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Dr. Patrick Barkey Director Bureau of Business and Economic Research, University of Montana February 11, 2016

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# **Key Findings**

This is the second annual report on the high tech industry in the state of Montana. The Montana High Tech Business Alliance (HTBA), formed in 2014, is a member-driven group of high tech businesses and other organizations statewide. The Alliance asked the University of Montana Bureau of Business and Economic Research (BBER) to collect information and insights from its members so that a better assessment of its economic footprint and its prospects for continued growth could be made. This report presents the findings of that research.

The BBER finds that on the basis of a survey of 202 HTBA members:

- The number of firms that are members of the HTBA doubled in 2015 (202) when compared to 2014 (101). Readers should keep this very positive fact in mind when evaluating year over year changes found when 2014 and 2015 survey results are compared.
- Alliance members expect to add a very substantial 940 net new jobs in 2016, a 19.3 percent increase, and a much stronger job growth than has occurred in the overall economy;
- Jobs at businesses who are Alliance members pay considerably more than jobs elsewhere in the economy. The average annual salary at HTBA businesses (\$56,800) was more than twice as large as the median earning per Montana workers overall as measured by the Census Bureau's American Community Survey;
- By almost any measure, growth projected in high tech businesses vastly exceeds average statewide economic growth, and employment and revenues are expected to grow at rates that are nearly seven times the BBER's projection of statewide growth;
- The high tech businesses that are regular members of HTBA expect to make at least \$123 million in capital expenditures at their Montana facilities in 2015. This represents a quite substantial increase over 2014 major capital expenditures;
- High tech companies that are HTBA members will raise wage rates by 5 percent in 2016, significantly faster than the 3.5 percent rate of growth realized in wage rates at Montana private sector employers in the most recent data;
- The Montana-based activities of HTBA members were responsible for \$867 million in gross sales in 2015;
- HTBA added three important new industry sectors to its membership in 2015: biotechnology, nanotechnology, and energy. All three sectors bring significant growth potential to Montana communities;
- For the second year in a row HTBA members reported that Montana's quality of life its lifestyle, the work/life balance available here, the recreation opportunities, and the beauty of the landscape – provides them a significant advantage in business;
- For the second year running HTBA members most often report that attracting talent and hiring skilled technology workers is their firm's largest impediment to faster growth.

In addition to survey research, BBER also conducted research using data from federal statistical agencies. While these data can only be used as a broad benchmark of high tech economic activity, they are suggestive of the size of the high tech activity of businesses who are not members of the Alliance. These data indicate that activity in the Montana economy that fits a published high tech definition used in national-level research comprises about 5.2 percent of total wages, paying wages that are roughly double the overall average and higher than all but three other Montana industries. Based on this analysis, BBER concludes that the aggregated responses of HTBA members reported here greatly understate the actual size of industry activity in Montana. While no precise estimate is possible, it is likely that the true size of the industry is 2-3 times as large as what is reported in the survey results in this study.

# **Background of the Project**

# The Montana High Tech Business Alliance

Launched in April 2014, the Montana High Tech Business Alliance is a statewide membership organization focused on creating more high tech jobs in Montana. The Alliance currently has more than 250 member firms.

Full membership in the Alliance is available to for-profit firms engaged in high tech and manufacturing that have operations in Montana. High tech is defined as firms that make or sell high tech products, provide professional services or consulting related to high tech, conduct e-commerce, or engage in manufacturing using skilled labor.

Organizations that are not in the high tech industry such as law firms, banks, or economic development agencies may join as affiliate members.

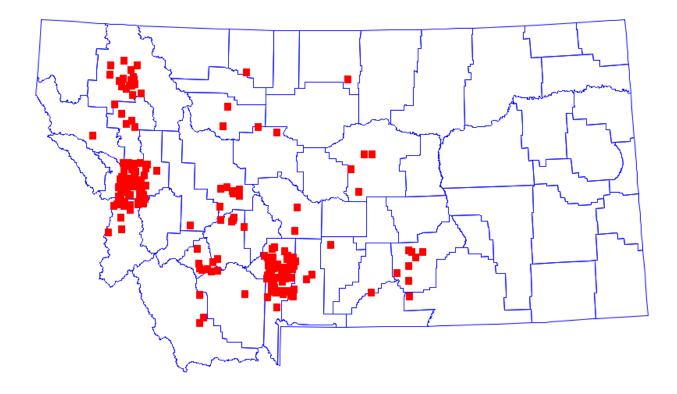
The Alliance is recognized as a 501(c)(6) nonprofit trade association.

#### Benefits include:

- Connecting with tech leaders across the state at quarterly networking events.
- Promoting your company and Montana's strong high tech and manufacturing sector through our e-newsletter, website and other communications channels.
- Accelerating growth by recruiting through our high tech jobs portal.

The Alliance's members are located throughout the state of Montana, with more prominent concentrations found in Gallatin and Missoula counties, as indicated in Figure 1.

Figure 1: Locations of 2016 HTBA Members



#### The Bureau of Business and Economic Research

The Bureau of Business and Economic Research is the primary research unit of the University of Montana's School of Business Administration. Begun in 1948, the Bureau regularly participates in forecasting and economic analysis, survey research, industry studies, and information dissemination. Since its founding, BBER has conducted hundreds of survey research projects of both businesses and households, utilizing its state-of-the-art survey center.

# **About This Study**

This is the second annual study conducted in order to objectively and accurately assesses the characteristics and the concerns of members of the Montana High Tech Business Alliance. Its findings serve as a benchmark for further inquiry into the rapidly evolving activities and concerns of the membership. It also serves as an important assessment of one of Montana's fastest-growing and highest-paying industry clusters, addressing a gap in information that is available from public sources. Because this study repeats one conducted last year, it is possible to observe some changes that have occurred among Alliance membership and in the high tech industry as a whole. It is important to note that over the last year membership in the Alliance has more than doubled. This very positive fact does

somewhat limit UM BBER's ability to separate changes caused by membership growth from changes caused by other factors.

We begin this report with some insights on high tech activity in Montana that draw from public data on industry aggregates. We then turn to the findings of the survey of HTBA members, including data gathered on business activity as well as responses to open-ended questions on their needs and concerns. Information on the methods used to derive the results is found in an appendix.

The data presented here represent aggregated information on all HTBA members. BBER fully respects the privacy of individual companies, and no data that might reveal individual company information or viewpoints is contained in this report.

# **Measuring High Tech Business Activity**

In this study we present the results of a survey of high tech businesses in Montana. It is instructive, however, to get a sense of the industry from the federal government statistical data before turning to the survey-based results. Adopting a nationally derived definition of high tech (defined in the paragraphs that follow), the data suggest that the presence of high tech economic activity in Montana is considerable, as shown below in Table 1. To put these broad estimates into context, Montana high tech companies accounted for 5.2 percent of total Montana wages, 3.2 percent of total Montana payroll jobs, and 5.2 percent of Montana business establishments in 2015. The data suggest that high tech companies here are relatively small-sized, but pay wages well above the state's overall average.

Table 1: Characteristics of Montana's High tech Industries, 2015

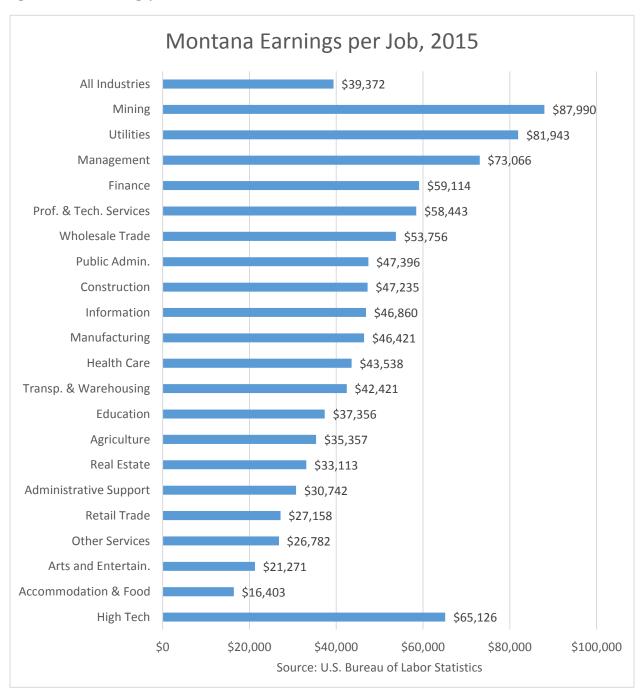
| Category               | 2015     | 2014     | 2015 Change |
|------------------------|----------|----------|-------------|
| Wages (\$ mill.)       | \$916.58 | \$876.89 | 4.5%        |
| Employment             | 14,074   | 13,934   | 1.0%        |
| Establishments         | 2,255    | 2,139    | 5.4%        |
| Wages per Job          | \$65,126 | \$62,930 | 2.5%        |
| Jobs per establishment | 6.2      | 6.5      | -4.6%       |

Note: Figures derived using Hecker (2005) definition of industry described below. Source: U.S. Bureau of Labor Statistics.

While broad, the estimates in Table 1 suggest that the high tech industry is a significant economic contributor. Furthermore, the publically available data suggest that the industry's presence is growing. When compared to 2014, the first year this report was produced, the total number of establishments in the state grew by 5.4 percent in 2015, while wages and employment grew by 4.5 and 1 percent, respectively. Montana's high tech firms are becoming more numerous. They also are paying higher wages. Wages per job grew by 2.5 percent in 2015, well over the rate of inflation.

The data also suggest that Montana's high tech employers pay considerably more in 2015 than the state average and rank among the highest paying Montana industries, as shown in Figure 2. The average wages per job in Montana high tech companies was \$65,126 per year, or roughly two-thirds higher than the state average of \$39,372 per year for all Montana industries. The wages do not include the value of benefits. As is clear from Figure 2 below, only three industries in the state paid higher average wages.

Figure 2: Montana Earnings per Job



These data can only be considered as suggestive of the size of Montana's high tech industry. Much more refined analysis and better defined data are needed to isolate and identify the characteristics of our state's high tech producers. But the data clearly indicate that Montana's high tech sector is a sizable source of economic activity in the state.

The direct measurement of high tech business activity in the economy has always been hampered by two issues: 1) the lack of a consistent definition, and 2) the shortcomings of publicly available data in adequately capturing whatever definitions are used. Simply put, estimates of high tech business activity derived from the standard sources for economic data shown above – the federal government statistical agencies – miss some activities that are clearly high tech and count other activities that are not.

A study by the U.S. Bureau of Labor Statistics in 2005 used a very conservative definition of the high tech industry, detailed in Table 2, to track national high tech growth. It was based on a national-level analysis that considered industries to be high tech if they:

- Employed a high proportion of scientists, engineers, and technicians,
- Had a high proportion of R&D employment,
- Produced a high tech product, or
- Used high tech production methods.

Table 2: 2005 BLS-Defined High Tech Industries

| NAICS Code   | Definition   |
|--------------|--|
| 3254         | Pharmaceutical and medicine manufacturing  |
| 3341         | Computer and peripheral equipment manufacturing                                      |
| 3342         | Communications equipment manufacturing   |
| 3344         | Semiconductor and electronic component manufacturing                                 |
| 3345         | Electronic instrument manufacturing  |
| 3364         | Aerospace product and parts manufacturing  |
| 5112         | Software publishers  |
| 516          | Internet publishing and broadcasting   |
| 517          | Telecommunications   |
| 518          | Data processing, hosting and related services  |
| 5413         | Architectural and engineering services   |
| 5415         | Computer systems design and related services   |
| 5417         | Scientific research and development services   |
| 5413<br>5415 | Architectural and engineering services  Computer systems design and related services |

Source: Hecker (2005).

We use this definition to identify high tech in the public data. Clearly such discrete classifications miss some high tech firms and include others that are not high tech. It is certain that the classification does not match the composition of HTBA membership. Thus, we must examine the survey results to more fully reflect the composition of the high tech industry in Montana.

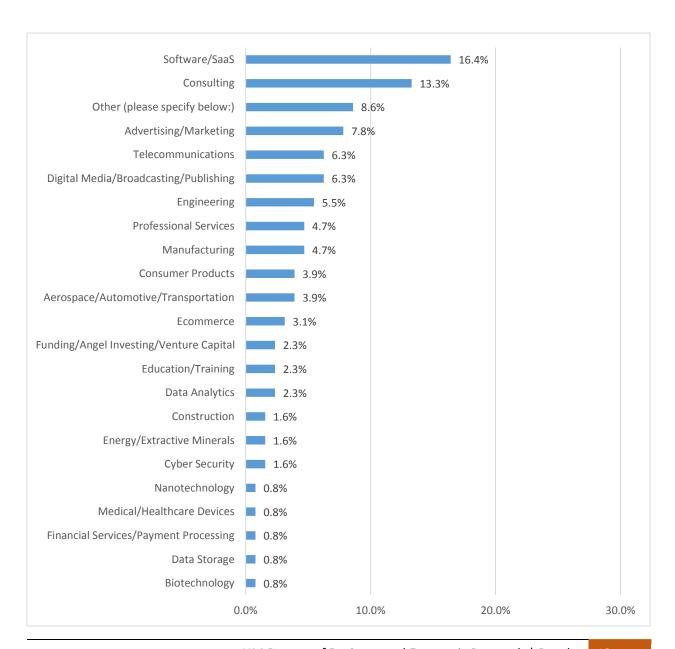
#### Results

The paragraphs that follow present the findings of the Montana High Tech Business Alliance that was conducted from October 2015 to January 2016. This section of the report is organized in the order that the questions appeared in the questionnaire, and the text of each question is provided to assist the reader.

# Q1. Which high tech sub-industry best represents your company?

Figure 3 describes the members of the High Tech Business Alliance as of December 2015 by their type of business. HTBA consists of businesses from a wide range of traditionally defined industry sectors.





2015 Changes. Three new industry sectors were represented among new 2015 Alliance members. These new sectors included energy or extractive minerals, nanotechnology, and biotechnology.

# Q2. How many employees does your company have in total?

# Q3. How many employees does your company have in Montana?

Three fourths (76%) of high tech firms employed fewer than 10 people in Montana. Figure 4 describes the distribution of employment sizes among the Montana High Tech Alliance firms. HTBA members employed 3,574 Montana workers as of December 2015.

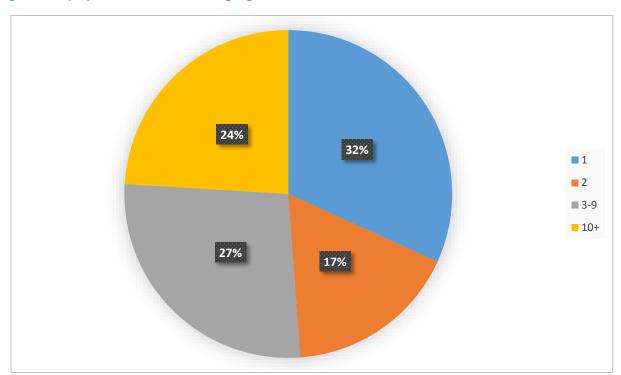


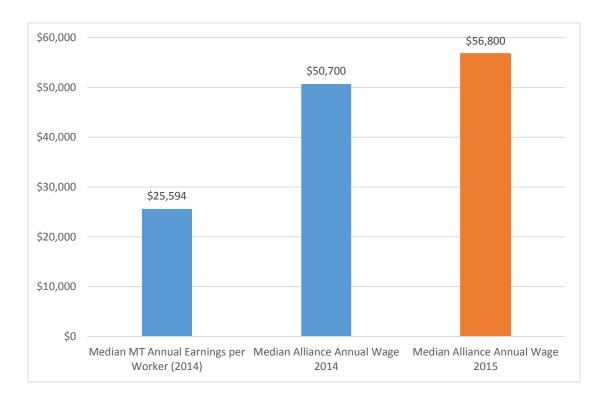
Figure 4: Employment Distribution among High tech Firms in Montana

2015 Changes. The distribution of large versus small firms in the Alliance changed slightly from 2014 to 2015. The proportion of larger firms, those with 10+ employees, grew slightly from 20% in 2014 to 24% in 2015. However, most of the change occurred among the smallest firms. In 2014 38% of Alliance firms had 1-2 employees, while in 2015 this proportion grew to 49%. Readers should keep in mind that the Alliance nearly doubled the number of firms in its membership from 2014 to 2015. In general, it appears that new 2015 Alliance member firms were smaller in terms of employment. This is consistent with the Federal statistics for the overall high tech industry in Montana cited in Table 1 above.

# Q4. What is your company's average annual Montana wage?

The members of the HTBA provide high paying jobs for Montanans. Figure 5 below illustrates that HTBA jobs pay more than *double* Montana's median annual earnings per worker.





2015 Changes. Median annual wages paid by Alliance member firms increased by 12% from 2014 to 2015. The increase in median Alliance wages is significantly higher than the total wage increase of 4.5% found in publically available data for all 2,225 Montana high tech firms. However, readers should keep in mind that the Alliance nearly doubled the number of firms in its membership from 2014 to 2015. New Alliance members probably also influenced the change observed.

<sup>&</sup>lt;sup>1</sup> Sources: UM Bureau of Business and Economic Research and U.S. Bureau of Labor Statistics.

# Q5. What were your company's annual revenues in 2015?

Montana HTBA companies may also be considered a very important component of Montana's economy in terms of revenue. The Montana-based portions of the HTBA firms generated an estimated \$867 million in 2015 revenue. Examining company revenue, Figure 6 shows that HTBA members range from start-ups with very little, if any, revenue to Fortune 500 companies.

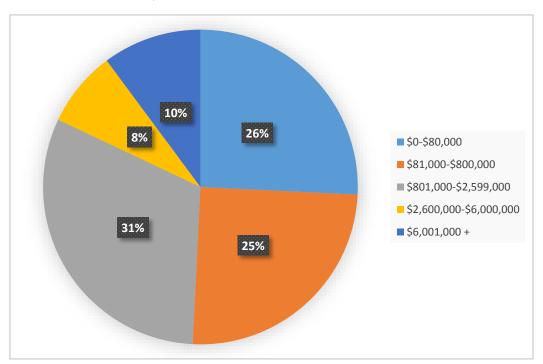


Figure 6: 2015 HTBA Revenue by Firm

2015 Changes. Total Alliance firm revenue increased from \$632 million in 2014 to \$867 million in 2015. The magnitude of this increase is consistent with the observation that new 2015 Alliance membership was made up largely of smaller firms.

# Q6. By what percentage do you estimate your company's annual revenues will increase or decrease next year (2016)?

Montana's high tech companies still anticipate growing very quickly. Figure 7 demonstrates that Montana HTBA firms anticipate growing almost seven times faster than the Montana economy as a whole.

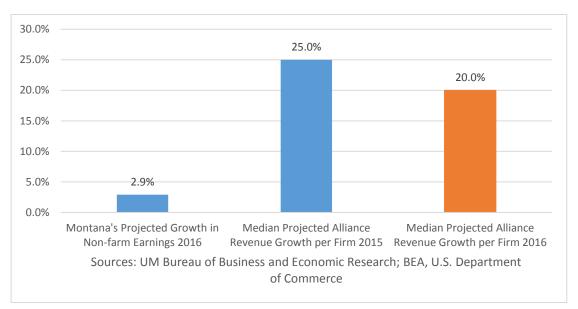
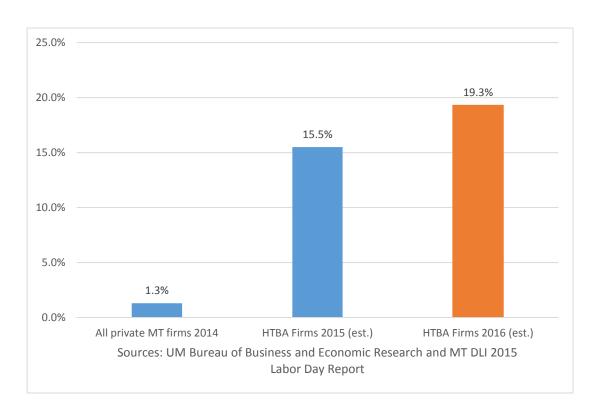


Figure 7: HTBA Growth Rate

2015 Changes. 2016 projected median Alliance revenue growth per firm (20 percent) declined when compared to 2015 projected growth (25 percent), but is still very robust. 2016 projected revenue growth aligns well with projected 2016 employment growth presented on the next page. The continuing anticipation of fast growth is an indication of the entrepreneurial nature of the firms in the Alliance.

# Q7. About how many new jobs do you expect your company will create in Montana next year (2016)?

Montana's HTBA firms will add an estimated 940 new jobs in Montana in 2016. This annual employment growth rate (19.3% percent) is significantly faster than Montana's 2014 private company employment growth rate of 1.3 percent (see Figure 8 below). Please note that the anticipated 2016 growth rate published here uses very conservative data processing practices which exclude outlying reports provided by exceptional Alliance firms that anticipate large employment growth. Excluding these outlying firms' reports probably makes this 2016 growth rate estimate quite conservative.



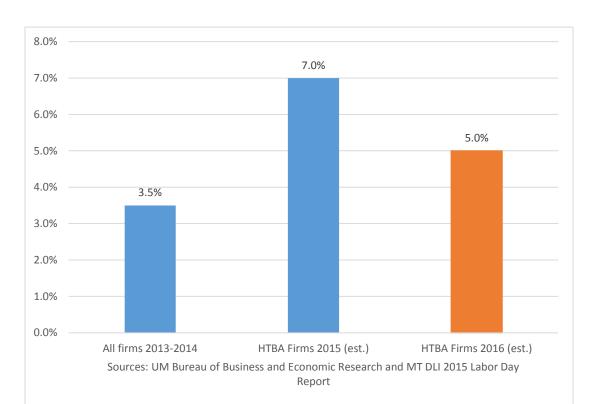
**Figure 8: Annual Employment Growth Rate** 

2015 Changes. 2016 projected employment growth is slightly higher than 2015 projected employment growth. However, 2016 employment growth aligns well with projected 2016 revenue growth presented on the previous page. Given that UM Bureau of Business and Economic Research and Montana Department of Labor and Industry both view the Montana economy as nearing full employment<sup>2</sup>, it is clear that many of these new jobs are likely to be filled by persons from outside Montana.

<sup>&</sup>lt;sup>2</sup> Sources: Montana Department of Labor and Industry 2015 Labor Day Report and UM Bureau of Business and Economic Research Montana Economic Report: 2016.

# Q8. By what percentage do you estimate your company's annual Montana wages may increase or decrease next year (2016)?

The annual pay of Montana's HTBA employees in 2016 is projected to grow significantly faster than that of all Montanans employed in private industry. Figure 9 shows that HTBA wages are projected to grow by 5 percent in 2016 while from 2013 to 2014 Montana annual wages grew 3.5 percent.



**Figure 9: Annual Pay Growth Rate** 

2015 Changes. 2016 projected Alliance annual wage growth per firm is slightly lower (5 percent) than 2015 projected wage growth (7 percent). However, readers should keep in mind that the Alliance nearly doubled the number of firms in its membership from 2014 to 2015.

# Q9. About how much money do you anticipate your company will invest in major capital expenditures in Montana next year (2016)?

HTBA companies plan to make more than \$123 million in major capital investments in Montana in 2016, which will add a significant number of additional construction and support jobs in the state. Figure 10 shows that 84 percent of HTBA firms each plan to invest between \$0 and \$200,000 in Montana. Sixteen percent of HTBA firms will each invest \$300 thousand or more.

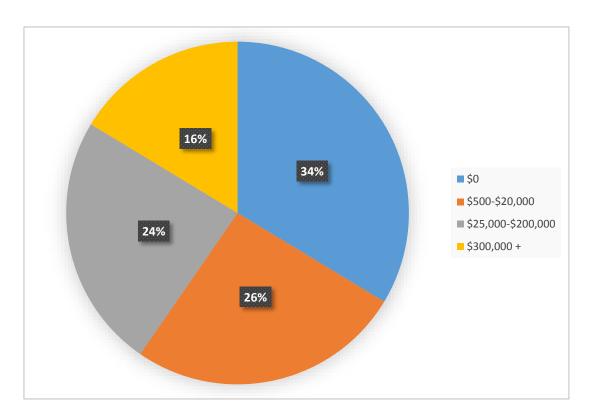
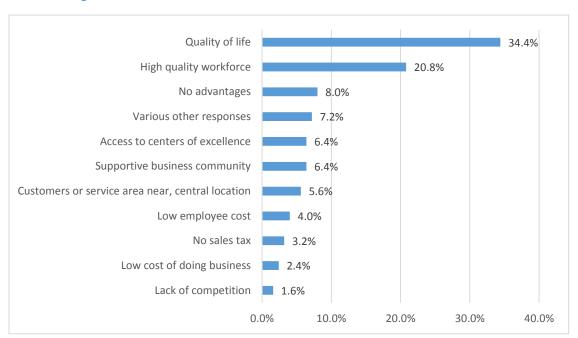


Figure 10: 2016 Planned Capital Investments in Montana

2015 Changes. 2016 anticipated Alliance major capital expenditures (\$123 million) increased significantly over 2015 anticipated major capital expenditures (\$35 million). Given the relatively small employment of new Alliance member firms, this anticipated increase is quite substantial.

#### Q10. What advantage does Montana give you in business?

HTBA members find that Montana's quality of life – its lifestyle, the work/life balance available here, the recreation opportunities, and the beauty of the landscape – provides them a significant advantage in business. As Figure 11 illustrates, 34 percent of all responses to Q10 cited Montana's quality of life. HTBA members also most frequently mentioned Montana's high quality workforce (21 percent), Montana's supportive business community (6 percent), and access to centers of excellence like universities (6 percent) gives them an advantage. Eight percent also said that Montana actually provides them few, if any advantages.



**Figure 11: Advantages Montana Gives HTBA Members** 

The following are selected comments that provide the reader additional insight into HTBA members' opinions.

- "My attitude is better as my quality of life is better here. I could make the business more successful elsewhere, and pay more too. I choose to stay because of the place, public lands, and like-minded people."
- "Smart, energetic, loyal workforce with a natural commitment to customer service and work ethic."
- "MSU gives us a pool of engineering resources. (Our) Employees are overall happy to be working/playing in Montana. "
- "The business environment is very welcoming to startups and new ventures in the technology world. Montanans seem very open to business opportunity and growth. There seem to be several programs available to grow startup businesses although I'm not fully versed on what these programs offer."

# Q11. What is your largest impediment to faster growth?

HTBA members (23 percent of all responses) most often reported that attracting talent and hiring skilled technology workers was their firm's largest impediment to growth (see Figure 12). A lower but substantial proportion (18 percent) cited access to capital (investors, cash, financing, or funding) as their firm's largest impediment to growth. The third most commonly cited impediment to growth (17 percent) was sales and marketing related, for example finding new customers or the visibility of their firm. Four smaller, but significant impediments mentioned were: the time and cost of training employees (5 percent), taxes (4 percent), that Montana is not taken seriously by the rest of the country (4 percent), and airfare or travel cost outside Montana (4 percent).

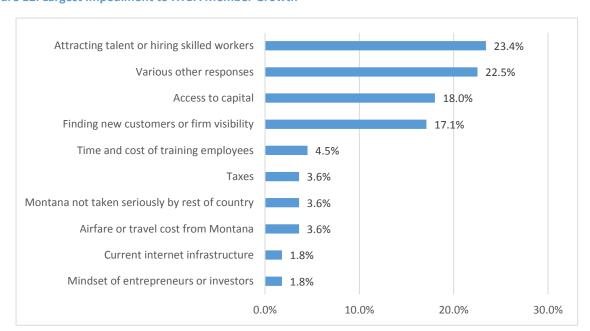


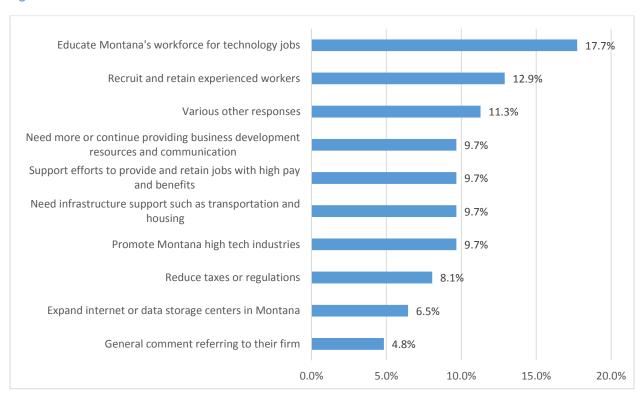
Figure 12: Largest Impediment to HTBA Member Growth

The comments displayed below give more perspective on HTBA members' opinions.

- "Ability to attract enough high caliber talent. Despite the quality of life here, it's a leap for a lot of people to jump off the "normal" career ladder and move to a place like Montana. We can attract 20-somethings and 45+. But that sweet spot of people in their 30s who have some great experience, a contemporary skill set and still have a lot of drive--those are hard to get here."
- "Access to capital and investment. There are still too many financial institutions in Montana
  that know how to write loans for combines and tractors but there are very few who understand
  how to work with technology companies that have intellectual collateral and not a lot of "hard"
  assets."
- "Sales still a large portion of the US doesn't realize the strength of Montana's tech sector so we need more visibility."
- "Reluctance of some Montana companies to even consider us. Many of us startup companies say "we could do more business in Montana if we moved our companies to Seattle.""

# Q12. What additional comments do you have? The Montana High Tech Business Alliance is particularly interested in your observations about improving Montana's business climate and creating new Montana jobs.

HTBA members most often directed their summary comments (see Figure 13) about improving Montana's business climate to two subjects: 1) educating Montana's workforce for technology jobs (18 percent), and 2) a renewed focus on recruiting and retaining experienced workers (13 percent of responses). Four additional areas also concerned Alliance members: 1) providing business development resources and communications (10 percent), 2) supporting efforts to grow and retain job with high pay and benefits (10 percent), 3) the need for additional infrastructure like transportation or housing (10 percent), and 4) the need to promote Montana's high tech industries (10 percent).



**Figure 13: Additional HTBA Member Observations** 

The following comments illustrate HTBA members' opinions in more detail. For an in-depth look at all of the responses to questions 10-12 please see Appendix 4.

- "Renewed focus on supporting skills schools (Code Montana) and 2 year curriculum could help alleviate some of the talent deficit in the short term. Employer education about these resources, particularly as it relates to utilizing raw talent ahead of always requiring experienced candidates, would be helpful to these graduates and businesses that aren't used to doing it. From a personal email with a tech CEO with the right approach here, "I'm less interested in mid and senior level experience and job titles than I am with raw horsepower with a great attitude.""
- "In our line of work, having a greater network outside of Montana will be key for our growth and would give us the ability to create higher paying jobs."

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Hecker, Daniel E. 2005. High technology employment: a NAICS-based update. Monthly Labor Review, 57-72.

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# **Appendix 1: Questionnaire and Topline Results**

See Figure 3. Q2. How many employees does your company have total? Please include all states and countries. If self-employed, indicate one employee. Your best guess is ok. Total number of employees Mean: 230 Median: 3 Responses: 129 Q3. How many employees does your company have in Montana? Number of Montana employees Mean: 18 Median: 3 Responses: 129 Q4. What is your company's average annual Montana wage? Average annual wage (\$) Mean: \$56,900 Median: \$56,800 Responses: 129 Q5. What were your company's annual revenues in 2014? Your best guess is ok. Annual 2014 revenues (\$) Mean: \$92,995,700 Median: \$800,000 Responses: 129 Q6. By what percentage do you estimate your company's annual revenues will increase or decrease next year (2016)? Your best guess is ok. Expected 2016 revenue increase (%)Mean: 85.1% Median: 20.0% Responses: 123 Expected 2016 revenue decrease (%)Mean: 31.2% Median: 31% Responses: 6 Q7. About how many new jobs do you expect your company will create in Montana next year (2016)? Your best guess is ok. Number of new jobs Median: 2 Mean: 5.4 Responses: 129 Q8. By what percentage do you estimate your company's annual Montana wages may increase or decrease next year (2016)? Your best guess is ok. Median: 5.0% Expected 2016 wage increase (%)Mean: 22.9% Responses: 129 Expected 2016 wage decrease (%)Mean: Median: Responses: 0

Q1. Which high tech sub industry best represents your company? Please click only one response.

Q9. About how much money do you anticipate your company will invest in major capital expenditures in Montana next year (2016)? Your best guess is ok.

Major capital expenditures (\$) Mean: \$870,000 Median: \$11,000 Responses: 129

Q10. What advantage does Montana give you in business?

# See Figure 11.



Q11. What is your largest impediment to faster growth?

# See Figure 12.



Q12. What additional comments do you have? The Montana High Tech Business Alliance is particularly interested in your observations about improving Montana's business climate and Creating new Montana jobs.

## See Figure 13.



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# **Appendix 2: Survey Methods**

#### **Data Collection Methods**

The data for this survey were collected by administering a questionnaire via the Internet to a list of HTBA members provided by the Alliance. BBER used Qualtrics survey research software to manage this survey. The questionnaire invitation was transmitted by e-mail and respondents are asked to click on a hyperlink to access the on-line questionnaire. The questionnaire was developed by the HTBA. Data was collected during the period from October 22, 2015 through January 20, 2016. Ms. Christina Henderson, executive director of HTBA, assisted significantly by conducting additional non-respondent prompts and helping to manage the respondent list.

#### **Data Collection Outcomes**

BBER received 129 responses from HTBA members out of 202 asked to participate, yielding a response rate of 64 percent. This response rate is quite high and is one indicator that the survey has yielded high quality data.

# **Data Processing and Analysis**

Following receipt of the survey responses, the data entered were inspected to ensure no duplicate cases were included and to correct any obvious typos made by respondents. Appropriate variable and value labels were added to the data set. Appropriate composite variables and flags were added to the data set to facilitate the analysis process.

BBER conducted a statistical analysis of the survey data using statistical analysis computer software (SPSS version 23, Copyright 2015, IBM Corporation). BBER analyzed the data collected using frequencies, cross-tabulations, standard measures of central tendency (mean, median, and mode), sums and ratios.

# Appendix 3: UM Bureau of Business and Economic Research and the Researchers

The **Bureau of Business and Economic Research** is a research department within the School of Business Administration at the University of Montana, Missoula. We produce a variety of economic and industry data including annual economic forecasts for the United States as well as Montana, its industries, and counties. Six functional areas make up the Bureau of Business and Economic Research:

- Economic Analysis tracks the economic performance of all geographic areas in Montana.
- Manufacturing Research and Forest Industry Research focus special attention on these important industries in Montana and surrounding states.
- Health Care Industry Research examines markets, trends, industry structure, costs, and other high visibility topics to monitor the health status of Montanans.
- Publications, such as the Montana Business Quarterly, the Outlook Book, and other reports, include research and data that help Montanans better understand the state's economic climate.
- The Survey Research Division regularly conducts research to gather local, state, tribal, and national economic data for both public and private sector studies.
- The Natural Resources and Energy Research program is devoted to understanding and tracking the growth and importance of Montana's energy and natural resources sector.

In addition to these six areas, the Bureau also houses the Montana Kids Count Program, a collaborative effort to collect data concerning Montana's children and families. The Bureau was founded in 1948 to monitor the state's economic and business conditions. Over the years we have expanded from a staff of four to a research department of 18 full-time employees and more than a dozen part-time workers. Bureau data assists businesses, government agencies, and individuals across Montana.

The Bureau has over 35 years of experience providing a full range of survey services. With a staff of highly skilled researchers using advanced data collection systems and techniques, the Bureau offers broad-based survey services for public and private sector studies, including: survey development, data collection, and analysis and report writing.

Quality survey data are the foundation of thorough and reliable research and are critical to the success of our clients, which have included: City of Missoula, Missoula County, Confederated Salish and Kootenai Tribes, U.S. Congress, U.S. Department of Commerce, U.S. Department of Agriculture, USDA Forest Service, Montana Department of Labor and Industry, Montana Department of Public Health and Human Services, Montana Department of Transportation, NorthWestern Energy, and Blue Cross Blue Shield of Montana.

#### Researchers

# **Principal Investigator**

Patrick Barkey is director of the Bureau of Business and Economic Research at the University of Montana, a 60- year-old organization with a distinguished record of timely, relevant research and information on the state and regional economies. He has been involved with economic forecasting and policy research for 26 years, both in the private and public sector. Before coming to Montana he served as director of the Bureau of Business Research at Ball State University in Indiana for 14 years. His recent research has been on the economic impact of higher educational attainment, the effect of alcohol abuse on the state's economy, and the economic impact of trade with Canada.

He attended the University of Michigan, receiving a B.A. ('79) and Ph.D. ('86) in economics. Dr. Barkey is a professor in the School of Business Administration at the University of Montana.

#### **Senior Economist**

Kyle Morrill is a senior economist and the director of forecasting at the Bureau. His responsibilities include regional demographic analysis and forecasting. Before joining the BBER team Kyle worked as an analyst in energy efficiency as well as municipal solid waste policy. Kyle earned a Bachelor of Science degree in economics along with a Bachelor of Arts in philosophy from the University of Puget Sound. He received his Master of Arts in economics from the University of Colorado Denver.

# **Director of Survey Research**

John Baldridge is BBER's director of Survey Research. Mr. Baldridge has an extensive background in survey research. His experiences were gained as an independent contractor in Montana and while in the employ of the University of Chicago's National Opinion Research Center, the nation's foremost non-profit, academically-based, survey research center. Mr. Baldridge is a graduate of the Irving B. Harris Graduate School of Public Policy Studies at the University of Chicago ('92), Simpson College ('90), and recently retired from the United States Army Reserve as a Sergeant Major.

# **Appendix 4: Detailed Responses to Open-Ended Questions**

#### Q10

1. outside the echo chamber 2. Novel solutions for rural populations 3. Inviting and available outdoors.

A Collaborative, Entrepreneurial Community. Friendly, Open Business Environment.

A tight-niche community that supports what we are doing. A culture that trusts each other and loves the outdoors.

Access to network of people who are interested in helping me.

Actually, being in Montana is problematic for growth. Hard to get highly experienced and highly educated employees that we need to grow our business.

Affordable workforce, and good standards of living.

Allows us to pay employees less.

At this point, being a solo entrepreneur, it's hard to forecast some of these so maybe I'm not the best person to ask these just yet. I fully expect to grow in income and scale up for hiring next year but I can't give any decent expectations as to what those numbers will look like.

Attracting people who like outdoor lifestyle

Attractive place to live and work. High quality of life and amenities.

Being able to offer a lower wage has been a huge benefit; however, being in the consultant industry is does not offer much leverage.

Close to family.

Community networking aspect.

Connections.

Connections. Cache. Low cost of living.

Cost of living.

Entelechy.

Entrepreneurial ecosystem/network/mentors.

Excellent employees.

Excellent quality of life. For those that want to live this lifestyle, our location can be a recruiting advantage.

Excellent workforce, strong employee retention, some panache in the enterprise IT space people who love mountains, fishing, skiing, Glacier, Yellowstone, river runs through it, etc.

For my business, there isn't a specific advantage, other than I enjoy living here (This is a business which could exist anywhere).

Forces us to be made in America.

Good opportunities for tech - in 2015 most companies are now feeling the need to explore more and different technologies and need new/different solutions, and we provide different options and solutions for network and systems infrastructure.

Good quality of life for owner and employees. Helpful business organization resources willing to help and provide advice and guidance. No sales tax. Us being Internet based however we have growing concern and are starting to run into national (USA) sales tax challenges.

Good technical skill pool in Bozeman. City and state seem eager to help us succeed - there are a lot of different avenues for getting assistance with different aspects of our business. No sales tax.

Great business atmosphere, very entrepreneurial, amazing support from everyone from universities to public officials, acceptable (but should be better) bandwidth for telecommuting, etc.., fantastic place to live.

Great support for a startup - local and statewide. Great employees - smart, determined, terrific work ethic.

Greenfield market - limited prior history and lots of potential to help define a new geography of startup activity.

Growing tech economy which we serve.

Hard working and dedicated workforce. Great place to live and raise a family. Great outdoor recreation.

Hardworking, smart, down-to-earth, friendly, well-educated employees.

Healthy lifestyle offering, passionate and hardworking individuals.

High standard of living.

I haven't seen one.

It is where I want to live. I've learned to make distance an advantage learn to relate to bigger pool of clients.

Lack of competition, access to business leaders/decision makers.

Less competition, natural beauty, a marketing edge due to the outside favorable opinions of Montana in general, and working with people who generally enjoy a much more positive demeanor than most other places.

Less time in the traffic and more time to work and spend with family, easier to network.

Lifestyle!

Lifestyle.

Low cost of living, great quality of life.

Low cost of living.

Lower employee costs; less employee turnover.

Lower relative cost of living.

Montana has a very dedicated, hardworking workforce. However, Montana's reputation as a technology hub is not established, even with Montana companies and state government. There is still too much emphasis placed on going out of state to find talent or expertise, all at the detriment of Montana businesses that offer superior services/products.

Montana is a great place to do business because the overall cost of living seems low. I can work from home and keep overhead costs very low. I own a home and everything I need is within a 15 minute drive.

More employee quality of life.

Motivated employees that want to work/play where we live.

MSU gives us a pool of engineering resources. Employees are overall happy to be working/playing in Montana.

MSU science programs nearby. Montana people good hard working.

My attitude is better as my quality of life is better here. I could make the business more successful elsewhere, and pay more too. I choose to stay because of the place, public lands, and like-minded people.

My customers are primarily ranchers and families that live in rural communities that have little opportunity to obtain high speed internet service at a reasonable cost.

No sales tax for online customers, great quality of life.

No sales tax; location; good labor force.

none

None that I'm aware of. MT does provide business training but this isn't an advantage because other states do the same. My business would do much better if I moved to another state because they provide directive grant, low interest loans and tax incentives. In Montana it seems you predominately have to be a farmer or a university professor to get grants.

None, actually. There are many disadvantages.

None.

None. High cost, including property tax and regulatory burdens.

Not a lot. It was much easier to get leads and therefore jobs in Minnesota just because of the population base. This may very well be imagined, but there seems to be more age-discrimination in I.T. in Montana than I saw in Illinois or Minnesota.

Not a whole lot, Need more business.

Not much that I can think of.

Not sure.

Our clients are primarily the municipalities of and State of Montana, so this question is somewhat mute.

Our clients have a good impression of Montana having honest hardworking people. There is a preconception in the US overall that is positive for Montana. Our clients often start conversations with "Wow, I've always wanted to visit Montana." For us, we also like working with Montana companies. They are responsive, easy going, and very approachable.

Our customers are here.

Our largest advantage here in Montana is bringing our expertise to underserved regions and markets in the state. There are rural schools, rural public entities and local business that are desperately needing better IT services. I think Montana has been lagging behind for many years and we are finally seeing the need and the potential for quality IT solutions. The 2nd advantage is that we are able to hire people that are naturally hard-working and desperately want to make Montana their home.

People who want to be here, Quality of life.

Quality Employees.

Quality of life

Quality of life

Quality of life Education in Engineering.

Quality of life, motivated creative workforce, cost of living low compared to coasts.

Quality of life.

Quality of life.

Quality of life.

Retaining key employees.

Sanity

Skilled labor at a lower cost than major metropolitan areas.

Smaller and more captive target audience.

Smart, energetic, loyal workforce with a natural commitment to customer service and work ethic.

Stealth, hardy employees, attractive living environment, work/life balance, virtuous values. "Blue ocean" for new industry creation, ideal environment for demonstrating the value of our product (private, on-demand regional transportation through quiet, comfortable smart planes).

Tax rates, office rent/lease, tax incentives, human resource expenses, quality of life

The business environment is very welcoming to startups and new ventures in the technology world. Montanans seem very open to business opportunity and growth. There seem to be several programs available to grow startup businesses although I'm not fully versed on what these programs offer.

The cost of living is cheap.

The networking around the state

We are able to hire talented senior software engineers, and entry level college graduates who love living in Montana.

We are the only XXXXXXXXXXXX company in Montana. Montana provides a central location for our company to connect with emerging technologies all over the Northwest.

We love it here. We have both worked in CA, OR, and NY, so we know what the alternatives are for work/life balance. We also both grew up here, so we have that tenacious MT work ethic that fuels our fire. We come to work every day and kick ass so we can continue to live here. Plus, you'd be surprised at how many out of state clients are fascinated with MT and the allure of the west. We are an anomaly. When we go to networking events or conventions out of state it makes for interesting icebreaker conversations about horses, fly fishing, and cowboys.

What advantage does Montana give you in business?

Work ethic / Collaborative culture.

Work ethic of employees. Quality of life.

Work force with a great work ethic / 3 days ground shipping from most of the US / Fairly business friendly, other than Bozeman.

Workers have a good work ethic.

#### 011

1. Available funding 2. Available skilled employees 3. Non-tech savvy citizens.

Ability to attract enough high caliber talent. Despite the quality of life here, it's a leap for a lot of people to jump off the "normal" career ladder and move to a place like Montana. We can attract 20-somethings and 45+. But that sweet spot of people in their 30s who have some great experience, a contemporary skill set and still have a lot of drive--those are hard to get here.

Access to capital and investment. There are still too many financial institutions in Montana that know how to write loans for combines and tractors but there are very few who understand how to work with technology companies that have intellectual collateral and not a lot of "hard" assets.

Access to closer customers.

Access to decision makers in other states.

Advertising.

Affordable health care.

Air travel.

Amount of companies who are willing to work with outside consultants to improve their businesses.

As a marketing firm that specializes in content marketing and PR, many MT companies don't see the value or have the ability to pay for our services. MT has been slow to catch on to the content marketing/inbound shift, which hinders our desire and ability to serve MT (which is something we want to do, since we live, work and love it here). We have many out of state clients, but there's so much opportunity in MT right now, that we hope to capture more MT marketing market share in 2016.

Bootstrapping, sales time.

Business property tax, which makes manufacturing equipment and other job-supporting capex 15% higher than in most other states. Seriously?

Can't find enough qualified talent.

Capital and Legality Issues.

Capital.

Capital.

Capital; combination of training on the capital and access to capital.

Capturing intellectual property (human resources).

Cash. I'm bootstrapping.

Connecting with additional cofounders with necessary expertise.

Cost of living is high but people expect small town prices.

Customer economy prevents raising prices to meet inflation.

Dearth of great quality software engineers.

Distance needed to travel, time, better wireless and broadband Internet coverage.

Everything.

Few business mentor resources.

Financial backing and/or lack of cofounders.

Financing for small business

Financing.

Finding employees with right experience.

Finding good people.

Finding high impact board members.

Finding talent.

Funding of the national transportation program has been our primary limiter. Also, the retraction of spending due to the Bakken downfall has been challenging the past two years.

Funding.

Funding.

Generating and closing more business deals. Once we find interested parties, we generally can make a good case for their business. But finding the clients with the need and the budget for our products seems to be the crux. If we had a steady diet of sales, then we would be more comfortable adding staff without the possibility of laying them off again.

Getting more customers.

Getting trained and qualified engineers because of being a new industry.

High taxes.

Increasing sales.

Investment.

Lack of companies that fit the \$5 - 50M target range.

Lack of funding for tech companies in Montana affects R & D budgets.

Lack of infrastructure funding.

Lack of local customers.

Lack of local potential customers. My ideal clients are manufacturing companies with growing product lines and there is very little manufacturing in this state.

Lack of major Hi Tech companies.

Lack of people coming to us for work.

Lack of public education on my service.

Lack of software developers.

Lake of investors (VC) and support from the University.

Larger talent pool.

Life and work balance.

Located in Butte. Not a lot. It was much easier to get leads and therefore jobs in Minnesota just because of the population base. This may very well be imagined, but there seems to be more age-discrimination in I.T. in Montana than I saw in Illinois or Minnesota.

Longer timeline for decisions in B2B due to the smaller average company size. Plus, difficulty finding qualified people who are willing to move to Bozeman. Cost of living in Bozeman keeps a lot of people away.

Majority of our growth is out of state.

Management of growth and building processes for that growth. Also, educating potential customers that you can find enterprise-level IT services locally. Many times, organizational leaders believe they must go out of state to receive quality, price competitive consulting and solutions.

Managing cash flow during fast growth. Limited access to capital and avoiding outside investments to continue bootstrapping to larger growth.

mid and senior level resources to help scale my entry level

More customers.

MT not taken seriously as place to do business

My mediocre sales team.

National misconception about doing business in Montana.

Nature of our business is such that growth is constrained.

New contracts and revenue.

New product development.

Not enough machinist.

Not enough mid-sized business opportunities, they're either small business (which doesn't help grow the company), or too large for a small outfit to take on.

Obtaining contracts.

Operating capital is a bit tight right now. That will soon change.

Other time commitments

Ourselves. Still working on product idea.

Picked a boom/bust industry, currently in "bust."

Property taxes.

Qualified employees.

Qualified employees.

Running a small business, taxes.

Sales - still a large portion of the US doesn't realize the strength of Montana's tech sector so we need more visibility.

Shortage of skilled workforce.

Small pool of qualified work force.

State and local political leadership have a fundamental misunderstanding of tech and software related industries. They are crafting insignificant policy with an antiquated mindset, geared towards the way business functioned 20 years ago.

Talent pool.

Talent pool.

Talent. Finding qualified and experienced systems and network tech and engineers. Most have come from out of state, some from in state, but need additional training.

The "outside" world isn't fully aware of the successful tech companies inside our state.

The lack of new businesses moving in that can be sustainable

The market.

The small business employee vs. cash flow catch: There's not enough funds to hire employees needed to grow to be able to hire new employees. So it's slow going.

There's too much to do in Missoula and Montana. The only thing stopping faster growth is my own love for the outdoors and a lack of focus come ski season.

Time

Time and ability to hire qualified employees.

Time. Money. Resources. Education. Networking. In that order.

Topography and competitive environment.

Trained people.

Trained staff.

Trained workforce.

Training new employees in marketing technology consulting.

Transportation - air travel; Reluctance of some Montana companies to even consider us. Many of us startup companies say "we could do more business in Montana if we moved our companies to Seattle."

Travel, conferences, meetings, trainings. Investment.

Undercapitalization and limited investor participation in the (old/new) market segment.

#### Q12

Airlines. Might seem like a fringe thing, but when it comes to client visits, the airlines are playing a big role. The number of flights and the cost of flights limits the amount of travel we do to meet clients face to face. So much can be done by phone, and that is great, but I believe the world is starting to get hungry for human interaction again. And it is a differentiator between competing companies. "Who came to see us?"

As the tech industry and R & D in Montana grows, so shall we, increasing new high-paying Montana jobs.

Better engagement of ecosystem. Missoula needs to get better. I did a diagram that I gave to XXXXXX and XXXXXXXX.

Bozeman specifically is becoming a new tech hub which is good for businesses like mine.

Given Montana's size and disposition of the telecommunications providers perhaps communities should consider providing high speed wireless Internet on their own for its residents and businesses. They do it in other corners of the country...in Montana, not so much.

Haven't done any actual business yet waiting on the next tax season.

High paying simply does not exist in most cases.

I feel continued and increased organizations like the HT Business Alliance provide small businesses the chance to create a larger sum than the individual parts.

I greatly appreciate your work and assistance.

I have downsized the company significantly and am looking for other opportunities, because Montana is a difficult place for this type of business to succeed.

I think new comes from two angles. We see companies that come to MT or are created in MT with ample resources and processes to succeed - sadly - most of those are out of state transplants. The other side of that coin are the smaller startups with the great idea or twist on a service or product that are struggling to get the right people and processes in place. They need marketing help, HR, accounting, and sales training, and resources like The Blackstone Launchpad and the BEAR program can only do so much. We work with a few clients that are high tech startups out of Bozeman, and to be perfectly frank, they have a great idea, but fail to execute because they are not thinking past MT. They aren't exposed to what's happening in the marketing landscape or trends for UX and PR. Starting a company in MT is great, but you have to have an understanding of what's happening in the rest of the country. They tend to settle into a little microcosm of mountains and in doing so, they aren't building companies that are prepped for success in broader terms.

In our line of work, having a greater network outside of Montana will be key for our growth and would give us the ability to create higher paying jobs.

It is very competitive for high quality engineers. Can we make more?

It is very difficult to find senior IT people in MT. - Most tech jobs are filled by word of mouth in MT. This gives outsiders the impression that there is little job growth and therefore it is harder to recruit them here

Keep promoting Montana as a good location for regional/national offices. Work with the Legislature, Montana Dept. of Commerce, local economic development groups, etc. to devise and implement incentives for existing companies to grow and to attract new companies.

#### Keep the Alliance non-partisan.

Let's work together to come up with workforce/workplace options. Specific tracks for the IT areas that will place a student into an area of IT they want to be in after graduating. Also working to achieve and get IT certifications with specific vendors and manufacturers would make a recent grad and current IT people much more employable. Working to emphasize how important IT is to companies would also highlight the need to build up a competent IT department with vision, strategies and tactics to be successful in business and leverage IT.

Local regulatory burdens, such as permitting, need to be addressed.

Montana is poised to expand our technology economy beyond our state's traditional tourism and agriculture economy. This will require changes within the business community, and especially within local and state government mindsets, to truly unleash the potential of technology jobs in the state.

More air service, incentives for workers that can work anywhere to come to Montana such as moving expense, home office set up, and airline coupons.

My vision is a new age ad agency that disrupts the traditional methods that are overpriced and provide little to no ROI for businesses. While the business model I have is not new (many major cities in more progressive areas of the world having been doing this for many years) I fully expect to have to educate my market as to this new wave of marketing before I can actually get them to pay for it. Montana is primed for this type of agency; being a bit behind the times in tech as a whole puts Montana in a unique position to begin reaping benefits of new age business practices and marketing in the near future.

Need better/more networking opportunities in focused areas in MT (Bozeman, Missoula, Helena, etc.).

Need to stop H1-B visas. Read the book Sold Out!

No new jobs will be created by us in Montana; employment laws not favorable compared to other states.

None.

None.

Not much help for small businesses and affordable healthcare is not affordable. People want to charge high for rent and things but don't want to pay comparable prices for services of small business.

Obtaining financing for a small business such as ours is extremely difficult. While there is a lot of talk about wanting to grow jobs in the area, I find there is a lack of resources to help small business do so.

Our vision for this company is to grow it to \$1 million annually and then to \$10 million annually. We also have some amazing products in development that may really offer some well-paid technology jobs in Montana.

Partnership with post-secondary education and other technology training CCNA, MCSE, etc. is critical.

Paying top of market is a mindset we endorse. However, creating the cash flow necessary demands a longer term vision to support the achievable valuations that can emerge only in due time. A short term focus kills wages and must be fought at every level, including the ones where smart, experienced investors and executives bring contrary advice.

Recruiting and retaining high quality people is number one for us. Quality internet access both at work and at home to retain key people.

Renewed focus on supporting skills schools (Code Montana) and 2 year curriculum could help alleviate some of the talent deficit in the short term. Employer education about these resources, particularly as it relates to utilizing raw talent ahead of always requiring experienced candidates, would be helpful to these graduates and businesses that aren't used to doing it. From a personal email with a tech CEO with the right approach here, "I'm less interested in mid and senior level experience and job titles than I am with raw horsepower with a great attitude."

Sense of a changing landscape. Hopefully we won't create so many high paying jobs that we turn into Boulder, CO.

Shouldn't be too big of a challenge depending on technology you have and if your product doesn't fall into becoming a shipping nightmare.

Skilled workforce is and will only increase as a significant impediment to growth in manufacturing in Montana. It needs to become a focus of state government, secondary and post-secondary education sectors, and employers to work towards solutions.

Statewide high speed internet access is very important.

The more we all know about each other and our struggles/triumphs, the better. A focus on old-school manufacturing union jobs would be welcome too.

The more we can coop businesses have to plug in have joint work programs to give people the idea of what is available as far as high tech. Keeping the students in the state. State needs to channel more nonprofit money toward job training programs for veterans. Such as salary share for training.

The people we most want to serve are hurting for disposable income.

The regulatory climate is decent, but not great. We look at regulatory risk when evaluating where to locate additional jobs. Tax and labor regulations and enforcement have significant room for improvement.

These days, creating the jobs isn't as difficult as filling them. We currently have two good paying technical jobs available but the workforce isn't here. Most applicants come from out of the area. And, once they do the research and learn about the cost of living in Bozeman they often decline the opportunity. I know several other businesses who have the same struggle.

They did a really neat workshop in Kalispell this year on marketing high tech and I was unable to attend I hope it will happen again in the near future and continue.

This survey seems like it is focused on financials for reporting/projection/promotion purposes. My observations about creating jobs are outside the scope of this survey and right now I just don't have time to go into it. Sorry.

Top talent comes with a significant price--often a lot more than even what our average salary is, which is quite high for Montana. This can be compounded by the high cost of living in a place like Bozeman. This can make it challenging to recruit and afford the salaries required to get people here. It seems that it would be better to groom talent that's already here which also comes with a price (i.e.., we have to spend time training/developing young people). Thus, if we could get more from education it would help.

Two major disadvantages to high tech business are the lack of ubiquitous high-speed internet and transportation difficulties and distances.

UM fellowships for students to work in biotech. Better collaboration between UM and biotech.

Understanding on a deeper level businesses that have grown large and scaled rapidly without relying on outside investments, but instead growing within and managing growing revenue and growing expenses and cash flow management.

We believe in paying decent wages and providing good benefits to our employees.

We have had great interactions with the City of Bozeman, the Montana Department of Commerce, the Governor's Office of Economic Development, and local organizations like MSU Launchpad, Prospera, and the Montana Community Development Corporation. Between the supportive environment and the right mix of other factors, I think that the tech sector in Bozeman is poised for rapid growth.

We have several job opening, many in six figures. More growth available, but will have to look for expanding outside of the state for new operations to sustain our growth unless we can attract the correct staff.

We need accelerators and co-working spaces in the same building in Missoula and Bozeman, to start.

We need infrastructure to support quality of life amenities and to support work force housing.

We need to lower taxes on businesses keep jobs in the United States. Montana would then benefit proportionally as higher paying jobs are offered nationally.

What additional comments do you have? The Montana High Tech / Business Alliance is particularly int...

Would like to spend more in state and use MSU more.

XXXXXX won't create super high-paying jobs right away, but the success of XXXXXXX will not only be a story of personal success, but a Montana success story as well. As we grow, we will look to give back as much as possible to the community that has already been so supportive. (That means jobs to Montanans)

XXXXXXXXX is on a mission to end XXXXXXXX through technology. We need high impact board members and financial support. We have built and published apps to help end XXXXXX but we need help launching them.