A Rising Tide
Who Experienced Wage Growth in Montana?

by Christopher Bradley, Economist

In economics, the widely-cited “big numbers” such as the unemployment rate or consumer price index can be good indicators of broad trends in the overall economy. But these headline-grabbing numbers are made up of smaller subsets of data (the numbers-behind-the-numbers) that sometimes tell a different story. The average annual wage might be increasing overall, yet wages could still be stagnant for certain groups of workers. To answer more specific economic questions, we need to dig up the more specific numbers. This article investigates the underlying trends of this wage growth across income brackets to verify all groups of workers are benefiting from Montana’s economic growth. In other words: will the rising tide raise all ships?

Why Wages?

While wages are only one source of income, they are the primary source of wealth distribution across the economy, making up 44% of Montana’s 2017 total personal income in Montana in 2017 – more than the share of income coming from any other source (such as investments or business ownership). For most people, wages are the primary source of income and the only way they benefit from economic growth. Strong wage growth, particularly at low income levels, is critical for maintaining economic engagement and helps promote continued growth going forward. Average annual wages in Montana have been growing since the recession ended in 2010, even after adjusting for inflation,¹ suggesting consistent increases in purchasing power for wage earners. However, as a metric, average wage growth does not reveal underlying trends of wages among different income brackets and worker types.

Worker Wages

In 2017, Montana’s average annual wage was $42,042. While most people think of this as the amount a “typical” worker earns each year, it is probably more accurate to describe the average wage as the average amount of wages paid by Montana employers for each position. Because of turnover, the average amount paid may be split between multiple workers. For example, a customer service representative position averages about $33,000 per year, but a worker may leave and be replaced six months into the year. While the position still paid $33,000 for the position over the course of the year, each worker only earned $16,500. From the perspective of average annual wages, only the $33,000 is included in the calculation.

However, this article takes a slightly different approach and looks at average wages per worker – or the $16,500 from the example above – to examine changes in wage earnings by income level for Montanans. Average wages per worker are generally lower than average wages per job because large numbers of people only work short periods each year, entering and exiting the labor force for reasons like retirements, relocations, and education.

In 2017, Montana’s average annual worker wage was $33,126, meaning that the average person brought home that much in wages across all their jobs. Even though the average annual wage per worker is lower than the average annual wage per jobs, both have been growing. Analyzing wages per worker will provide greater insight into how wage growth has been spread amongst higher and lower wage earners.

Workers are grouped by their percentile rankings for wage earnings at the 10th, 25th, 50th, 75th, and 90th percentiles.

FIGURE 1
Montana Wage Earner Distribution 2017

Source: Montana Department of Labor & Industry, Research & Analysis Bureau
In 2017, Montana’s 25th percentile for worker wages was $7,408, implying that 25% of wage earners earned less than $7,408. The 50th percentile is also known as the median. The higher the percentile the higher the wages. Figure 1 shows all the wage percentiles for Montana in 2017.

Workers who earned wages at or below the 25th percentile are likely to be part-time or part-year workers. About 25% of wage earners earned wages that are associated with a part-year or part-time job. According to the 2016 American Community Survey (ACS), nearly 140,000 Montana workers (about 26%) worked less than full-time or for less than the full year. Self-employment and non-wage earnings are not available for this analysis, therefore the wage earnings used do not represent workers total annual income. Additional income sources are especially common among the part-time or part-year wage workers. In contrast, workers earning in the top 25% (above the 75th percentile) are those who are likely to be working in wage paying jobs that are full-time, year-round.

Growing Income Levels

Over the last five years wage earnings have grown for all levels of the wage distribution. In 2012, the bottom 50% earned less than $19,265 and the top 10% earned over $62,839. By 2017, the wage percentiles had increased across all levels, as seen in Figure 2. By raw numbers, income gain was largest for higher wage earners. The 90th percentile of wages increased by about $8,600, up to $71,491, while median wage earnings rose by about $4,000, or half of that for the 90th percentile. While the raw increase appears to favor higher wage earners, the rate of growth was faster in the bottom half of income earners. Growth of the bottom half of wage earners percentiles averaged about 4% per year, compared to 3% or less per year for the top half of the income spectrum. Figure 2 shows these trends.

**FIGURE 2**
Nominal and Percent Growth in Montana Wage Percentiles
2012 and 2017

Wage Change ($)

<table>
<thead>
<tr>
<th>Wage Percentile</th>
<th>10th</th>
<th>25th</th>
<th>50th</th>
<th>75th</th>
<th>90th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage Change (%)</td>
<td>3.6%</td>
<td>4.3%</td>
<td>4.0%</td>
<td>3.0%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Raw Growth in Wages</td>
<td>$296</td>
<td>$1,321</td>
<td>$3,894</td>
<td>$5,905</td>
<td>$8,652</td>
</tr>
</tbody>
</table>

Percent Growth in Wages

0% 1.5% 2.0% 2.5% 3.0% 3.5% 4.0%

Source: Montana Department of Labor & Industry, Research and Analysis Bureau & the Unemployment Insurance Program
Faster growth rates among the lower wage earners is also reflected in changes to the share of total wages going to workers at lower wage levels (Figure 3). The share of total wages earned by the top 10% of Montana’s wage earners decreased slightly between 2012 and 2017, while they increased for the 25% of workers between the 25th and 50th percentiles. The other wage bracket’s share of total wages had little change, suggesting wage growth was spread equitably with a slight skew to middle-wage workers. Worker shortages and sustained low unemployment rates generally increase hourly pay rates and work hours available for part-time and low pay rate wage earners, but these factors have less of an impact on higher wage workers. These labor market conditions contributed to the faster wage growth within lower income brackets.

![FIGURE 3](Image)

**Share of Total Wages by Wage Brackets**

2012 and 2017

<table>
<thead>
<tr>
<th>Wage Bracket</th>
<th>2012 Share (%)</th>
<th>2017 Share (%)</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% - 10th Percentile</td>
<td>0.25</td>
<td>0.25</td>
<td>0.0%</td>
</tr>
<tr>
<td>10% - 25th Percentile</td>
<td>1.91</td>
<td>1.99</td>
<td>0.1%</td>
</tr>
<tr>
<td>25% - 50th Percentile</td>
<td>10.57</td>
<td>11.13</td>
<td>0.6%</td>
</tr>
<tr>
<td>50% - 75th Percentile</td>
<td>24.53</td>
<td>24.94</td>
<td>0.4%</td>
</tr>
<tr>
<td>75% - 90th Percentile</td>
<td>25.54</td>
<td>25.42</td>
<td>-0.1%</td>
</tr>
<tr>
<td>90% - 100th Percentile</td>
<td>37.27</td>
<td>36.28</td>
<td>-0.9%</td>
</tr>
</tbody>
</table>

*Source: Montana Department of Labor & Industry, Research & Analysis Bureau*

**Working More Jobs?**

A few scenarios can lead to worker wage growth. Raises and increases in work hours can lead to more pay while staying in the same job. Alternatively, workers can seek out a new job with higher pay, or more hours and change jobs. Finally, a worker can stay in their job, with no change in hours or pay rate, and get a second (or third) job. Between 2012 and 2017, the share of all wage earners with only one job decreased slightly, from 73.7% to 72.4%. Though not very large, the decline in workers with only one job suggests that a portion of wage growth came from workers seeking higher pay through job switching or holding second jobs.

Changes in the share of single job holders by wage level (Figure 4) show that the method of obtaining wage increases varied by wage level. Wage earners under the 75th percentile all saw the share of multiple job holders increase by between one and two percent. At the same time, workers above the 75th percentile experienced a slight increase in the share of single job holders. These changes suggest that the increases in earnings for workers at lower wage levels are in part due to job-switching and take-up of work from a secondary employer, while workers at higher wages were able to obtain pay raises while remaining with one employer.
Wage Growth for 2012 Workers

People who worked for wages over the five years between 2012 and 2017 had wage increases that reflected their changes in work experience, skills, and other factors. This next section asks the question, what happened to people who worked the whole time between 2012 and 2017 and how did their wages change? Wage earnings mobility over time is looked at by tracking changes for 2012 workers who were still working in 2017.

Only 35% of workers who earned Montana wages in 2012 were still earning Montana wages in 2017. Leaving the pool of wage earners does not imply unemployment; other reasons workers stop earning wages include pursuing self-employment or other non-wage work, working in other states, or retirement. Montana has a lot of seasonal workers from out of state and a high rate of entrepreneurs, both of which contribute to only 35% of 2012 wage earners remaining in 2017. Workers who leave the pool of wage earners tend to be lower wage earners. Less than 15% of workers under the 25th percentile remained as wage earners after five years compared to over 58% of the top 25% of wage earners. Figure 5 shows the change in wages for the workers who remained wage earners between 2012 and 2017.

![Figure 5: Average Wages for Earners by Wage Bracket from 2012-2017](Source: Montana Department of Labor & Industry, Research & Analysis Bureau)
The highest wage increases were for workers at the lowest wage levels, though wages grew for high and middle wage level earners as well. Workers in the bottom 10% in 2012 saw their wages increase nearly tenfold by 2017, from $755 to $7,322. Overall, the average wage earnings within each wage bracket increased significantly to suggest that workers that remained through 2017 had significant opportunity to be upwardly mobile and move into a higher earnings bracket.

Figure 6 shows the movement between wage earning brackets for 2012 wage earners who continued working through 2017. Nearly 50% of workers in the lowest wage bracket moved to a higher wage bracket by 2017, and about 43% moved up from the 10-25th percentile to a higher bracket as well. With less room to move upward, workers in higher wage brackets had slightly less upward mobility. But there was some mobility present, suggesting workers who were able to move from low to middle wage brackets will have more opportunity for wage mobility. Higher wage brackets had more stability, with a higher share of workers remaining in the same wage bracket. Workers in higher wage brackets did not have increased rates of movement to lower wage brackets, despite there being more room to move downward. Montana’s wage workers showed strong earnings stability with only approximately 20% of 2012 wage earners above the median moving to a lower bracket, implying that workers who had high paying work were able to maintain that high level of pay.

Figure 6
Wage Mobility in Montana
MT Wage Earners in 2012 Who Remained MT Wage Earners in 2017

Conclusion
Over the last five years, wage growth was experienced at all levels of the income spectrum. Workers earning very low, high, and in the middle wages have all posted wage gains. Wage workers who consistently work in Montana have opportunities for wage growth and upward mobility into higher wage brackets. Going forward, projections have Montana’s economy continuing to grow with unemployment rates declining lower. Workers should expect continued wage gains, especially at lower income brackets, with the continued high competition for workers and their labor.