	/(260/12/2)/7.5*40	0.492307692307692
Semi-monthly (7.5hr)	Hourly	/(21.09375/2)/7.5	0.012641975308642
Semi-monthly (7.5hr)	Annually (8hr)	/7.5*8*24	25.6000000000000
Semi-monthly (7.5hr)	Daily (7.5hr)	/(260/12/2)	0.0923076923076923
Semi-monthly (7.5hr)	Weekly (37.5hr)	/(260/12/2)*5	0.461538461538462
Semi-monthly (7.5hr)	Bi-weekly (8hr)	/7.5*8/(260/12/2)*10	0.984615384615385
Semi-monthly (7.5hr)	Semi-monthly (8hr)	/7.5*8	1.06666666666667
Semi-monthly (7.5hr)	13 pay periods	/7.5*8*24/13	1.969230769
Semi-monthly (7.5hr)	Daily (8hr)	/7.5*8/(260/12/2)	0.0984615384615385
Semi-monthly (7.5hr)	Monthly (7.5hr)	*2	2
Semi-monthly (7.5hr)	Bi-weekly (7.5hr)	/(260/12/2)*10	0.923076923076923
Semi-monthly (7.5hr)	Semi-monthly (7.5hr)	*1	1
Semi-monthly (7.5hr)	Annually (7.5hr)	*24	24
Annually (7.5hr)	Monthly (8hr)	/7.5*8/12	0.0888888888888889
Annually (7.5hr)	Weekly (40hr)	/7.5*8/52	0.0205128205128205
Annually (7.5hr)	Hourly	/260/7.5	0.000512820512820513
Annually (7.5hr)	Annually (8hr)	/7.5*8	1.06666666666667
Annually (7.5hr)	Daily (7.5hr)	/260	0.00384615384615385
Annually (7.5hr)	Weekly (37.5hr)	/52	0.0192307692307692
Annually (7.5hr)	Bi-weekly (8hr)	/7.5*8/26	0.041025641025641
Annually (7.5hr)	Semi-monthly (8hr)	/7.5*8/24	0.0444444444444444
Annually (7.5hr)	13 pay periods	/7.5*8/13	0.0820512820512821
Annually (7.5hr)	Daily (8hr)	/7.5*8/260	0.0041025641025641
Annually (7.5hr)	Monthly (7.5hr)	/12	0.0833333333333333
Annually (7.5hr)	Bi-weekly (7.5hr)	/26	0.0384615384615385
Annually (7.5hr)	Semi-monthly (7.5hr)	/24	0.0416666666666667
Annually (7.5hr)	Annually (7.5hr)	*1	1

Appendix E – Expanded Rationale for Wage Directives

Mean versus Median Wages

A measure of central tendency is the value that describes a set of data by identifying the central position within a set of data. The mean, median and mode are three recognized statistical measures of central tendency, but under different conditions, specific measures of central tendency are more appropriate to use than others.

The mean (or average) is equal to the sum of all the values in the data set divided by the number of values in the data set. It is the most popular and well known measure of central tendency however it has the main disadvantage of being particularly sensitive to outlier values. Also, it is not recommended to use the mean when the data distribution is skewed. In this case, the mean doesn't represent the best central location for the data as the skewed data drags it away from the typical value.

The median is the middle observation for a set of data that has been arranged in order of magnitude. When there are an even number of values (e.g. 10), the median is set at the average of the two middle values (e.g., the values 5 and 6). Contrary to the mean, when the data distribution is skewed, the median is the best representation of the central position and is not as strongly influenced by the skewed distribution and outlier data.

The mode is the most frequent observation in a data set. Normally, the mode is used for nominal data where one wishes to identify which is the most common category (e.g. most common wage pay period: hourly, weekly, annual, etc.). The mode is very rarely used with continuous data such as wages where it is unlikely to have any one value that is more frequent than the other. Due to the minimum wage policies, the minimum wages would in many cases constitute the mode which would not be representative of wage central measure for an occupation and would be misleading.

In any symmetrical distribution, the mean, median and mode are equal; analysts could legitimately use either the mean or the median as the measure of central tendency. However, when a data distribution is skewed, the mean is being dragged in the direction of the skew. In these situations, the median is generally considered to be the best representation of the central location of the data. The more skewed the distribution the greater the difference between the median and mean, and the greater emphasis should be placed on using the median. Income and salary are known as classic example of the right-skewed distribution, where higher-earners provide a false representation of the typical income if expressed as a mean and not a median.

As stated above, the median is also usually preferred over the mean as the value of central tendency since it is not distorted by outlier values. To minimise the impact of outlier wage values, Service Canada regions have published the trimmed mean, calculated on 80% of the distribution. There are two main advantages of using the trimmed means. First, trimming the bottom 10% and top 10% of the wage values removes the atypical wages at the top end of the distribution. The second advantage of using the trimmed mean is that it provides some protection from the accidental disclosure of data, mostly due to the atypical wages potentially present at the top end of the distribution. Although this practice has its advantages, it also has the disadvantage of arbitrarily excluding wage values that may be valid and reducing the sample size from which an occupational wage is derived introducing a significant statistical bias. Unless

LMI applied statistical methods to exclude outliers, such as the application of the sigma gap analysis, the use of the median should be enforced.

Data Source Blending and Weighting

Wage information produced and published by Analysts on the WiC website are official government statistics. They should meet the needs of LMI users and it is essential that the statistics are produced, managed and disseminated to high standards. Wage statistics should be well explained and easily replicated. In the same vein, they should be derived using statistical methods that are consistent with scientific principles and recognized best practices. Therefore, the LMI wage methodology should adopt quality assurance procedures, including the consideration of each statistical product against users' requirements, and of their coherence with other statistical products to achieve continuous improvement in statistical processes.

In some LMI regions, a current practice for the calculation of average wages is to proceed to the "blending" of information from a variety of data sources. Data blending under specific conditions has been perceived as being a reasonable way to calculate wage estimates from sources that are considered to have too few observations to produce reliable results. However, Statistics Canada's evaluation of blending has indicated that blending would be appropriate across different surveys/admin data sources only when there is consistency between the surveys and samples are mutually exclusive. The more the surveys can be thought of as covering different populations in a consistent manner (similar to looking at each province separately within the same survey) the more appropriate it is to combine the information from different data sources. However, due to heterogeneity in wage data sources currently used and their sample size disparities, this approach should not be used. Blending of simple arithmetic means is possible if the number of observations from each data source is accounted for.

Averaging medians does not produce good results. Unless the observations are evenly distributed, the average of two medians can be significantly different from the median of the combined observations. The average median is not a statistical measure consistent with scientific principles and recognized best practices. The blending of medians is only appropriate when the underlying datasets can be blended into a single dataset, and then the median can be calculated from the "blended dataset."

This is best illustrated through an example:

Suppose there is a dataset with three hourly wage observations ($10, $11, $15), and another dataset with three observations ($13, $14, $18). These can be thought of the wages for less experienced and more experienced workers, respectively. The median of the first is $11, and the median of the second is $14. Performing the mathematical error of averaging the two medians, the result is $12.50. Were these datasets be combined into the single dataset ($10, $11, $13, $14, $15, $18), then you could find the true median of $13.50 = ($13+$14)/2, since there is an even number of observations.

For the same reason it is inappropriate to blend the means of inconsistent data sources or blend median statistics, it is, from a statistical and mathematical standpoint, inappropriate to blend trimmed means.

For example, assume two data sources with wages as follows:

Let $\overline{X}$ = the trimmed mean where the top and bottom 10% of observations are eliminated.

Source #1: $10.00, $15.00

=> Average wage ($\overline{X}_1$)) = $12.50

Source #2: $9.00, $9.50, $10.00, $10.50, $11.00

=> Average wage ($\overline{X}_2$) = $10.00

Combined Data sources: $10.00, $15.00, $9.00, $9.50, $10.00, $10.50, $11.00

=> Average wage ($\overline{X}_{1,2}$)) = $10.71

Average of $\overline{X}_1$ and $\overline{X}_2$ = $12.50 +$10.00 = $11.25

Using the above example, it becomes clear that simply taking the average of the trimmed means from multiple data sources is inappropriate since it gives excessive weight to the data source with fewer observations (which is not an issue if all data sources have exactly the same number of observations for all sub-groups of interest, which is highly improbable).
Using the same data as an example, it would be possible to calculate the correct average wage as follows:

$$\overline{X}_{1,2} = \frac{n_1 * \overline{X}_1 + n_2 * \overline{X}_2}{n_1 + n_2} = \frac{2*12.50 + 5*10.00}{2+5} = \frac{25+50}{7} = \$10.71$$

In summary, blending is only appropriate with the standard untrimmed mean under the provision that the data sources are consistent, unbiased and the sample sizes are equal. It is, however, impossible to have an accurate measure of the trimmed mean across various data sources without having access to the micro-data of these data sources. Furthermore, the important issue that wage distributions are highly right skewed remains, which means that the standard mean is not very representative of the "average" worker.

Therefore, Statistics Canada strongly encourages the use of the median, given its robustness, as well as it being the best measure of the "average" worker's wage. Additionally, the publication of ranges could also show users that wages are in fact right-skewed, and give some indication of the wage distribution.

For the cases of the sparse combinations of occupation and geography, HRSDC needs to review to what extent it should be providing information. Where census data shows there is limited number of individuals working in an occupation in a given geographic region, wage information should not be published. For the middle ground of those occupations and geographical combinations where there is not enough information available from the LFS, but there are still a sizeable number of workers to be found, the hierarchical approach of going from the best data source to a lesser quality data source is the best compromise. A consistent methodology will allow for Analysts to always find the same wages, and completely remove the judgement calls from the system.

No reputable statistical organisation or statistician in the world would condone the blending of medians/trimmed means. Considering that wage and income data are generally right skewed, the most appropriate option to calculate the wage of the average worker is to use the median

from a single data source using the hierarchical approach of using data sources in order of quality).

Sample Size and Data Quality Indicator Guidelines

Sample size and assessment of the data quality indicator based on the CV are important to ensure that wage data reliability is optimized. Different measures are available to Analysts to gauge the quality of the available wage information from diverse data sources. When disseminating wage data, Analysts should also be cautious of protecting the confidentiality of the respondent information. The following section describes the minimum sample size and suppression thresholds as well as data quality parameters to be considered when using survey or administrative data for the calculation and publication of wages.

Survey Data (LFS, provincial wage surveys, stakeholder surveys, Census, etc.)

Survey data are sample observations—a subset of the true population—and are subject to sampling error and non-sampling error. It is important for Analysts to be familiar with the methodology of a survey and its documentation.

As presented previously, the LFS should be the primary source of data used to derive wages. The LFS User Guide, published annually by Statistics Canada, presents the data usage guidelines to certify that data quality standards are upheld, and data suppression is considered to protect people's privacy. LFS estimates can only be disseminated if the weighted number of observations from which a statistic is derived (e.g. combination of geography and occupation) is above the following threshold for a particular geographic area.

Table 1: Minimum weighted sample sizes for release, Canada and the provinces

Geographic Area	Minimum size for release
Canada	1,500
Newfoundland and Labrador	500
Prince Edward Island	200
Nova Scotia	500
New Brunswick	500
Quebec	1,500
Ontario	1,500
Manitoba	500
Saskatchewan	500
Alberta	1,500
British Columbia	1,500

For LFS data on wages, a minimum of 5 non-weighted observations per cell is required to publish an estimate for a specific occupational group within a determine region.

When a wage estimate cannot be published for a specific geographic area, analysts are requested to evaluate the number of workers employed in an occupation at a broader geography level (provincial level instead of ER) or a more aggregate occupational group (NOC-3). The hierarchy of the domains examined are defined in Appendix B.

Based on the survey design (e.g. household versus employer surveys) the sample size threshold for data suppression will vary. However, in addition to the minimum number of observations, analysts should also evaluate the CV associated with an estimate. The CV can be

mathematically defined[7] as the ratio of the sampling error of the estimate [$se(\hat{\theta})$] to the estimate itself [$\hat{\theta}$]:

$$cv(\hat{\theta}) = \frac{se(\hat{\theta})}{\hat{\theta}}.$$

The CV is valid for any estimate of a positive-valued parameter (e.g., wages). It provides information on the degree of variability in the observations, meaning how the wage estimates are likely to vary from one survey to the next. Although some wage data may not be suppressed, the estimates may be subject to a great percentage of variation and therefore may not be suitable for dissemination or should be used with caution. As recommended by Statistics Canada, only estimates with a CV of less than 30% should be considered for publication. When the CV associated with a wage estimate is significantly lower at a more aggregate geographical or occupational level (below 15% compare to a CV between 15% and 30%), the estimate with the lowest CV should be chosen.

Table 2: Coefficient of variation data publishing standards

Coefficient of Variation	Instruction
CV < 15%	okay to publish
15% > CV > 30%	publish with caution
CV > 30%	do not publish

For the LFS, the Coefficient of Variation of each wage value can be provided by Statistics Canada or can be estimated using the following table.

Table 3: Coefficient of variation data publishing

2011	Coefficient of variation									Minimum size for release
	1.0%	2.5%	5.0%	7.5%	10.0%	15.0%	20.0%	25.0%	30.0%	(x1000)
Canada	1,137.70	339.8	150.4	88.1	50.4	29.6	19.8	14.4	11.1	1.5
Newfoundland and Labrador	243.2	65.4	25.7	14.3	8.4	4.7	3	2.2	1.6	0.5
Prince Edward Island	70.6	20.7	8.8	5.1	3	1.7	1.2	0.8	0.6	0.2
Nova Scotia	244	71.9	31	18	10.5	6.1	4.1	3	2.3	0.5
New Brunswick	205.4	60.2	25.8	15	8.7	5	3.4	2.4	1.9	0.5
Quebec	1,038.50	302.8	130.2	75.3	43.5	25.1	16.7	12.1	9.3	1.5
Ontario	1,152.30	333.5	143.2	82.6	47.3	27.3	18.1	13.1	10	1.5
Manitoba	185.6	57.1	26.5	15.8	8.9	5.3	3.6	2.6	2	0.5
Saskatchewan	164.9	50.1	22.9	13.6	7.6	4.5	3	2.2	1.7	0.5
Alberta	519.9	160.7	75.5	45.3	25	15	10.2	7.5	5.8	1.5
British Columbia	737.8	213.7	92.6	53.6	30.2	17.5	11.6	8.4	6.4	1.5

[7] See for example, Särndal, C.E., B. Swensson, J. Wretman (1992) Model Assisted Survey Sampling, New York: Springer Verlag, page 42.

For census, the formal requirement is that 250 observations at a minimum by geographical area (not per cell) to publish income variables. For the mean, an indicator in the census (standard error of the mean) should always be produced when calculating a mean with CAPSS. From this, one can easily calculate a CV (see the formula above). This is not the true error due to sampling, but it is a good estimation. Regarding the median, there is no readily available measure at the current time.

Administrative Data Sources (EI and Job Bank)

EI administrative data is one of the most commonly used wage sources across Service Canada regions. It is therefore important to clarify the guidelines for using this data to ensure that it is reliable and accurate. Job Bank data are less popular, but also require data reliability standards.

It is recommended that EI and Job Bank administrative data be used only when there is a minimum of 30 observations. This threshold was developed by calculating the CVs for various four-digit NOCs across Canada using EI administrative data to ensure that the data was of "reasonable quality". It was found that using less than 30 observations yielded less reliable data and may jeopardize the confidentiality of program participants' information.

Since the use of Job Bank information presents considerable caveats, this source of data should not be a primary data source. Also one job posting should be considered as one observation.

Individual employer contacts are usually performed on small sample sizes. When collecting information directly from an employer either to establish a wage or to validate the information available from another data source, a formal survey protocol should be follow to ensure the industries selected are representative of the universe from which the sample is selected and the wage information collected is adequately measured. In addition to wage information and occupation characteristics, it would be mandatory to collect information about the number of individuals employed, by employer, and in each occupation. The collection of wage data for each employee within a specific occupation will enable Analysts to calculate the median and other central tendency measures for comparison.

Wage Conversion

In many occupations, employees are not paid a straight hourly wage; rather, they are compensated according to:

- An annual salary, with or without non-wage benefits (which can be a significant component to compensation);
- Monthly, weekly, bi-weekly, or daily earnings;
- Commission-based sales; and
- Piece rates, or per unit of production, which are typical in farming and trucking.

These earnings structures represent a significant component of all paid employees in Canada. Therefore, converting to an hourly wage can be an oversimplification of a very complex payment structure which could misrepresent true compensation.

It should be noted that payment structures are not necessarily occupation-specific—they may also be employer-specific. For example, while one employer in the trucking industry may pay

per unit of distance travelled, another employer in the same industry may pay by trip, week, hour, etc.

Similarly, CBAs often present compensation information in the form of annual earnings on a moving scale, depending on the worker's level of experience. This can introduce significant complications to the conversion process, as one must first determine which increment within the range will represent the occupation, and then, how to convert to an hourly wage, without considering non-wage compensation.

Many occupations experience a strong level of unionization, particularly those that are associated with government services, such as police officers, firefighters, nurses and teachers. These CBAs are often available to the public, and provide accurate information on earnings, although the number of workers covered under any given agreement is often unknown. For occupations such as these, the conversion is simpler, as very few workers earn a salary that is not collectively bargained. When an industry contains an equal mix of unionized and non-unionized workers, the matter is more complicated.

Furthermore, some occupations are solely commission-based, i.e., the worker does not earn a wage unless they are able to sell product or service from which they keep a share of as their income. Insurance brokers, real estate agents, energy providers and investment brokers are examples of these professions. Similar to workers in industries with high degrees of unionization, not all of these occupations offer only commission. Some may pay a guaranteed income, in addition to commission-based, monetary incentives, while others may play a salary or wage with no commission option.

The most complicated form of compensation to convert to hourly earnings is the piece rate, or per unit of production structure. Under this system, for example, workers earn compensation based on how many kilometers they drive, how much produce they pick, and so on. Their earnings are not a function of how much they work; rather, they are a function of how efficient they are. The conversion method for piece rate occupations are particularly challenging because they are almost always derived from the number of hours worked, which was cross referenced with the census or LFS.

Rounding

As with the blending of data sources, there are also a variety of practices used by Service Canada regions for the rounding of the wage information. Rounding practices range from the rounding to nearest penny, up to the nearest $0.25. If wages are around the minimum wage of approximately $10/hour, this translates into an error of approximately 2.5%.

Part of the rationale for rounding has been to publish wage information that may better reflect a wage that employers actually offer. Following this logic, a wage estimate of $12.23/hour would be rounded to $12.25 because an employer may be less likely to pay a wage that is not rounded to the nearest $0.05, $0.10, etc. As well, Service Canada regions have identified rounding as a technique to account for increases in minimum wages.

Furthermore, this effect can be compounded if Analysts only round up to the nearest penny (or quarter), rather than the standard (and more appropriate) method of rounding. The standard method of rounding would involve rounding down to the nearest penny for any amount up to (but not including) the nearest half cent, and rounding up to the nearest penny for any amount up to and including the nearest half cent. For example, suppose hourly wages are calculated as $10.4873, then using standard rounding to the nearest penny, this would become $10.49. Now

suppose hourly wages are calculated as $10.0554, then using standard rounding to the nearest penny, this would become $10.06.

Statistics Canada does not round hourly wage data published from the LFS, census, the Survey of Income and Labour Dynamic (SLID), or data from the Survey of Employment, Payrolls and Hours. For annual wage estimate, the current central statistics practice is to round the estimates to the nearest $100. In order to facilitate data verification and comparability across data sources, a best practice would be to publish the wage estimate as they are reported.

Finally, rounding should not be used as a method of inflating out-dated wages (more appropriate cost of living adjustment techniques are explored later in this document). The implementation of an annual update cycle and increased monitoring for adjusting wages to meet the minimum wage for each province will address the issue of sub-minimum wage estimates being posted in the future.

It is generally difficult for Analysts to establish with precision the number of employees covered under a CBA. Unless Analysts have access to pay records of employees, it is virtually impossible to determine how many workers are paid (at each pay level) and derive a precise and accurate wage central tendency measure. It is advised that these data sources be used with caution and only to determine a range. CBAs should not be used to estimate a median.

Minimum Wages and Wage Ranges

Minimum Wages

In some instances, wage estimates can be lower than the provincial minimum wage. Because one cannot earn a wage that lies below the provincially legislated minimum wage[8], it is necessary to define the approach to adjusting wage estimates to at least match minimum wage.

Provincial minimum wages are updated on an annual or semi-annual basis across Canada. These increases come into effect on different dates, and increase by different amounts. A schedule of minimum wage increases and the amount they will increase by can be found online at HRSDC's Minimum Wage Database.

The most significant and frequent wage increases that are scheduled to take affect in the next two years is in BC, where the minimum wage will increase by $2.25 from $8.00/hr to $10.25/hr. Most recently, it increased to $8.75/hr on May 1st, 2011.

[8] There are some exceptions to this rule.

Two-Year Schedule of Minimum Wage Increases by Province

Province	2011	2012
British Columbia	01-May-11 $8.75 01-Nov-11 $9.50	01-May-12 $10.25
New Brunswick	01-Apr-11 $9.50 01-Sep-11 $10.00	
Northwest Territories	01-Apr-11 $10.00	
Nunavut	01-Jan-11 $11.00	
Prince Edward Island	01-Jun-11 $9.30 01-Oct-11 $9.60	01-Apr-12 $10.00
Quebec	01-May-11 $9.65	
Yukon	01-Apr-11 $9.00	

When calculating average or median wages, it was found that several Service Canada regions adjusted individual wage observations to the provincial minimum wage. Service Canada regions should remove data points that are submitted in error (for example, $2.00/hr was submitted on an application for EI instead of $20.00/hr); however, it is not the best practice to remove or adjust wages that are slightly below the minimum wage to compute the average or median. Doing so would leave the final estimate as biased upwards.

Consider the following example:

An Analyst is gathering data to calculate the average wage for NOC 6641- Food Counter Attendants, Kitchen Helpers, and Related Occupations for the Ottawa region. They are using EI administrative data and have 11 observations on hourly wages:

$9.00, $10.00, $11.00, $14.00, $14.10, $14.50, $14.90, $15.00, $15.25, $15.30, and $15.50
Knowing that the current minimum wage in Ontario is $10.25/hr, they omit the first two observations and get an average of:

$$\overline{X}_{adjusted} = \frac{11.00 + 14.00 + 14.10 + 14.50 + 14.90 + 15.00 + 15.25 + 15.30 + 15.50}{9} = \$14.39$$

The median wage=$14.90

This is significantly different from what the average and median would have been if the two observations had not been omitted:

$$\overline{X}_{unadjusted} = \frac{9.00 + 10.00 + 11.00 + 14.00 + 14.10 + 14.50 + 14.90 + 15.00 + 15.25 + 15.30 + 15.50}{11}$$

=$13.50

The median wage= $14.50

Thus, pre-adjusted or pre-omitted wage observations can bias estimates upwards. To avoid this, leaving the individual wages unadjusted and adjusting the final estimate to the provincial minimum wage (should it lie below) would be the best practice.

Wage Range

Currently, the wage range of posted on the WiC website includes the 10th decile and 90th decile. This is to account for a starting or entry-level wage (10th decile), and a wage that would be earned by a more experienced worker (90th decile). WWG consultations have determined that this range is appropriate and suits the needs of clients.

Updating Wages

Hourly wages are currently posted for public consumption on the WiC website.
These data are freely available to the public once they have been posted. The following directive will summarize the changes to the visual interface of WiC's wage page. Operational considerations surrounding format changes to the website are discussed in greater detail in Section 5.

Human Resources and Skills Development Canada
Deputy Minister

Ressources humaines et Développement des compétences Canada
Sous-ministre

2011 HR-NHQ 031802

MEMORANDUM TO THE MINISTER OF HRSD

FEB 2 7 2012

STANDARDIZING THE DETERMINATION OF WAGES ON WORKING IN CANADA

FOR INFORMATION

SUMMARY

- Over the last six months, Human Resources and Skills Development Canada's (HRSDC) Labour Market Information (LMI) group, in cooperation with regional LMI staff, has been developing a new methodology for determining prevailing wages, or the average wage that a Canadian in a given occupation and location would earn.
- In the past, regions had adopted a variety of different methods of calculating wages, leading to inconsistency and criticism from stakeholders that calculated averages bore little resemblance to actual wages.
- The new wage methodology relies heavily on wage data from Statistics Canada's (StatCan) monthly Labour Force Survey (LFS). Where sufficient data are available, a median wage will be identified for each occupation (by National Occupational Classification code) and for each StatCan region. These wages will be updated once each year and posted on the Working in Canada (WiC) website. Contrary to previous practice, the methodology used to calculate wages will be publicly available, boosting both the credibility of posted wages.
- To date, the Temporary Foreign Worker Program (TFWP) has relied on prevailing wages calculated by Service Canada to determine what employers must pay foreign workers in order to receive a positive labour market opinion (LMO). Regional inconsistencies in wage determination and unexplainable increases have made it difficult for employers to plan for salary costs, and many have noted that prevailing wages are often well above real wages that Canadian employees earn, creating tension in the workplace as temporary foreign workers (TFW) are often paid at a higher rate than their Canadian co-workers.
- As of April 1, 2012, wages will be posted on WIC website using the new methodology. For the purposes of the TFWP, as of that date employers will be asked to identify, as part of their LMO application, the wage they propose to pay the TFWs they wish to hire. They will be informed, however, that this wage must be equivalent to what they pay Canadian staff doing the same job, and reasonably close to the calculated median wage.

Canada

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BACKGROUND:

- Hourly wages are posted by occupation and economic region on the WiC website. A broad range of Canadians, including employers, unions, students and workers in transition, rely on these wages to inform a variety of decisions.

- These wages are also used by TFWP officers to assess employer wage offers when assessing LMOs. Employers using the TFWP have long disputed the validity of many posted wages as not reflective of wages paid to Canadians and not comparable across regions. In response, HRSDC conducted a review of how wages were calculated across all regions, and found a number of issues including: irregular wage updates, varying sample sizes, blending of data sources of unequal quality, unnecessary rounding of estimates and unrecognized techniques to remove extreme wage values that influenced the average and accuracy of the published information.

- A working group including labour market analysts from National Headquarters, Service Canada and StatCan was established. The working group was asked to develop national guidelines that would be statistically sound and that would account for data availability and unique labour market conditions at the regional level. A draft set of national guidelines was developed based on the principles of data accuracy, methodological transparency and consistency (Annex A).

- The new guidelines include some key departures from how they were determined in the past. The new methodology uses a decision tree approach, using the LFS as the primary source of data. The LFS is the most inclusive, timely and unbiased source of wage data source by occupational group. When the LFS data are not available, other sources will be considered hierarchically based on a number of data quality indicators. Other data sources include employment insurance data, provincial surveys, census, collective bargaining agreements, etc. As well, additional data sources will be used, with a consistent methodology, to capture local variations in wages to ensure that wages are as accurate as possible.

- The new methodology uses the median as the indicator of prevailing wage, which is less sensitive to extreme wage values and is regarded by statisticians as being more representative of the average worker's salary.

- The new methodology will include data quality improvements. For example, a minimum sample size will be required, wages will be updated on an annual basis, and recognized principles will be applied to data regarding rounding, reference periods, annual salaries and minimum wages.

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CURRENT STATUS:

- Testing of the new methodology is being finalized and results are encouraging. We are focusing on the occupations most frequently consulted on WiC and in demand through the TFWP.

- Work is under way with regional TFWP staff to make adjustments to the LMO assessment process using the new wage methodology. As of April 1, 2012, high skilled occupations will be eligible for a new attestation-based assessment process. This will include allowing employers to propose the wage they will pay foreign workers. Provided the employer can demonstrate that the wage they propose is equivalent to what Canadians doing the same job earn, and is within 15% below the calculated median wage, their LMO application through the accelerated process will be approved (assuming other attestation requirements are met).

NEXT STEPS:

- Wages based on the new methodology have been calculated and work is under way with regional LMI staff to validate them and make any adjustments necessary to accommodate local circumstances.

- A communication strategy for both internal and external purposes is being developed. New wages are planned to be released by April 1, 2012.

Deputy Minister

Executive Head: Frank Vermaeten
819-997-9236

☐ I would like an oral briefing

☐ I would like_____of my staff to be briefed

☐ No briefing required

Attachments: 2

Proposed Standardized Approach to Wage Verification
Labour Market Information Division
Service Canada

Overview

With the development of the new National Guidelines, the need arose to have a document that outlines a standardized approach to wage analysis and verification in order to ensure that the wages posted on the Working in Canada (WiC) website as well as provided to senior managers, employers, and the Temporary Foreign Worker Program (TFWP) are both of high quality and consistent across Canada.

The following are proposed steps that should be taken when determining a wage in a specific economic region (ER), at the provincial level, or nationally.

A. Using census data, verify the number of people employed in an occupation to measure potential coverage and need to provide provincial or national level data

The minimum threshold for EI data (or other administrative data) at the regional or provincial level (depending on the level of data dissemination) is of 30 observations for each occupation

B. Comparing wage value for an occupation by geography level and over time:

1. When deciding on a data source to use for a specific economic region, a benchmarking exercise against other data sources should be conducted with available data sources to evaluate variability of wages for an occupation. The new wage methodology relies primarily on the use of the LFS data at the 4 digit NOC at different geographic levels (Annex B). However alternate data sources could be used based on data availability and quality.

2. Compare the median wage to the average wage to establish dispersion of wage within an occupation.

3. Analyzing and verifying how wages for each occupation by Economic Region/Province change over time (using historical data), compare with other available data sources to evaluate variability of wages for an occupation. If for one data source the observed wage difference is significant larger than the percentage differences for all occupations for that data source, a more in depth analysis must be performed to provide a justification.

4. For EI data, compare the wages using 2 year averages with the most recent data to evaluate impact on average and median wages for each occupation at the 4 digit level.

The use of 2 year averages might improve the reliability of estimates for detailed occupations in small geographic areas.

5. Compare wages for an occupation in a given economic region with the wage for this occupation at the provincial level – evaluate the difference in wages if two sources of data are used at the provincial and sub provincial levels. The acceptable difference level should be less than 10% and a justification must be provided otherwise. Please note that a provincial wage must be determined..

6. Comparing the wages with neighbouring economic regions.

C. Compare median wage value for an occupation (4 digit NOC Unit groups) with median wage for its major occupation group (3 digit NOC):

7. Compare wages at the 4 digit and 3 digit level by occupations within a data source, and compare with other available data sources to evaluate variability of wages for an occupation. If the number of observations is insufficient at the unit group level, then the wage for the intermediate occupational group or the data for a higher geographical area should be used

D. Verify for high percentage of self-employed and unionized workers

8. For occupations where there is a high percentage of self employed, the LFS and EI data may not be the most accurate source of wage information. Other data sources should be considered (e.g. provincial surveys, Census, etc.). Need to determine what thresholds should be used in determining occupations that have a high proportion of self-employed and therefore which data source should be used.

9. For occupations where there is a high percentage of unionized workers, collective Bargaining agreements may represent a more reliable source of data than EI or the LFS. In this case, the wage gap between the lowest and highest levels of pay will be published. Need to determine what thresholds should be used in determining occupations that have a high proportion of unionized workers and after which data source should be used.

E. Annual, high and low wage values:

10. Assessing which occupations at the 4 digit level have wages that are below minimum wages (Annex A). Occupations for which wages could be below minimum wage in a province are the following:

NOC Code	Occupations
6232	Real Estate Brokers
1113	Securities Sales Persons
6231	Insurance Sales Persons
5135	Extras (video or film production)
8431	Farm employees (fruit/vegetable pickers)
	Students
	Counsellors/Instructors in non-profit camp

11. Ensure there are no high skilled occupations with wages below the minimum wage rate. High skilled occupations, according to the TFWP, are those classified under the 16 major groups (NOC 2 level) that include: 00, 11, 12, 21, 22, 31, 32, 41, 42, 51, 52, 62, 72, 73, 82 and 92. Are occupations in this group at the 4 digit level likely to earn minimum wages?

12. Similarly, assess which occupations at the 4 digit level with wages above 75$/hr are high skilled occupations. If they are low skilled occupations then the wages should be verified ensuring that high wages is not due to data conversion errors.

13. For the following occupation the dissemination of annual median wage should be considered:

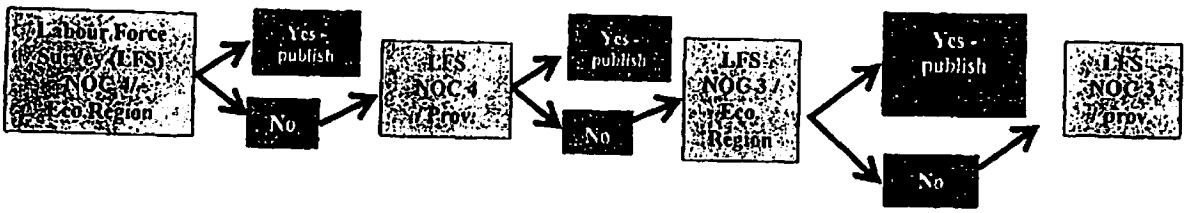
    NOC 2224- Conservation and Fishery Officers
    NOC 3112- General Practitioners and Family Physicians
    NOC 4131- College and Other Vocational Instructors
    NOC 4141- Secondary School Teachers
    NOC 4142- Elementary School and Kindergarten Teachers
    NOC 6462- Correctional Service Officers

Appendix A
Minimum Wage by Province/Territory

Province/Territory	Minimum Wage
Newfoundland and Labrador	$10.00 as of July 1, 2010
Prince Edward Island	$9.60 as of October 1, 2011 Expected to increase April 1, 2012 to $10.00
Nova Scotia	$10.00 as of October 1, 2011
New Brunswick	$9.50 as of April 1, 2011 Expected to increase April 1, 2012 to $10.00
Quebec	$9.65 as of may 1, 2011
Ontario	$10.25 as of March 31, 2010
Manitoba	$10.00 as of October 1, 2011
Saskatchewan	$9.50 as of September 1, 2011
Alberta	$9.40 as of September 1, 2011
British Columbia	$9.50 as of November 1, 2011 Expected to increase May 1, 2012 to $10.25
Yukon	$9.00 as of April 1, 2011
Northwest territories	$10.00 as of April 1, 2011
Nunavut	$11.00 as of January 1. 2011

Appendix B – Decision Tree

The following decision tree (based on consultations with Service Canada and Statistics Canada), outlines the approach for determining a single data source for calculating wages.



Note: The LFS is the most inclusive, timely and unbiased source of wage data source by occupational group. When the LFS data are not available other sources will be considered hierarchically based on a number of data quality indicators. Other data sources include employment insurance data, provincial surveys, census, collective bargaining agreements, etc.

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Cc: Camarda, Frank [ON]; Varty, David J [ON]; LeBreton, Samuel J [ATL]; Tieleman, Nathalie [QC]; Bélisle, Sylvain [QC]; Park, Danny [ATL]; McIntyre, Patrick B [W-T]; Mattioli, Robert [W-T]; Wright, Robert C [W-T]; Woods, Grant [W-T]; Raisbeck, Rob [W-T]; Benaschak, Bart [W-T]; McDuff, Patrick [ON]; Beeraj, Christine [NC]; Patel, Sunita [NC]; Kireti, Martin [NC]; Boucher, Christian P. [NC]
Subject: Wage determination Access tool-Outil de détermination des salaires en Access

English follows

Bonjour,

Afin de faciliter l'analyse initiale des salaires nous avons mis à jour l'outil Access pour la détermination des salaires présenté en novembre dernier au Groupe de travail sur les salaires. L'outil se trouve présentement sur le répertoire partagé (\\nhfp304.hrdc-drhc.net\Common-Commun5\SEB-DGCE\TFW-TET\LMI-IMT\Limited_Shared\RLMIN-RRIMT\National\Wage). Les instructions suivantes vous expliqueront comment l'utiliser.

Cet outil doit être utilisé avec les fichiers Excel distribués précédemment à partir desquels vous pourrez facilement comparer les données disponibles des différentes sources et faire des opérations mathématiques pour mesurer la variation des estimés. Vous noterez que les données de de Job Bank pour 2010 ont été remplacées par les données de 2011.

Dans l'outil Access, la table "Tool_NHQ Wage Report" est mise à jour après l'exécution de chacune des requêtes. Cette table se trouve dans la section Tables de l'outil.

Afin de mettre à jour cette table, les requêtes doivent être exécutées en ordre séquentielle. Toutes les requêtes se trouvent dans la section Requêtes de l'outil Access. La requête Step 00 - Clear Table réinitialise le salaire moyen et médian ainsi que les 10e et 90e percentiles à 0. La première requête remplacera le plus de 0 possibles avec des données valides provenant de la source identifiée (p. ex. données de l'EPA à 4 chiffres pour la région économique). Veuillez noter que lorsqu'aucune donnée valide n'est disponible à partir de cette source, les cellules respectives du tableau resteront à 0. Chaque requête exécutée par la suite tentera de remplacer la plus de 0 possibles avec des données valides de chacune des sources de données. L'exemple suivant démontre comment vous pouvez commencer à mettre à jour les données, en débutant par les données de l'EPA, tel que précisé dans l'arbre de décision de la méthodologie sur les salaires. Veuillez noter que ces étapes ont déjà été exécutées pour vous. Par contre, vous pouvez recommencer du début si vous le désirez.

Afin d'exécuter chaque requête, double cliquez sur le nom de la requête et indiquer "Oui" lorsque demandé. Access procèdera à l'exécution de la requête, après quoi il vous indiquera le nombre de dossiers qui seront mis à jour. Choisissez "Oui" à nouveau. La table "Tool_NHQ Wage Report" sera maintenant mise à jour avec les données de cette source (ou rénitialisée si Step 00 a été exécutée). Ensuite, double cliquez sur la prochaine requête que vous voulez exécuter et répétez les étapes mentionnées ci-haut. Si jamais les requêtes sont exécutées dans le mauvais ordre, vous devrez réinitialiser les données en exécutant la requête Étape (Step) 00 et ensuite exécuter chacune des requêtes à nouveau dans le bon ordre.

Exemple:

Étape (step) 00 - Clear Table (39 520 dossiers sont réinitialisés à 0)

Étape 01 - EPA 2010-11 4-chiffres RE (2 099 dossiers sont mis à jour)

Étape 02 - EPA 2010-11 4-chiffres Provincial (14 622 dossiers sont mis à jour)

Étape 03 - EPA 2010-11 3-chiffres RE (3 285 dossiers sont mis à jour)

Étape 04 - EPA 2010-11 3-chiffres Provincial (13 794 dossiers sont mis à jour)

Les analystes peuvent choisir l'ordre dans lequelle ils exécuteront les requêtes, tenant compte de l'esprit de la méthodologie sur les salaires. L'ordre dans lequelle les requêtes sont exécutées devrait être documenté comme référence.

Veuillez noter qu'en plus des salaires moyens, médians, 10e et 90e percentile, la table "Tool_NHQ Wage Report" contient les champs suivants :

- Source : La source de données qui a été utilisée pour mettre à jour les salaires pour cette profession
- Old mean, Old 10th, Old 90th, Old reference : Données apparaissant présentement dans Travailler au Canada

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To facilitate the initial analysis of wages we have updated the Access tool for wage determination presented last November to the Wage Working Group. It is currently available on the share repository (\\nhfp304.hrdc-drhc.net\Common-Commun5\SEB-DGCE\TFW-TET\LMI-IMT\Limited_Shared\RLMIN-RRIMT\National\Wage). The following instructions will explain to you how it works. This tool should be used with the Excel data files distributed earlier from which you can easily compare the data available from different sources and that you can use to perform calculations to measure variations between data estimates. Please note that the 2010 Job Bank data have been updated with the 2011 data.

In the Access tool, the table "Tool_NHQ Wage Report" is updated as queries are run. This table can be found in the Tables section of the Access tool.

To update this table, queries must be run in sequential order. All queries can be found in the Queries section of the Access tool. Query Step 00 - Clear Table will reset the mean and median wages as well as the 10th and 90th percentiles to zero. The first query will replace as many 0s as possible with valid wage data from the identified source (e.g. LFS data at 4-digits for the ER). Please note that where valid wage data are not available from this source cells will remain at 0. Each subsequent query run will attempt to replace as many outstanding 0s as possible with valid wage data from the next source. The following example illustrates how you can begin to update information starting with LFS data as per the decision tree in the wage methodology. Please note that these steps have already been done. However, you may start from the beginning if you like.

To run each query, double click on the appropriate query name and say Yes when prompted. Access will then run the querry and let you know how many records are about to be updated. Select Yes again. Table "Tool_NHQ Wage Report" has now been updated with values from this data source (or reset if running Step 00). Next, double click on the next query that you want to run and repeat the steps above. Should queries be run in the incorrect sequence the table must be reset with Step 00 and all the queries must be run again in the correct order.

Example:

Step 00 - Clear Table (39,520 records reset to zero)

Step 01 - LFS 2010-11 4-digit ER (2,099 records are updated)

Step 02 - LFS 2010-11 4-digit Provincial (14,622 records are updated)

Step 03 - LFS 2010-11 3-digit ER (3,285 records are updated)

Step 04 - LFS 2010-11 3-digit Provincial (13,794 records are updated)

Analysts can choose the order in which they run the queries, respecting the spirit of the wage methdology. The order in which the queries are run should be documented for future reference.

Please note that in addition to mean, median, 10th and 90th percentiles, table "Tool_NHQ Wage Report" also contains the following fields

- Source : This is the source of data used to update the wages for this occupation
- Old mean, Old 10th, Old 90th, Old reference : Data currently displayed on Working in Canada

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Cc: Kireti, Martin [NC]; Patel, Sunita [NC]; Brisson, Paul [NC]; Beeraj, Christine [NC]; Bombardier, Diane I [NC]
Subject: Nouvelle information pour l'analyse des salaires/New information for wage analysis

English follows

Bonjour,

Tel que mentionné lors de nos appels conférence avec vous cette semaine, certains ajustements ont été faits à l'outil Access et aux chiffriers Excel (\\Hrdc-drhc.net\nc_common-commun$\SEB-DGCE\TFW-TET\LMI-IMT\Limited_Shared\RLMIN-RRIMT\National\Wage) afin de vous assister dans la détermination et la vérification des salaires,

Veuillez noter que nous avons ajouté les données suivantes :

- **Enquête sur la population active :** Nombre pondéré d'employés (000s) pour 6 ans aux 3 et 4 chiffres de la CNP pour les régions économiques et pour chaque province;
- **Assurance emploi :** Nombre d'observations aux 3 et 4 chiffres de la CNP pour les régions économiques et pour chaque province;
- **Recensement 2006:** Nombre pondéré d'employés aux 3 et 4 chiffres de la CNP pour les régions économiques et pour chaque province;
- **Guichet-emploi 2011:** Nombre d'observations aux 4 chiffres de la CNP pour les régions économiques et pour chaque province;
- **Enquête provinciale sur les salaires (Quebec) :** Salaires aux 25e et 75e percentile aux 3 et 4 chiffres de la CNP ;
- **Enquête provinciale sur les salaires (Saskatchewan):** Nombre d'employés;
- **Salaires présentement affichés sur TAC :** Moyenne courante, salaire minimum et maximum ainsi que l'année de référence pour les fins de comparaison.

De plus, nous avons ajouté les éléments suivants :

- Un indicateur pour les codes de la CNP où les salaires annuels pourraient être affichés (à partir de la liste partagée dans le document sur la stratégie de vérification - pourrait être ajustée suite à l'apport régional)
- Des colonnes pour indiquer les salaires minimums et maximums proposés
- Une ligne pour les salaires au niveau provincial

N'hésitez pas à nous faire part de toute information manquante, de vos commentaires ou de vos questions.

As mentioned in our conference calls with you this week, some changes were made to the Access tool and to the Excel spreadsheets (\\Hrdc-drhc.net\nc_common-commun$\SEB-DGCE\TFW-TET\LMI-IMT\Limited_Shared\RLMIN-RRIMT\National\Wage) to help in the wage determination and verification as per regional requests

Please note that we have added the following data:

- **Labour Force Survey:** Weighted number of employees (000s) for 6 years at 3- and 4-digit NOC codes for both Economic Regions and Provincial levels of geography
- **Employment Insurance:** Number of observations for 3- and 4-digit NOC codes for both Economic Regions and Provincial levels of geography
- **Census 2006:** Weighted number of employees for 3- and 4-digit NOC codes for both Economic Regions and Provincial levels of geography
- **Job Bank 2011:** Number of observations for 4-digit NOC codes for both Economic Regions and Provincial levels of geography
- **Quebec Provincial Wage Survey:** Wages at the 25th and 75th percentile for 3- and 4-digit NOC codes
- **Saskatchewan Provincial Wage Survey:** Number of employees
- **Wages currently published in WIC:** current average, low, high, and reference year for comparison purposes

We have also added the following elements:

- A flag for those NOCs where an annual salary can be posted (from the wage verification strategy document - may be updated based on regional input)
- Columns for proposed low and high wages
- A row for the wages at the provincial level

Please do not hesitate to let us know if we are missing any information, or if you have any comments or questions.

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To: Patel, Sunita [NC]; Bombardier, Diane I [NC]; Kireti, Martin [NC]
Subject: Wage methodology summary

Could you quickly review the attached document before I circulated it to WiC and the Communication team for their comments? Merci!

New Wage Methodology-Inf...

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Human Resource and Skills Development Canada
Implementation of 2012 Wage Methodology on Working in Canada
Information to data users
April, 2012

Wage are posted in the Working in Canada website by occupation and geographic region to assist individuals and employers in making informed labour market decisions.

In order to response to an increasing need for accurate and timely wage data information, Human Resources and Skills Development Canada (HRSDC) in consultation with Service Canada and Statistics Canada, has developed and implemented a new standardized approach for calculating wages by occupational group. Our main objective is to provide wages using a consistent approach using information that is statistically sound, comparable and timely across the different geographic regions in Canada.

The main principles of the new wage methodology:

- Where sufficient data are available for a particular occupation, the key primary source on wage data is Statistics Canada's Labour Force Survey (LFS). The LFS is view as an inclusive, timely and unbiased source of wage data source by occupational group. When the LFS data are not available, other sources (such as employment insurance data, provincial wage surveys, census, and collective bargaining agreements can be used to determine wages based on a number of data quality measures (accuracy, timeliness, relevance,)

- The new methodology uses the median as the indicator of prevailing wage for each occupation. The median wage is preferred to the average wages previously disseminated because it is less sensitive to extreme wage values and is regarded by statisticians as being more representative of the average worker's salary.

- For most occupations, wages will be reported as median hourly earnings and will also include a minimum starting hourly wage and maximum hourly wage for that occupation. In some cases annual wage information would be posted when this remuneration mode is more common within a given an occupation group.

- The new methodology also included other data quality improvements. For examples, wages will be updated on an annual basis, and recognized principles will be applied to data regarding rounding, reference periods, annual salaries and data adjustment reflecting minimum wages.

Please note that lack of reliable data and/or confidentiality rules would prevent wage data being published for an occupation in geographic areas where the number of observations is small, for example some local areas or in the Territories. Where necessary, data are suppressed to prevent direct or residual disclosure of identifiable information or to ensure the wages posted are reliable. In these cases, please refer to the wage posted at the provincial or the national wage level information also included in WiC.

As of spring 2012, wages will be updated once each year and posted on the Working in Canada (WiC) website by HRSDC and Service Canada.

Any Further question can be addressed to XXXX