Campbell County

Higher Education Market Study

Research Summary / Concept Plan
Phase II
August 2017

Lone Tree Academics LLC

innovation economics
shaping change - creating growth

entangled.solutions

Agenda

01 | Introduction

02 | Linking Economic Development & Education

03 | Research Findings

04 | Competitive Landscape
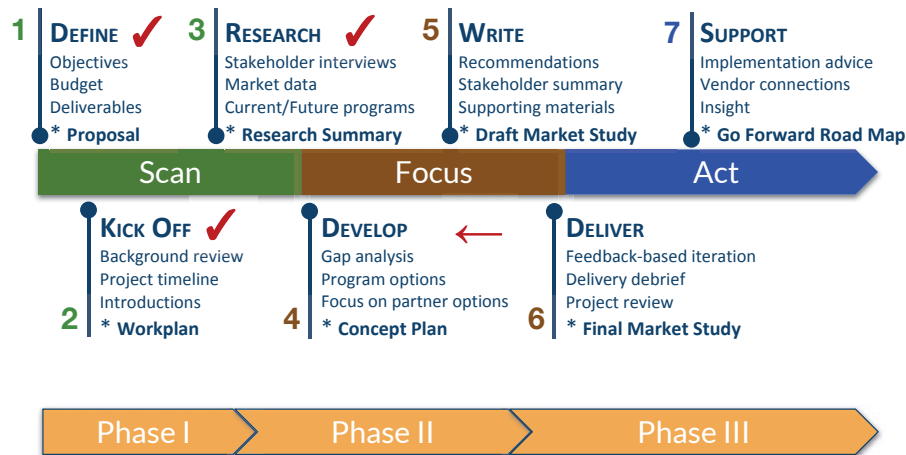
05 | Appendix

01

Introduction

Purpose of Presentation

- Deliver Research Summary and Concept Plan (Conclusion of Phase II)

- Gather directional feedback from key stakeholders for Phase III

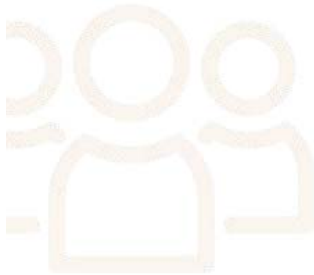- Outline next steps to conclusion of project

Project Phasing

1 DEFINE ✓
Objectives
Budget
Deliverables
* **Proposal**

3 RESEARCH ✓
Stakeholder interviews
Market data
Current/Future programs
* **Research Summary**

5 WRITE
Recommendations
Stakeholder summary
Supporting materials
* **Draft Market Study**

7 SUPPORT
Implementation advice
Vendor connections
Insight
* **Go Forward Road Map**

Scan | **Focus** | **Act**

KICK OFF ✓
Background review
Project timeline
Introductions
2 * **Workplan**

DEVELOP ←
Gap analysis
Program options
Focus on partner options
4 * **Concept Plan**

DELIVER
Feedback-based iteration
Delivery debrief
Project review
6 * **Final Market Study**

Phase I 〉 Phase II 〉 Phase III

Market Study Goals — In Brief

Phases I & II

- Identify **potential educational champions** to provide leadership in developing key products or assets.

- Establish current and projected future **patterns of employer demand** for knowledge, skills, occupations, and required qualifications.

- Use state-of-the-art analysis of **regional labor-market and workforce trend data** to distinguish established and emerging growth industries to use as a basis for aligning educational priorities to current realities and needs.

- Evaluate **current educational and training products** for job market alignment, accessibility, acceptance, and value for business, industry, and community stakeholders to identify gaps and expansion potential.

Phase III

- Translate what **business, industry, and educational professionals already know** and think, to qualify both demand for future programs and products, as well as supply-side capacity.

- Identify and vet **potential partners** to assist with the funding and delivery of new or enhanced educational and training products or programs.

- Design an **industry-centric investment and funding model** to allow for the development and ongoing offering of the identified programs.

Project Sponsors

Campbell County, Wyoming, the Board of County Commissioners

University of Wyoming

Northeast Wyoming Economic Development Coalition

Gillette College/Northeast Wyoming Community College

Board of Cooperative Educational Services (BOCES)

Authors

Dr. Doug Gilbert (Lone Tree Academics LLC) has previously completed substantial Higher Education work in Wyoming. His involvement in Higher Education includes serving as a faculty member and administrator for more than 25 years, as well as acting as general counsel for a Higher Education investor. Projects in Higher Education have included the development and implementation of an international private university concept to deliver affordable Higher Education to less developed countries. He also has assisted Peregrine Academic Services in Gillette with several projects.

Dr. Phil McCready (Innovation Economics) is a researcher, data analyst, and development economist who has worked in economic development and in Higher Education. He also is an adjunct professor teaching research methods. As a development economist, he specializes in strategies for technology led economic development, small business and enterprise development. He has significant experience in research, data analytics, complex projects, strategic planning, presenting, and teaching in his field of expertise. His completed projects have been completed for the Denver South EDG, Denver health corridor, and Rapid City, SD.

Jasmin Schiener (Entangled Solutions) provides program/project management, support for data analysis, and identification of potential partners/funding sources for potential solutions. Entangled Solutions is an education innovation agency based in San Francisco, California, with customers ranging from foundations and private companies to elite institutions and university consortiums. Jasmin earned a law degree at Bucerius Law School in Germany and is experienced in program development, market analysis, M&A, healthcare education, and the creation of sustainable operations infrastructure for highly regulated education entities.

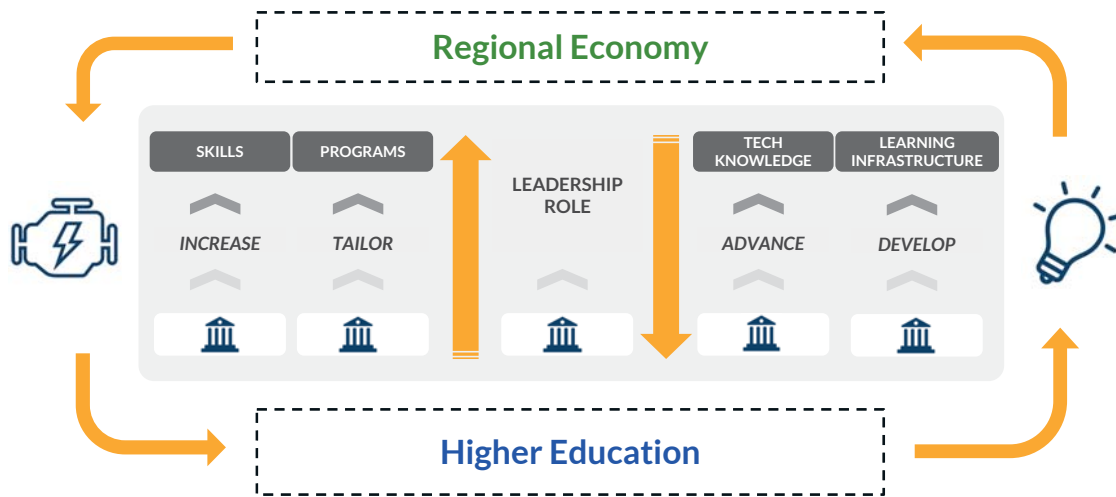**02**

Linking Economic Development & Education

Impact of Higher Education in Regional Economic Development

Higher Education is uniquely placed to understand the needs of the local economy to help:

- **Increase** skills and knowledge to create a quality workforce to attract outside firms.
- **Tailor** programs to help local firms or sectors succeed.
- **Lead regional leadership** role in initiatives and partnerships.
- **Advance** understanding of technologies impacting local industries.
- **Develop** infrastructure to promote applied learning in strategic facilities, e.g., from broadband to hospitality.

How Higher Education Can Support Economic Development

Regional Economy

SKILLS	PROGRAMS	LEADERSHIP ROLE		TECH KNOWLEDGE	LEARNING INFRASTRUCTURE
INCREASE	*TAILOR*			*ADVANCE*	*DEVELOP*

Higher Education

03
Research Findings

Market Definition and Key Characteristics

- Vibrant mining community located in the northeast Wyoming rural sphere

- Bridges the interface of three metropolitan regions within a two-hour drive time

- Major coal, oil, and natural gas energy-producing region known as the Powder River Basin

- Network of road, airport, and high volume freight rail connectivity

- Top producing coal region in the nation using large-scale mechanized surface mining

- Extensive network of natural gas pipelines, both interstate, and intrastate

150-mile market radius
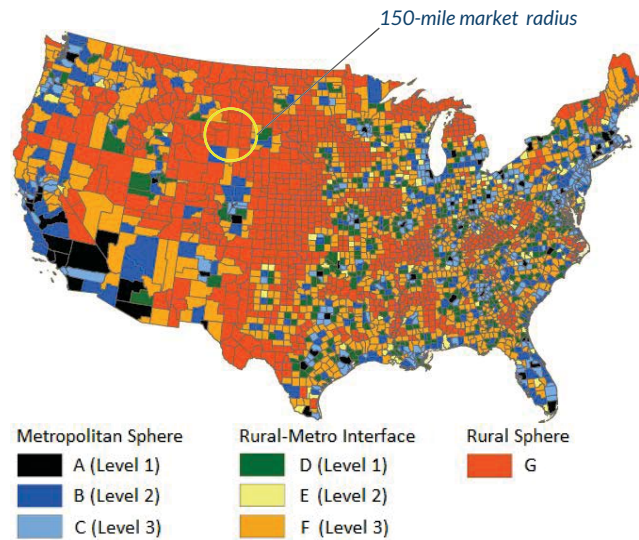
Metropolitan Sphere	Rural-Metro Interface	Rural Sphere
A (Level 1)	D (Level 1)	G
B (Level 2)	E (Level 2)	
C (Level 3)	F (Level 3)	

Supply Analysis Refinement

Phases I and II

Total Available Market:

Total potential degree seekers in the target region (150-mile radius +/-)

Serviceable Available Market:

Potential number of degree seekers who **could** be served by Gillette College

Phase III

Serviceable Obtainable Market:

Potential number of degree seekers who **can** be served by Gillette College based on institutional degree programs, modality, and capability

Snapshot Competitive Landscape

- **19 schools** (including University of Wyoming and Gillette College) are located within the analyzed region.

- **Graduation rates are extremely low** with only two providers, University of Wyoming and South Dakota School of Mines and Technology, attaining 50%.

- **Student population** in the area is 40,852.

- Eight colleges mainly award **degrees** in General Studies and Business, seven schools in Education and Healthcare, and only one university (South Dakota School of Mines and Technology) is highly focused on STEM disciplines.

19 institutions		
8 universities	8 community colleges	3 other
1. University of Wyoming 2. Black Hills University 3. Montana State University - Billings 4. South Dakota School of Mines & Technology 5. Chadron State College 6. National American University-Rapid City 7. Rocky Mountain College 8. National American University-Ellsworth AFB Extension	1. Gillette / NWCCD 2. Casper College 3. Eastern Wyoming College 4. Northwest College 5. Western Dakota Technical Institute 6. Miles Community College 7. Little Big Horn College 8. Chief Dull Knife College	1. Bold Beauty Academy 2. Black Hills Beauty College 3. Headlines Academy Inc.

*Source: Entangled Solutions analysis, College Navigator, IPEDS — *Details in appendix*

03 a
Research Findings: Supply Data

Question to be answered:
What degree programs compete against Gillette College?

Matching Supply and Demand via The National Career Clusters Framework

Career Cluster	Description
Agriculture, Food, & Natural Resources	Includes Educational Programs such as "Agricultural/Farm Supplies Retailing and Wholesaling" and Occupations such as "Purchasing Agents & Buyers, Farm Products"
Architecture and Construction	Includes Educational Programs such as "Architecture (BArch, BA/BS, MArch, MA/MS, PhD)" and Occupations such as "Engineering Managers"
Arts, Audio/Video Technology, & Communications	Includes Educational Programs such as "Audiovisual Communications Technologies/Technicians, Other" and Occupations such as "Media & Communication Workers, All Other"
Business, Management, & Administration	Includes Educational Programs such as "Public Relations/Image Management" and Occupations such as "Advertising & Promotions Managers"
Education and Training	Includes Educational Programs such as "Educational Leadership and Administration, General" and Occupations such as "Education Administrators, Preschool & Child Care Center/Program"
Finance	Includes Educational Programs such as "Finance, General" and Occupations such as "Financial Managers"
Government and Public Administration	Includes Educational Programs such as "Political Communication" and Occupations such as "Public Relations Specialists"
Health Services	Includes Educational Programs such as "Psychology, General" and Occupations such as "Clinical, Counseling, & School Psychologists"
Law, Public Safety, and Corrections	Includes Educational Programs such as "Corrections" and Occupations such as "Psychology Teachers, Postsecondary"
Manufacturing	Includes Educational Programs such as "Machine Tool Technology/Machinist" and Occupations such as "Rolling Machine Setters, Operators, & Tenders, Metal & Plastic"
Marketing Sales and Service	Includes Educational Programs such as "Marketing/Marketing Management, General" and Occupations such as "Advertising & Promotions Managers"
Science, Technology, Engineering and Math	Includes Educational Programs such as "Engineering, General" and Occupations such as "Engineering Managers"
Transportation, Distribution and Logistics	Includes Educational Programs such as "Aeronautical/Aerospace Engineering Technology/Technician" and Occupations such as "Occupational Health & Safety Specialists & Technicians"

Source: The National Career Clusters Framework, 2017

Supply Analysis — Total Educational Program Conferrals

In order to identify the gap in a meaningful way, it is necessary to group all educational program offerings:

Career Cluster — **Conferrals based on CIP-Code***
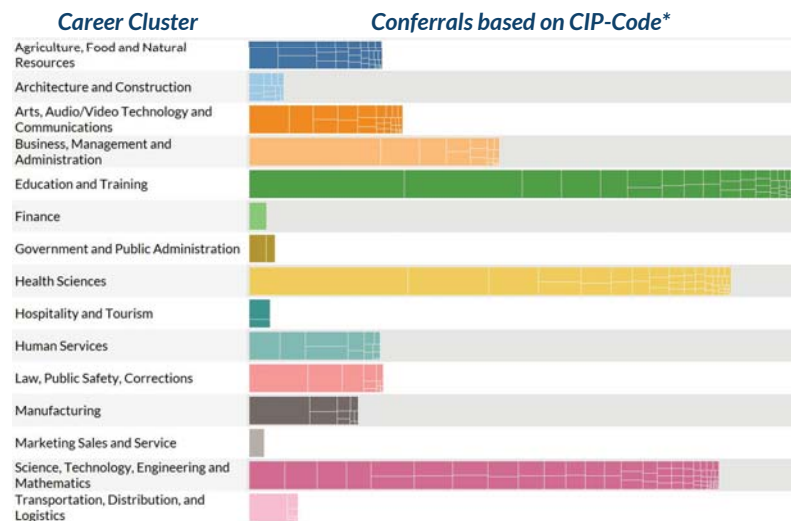
CIP = Classification of Instructional Programs, standard educational program classification developed by NCES.

Note: Conferrals awarded in 2016; award levels include Associate's degree and above. Source: IPEDS, 2017

Relevant Market Multiplier

In order to find the size of the relevant market for Gillette College, we have to consider that not all graduates of the educational programs stay in the region.

Potential student supply depends on the prevailing out-of-state migration patterns. When analyzing and confirming an accurate picture of the Higher Education landscape and corresponding graduate supply, it is imperative to account for varying capture rates.

? How many graduates move
- from non-Wyoming colleges to Wyoming
- from colleges in Wyoming to other states

Source: "The Great Out-of-State Migration: Where Students Go," The New York Times, 2016, Nick Strayer

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Basis of Market Multiplier for Competitor Institutions

Use of migration rates at census regional level to identify adjustments to the number of graduates for competitor universities.

Using regional data, the study examines the out-of-state migration behavior of college graduates who attended in-state institutions in the United States.

TABLE 2. Detailed Descriptive Statistics at Census Regional Level

Migration Rate	Mean	Minimum	Maximum
All States	23.3%	10.2%	61.5%
Northeast	26.1%	13.3%	60.0%
Midwest	28.7%	20.0%	45.7%
South	21.7%	10.8%	61.5%
West	15.2%	10.2%	35.7%

Source: "The Determinants of Out-Migration Among In-State College Students in the United States," Research in Higher Education, 2011, Volume 52, Number 2, Page 107, Terry T. Ishitani

By applying the capture rate, the number of graduates was adjusted to reflect a more accurate picture of the Serviceable Accessible Market (SAM).

Educational Supply — Market Multiplier Adjustments

Radius (miles)	Metropolitan and Nonmetropolitan Counties	Market Multiplier	State	Notes
0-100	Campbell WY, Crook WY, Weston WY, Johnson WY, Sheridan V	84.8%	Wyoming	84.8% of graduates of Institutions in WY stay within the state after graduation
100-150	Natrona WY	84.8%	Wyoming	84.8% of graduates of Institutions in WY stay within the state after graduation
100-150	Converse WY, Niobrara WY	84.8%	Wyoming	84.8% of graduates of Institutions in WY stay within the state after graduation
100-150	Lawrence SD, Butte SD, Fall River SD, Harding SD	28.7%	South Dakota	28.7% of graduates of Institutions in SD have the potential to migrate outside SD (e.g., to WY) after graduation
100-150 plus	Powder River MT, Carter MT, Custer MT, Rosebud MT	15.2%	Montana	15.2% of graduates of Institutions in MT have the potential to migrate outside MT (e.g., to WY) after graduation
150 plus	Big Horn MT	15.2%	Montana	15.2% of graduates of Institutions in MT have the potential to migrate outside MT (e.g., to WY) after graduation
150 plus	Washakie WY, Big Horn WY, Hot Springs WY	84.8%	Wyoming	84.8% of graduates of Institutions in WY stay within the state after graduation
150 plus	Custer SD, Meade SD, Pennington SD	28.7%	South Dakota	28.7% of graduates of Institutions in SD have the potential to migrate outside SD (e.g., to WY) after graduation
150 plus	Chadron NE	28.7%	Nebraska	28.7% of graduates of Institutions in NE have the potential to migrate outside NE (e.g., to WY) after graduation
150 plus	Torrington WY	84.8%	Wyoming	84.8% of graduates of Institutions in WY stay within the state after graduation

Montana
- Miles Community College
- Rocky Mountain College
- Chief Dull Knife College
- Montana State University - Billings
- Bold Beauty Academy
- Little Big Horn College

South Dakota
- Western Dakota Technical Institute
- National American University - Ellsworth AFB Extension
- Black Hills State University
- South Dakota School of Mines and Technology
- National American University - Rapid City
- Black Hills Beauty College
- Headlines Academy Inc.

Wyoming
- NWCCD - Gillette College
- Casper College
- Northwest College
- University of Wyoming
- Eastern Wyoming College

Nebraska
- Chadron State College

Educational Conferrals by Occupational Cluster (2016)

TAM

In the degree market (conferrals), the majority were awarded in the following fields:
- Education,
- STEM,
- Health Sciences, and
- Business.

The smallest educational supply is generated for:
- Finance,
- Hospitality,
- Marketing,
- Government, and
- Transportation.

SAM
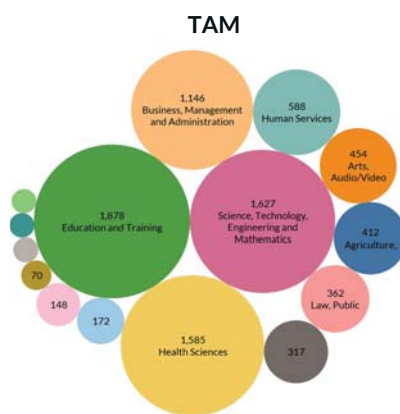
TAM = Total Available Market: Total potential degree seekers in the target region (150 mile radius +) Conferrals awarded in 2016; award levels included associate's and above.

SAM = Serviceable Available Market: Potential number of degree seekers who could be served by Gillette College Conferrals awarded in 2016; award levels included associate's and above.

Note: Conferrals awarded in 2016; award levels include Associate's degree and above. Source: IPEDS, 2017

Largest Occupational Clusters 2012-2016 (SAM)

- Largest **growing** educational offerings: Health Sciences, STEM, Business, Human Services, and Manufacturing
- Largest **declining** educational offerings: Education and Training, Law, Public Safety, and Agriculture

Career Cluster	2012	2013	2014	2015	2016	CAGR, %
Education and Training	1,031	976	978	1,000	944	↓ -1.7%
Health Sciences	861	814	862	896	904	↑ 1.0%
Science, Technology, Engineering and Mathematics	791	838	863	849	888	↑ 2.3%
Business, Management and Administration	411	455	447	438	503	↑ 4.1%
Arts, Audio/Video Technology and Communications	273	292	284	273	259	↓ -1.0%
Law, Public Safety, Corrections	263	248	227	239	230	↓ -2.6%
Agriculture, Food and Natural Resources	219	221	236	244	276	↑ 4.7%
Human Services	245	231	226	222	258	↑ 1.0%
Manufacturing	195	223	183	185	195	0.0%

Note: Conferrals awarded in 2016; award levels include Associate's degree and above.   *Source: IPEDS, Entangled Solutions Analysis , 2017*

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Smallest Occupational Clusters 2012-2016 (SAM)

- Lowest **growing** educational offerings are: Finance, Marketing Sales and Service, Architecture, and Transportation
- Lowest **declining** educational offerings are: Government Public Administration and Hospitality

Career Cluster	2012	2013	2014	2015	2016	CAGR %
Transportation, Distribution, and Logistics	66	108	103	88	75	↑ 2.6%
Architecture and Construction	57	80	64	46	66	↑ 3.0%
Government and Public Administration	54	57	35	46	41	↓ -5.4%
Hospitality and Tourism	41	37	39	40	34	↓ -3.7%
Finance	30	27	32	32	36	↑ 3.7%
Marketing Sales and Service	29	32	16	24	35	↑ 3.8%
	2012	2013	2014	2015	2016	

Note: Conferrals awarded in 2016; award levels include Associate's degree and above.   *Source: IPEDS, Entangled Solutions Analysis , 2017*

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Educational Offerings — TAM / SAM Comparison

Career Cluster	Total Available Market	Serviceable Available Market
Education and Training	1,878	944
Science, Technology, Engineering and Mathematics	1,627	888
Health Sciences	1,585	904
Business, Management and Administration	1,146	503
Human Services	588	258
Arts, Audio/Video Technology and Communications	454	259
Agriculture, Food and Natural Resources	412	276
Law, Public Safety, Corrections	362	230
Manufacturing	317	195
Architecture and Construction	172	66
Transportation, Distribution, and Logistics	148	75
Government and Public Administration	70	41
Marketing Sales and Service	49	35
Hospitality and Tourism	48	34
Finance	47	36

Note: Conferrals awarded in 2016; award levels include Associate's degree and above.   *Source: IPEDS, Entangled Solutions Analysis , 2017*

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Current State Analysis: Degree Conferrals

Total relevant supply is based on

- **The number of conferrals**
- **Adjusted for geographic reach of institutions**

Supply
(SAM ← TAM)
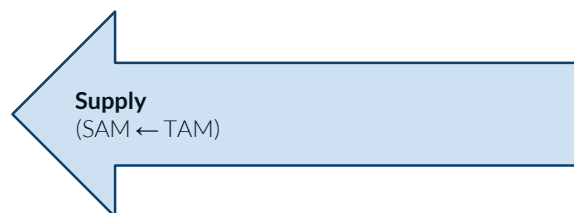
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03 b
Research Findings:
Demand Data

Question to be answered:
How many and what types of jobs are available in the areas served by Gillette College?

Sources of Labor Market Information

There are two sources of labor market information (LMI) to project demand for occupations/skills in the study:

- **Traditional LMI** via the U.S. Bureau of Labor Statistics' Occupational Employment Statistics (OES) using five years of historical data to track trends by Standard Occupational Classification (SOC) codes.
    - **SOC codes** are a national system of classifying occupations to provide insight on the skills, knowledge, and workforce that defines the study region.

- **Real-Time LMI** via Burning Glass Technologies that extracts, mines, and codes millions of job postings from close to 40,000 online sources daily. The data was pulled from June 2015 to May/June 2017 to generate up-to-date insight on the local job market, company job openings, and specific underserved skills by SOC job category.

Labor Market Project Method

Traditional LMI
Occupational growth:
- Rates of annual change in the total numbers of workers in each occupation.

Occupational separations:
- Rates of workers who leave an occupation and find employment in a different occupation (transfers).
- Rates of workers who leave the labor force entirely, e.g. retirees etc. (labor force exits).

Real-Time LMI
Occupational job postings:
- Online job postings from the region over the prior two years by SOC job category.
- Period from July 1, 2015 to July 31, 2017.

SOC_Occupation	2016 BLS/OES Employment	Annual Job Openings from Growth, 2012-16	Annual Occupational Separations, 2012-16	Estimated Annual Openings, 2012-16	Posted Jobs 2016-2017	Posted Jobs 2015-2016	AVERAGE GROSS DEMAND
29-1141: Registered Nurses	7820	323	399	721	4911	4073	2607

Occupational Cluster Analysis

Why do Occupational Clusters matter?

- The global integration of markets has eliminated many regional competitive advantages.

- In today's low cost, competitive environment, where technology quickly jumps borders, a region's best way to differentiate itself is brainpower.

- The shift of business to more knowledge-based markets are putting workforce skills at a premium.

Analysis Methodology

- Clusters were defined to secure that educational conferrals match labor market data.

- Demand Equation = [(Net new openings + replacement + Burning Glass Employer Demand) - non-degree jobs].
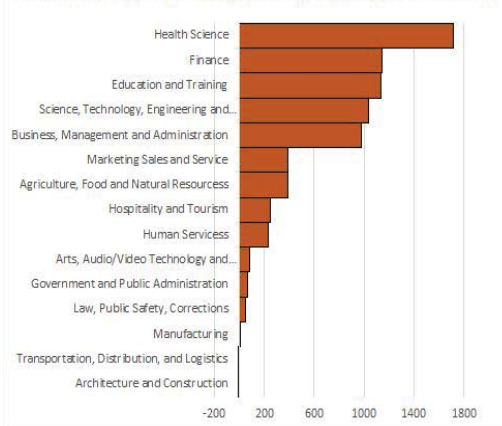
Source: BLS Occupational Employment Statistics by metropolitan and nonmetropolitan region (2012-2016)

Demand Analysis: Health Sciences, SOC Codes

Fastest Growing Occupations in the Health Sciences Cluster requiring an Associate's or Bachelor's Degree

Occupation	2016, Employment	2012, Employment	Change, 2012-2016	CAGR, 2012-2016
29-1141: Registered Nurses	7,820	6,530	1,290	3.7%
11-9111: Medical and Health Services Managers	860	650	210	5.8%
21-1015: Rehabilitation Counselors	250	134	116	13.3%
29-2081: Opticians, Dispensing	310	196	114	9.6%
29-2071: Medical Records and Health Information Technicians	690	620	70	2.2%
Other	3,689	3,779	-89	-0.5%

Source: BLS Occupational Employment Statistics by metropolitan and nonmetropolitan region (2012-2016)

Demand Analysis: Business, Management & Administration, SOC Codes

Fast Growing Occupations in the Business, Management, and Administration Cluster requiring an Associate's or Bachelor's Degree

Occupation	2016, Employment	2012, Employment	Change, 2012-2016	CAGR, 2012-2016
43-6011: Executive Secretaries and Executive Administrative Assistants	1180	1010	170	3.2%
27-3031: Public Relations Specialists	500	380	120	5.6%
13-1161: Market Research Analysts and Marketing Specialists	270	205	65	5.7%
13-2031: Budget Analysts	50	10	40	38.0%
11-3051: Industrial Production Managers	160	157	3	0.4%
Other	1200	1430	-230	-3.4%

Source: BLS Occupational Employment Statistics by metropolitan and nonmetropolitan region (2012-2016)

Demand Analysis: Finance, SOC Codes

Fast Growing Occupations in the Finance Cluster Requiring an Associate's or Bachelor's Degree

Occupation	2016, Employment	2012, Employment	Change, 2012-2016	CAGR, 2012-2016
41-4012: Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	3280	2540	740	5.2%
13-2072: Loan Officers	1140	980	160	3.1%
13-1041: Compliance Officers	840	690	150	4.0%
41-3031: Securities, Commodities, and Financial Services Sales Agents	270	190	80	7.3%
13-2052: Personal Financial Advisors	170	120	50	7.2%
13-1031: Claims Adjusters, Examiners, and Investigators	70	110	-40	-8.6%

Source: BLS Occupational Employment Statistics by metropolitan and nonmetropolitan region (2012-2016)

Demand Analysis: Education and Training, SOC Codes

Fast Growing Occupations in the Education and Training Cluster requiring an Associate's or Bachelor's Degree

Occupation	2016, Employment	2012, Employment	Change, 2012-2016	CAGR, 2012-2016
25-2054: Special Education Teachers, Secondary School	590	370	220	9.8%
25-2021: Elementary School Teachers, Except Special Education	4,170	3,980	190	0.9%
25-2031: Secondary School Teachers, Except Special and Career/Technical Education	3,320	3,190	130	0.8%
21-1012: Educational, Guidance, School, and Vocational Counselors	860	755	105	2.6%
25-3011: Adult Basic and Secondary Education and Literacy Teachers and Instructors	200	100	100	14.9%
Other	6,080	5,688	392	-5%

Source: BLS Occupational Employment Statistics by metropolitan and nonmetropolitan region (2012-2016)

Demand Analysis: Science, Technology, Engineering & Math, SOC Codes

Fast Growing Occupations in the Science, Technology, Engineering, and Mathematics Cluster requiring an Associate's or Bachelor's Degree

Occupation	2016, Employment	2012, Employment	Change, 2012-2016	CAGR, 2012-2016
17-2051: Civil Engineers	1.110	730	380	8.7%
15-1132: Software Developers, Applications	370	199	171	13.2%
15-1151: Computer User Support Specialists	780	630	150	4.4%
15-1142: Network and Computer Systems Administrators	770	620	150	4.4%
15-1152: Computer Network Support Specialists	320	240	80	5.9%
Other	1.570	1.465	105	1.4%

Source: BLS Occupational Employment Statistics by metropolitan and nonmetropolitan region (2012-2016)

Summary of Method for Labor Market Trends

Labor market demand

- **Trends**
- **Gaps - supply or oversupply**
- **Competitive intensity of program offerings**

Demand
[(Net new openings + replacement + Burning Glass Employer Demand) - non-degree jobs]

03 c

Research Findings: Gap Analysis Draft

Question to be answered:
Based on the gap between labor market needs and educational supply in occupational groups, what types of programs are viable in the market area?

Gap Analysis

What is the "gap"?

The over-/under-supply of

Educational program graduates going into the workforce

versus

Occupations available for the corresponding degrees.

Demand
[(Net new openings + replacement + Burning Glass Employer Demand) - non-degree jobs]

GAP

Supply
(SAM ← TAM)
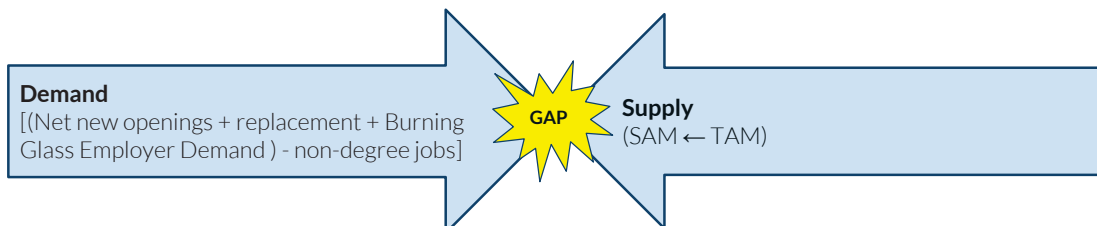
Labor Market Trends — Manufacturing

Demand for **advanced manufacturing** workers in sharp decline
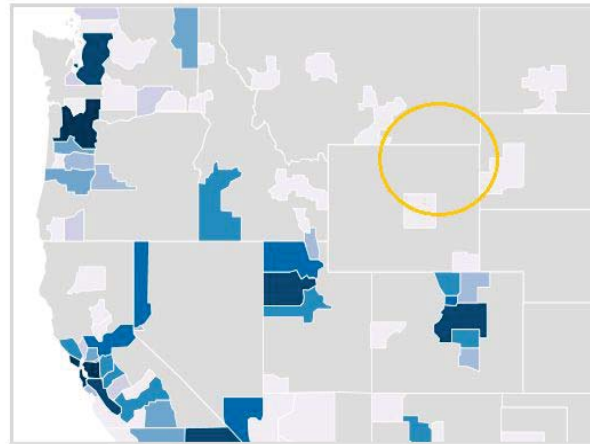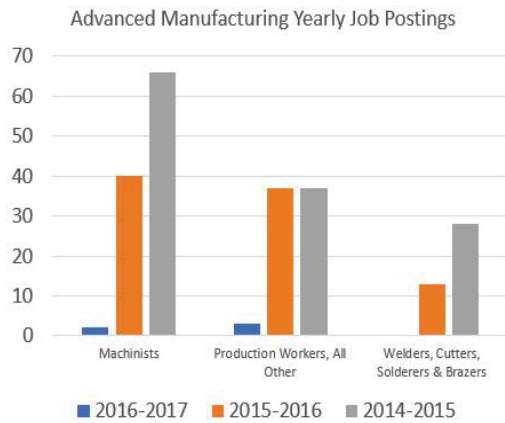
Source: Burning Glass Labor Market Insight (July 2014 - July 2017)

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Labor Market Trends — Healthcare

Demand for **middle skills jobs** in healthcare is large and growing
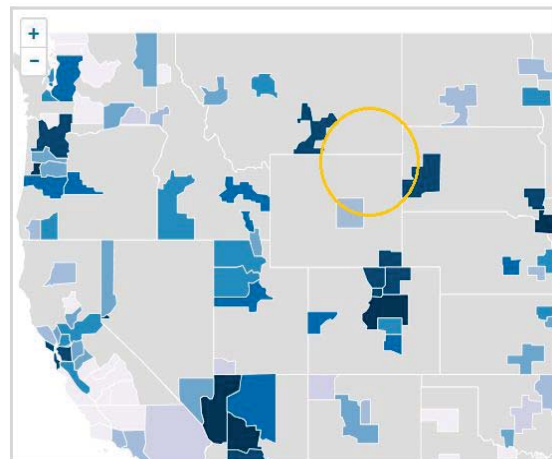
Source: Burning Glass Labor Market Insight (July 2014 - July 2017)

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Labor Market Trends — Green Collar Jobs

Demand for **green jobs** is an emerging area of growth

Green Occupations Yearly Job Postings (2014-2017)

- Maintenance/Repair Workers,…
- Biological Technicians
- Managers, All Other
- Park Naturalists
- Forest and Conservation…
- Wind Turbine Service Technicians
- Environmental Engineers
- Civil Engineers
- Manufacturing Production…
- Zoologists and Wildlife Biologists

0 20 40 60 80

■ 150-mile Area ■ Wyoming

Source: Burning Glass Labor Market Insight (July 2014 - July 2017)

Labor Market Trends — Green Jobs Statewide

- Green jobs demand technical skills
- Wind turbine servicing is a growing niche
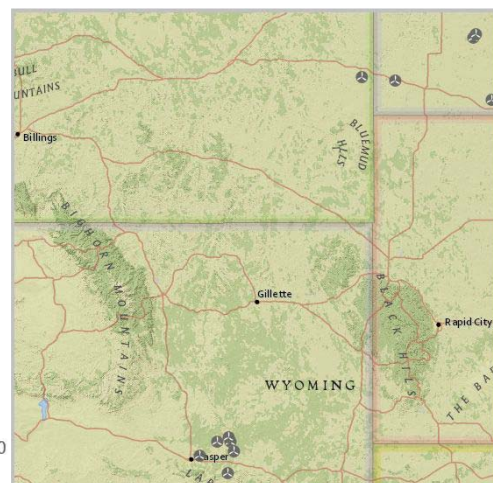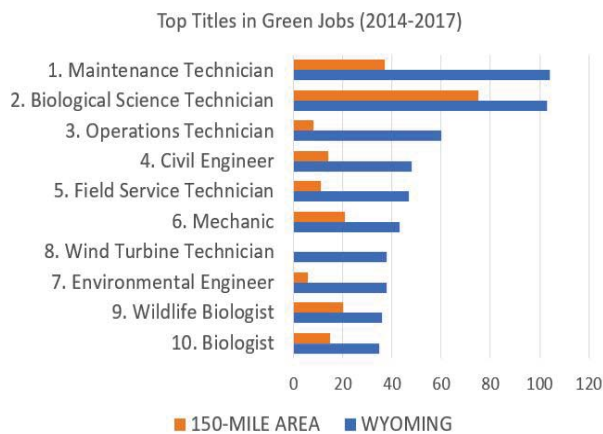
Top Titles in Green Jobs (2014-2017)

1. Maintenance Technician
2. Biological Science Technician
3. Operations Technician
4. Civil Engineer
5. Field Service Technician
6. Mechanic
8. Wind Turbine Technician
7. Environmental Engineer
9. Wildlife Biologist
10. Biologist

0 20 40 60 80 100 120

■ 150-MILE AREA ■ WYOMING

Source: Burning Glass Labor Market Insight (July 2014 - July 2017)

Gap — Labor Market vs. Degrees Conferred (2016)

- Largest **Current Gap** is in Health Sciences, Business Management, Agriculture and Human Services

Cluster Title	Average Gross Demand (BLS/OES &BGT)	Conferrals (SAM)
Health Sciences	3,758	904
Business, Management and Administration	787	503
Agriculture, Food and Natural Resources	685	276
Human Services	400	258
Marketing Sales and Service	373	35
Finance	260	36
Education and Training	256	944
Manufacturing	254	195
Hospitality and Tourism	211	34
Architecture and Construction	163	66
Transportation, Distribution, and Logistics	108	75
Law, Public Safety, Corrections	85	230
Science, Technology, Engineering and Mathematics	83	888
Arts, Audio/Video Technology and Communic..	70	259
Government and Public Administration	2	41

Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)

Net Gap — Labor Market vs. Degrees Conferred (2016)

Largest **Undersupply** between Educational Supply and Labor Market Demand in

- Health Sciences,
- Marketing Sales and Service,
- Finance, Hospitality and Tourism

There is an **Oversupply** in **STEM** and **Education and Training:** These are educational programs, with more graduates than occupations to be employed within the region.

Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)

Projected Gap Size by Cluster (2026)

Oversupply in STEM, and Education and Training: These are educational programs, with no corresponding occupations within the region.

Undersupply in Health Sciences, Marketing Sales and Service, Finance, Hospitality and Tourism

Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)
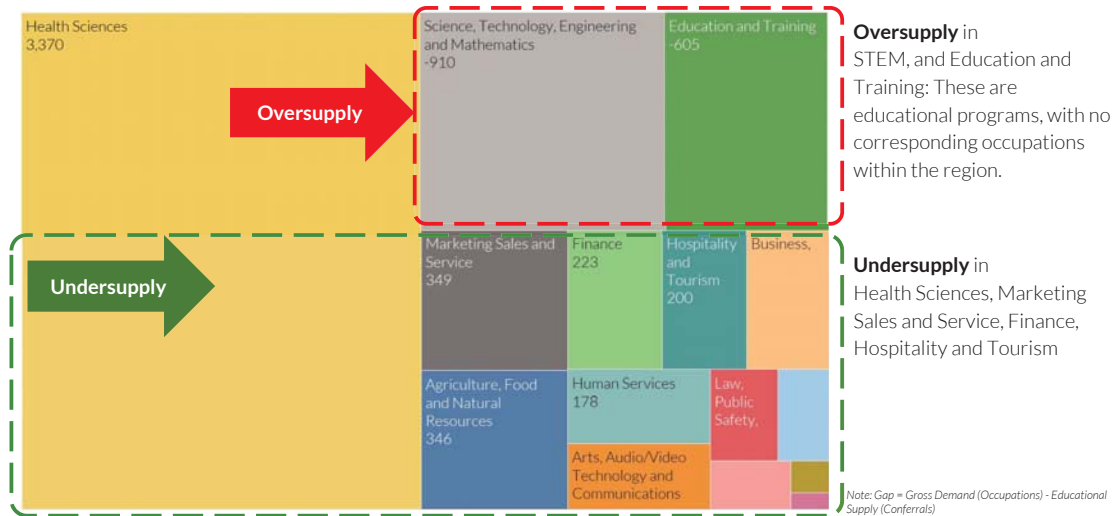
Gap Details by Program — Health Sciences

Descriptive Program	Gap (2016)	Gap Projected (2026)
Nursing	2,654	3,069
Other	212	228
Medical Records	58	75
Medical Services Management	54	72
Emergency Medical Technology	40	48
Medical Radiologic Technology	44	44
Medical Laboratory Technician	17	34
Occupational Therapy Assisting	17	32
Respiratory Therapy	21	29
Surgical Technology	10	16
Medical Office and Clerical	13	15
Community Health Work	-11	7
Medical Assisting	6	3
Medical Transcription	-1	2
Occupational Safety and Health	2	2
Athletic Training	-3	0
Nurse Assisting	0	0
Optical Technology	-2	0
Dietetics/Nutrition	-1	-2
Physician Assisting	-1	-2
Massage	-14	-4
Magnetic Resonance Imaging Technol..	-1	-6
Pharmacy Support	7	-7
Miscellaneous Health Services	-10	-16
Pharmacy	-33	-17
Dental Hygiene	-19	-24
Speech Pathology/Audiology	-42	-25
Veterinary Assisting/Technology	-18	-39
LPN	18	-59
Psychology	-163	-191

In 2026, *Occupations* in **Health Sciences**, for which there are not enough *Educational Program* graduates will be:

- Nursing,
- Medical Records,
- Medical Services Management,
- Emergency Medical Technology

In 2026, *Occupations* in **Health Sciences**, for which there will be more *Educational Program* graduates than jobs available will be:

- Psychology,
- LPN,
- Veterinary Assisting,
- Speech Pathology

Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)

Gap Details by Program — Marketing Sales and Service

Descriptive Program	Gap (2016)	Gap Projected (2026)
Other	289	306
Sales	84	91
Marketing Management and Research	-35	-32

In 2026, *Occupations* in **Marketing Sales and Service**, for which there are not enough *Educational Program* graduates will be:

- Sales,
- Other Marketing and Sales Occupations

In 2026, *Occupations* in **Marketing Sales and Service**, for which there will be more *Educational Program* graduates than Jobs available will be:

- Marketing Management and Research

Note: "Other" shows various Occupations, for which there's no corresponding Educational Program.
Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)

Gap Details — Agriculture, Food and Natural Resources

Descriptive Program	Gap (2016)	Gap Projected (2026)
Other	527	474
Garden and Landscaping Services	11	12
All Other Engineering Technology	6	7
Water and Waste Treatment	7	7
Forestry and Conservation	2	6
Agricultural Services and Supplies	3	2
Environmental Science	-2	-3
Parks, Recreation and Fitness	2	-4
Animal Training	-13	-14
Economics	-8	-17
Mining/ Petroleum Technology	-25	-67
Agricultural/Food Sciences	-101	-111

In 2026, *Occupations* in **Agriculture, Food and Natural Resources**, for which there are not enough *Educational Program* graduates will be:

- Garden and Landscaping Services
- Other (Agriculture and Technology)
- Water and Waster Treatment

In 2026, *Occupations* in **Agriculture, Food and Natural Resources**, for which there is more *Educational Program* graduates than Jobs available will be:

- Agricultural/Food Sciences
- Mining/Petroleum Technology
- Economics
- Animal Training

Note: "Other" shows various Occupations, for which there's no corresponding Educational Program.
Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)

Gap Details by Program — Business Management & Finance

Descriptive Program	Gap (2016)	Gap Projected (2026)
Office Clerical	309	328
Secretarial	123	128
Bookkeeping	120	111
Other	90	82
Human Resources Management	17	15
Advertising/Public Relations	2	4
Transportation, Storage and Distribut...	2	2
Computer Systems	0	0
Economics	-33	-83
Accounting	-91	-140
Business Management and Administr...	-255	-295

In 2026, *Occupations* in **Business Management and Finance**, for which there are not enough *Educational Program* graduates will be:

- Office Clerical
- Secretarial
- Bookkeeping
- Other (Business and Management)

In 2026, *Occupations* in **Business Management and Finance**, for which there will be more *Educational Program* graduates than Jobs available will be:

- Business Management and Administration
- Accounting
- Economics

Note: "Other" shows various Occupations, for which there's no corresponding Educational Program.
Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)

Gap Details by Program — Finance
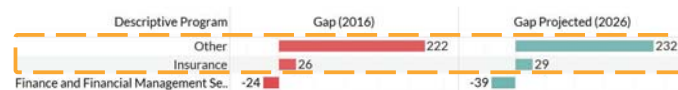
Descriptive Program	Gap (2016)	Gap Projected (2026)
Other	222	232
Insurance	26	29
Finance and Financial Management Se...	-24	-39

In 2026, *Occupations* in **Finance**, for which there are not enough *Educational Program* graduates will be:

- Insurance
- Other Finance Occupations

In 2026, *Occupations* in **Finance**, for which there will be more *Educational Program* graduates than Jobs available will will be Finance and Financial Management.

Note: "Other" shows various Occupations, for which there's no corresponding Educational Program.
Note: Gap = Gross Demand (Occupations) - Educational Supply (Conferrals)

Gap Analysis - In Summary

Demand
[(Net new openings + replacement + Burning Glass Employer Demand) - non-degree jobs]

GAP

Supply
(SAM ← TAM) - Distance methodology
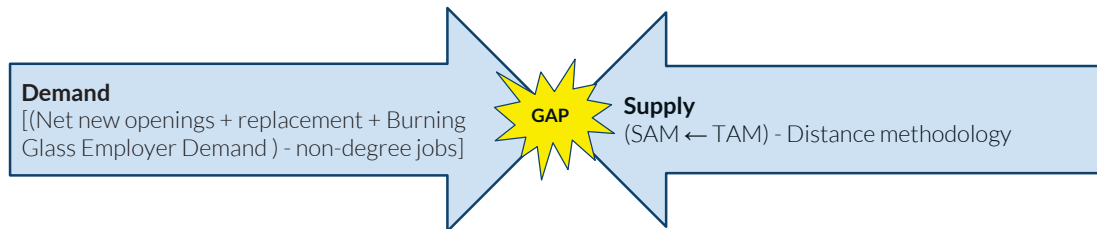
03 d

Next Steps

Question to be answered:
What are the most viable programs based on desirability and ability to execute for each set of stakeholders?

Ensuring That Solutions Fit Wyoming

State	% High School Graduate	Rank	% Bachelor's Degree	Rank	% Advanced Degree	Rank
Montana	92.80%	1	29.50%	20	9.50%	32
Wyoming	92.30%	3	25.70%	40	8.60%	40
South Dakota	90.90%	13	27.00%	33	8.00%	43
Colorado	90.70%	14	38.10%	2	14.00%	7
Nebraska	90.70%	14	29.30%	21	9.70%	30

Wyoming is different from neighboring states in the mix of occupations and educational attainment

- High level of high school graduation,
- But lower level of bachelor's attainment.

Moving into Phase III, solutions developed need to fit the situation of Wyoming.

Next Steps - Phase III and Conclusion

1. **Define and develop user scenarios**
   - *Business as usual* - What happens if current approaches are continued?
   - *Economic development as catalyst* - How certain economic clusters may lead Higher Education?
   - *Education as catalyst* - What opportunities are there to use Higher Education as catalyst for economic development?

2. **Phase III data collection**

3. **Going forward roadmap**

4. **Final report preparation and presentation**

Next Steps - Program Priorities

A variety of inputs will be used to match the *desirability* of potential types of programs with the *ability* to address the opportunity

Desirability (score)

- Size of the sector
- Growth rates
- Pay rates
- *Fit to economic development strategy**
- Location quotient
- Automation risk
- Economic impact / multiplier
- No institutional coverage by colleges

Find Resources

Execute on Growth

De-emphasize

Redirect Resources

High / Low (Desirability)

Low — High (Ability to address (score))

Ability to address (score)
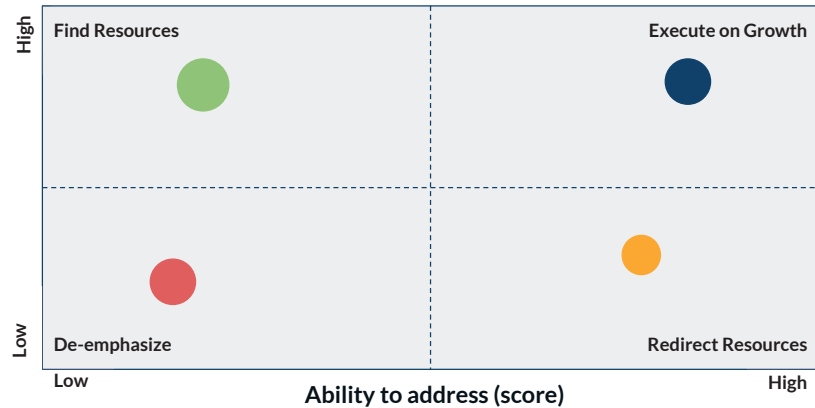
- Funding
- Organizational capacity
- State / Institutional restrictions

Questions?

04 a
Competitor Appendix

Overview of the Educational Landscape

An analysis of educational offerings within the target range of 180 miles radius around Gillette, WY, offers more insight on the circle of institutions providing Higher Education to the region.

The analyzed 19 institutions cumulatively provide a rather saturated supply for General Studies /Liberal Arts majors, while in-demand programs in Business- Healthcare- or STEM-field do not produce enough graduates to serve the needs of the evolving, regional workforce.

As it is crucial to determine relevant specializations within these majors, we conducted a deeper, more granular gap analysis to pinpoint the specific in-demand programs that need to evolve as part of the educational landscape in Campbell County.

We want to highlight that additional measures are required in tackling graduation rates which are significantly lower than national average for many institutions in the region (59% for 4-year universities and 30.9% for 2-year institutions).
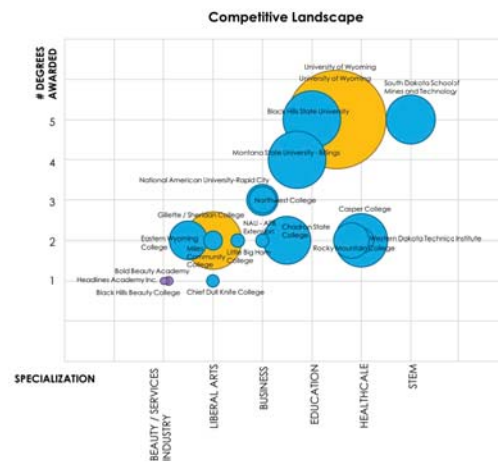
Source: Entangled Solutions analysis, College Navigator, IPEDS

Analyzed Educational Institutions

#	University / College	total # of students	miles range
1	University of Wyoming	12,648	198.4
2	Black Hills State University	4,395	82.4
3	Montana State University - Billings	4,362	178.3
4	Gillette / NWCCD	4,307	80.1
5	Casper College	3,680	108.3
6	South Dakota School of Mines and Technology	3,230	114.8
7	Chadron State College	2,977	162.3
8	Eastern Wyoming College	1,937	164.9
9	Northwest College	1,656	164.0
10	National American University-Rapid City	1,298	114.8
11	Rocky Mountain College	1,000	182.5
12	Western Dakota Technical Institute	836	113.5
13	Miles Community College	481	147.6
14	Little Big Horn College	248	134.4
15	National American University-Ellsworth AFB Extension	235	120.8
16	Chief Dull Knife College	218	102.3
17	Bold Beauty Academy	125	178.3
18	Black Hills Beauty College	85	114.8
19	Headlines Academy Inc.	77	114.8

Source: IPEDS, College Navigator, Google Maps
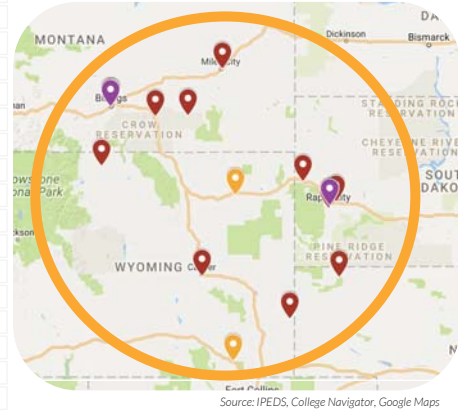
Fast Facts

- **19 schools** (including University of Wyoming and Gillette College) are located within the analyzed region.

- **Graduation rates are extremely low** with only two providers, University of Wyoming and South Dakota School of Mines and Technology, attaining 50%.

- **Student population** in the area is 40,852.

- Eight colleges mainly award **degrees** in General Studies and Business, seven schools in Education and Healthcare, and only one university (South Dakota School of Mines and Technology) is highly focused on STEM disciplines.

19 institutions		
8 universities	8 community colleges	3 other
1. University of Wyoming 2. Black Hills University 3. Montana State University - Billings 4. South Dakota School of Mines & Technology 5. Chadron State College 6. National American University-Rapid City 7. Rocky Mountain College 8. National American University-Ellsworth AFB Extension	1. Gillette / NWCCD 2. Casper College 3. Eastern Wyoming College 4. Northwest College 5. Western Dakota Technical Institute 6. Miles Community College 7. Little Big Horn College 8. Chief Dull Knife College	1. Bold Beauty Academy 2. Black Hills Beauty College 3. Headlines Academy Inc.

Source: Entangled Solutions analysis, College Navigator, IPEDS

Black Hills State University

Black Hills State University is a four-year, public, liberal arts university. The institution provides a broad variety of programs, however in 2015 most degrees awarded were in the Education sector. It has a second campus, BHSU-RC, recently established in Rapid City.

Type

4-year, Public

Total # of students

4,395

Location

Spearfish, SD 57799

Graduation rate

36%
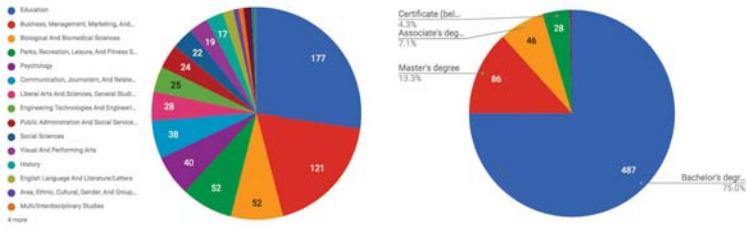
Montana State University - Billings

MSU Billings has the third largest population in the Montana State University System. Offers more online courses than any other institution in Montana (24 online programs). The five colleges are Arts and Sciences, Business, Allied Health professions, Education and City College.

Type

4-year, Public

Total # of students

4,362

Location

Billings, MT 59101

Graduation rate

24%
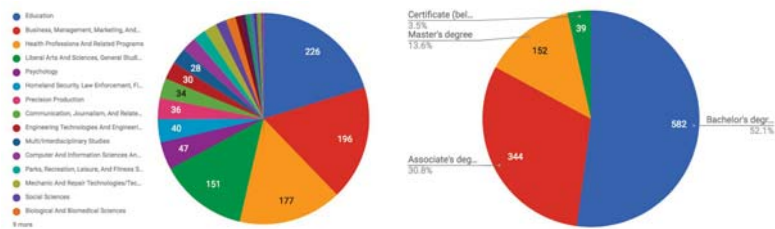
Casper College

Casper College is the second largest community college in the region after Gillette/NWCCD. Most degrees awarded in 2015 were in the Healthcare field. Through the partnerships with various institutions, including the University of Wyoming, Franklin University, University of Mary, Rush University, Western Governors University and the University of North Dakota, students may also pursue Bachelor, Master and Doctorate degrees.

Type

2-year, Public

Total # of students

3,680

Location

Casper, WY 82601

Graduation rate

32%

Source: College Navigator, official university website

South Dakota School of Mines and Technology

This organization is the only university in the area that specializes in STEM education. 98% of students of the most recent graduating class are going on to graduate school or have secured employment at an average starting salary of $63,000+ at notable employers such as Google, Microsoft, Medtronic, NASA, SpaceX, Keurig, etc.

Type

4-year, Public

Total # of students

3,230

Location

Rapid City, SD 57701

Graduation rate

51%
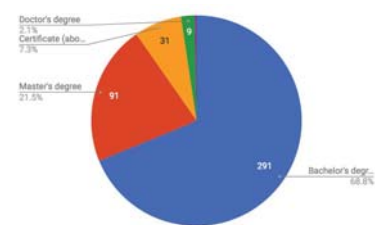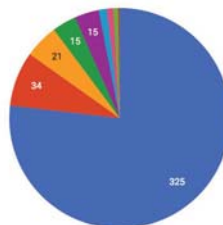
Source: College Navigator, official university website

Chadron State College

Chadron State experiences several consecutive years of enrollment growth. The curriculum has grown to offer programs and courses in 52 majors and endorsements and eight master's degree programs. The six bachelor's degree programs attracting the most students are business administration, education, psychology, biology-health sciences, rangeland management and justice studies.

Type

4-year, Public

Total # of students

2,977

Location

Chadron, NE 69337

Graduation rate

43%
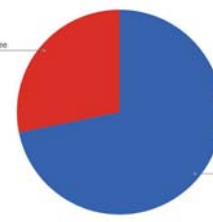
Source: College Navigator, official university website

65

Eastern Wyoming College

Eastern Wyoming College is a community college in Torrington, Wyoming. The college also has outreach centers serving Platte, Niobrara, Converse, Weston and Crook counties. Most degrees awarded are in Liberal Arts or in Precision Production (mostly certificates).

Type

2-year, Public

Total # of students

1,937

Location

Torrington, WY 82240

Graduation rate

33%
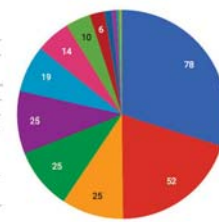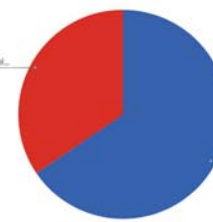
Source: College Navigator, official university website

66

Northwest College

Among other majors, Northwest College offers an Associate Degree in Nursing. NWC and University of Wyoming have more than 20 program transfer agreements currently in place that allow students to transfer at the junior level.

Type

2-year, Public

Total # of students

1,656

Location

Powell, WY 82435

Graduation rate

37%
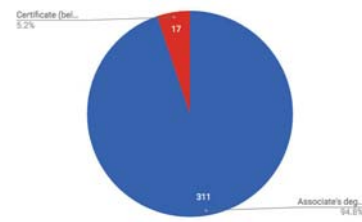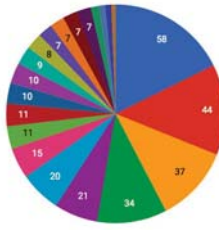
Source: College Navigator, official university website

67

National American University-Rapid City

This multi-state institution offers programs online, on-campus, and in hybrid formats. At the Rapid City campus NAU operates three colleges: The College of Business, Accounting and Technology, the College of Health and Sciences, and the College of Legal Studies.

Type

4-year, Private for-profit

Total # of students

1,298

Location

Rapid City, SD 57701

Graduation rate

19%
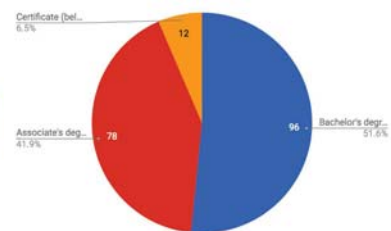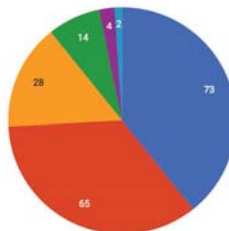
Source: College Navigator, official university website

68

Rocky Mountain College

RMC is a private comprehensive college offering 50 liberal arts- and professionally oriented- majors in 24 undergraduate disciplines. Some of RMC's less traditional academic offerings include aviation programs, equestrian programs, and physician assistant programs.

Type

4-year, Private not-for-profit

Total # of students

1,000

Location

Billings, MT 59102

Graduation rate

48%
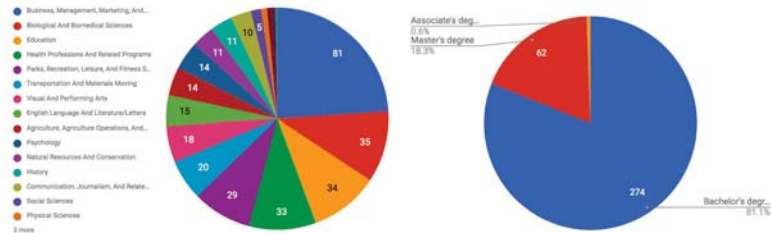
Source: College Navigator, official university website

69

Western Dakota Technical Institute

The institute aims to only offer educational programs in growing fields and industries, including Business and Computers, Construction and Manufacturing, Energy and Environmental Technologies, Health Sciences, Legal and Public Services, and Transportation Technologies.

Type

2-year, Public

Total # of students

836

Location

Rapid City, SD 57703

Graduation rate

33%
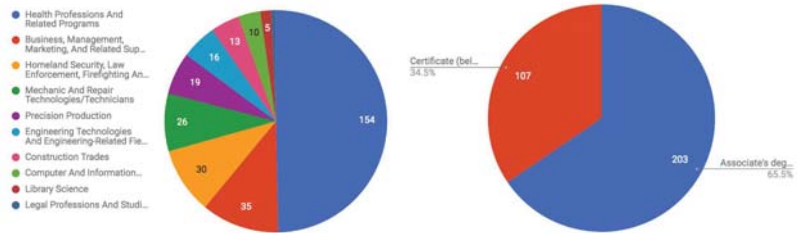
Source: College Navigator, official university website

70

Miles Community College

Miles Community College has awarded the majority of its degrees in Liberal Arts. MCC highlights its open door-admission policy and offers credit programs to prepare students for transfer, as well as career and technical programs to prepare students to enter the workforce.

Type

2-year, Public

Total # of students

481

Location

Miles City, MT 59301

Graduation rate

42%

Source: College Navigator, official university website

Little Big Horn College

The majority of the students enrolled in Little Big Horn College are members of the Crow Tribe of Indians. The college is committed to the preservation, perpetuation and protection of Crow culture and language. The schools offers Associate of Arts and Associate of Science degrees instructing via traditional and distance education.

Type

2-year, Public

Total # of students

248

Location

Crow Agency, MT 59022

Graduation rate

20%

Source: College Navigator, official university website

National American University - Ellsworth AFB Extension

This NAU campus focuses on providing education for active-duty, reserve, National Guard, and retired military personnel, as well as military families, veterans receiving VA benefits, DOD employees and their dependents, and base contractors.

Type

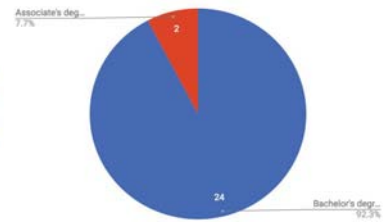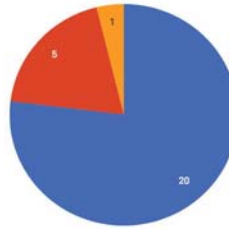4-year, Private for-profit

Total # of students

235

Location

Ellsworth AFB, SD 57706

Graduation rate

25%

Legend:
- Business, Management, Marketing, And Related Support Services
- Computer And Information Sciences And Support Services
- Homeland Security, Law Enforcement, Firefighting And Related Protective Services

Associate's deg... 7.7%
Bachelor's degr... 92.3%

Chief Dull Knife College

Chief Dull Knife College is a small, community based, land grant, and tribally controlled community college established to provide quality educational opportunities to residents of the Northern Cheyenne Reservation and surrounding communities.

Type

2-year, Public

Total # of students

218

Location

Lame Deer, MT 59043

Graduation rate

15%

Legend:
- Liberal Arts And Sciences, General Studies And Humanities

Associate's deg... 100.0%

Bold Beauty Academy

Students of Bold Beauty Academy gain know-how and hands-on training necessary to succeed in the beauty industry. They learn both the fundamentals and advanced techniques and master everything from haircutting, hair styling, and hair coloring to marketing and business skills.

Type

2-year, Private for-profit
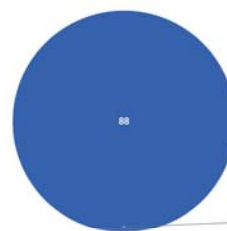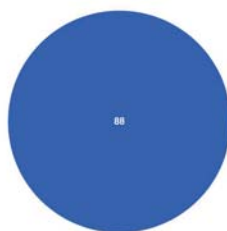
Total # of students

125

Location

Billings, MT 59101

Graduation rate

73%

Personal And Culinary Services

88

88

Certificate (bel... 100.0%

75

Black Hills Beauty College

Black Hills Beauty College is a private cosmetology school that offers courses in cosmetology, esthetics, massage and nail technology. In addition, advanced classes are available in business education, sales and personal development.

Type

2-year, Private for-profit

Total # of students

85

Location

Rapid City, SD 57701

Graduation rate

58%

Personal And Culinary Services

34

34

Certificate (bel... 100.0%

76

Headlines Academy Inc.

Headlines Academy is a full service school of beauty with certified courses in cosmetology, esthetics, massage therapy, and nail technology.

Type

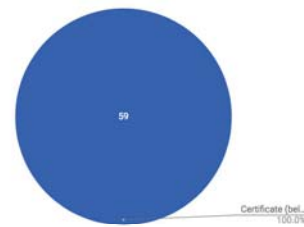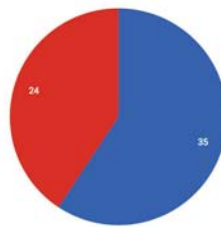2-year, Private for-profit

Total # of students

77

Location

Rapid City, SD 57701

Graduation rate

63%

- Personal And Culinary Services
- Health Professions And Related Programs

24

35

59

Certificate (bel...
100.0%

Source: College Navigator, official university website

77

04 b

Data Appendix

Data Appendix

Please find the full set of raw data by clicking on these hyperlinks. .

SOC & CIP To Program of Study

Employment data (SOC Codes)

SOC & CIP To Career Cluster

Institutional Programs data (CIP Codes)

"CCO - Phase II" folder

04 c

Methodology Appendix

SOC-CIP-Cluster Crosswalk Methodology

1. Download Employment data
from the BLS.gov website (SOC2010)

2. Download Classification
of Instructional Programs data (CIP 2010)

3. Download Crosswalks
- SOC & CIP to Program of Study (EDEPS)

- SOC & CIP to Career Cluster (The National Career Clusters Framework)

SOC-CIP-Cluster Crosswalk Methodology

Step 1 : Download Employment data (SOC2010)

Download data
- visit Bureau of Labor Statistics website
- select "Data Tools" to get to Employment Projections section
- download Employment data

Start using the data
- visit The Integrated Postsecondary Education Data System website
- within the Survey Data section select "Custom data files" option

SOC-CIP-Cluster Crosswalk Methodology

Step 2 : Download Classification of Instructional Programs data (CIP 2010)

Select data release

- choose "Use provisional release data" to obtain the latest data available (2015-16 at the moment of writing)

- click "Continue"

Select Institutions

- Use comma-separated UnitIDs of the institutions

- Select institutions within 150mi radius from the Gillette College [1]

- click "Select"

College Navigator website allows to obtain a list of institutions within the radius of the specified location

---

SOC-CIP-Cluster Crosswalk Methodology

Step 2 : Download Classification of Instructional Programs data (CIP 2010)

Select Variables

- Year: *2015*

- Variables:
  Completions → Awards/degrees conferred by program (CIP) ... → Completions, awards and degrees by 6-digit cipcode

- *Select Qualifying Variable(s)* (next slide)

- Press "Continue"

SOC-CIP-Cluster Crosswalk Methodology

Step 2 : Download Classification of Instructional Programs data (CIP 2010)

Select Qualifying Variables

- First or Second Major: *first*

- CIP Codes - 2010 Classification: *select all 6-digit* programs

- Select from the list of variables: *Grand total*

SOC-CIP-Cluster Crosswalk Methodology

Step 2 : Download Classification of Instructional Programs data (CIP 2010)

Output

- Do you want to include imputational variables: *no*

- Choose the preferred format to download the data

Output

Use
- SOC & CIP to Program of Study (EDEPS)
- SOC & CIP to Career Cluster (The National Career Clusters Framework) crosswalks

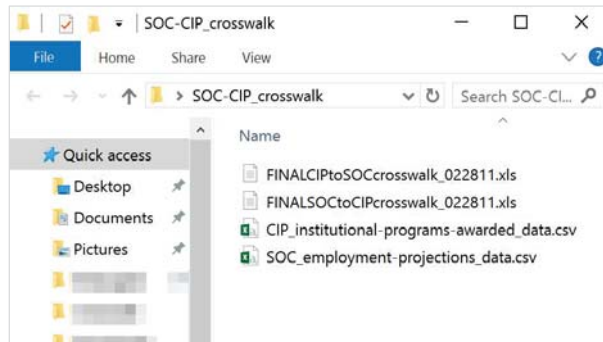Identify the Occupations and the corresponding Instructional Programs and Career Clusters.

SOC-CIP Crosswalk Methodology

Prerequisites:

Make sure the following files are readily available prior to performing the crosswalk:

✓ **Employment data**
(SOC2010 codes, 150mi distance)

✓ **Institutional Programs data**
(CIP2010 codes, 150mi distance)

✓ Use the **SOC & CIP to Program of Study** (EDEPS) and **SOC & CIP to Career Cluster** (The National Career Clusters Framework) mappings to identify the Occupations and the corresponding Instructional Programs within Career Clusters.

Methodology – Crosswalk

Step 1:
Use the official "SOC Code to Program of Study" and "CIP Code to Program of Study" mappings to identify the Occupations, Instructional Programs and the corresponding Program of Study

Step 2:
Use the crosswalk which maps Skill-Based Occupation Clusters to CIP & SOC codes

SOC2010 Code	SOC2010 Title	Program of Study
11-1011	Chief Executives	Management

CIP2010 Code	CIP2010 Title	Program of Study
44.0401	Public Administration.	Management

Source: Economic Development and Employer Planning System (EDEPS), The National Career Clusters Framework
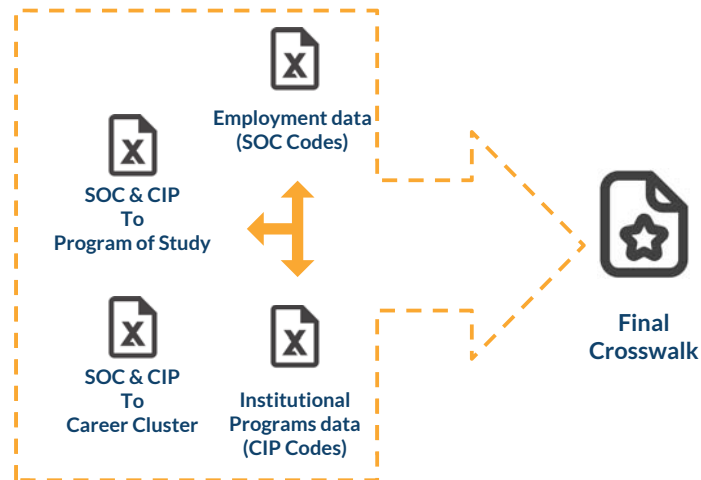
Methodology — Crosswalk

Step 3:

Create a crosswalk table by joining multiple tables:

- Employment data
  (SOC2010 codes, 150mi distance)

- Institutional Programs data
  (CIP2010 codes, 150mi distance)

- SOC & CIP to Program of Study
  (EDEPS)

- SOC & CIP to Career Cluster
  (The National Career Clusters Framework)

SOC & CIP To Program of Study

Employment data (SOC Codes)

SOC & CIP To Career Cluster

Institutional Programs data (CIP Codes)

Final Crosswalk

Gap Analysis — Clarifications around Methodology

We performed a crosswalk to identify the **Gap** between the **Instructional Programs** and the **Occupations** where more workforce is needed.

Crosswalk Data

The following data was analyzed:

1. **Classification of Instructional Programs data** (CIP 2010)
   - **Instructional Programs** (with the CIP codes)
   - within 150mi from the Gillette College
   - # of Degrees awarded (conferrals) in 2016, includes:
     - Certificate (above/below the baccalaureate level)
     - Associate's degree
     - Bachelor's degree
   - (referred to as "Supply")
2. **Employment data** (SOC2010)
   - **Occupations** (with the SOC codes)
   - within 150mi from the Gillette College
   - # of people "Employed"
     - Employed in the Region (2015)
     - National Employment Projections (2026)
     - Job Postings (in 2015)
   - (referred to as "Demand")

Crosswalk Goals

The main goal of the crosswalk was to:

1. **Identify the Gap**
   - **Undersupply**
     What are the **Occupations** with the growing Employment, yet not enough graduates for the corresponding **Instructional Programs**?

   - **Oversupply**
     What are the **Occupations** with low Emmployment, yet many graduates for the corresponding **Instructional Programs**?

Performing the Crosswalk

1. SOC & CIP to Program of Study
2. SOC & CIP to Career Cluster
3. Analyze Supply-Demand differences
   a. High-level: Career Cluster
   b. Details: Program of Study within the Career Cluster