



A Profile of Montana's High Tech Industries

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(Board Chair)

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Key Findings

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

The BBER finds that on the basis of a survey of 101 regular HTBA members:

- Jobs at businesses who are Alliance members pay considerably more than jobs elsewhere in the economy. The average annual salary at HTBA businesses (\$50,702) was twice as large as the median earning per Montana workers overall as measured by the Census Bureau's American Community Survey;
- HTBA businesses collectively paid more than \$139 million in payroll in 2014. Other data sources suggest that the actual payroll paid by all high-tech businesses (including nonmember businesses) was much larger;
- The Montana-based activities of HTBA members were responsible for \$632 million in gross sales in 2014;
- By almost any measure, growth projected in high-tech businesses vastly exceeds average statewide economic growth, and employment and revenues are expected to grow at rates that are 8-10 times the BBER's projection of statewide growth;
- High-tech companies that are HTBA regular members will raise wage rates by 7 percent in 2015, significantly faster than the 1.4 percent rate of growth realized in wage rates at Montana private sector employers in the most recent data;
- Alliance members expect to add more than 400 net new jobs in 2015, a 15 percent increase, a much stronger job growth than has occurred in the overall economy;
- The high-tech businesses that are regular members of HTBA expect to make at least \$35 million in capital expenditures at their Montana facilities in 2015;
- Montana high-tech businesses are varied, but on average tend to be smaller, younger and more growth-focused;

- HTBA members find that Montana’s quality of life – its lifestyle, the work/life balance available here, the recreation opportunities, and the beauty of the landscape – provides them a significant advantage in business;
- HTBA members most often reported that attracting talent and hiring skilled technology workers was their firm’s largest impediment to faster growth.

BBER also conducted research using publicly available data from federal statistical agencies. While these data can only be used as a crude 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 percent of the total state economy, paying wages that are roughly double the overall average and higher than all but three other Montana industries. Based on this analysis, BBER concludes that the aggregated responses of HTBA members reported here greatly understate the actual size of industry activity in Montana. While no precise estimate is possible, it is likely that the true size of the industry is 2-3 times as large as what is reported in the survey results in this study.

Background of the Project

The Montana High Tech Business Alliance

Launched in April 2014, the Montana High Tech Business Alliance is a statewide membership organization focused on creating more high-tech jobs in Montana. The Alliance currently has more than 140 member firms.

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

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

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

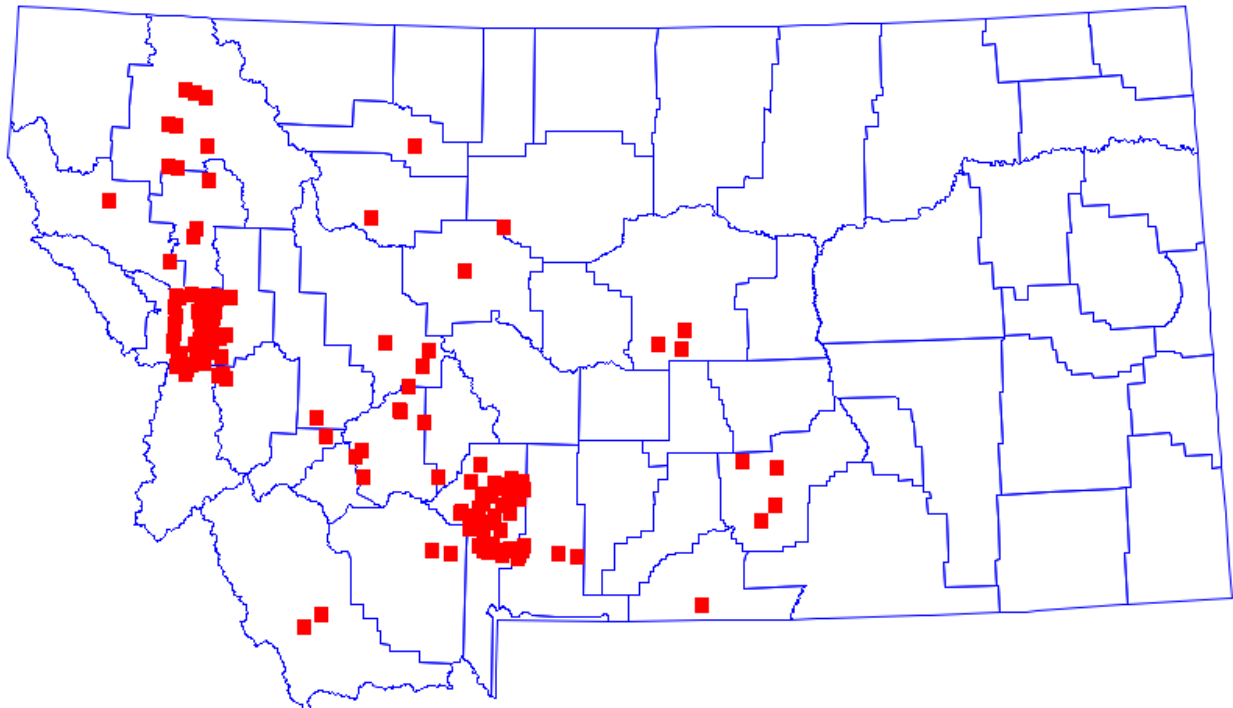
Benefits include:

- **Networking:** Connect with founders and executives of Montana high-tech and manufacturing companies at regional and statewide members-only events.
- **Visibility:** Increase awareness of your company across the state. The Alliance serves as a voice for high tech in Montana, shining a light on the success of our member firms.

- Recruiting: Gain exclusive access to our online jobs portal, a powerful recruiting tool that reaches talented job-seekers, including top students and alumni from Montana's universities.

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 HTBA Members



The Bureau of Business and Economic Research

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

About This Study

This project was conducted in order to objectively and accurately assess the characteristics and the concerns of members of the Montana High Tech Business Alliance. Its findings will serve as a benchmark for further inquiry into the rapidly evolving activities and concerns of the membership. It also serves as

an important assessment of one of Montana’s fastest-growing and highest-paying industry clusters, addressing a gap in information that is available from public sources.

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

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

Measuring High-Tech Business Activity

The direct measurement of high-tech business activity in the economy has always been hampered by two issues: (i) the lack of a consistent definition, and (ii) 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 – the federal government statistical agencies – miss some activities that are clearly high tech and count other activities that are not.

Those shortcomings aside, federal government statistical data still provide insights on the size and scope of the industry that provide a useful context for the survey-based results presented in this study. 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 1, 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 1: 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).

Clearly such discrete classifications miss some high-tech firms and include others that are not high tech. Certainly the classification does not match the composition of HTBA membership. But it is an industry

definition that has been used in other research, and it provides a working definition that can give us at least a rough idea of the size and other characteristics of Montana’s high-tech industry.

Table 2: Characteristics of Montana's High-Tech Industries, 2014

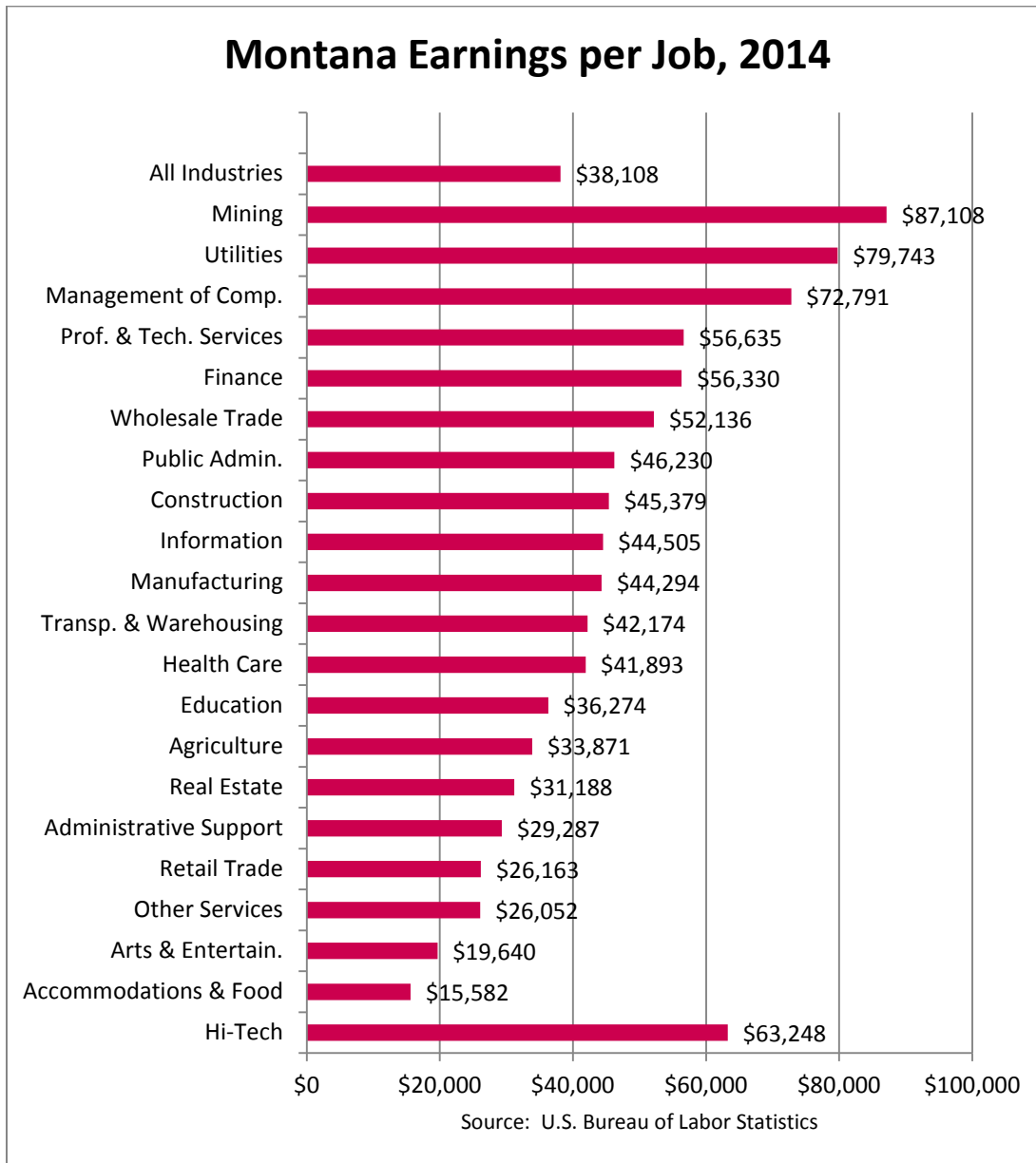
Category	Amount
Wages (\$ mill.)	\$868.8
Employment	13,730
Establishments	2,202
Wages per Job	\$63,275
Jobs per Establishment	6.6
Note: Figures derived using Hecker (2005) definition of industry.	

Using this nationally derived definition of high tech, the data suggest that the presence of high-tech economic activity in Montana is considerable, as shown in Table 2. The data suggest that high-tech companies here are relatively small-sized, with an average of 6.6 employees per establishment, but pay average wages considerably above the state’s overall average.

To put the crude estimates shown in Table 2 into context, Montana high-tech companies accounted for 5.2 percent of total Montana wages, 3.1 percent of total Montana payroll jobs, and 5.1 percent of Montana business establishments in the year 2014. This is clearly a significant fraction of the total, despite its rather crude definition here.

The data also suggest that Montana’s high-tech employers pay considerably more than the state average and rank among the higher paying Montana industries, as shown in Figure 2. The average wages per job in Montana high-tech companies, as defined above, was \$63,275 per year, or roughly two-thirds higher than the state average of \$38,108 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, paying wages significantly higher than most other sectors.

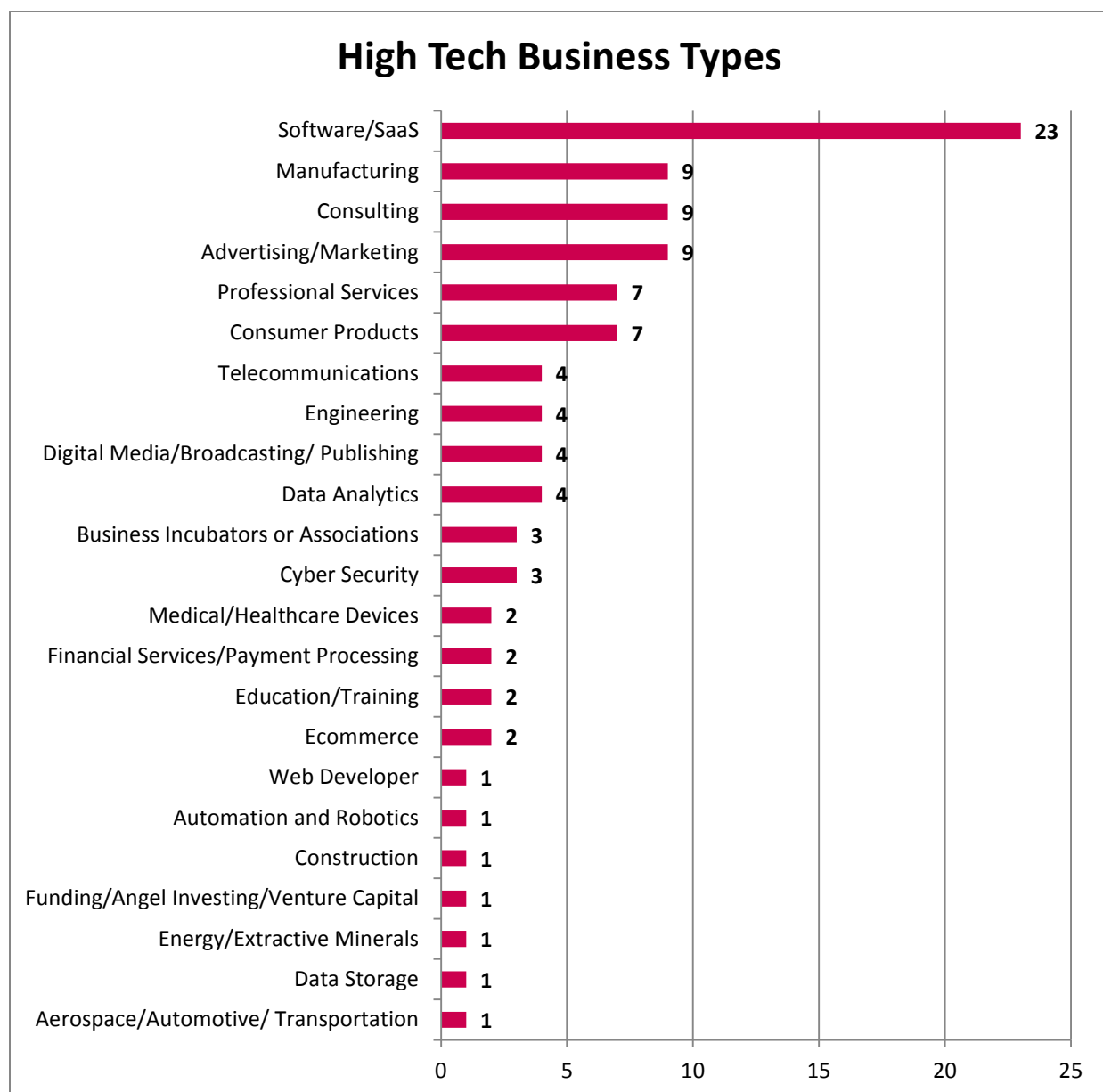
Results

The paragraphs that follow present the findings of the Montana High Tech Business Alliance that was conducted from November 2014 to January 2015. 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 2014 by their type of business. HTBA consists of businesses from a wide range of traditionally defined industry sectors.

Figure 3: High-Tech Business Types

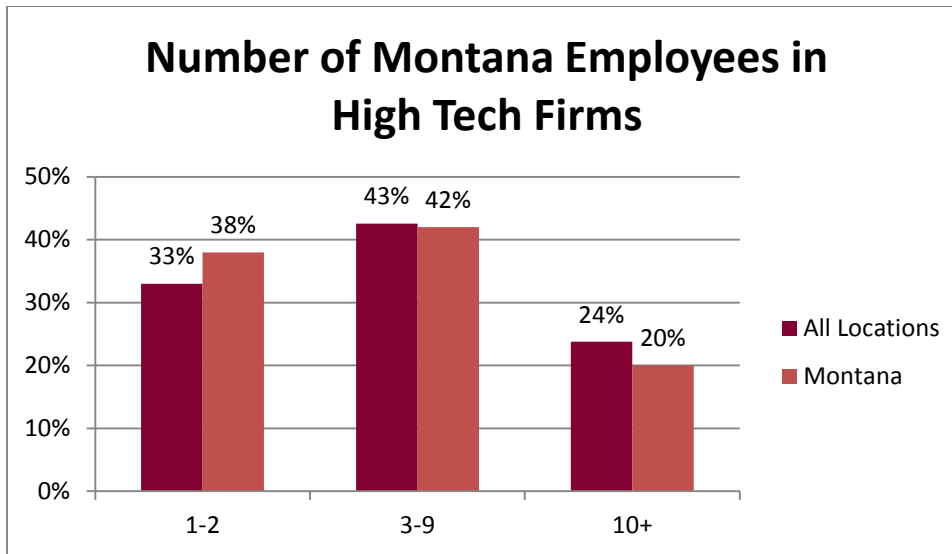


Q2. How many employees does your company have in total?

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

Most high-tech firms employed fewer than 10 people in Montana. Figure 4 describes the distribution of employment sizes among the Montana High Tech Alliance firms. HTBA employed 2,742 Montana workers as of December 2014.

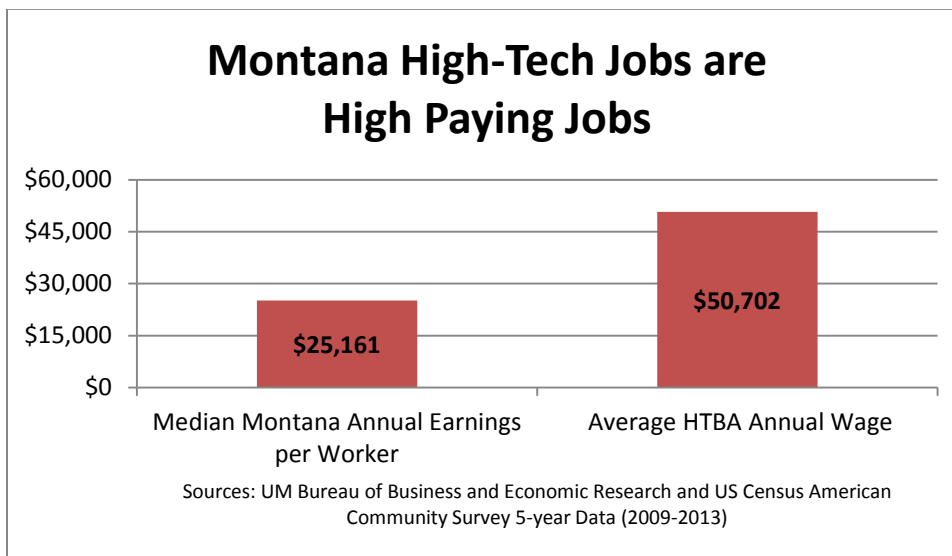
Figure 4: Employment Sizes of High-Tech Firms



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

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

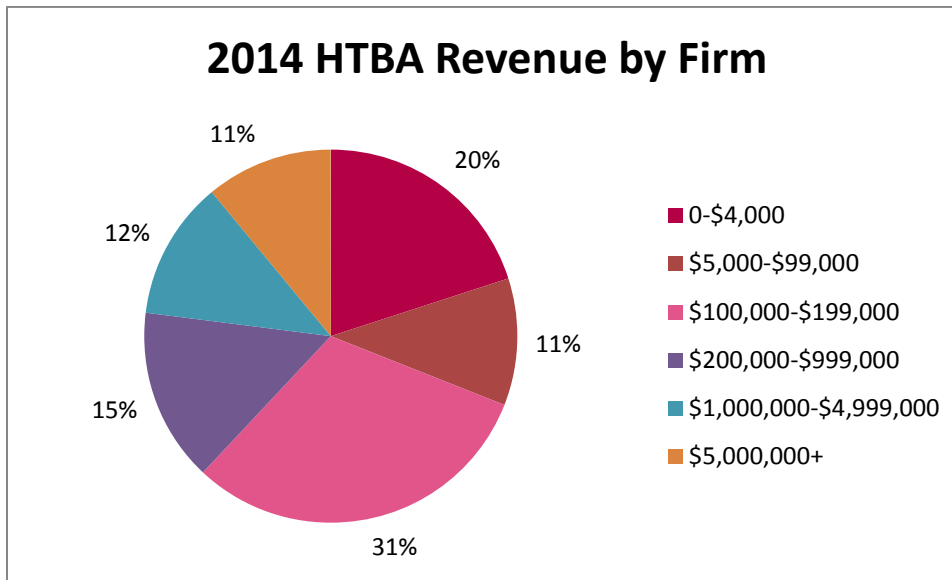
Figure 5: HTBA Annual Wages



Q5. What were your company's annual revenues in 2014?

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 \$632 million in total 2014 revenue. In terms of company revenue, Figure 6 shows that HTBA members range from start-ups with very little, if any, revenue to Fortune 500 companies.

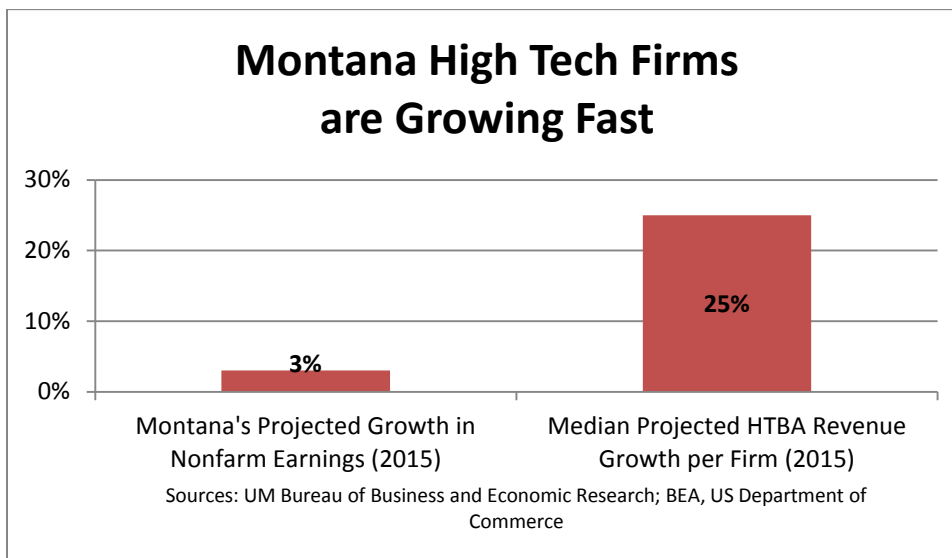
Figure 6: 2014 HTBA Revenue by Firm



Q6. By what percentage do you estimate your company's annual revenues will increase or decrease next year (2015)?

Montana's high-tech companies are growing very quickly. Figure 7 demonstrates that Montana HTBA firms anticipate growing *eight times* faster than the Montana economy as a whole.

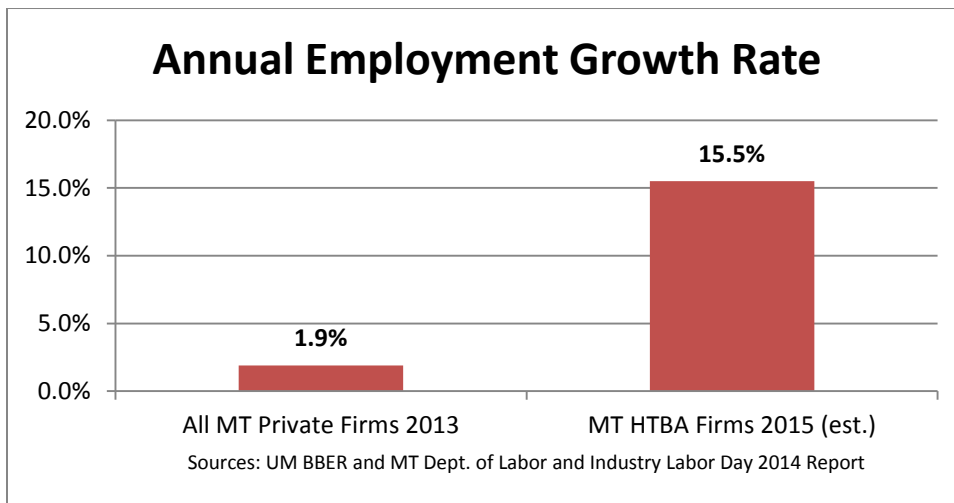
Figure 7: HTBA Growth Rate



Q7. About how many new jobs do you expect your company will create in Montana next year (2015)?

Montana’s HTBA firms will add an estimated 426 new jobs in Montana in 2015. This annual employment growth rate (15.5 percent) is significantly faster than Montana’s 2013 private company employment growth rate of 1.9 percent (see Figure 8 below).

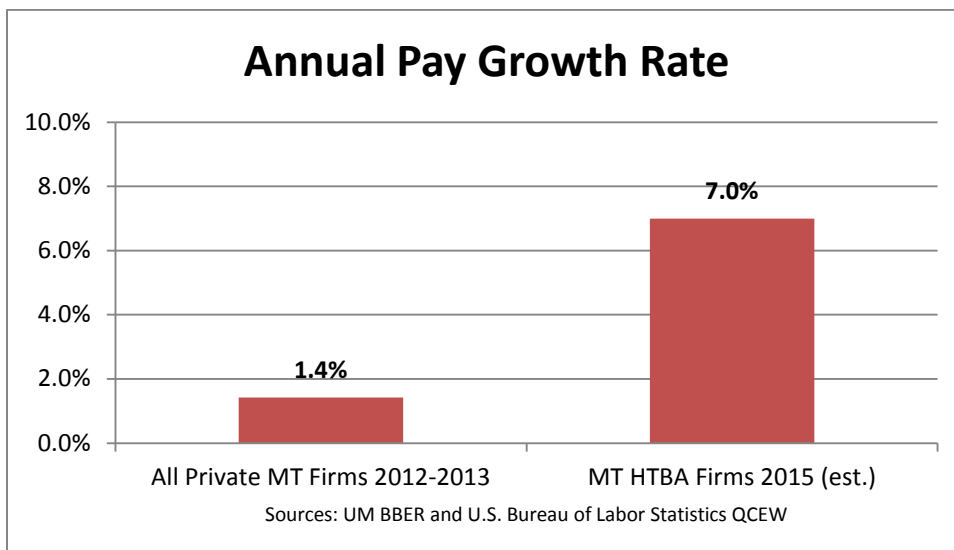
Figure 8: Annual Employment Growth Rate



Q8. By what percentage do you estimate your company’s annual Montana wages may increase or decrease next year (2015)?

The annual pay of Montana’s HTBA employees in 2015 is projected to grow significantly faster than that of all Montanans employed in private industry. Figure 9 shows that HTBA wages are projected to grow by 7 percent in 2015 while from 2012 to 2013 annual wages grew 1.4 percent.

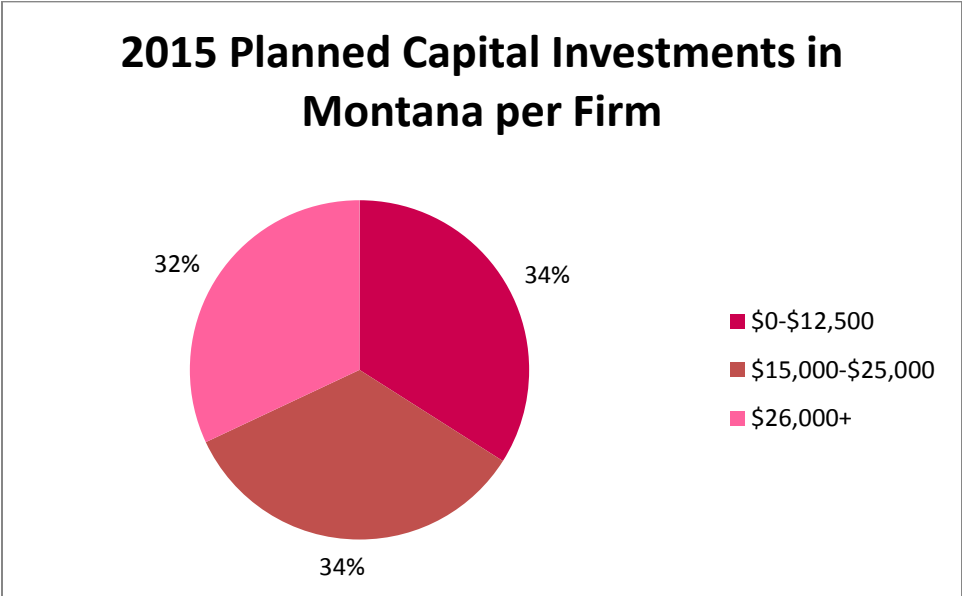
Figure 9: Annual Pay Growth Rate



Q9. About how much money do you anticipate your company will invest in major capital expenditures in Montana next year (2015)?

HTBA companies plan to make more than \$35 million in major capital investments in Montana in 2015, which will add even more construction and support jobs in the state. Figure 10 shows that 68 percent of HTBA firms each plan to invest between \$0 and \$25,000 in Montana. Nine percent of HTBA firms will each invest \$1 million or more.

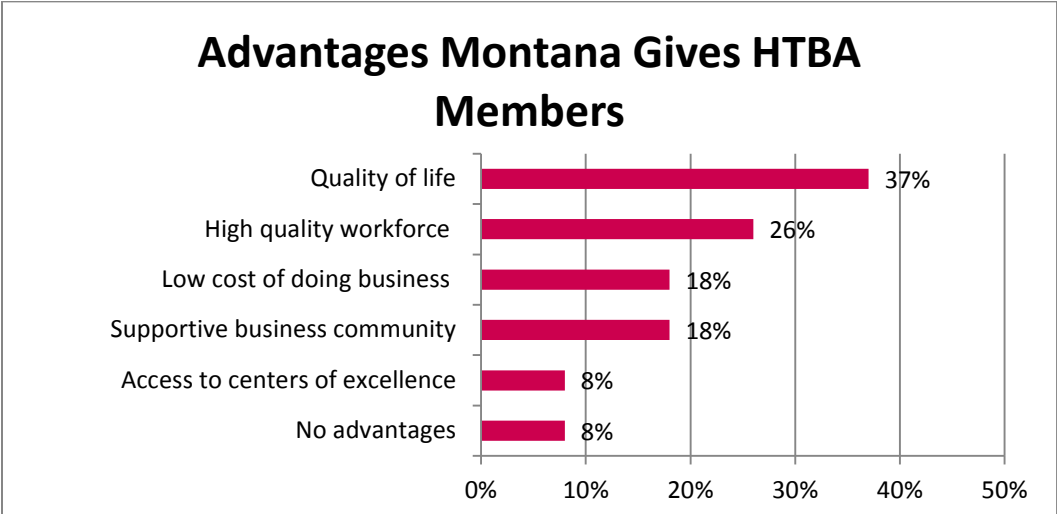
Figure 10: 2015 Planned Capital Investments in Montana



Q10. What advantage does Montana give you in business?

HTBA members find that Montana’s quality of life – its lifestyle, the work/life balance available here, the recreation opportunities, and the beauty of the landscape – provides them a significant advantage in business. As Figure 11 illustrates, 37 percent of all responses to Q10 cited Montana’s quality of life. HTBA members also most frequently mentioned Montana’s high quality workforce (26 percent), Montana’s supportive business community (18 percent), and the low cost of doing business in Montana (18 percent). A somewhat lower proportion (8 percent) said that access to centers of excellence like universities gives them an advantage. Eight percent also said that Montana actually provides them few, if any advantages.

Figure 11: Advantages Montana Gives HTBA Members



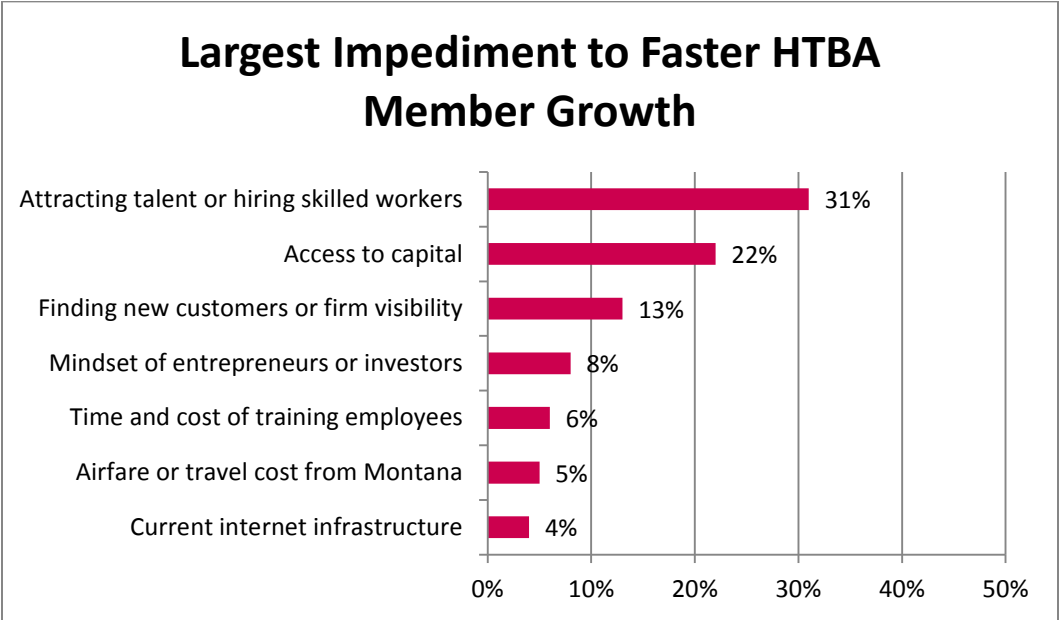
The following are selected comments that provide the reader additional insight into HTBA members’ opinions.

- “Great place to live, recreate, and raise families, which is attractive both to employees and customers.”
- “Fantastic location – employees who live here love it and the work/life balance we offer.”
- “A bit of panache of working in the Rockies, very attractive to technical talent.”
- “High quality workforce that understands what a work ethic is all about.”
- “Quality, ethical people in Montana.”
- “Doing business in Montana is unique in that there is always a community supporting you – regardless of industry you can count on the people to back you up.”
- “Access - meaning that you can get help with an email or phone call away, even up to senators, governors, etc. where in other states you are more anonymous. The professional network with successful entrepreneurs and mentors is phenomenal.”
- “Low cost of doing business is a positive aspect of doing business in Montana.”
- “Access to Montana State University and specifically the Center for Biofilm Engineering.”

Q11. What is your largest impediment to faster growth?

HTBA members (31 percent of all responses) most often reported that attracting talent and hiring skilled technology workers was their firm’s largest impediment to growth (see Figure 12). A lower but substantial proportion (22 percent) cited access to capital (investors, cash, financing, or funding) as their firm’s largest impediment to growth. The third most commonly cited impediment to growth (13 percent) was sales and marketing related, for example finding new customers or the visibility of their firm. Four smaller, but significant impediments mentioned were: the mindset or risk aversion of entrepreneurs or investors (8 percent), the time and cost of training employees (6 percent), airfare or travel cost outside Montana (5 percent), and current Internet infrastructure (4 percent).

Figure 12: Largest Impediment to HTBA Member Growth



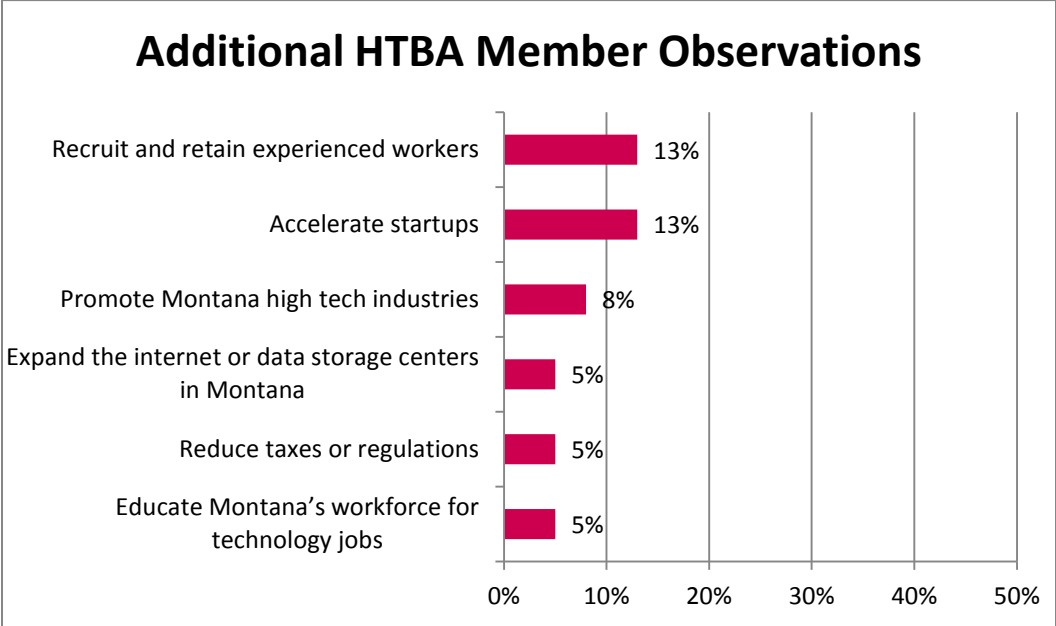
The comments displayed below give more perspective on HTBA members’ opinions.

- “Experienced workers deeply skilled in software engineering and building and scaling software startups. Many of the highly skilled workers flee the state for higher salaries in metro markets. Given a small amount of companies here run their software organization like larger companies, the pool of experienced workers is limited.”
- “Our largest impediment is access to working capital in order to fund expansion. We are actively marketing our services to out-of-state clients. If we had access to working capital, we could compete at a much higher level.”
- “Available skilled workers. I either need to train from the ground up or import workers into the state. The burden is on me to teach an apprentice. I’ve looked into the MT apprentice program, but I have to invent my own program because it’s so out of date. It’s very, very time-consuming.”

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

HTBA members most often directed their summary comments (see Figure 13) about improving Montana’s business climate in two areas: 1) a renewed focus on recruiting and retaining experienced workers (13 percent of responses), and 2) accelerating startups with investment, incubators, or mentoring (13 percent). Montana HTBA members also mentioned promoting Montana high-tech industries (8 percent), educating Montana’s workforce for technology jobs (5 percent), reducing taxes or regulations (5 percent), and expanding the Internet or data storage centers in Montana (5 percent).

Figure 13: Additional HTBA Member Observations



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

- “Excited about expanding the [www.MTHighTech.org/jobs] listing/portal. A strong aggregate of high-tech positions will continue to prove that Montana is a great place to live and work.”
- “If we want to see more high-paying Montana jobs, we Montanans (particularly those in state government) need to rally around young professionals in state and focus on bringing young talent (back) from more technologically developed states.”
- “If Montana is to become a destination for high-tech companies it needs to have aggressive programs to build existing companies and attract others. Investors and community development groups need to get over their “fear” of high tech and embrace the reality that it is worth the investment and risk.”
- “We need to invest in programming and computer science at the high-school level. It’s a great professional skill and teaches logic/reasoning.”

References

American Association for Public Opinion Research. (2011). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*. 7th edition. Kansas, City, KS: AAPOR.

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

Appendix 1: Questionnaire and Topline Results

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

	<u>Response% (Total =78)</u>
● Advertising/Marketing	8.9
● Aerospace/Automotive/Transportation	1.0
● Biotechnology	0.0
● Consulting	8.9
● Consumer Products	6.9
● Cyber Security	3.0
● Data Analytics	4.0
● Data Storage	1.0
● Digital Media/Broadcasting/Publishing	4.0
● Ecommerce	2.0
● Education/Training	2.0
● Energy/Extractive Minerals	1.0
● Engineering	4.0
● Financial Services/Payment Processing	2.0
● Funding/Angel Investing/Venture Capital	1.0
● Manufacturing	8.9
● Medical/Healthcare Devices	2.0
● Nanotechnology	0.0
● Professional Services	6.9
● Software/SaaS	25.6
● Telecommunications	4.0
● Construction	1.0
● Automation and Robotics	1.0
● Web developer	1.0
● Business Incubators or Associations	3.0

Q2. How many employees does your company have total? Please include all states and countries. If self-employed, indicate one employee. Your best guess is ok.

Total number of employees

Mean: 1,275 Median: 3.0 Responses: 78

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

Number of Montana employees

Mean: 27.2 Median: 3.0 Responses: 78

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

Average annual wage (\$)

Mean: \$50,702 Median: \$50,000 Responses: 61

Q5. What were your company's annual revenues in 2014? Your best guess is ok.

Annual 2014 revenues (\$)

Mean: \$394,822,095 Median: \$195,000 Responses: 63

Q6. By what percentage do you estimate your company's annual revenues will increase or decrease next year (2015)? Your best guess is ok.

Expected 2015 revenue increase (%) Mean: 92.8% Median: 25.0%
Responses: 52

Expected 2015 revenue decrease (%) Mean: 5.5% Median: 5.5%
Responses: 2

Q7. About how many new jobs do you expect your company will create in Montana next year (2015)? Your best guess is ok.

Number of new jobs

Mean: 4.2 Median: 2 Responses: 63

Q8. By what percentage do you estimate your company's annual Montana wages may increase or decrease next year (2015)? Your best guess is ok.

Expected 2015 wage increase (%) Mean: 31.4% Median: 7.0%
Responses: 51

Expected 2015 wage decrease (%) Mean: Median: Responses: 0

Q9. About how much money do you anticipate your company will invest in major capital expenditures in Montana next year (2015)? Your best guess is ok.

Major capital expenditures (\$)

Mean: \$355,465 Median: \$25,000 Responses: 56

Q10. What advantage does Montana give you in business?

Q10 What advantage does Montana give you in business?	Responses
Quality of life; Lifestyle; Work-life balance; Recreation; Beauty	29
High quality workforce: Work ethic	20
Supportive business community; Access to networks	14
Low cost of doing business; Low cost of living; No sales tax	14
Access to centers of excellence; universities; expertise	6
Not many advantages; Not business friendly	6
Less competition	1
Centrally located for shipping nationwide	1
Favorable political environment	1
Market vision	1
Customers are within the region	1

Q11. What is your largest impediment to faster growth?



Q11 What is your largest impediment to faster growth?	Responses
Attracting talent; Hiring skilled technology workers; Cost of workforce	24
Access to capital; Investors; Cash; Financing; Funding	17
Sales and marketing; Finding new customers; Visibility	10
Mindset; Risk-aversion; More entrepreneurs who think big	6
Training employees - Time and cost	5
Airfare; Expense of travel; Direct access to customers outside MT	4
Internet infrastructure; Bandwidth; Data center facilities	3
Community acceptance	1
Identify acquisition opportunities	1
Lower salaries	1
Economy	1
Time	1
High cost of real estate	1
No control of Oracle Service Cloud - RightNow software sales	1
Finding needed services (like manufacturing)	1
Lack of a technical co-founder	1
Not enough high tech companies in the state	1
Poor communications infrastructure	1
Strategic partnerships	1

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

Q12 What additional comments do you have?	Responses
Recruit/Retain experienced workforce	10
Accelerate startups with investment, incubators, mentoring	10
Promote MT high tech industry	6
Educate workforce for tech jobs	4
Reduce taxes, regulation; Change laws	4
Expand Internet; Data centers	4
New, no comment	3
Keep up the good work	3
Optimism about future growth	2
Construction Industry	1
Traveling--out of state	1
Jobs created related to attrition	1

Appendix 2: Survey Methods

Data Collection Methods

The data for this survey were collected by administering a questionnaire via the Internet to a list of HTBA members provided by the Alliance. BBER used Qualtrics survey research software to manage this survey. The questionnaire invitation was transmitted by e-mail and respondents are asked to click on a hyperlink to access the on-line questionnaire. The questionnaire was developed by the HTBA. Data was collected during the period from November 17, 2014 through January 5, 2015. Ms. Christina Henderson, executive director of HTBA, assisted significantly by conducting additional non-respondent prompts and helping to manage the respondent list.

Data Collection Outcomes

BBER received 78 responses from HTBA members out of 101 asked to participate, yielding a response rate of 77.3 percent. This response rate is quite high and is one indicator that the survey has yielded high quality data.

Data Processing and Analysis

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

BBER conducted a statistical analysis of the survey data using statistical analysis computer software (SPSS version 22, Copyright 2013, IBM Corporation). BBER analyzed the data collected using frequencies, cross-tabulations, standard measures of central tendency (mean, median, mode), sums and ratios. Ms. Christina Henderson of the HTBA conducted content analysis of Questions 10-12 and tabulated these results.

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

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

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

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

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

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

Researchers

Principal Investigator

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

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

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 Harris Graduate School of Public Policy Studies at the University of Chicago and recently retired from the United States Army Reserve as a Sergeant Major.

Appendix 4: Detailed Responses to Open-Ended Questions

Q10 What advantage does Montana give you in business?
1) Access to motivated, bright entry level employees 2) A bit of panache of working in the Rockies, very attractive to technical talent
A great place to live.
Ability to pay low wages because of increased quality of life
Access to business leaders and media. No sales tax.
Access to friendly, smart, hard working professionals that are coming right out of school or 1-2 years out of school.
Access to MSU and specifically the Center for Biofilm Engineering
access to networks, cache'
cheaper place to do business
Close-knit community; never too many degrees of separation between people I need to contact.
Credibility over Silicon Valley in terms of the products that we are developing
Culture, community, and Mountains!
Dedicated workforce. Affordable cost of business opportunities.
Desirable place to live. People have good work ethic.
Electrochemical expertise and ecosystem in the Flathead Valley due to Semitool/AMAT
Excellent workforce, supportive business environment, excellent support from UM, Missoula, and the State
Fantastic location - employees who live here love it and the work/life balance we offer. Great clients/quality, ethical people in Montana
Farm boy work ethic
Flat hierarchy, unique, untapped markets, growing recognition nationwide
Great employment pool if we grow as planned...healthy lifestyle and small state feel...great place to live and with the internet we can live anywhere
Great place to live, recreate, and raise families which is attractive both to employees and customers. People are unfortunately willing to pay the "Montana tax" to be able to live here, which for employers means lower wages than large metro markets. We are trying to correct that, however, so it's unclear what the specific advantages are from a business perspective. Another would be "access" meaning that you can get help with an email or phone call away, even up to Senators, Governors, etc. where in other states you are more anonymous. The professional "network" with successful entrepreneurs and mentors is phenomenal.
High quality workforce that understands what a work ethic is all about. Quality of life opportunities while still being able to participate in the technology field.

High quality workforce, strong work ethic, high quality of life for the team and their families.
High quality, lower cost employees; Desirable location for employees, as well as desirable location for clients to visit us.
Honestly? Not a lot. Montana is not really business friendly and people here expect to pay less than in the rest of the company.
I can create a work-hard play-hard tech culture. Software is nothing if not for a great team!
I like being here.
Lifestyle
Lifestyle and good place to raise kids.
lifestyle, connectivity and relationships, willingness to help/try things out, opportunity to build a robust and diverse personal and professional network
Lifestyle, workforce/community culture, somewhat lower workforce costs (minimal)
Low cost of doing business is a positive aspect of doing business in Montana. Montana is a very rural state and due to that characteristic there is decreased in competition for this market. A lot of bigger analytic vendors don't want to step in this state as it's not worth their time for such a relatively small sale. This has made Montana a great starting point for our company to gain clients and develop solutions to meet those client's needs.
Low cost of living.
Low cost of living. Great life style environment.
Low cost of real estate Centrally located for shipping nationwide Educated workforce State income tax is lower than California -- but still too high No sales tax
Low crime, beautiful scenery, honest workers, relatively favorable political environment, recreational opportunities
lower operating costs
Market vision
Montana has the best people in the world. We've been able to hire some of the best and experienced Professionals in the industry along with attracting the brightest and hardest working college graduates.
Montana is a tough place to do business. I like it here but do not see a lot of advantages to being here from a business standpoint.
Montana offers many advantages in business - first and foremost the low cost of living makes everything much simpler when attempting to expand. Everything from cheaper office space to cheaper general living expenses helps alleviate the stress typically associated with running a business in other areas of the world. Doing business in Montana is unique in that there is always a community supporting you - regardless of industry you can count on the people to back you up.

Montana's excellent public universities and low cost (and high quality) provide start-ups like ours with the time and talent needed to realize digital products. As long as intelligent young people are living in Montana, the future is bright.
NONE
None – it's a disadvantage. Poor internet connectivity, high cost of real estate in Bozeman, difficult travel and expense of public and private carrier to major east coast population centers
One- to two-degrees of separate from major decision makers in high-level business, government, funding, etc. Great quality of life, outdoor recreation. Qualified and under-utilized workforce eager for opportunity. Qualified independent contractors. Montana cache - the last frontier, the cowboy way.
Our business services this region primarily. That's the primary advantage.
Our customers are here. Montanans enjoy supporting locally owned business because the executives and employees spend their profits in Montana.
Our pristine natural environment. Talent likes to live here and that can be a recruiting advantage.
Proximity to Montana State University.
Quality of Life
Quality of life helps attract and retain.
Quality of life.
Rural lifestyle. Rural main street businesses provide a ripe market.
stronger startup community
There is not much going on in Montana that directly impacts our business at this point so this is hard to define. We'd like to see more technology activity in Montana that can create some advantages to being here. We believe we can be a part of creating tat.
valuable human resources
We get to live in the most beautiful state there is! Other than that, MT isn't very small-business friendly. I'd like to see more benefits and advantages for small businesses in MT.
Work ethic, work life balance.

Q11 What is your largest impediment to faster growth?
1. Not having control of sales. Always looking and interested in software resale options. 2. How to scale. Being able to hire and enable new employees fast enough. We've been fortunate to attract former RightNow employees however that pool is shrinking. Our firm has started to hire college graduates and we have successfully proven that model however the on-boarding period can be lengthy. Maybe 6 months on average for a new college graduate hire to be cost neutral.
1) mid-level and senior-level talent to scale entry level employees. 2) Airfare is a significant challenge. Flights options are fine, prices are not.
Ability to take risks
Acceptance in the community: not being a MT native, we struggle to find investment capital. We also struggle to find good mfg. services and talented, motivated, technical people.
Access to capital, investors. Quality programmers.
Access to good people to hire.
attracting talent. primarily a struggle to attract those that are creative, cultured, and desire to reside in a major metro area
Availability of experienced engineers.
Available skilled workers. I either need to train from the ground up or import workers into the state. The burden is on me to teach an apprentice. I've looked into the MT apprentice program but I have to invent my own program because its so out of date. Tis very, very time consuming. I need serious commitments from people for my time investment otherwise it's a waste of time and exercise in giving someone a free education. Really, I should charge them! All kidding aside, a generation of kids and young adults who want instant gratification is their doom. We need to go back to the days of apprenticeship programs before WWII and in Europe for centuries. It's not that I'm Eurocentric in my views - far from it. But for trades like mine it's essential. Most manufacturers (think micro-manufacturing) are small and have very few employees and are family businesses.
Available Tech Workforce and cost of Tech Workforce
Bandwidth, data center facilities and talent pool
can be challenging to source qualified technical and creative talent, especially hardware engineers
capital
Capital, market awareness, labor, talent
Capital. We are self-funded so growth is steady, but slow. Banks are not very interested in service businesses.
cash

Direct access to our customer base which is largely outside of Montana. Lack of resources on the personnel side with an understanding of the global business climate. Our employees require on the job training and experience to come up to speed with our industries which requires more time than if we were drawing people out of an active technology region.
Experienced workers deeply skilled in software engineering and building and scaling software startups. Many of the highly-skilled workers flee the state for higher salaries in metro markets. Given a small amount of companies here run their software organization like larger companies, the pool of experienced workers is limited. Attracting out-of-state talent to help skill up local requires capital, so you must bootstrap your way through sales until revenues support attracting the correct talent (who may or may not be equity-incentivized), or you need to raise capital. The "network" is strong but risk averse so capital access is still a challenge for most; often banks and credit cards are primary sources which limits competitiveness where companies in other communities have easier access to resources (human, financial, etc.).
Financing and new contracts
Finding appropriate engineers and physicists to hire.
finding product market fit
funding
Funding and lacking a strong technical co-founder
Funding.
good people
Hiring skilled technology workers Very high airfares out of BZN
Identifying acquisition opportunities.
In Montana's larger cities, the lack of internet infrastructure (industrial speed internet) and telecom/ISP regional monopolies who wish to exercise exclusive control to that service are the twin culprits. If fiber optic cables were live in Montana, we could make and run any game or game related service here in Montana, rather than having to rely on west coast giants like Amazon. The sooner we get someone like Google Internet in Montana, the sooner the industry can put on its big kid pants.
Investment capital.
Lack of available tech work pool.
Lack of capital
Lack of people.
Largest impediment to growth is availability of capital investment.
Loans for capital investment.
lower salaries
Me.
more clients
More employees

More entrepreneurs who think big
Not enough High Tech companies in the state.
Our largest impediment is access to working capital in order to fund expansion. We are actively marketing our services to out-of-state clients due to the small markets that exist within Montana and are growing organically. If we had access to working capital, we could compete at a much higher level.
Ourselves
Poor communications infrastructure
Qualified sales people
Revenue
Revenues vs staff size
Sales
sales,
Shortage of qualified workers
Speed of in-house training. We provide professionals services in the marketing technology space so we have to hire and train individuals who like both marketing and technology. We generally hire business majors who want to become more technical so there is a 6-8 month ramp up period internally as they quickly learn the deeper technical skills. But long-term, these employees have worked out very, very well for our firm.
Strategic partnerships
Tech talent, funding
The economy that Obama has decimated around us.
time
Travel access to other cities.
Visibility and credence. Most of our customers are not in Montana. Most of our potential customers look for local engineering firms and don't give much consideration to Montana engineering firms. Almost all of our clients are from referrals.
While I love Montana, interestingly enough, the only major impediment to faster growth is Montana. What I mean is Montanans do not understand technology yet. I have literally had clients, big and small companies, tell me "they do not see the value in having an online presence." The work I do is entirely online - I can and do work with clients around the world from my basement in the middle of the countryside, but very little of my business comes from my home state, despite my best efforts. From my experience there is early adopters, followers, late followers, late late followers, and then Montana. While I have no plans to bring on additional employees, it is impossible to hire great high tech talent - online web/ mobile developers, designers, marketers, etc are in short supply.
Workforce availability

Q12 What additional comments do you have?
Availability of experienced engineers is always an issue. There are only so many top tier candidates you can find locally.
brand new to the Alliance and Missoula so no comments yet
Building awareness is key to growing the high tech sector. Out of sight out of mind keeps Montana and Montanans from seizing opportunities that exist in the state. While there are a multitude of companies paving the way for smaller businesses, many opportunities still go unnoticed because there are not marketed well.
Companies need to sell out of Montana to bring enough here to raise the company's income, which in turn increases how much they can pay. It's a chicken/egg scenario but infrastructure like affordable travel, affordable office space, broadband, and telephony are helpful. The bottom line is we need to create valuable products and services that are sought after by a large audience and if we do that well, the money and rest will come.
Construction is a field that employs many new and/or advanced technologies...please don't leave it off the list of high-tech industries
continued free/low cost support for startups, grants, incubators, mentoring.
Creating a nationwide presence for MT high tech industry will help attract great people from technical professions.
excited about expanding the jobs listing/portal. a strong aggregate of high tech positions will continue to prove that Montana is great place to live and work.
Finding well educated workforce can be a challenge. The Higher education system needs to modernize. We need technicians. We hire folks with a 4 year degree and then we teach them to be technicians.
Flooding the market with low cost or no cost interns will decrease the salary levels of existing software development jobs. Montana has a persistent issue of businesses not wanting to pay well for software developers and tech people. Then these newly trained people leave because the tech companies want low cost labor and the cycle continues. CEOs continue this tradition wanting interns to keep costs low to carry on. Bozeman may not see this issue but other cities do due to how many good jobs are available.
Growing my services will make it easier to grow. But I can't do it with capital and working longer hours (me working more). I can't afford to spend \$20K-50K on new capital on the hopes that a trainee will "work out," and I don't have enough work now to keep a trained professional occupied. The transition is brutal.

<p>Hi-tech jobs in Montana are frustrating. Montana companies will many times mentor young professionals for 2 years with continued salary increases. Once trained, larger 'Coastal / out-of-state' companies that have more ability to make revenue from that professional are able to offer much more compensation. The Montana company can no longer afford that professional, and all that training and effort is lost to an out-of-state company. Many times the professional doesn't understand cost-of-living difference. Cost of living education could be important. Maybe part of the solution could be to help drive the cost-of-living in Missoula down.</p>
<p>I like what MT High Tech is doing. It's needed.</p>
<p>i want the alliance to get out Montana's story</p>
<p>I'd like to see more effort to build/move large server farms here. We have ideal geography, risk profile, and energy costs for housing those data centers here.</p>
<p>I'm still learning about how things work differently in Montana.</p>
<p>I'm very optimistic about our future growth in SW Montana. Our firm is really just people. We are a Professional Services Consulting Company. We are an Experience Company. We are the best at what we do because we have an incredible team that I would put p against any team in the world. Montana has the most ethical, hardest working, high-aptitude, impressive attitude pool of candidates that match our culture impressively.</p>
<p>If there's any way you could help lobby the state to give tax incentives or other benefits to small businesses to bring them to MT (or keep them there), that would be awesome!</p>
<p>If we want to see more high-paying Montana jobs we Montanans (particularly those in State Government) need to really rally around young professionals in state and focus on bringing young talent (back) from more technologically developed states. Montana has a lot to be proud of, it has access to two top tier national parks, excellent access to the full array of outdoor entertainment, and a (generally) friendly Mountain-West culture. This will sound crazy, but I honestly feel special interest groups like he Tavern Association (and those in state government who collaborate with them) are holding Montana's development as a tech hub back. Montana currently has an astronomical number of quality micro-breweries and distilleries (the second highest number per capita in the nation, second only to Oregon.) Despite this success, our state laws and alcohol related licenses are some of the most prohibitive in the nation second only to Utah. This arrangement benefits large out of state companies like Bush, Millers, and other standard fare American Manufactures explicitly at the expense of our own entrepreneurs. This actively makes the Montana night life sleepier and more isolated and relegates Montana as a "great place to visit" in the eyes of my young west coast pees. If our state continues do define itself by the industries of its past instead of what it could be (a mountain-west Oregon for example,) our future will be far less bright.</p>
<p>Keep up the good work!</p>

Keep up the periodic meetings at difference locations around Montana. I think it is important to have reasons to travel to the other cities to meet and network with other businesses.
Local regulation (time and expense of permitting) and government regulation and competition make it difficult to justify additional capital expense.
Many reasons we cannot compete with Silicon Valley are psychological. However, our dismal Internet connectivity is probably the biggest impediment in my industry.
Montana has got to get behind companies that are willing to hang in there and create high paying high tech jobs within the state and import dollars into the Montana economy. It is imperative that Montana begins to recognize the level of commitment it requires to begin a high tech endeavor in this state and goes to work to enable our types of companies. If Montana is to become a destination for high tech companies it needs to have aggressive programs to build existing companies and attract others. Montana cannot continue to use the excuse that "it just doesn't understand high tech". Investors and community development groups need to get over their "fear" of high tech and embrace the reality that it is worth the investment and risk, both from a personal standpoint and also for the entire state of Montana.
Montana will need more of the local successful entrepreneurs to re-invest in emerging technology similar to other areas.
Montana's candidate pool is limited, in terms of life sciences expertise.
Most important is quality people. We also need good internet not just at the company locations, but at the community locations also. The types of people that we attract want good internet at home as well as in the office.
My business has been in operation for less than a year so I do not have substantial feedback that this time.
need to build business structure and recruit investment and quality workers
Part of the problem is that the vast majority of employers outside of technology are comfortable with what they know and are hesitant to invest in their employees' training and professional development. If Montana is to grow in the knowledge/creative economy, there has to be more focus placed on alternative ways of training and educating technology workers. The colleges and universities take years to produce a graduate and even then, the employers need to invest in training because the technologies being taught are not current with the industry. With the cost of higher education increasing and the quality decreasing, this is not a winning combination. The bureaucracy and administration is too much and the teaching is too little.
Reduce/eliminate equipment taxes on pre-revenue R&D companies. Establish investment network in Montana for capitalizing startups - VC's, P/E's all push for companies to move
Right to work

Start trying to access the farmers and ranchers of the state and promote what you are doing. Many of their children need jobs in MT and they are very innovative!
The 25 jobs we will likely hire in 2015 represent anticipated attrition.
The current environment and support infrastructure for startups is amazing. Great place to be to start a high-tech business.
There are numerous Montanans that are doing business outside the state. We need to connect with them and make sure they are aware of strong businesses in their home state. We need a marketing campaign to get to these folks
travel-- out of state
We are particularly interested in how we can help educate Montana businesses about increasing wages in the tech space. Montana employment laws are a challenge in this state. How can we attract businesses to Montana when we have unfavorable labor laws or employers?
We are partnering with Montana State University in Billings to offer our software and system platform to the university so students can be trained on our software. Analytics are becoming increasingly important in healthcare. The people who will be trained to use our analytic tools to drive efficiency and improve quality in healthcare are vital to our company's expansion and the uptake in the use of our software.
We need to focus on building tech companies with a solid revenue driver. Silicon valley's approach to losing money to acquire users (like many social media platforms) doesn't make sense for Montana. We need to create a reputation of great engineering and products that bring real value (ROI) We also need to invest in programming and CS at the high school level. It's a great professional skill and teaches logic/reasoning.
We need to get more Montana students to take jobs in Montana.
We need to go recruit some high impact folks from a tech hub like Seattle/Bay Area/Austin and get them out here. Can't have enough smart people.
We would like to see more grants and loans supportive of smaller high-tech businesses during their seed/growth stages. If a company can prove revenue and growth, they should be able to receive capital to invest in the acceleration of their growth.
What would help us is helping to establish Montana as a place to find quality tech firms and services.

Would like to see wages of workforce increase to provide better standard of living for MT families, but the skills need to be increased proportionately. We struggle to find production workers that have adequate skills for entry level in the "skilled" trades, and find even fewer that have the qualities of a highly-productive worker in a production/factory environment. Attitude and ethics are most likely better than in urban areas, but the opportunities to develop skills and experience in true "manufacturing" are very limited. We train to the specific "tribal skills" of our production floor, but can't afford to start a new employee from ground zero...we need to begin with at least a basic knowledge and proficiency in the application they are being hired in.