



A PROFILE OF **MONTANA'S** HIGH-TECH INDUSTRIES

FEBRUARY 2019



BUREAU OF BUSINESS AND
ECONOMIC RESEARCH
UNIVERSITY OF MONTANA

Acknowledgements

The members of the Montana High Tech Business Alliance worked hard to provide the thorough information presented here, for that they are due sincere thanks.

The Board of Directors of the Montana High Tech Business Alliance commissioned this report and provided a clear vision for its implementation. They are:

Jeff Trom, Chief Technology Officer and Managing Director, Workiva, Bozeman (Founding Board Member, Board Chair)

Liz Marchi, Founder, Frontier Angel Fund, Polson

Jason Mittelstaedt, Co-founder, Yellowstone Growth Partners, Bozeman (Founding Board Member)

Kelly Schwager, Vice President, Global Communications for Oracle, Columbia Falls

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Paige Williams, Founder and CEO, The Audience Awards, Missoula

The Montana High Tech Business Alliance Board of Advisors also provided vital input. They are:

Tim Austin, Senior Vice President, Chief Operations Officer, D.A. Davidson, Great Falls

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Shon Wedde, Senior Director, Product Management, Oracle, Bozeman

Steve Wheeler, President, First Security Bank, Bozeman

This study would not have been possible, nor would it have achieved so much without patience and tireless efforts of Ms. Christina Henderson, executive director of the Montana High Tech Business Alliance. In addition, the staff of the Alliance put forth excellent effort in guiding this project to a successful conclusion, including Katy Spence, communications director; Noah Hill, membership service intern; and Jack Meyer, systems and marketing analyst.

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February 14, 2019

Contents

Acknowledgements..... 1

List of Tables and Figures..... 5

Key Findings..... 6

Background of the Project 7

 The Montana High Tech Business Alliance 7

 The Bureau of Business and Economic Research..... 8

Measuring High Tech Business Activity 10

Results..... 13

Alliance Member Firm Trends..... 30

 Annual Wage 30

 Montana Employment..... 31

 Total Annual Montana-Generated Revenue 31

 Total Capital Expenditures in Montana 32

References..... 33

Appendix 1: Questionnaire 34

Appendix 2: Survey Methods 39

 Data Collection Methods 39

 Data Collection Outcomes 39

 Data Processing and Analysis 39

Appendix 3: UM Bureau of Business and Economic Research and the Researchers..... 40

 Researchers 40

 Principal Investigator 40

 Senior Economist 41

 Director of Survey Research 41

Appendix 4: Detailed Responses to Open-Ended Questions 42

List of Tables and Figures

Table 1: Characteristics of Montana’s High Tech Industries, FY2018.....	10
Table 2: 2005 BLS-Defined High Tech Industries	12
Figure 1: Locations of 2018 HTBA Members	8
Figure 2: Montana Earnings per Job	11
Figure 3: High Tech Business Types	13
Figure 4: Employment Distribution among High Tech Firms in Montana.....	14
Figure 5: HTBA Annual Wages.....	15
Figure 6: 2017 HTBA Revenue by Firm	16
Figure 7: Annual Revenue Growth Rate.....	17
Figure 8: Annual Employment Growth Rate	18
Figure 9: Most Often Hired Occupations.....	19
Figure 10: Most Often Sought Skills	20
Figure 11: 2018 Ease or Difficulty of Hiring Qualified Employees.....	21
Figure 12: 2018 Hiring from within Montana	22
Figure 13: Annual Pay Growth Rate.....	23
Figure 14: 2019 Planned Capital Investments in Montana	24
Figure 15: 2018 Ease of Difficulty in Obtaining New Capital	25
Figure 16: Advantages Montana Gives Firms	26
Figure 17: Largest Impediment to Firm Growth.....	27
Figure 18: Most Important Membership Benefit	28
Figure 19: Additional Respondent Observations	29
Figure 20: Median Annual Wages Paid by Alliance Member Firms.....	30
Figure 21: Total Montana Employment by Alliance Firms	31
Figure 22: Total Annual Revenue.....	31
Figure 23: Total Major Capital Expenditures in Montana	32

Key Findings

This is the fifth annual report on the high tech industry in the state of Montana. The Montana High Tech Business Alliance (HTBA or the Alliance), 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 fifth iteration of this study adds a new question focused on skills that are in demand among the industry's new hires.

The BBER finds that on the basis of 153 HTBA member firm and 67 nonmember firm survey completions:

- Alliance member firms and responding nonmember high tech firms report quite similar characteristics and concerns, which adds credibility and depth to the findings presented in this study;
- Alliance members expect to add a very significant 1,500 new jobs in 2019, much stronger job growth than has occurred in the overall economy. Responding nonmember firms will add an additional 200 jobs;
- Jobs with Alliance members pay considerably more than jobs elsewhere in the economy. The average annual salary at HTBA businesses (\$65,000) and nonmember businesses (\$63,000) was 60% larger than the average earnings per Montana worker;
- By essentially any measure, growth projected in member and nonmember high tech businesses vastly exceeds average statewide economic growth. Employment and revenues are expected to grow at roughly nine times BBER's projected statewide growth rate;
- The HTBA members expect to make at least \$125 million in capital expenditures at their Montana facilities in 2019. This represents a significant increase from anticipated 2018 major capital expenditures (\$86 million);
- HTBA members will raise wage rates by 5% in 2019, faster than the 3.2% rate of growth realized in wage rates of all Montana employers in the most recent data;
- The Montana-based activities of HTBA members were responsible for \$1.6 billion in gross sales in 2018, a significant increase over 2017 revenue (\$1.4 billion). Responding nonmember firms generated \$443 million in 2018 gross sales;
- For the fifth year in a row, HTBA member respondents 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. Nonmember respondents reported the same for the third year in a row;
- HTBA members and nonmembers report that hiring skilled technology workers and finding capital are their firms' two largest impediments to faster growth. Visibility to customers was also recognized as an impediment to faster growth by both member and nonmember firms;
- Somewhat fewer Alliance companies (13.4%) reported that it was harder to obtain capital in 2018 when compared to 2017 (20%).

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 5.4% 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 370 member firms.

Full membership in the Alliance is available to 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, government entities or economic development agencies may join as affiliate members.

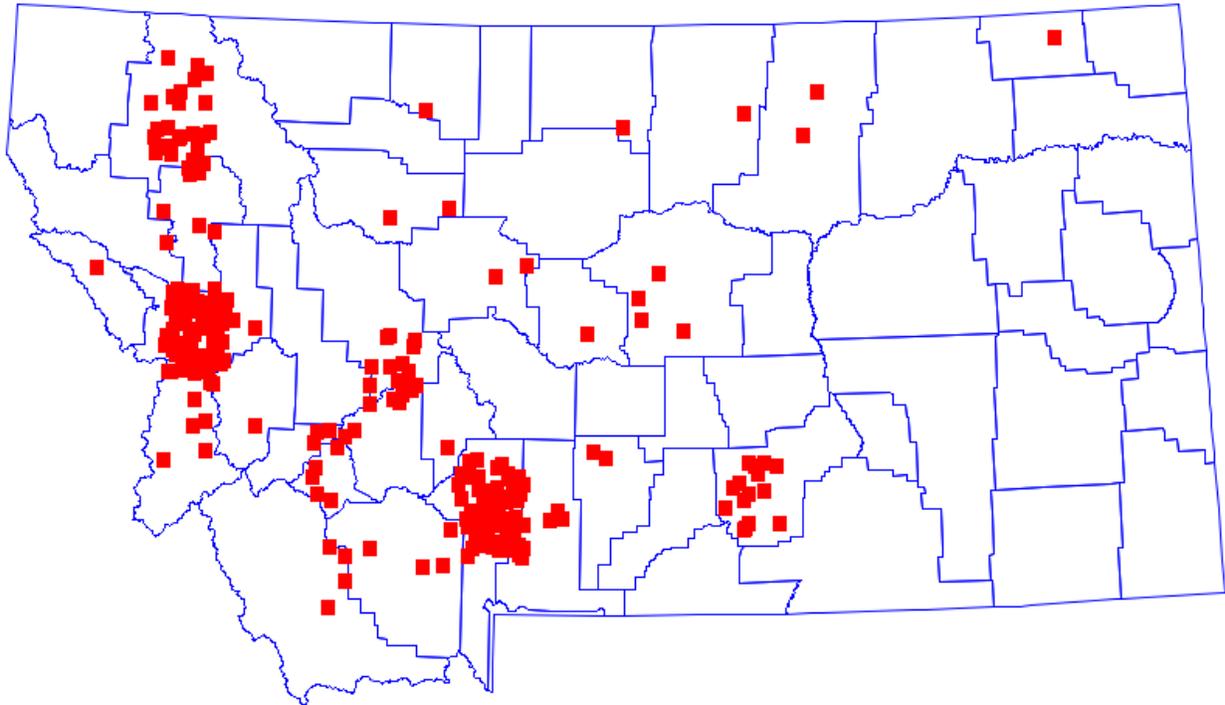
The Alliance is recognized as a 501(c)(6) nonprofit trade association.

Benefits of membership include:

- connecting with tech leaders across the state at quarterly networking events;
- promoting member companies and Montana's strong high tech and manufacturing sector through a biweekly e-newsletter, website and other communications channels;
- and accelerating growth by recruiting employees through a 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 2018 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 College of Business. Founded 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 fifth 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 illustrate 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 is the fifth replication of this study, it is possible to observe some changes that have occurred among Alliance membership and in the high tech industry as a whole.

This study also examines the characteristics and concerns of nonmember high tech firms located in Montana. Including nonmember firms in the study provides data users a useful glimpse into the broader population of high tech firms. Nonmember data also provide helpful context that broadens data users' understanding of Alliance member firms.

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. For this study 311 of the 370 member firms, only those that work in the areas of high tech or manufacturing, were invited to participate. In addition, 279 nonmember high tech firms were invited to participate.

This year's survey contains a new addition. The survey adds a question about what skills companies are looking for in their new hires. Those results are reported below. Finally, trends in wages, employment, revenue, and capital expenditures over the five years the survey has been conducted are examined at the end of 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 5.4% of total Montana wages, 3.3% of total Montana payroll jobs, and 5.4% of Montana business establishments in FY2018. 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, FY2018

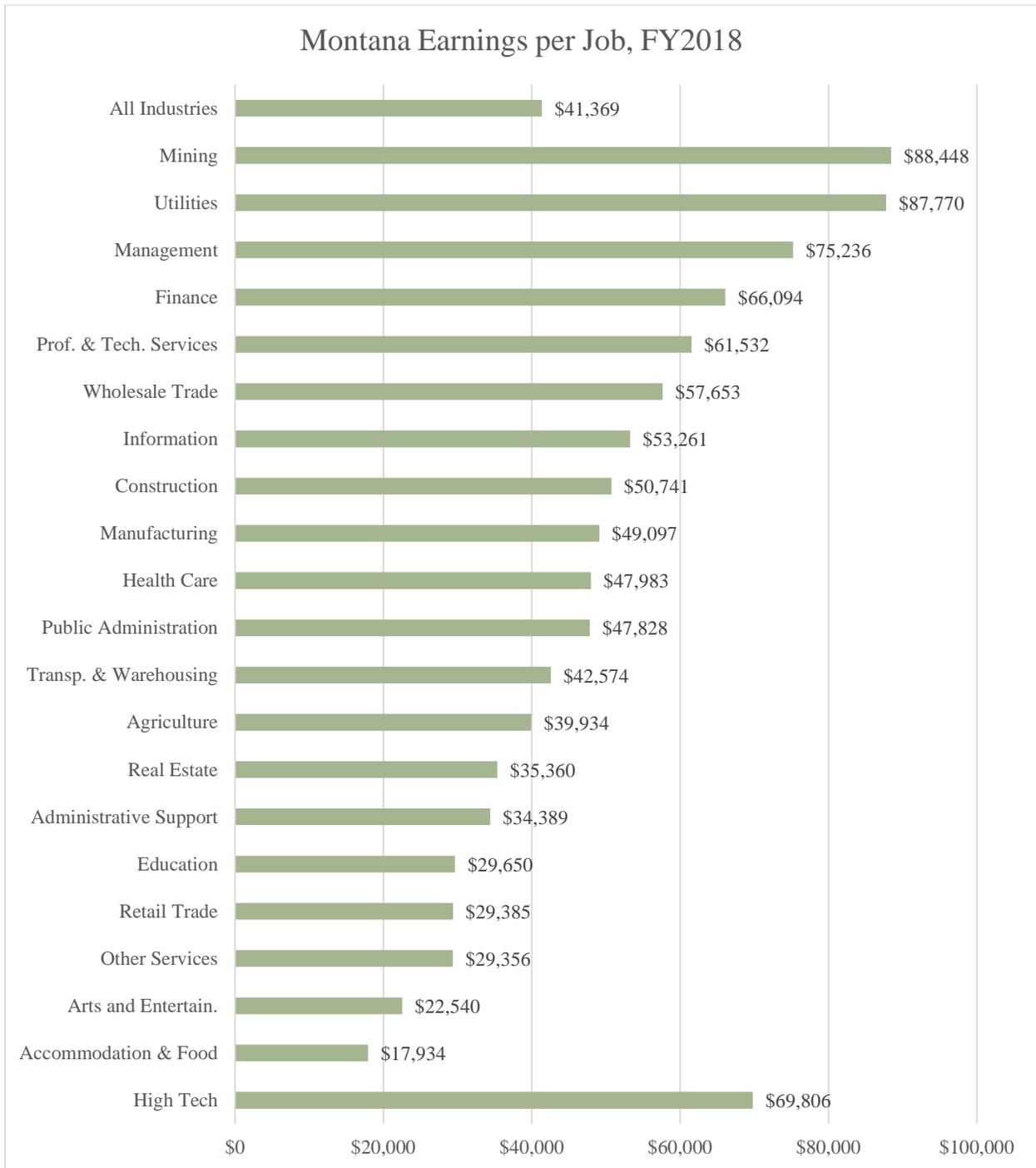
Category	FY2018	FY2017	FY2018 Change
Wages (\$ mill.)	\$1,061.74	\$1,032.89	2.8%
Employment	15,210	15,069	0.9%
Establishments	2,655	2,368	12.1%
Wages per Job	\$69,806	\$68,544	1.8%
Jobs per establishment	5.73	6.36	-9.9%

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 publicly available data suggest that the industry’s presence is growing. When compared to FY2017, the total number of establishments in the state grew by 12.1% in FY2018, while wages grew by 2.8% while employment grew by 0.9%. Montana’s high tech firms are becoming more numerous. They also are paying higher wages. Wages per job grew by 1.8% in FY2018.

The data also suggest that Montana’s high-tech employers pay considerably more in FY2018 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 \$69,806 per year, or roughly 69% higher than the state average of \$41,300 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

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.

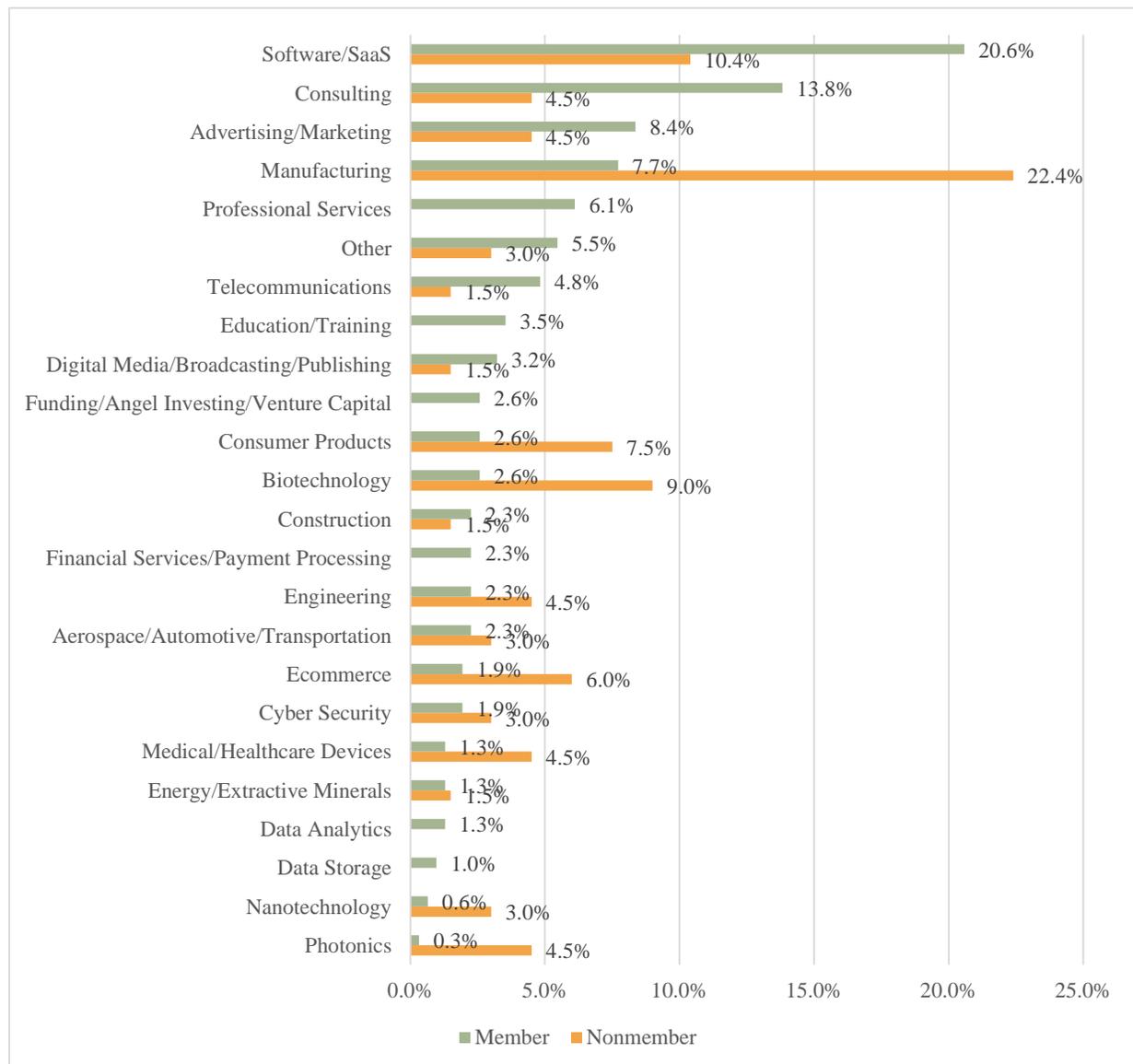
Results

The paragraphs that follow present the findings of the Montana High Tech Business Alliance survey that was conducted from December 2018 to February 2019. 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 2018 by their type of business. HTBA consists of businesses from a wide range of industry sectors. Software, consulting, and high tech advertising/marketing firms are the three most common firm types in the Alliance. Among nonmember firms, manufacturing and biotechnology were the most common firm types.

Figure 3: High Tech Business Types

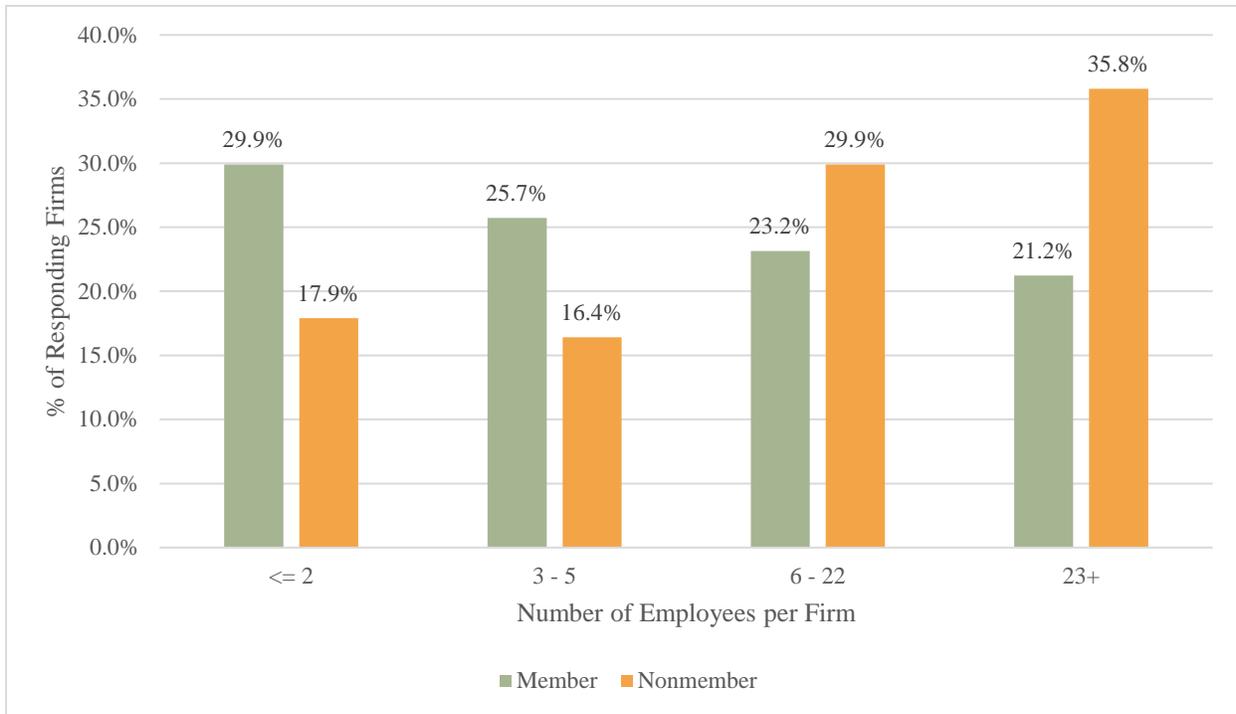


Q2. How many employees does your company have in total?

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

More than three quarters (79%) of Alliance high tech firms employed 22 or fewer people in Montana. Figure 4 describes the distribution of employment sizes among the Montana High Tech Alliance. HTBA members employed 7,500 Montana workers as of December 2018. Responding nonmember firms employed an additional 2,300 Montana workers.

Figure 4: Employment Distribution among High Tech Firms in Montana

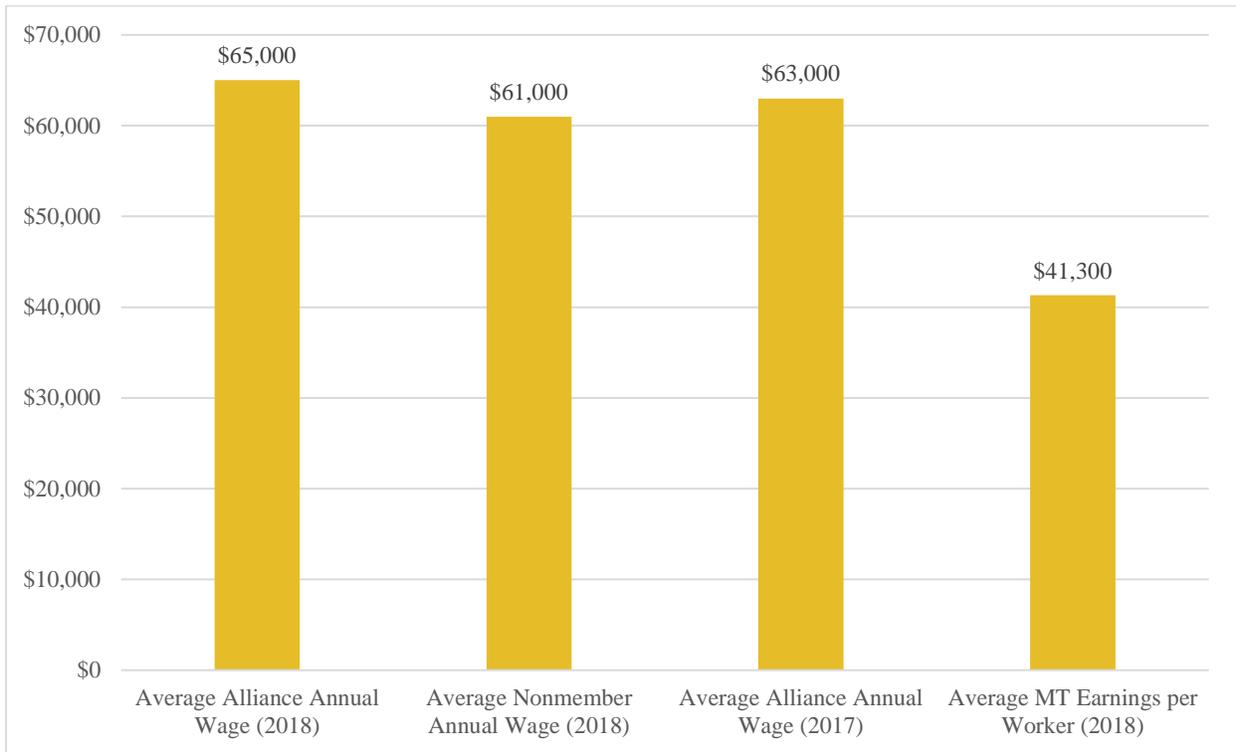


2018 Changes. The distribution of large versus small firms in the Alliance remained roughly the same from 2017 to 2018. The proportion of Alliance firms with from 1 to 5 employees was 57% in 2017 and 56% in 2018. The employment distribution of the responding nonmember firms shifted toward the top two quartiles in 2018.

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

The members of the HTBA and responding nonmember firms provide high-paying jobs for Montanans. Figure 5 below illustrates that HTBA jobs and nonmember high tech jobs pay almost 60% more than Montana's average annual earnings per worker.

Figure 5: HTBA Annual Wages



2018 Changes. Average annual wages paid by Alliance member firms increased by 3.2% from 2017 to 2018. The increase in average Alliance wages is higher than the total wage increase of 1.8% found in publically available data for all 15,210 Montana high tech firms.¹ Nonetheless, Alliance annual wages increased at a rate that exceed the 2018 national inflation rate of 1.9%.²

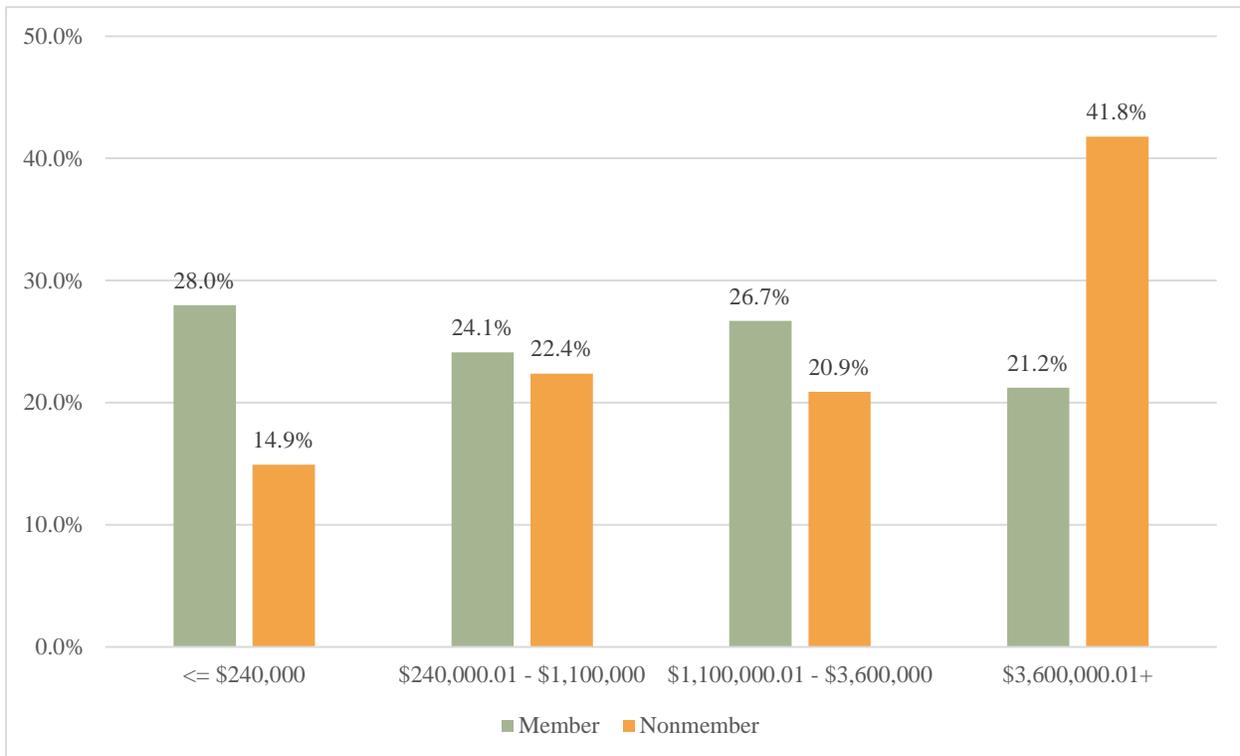
¹ Sources: UM Bureau of Business and Economic Research and U.S. Bureau of Labor Statistics State and Area Employment, Hours, and Earnings, Total 2018 Private Earnings in Montana.

² Source: Bureau of Labor Statistics, U.S. Department of Labor, The Economics Daily, Consumer Price Index: 2018 in review on the Internet at <https://www.bls.gov/opub/ed/2019/consumer-price-index-2018-in-review.htm> (visited February 13, 2019).

Q5. What were your company's annual revenues in 2017?

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 \$1.6 billion in 2018 revenue. Responding nonmember firms generated an additional \$443 million in Montana-based revenue during 2018. 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: 2017 HTBA Revenue by Firm

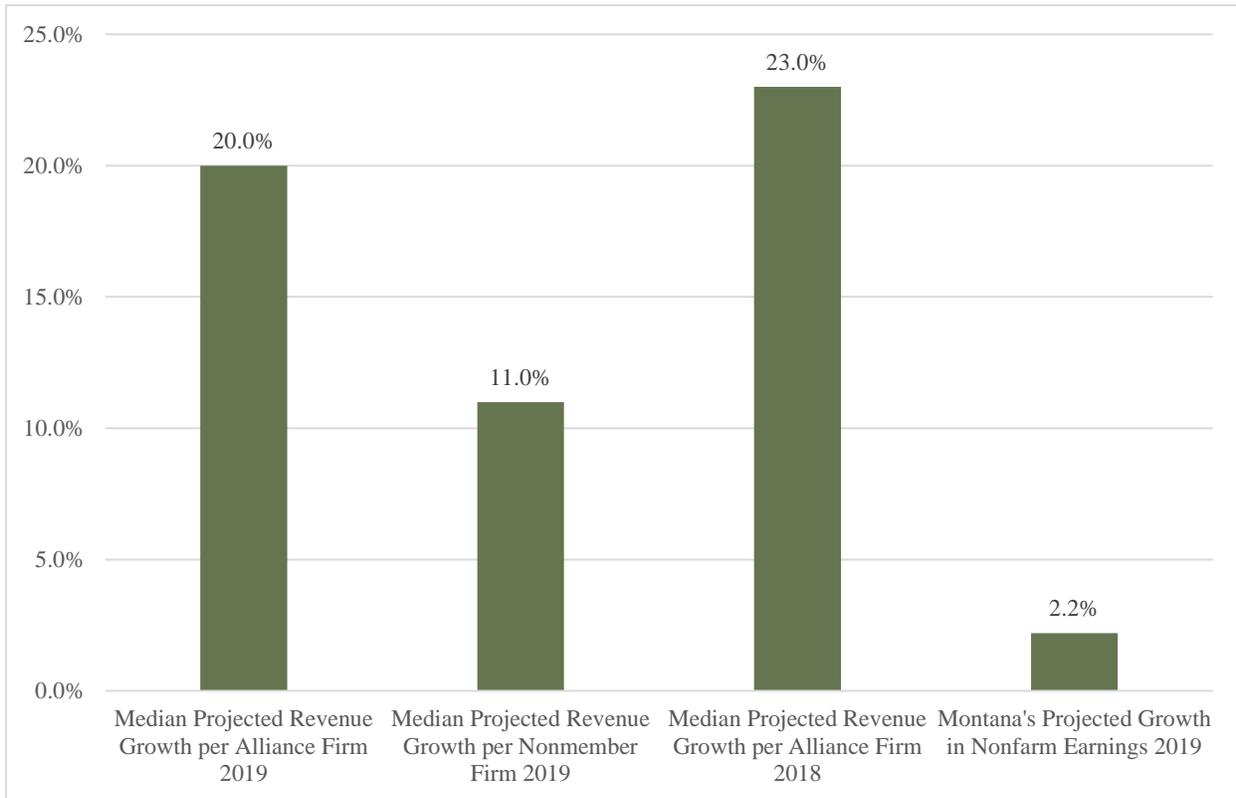


2018 Changes. Total Alliance firm revenue increased from \$1.4 billion in 2017 to \$1.6 billion in 2018. This increase suggests that Alliance firms are growing substantially. In addition, a significant number of member and nonmember firms chose not to answer this question. This respondent choice required UM BBER to impute the missing responses. For this reason, readers should use the data presented for question 5 with some caution.

Q6. By what percentage do you estimate your company's annual revenues will increase or decrease next year (2018)?

Montana's high tech companies still anticipate growing very quickly. Figure 7 demonstrates that Montana HTBA firms anticipate growing more than nine times faster than the Montana economy as a whole. Responding nonmember firms anticipate growing at four times the rate of the entire Montana economy.

Figure 7: Annual Revenue Growth Rate

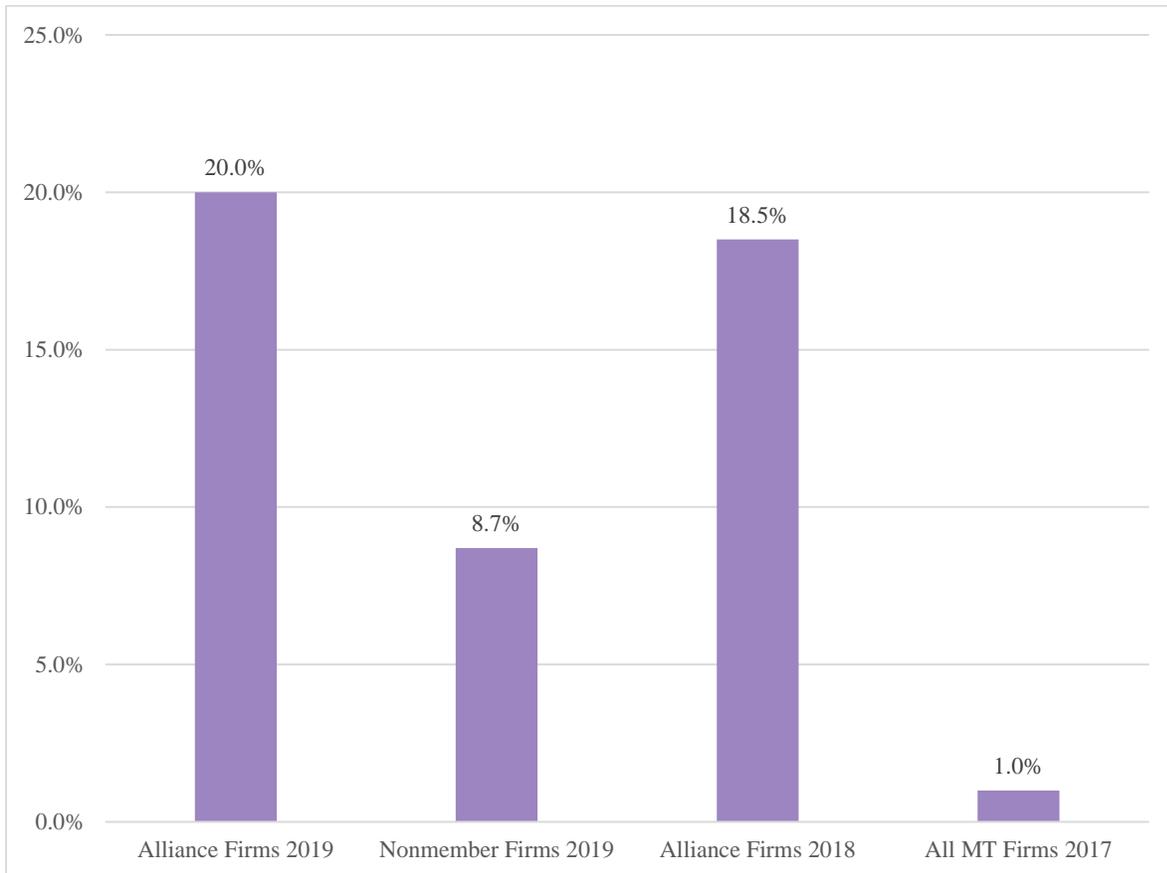


2018 Changes. 2019 projected median Alliance revenue growth per firm (20%) decreased slightly when compared to 2018 projected growth (23%). 2019 projected revenue growth aligns well with projected 2019 employment growth presented on the next page. The continuing anticipation of fast growth is an indication 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 (2019)?

Montana’s HTBA firms will add an estimated 1,500 new jobs in Montana in 2019. Responding nonmember firms will add an additional 200 new jobs. This annual Alliance employment growth rate (20%) is significantly faster than Montana’s 2017 total employment growth rate of 1% (see Figure 8 below).

Figure 8: Annual Employment Growth Rate



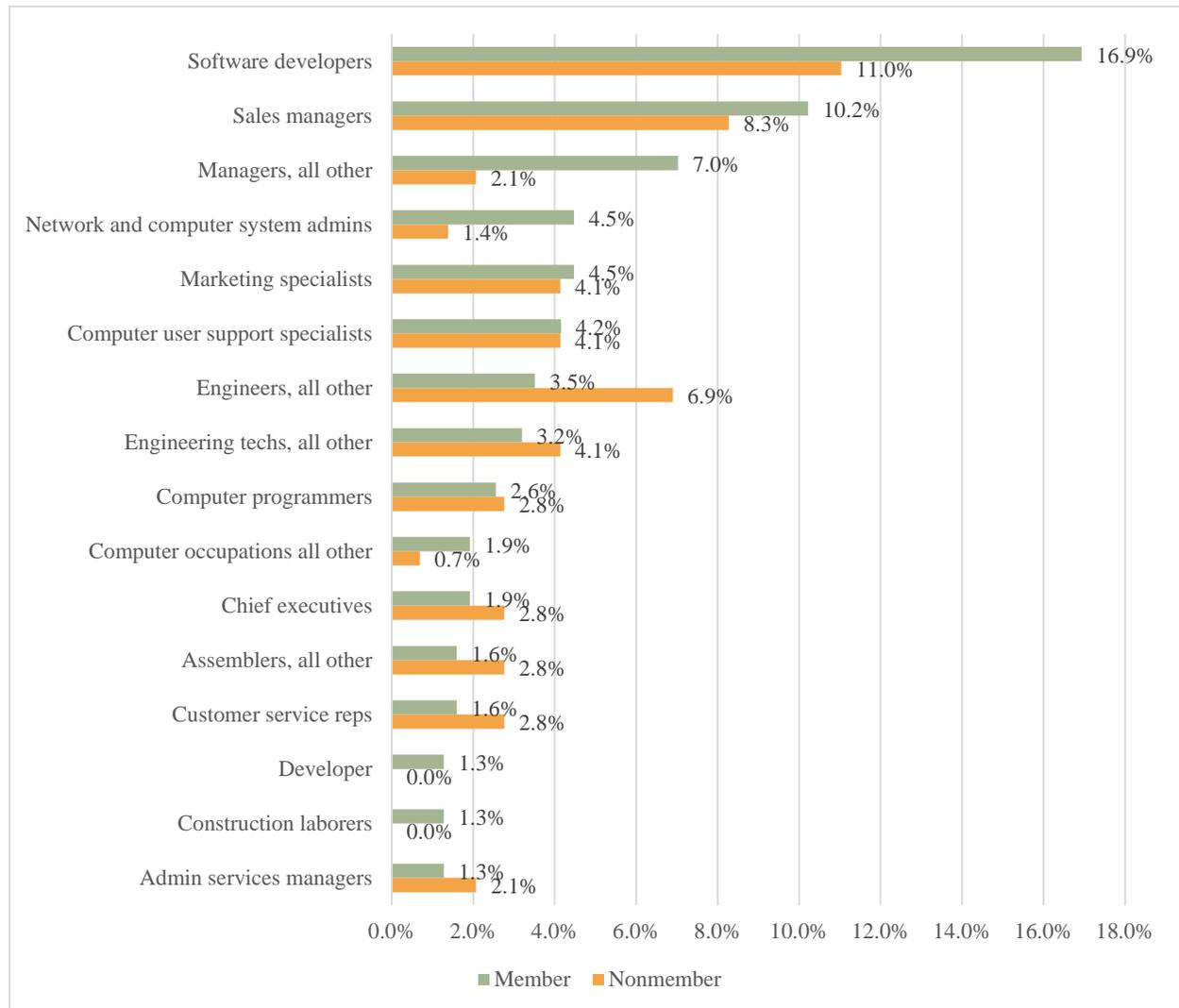
2018 Changes. 2019 projected employment growth is slightly higher than 2018 projected employment growth. 2019 employment growth aligns well with projected 2019 revenue growth presented on the previous page. Given that UM Bureau of Business and Economic Research and Montana Department of Labor and Industry both view the Montana economy as nearing full employment³, it is clear that many of these new jobs are likely to be filled by persons from outside Montana.

³ Sources: Montana Department of Labor and Industry 2018 Labor Day Report and UM Bureau of Business and Economic Research Montana Economic Report: 2019.

Q8. What are the job titles of the three job types that your firm most often hires?

Alliance member firms provided a total of 313 answers to this question. Among these 313 answers, Alliance members said that they most often hire 95 distinct job titles. The most frequently cited job title was Software Developer, which comprised 16.9% of the 313 total answers (see Figure 9). Sales Manager was next most often mentioned (10.2%), followed by Managers (7%), and Network System Administrators (4.5%). Nonmembers most often hired Software Developers (11%), Sales Managers (8.3%), and Engineers (6.9%).

Figure 9: Most Often Hired Occupations



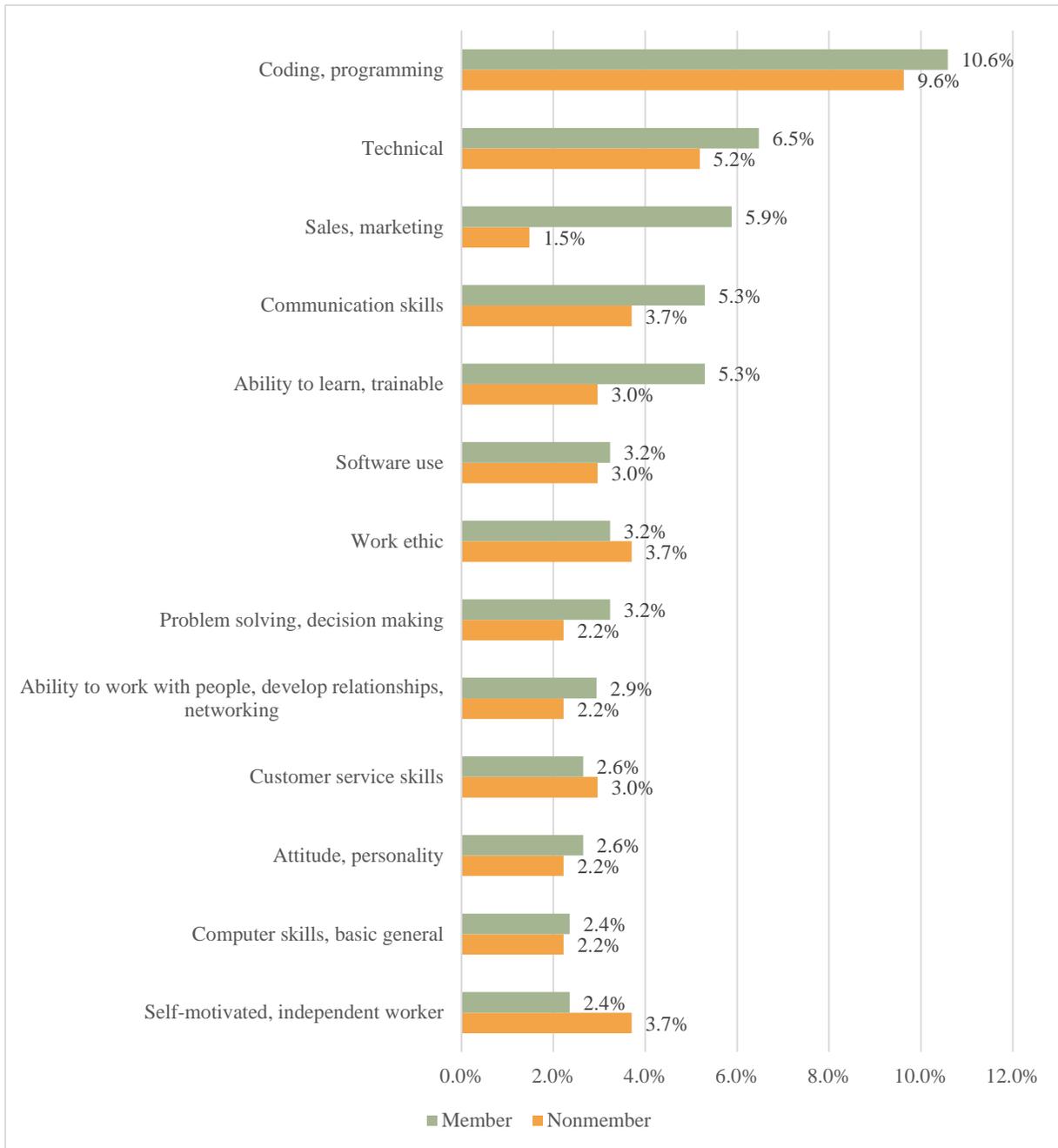
All answers to this question were coded by U.S. Bureau of Labor Statistics 2018 Standard Occupational Classification (SOC).⁴ The complete table presenting the frequency of responses by 2018 SOC may be found in Appendix .

⁴ The 2018 direct match file may be found here: https://www.bls.gov/soc/2018/soc_2018_direct_match_title_file.pdf

Q9. What are the three job-related skills your firm looks for most in new hires?

Alliance members (10.6%) and nonmembers (9.6%) are most likely to say that their firm looks for coding or programming skills in new hires (see Figure 10). The percentages reported here are based on 340 Alliance member responses and 135 nonmember responses. Both Alliance members (6.5%) and nonmembers (5.2%) are next most likely to mention technical skills specific to their business. Sales and marketing (5.9%), communications skills (5.3%), and the ability to learn (5.3%) were also prominently mentioned by Alliance members.

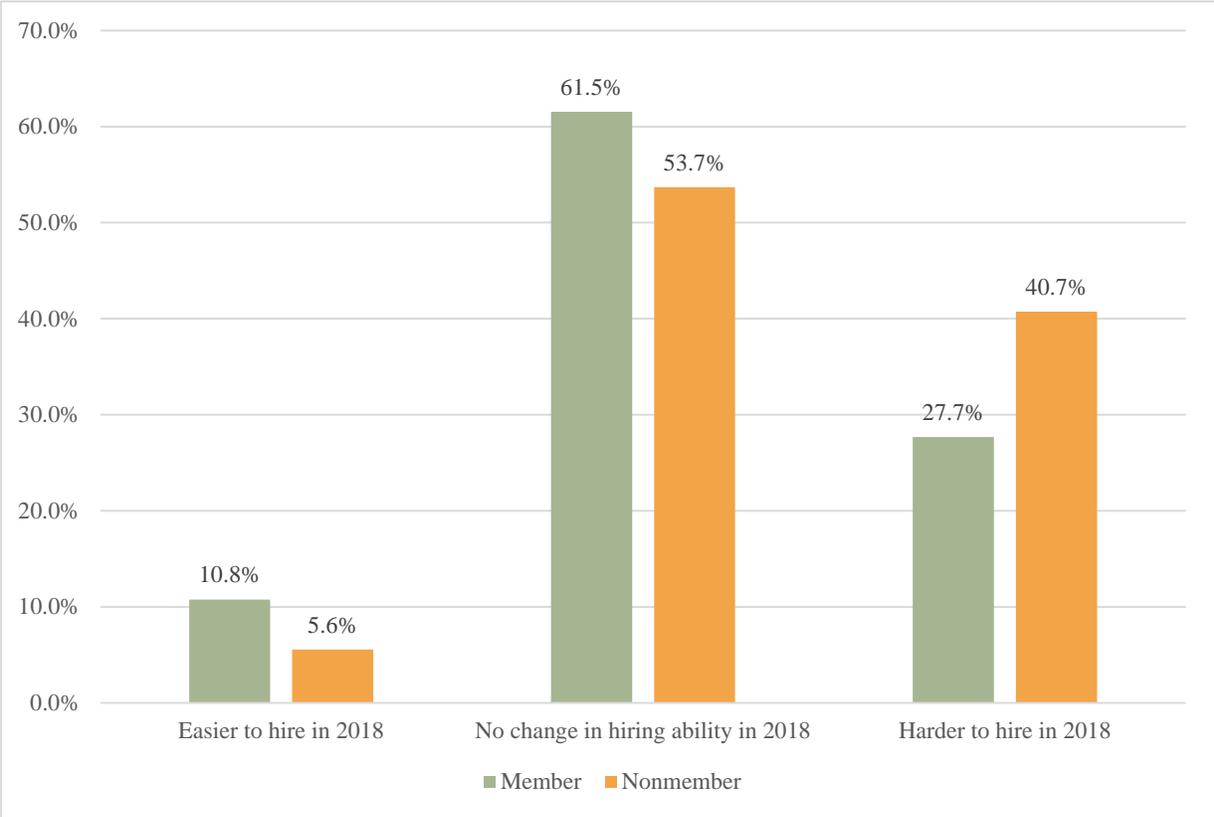
Figure 10: Most Often Sought Skills



Q10. Some Montana employers say that it is hard for their firm to find qualified new employees. Other Montana employers say that it isn't hard for their firm. Over the course of calendar year 2018 would you say that for your firm it has become easier, there has been no change, or it is harder to hire qualified new employees?

Almost three of every 10 Alliance employers (27.7%) reported that it became harder for their firm to hire qualified workers over the course of 2018 (see Figure 11). Four of every 10 nonmember firms (40.7%) said that hiring got harder during 2018. A majority of Alliance members (61.5%) observed no change in hiring ease or difficulty. About 1 in ten Alliance employers (10.8%) said hiring qualified workers became easier during 2018.

Figure 11: 2018 Ease or Difficulty of Hiring Qualified Employees

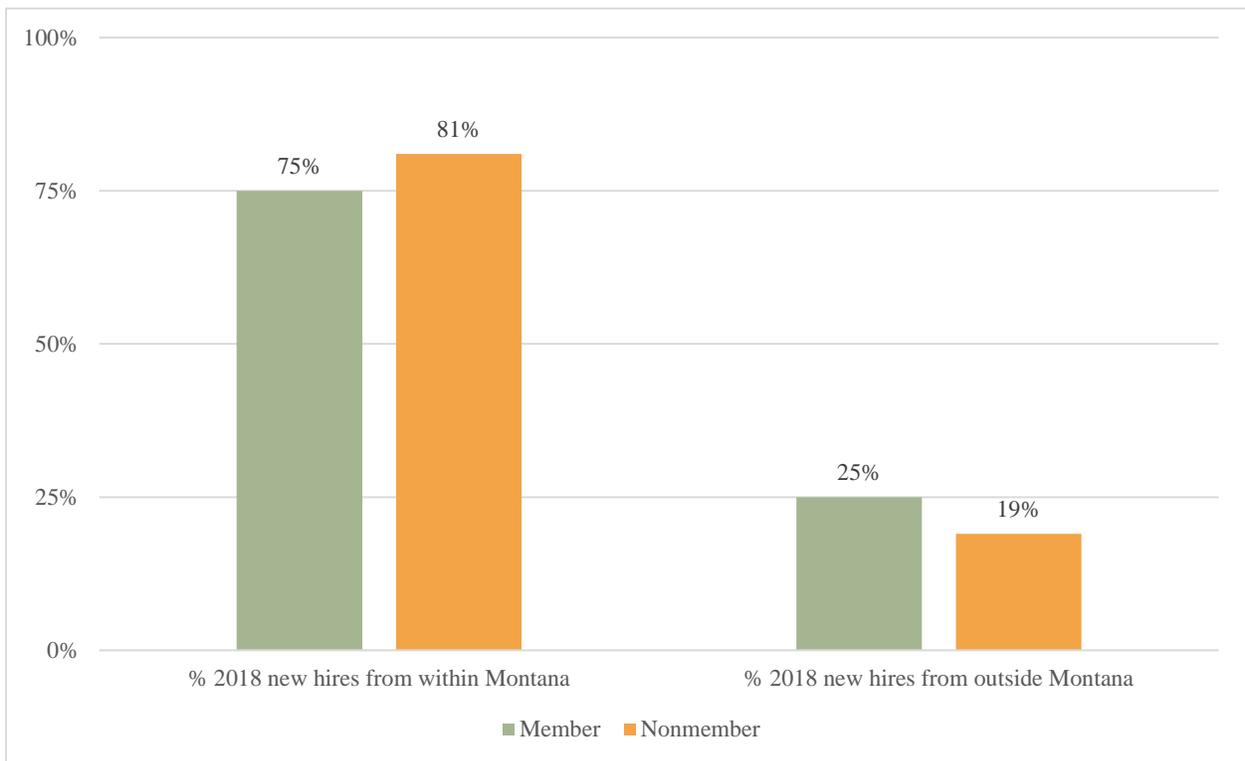


2018 Changes. Alliance members and nonmembers reported very little change in 2018 in the ease or difficulty of hiring workers when compared to 2017.

Q11. Over the course of calendar year 2018 what percentage of your firm's new hires came from within Montana and what percentage came from out of state?

Alliance firms reported hiring 75% of their new employees from within Montana during 2018 (see Figure 12). About 25% of new Alliance company employees came from outside Montana. Nonmember firms reported a slightly higher within Montana hiring rate, 81%. This survey result represents only the second year of the Alliance’s attempt to measure state of origin for new hires among Montana businesses. This effort is providing an important benchmark as efforts within Montana to develop the state’s workforce progress.

Figure 12: 2018 Hiring from within Montana

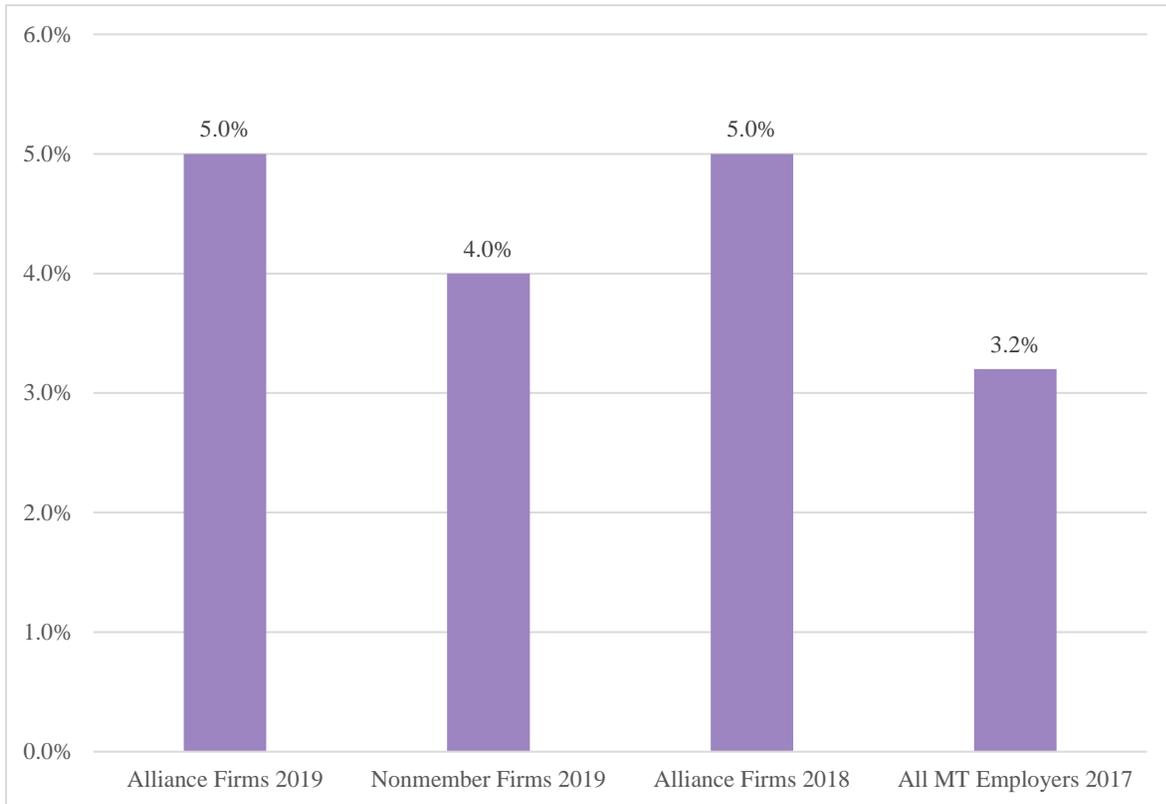


2018 Changes. Alliance members’ in-state hiring rate in 2018 remained basically steady, declining only 2% from the 2017 rate (77%).

Q12. By what percentage do you estimate your company’s annual Montana wages may increase or decrease next year (2019)?

The annual pay of Montana’s HTBA employees and nonmember firm employees in 2019 is projected to grow somewhat faster than that of all Montanans. Figure 13 shows that HTBA and nonmember tech firm wages are projected to grow by 5% in 2018 while in 2017 Montana annual wages grew 3.2%.

Figure 13: Annual Pay Growth Rate

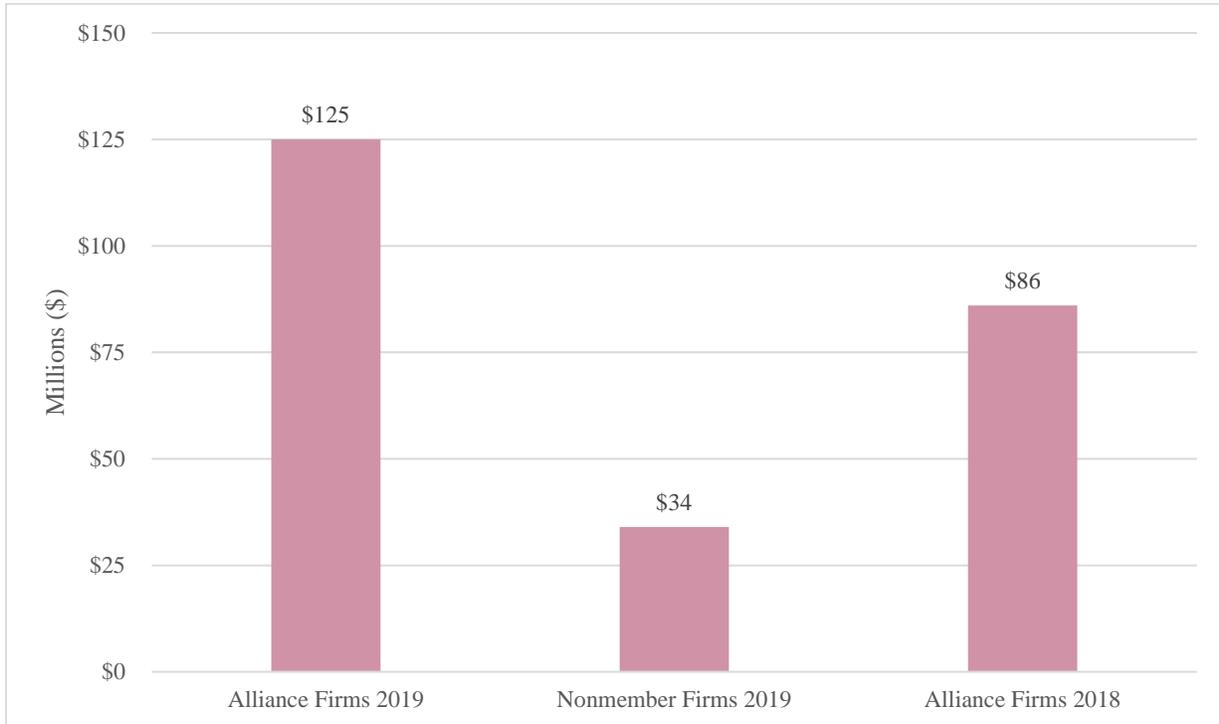


2018 Changes. 2019 projected Alliance annual wage growth per firm is the same as 2018 projected wage growth.

Q13. About how much money do you anticipate your company will invest in major capital expenditures in Montana next year (2019)?

HTBA companies plan to make \$125 million in major capital investments in Montana in 2019, which will add a significant number of additional construction and support jobs in the state (see Figure 14). The responding nonmember firms reported plans to spend an additional \$34 million in major capital investments in Montana in 2019.

Figure 14: 2019 Planned Capital Investments in Montana

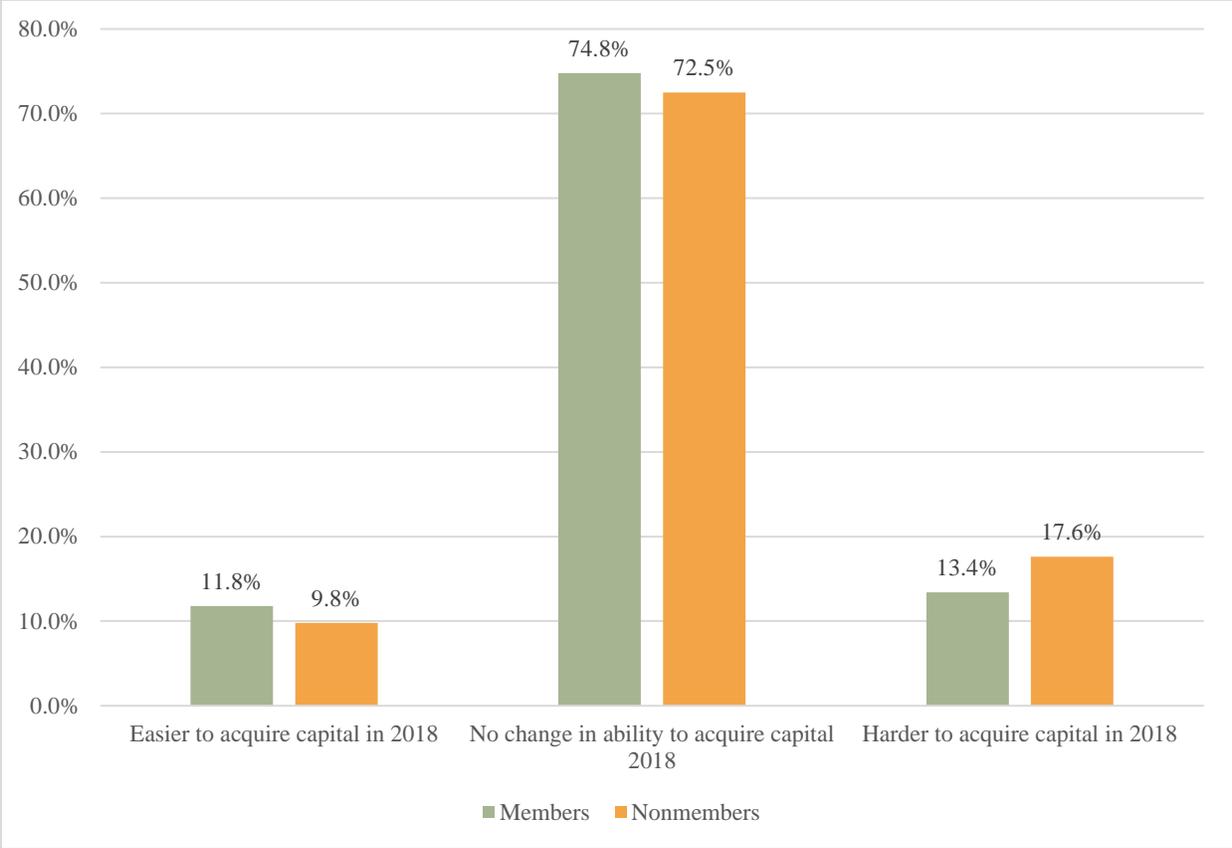


2018 Changes. 2019 anticipated Alliance major capital expenditures (\$125 million) increased substantially over 2018 anticipated major capital expenditures (\$86 million).

Q14. Some Montana employers say that it is hard for their firm to acquire new capital. Other Montana employers say that It Isn't hard for their firm. Over the course of calendar year 2017 would you say that for your firm it has become easier, there has been no change, or it is harder to acquire new capital?

In 2018, 13.4% of Alliance firms reported that it was more difficult for their firm to obtain new capital (see Figure 15). A large majority (74.8%) observed no change in the ease or difficulty of obtaining capital. About 11.8% said that obtaining new capital was easier in 2018. Nonmember reports on the ease or difficulty of obtaining capital in 2018 were remarkably similar to Alliance member reports.

Figure 15: 2018 Ease of Difficulty in Obtaining New Capital

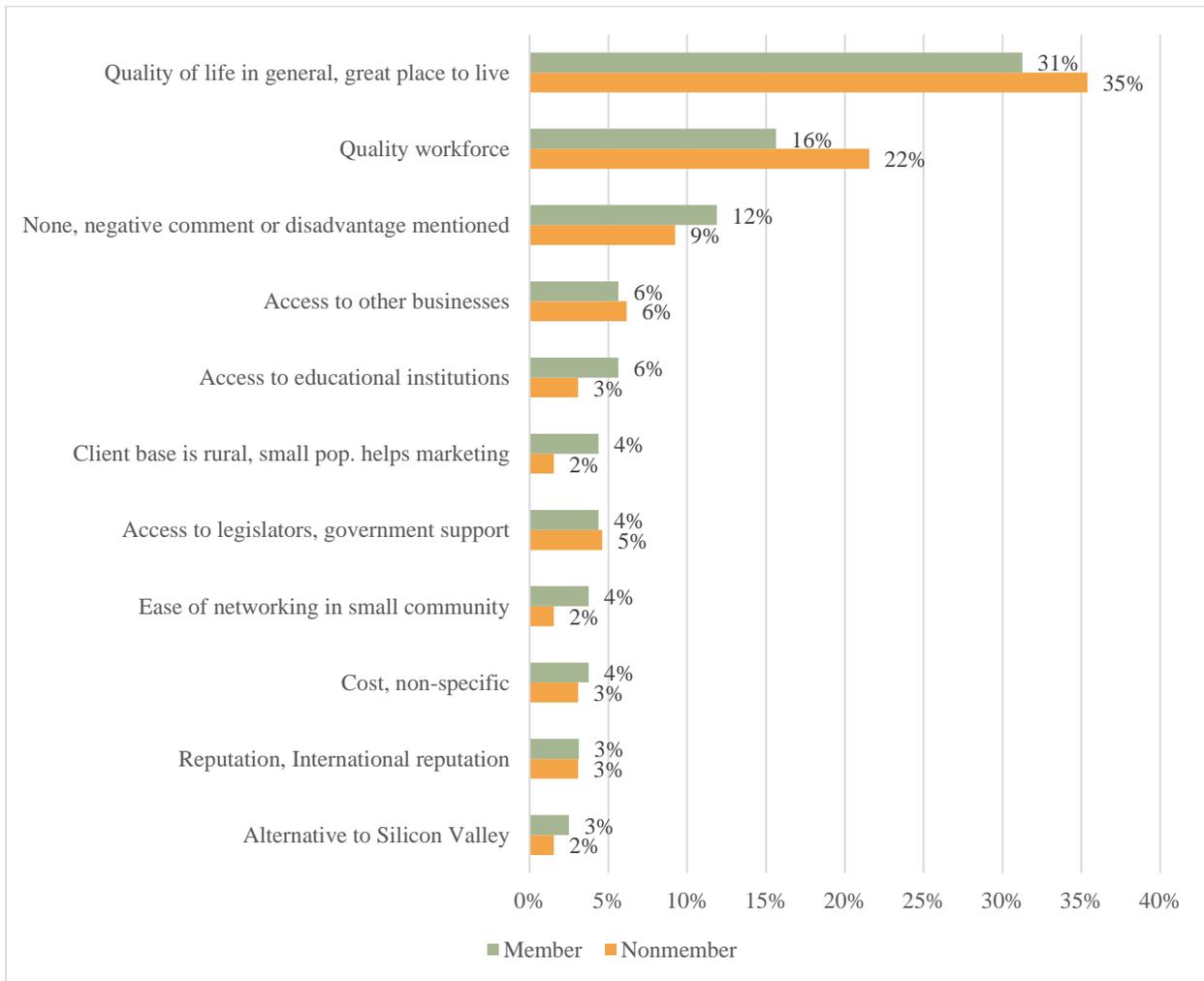


2018 Changes. Somewhat fewer 2018 Alliance companies (13.4%) reported that it was harder to obtain capital when compared to 2017 (20%).

Q15. What advantage does Montana give you in business?

HTBA members and nonmember high tech firms most often reported (31% of total Alliance member responses and 35% of nonmember responses) that quality of life in Montana gives them an advantage (see Figure 16). Montana’s high quality workforce was next most frequently cited by both groups. A slightly larger number of 2018 Alliance members (12%) said Montana gives them no advantage compared with 2017 (5%).

Figure 16: Advantages Montana Gives Firms



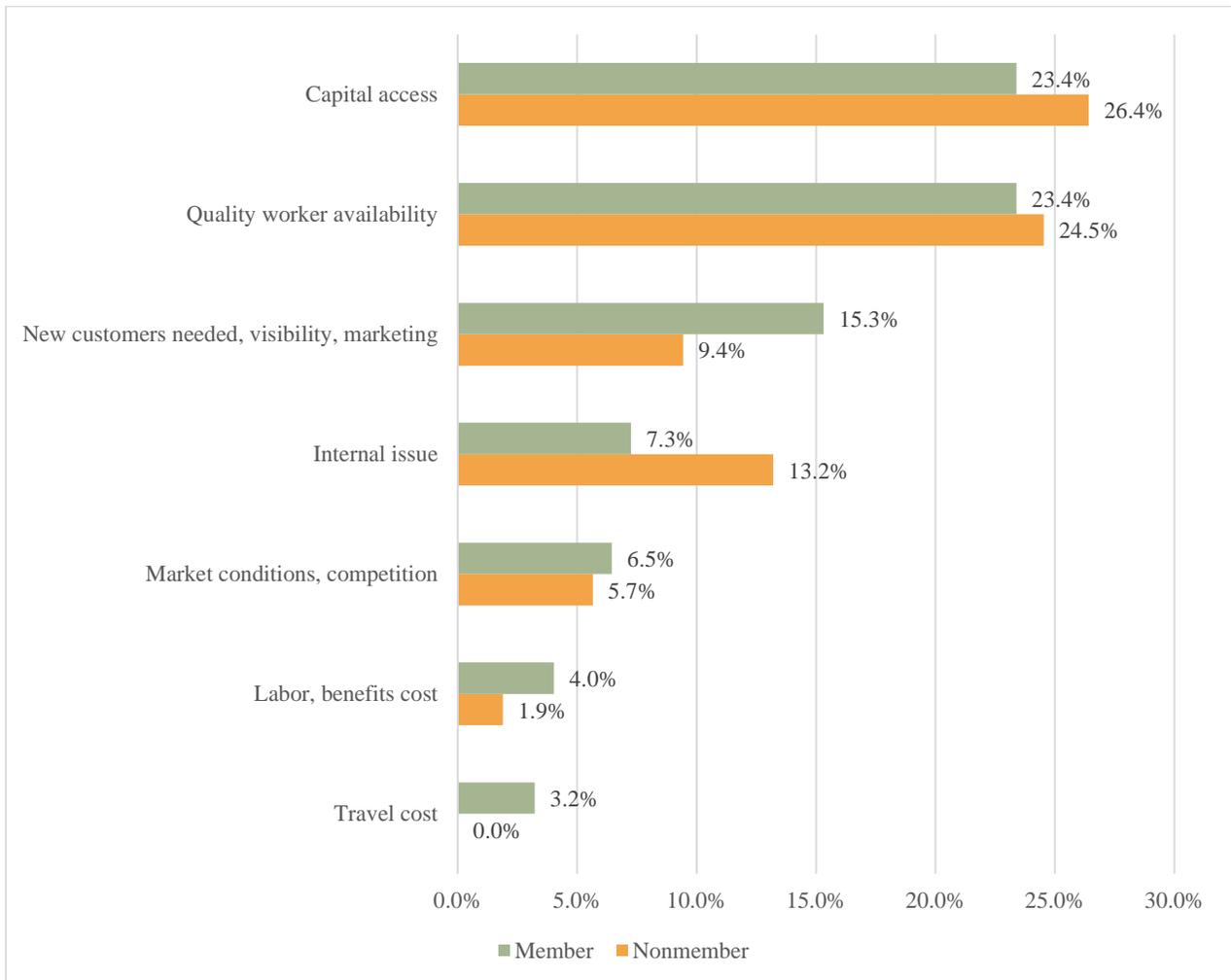
The following are selected comments that provide the reader additional insight into HTBA members’ opinions.

- “Access to smart, well-educated, enthusiastic employees who are drawn to Montana’s quality of life.”
- “Access to MSU is key for my business! Particularly to instrumentation and expertise in the Center for Biofilm Engineering.”
- “High skill workers with a vastly superior work ethic. Good tax environment. Flexible and easy to work with city and state government.”

Q16. What is your largest impediment to faster growth?

HTBA members most often reported that a lack of access to capital (23.4% of total member responses) and skilled workers (23.4%) was their firm’s largest impediment to growth (see Figure 17). Poor firm visibility or a lack of new customer availability was next most commonly cited (15.3%), followed by internal firm issues (7.3%). Nonmembers most often reported lack of access to capital (26.4%) and lack of skilled workers (24.5%).

Figure 17: Largest Impediment to Firm Growth



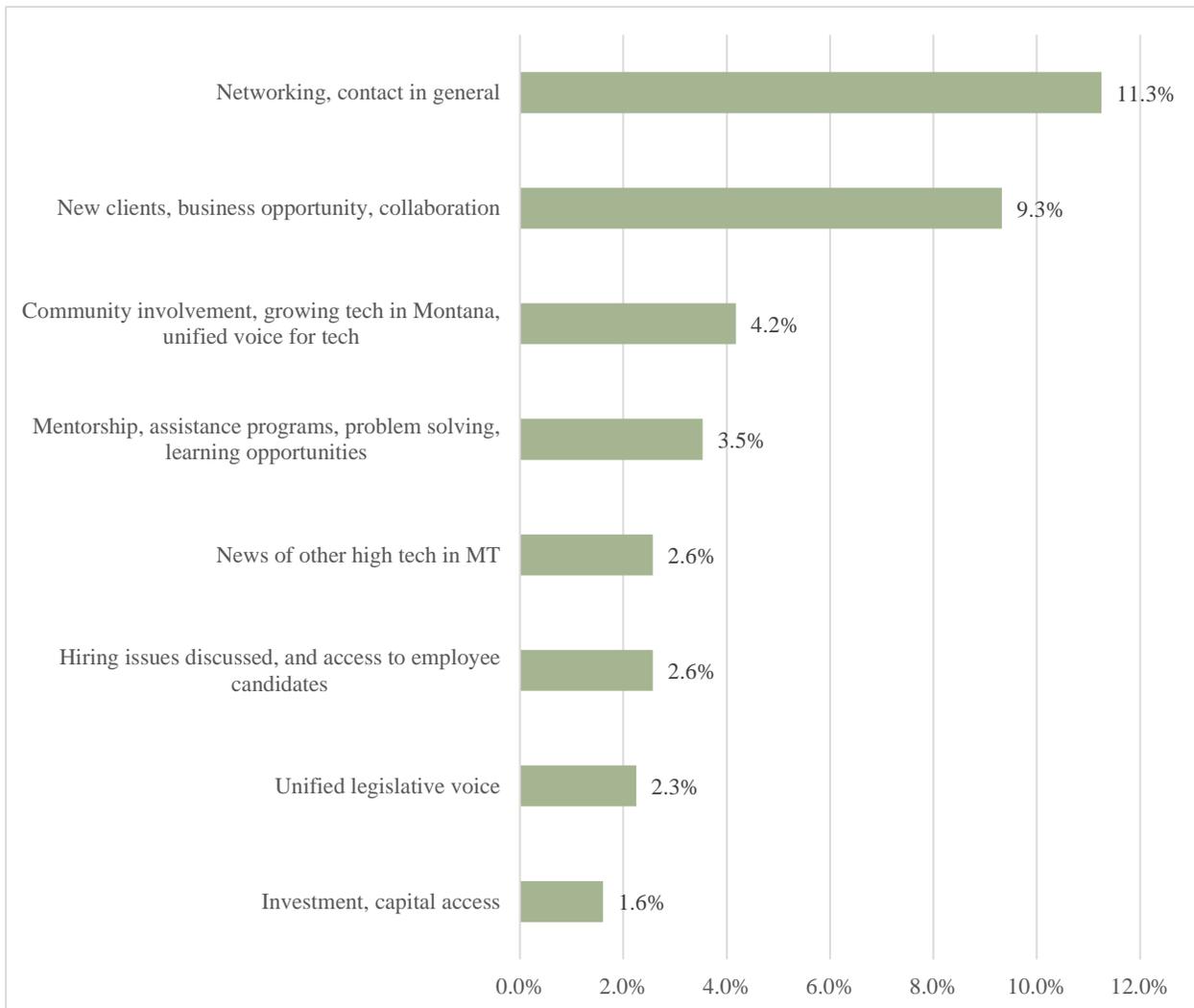
The comments displayed below give more perspective on HTBA members’ opinions.

- “It has been access to capital, but that seems to be changing. Nonetheless, I would say in general that this is the case.”
- “Finding qualified programmers. We simply don't get applications. We have only three qualified web developers, and in our desperation to grow the team we have a fourth person who is learning to code on the job.”
- “Marketing. Most of our clients are out of state and we don't have the visibility that firms in large cities do.”

Q17. What is the one most important thing you would like to get out of your Montana High Tech Business Alliance membership?

This question was asked of Alliance members only. Alliance members most often said that they want networking opportunities (11.3%) or specifically networking to obtain new clients or new business opportunities (9.3%) (see Figure 18). About 6.5% of Alliance members said that they want the Alliance to be involved in the community, the state legislature, or in growing tech businesses in Montana.

Figure 18: Most Important Membership Benefit



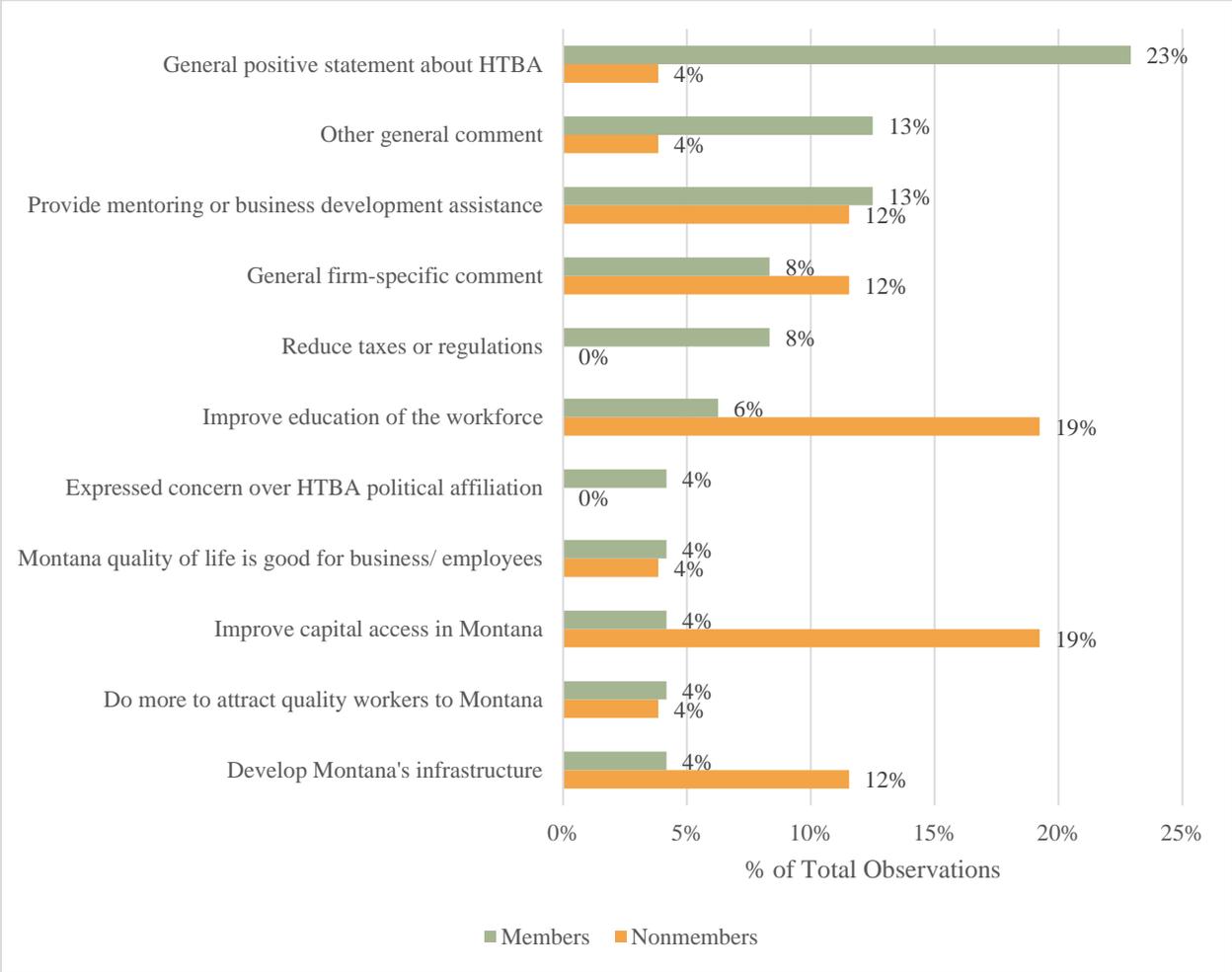
The comments below illustrate members' opinions.

- “Continued opportunities to network at events with each other. Honestly, this is the biggest value I have gained from the association.”
- “A learning environment. I thought the CEO roundtables were helpful.”
- “Exposure. I'd like to get exposure in large tech markets so that firms in those areas consider Montana as a source of tech development.”

Q18. 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.

Please see Figure 19 for a summary of the most common observations by members and nonmembers.

Figure 19: Additional Respondent Observations



The following comments illustrate respondents’ opinions.

- “A more tailored introduction process to companies/leaders facing the same challenges could be very interesting.”
- “Encourage government & manufacturers to support Montana businesses! Create an apprenticeship program for all the trades to create good paying jobs for high school & 2-year college students to earn a livable wage and remain in Montana.”
- “Raising capital is getting easier, but it is still a barrier. Support services, legal, finance and accounting, etc., are also improving, but could be better.”
- “The formation of the machinist and photonics technician programs at Gallatin College is good example of things that really help. Extending it to electronics, including soldering skills would be useful.”

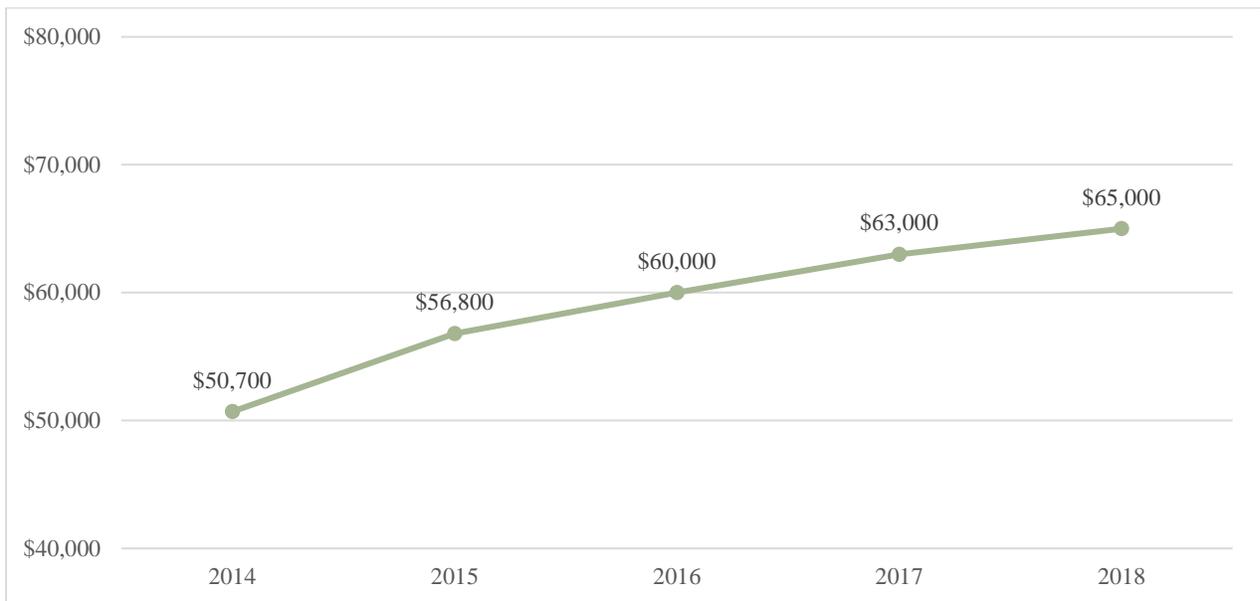
Alliance Member Firm Trends

This section presents four charts that illustrate trends in key indicators among Alliance member firms. Three of the four indicators (total Montana employment, total Montana-generated revenue, and total Montana capital expenditures) are influenced not only by overall growth in Montana's high tech industry sector but by an increase in the number of Alliance member firms over the five years of data collection.

Annual Wage

Median annual wages paid by Alliance members have increased each year since the annual survey first started.

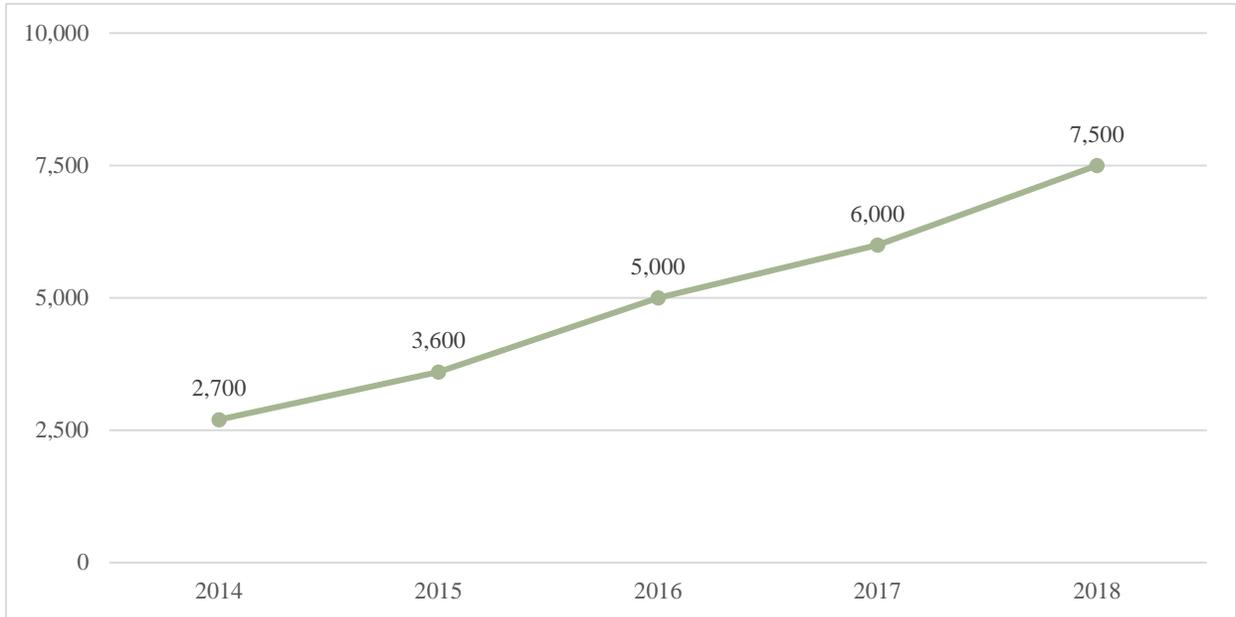
Figure 20: Median Annual Wages Paid by Alliance Member Firms



Montana Employment

Total Montana employment of all Alliance firms has also increased each year.

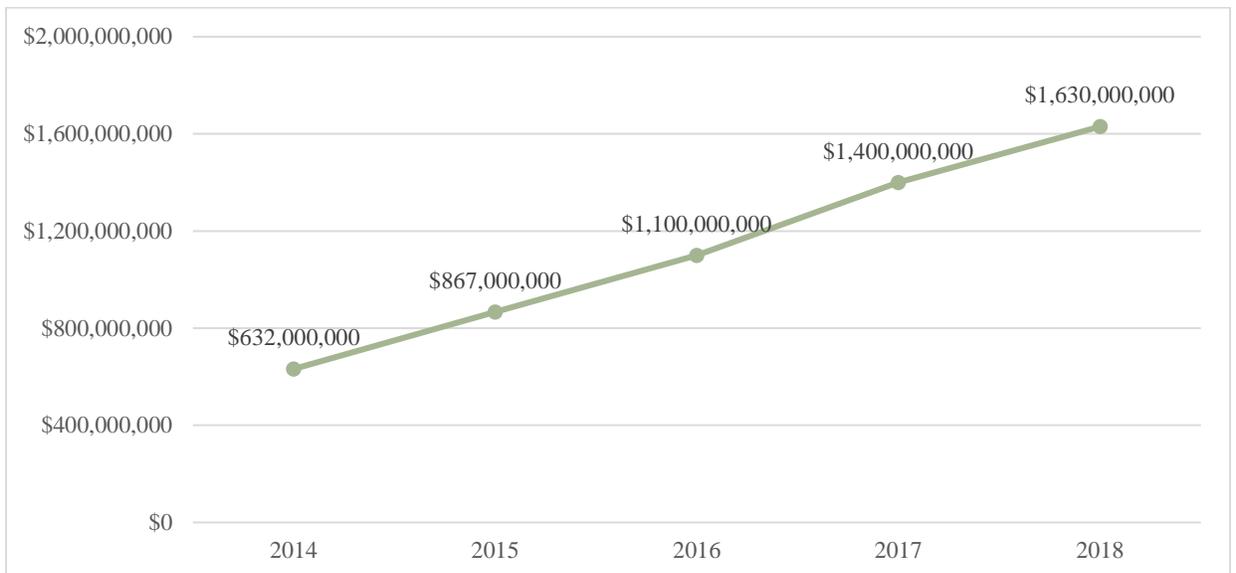
Figure 21: Total Montana Employment by Alliance Firms



Total Annual Montana-Generated Revenue

Revenue generated in Montana by Alliance member firms grew steadily each year the survey was administered.

Figure 22: Total Annual Revenue



Total Capital Expenditures in Montana

Major capital expenditures in Montana by Alliance firms have been more volatile than annual wages or employment.

Figure 23: Total Major Capital Expenditures in Montana



References

American Association for Public Opinion Research. 2016. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*. 9th edition. AAPOR.

Bureau of Business and Economic Research, University of Montana. 2018. *2018 Montana Economic Report*.

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

Montana Department of Labor and Industry. 2017. *2017 Labor Day Report*.

U.S. Bureau of Labor Statistics. *CPI Detailed Report for December 2017*.
<https://www.bls.gov/opub/ted/2018/consumer-price-index-2017-in-review.htm>.

U.S. Bureau of Labor Statistics. *2018 Standard Occupational Classification System*.
<https://www.bls.gov/soc/2018/home.htm>

Appendix 1: Questionnaire

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

- Advertising/Marketing (1)
 - Aerospace/Automotive/Transportation (2)
 - Biotechnology (3)
 - Consulting (4)
 - Consumer Products (5)
 - Cyber Security (6)
 - Data Analytics (7)
 - Data Storage (8)
 - Digital Media/Broadcasting/Publishing (9)
 - Ecommerce (10)
 - Education/Training (11)
 - Energy/Extractive Minerals (12)
 - Engineering (13)
 - Financial Services/Payment Processing (14)
 - Funding/Angel Investing/Venture Capital (15)
 - Manufacturing (16)
 - Medical/Healthcare Devices (17)
 - Nanotechnology (18)
 - Professional Services (19)
 - Software/SaaS (20)
 - Telecommunications (21)
 - Other (please specify below:) (22) _____
 - Construction (23)
-

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 (1) _____
-

Q3 How many employees does your company have in Montana?

- Number of Montana employees (1) _____
-

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

- Average annual wage (\$) (1) _____
-

Q5 What were your company's annual revenues in 2018? *Your best guess is ok.*

- Annual 2018 revenues (\$) (1) _____
-

Q6 By what percentage do you estimate your company's annual revenues will increase or decrease next year (2019)? *Your best guess is ok.*

- Expected 2019 revenue increase (%) (1)

- Expected 2019 revenue decrease (%) (2)

-

Q7 About how many new jobs do you expect your company will create in Montana next year (2019)? *Your best guess is ok.*

- Number of new jobs (1) _____
-

Q8 What are the job titles of the three job types that your firm most often hires?

- Job title 1 (1) _____
- Job title 2 (2) _____
- Job title 3 (3) _____
-

Q9 What are the three job-related skills your firm looks for most in new hires?

- Job skill 1 (1) _____
 - Job skill 2 (2) _____
 - Job skill 3 (3) _____
-

Q10 Some Montana employers say that it is hard for their firm to find qualified new employees. Other Montana employers say that it isn't hard for their firm. Over the course of calendar year 2018 would you say that for your firm it has become?

- Easier to hire qualified new employees (1)
 - There has been no change in my firm's ability to hire qualified new employees (2)
 - Harder to hire qualified new employees (3)
-

Q11 Over the course of calendar year 2018 what percentage of your firm's new hires came from within Montana and what percentage came from out of state? Your best guess is ok. The total should add to 100.

% of new hires who came from within Montana : _____ (1)
% of new hires who came from out of state : _____ (2)
Total : _____

Q12 By what percentage do you estimate your company's annual Montana wages may increase or decrease next year (2019)? *Your best guess is ok.*

- Expected 2019 wage increase (%) (1)

 - Expected 2019 wage decrease (%) (2)

-

Q13 About how much money do you anticipate your company will invest in major capital expenditures in Montana next year (2019)? *Your best guess is ok.*

- Major capital expenditures (\$) (1) _____
-

Q14 Some Montana employers say that it is hard for their firm to acquire new capital. Other Montana employers say that it isn't hard for their firm. Over the course of calendar year 2018 would you say that for your firm it has become?

- Easier to acquire new capital (1)
 - There has been no change in my firm's ability to acquire new capital (2)
 - Harder to acquire new capital (3)
-

Q15 What advantage does Montana give you in business?

Q16 What is your largest impediment to faster growth?

Q17 MHTBA members only: What is the one most important thing you would like to get out of your Montana High Tech Business Alliance membership?

Q18 What additional comments do you have? *The Montana High Tech Business Alliance is particularly interested in your observations about creating new, high-paying Montana jobs.*

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. The Alliance invited 311 of its members to participate. This represents only those Alliance members that work in high tech or manufacturing industries, out of a total membership of some 370 companies. The Alliance also chose to invite 279 nonmember tech firms to participate. BBER used Qualtrics survey research software to manage this survey. The questionnaire invitation was transmitted by email and respondents are asked to click on a hyperlink to access the online questionnaire. The questionnaire was developed by the HTBA. Data was collected during the period from December 2017 through February 2018. Ms. Christina Henderson, executive director of HTBA and Ms. Katy Spence, communications director, assisted significantly by conducting additional non-respondent prompts and helping to manage the respondent list.

Data Collection Outcomes

BBER received 153 responses from HTBA members out of 311 asked to participate. Another 22 member firms were unreachable, yielding an effective Alliance study population of 289. The response rate for the Alliance survey was 53%.⁵ BBER received 67 nonmember responses out of 279 asked to participate. An additional 64 nonmember firms were unreachable, yielding an effective nonmember study population of 215. The response rate for the nonmember survey was 32%.

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 25, Copyright 2017, IBM Corporation). BBER analyzed the data collected using frequencies, cross-tabulations, standard measures of central tendency (mean, median, and mode), sums and ratios.

⁵ Using American Association for Public Opinion Research response rate formula 1.

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 College 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 27 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 College of Business Administration at the University of Montana.

Senior Economist

Brandon Bridge is a senior economist and the director of forecasting at the Bureau. His responsibilities include regional demographic analysis and forecasting. Other research interests of his include energy poverty, economic development, cryptocurrencies, and sports economics. He grew up in Montana, and before returning home to join the BBER team, Mr. Bridge studied economics at Brigham Young University (BA, 2010) and the University of New Mexico (MA, 2015; PhD, 2017).

Director of Survey Research

John Baldrige is BBER's director of Survey Research. Mr. Baldrige 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. Baldrige 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

Q15. What advantage does Montana give you in business?

A great place to live Honest workforce, Safe place to raise a family.
Ability to attract and retain employees for lifestyle, community of Montana is supportive of MT businesses.
Access to MSU is key for my business! Particularly to instrumentation and expertise in the Center for Biofilm Engineering.
Access to smart well-educated enthusiastic employees who are drawn to MT quality of life.
Advantage is probably just for our employees, who already live here. We market our software worldwide and use the internet for advertising and for obtaining new customers.
Alternatives for technical employees to live outside of the Silicone Valley or more concentrated hubs. Work/life balance and outdoor recreation.
Amazing community of talented individuals with a strong work ethic.
Attract long-term employees that seek quality of life.
Attractive quality of life, amenities.
Beautiful place to live. Taxes and Laws do not favor business; however, the people in Montana are the real asset.
Beautiful setting; however, low overall wages in Montana make it difficult to attract talent.
Bozeman has numerous machine and sheet metal shops that heavily utilize. The Gallatin College has been helpful in producing technical personnel that staff the shops we utilize. Bozeman also has a large number of optical related companies that we are working with.
By filling a niche that does not exist in Montana, we have been able to grow our audience and reputation, both in Montana and beyond. It has brought recognition to our company and attention to Montana.
Close to scenic areas and outdoor activities for quality of life.
Companies need professional services or contracting to flex on projects when hiring is challenging or not advantageous.
Compete on worldwide stage.
Cost.
Cutting Edge Media Services Digital Agency Superiority.
Desirable place to live and work helps recruiting talented new team members.
Easier for new capital because our revenue grows. Banks and lenders are nearly impossible to get to lend until you are really profitable. Startups stand little or no chance unless you are a coffee cart, then just call MCDC. Everyone else will struggle. Advantages: Wages are low. However, that's not something we like for the individual human. It is an advantage though.
Easier to hire due to life style.
Ecommerce is big right now, which is making the landscape for hiring talent tight. But we get resumes from folks that want to work for us because they want to live in Montana and enjoy the outdoor lifestyle and quality of life. Being in Montana, we have one advantage in hiring that our competition doesn't.
Employee attraction to the area.
Employees inherent work ethic. Quality of life.
Employees want to live here for the quality of life and are unlikely to leave for positions at other companies.
Entrepreneur climate is strong and so too is state government support.

For international sales, Montana has an excellent reputation. Businesses here are considered to be honest and reliable. It also makes us stand out a bit from others and is a good "talking point" when first meeting others.

General pride of the workforce in living in Montana, which translates into a reluctance to leave the state if they are already residing here.

Good people, great place to live.

Good reputation when dealing with foreign countries. Everyone has heard of Montana and they have a good opinion; hardworking, honest, etc.

Grants

Great community, airport, lifestyle, downtown is amazing, fiber internet, amazing people

Great Falls is a low cost place to do business. Lots of bandwidth choices. Affordable rent.

Great place to live; attractive for employees.

Great place to raise kids and family.

Hard working employees with a great quality of life.

Having a HQ in a state with low rates of litigation helps the business protect its IP and position itself ethically.

High demand for rural Internet service.

High skill workers with vastly superior work ethic. Good tax environment. Flexible and easy to work with city and state government.

I am fortunate enough to work remotely for a large organization. Montana gives me a great quality of life, but is a disadvantage for my employer due to travel expenses and lost travel time.

I can do cloud services using the "Cloud." This means I can work remotely. The difficulty I'm having is finding customers. Many companies are unaware of the money they can save using cloud services vs. legacy hardware data closets. There is a major disconnect between the Amazon Cloud Services that I offer and the companies that need these services but tend to look out of state for them. Sad but true, we don't want to help our own tax paying public.

I live here. I want to keep my business here. We are a social media web company and have a great partner in ZaneRay Group in Whitefish. We will not be going elsewhere.

I really can't think of an advantage Montana gives our business.

Ideal, active lifestyle.

It is a great place to live so people want to live here. Our relatively low population makes access to lawmakers and key powerbrokers easier. Also the current ascendancy of Montana as a new start up hub is helpful to our image.

It's where we all want to live.

Less churn than in a place like the Bay Area. But this is offset by other negative factors. I would not recommend a company move here.

Less competition for technology talent than in a metro area. The natural beauty and outdoor recreation opportunities make recruiting people to MT from out of state easier than recruiting people to less desirable states.

Less competition than large markets.

Less local competition, more industrious workers with mechanical ability.

Life in a smaller community offers a simpler lifestyle. The majority of employees ride bicycles to work, which would be difficult in a larger city.

Lifestyle only. Montana's a rough and small market for Managed Service Providers.

Lifestyle opportunities. Lower cost of living.

Lifestyle!

Lifestyle.

Lifestyle. People want to live here and experience the Montana way of life. People are generally calmer and happier, and usually have a better work ethic if they are from here.
Limited competition with local clients.
Location.
Low cost of living, quiet environment for concentration.
Low cost of operations.
Lower Cost of Labor, Quality of Life, Work Ethic.
Lower cost to operate a business than SF or LA.
Loyal hardworking employees. Panache with big city and international clients. Fresh and unique perspective on technology. Unprecedented collaboration with University of Montana.
Many high net worth folks who want to give back and become Angel investors.
Many of our employees come from a background of small, family-owned businesses and they bring with them the mentality that it is everyone's job to help the company be successful in their role.
Maybe too many to list in this box. Remoteness leads to less competition for my employees. Quality of life retains employees, cost of living makes wages go further than some other states, mills are east, our markets are west, so we actually have neutral to positive advantage over our competition, people who WANT to live in Montana will stay with employers who take care of them and value them. Romantic view is if the employee loves Montana and the employer can take care of the employee the formula is success for all.
Montana employees are all very skilled and are leaders in their areas, and have a great work ethic.
Montana employees are caring, hardworking, smart and grounded. Our clients love working with our consultants because they are not arrogant. They feel they get huge value from their engagements with our employees.
Montana has many characteristics that lend to it having high quality standards. Our quality of life ranks in the top 15 of all states. The quality of products made here facilitate sales in national and international markets. The quality of our professional networks, we are ranked #2 of all states for our social environment, gives us access to the top levels of state governments, CEO's, bankers, and our high school best friends. Montanan's high entrepreneurial rate creates relatively small business sizes that give us the ability to be nimble, dynamic, and responsive to offer very high quality customer service.
Montana is a great place to live. The quality of people who chose to live and work here is top notch. The innovative attitude and culture is also great!
Montana is an attractive, desirable place to which to attract talent, and we have a very good pipeline of engineering talent coming out of Montana State University, many of whom want to stay in Montana.
Montana offers a way of life for our team members and is an attractive place to live because of that. As Montana grows and investments in infrastructure and technology are made it gets easier and easier to launch and run successful businesses here.
Montana offers ample access to public lands and outdoor recreational opportunities that simply aren't accessible from the more traditional urban tech hubs.
Montana provides a genuine, honest atmosphere for developing a growing company. I am constantly amazed as the number of individuals willing to help other businesses here. Complete opposite from the East Coast!
Network of small businesses in the optics sector in Bozeman is very conducive to fostering a new company like mine.
Nice place to live.
None, much of our business is outside of the state.
None.

Opportunity for our industry to find clientele here who are willing to work with us even though we are early stage. It's also great that our overhead costs can be so low in comparison to the rest of the tech sector. There's also a growing number of talented individuals locally, and TONS of qualified mentors who can help us learn.

Our cost to do business in Montana is lower than in the Northeast and we are able to successfully compete with agencies in New York and Boston.

Our employees are exceptional. In Bozeman, we can attract talent who seek a high quality of life and access to the outdoors. In the past 12-18 months, I think Bozeman has earned even more of a reputation for having the "best jobs" in Montana. We've had a number of in-state but out-of-Bozeman candidates move here for jobs over the past year.

Our relationship with the Missoula College has been quite helpful.

Outdoor lifestyle.

People are always ready to collaborate and help network. The human and business networks are strong.

People here are down to earth and hard working.

People here are phenomenally hard working and thoughtful. Being near the natural beauty is inspiring and centering.

People love to live here. Just need to have a great job to make it the LAST BEST PLACE!

People want to be here. Retaining employees is easier. Also, there is a lot of wealth coming in and creating a lot of opportunities.

People want to live here.

People with good work ethic.

Proximity to Montana State University and technical capabilities present there.

Quality workforce drawn to the high quality of life; education, outdoor amenities, community.

Quality of life and focus for employees. Low turn over.

Quality of life and most Montanans have a strong work ethic.

Quality of life for employees. Access to supporting high tech firms in Bozeman.

Quality of life for employees. No discernable benefit for business.

Quality of life for hiring.

Quality of life outside of work for myself and employees; lower cost of living, most of the time.

Quality of life to attract people.

Quality of life, access to like-minded individuals, work-life balance.

Quality of life, low housing costs, employees stay in positions longer.

Quality of life.

Quality of lifestyle.

Quality of living, cost of living in rural Montana for employees. Cache of a MT product for our customers.

Quality workforce; good work ethic, quality living environment, quality higher education; MSU.

Quicker access to decision makers, potential business partners, mentors and referrals.

Really no business advantage. It is just where we want to live.

Relationship based clients.

Resources such as MTIP, PTAC, TechLink, etc. that helps small businesses going after government contracts.

Retention of good employees.

Sensational work / life balance.

Small community, easy networking.
Small market but easier to identify prospects because the pond is so small. New businesses stand out. Also, easier to work with government agencies, when necessary.
Small network.
Small population, easy to get brand out.
Small state so easy to have relationships with strategic partners.
Small town feel, with access to knowledge and resources. Excellent Departments of Commerce and Natural Resources with smart people and a variety of programs to support business launch and growth with special support for energy conservation and alternative energy implementation. Also accessible offices for programs like MoFI, SBDC, USDA and SBA.
Small, relationship-based economy where people still trust each other. You can run a lot of small pilots with industry connections to determine market viability much faster and cheaper here than you could elsewhere. There is also still a novelty to being a tech company in Montana, which often opens doors or spurs conversations that may not have occurred otherwise.
Some customers are loyal to a Montana business.
Some employees consider MT a plus relative living conditions, but this is offset by the high cost of housing.
Strong work ethic and creativity. Great place to work corporate cultures and high employee retention.
Talent is somewhat less expensive if you can find it.
Tech ecosystem with great people, great resources.
The ability to tap into networks with high-profile people easily to conduct business.
The employees that are in Montana are not likely to be recruited away to other States if we pay the appropriate salaries. Also, the employees tend to be healthier which keeps health benefit costs in check.
There are perceived advantages but I am not sure I can speak to some true strategic advantage Montana offers that other States don't.
There's less competition in the "tech" space. In other words, it's easier to stand out and to be recognized as a notable company to watch. It's good PR that's driven investor and employee interest.
This area is growing.
This is where we want to live.
Transportation ease. Air Access to Seattle and Denver. High speed internet! Good community of start up entrepreneurs.
We are a product of the BlackStone LaunchPad at UM. Accessibility of decision makers at corporate and government levels.
We are researching methods of measuring snow. Montana has lots of snow and people that depend on snow for agriculture, power, and recreation.
We find great employees who could be working on the coasts in technology but are choosing to stay in Bozeman. This lets us compete effectively in a global software market without exorbitant costs. And our people are very sharp and hardworking which we believe is a consistent trait for Big Sky country.
We're still small enough that you can see your lawyer on the street, that you can get to know people and there's strength in community. Right now, we're attracting large companies to hire our talent, ClassPass, etc., that's cool. Our networking game is strong and technology meetups are starting to become more frequent and better quality.
Work ethic of employees, no sales tax.
Work ethics.
Workers with a great work ethic and a desire to do what's right for the customer. Good retention. Work hard and play hard.
Workers with strong work ethic.

Q16. What is your largest impediment to faster growth?

A government that supports business growth.
A great CRM software is our largest impediment to faster growth.
Ability to afford additional employees.
Ability to hire new employees.
Ability to raise capital to fuel growth.
Access to affordable capital or loans. Low interest rates would be best.
Access to capital although it is getting easier.
Access to capital and good employees.
Access to capital as a female founder.
Access to capital for equipment purchases.
Access to capital.
Access to markets.
Acquiring skilled/experienced staff.
Affordable health benefits and other benefits can impede hiring new employees. Health insurance and worker's comp rates are high compared to other states. While lower amounts of capital are more available than I think they would be in a large city, the total amount of substantial investments in small companies do not compete with high tech hub cities, San Francisco/Boston/etc. It requires more travel to meet or create opportunities to meet key people who can help a business in other cities.
Aging partners.
As a fast growing business, finding shop space in the Gallatin Valley has been a challenge. We have occupied 4 spaces in the past 3 years, each time doubling the square footage. We find ourselves having to start looking for the next space almost as soon as we get into a new one because each time it is more challenging.
As a start-up: establishing cash flow quickly enough to build credit, allowing more competitive rates for loans or lines of credit.
Available spectrum and gear to deliver to end users.
Being a bootstrapped service business.
Being able to hire experienced software engineers.
Being located in Montana.
Can't find enough qualified software developers.
Capital and the down agricultural market.
Capital costs of running the business.
Capital influx. Mainly due to the advanced service being introduced to underserved rural markets as a primary market.
Capital investment.
Capital Investment.
Capital with reasonable terms.
Capital.
Capitalization.
Cash flow and staff.

Cash flow.
Cash since we don't have investors and are privately funded by our founders.
Cash.
Company willingness to pay national market rates for things even though they receive national market revenue.
Competition has eroded our pricing power. Consumer habits are changing.
Competition.
Continued funding of Big Sky Trust Fund and Workforce Training grant's.
Customer acquisition.
Customer funding primarily through government spending and grants. Reduced government research spending impedes customer growth and our sales.
Customer interest in services, reduced customer cash flow.
Development of our target market, nothing related to Montana.
Development talent.
Difficult to travel.
Distances required to obtain new customers.
Distracted leadership. That would be me. Starting new projects and not working actively on the company.
Diversity, Montana as a whole doesn't have a lot of diversity. It's an obstacle to overcome when recruiting for open roles.
Don't have one. I'm not looking to grow my company larger, however, getting better clients is our target goal.
Easy access to Venture Capital funds due to location.
Economic restraints. Slow growth.
Enough revenue to hire new employees. Followed by finding qualified and motivated employees.
Entire attitude of the state of Montana; low wages are accepted for highly educated people, yet due to unions, laborers with little training make more than those with college degrees. The educational system in Montana is really lacking. The schools do not do an adequate job nor do they pay their teachers fairly. Really, if you want to succeed in Montana, it's best to be a plumber or electrician. They get paid well and only work 4 days a week.
Exposure to larger clients.
FDA compliance slows everything down.
Finding folks in-state that want to be in Helena.
Finding qualified programmers. We simply don't get applications. We have only three qualified web developers, and in our desperation to grow the team we have a fourth person who is learning to code on the job. We would prefer to hire a fourth qualified programmer or even a fifth team member and keep the person who is learning for future growth. We just don't get applications.
Finding qualified sales people who know how to sell a complicated product to multiple stakeholders and consistently close deals.
Finding readily available new employees.
Finding the right product/market fit.
Finding top candidates for a moderate salary.
Funding.
Gaining new customers.
Geography of Montana and the rate of business growth within Montana.

Global Economic Stagnation.
High speed, in-state travel. it would be rad to be able to ride a train from Missoula to Billings and work along the way. Cheaper office space.
Hiring of key positions and scaling up the workforce skillsets to meet the demand.
Hiring qualified people, high cost of living, especially cost of housing.
Hiring qualified personnel.
Hiring talent, acquiring customers bootstrapping our growth.
Hiring the right talent quickly enough.
Hiring.
Human resourcing.
Import tariffs on steel & aluminum; lack of knowledge of the value of renewable technologies.
In MT, most start-ups have little to no access to capital markets and/or seed funding, which is a significant disadvantage when competing against well-funded tech companies in urban centers. Although both UM and MSU do an amicable job of providing new entrants into the tech labor market, it remains a challenge to find top tier talent in MT.
International regulations. Growing exponentially, requiring much more time for compliance and considerably more money each year.
It has been access to capital, but that seems to be changing. Nonetheless, I would say in general that this is the case.
Labor law and tax structure in Montana is not friendly to growing tech businesses. The labor laws really reflect mining, timber and union based organizations, this is not applicable to high tech personnel. The state tax structure is also backwards, we have 1m residents and 12mm tourists yet zero sales tax and a high income tax on people who have the 49th lowest wages in the country. We should drastically reduce income tax and institute a heavy sales tax that only applies to out of state visitor. This is what Florida does, have sales tax, but show your MT driver's license and you are exempt as a resident. Tourists should then pay 10% sales tax.
Lack of a sales force.
Lack of a skilled workforce and scarcity of affordable housing.
lack of deal flow.
Lack of depth in the workforce of leadership capabilities.
Lack of manufacturers within the State.
Lack of qualified workforce candidates.
Leadership talent.
Limited capacity.
Local organizations lack of growth and knowledge of technology accelerators.
location; there is not enough manufacturing base to support us as an OEM mfg. Transport costs are higher.
Market development.
Marketing.
Marketing. Most of our clients are out of state and we don't have the visibility that firms in large cities do.
Money.
Monolithic application with no forethought on scalability from my predecessor, slows the process down for adding value to new features and enhancing existing UX features.
More people.
My ability to scale our sales and marketing processes.

My conservative approach to funding. I have been working mostly out of pocket to fund growth. I now have a solid product and will begin ramping up the sales efforts in 2019 and beyond.
Need for funding.
New client sales. We engage with large B2B type companies across the US and Canada. We are competing against firms in San Francisco, New York and other major metros. That competition for new clients is intense.
New product development.
No incentives from Montana, like tax benefits, for small businesses.
No reasonably priced commercial locations for me to move/expand into.
Not enough qualified and skilled employees.
Not looking to grow at this time.
Number of developers we can hire due to our low capitalization.
Office Space and housing.
Other projects not related to my business, i.e.: I teach at MSU.
Our infrastructure. We need to add onto our facility to hire more people to experience growth. We are tapped out on space and can't cheat time to run more shifts. We are planning and expansion for 2020 which will create 25-30 more positions.
Out growing the property we own.
Out of state competition. Bringing in new projects.
Paperwork, red tape, long procedural methods for securing contracts.
People to serve, declining population in rural Montana.
Poor access to capital. It is overwhelmingly the biggest downfall of MT.
Product adoption.
Property Taxes.
Qualified candidates.
Qualified employees in Montana.
Qualified employees.
Qualified Employees
Qualified people to fill skilled positions.
Qualified people.
Raising capital. Very few options for seed rounds. Angel networks tend to be more favorable towards consumer products or solutions they have direct experience with.
Regulatory requirements. In 2018, nearly every regulatory agency had major changes, so the costs will be higher than usual, but between ISO (Europe), MDSAP (Canada), the EU and the US FDA, compliance will cost approximately \$60,000 this year, plus an estimated \$35,000 for employee wages for implementing the changes.
Restricted access to opportunities.
Revenue.
right to work, qualified employees.
sales, affording that next employee.
Sales.
SBA is not helping me get this business started.
Self-imposed restrictions on growth to ensure on-hand capital.

Slow adoption of technology in Montana. As an eLearning developer it's difficult because local businesses don't see the value yet.
Slows sales cycle in industry verticals.
Starting this business while working.
Technical challenges bringing the product to market.
The ability to find employees.
The state economy is relatively limited. Obviously, it takes more effort to develop distant markets. On the other hand, that leads to more sustainable growth.
Time and cost to build out new communications infrastructure.
Time and lack of interest for businesses to implement a cybersecurity program.
Time.
Top talent.
Training new employees.
Training new people. Technical and management training.
Uncertain funding for scientific research on federal and international level.
Wages relative to cost of living.
We are happy with the present level of growth.
Weak in sales expertise.
With Industry circumventing NHPA Section 106 as it relates to of the Tribes that (my company) does work for that to us is shear Political.

Q17. MHTBA members only: What is the one most important thing you would like to get out of your Montana High Tech Business Alliance membership?

A coordinated effort to increase the number of computer science trained perspective employees.
A learning environment. I thought the CEO roundtables were helpful.
A platform to inform other members of the work that we do.
A unified voice, although there are not enough other businesses with similar issues, the need to reign in ever-increasing regulatory requirements and costs.
A voice to promote learning the basics of SQL, PHP and Java.
A voice when trying to control excess regulations
Access to other businesses as potential collaborators, customers, and in terms of lobbying power.
Access to technology round tables within my community.
Access to training funds.
Better health insurance options and affordability.
Better networking, in fairness, I have been out of the loop on my own business due to other projects so it is not something MHTBA needs to do better, it is something I need to participate in more.
Brand recognition.
Business advisor.
Business contacts.
Changing the Montana brand from a state of log cabins and crafts to a place with a modern progressive economy.
Collaboration between educators and business.
Community engagement across the tech ecosystem.
Connections and knowledge sharing of best practices.
Connections and mentoring.
Connections with members of the Montana High Tech community who have advanced past the roadblocks of doing business in Montana to develop successful companies. Learning from their success and mistakes.
Connections with others who we can either add value to with our technology, or who can add value to us.
Connections with true peers.
Connectivity to others in the tech industry. To hear their ideas and to know where they are going.
Contacts with other businesspeople.
Contacts with others in the same business.
Contacts.
Continue to improve Montana's image as a desirable location for high tech businesses to startup in or relocate to.
Continue working with the education system and DLI to create programs to train new workers.
Continued Networking and learning about new businesses.
Continued networking opportunities.
Continued opportunities to network at events with each other. Honestly, this is the biggest value I have gained from the association.
Continuing networking opportunities and information about what others are doing across the state.
Coordination of and advocacy for the tech industry in MT.

Could we have a Missoula Chapter lunch or networking event once a month, set time and place, available to whoever wants to join so we can learn from each other and network? Perhaps it could be a Lunch and Learn where a business/technology presents their "stuff" and the MHTBA community could ask questions and develop possible Use Case applications. This event could be sponsored by MHTBA, but it does not have to be. Participants could subsidize themselves, especially if the event is held at a food/drink venue. This may be more work than it is worth, but to develop a real community the participants have to meet enough to get to know each other and feel comfortable enough to collaborate. Please understand this is just an idea; perhaps it's worth considering and perhaps it's not.

Cross Montana teaming and collaboration. Packaging of all the moving pieces of technology for external consumption.

Develop a strong community and network with talented software engineers looking for new opportunities.

Employee referrals.

Expanded network of professional contacts.

Exposure to more companies seeking financing.

Exposure. I'd like to get exposure in large tech markets so that firms in those areas consider Montana as a source of tech development.

Finding better B2B partners.

Finding top talent.

Helping the organization reach beyond its membership to influence the community a whole in positive forward thinking ways.

I value the role MHTBA plays as an ambassador for tech in MT.

I would like to build a small business that offers cloud services the Amazon Web Services. I would like to have more people go in with me that are interested in Cloud Services. This will create jobs in Montana. I think the business could easily have several hundred employees but we need to start somewhere. We need to be connected to businesses that need cloud services and help them reduce infrastructure costs. I have degrees in Electrical Engineering from Montana State University and Carroll College. Thanks

Identifying new clients.

Increase awareness of Montana Technology companies, skills, expertise.

Increased voice in the state capital on key issues such as new Drone laws, tax structure reform and labor law reform.

Info on Montana resources supporting high tech businesses, machine shops, technical services, business services, etc.

Information about business growth developments in Montana.

Keeping up on latest tech news.

Knowledge and contacts.

Lobbying for favorable business and employment climate.

Marketing, collaboration with other MT high tech businesses.

Meaningful connection to others in the industry.

Media exposure & networking.

More "training" or "learning" opportunities.

More connection with other members.

More exposure and attraction of potential employees from outside Montana. More people considering Montana as a place of opportunity. In particular, people who are highly skilled technically and/or experienced in management of larger companies.

More involvement by our State Senators and Congressman.
More opportunity to network with business owners without the sales people from banks and insurance companies hovering.
More support on training and more emphasis on market development, by reaching out to companies sourcing outside the state / country.
More tech focused meetups for employees rather than CEOs.
Networking and knowledge of opportunities.
Networking and promotion of the industry.
Networking and the ability to post job openings.
Networking for new management hires as well as potential networking for access to better capital.
Networking opportunities that lead to employment applications, introductions to investors and increased brand exposure.
Networking Opportunities.
Networking to build business.
Networking to understand what challenges others are facing and how we might work together to solve some of them.
Networking with other business, government, and community leaders and access to information, events, and resources to grow our business.
Networking with other high tech companies.
Networking with other MHTBA members to develop a better understanding of the specific capabilities that members offer one another.
Networking with other tech business leaders.
Networking with peers.
Networking, opportunity to meet new clients.
Networking, working on common goals. Workforce training, representation at legislature.
Networking; meeting new and interesting people and learning about their businesses.
Networking.
Networking/education.
No longer a member, decided our goals not necessarily aligned.
Not a member but wanted to mention this as other tech founders in the space who haven't joined feel the same way. In short, we'd like to see the organization distance itself from polarizing political candidates and truly serve the needs of the sector. Many of us have been reluctant to participate at a deep level with MHTA as it seems a front for political goals. In addition, our clients across the country have asked about MHTA founders' behavior and if other people in Montana share the same views which distracts from our mission that we're here in Montana to do cutting-edge work.
One fantastic employee.
Opportunities to engage with businesses, schools, and officials in order to help establish and operate our youth talent development network.
Opportunity to interact with mentors, and venture opportunities.
Perhaps more resources and exchange of helpful information with other CEOs / owners.
Real, meaningful progress on the workforce pipeline issue.
Referrals.
Relationships with others.
Resource network opportunities.
Sales.

Sharing of ideas/knowledge with other high tech business leaders.

Smaller networking events with a specific focus, 30-minute speaker and then networking on a topic. Leadership, a piece of technology, law, etc. Use members to present. MHTBA is the business side of tech companies, it might be interesting to engage the tech sides of those businesses. Collaborations with developers, code schools or computer science programs around the state.

Synergistic partnerships and access to capital.

Targeted outreach to metro areas that would be fruitful for recruiting.

To elevate the IT awareness in Eastern Montana.

Visibility of technology, employment and capital trends in the State.

Visit with other high tech companies during the CEO round table and reception events.

We do not involve ourselves in these type gross y as we focus on selling and servicing clients and building products for the future.

We don't participate due to xxxxxxxxxxxxxxxxxxxxxxxx.

Q18. What additional comments do you have? The Montana High Tech Business Alliance is particularly interested in your observations about creating new, high-paying Montana jobs.

A more tailored introduction process to companies/leaders facing the same challenges could be very interesting. Assuming that our company has contacts to other companies in Montana facing the same challenges is a stretch. MHTBA could play a more active role, if ok w/both parties, in making introduction between leaders that could benefit from direct conversation. This would lead to a more direct sharing of experience and lessons learned.

Access to incredible public lands is the single greatest asset the state of Montana can offer to both current and future employees. The reality is every single state in the country is interested in new high-paying jobs and without the natural differentiator that is access to our extraordinary landscape, Montana is no different than a state like Ohio. No offense to Ohio of course, I'm sure it's a lovely place!

[The firm] has now deployed over \$X in MT. We are eager to find more companies who would be a fit for our type of capital.

As small manufacturing company we anticipate hiring as follows: engineer, quality manager, programmer.

At this point, I enjoy the process that high tech has utilized companies during the meetings to gain insight on business as it relates to how (my company) can expand, particularly as it relates to I.T. initiatives.

Build it and they will come.

Connecting to larger markets seems to be key for high-tech business in MT. Enabling connections and systems to improve communication and transactions would be greatly beneficial for economic growth.

Encourage Government & manufactures to support Montana Businesses! Create an apprenticeship program for all the trades to create good paying jobs for high school & 2 year college students to earn a livable wage and remain in Montana.

Gallatin county remains bullish, growth and opportunity continues to prosper.

Great job!

Health insurance costs are the issue that needs to be resolved. Our per-capita insurance costs are now equal to or exceed the monthly cost of housing for our employees. It has doubled in the last 10 years and shows no sign of slowing down. Elected officials have shown no ability to solve the problem.

High paying jobs will come with higher revenues.

I am still concerned about MHTBA's association with xxxxxxxx. Looking forward, as we talk to investors, I'm worried how this affiliation will affect my company.

I can't start people at wages higher than my own salary so MHTBA's view of providing entry level positions for Montana graduates at \$80k+/year is absurd.

I have had my business a bit dormant the past couple of years in order to pursue other opportunities, so I worry that my answers will skew your survey. Most questions didn't apply to me in 2018. I am in the process of ramping back up and will be more involved and hopefully a more worthy participant at the close of 2019!

I know that lots of firms have trouble hiring good people. I don't and I firmly believe that's because (my company) has a reputation for being a firm that people want to work for. Most CEO's focus on delivering a good product or service, but many fail to focus on providing a good work environment. I've found that focusing on the latter results in the former.

I like parties where we can introduce ourselves and companies with a 3-minute elevator pitch on what we do, then drink and mingle and trade cards. Thanks

I thought the way you handled Michael Fitzgerald's letter was good and much appreciated.

Important that the alliance maintains its nonpartisan orientation.

Is there an online logistics resource, that helps with business plans, state/federal paperwork, etc.?

It needs a way to support entrepreneurs and startups more effectively.

It seems that tech industry is getting a lot of money, and non-tech manufacturing gets swept to the side and is scrutinized harder because it isn't a super high-growth category. It seems like the lower risk manufacturing, non-tech, isn't as 'cool' so it doesn't have as much funding from private or public entities. Investors right now aren't looking at non-tech manufacturing because it's slower growth.

Keep doing the great work that you are doing, it is a significant benefit to Montana!

Keep up the good work. Document and vocalize 1 to 3 year plans.

Keep up the great work. It's a pleasure to be a part of the alliance.

MHTBA has been a great organization for (company) team and we look forward to many years of partnership ahead as we continue to grow this enterprise.

MHTBA must look beyond thinking its only for "technology" companies. Technology is like food, it is integral part of business existence. Its members have a duty to become a larger influence on Montana and its communities to move beyond relying on its past to compete favorably in the present and past.

Montana High Tech Business Alliance should work to bring external investments, VCs, super angels, etc., into the state to support high tech jobs.

Most of our employees love working for us because they love living in Montana and all it has to offer.

Nothing ever seems to happen when I seek out help in starting a business. It's always a dead wall. In California Cloud Services have sky rocketed. Amazon is now a Trillion Dollar business, but Montanans seem to be unaware of what is happening in the IT industry.

Our industry, construction, may seem rather "low tech," but the lack of qualified workers combined with technological advancements and applications within our industry are rapidly making ours a high-tech environment. Montana tends to be a late adoption state for new technologies. I'm hoping MHTBA can help the construction industry as a whole understand and adapt to the opportunities new technologies offer as we struggle to find employees.

Provide hiring assistance. For example, pay 50% of first year for training. It's the first year that is cost prohibitive before an employee can generate value.

Raising capital is getting easier, but it is still a barrier. Support services, legal, finance and accounting, etc., are also improving, but could be better.

Reality is that even in tech, the jobs don't pay well.

Really enjoyed the time that we have spent at the gatherings!

Students graduating from MSU programs like chemistry, biochemistry, biology are lacking lab experience.

Thank you for all that you do!!!

Thank you for bringing exposure to Montana's high tech community.

Thank you for doing this survey and for advocating for Montana tech businesses!

Thanks for your work and for this opportunity!

The formation of the machinist and Photonics technician programs at Gallatin College is good example of things that really help. Extending it to electronics, including soldering skills would be useful. Seems like there is a huge shortage, in the US in general, of trade skills as oppose to four year degrees.

We expect to create a host of good jobs not only internally, but also in respect of our Montana vendors, so having them find qualified workers is important as well.

We have not had any issues finding good employees but we have a reputation as a great place to work with good pay and benefits. We do need to groom a significant portion of HS kids to go into the hands on manufacturing field. Out of HS I was not ready for an engineering degree so I went into Aviation Maintenance, after 5 years of that I was ready to put myself through a 4 year Engineering program.

We need a well-functioning Legislature that focuses on reasonable policies that nurture the business environment that is conducive to doing business in our state. Hopefully there will be less partisanship than in past sessions.

We need an angel tax credit, like ND and MN. I will be working on this in the next legislature and call on you to support.

We would like to be an outreach to Montana Tech companies that want to develop online learning content.

Would be great if there were grants or 0% interest loans for startups who are bootstrapping and legitimately self-funded, not those who have already had a successful exit or past track record of funding. To start from nothing and grow is very hard, a little easy cash for developing further software or hiring a sales person could go a long way to job creation. Bridge financing in the form of a grant or 0% interest loan.

Zoning and parking requirements in Bozeman have been an issue for us. It's difficult to invest in our infrastructure when the city doesn't keep up with their end of it.