JUNE 2016

Montana Economy at a Glance

EMPLOYMENT BY INDUSTRY

In Thousands - Seasonally Adjusted

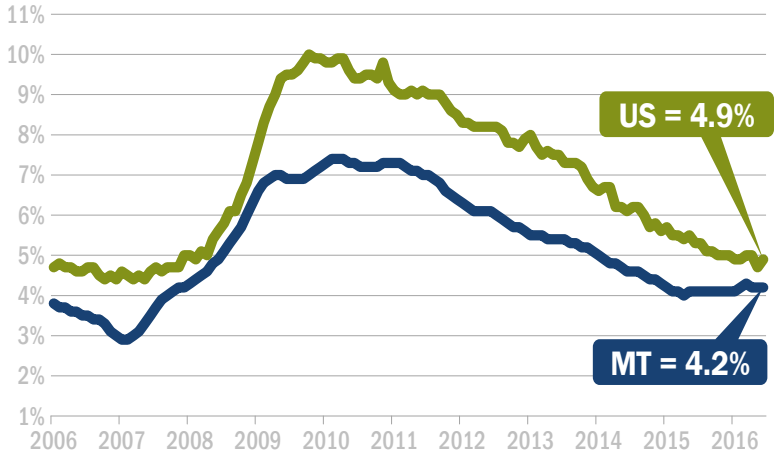
Montana's total non-agricultural payroll employment increased by 200 jobs over the month, for a total of 464,000.

Industry	June 2016 (prelim)	May 2016	Net Change	% Change
Total Non-Ag Employment	464.0	463.8	0.2	0.0%
Natural Resources & Mining	7.0	7.1	-0.1	-1.4%
Construction	25.4	26	-0.6	-2.3%
Manufacturing	19.6	19.6	0.0	0.0%
Trade, Transportation, & Utilities	94.8	95.2	-0.4	-0.4%
Information	6.2	6.3	-0.1	-1.6%
Financial Activities	24.3	24.1	0.2	0.8%
Professional & Business Services	41.3	40.8	0.5	1.2%
Education & Health Services	75.0	74.8	0.2	0.3%
Leisure & Hospitality	62.5	61.8	0.7	1.1%
Other Services	17.8	17.6	0.2	1.1%
Total Government	90.1	90.5	-0.4	-0.4%

Excludes self-employed and agricultural employment

UNEMPLOYMENT RATE

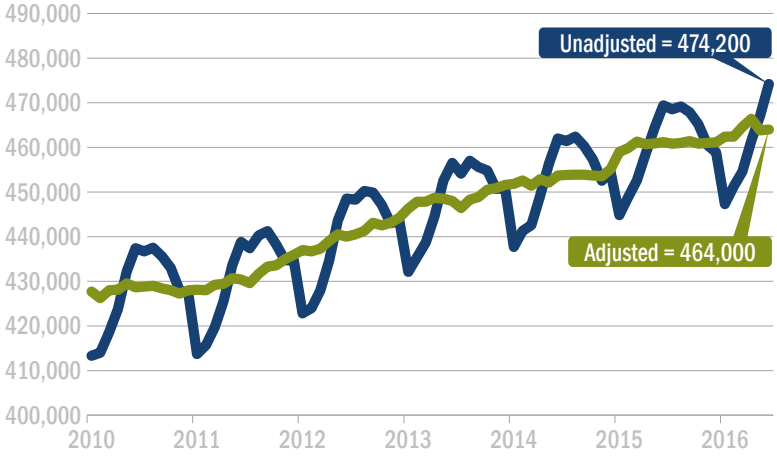
Seasonally Adjusted



Montana's unemployment rate for June 2016 held steady, remaining at 4.2% from the previous month. The national unemployment rate rose to 4.9% from May's rate of 4.7%.

NON-AGRICULTURAL EMPLOYMENT

In Thousands



Montana Department of LABOR & INDUSTRY

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UNDERSTANDING
THE UNEMPLOYMENT RATE

by Barbara Wagner, Chief Economist

The unemployment rate is one of the most widely used economic indicators. It is relevant and easy to grasp– everyone understands the importance of being gainfully employed, and realizes how job loss would impact our standard of living. In contrast to more abstract concepts like gross domestic product, personal income, or inflation, the unemployment rate seems very straightforward. But is it really?

The unemployment rate is the ratio of the unemployed divided by the total labor force.

$$\textbf{Unemployment Rate} = \frac{\textbf{Unemployed People}}{\textbf{Total Labor Force}}$$

That seems straightforward. But the model actually used to estimate Montana's monthly unemployment rate is much more complicated. Below is a *simplified* version of the formula:

$$Y = T_{Y,t} + S_{Y,t} + I_{Y,t}$$
$$T_{Y,t} = T_{Y,t-1} + R_{Y,t-1} + v_{TY,t}, \quad v_{TY,t} \sim NID(0, \sigma^2_{TY,t})$$
$$R_{Y,t} = R_t + v_{RY,t}, \quad v_{RY,t} \sim NID(0, \sigma^2_{RY,t})$$
$$S_{Y,t} = \sum_{j=1}^{6} S_{Y,j,t}$$
$$S_{Y,j,t} = \cos w_j S_{Y,j,t-1} + \sin w_j S^*_{Y,j,t-1} + \eta_{Y,j,t}, \quad \eta_{Y,j,t} \sim NID(0, \sigma^2_{SY})$$
$$S^*_{Y,j,t} = -\sin w_j S_{Y,j,t-1} + \cos w_j S^*_{Y,j,t-1} + \eta^*_{Y,J,t}, \quad \eta_{Y,j,t} \sim NID(0, \sigma^2_{SY})$$
$$w_j = \frac{2\pi_j}{12}, \quad j = 1 \ldots 6$$
$$I_t = v_{I,t}, \quad v_{I,t} \sim NID(0, \sigma_I^2)$$

The Bureau of Labor Statistics (BLS) started measuring unemployment in Montana over 40 years ago, and has spent the last several decades fine-tuning and improving the methods used to generate the numbers. Over time, the fine-tuning has resulted in a complex formula. However, the improvements have reduced the administrative costs of producing the rate and improved accuracy, particularly for areas with small populations.

This article answers some frequently asked questions about the unemployment rate. Don't worry, we won't be doing any math from that long equation.

What does the unemployment rate measure?

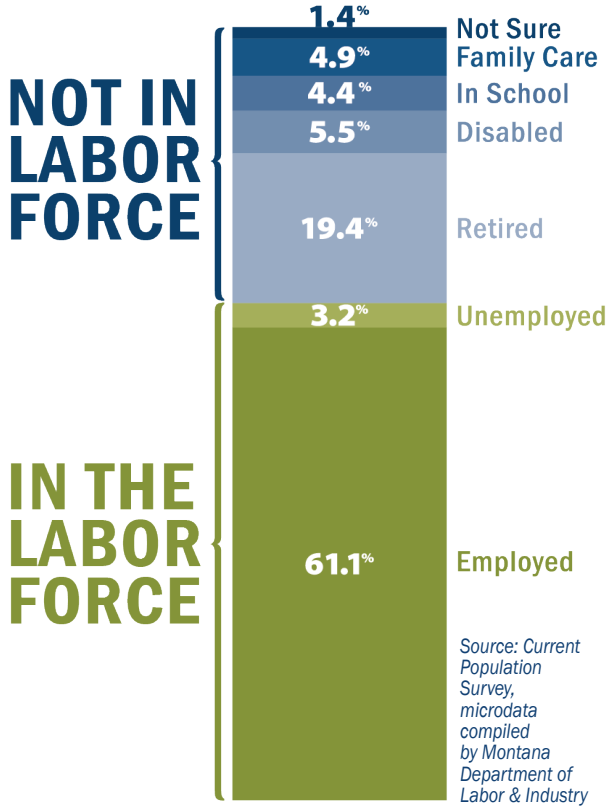
A common misperception is that the unemployment rate measures how many people are without work. In actuality, the unemployment rate measures how hard it is to find work <u>if you are looking for work</u>.

About half of Montana's population is not interested in working because they are retired, too young for work, in school, disabled, or caring for their home or family. People not actively seeking work are not included in the total labor force.

Figure 1 illustrates this concept using data from May 2012 to September 2015 for the Montana population over 16 years of age. About 61% are employed, while roughly 3.2% are unemployed. These two groups comprise the labor force and are included in the calculation of the official unemployment rate. The labor force is defined as everyone who is currently working, plus everyone who is actively seeking work.

What about the remainder of the population? Many individuals out of the labor force are retired, disabled, caring for family members, or in school. Many in this group would consider working, but may need the right opportunity to entice them into the labor market. For example, those who are disabled may require special equipment. Stay-at-home parents may need wages high enough to make work profitable after paying for child care. Sick workers may need additional hours available for health appointments.

FIGURE 1:
LABOR FORCE STATUS OF MONTANANS 16 & OLDER[1]
MAY 2012-SEP 2015



The labor force represents the body of workers who are easily accessible to growing businesses, and steady growth in the labor force is important for macroeconomic growth. Montana's labor force is roughly 522,000 workers and has been increasing at a rate of roughly 0.8% per year since 2000.

What about a person who was seeking work a few months ago, but has stopped looking for work?

To be considered unemployed, a worker had to be actively seeking work within the last month and had to participate in a job search activity, such as looking for jobs or updating or submitting a resume. Someone who has not been active in their job search in the last month, but is still interested in working, is considered a "marginally-attached worker" and is not included in the labor force.[2]

Why does the unemployment rate exclude people who are outside of the labor force?

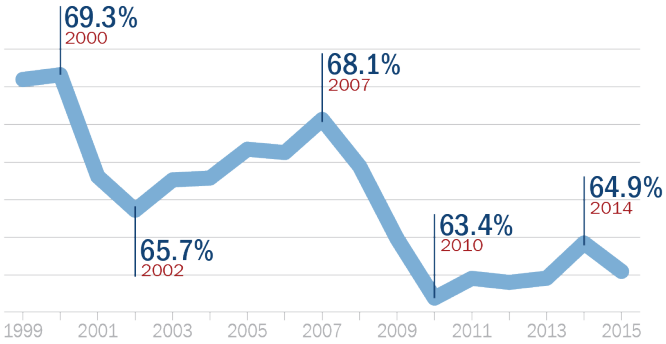
Limiting the official unemployment rate to those actively seeking work ensures that it remains a purely economic indicator rather than measuring demographic changes. To illustrate, let's review another economic indicator: labor force participation.

THE LABOR FORCE PARTICIPATION RATE

Labor force participation rates measure the percentage of the population 16 and older that is in the labor force, which is about 64% in Montana. Labor force participation rates are closely watched by economists as they represent how engaged the population is in the economy and in productive activity. Low labor force participation rates over a long period of time can indicate a stagnant economy with few job openings and little wage growth. Such economic conditions can lead to economic disengagement by workers and disinvestment by businesses.

Figure 2 illustrates Montana's labor force participation rate since 1999. The 2001 and 2007 recessions had an impact on the labor force participation rate, with fewer workers participating in the labor force due to poor economic conditions and fewer employment opportunities. Figure 2 illustrates that the labor force participation rate is an important economic indicator and sensitive to changes in the economy.

FIGURE 2:
MT LABOR FORCE PARTICIPATION
1999-2015



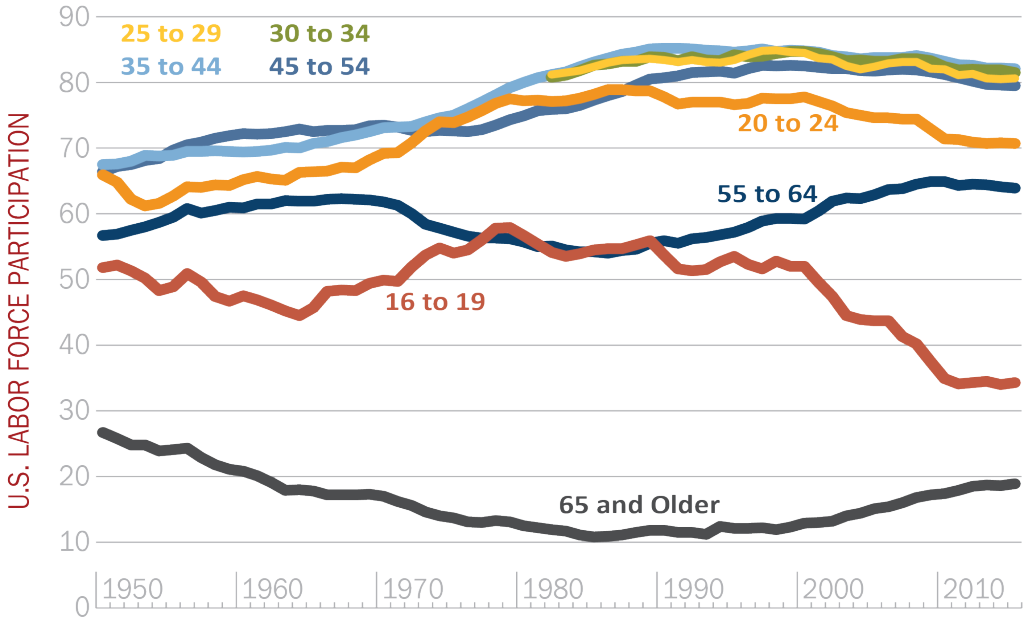
However, the labor force participation rate is also influenced by demographic and cultural factors that are unrelated to the economy. While economic growth has returned to pre-recession levels, with higher employment levels than ever before, the overall labor force participation rate has not yet reached its pre-recession peak. The baby boomer population has started to retire, moving this large population group out of the labor force. With a larger percentage of our population in their retirement years, the labor force participation rate will decrease regardless of economic influences.

Figure 3 further illustrates the sensitivity of labor force participation rates to demographic and cultural changes using labor force participation rates by age category in the U.S. Workers of typical high school age (16 to 19) have had declining labor force participation since 1980, a cultural shift reflecting the increased importance and costs of college, moving teen's incentives away from working in low-wage jobs and instead spending time on school and extra-curricular activities that might result in college scholarships.

Younger workers aged 20 to 24 also show a downward trend over the last 25 years, reflecting greater educational attainment among that age group. Other age groups exibited increased labor force particiaption rates since 1950, which largely reflects more women entering and remaining in the labor force throughout their working years, rather than taking time out of the labor force when raising children. Older workers (55 and older) have increased labor force partipation rates since the mid-80s, reflecting improved life-expectancy and the ability to remain working and active later in life.[3]

Sensitivity to demographic and cultural changes explains why the unemployment rate excludes workers outside of the labor force. By including only those actively seeking work, the official unemployment rate remains a purely economic indicator, measuring the utilization of readily available labor. Instead of reflecting demographic and cultural shifts, the unemployment rate measures the availability of labor for businesses and availability of employment opportunities for workers.

FIGURE 3:
US LABOR FORCE PARTICIPATION BY AGE
1980-2015



What about people who aren't in the Labor Force?

Although the official unemployment rate excludes those outside the labor force, those who are not actively seeking work are still measured and counted. There are technically six different unemployment rates generated each month at the national level, and quarterly for the state. The other five rates have different definitions of unemployed, many of which include workers left out of the official unemployment rate.

Figure 4 illustrates the six different definitions of unemployment that are tracked by the Bureau of Labor Statistics. The U1 and U2 use more restrictive definitions of the unemployed than the official (U3) rate. U4, U5, and U6 all include discouraged workers–those who have stopped looking for work because they don't believe profitable work is available. Discouraged workers are often the first to respond to improving economic conditions, when higher wages and more job opportunities encourage them to rejoin the labor force.

Both the U5 and U6 include marginally attached workers–those not actively seeking work, but who have looked for work within the last 12 months.
The U6 is the most inclusive rate, counting part-time workers who would prefer full-time work.

Even though the BLS produces six different rates, the focus typically remains on just the official U3 rate. The other rates follow the official rate quite closely, and do not provide that much additional information about the economy. The U3 has been in use for the longest amount of time, allowing current unemployment rates to be compared with historic unemployment.

How do you know who is unemployed instead of discouraged?

The difference between unemployed and discouraged is just a matter of when the most recent job search activity occurred. How does the BLS know who is unemployed versus employed versus out of the labor force? Unemployment data is produced using a combination of several different data sources, including a survey of individuals, a survey of businesses, and tracking of unemployment insurance claims. Even more data is included on an annual basis to ensure that the model is tracking unemployment accurately.

The challenge in producing economic statistics in rural areas like Montana is how to get a consistent, unbiased estimate from a relatively small sample at a reasonable cost. If the BLS could call every citizen every month to determine their employment status, we would have a very accurate unemployment rate. But it would be

FIGURE 4:
THE SIX UNEMPLOYMENT RATES

INCLUDES	U1	U2	U3 ("OFFICIAL" RATE)	U4	U5	U6
ONLY those unemployed 15 weeks or longer	✓	✗	✗	✗	✗	✗
ONLY those who recently lost a job	✗	✓	✗	✗	✗	✗
Those Actively Seeking Work	✗	✗	✓	✓	✓	✓
Discouraged Workers	✗	✗	✗	✓	✓	✓
Marginally Attached Workers	✗	✗	✗	✗	✓	✓
Work Part-time for Economic Reasons	✗	✗	✗	✗	✗	✓

prohibitively costly and overly intrusive. Therefore, the unemployment rate is calculated with a statistical model using survey data and other inputs.

The process of identifying the unemployed begins with the national unemployment rate and a telephone survey called the Current Population Survey. Every month, the Bureau of Labor Statistics conducts a national telephone survey that includes 60,000 households (about 1,670 in Montana). This survey is used to develop the estimates for total employment and unemployment at the national level. The large sample allows for the national rate to be fairly accurate, especially when combined with statistical models that use data from the previous and future months to reduce volatility.[4]

Once accurate employment data is generated at the national level, the employment is allocated to each state based on data from three sources:

- **State-level data in the Current Population Survey**
- **Unemployment insurance claim trends**
- **Survey data from the Current Employment Statistics (CES).**

CES

The Current Employment Statistics program conducts a monthly survey of about 3,600 Montana employers that generates payroll employment estimates by industry.[5] Payroll employment estimates measure the number of workers who receive a paycheck. The CES is included in the unemployment rate model to provide indications of hiring. The use of a survey allows this data series to be produced fairly quickly after employment occurs.

Because CES data is gathered through a survey, its inclusion introduces error into the process. However, CES data is ultimately replaced by data from the Quarterly Census of Employment and Wages (QCEW) in the unemployment rate model.

QCEW

The QCEW provides the most accurate employment data because it includes all Montana businesses that report to the unemployment insurance program. However, it takes time for businesses to report this data, so it is only produced quarterly and can't be used to create a monthly unemployment rate.

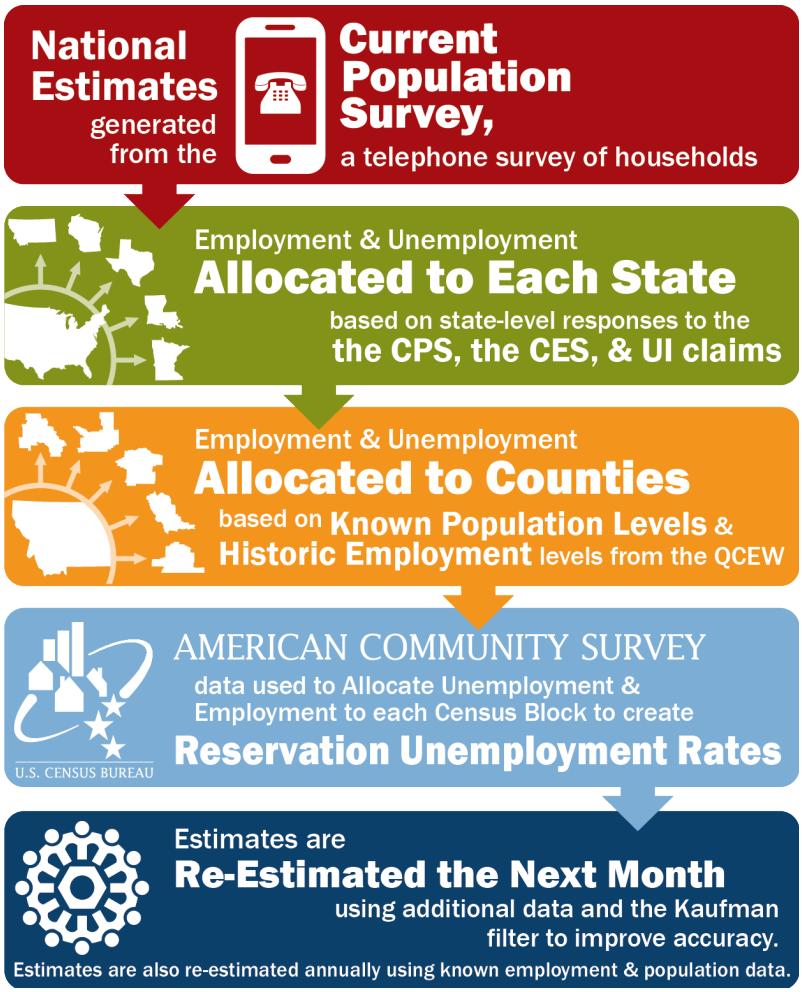
After the employment and unemployment figures are set for the state as a whole, the number of jobs and unemployed are divvied up among the 56 counties based on the survey and claims data, along with last year's employment data from the QCEW. The model also includes Census data from the population estimates and the American Community Survey to accurately measure labor force participation rates and allocate the unemployed across census blocks.

The model used to generate the unemployment rate also creates another estimate of employment that measures total employment. Total employment includes everyone who is working for a wage, including the self-employed and those who are receiving payment in forms other than wages (someone who barters to exchange services or who receives lodging in exchange for work, for example). Because Montana has so many entrepreneurs, this measure of employment that includes the self-employed is important for measuring our economy.

Conclusion

The unemployment rate concept is deceptively simple, hiding a complex model and data-gathering process that is designed to get the maximum accuracy at the lowest possible cost. Although not perfect, this process allows unemployment rates to be published for Montana's counties and reservation areas, even in rural areas with low populations, allowing people to track improvements in economic conditions in their communities and compare their economic outcomes across time and with other states, regions, and the nation.

Although many point to the exclusion of those outside the labor force as a weakness of the unemployment rate, it is actually a strength, allowing the unemployment rate to be focused on changes in economic conditions rather than reflecting long-term economic and cultural shifts. The exclusion of those not participating in the labor force allows the unemployment rate to be used as a one-stop indicator of whether Montana's economy is better or worse than historic time periods, or better than worse than the nation or neighboring states. The unemployment rate should not be the only economic indicator used to understand the economy, but it is an important one. Understanding the nuances of the unemployment rate allows us to use this metric to its full potential in revealing information about our economy.



ENDNOTES

1 *Standard errors of the estimates for the categories out of the labor force are very high. Better data on the level of disabled workers, students, and caregivers are available from the American Community Survey.*

2 *More information on the definitions for employed and unemployed can be found on the Bureau of Labor Statistic's website at bls.gov/cps/cps_htgm.htm#concepts.*

3 *More information about the demographic and cultural factors influencing labor force participation rates can be found in the EAG issue from June 2015 "Will Montana Face a Worker Shortage?" by Christopher Bradley. lmi.mt.gov/Portals/135/Publications/LMI-Pubs/Articles/2015/0615-WorkerShortage.pdf*

4 *The final rate, published two months after the employment occurred, is estimated using historic data, data from the actual month, and data from the following month.*

5 *Additional information on the monthly estimating model for the state unemployment rate can be found on the LAUS Estimation Methodology page at bls.gov/lau/laumthd.htm.*

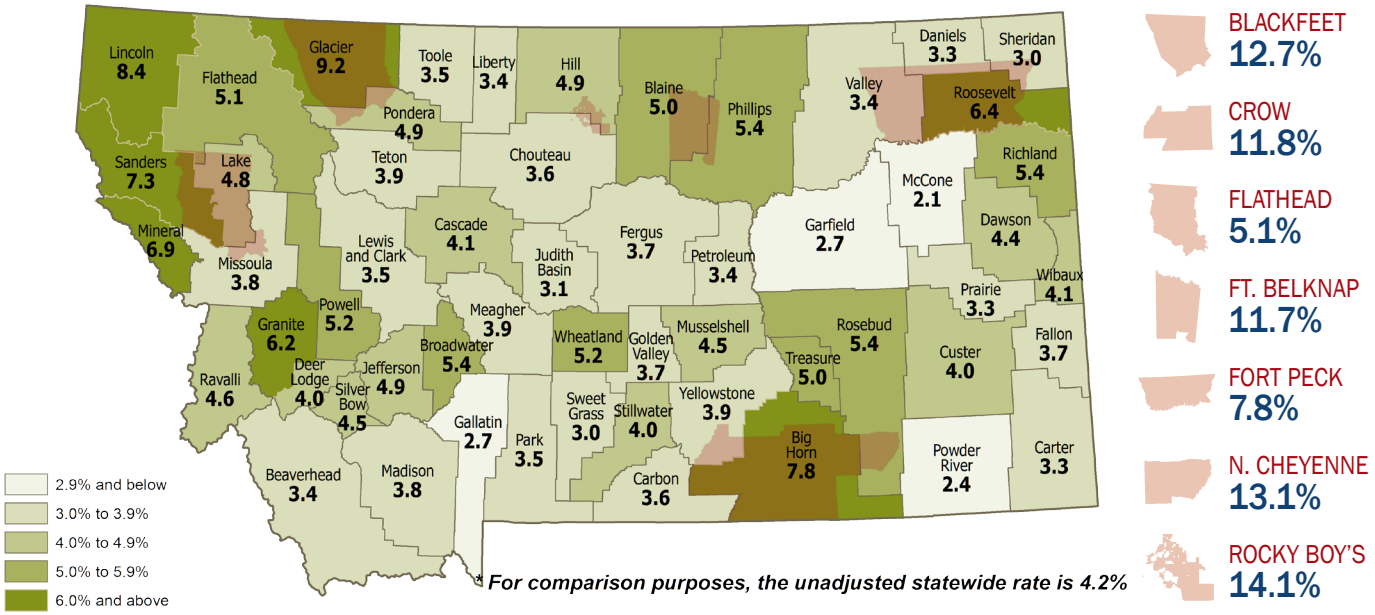
The Relationship between the Bureau of Labor Statistics (BLS) and the Montana Department of Labor & Industry

Nationally, the BLS is the agency designated to generate labor statistics. While other agencies, including the Census Bureau, Bureau of Economic Analysis, Bureau of Indian Affairs, and tax agencies, also produce employment data, the BLS's focus is on employment statistics. The BLS has the most accurate data on employment, and uses various methods to measure different aspects of employment.

The Montana Department and Labor & Industry serves as the official agent of the BLS in Montana, so all of the statistics we produce are official BLS statistics. The models and processes used are standardized across all states and the nation so that data can be accurately compared across regions and timeframes. Montana's unemployment rate can be compared to rates for other geographies from Los Angeles to North Dakota. In fact, because the BLS definitions used for employment and unemployment are the official standards, the unemployment rates can be compared to other countries as well, although the formulas and models used in other countries are slightly different than the ones used in the U.S.

COUNTY AND RESERVATION UNEMPLOYMENT RATES – JUNE 2016

Not Seasonally Adjusted



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