The Problems:

1. Employers struggle to find workers with the skills they need.

2. Public dollars are spent to re-train workers, and on education systems.

3. Students graduate, but are unable to find jobs, leading to difficulty with student loans and wasting time.
Statewide College Report

Supply of Students from Colleges → Labor Market

Demand for Graduates by Employers

- Employed in Jobs
- Wages
- Other income from self-employment

Montana Department of LABOR & INDUSTRY
Pilot project for Missoula College met with rave reviews

Involved cooperation across three state agencies, 16 public colleges, and 2 private colleges.

lmi.mt.gov/Publications/PublicationsContainer/meeting-state-worker-demand
Statewide Research Questions

1. Who are Montana college students?

2. How do graduates fare in the labor market?

3. Do colleges produce enough graduates in the right fields?

4. Does the geographical distribution of graduates matter?
## Student Demographics

Two-Year Colleges Serve Non-traditional Students

### Enrollment End of Term

- **Montana data from American Community Survey 2011-2015.**

### Percent of Enrollment and Population by Age Category

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Two-Year Colleges</th>
<th>Four-Year Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-17</td>
<td>22%</td>
<td>16%</td>
</tr>
<tr>
<td>18-24</td>
<td>48%</td>
<td>70%</td>
</tr>
<tr>
<td>25-34</td>
<td>21% 20%</td>
<td>17% 8%</td>
</tr>
<tr>
<td>35-49</td>
<td>11% 8%</td>
<td>4% 2%</td>
</tr>
<tr>
<td>50+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** MUS Warehouse, fall 2016 enrollment end of term. Montana data from American Community Survey 2011-2015.
Student Enrollment Trends

Source: MUS Warehouse, Summer 2003 to Spring 2015 Enrollment EOT. FVCC, Dawson, and Miles Community College were excluded due to lack of historical data.
Student Enrollment by Program - Liberal Arts / General Studies is Largest

Source: MUS Warehouse, Summer 2005 to Spring 2016 Enrollment EOT.
1. Who are Montana college students?

2. How do graduates fare in the labor market?
Data on Graduates

Graduates from 2001-02 to 2014-15

~ 100,000 graduates

~ 113,000 degrees

18 Montana colleges
Stay in School?
Most graduates earn a bachelor’s degree

• 11% of graduates continued their education.

• Most graduates earn a bachelor’s degree (63%).

• Varies by program
  • Legal – First professional
  • Health profession – Associate
  • Business – Bachelor’s
  • Education – Master’s

Source: OCHE, RMC, and CC graduate data from 2001-02 to 2014-15.
CTS (<1 yr) = Certificate of Technical Studies, CAS (>1 <2 yrs) = Certificate of Applied Science
Most Graduates Work in Montana

75% of graduates work in Montana sometime in the five years after graduation

69% find jobs within a year

Graduates work in every county in the state
Employment by Industry
Top Industries are Healthcare and Education

Source: MT DLI, OCHE MUS, RMC, and CC graduate data wage match.
Graduates Earn Above Median Wages within Three Years of Graduation

- $5,000
- $10,000
- $15,000
- $20,000
- $25,000
- $30,000
- $35,000
- $40,000
- $45,000
- $50,000

Real Average Wages

Years after Graduation

- Montana Median Wage
- Montana Entry-Level Wage

Source: MTDLI, OCHE, RMC, and CC graduate data wage match. Real wages reported in 2015 dollars using the CPI-U.
Higher Wage Earnings Come From:

Incumbent Workers

- $8,000 wage premium one year after graduation
- Premium decreases to $6,000 over five years

Workers in high-wage industries

More education

- Graduate degrees have the highest wages
- Associates ≈ Bachelor’s degree
Workforce Outcomes by Degree

Median Income One-Year After Graduation

Percent Filing One-Year After (Resident and Non-Resident)

Source: DOR, OCHE MUS, RMC, and CC income data match summarized by MT DLI. Income is defined as lines 7, 12, 17, and 18 on the MT income tax return.
Wage Premium for Bachelor’s Degree

Difference in wage earnings for associate vs. Bachelor’s


Montana Department of LABOR & INDUSTRY
Wages versus Tuition Costs
Breakeven period by degree

• Graduates from all degrees earn wages equal to their tuition costs in **less than two years**.

• Two-year colleges can provide tuition savings for students pursuing a bachelor’s degree.

<table>
<thead>
<tr>
<th>Degree</th>
<th>Average Cost</th>
<th>Breakeven Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTS &lt; 1YR</td>
<td>$8,322</td>
<td>5.3</td>
</tr>
<tr>
<td>CAS &gt;1 &lt;2YR</td>
<td>$6,773</td>
<td>4.3</td>
</tr>
<tr>
<td>Associates</td>
<td>$11,094</td>
<td>7.2</td>
</tr>
<tr>
<td>Bachelor’s (New)</td>
<td>$25,320</td>
<td>16.1</td>
</tr>
<tr>
<td>Bachelor’s (Transfer)</td>
<td>$23,996</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Source: MUS warehouse, OCHE. Costs based on average in-state tuition per credit at two-year and four-year colleges in MT, and average credits to degree. RMC and CC data not included. Student loan information not included. NA=not available.
Why Use Breakeven Points?

• Graduates from all degrees earn wages equal to their tuition costs in **less than two years** ..if all wages earned went towards paying tuition/debt.

• Each person faces unique situations/incentives.
  • Full info on costs will NEVER be available.

• Allows for other interested parties to use data with different assumptions.

Source: MUS warehouse, OCHE. Costs based on average in-state tuition per credit at two-year and four-year colleges in MT, and average credits to degree. RMC and CC data not included. Student loan information not included. NA=not available.
Statewide Research Questions

1. Who are Montana college students?

2. How do graduates fare in the labor market?

3. Do colleges produce enough graduates in the right fields?
Measuring Worker Demand

Minimum training needs =

job openings due to growth + retirements

Colleges may also need to train existing workings looking to change careers.

Demand Range

Job-to-Job
## Supply and Demand Analyses

Four Analyses Used for Robust and Well-Rounded Findings

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Definition</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>By Industry</td>
<td>Compares number of graduates working in each industry to industry demand.</td>
<td>Each student is only counted once based on their actual industry of employment. Only graduates who stay in Montana are counted in supply.</td>
<td>Demand does not include replacement needs. Includes demand for jobs that do not require a college degree.</td>
</tr>
<tr>
<td>By Occupation</td>
<td>Compares projected job openings for high-demand occupations to the number of graduates trained to work in the occupation.</td>
<td>Focuses on high-demand occupations that require a college education. Can help colleges identify areas for new program development.</td>
<td>Graduates are double-counted in the supply of workers by occupation if they are qualified to fill multiple occupations with their degree.</td>
</tr>
<tr>
<td>By Program</td>
<td>Compares the number of graduates in each program to the projected demand for jobs graduates from the program can fill.</td>
<td>Allows for a direct comparison of the relative demand for each program. Identifies areas for program expansion, and potential capacity reductions.</td>
<td>Includes demand for jobs that do not require a college degree. Overestimates demand in cases where a job can be filled by graduates from multiple programs.</td>
</tr>
<tr>
<td>Workforce Outcomes</td>
<td>Compares likelihood of retention in Montana workforce and reported income levels after graduation by program.</td>
<td>Depicts actual workforce outcomes as an indication of employer demand levels. Helps confirm prior conclusions.</td>
<td>Only includes individuals employed in Montana. Lower retention may not indicate low demand if graduates find employment in other states.</td>
</tr>
</tbody>
</table>
By Industry

Students Work in their Field of Study

<table>
<thead>
<tr>
<th>Program Category</th>
<th>Top Employing Industry</th>
<th>% Emp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Professions</td>
<td>Healthcare</td>
<td>75%</td>
</tr>
<tr>
<td>Education</td>
<td>Education</td>
<td>73%</td>
</tr>
<tr>
<td>Architecture</td>
<td>Prof &amp; Tech Service</td>
<td>67%</td>
</tr>
<tr>
<td>Legal Professions</td>
<td>Prof &amp; Tech Service</td>
<td>53%</td>
</tr>
<tr>
<td>Human Services</td>
<td>Healthcare</td>
<td>39%</td>
</tr>
<tr>
<td>Engineering</td>
<td>Prof &amp; Tech Service</td>
<td>34%</td>
</tr>
<tr>
<td>Culinary Arts &amp; Recreation</td>
<td>Healthcare</td>
<td>28%</td>
</tr>
<tr>
<td>Computer &amp; Info Science</td>
<td>Prof &amp; Tech Service</td>
<td>27%</td>
</tr>
<tr>
<td>Physical Science</td>
<td>Education</td>
<td>22%</td>
</tr>
<tr>
<td>Social Science</td>
<td>Healthcare</td>
<td>22%</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>Education</td>
<td>20%</td>
</tr>
<tr>
<td>Business</td>
<td>Finance</td>
<td>19%</td>
</tr>
<tr>
<td>Construction &amp; Transport</td>
<td>Construction</td>
<td>17%</td>
</tr>
<tr>
<td>Ag &amp; Natural Resource</td>
<td>Education</td>
<td>16%</td>
</tr>
<tr>
<td>Communication</td>
<td>Information</td>
<td>16%</td>
</tr>
</tbody>
</table>

Source: MT DLI, OCHE MUS, RMC, and CC graduate data wage match. Program of study shown is the program associated with the graduate’s highest degree earned in Montana.
What is High-Demand?

Post Secondary Award
- Bachelor's Degree: 18%
- Associate Degree: 3%
- Master's Degree: 2%
- Doctoral or Prof. Degree: 2%
- Some College, no Degree: 2%
- No College Degree: 69%
- Two-Year Degree: 9%
- Four-Year Degree: 22%

Note: Percentages refer to percent of high-demand occupations, not percent of workers within those occupations.
What is High-Demand?

Focus on Occupations Requiring College Education

High – Demand
Top 25% for total openings within a degree type

Note: Percentages refer to percent of high-demand occupations, not percent of workers within those occupations.
Most are high-level healthcare jobs cannot be filled by graduates from Montana colleges.

22% of high-demand jobs are undersupplied.

Most are high-level healthcare jobs.
Supply and Demand by Program

Select Programs

Expansion Candidates

- Jobs require college degree.
- Jobs rely on program to fill openings.

Largest Oversupply

Number of Graduates

Source: MTDLI 2015-2025 occupational employment projections. OCHE, RMC, and CC graduate data. Demand is sum of all occupations a graduate from the program could fill. Supply is average over last three academic years.
Workforce Outcomes by Program

Median Real Income One Year After Graduation

Percent Filing (Resident and Non-Resident)

Source: DOR, OCHE, RMC, and CC income data match summarized by MTDLI. Earned income is defined as lines 7, 12, 17, and 18 on the Montana income tax return, not including farm income.
Statewide Research Questions

1. Who are Montana college students?
2. How do graduates fare in the labor market?
3. Do colleges produce enough graduates in the right fields?
4. Does the geographical distribution of graduates matter?
Migration Helps Fill Gaps

Source: MTDLI, OCHE MUS, RMC, and CC graduate data wage match. Excludes years prior to 2010 due to lack of region 5 data. Arrows show net migration between regions.
# Program Supply and Demand by Region

<table>
<thead>
<tr>
<th>Program Category</th>
<th>Program</th>
<th>NW</th>
<th>SW</th>
<th>NC</th>
<th>SC</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer/ Info Science</strong></td>
<td>Computer/Info Science, Other</td>
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<td></td>
<td>Information Technology</td>
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<td></td>
<td>Computer Science</td>
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<tr>
<td><strong>Liberal Arts</strong></td>
<td>General Studies</td>
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<tr>
<td><strong>Human Services</strong></td>
<td>Social Work</td>
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<tr>
<td><strong>Construction, Mechanic &amp; Transportation</strong></td>
<td>Mechanic Repair Tech</td>
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<td></td>
<td>Automotive Technology</td>
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<tr>
<td><strong>Health Professions</strong></td>
<td>HIT and Medical Coding</td>
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<td></td>
<td>Registered Nursing</td>
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<td></td>
<td>Practical Nursing</td>
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<tr>
<td><strong>Business</strong></td>
<td>Business</td>
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<tr>
<td></td>
<td>Accounting</td>
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</tbody>
</table>
More Information at lmi.mt.gov

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