

# The 2014 Market Analysis Process

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## Introduction

This biennium, the State Human Resources collected and analyzed salary survey data to produce two sets of market rates for the 2014 market analysis. Both sets of market rates are now required by Section 2-18-301(1) (a) and (b), and (6), MCA. This document describes the two methods used to establish these two sets of market rates.

The method for the first set of market rates is new. This statutorily required analysis is based on information from the states of Idaho, North Dakota, South Dakota, and Wyoming, from National Compensation Association of State Governments (NCASG) salary survey. In addition, the new statute requires the department "recommend competitive pay zones" based on this method.

The second set of market rates is based on the method established by the Workforce Planning Advisory Council, and has one minor process change. This second process is used to fill in the gaps in data.

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The two sets of market rates, as well as the competitive pay zones, are located in a separate document.

## Challenges

As we conducted this market analysis process, we encountered a number of challenges when applying the new statutory requirements. *We recommend thoroughly reviewing the methodology and statutory intent\* for the market rates, as well as the challenges associated with the two sets of data, before using the new markets.* Some of the challenges included:

- Only 177 of 755 job codes had all four of the data points from the 2013 NCASG salary survey, as required in statute. This equaled only 30.62% of all job available codes
- 437 of 755 job codes, or 57.90% of all remaining job codes had zero data points, or no salary information, available from the 2013 NCASG salary survey.
- Statute requires the department recommend competitive pay zones with municipal and state government labor markets from the NCASG. However, NCASG only contains state government data. The department has been unable to identify a salary survey source that collects salary data specifically for municipal governments.
- 141 of 755 job codes, or 18.70%, had partial NCASG data available from some of the required four states listed in statute. These job codes did not have all four of the required data points, and NCASG information was not considered valid for use in the market analysis process. For example, validity problems included the following:
  - Montana state government has 45 Correctional Treatment specialists in bands three, four, and five. Only one data point is available for that occupation, and that data point consists of one person's salary in South Dakota. That means our 45 employees in three different bands would have had market data for all salaries based on one individual in South Dakota.
  - The surrounding states only include salary information in the NCASG salary survey for their employees when those employees are in the state's major classified plan. So, although all four states employ dentists, only South Dakota has dentists in their classified plan, and South Dakota only reports salary data for two dentists in the NCASG salary survey.
  - Of the 141 job codes with partial NCASG data, serious statistical flaws occur with so few data points. With no additional mechanism available to gather more data points, the data will have a very high probability of error.
- As the division is only allowed to use information from the four states in the NCASG salary survey when recommending competitive pay zones, the market data may not capture information for a relevant labor market. For example, all four of the surrounding state governments employ administrative assistants. However, Montana state government will recruit from the local labor market for administrative assistants, not from employers in the four surrounding states.
- The NCASG survey benchmarks are predominantly journey level professional positions. This means the NCASG survey does not typically capture information for lower level occupations or middle management occupations. They do not survey lower occupations because state governments normally do not recruit outside their state for lower skill level occupations. They do not gather salary data for middle management jobs, as agencies are organized differently

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from state to state, making this work difficult to match accurately. This means many of the job codes for Montana state government do not have a match from the NCASG salary survey. Only 177 of 755 job codes had all four of the data points from the 2013 NCASG salary survey required by statute, which is 30.62% of all available job codes.

Agencies should carefully consider their mission, goals, and objectives when using or applying the new market rates.

## Examples

To describe the process for determining each set of market rates, we'll use the example for the Accountant. The following is an example of the Accountant market information, found in the 2014 Market Rates Spreadsheet:

**Figure 1 – Spreadsheet Excerpt**

Code Key	1	Standard Method				
	2	NCASG Survey for 4 States - Averages				
	3	Less than 4 NCASG Data Points Available				
	4	Slope Adjustment for Occupations with >30% slope below the anchor, and >1 level below anchor				
	5	Tier 2 Rates (No NCASG Data Points Available)				
Job Code	Band	Job Code Title	NCASG Market Midpoint	**NCASG 4 States Recommended Competitive Pay Zone - Minimum	**NCASG 4 States Recommended Competitive Pay Zone - Maximum	Code Key
132115	5	Accountant	\$ 37,069	\$ 29,655	\$ 44,482	2
132116	6	Accountant	\$ 46,942	\$ 37,554	\$ 56,330	2
132117	7	Accountant	\$ 63,855	\$ 49,871	\$ 77,839	2

The code key identifies which elements comprise the information for each job code.

## The NCASG Method for the Market Analysis

Section 2-18-301 (1) (a), MCA, outlines the requirements for the first method, using "municipal and state government salary data from the NCASG salary survey for the states of Idaho, North Dakota, South Dakota, and Wyoming" to establish one of the sets of market rates. Unfortunately, the statutorily required survey does not gather or publish data from municipal governments; so, only state government data is available from this salary survey source.

The NCASG provides compensation information from 25 state governments who exchange salary information annually. State government occupations and salaries are considered reliable job matches for market comparisons, when available.

## Anchoring the Market Rate

The market rate is attached to a specific pay band or "anchor level" in an occupation. To choose a broadband anchor level, job analysts first compare the complexity of work in the occupational standard to the factor levels defined under Montana's broadband classification policy and system. The

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broadband job standard from the Standard Occupational Classification system (found on O\*Net) for an Accountant includes information about the "job zone", or education and experience levels.

**Accountant:** <http://www.onetonline.org/link/summary/13-2011.01>

13-2011.01 – Accountants: Analyze financial information and prepare financial reports to determine or maintain record of assets, liabilities, profit and loss, tax liability, or other financial activities within an organization.

In this example, considering all available information for this occupation from O\*Net, the complexity of the work is classified as factor level six.

We then confirm the factor level for the work by checking the education level in the O\*Net standard. Information from the federal Bureau of Labor Statistics indicates that the job zone rating for the Accountant occupational category is Job Zone Four. This job zone has similar education requirements to the broadband classification level six, and confirms the classification factor level.

Next, we compare the NCASG survey description for Accountants to the occupational standard for Accountants. The NCASG survey description must match the O\*Net standard by at least 70%.

In our example, the NCASG description follows:

"Accountant - Journey-level professional accounting work requiring the application of accounting principles, theories, and concepts to a variety of financial transactions and procedures in an established system of accounts. Typically involves maintaining financial records, checking for accuracy of accounts or other financial records, gathering data prior to budget preparation, and composing reports."

The NCASG description matches the O\*Net standard, almost exactly, so is considered a good match.

### **Market Midpoints – NCASG Method**

After confirming the NCASG accountant information matches the standard, we average the four NCASG data points for Idaho, North Dakota, South Dakota and Wyoming to establish the market midpoint. The average of these four data points is \$46,942. These four data points are:

- NCASG Idaho           \$42,219
- NCASG North Dakota   \$50,810
- NCASG South Dakota   \$47,705
- NCASG Wyoming       \$47,034

We then extend the market rate for this occupation to the midpoint of other levels based on a variable slope between levels. Market rates classified at a lower pay band are set using a slope based on the Montana OES percent difference between the 25th and 50th percentile. For occupations with greater than two levels below the anchor, and slopes greater than 30%, we capped the slope at 30%. Market rates for the same occupation classified at a higher pay band are set using a slope based on the Montana OES percent difference between the 50th and 75th percentile

In our Accountant example, the market rate, anchored at level 6, is \$46,942 for the midpoint. We then use a 21.03 percent (the percent difference between the 25th and 50th percentiles in the OES data)

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slope to extend the market rate to the level below the anchor, and a 36.03 percent (the percent difference between the 50th and 75th percentile in the OES data) slope to extend the market rate to the level above the anchor.

**Figure 2 - Accountant Market Rates**

Job Code	Band	Job Code Title	NCASG Market Midpoint
132115	5	Accountant	\$ 37,069
132116	6	Accountant	\$ 46,942
132117	7	Accountant	\$ 63,855

### Competitive Pay Zones

The state's new statutes require the department establish the recommended competitive pay zone for each band level based on information from the NCASG for the states of Idaho, North Dakota, South Dakota and Wyoming. This competitive pay zone may be one of many factors considered when setting pay. Pay adjustments depend on state policy, agency pay rules, the agency's ability to pay, and collective bargaining (if applicable). Montana state government does not guarantee employees are paid within their competitive pay zone.

We provide different competitive zones for each pay band level. Best practice shows that the work for increasingly higher band levels requires a progressively higher learning curve. In other words, it takes less time to become fully competent for a lower band level than a higher band level.

The width of the zone, sometimes referred to as "range spread," is the distance from the lowest to highest salary in the zone. Subtracting the lowest salary from the highest salary and dividing the result by the lowest salary calculates the percentage of the zone width. The following is the range spread for each competitive pay zone in the nine pay bands:

**Figure 3 - Competitive Pay Zone Spreads**

Band	Band Spread	Spread on Either Side of Midpoint
01	30%	13.0%
02	40%	16.7%
03	40%	16.7%
04	40%	16.7%
05	50%	20.0%
06	50%	20.0%
07	55%	21.9%
08	60%	23.1%
09	60%	23.1%

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Using this process, the NCASG recommended competitive pay zones for Accountants are:

**Figure 4 – Accountant Competitive Pay Zones**

Job Code	Band	Job Code Title	NCASG Market Midpoint	**NCASG 4 States Recommended Competitive Pay Zone - Minimum	**NCASG 4 States Recommended Competitive Pay Zone - Maximum	Code Key
132115	5	Accountant	\$ 37,069	\$ 29,655	\$ 44,482	2
132116	6	Accountant	\$ 46,942	\$ 37,554	\$ 56,330	2
132117	7	Accountant	\$ 63,855	\$ 49,871	\$ 77,839	2

Whenever possible, we calculated our competitive pay zones based on the average of the four NCASG data points. However, as we completed the process for the NCASG method, required by statute, we found we had many gaps in our information. As no data was available for 437 (or 57.90%) of the 755 job codes, and only 30.62% of our job codes had all four required data points, we turned to the data from our "Two-tiered Market Method", described below, to complete the rest of the required market rates and competitive pay zones for the NCASG salary survey process.

To distinguish between the NCASG rates and the rates from our Two-Tiered market method, we've included a code in the column labeled "Code Key". In our Accountant example, we used the NCASG salary survey process for the recommended competitive pay zones, so the code is "2".

## Two-Tiered Market Method

We based our biennial market analyses, also required by statute, 2-18-301 (1)(b), MCA, on our previously established market method, recommended by the Workforce Planning Advisory Council in 2012. For our regular biennial salary survey process, Montana considers salary information from Montana and the surrounding states of Idaho, North Dakota, South Dakota and Wyoming. These states were identified as the relevant labor market for many occupations because of their proximity, comparable demographics, and primarily rural economies.

For some occupations, we need to recruit from a different market area, or gather data not available from the standard survey sources. To meet these needs, we use a two-tiered survey approach to determine market rates.

- A. **Tier 1 (standard market analysis):** We use the median rate of ten or more data points from the three salary survey sources for Montana's regional labor market (Montana, North Dakota, South Dakota, Wyoming and Idaho).
- B. **Tier 2 (customized market analysis):** At the request and consensus of employing state agencies, we customize our survey approach for hard-to-fill job occupations, or for jobs that do not have tier one data.

## Salary Sources

We gather and analyze information from three different salary survey sources, in order to consider all aspects of the external competitive labor market. These three sources allow for a wider range of

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occupational matches, consider data from all industries that are external competitors, provide statistical reliability, and achieve adequate sample size. We use median salary survey data from:

- National Compensation Association of State Governments (NCASG)
- Occupational Employment Statistics (OES)
- IBM Kenexa CompAnalyst

The NCASG salary survey source is described above. See the "NCASG Method for the Market Analysis" for more information about this salary survey source.

The Occupational Employment Statistics (OES) program, conducted by the Bureau of Labor Statistics, U.S. Dept. of Labor, produces employment and wage estimates for over 700 occupations. These estimates are available for the nation, for individual states, for specific industries, and for some selected metropolitan areas. The OES survey has the largest number of responding private and public sector employers of all of our salary survey responses. The survey also matches the largest number of state government jobs. This program undergoes extensive data validation testing, and is generally considered very reliable. Additionally, Occupations within OES are classified by the SOC/O\*Net classification system. State of Montana occupations also use this occupational classification system. This creates a high level of confidence in correct job matching. Most OES data used by Montana state government is available on the OES web site at: <http://www.onetonline.org/>

IBM Kenexa centralizes third party surveys in an online database that allows us to search over 3,200 benchmark jobs and job descriptions by job family or job level. These represent many of the largest proprietary surveys available covering a scope of 21 industries and a variety of company sizes. Data from Kenexa is updated monthly. For more information about Kenexa, go to <http://www.kenexa.com/AboutKenexa>.

## **Aging**

Not all of the survey sources cover the same time period. To bring all of the sources to the same time frame, data is aged using the most current employment cost index provided by the U.S. Department of Labor. The median base pay rate from OES and CSCA were brought to March of 2014. Kenexa is updated monthly and did not need to be aged.

## **Market Midpoint – Biennial Salary Survey Method**

To calculate the market rate for the regular biennial salary survey method, we first determine the anchor level, using the same method discussed above for the NCASG method. We then determine the median of our 15 available data points. Medians are considered more statistically valid than averages when considering more data points. The following tables show all median data for our accountant example from the four surrounding states and Montana:

**Figure 5 – Two-Tiered Salary Data – Accountant**

Accountant Salary Data							
MT Job Code	Kenexa Idaho	Kenexa Montana	Kenexa North Dakota	Kenexa South Dakota	Kenexa Wyoming	OES Idaho	OES Montana
132116	53100	50200	52800	47200	51100	63579	62404

Accountant Salary Data (cont.)									
OES North Dakota	OES South Dakota	OES Wyoming	NCASG Idaho	NCASG Montana	NCASG North Dakota	NCASG South Dakota	NCASG Wyoming	Median	Data Points
56771	59806	61698	42219	48014	50810	47705	47034	51,100	15

We then calculate the slope for the midpoints of the band levels above and below the anchor level, using the same process found in the NCASG method. The difference between this method and the NCASG method are shown here.

**Figure 6**

Code Key	1	Standard Method		
	2	NCASG Survey data available for 4 States - Reference separate s		
	3	Less than 4 NCASG Data Points Available		
	4	Slope Adjustment for Occupations with >30% slope below the a		
	5	Tier 2 Rates		
Job Code	Band	Job Code Title	Market Midpoint Using Standard Method	Code Key
132115	5	Accountant	\$ 40,352	2
132116	6	Accountant	\$ 51,100	2
132117	7	Accountant	\$ 69,511	2

Note the "2", indicating that NCASG survey data is available for the 4 required states. You would need to reference a separate spreadsheet to access the recommended competitive pay zones, which are based on the NCASG data points.

Because the NCASG survey provides market data for so few occupations, for your convenience, we also provided competitive pay zones for all occupations based on the two-tiered survey, using the same spreads for calculating the ranges in the Competitive Pay Zones section. Refer to the Code Key column in the 2014 Spreadsheet for more information about an occupation's market midpoints and competitive pay zones. Carefully consider all aspects of agency pay rules and internal equity before applying either set of pay rates.

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## Finding a Market Rate and Competitive Pay Zones

Because the NCASG survey provides market data for so few occupations, for your convenience, we have also provided competitive pay zones for all occupations based on the two-tiered survey process.

Agencies are urged to review the 2014 Market Analysis Process document before applying either set of market rates. Agencies must set pay according to their pay rules and collective bargaining agreements.

To see an occupation's market midpoints, click on the drop-down filter from one of the two spreadsheets, and choose one or more occupations.

Figure 7

Code Key						
1	Standard Method					
2	NCASG Survey data available for 4 States - Reference separate spreadsheet					
3	Less than 4 NCASG Data Points Available					
4	Slope Adjustment for Occupations with >30% slope below the anchor, and >1 level below a					
5	Tier 2 Rates					

  

Job Code	Band	Job Code Title	Market Midpoint Using Standard Method	Code Key	Minimum Pay Range - Biennial Process	Maximum Pay Range - Biennial Process
132115	5	Accountant	\$ 40,352	2	\$ 32,282	\$ 48,422
132116	6	Accountant	\$ 51,100	2	\$ 40,880	\$ 61,320
132117	7	Accountant	\$ 69,511	2	\$ 54,288	\$ 84,734
151215	5	Computer Programmer	\$ 49,120	1	\$ 39,296	\$ 58,944
151216	6	Computer Programmer	\$ 63,650	1	\$ 50,920	\$ 76,380
151217	7	Computer Programmer	\$ 83,396	1	\$ 65,132	\$ 101,659
436113	3	Administrative Assistant	\$ 34,854	1	\$ 29,034	\$ 40,675
436114	4	Administrative Assistant	\$ 42,202	1	\$ 35,154	\$ 49,250

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