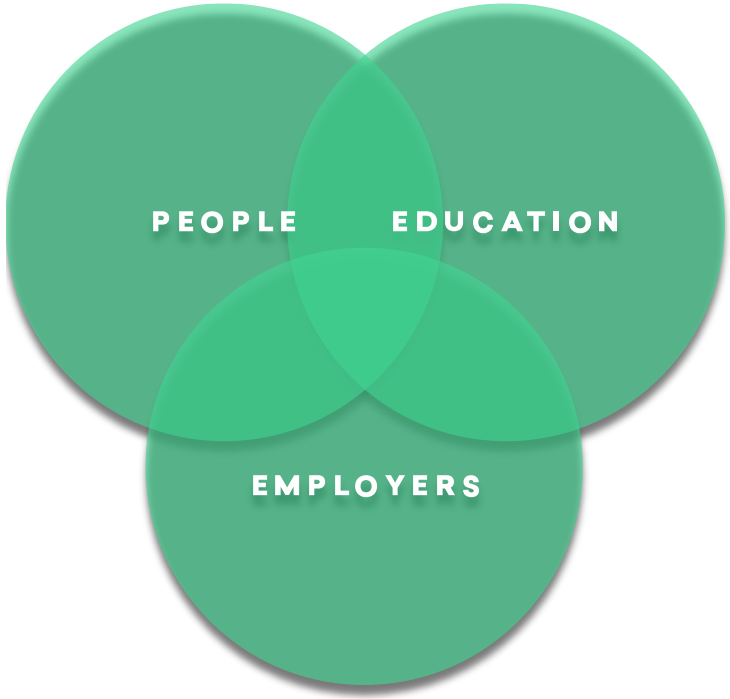
Aligning Business Needs, Educational Offerings, and Individual Aspirations

Erin Baird
Sterling Smith

March 6, 2020

Emsi's mission is to use labor market data to inform & connect people, education, and work.



Emsi Data

LABOR MARKET INFORMATION

ONLINE JOB POSTINGS

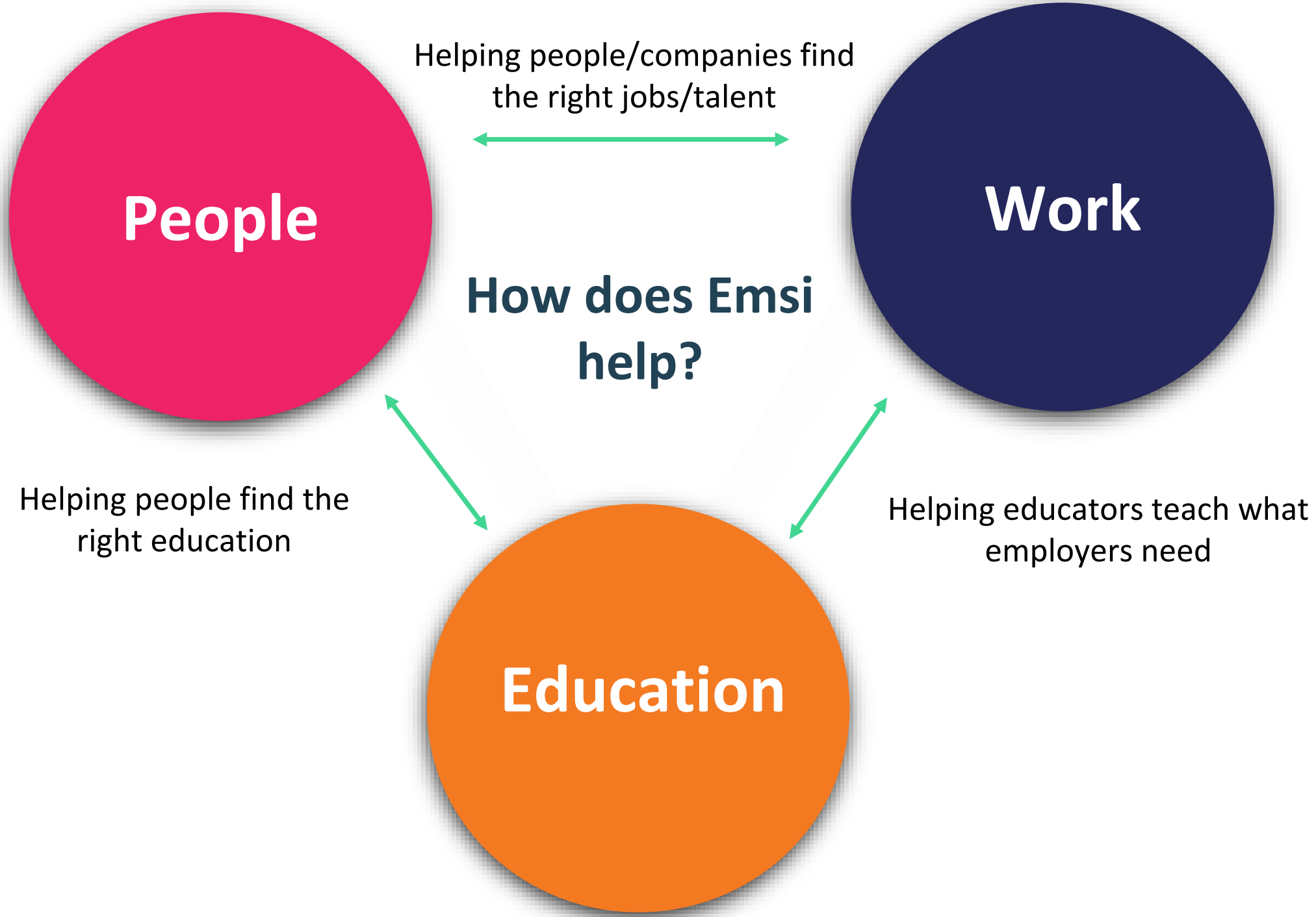
RESUMES AND PROFILES

COMPENSATION MODELING

The Power of Emsi data

The Problem of Market Alignment

- People struggle to find the right work
- Employers struggle to find the right talent
- Educators struggle to bridge the right gaps


People
Helping people/companies find the right jobs/talent
Work
How does Emsi help?
Helping people find the right education
Helping educators teach what employers need
Education

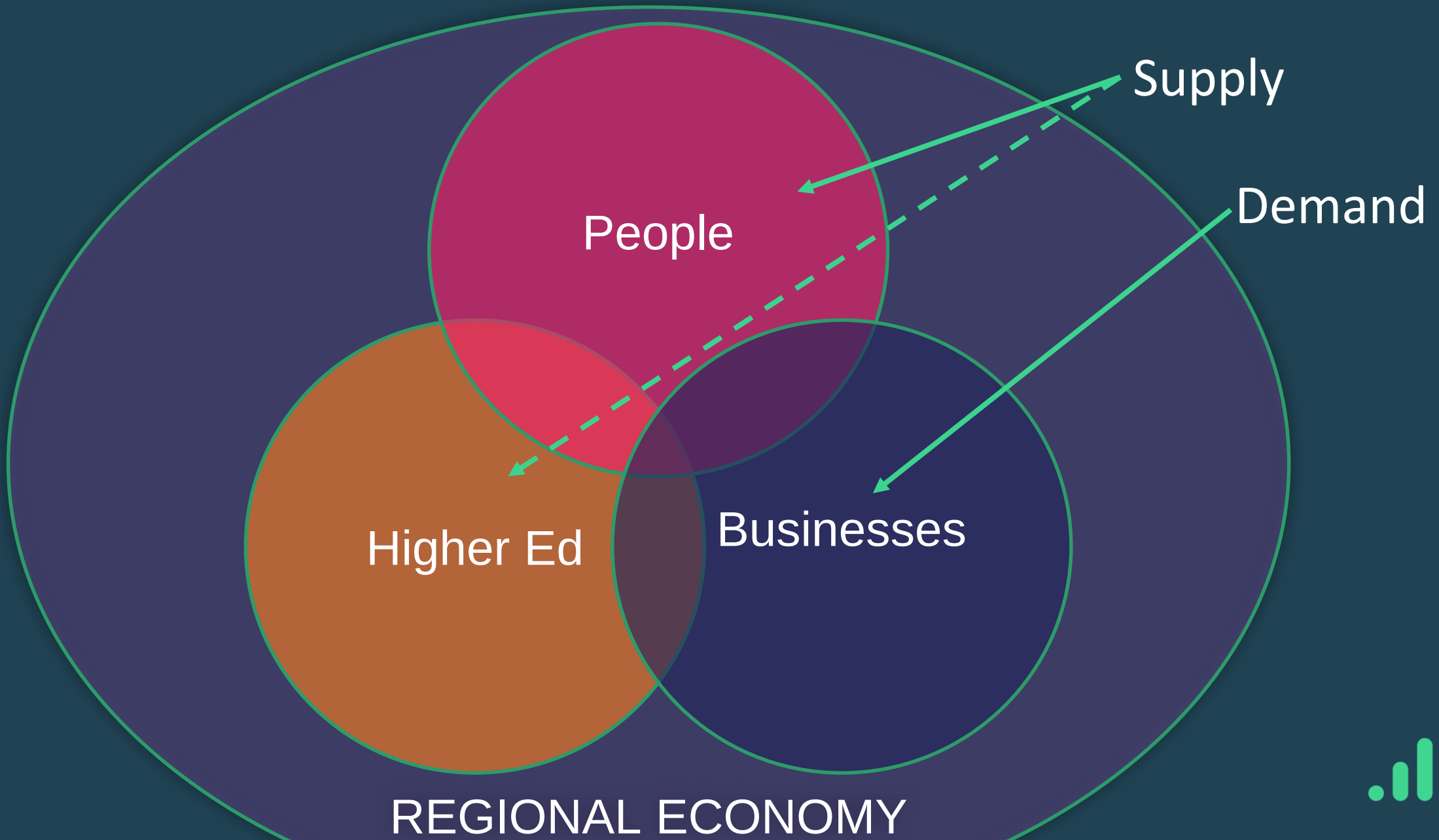
Using traditional (structured) labor market data

Bureau of Labor Statistics (SOCS; NAICS)

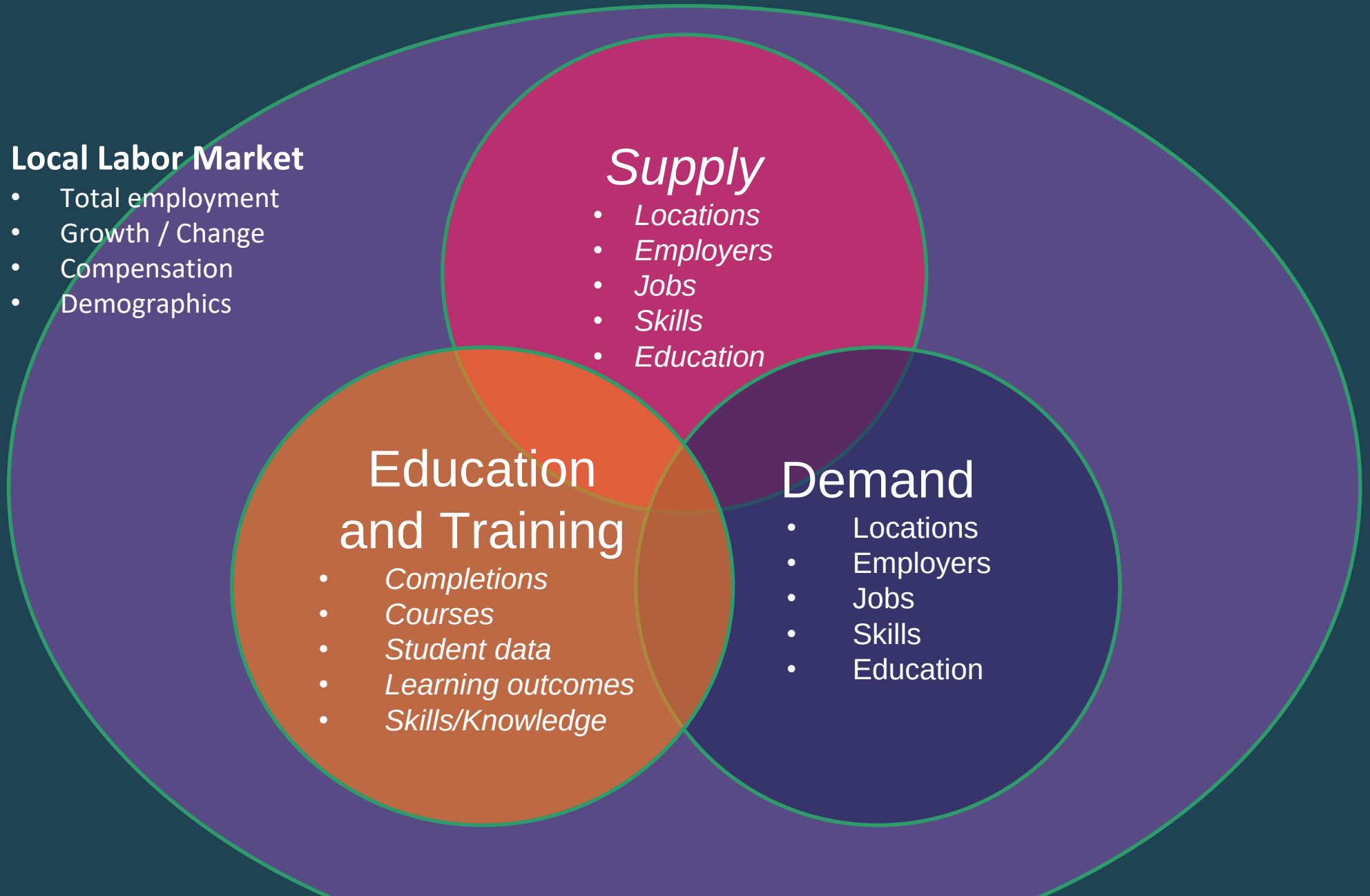
U.S. Census Bureau (Demographics)

Integrated Postsecondary Education Data System (Education)

How does Emsi help? By aligning the labor market ecosystem



How does Emsi help? By using labor market data to inform alignment



Gateway Cities Economy

4%

Growth in jobs 2019-2029

35%

Increase in persons aged 65+

621K

Workers commuting out of the region

-3%

Decline in persons aged 20-64

6%

Growth in jobs that typically require a Cert. or greater

556K

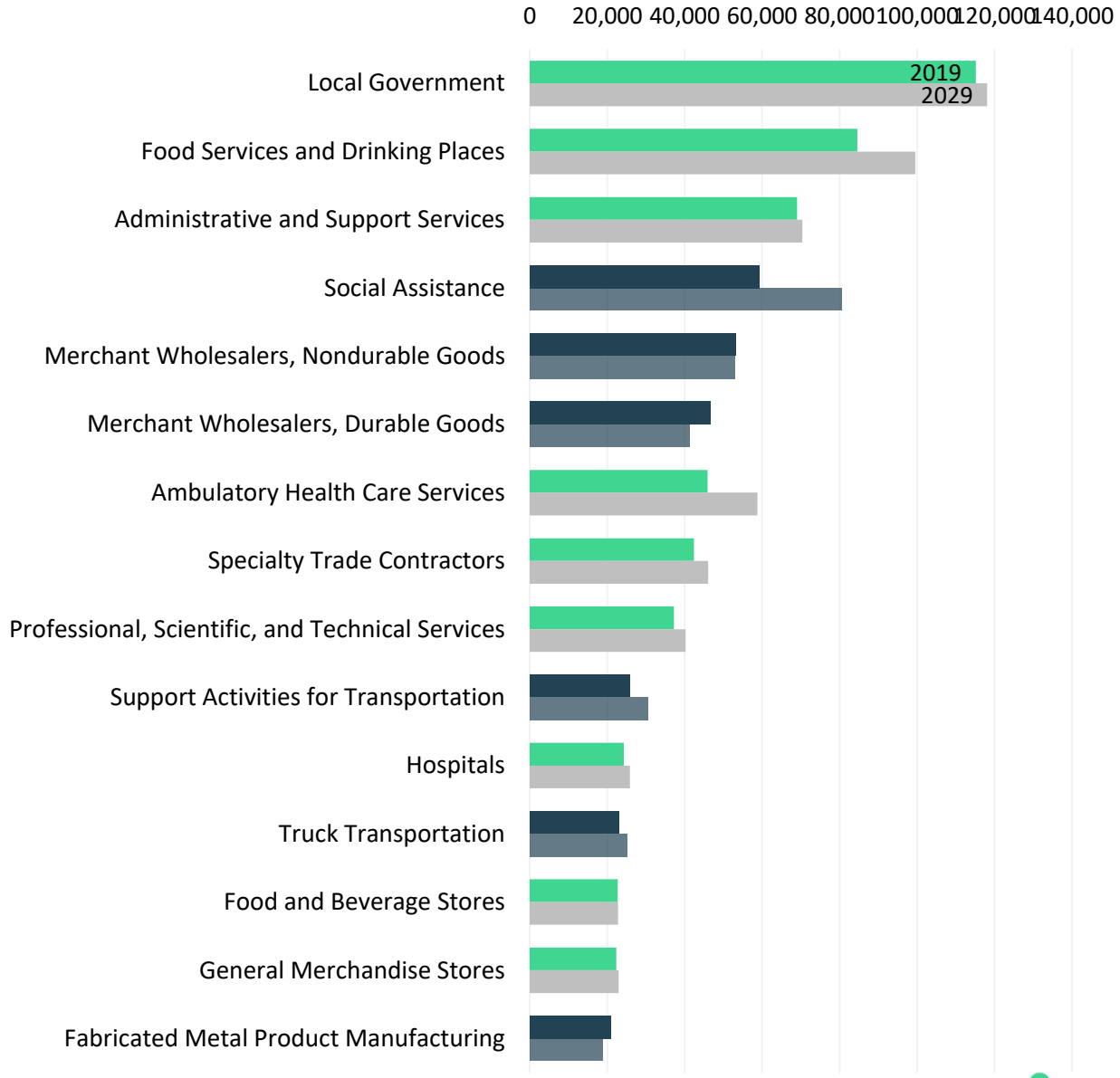
Workers commuting into the region

Gateway Cities Economic Structure

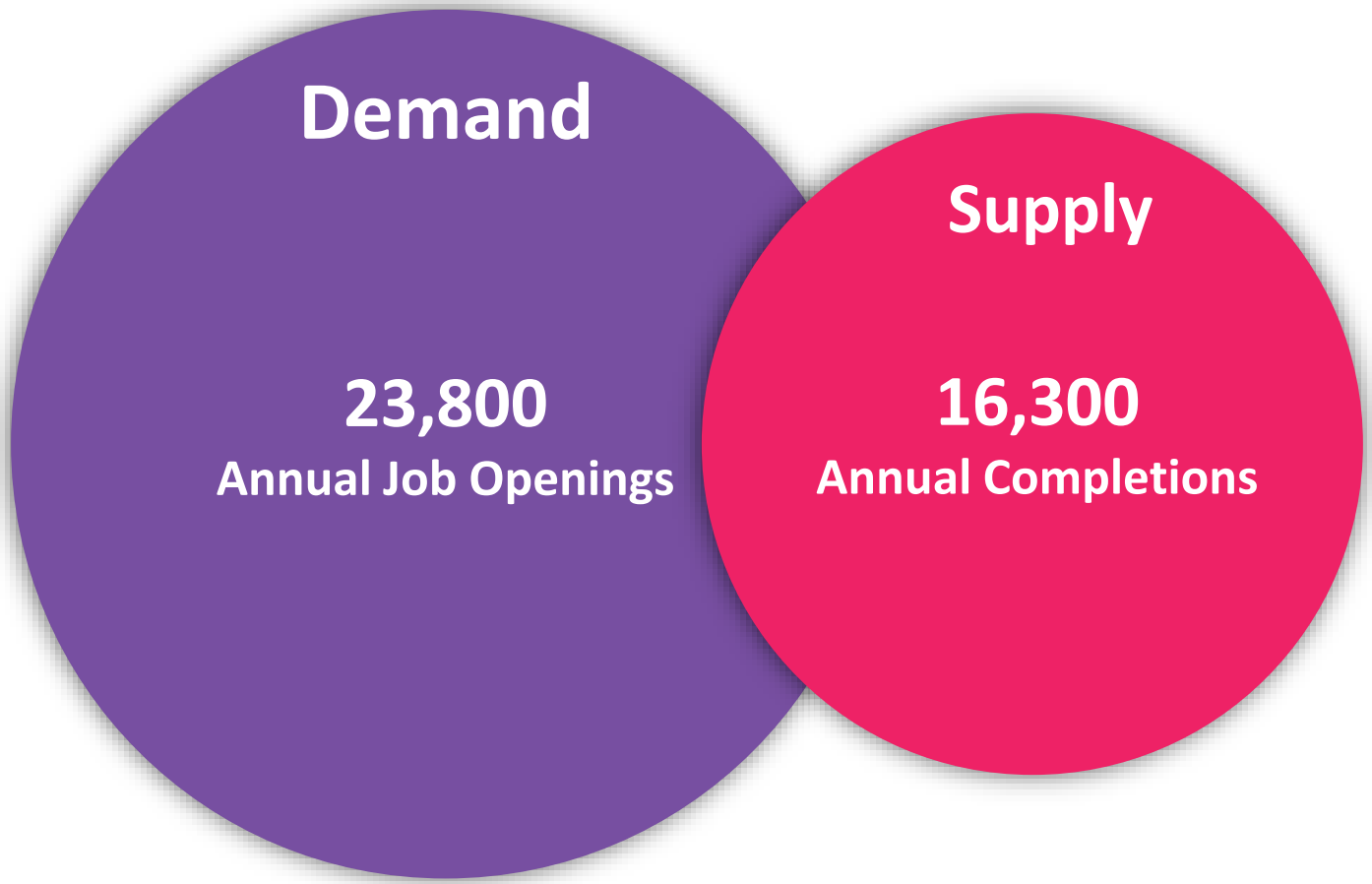
Key industries are responsible for **23%** of the Gateway Cities exports.

Occupations

- **Personal Care Workers**
- **Transportation Workers**
- **Sales & Business Operations**
- **Production Workers**



Middle Skill Workers



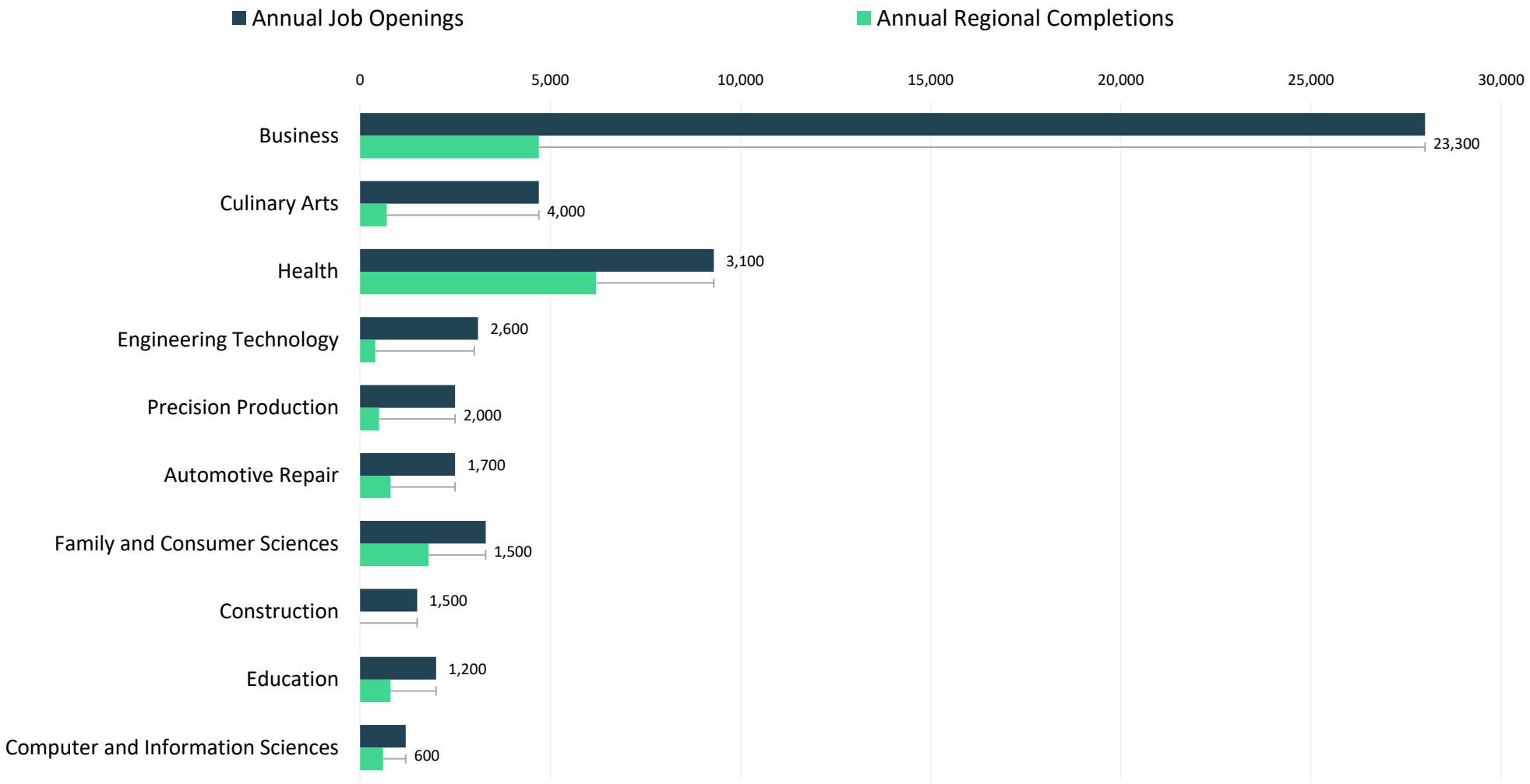
Occupations (SOC's)

- Registered Nurses
- Accounting Clerks
- First-Line Supervisors
- Electricians
- Plumbers

Programs (CIP's)

- Business
- Culinary Arts
- Health Services
- Child Care
- Criminal Justice

Program Gap Analysis



Using non-traditional (unstructured) labor market data

Job postings data

Professional profiles data

Job postings data: 1.49M unique postings in Cerritos

Top Companies Posting

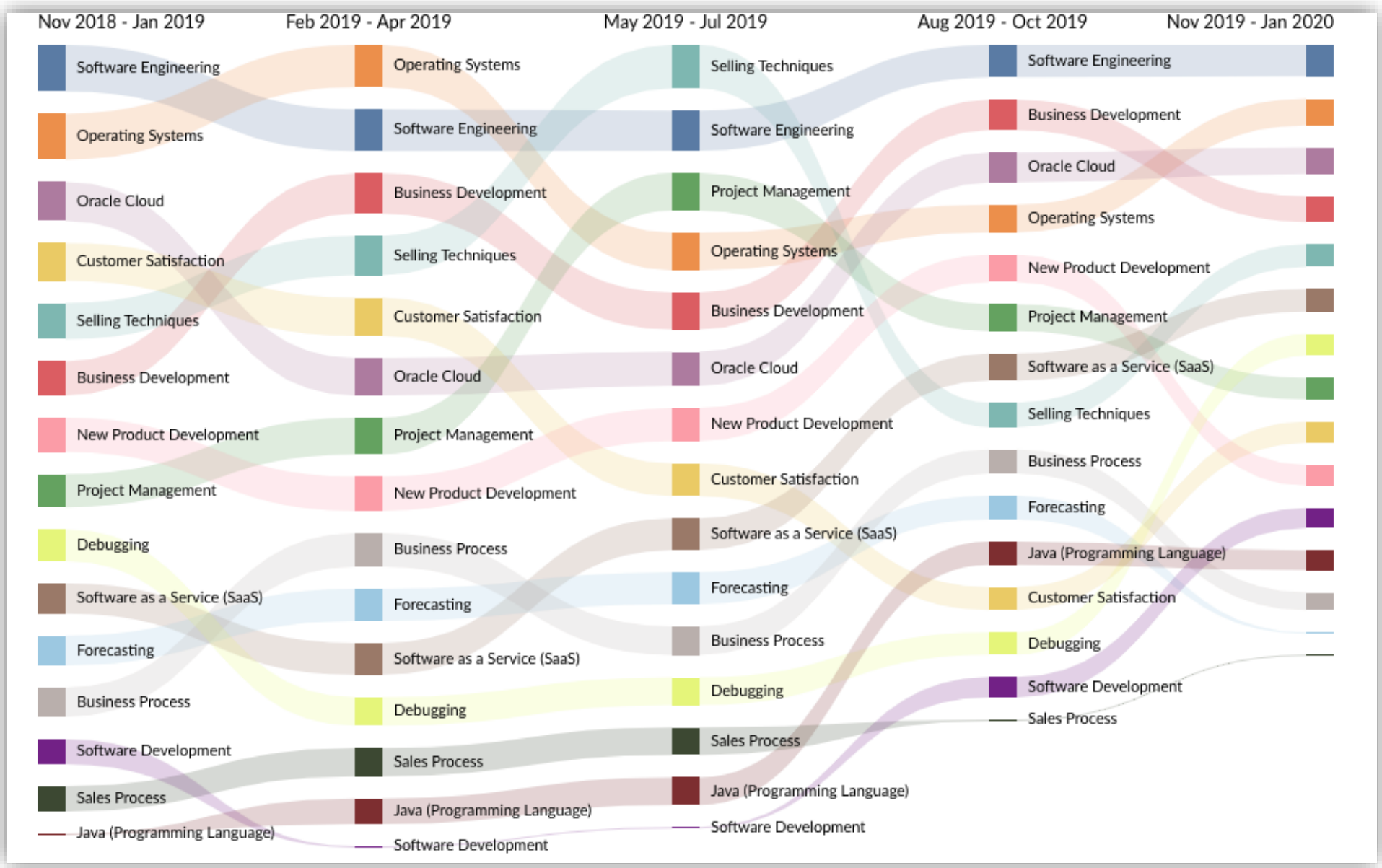
Company	Total/Unique (Jun 2019 - Jan 2020)	Posting Intensity	Median Posting Duration
Anthem, Inc.	63,439 / 21,102	3 : 1	26 days
University of California	72,994 / 11,293	6 : 1	42 days
Oracle Corporation	51,377 / 10,218	5 : 1	35 days
Northrop Grumman Corporation	81,990 / 10,179	8 : 1	45 days
HealthCare Employment Network	29,755 / 9,990	3 : 1	18 days
CyberCoders, Inc.	67,039 / 9,434	7 : 1	38 days
General Healthcare Resources, Inc.	60,998 / 8,900	7 : 1	37 days
CRST International, Inc.	44,115 / 7,584	6 : 1	45 days
Marriott International, Inc.	43,584 / 7,580	6 : 1	41 days
NurseFly	27,042 / 5,451	5 : 1	22 days

Job postings data: Top job titles for Oracle

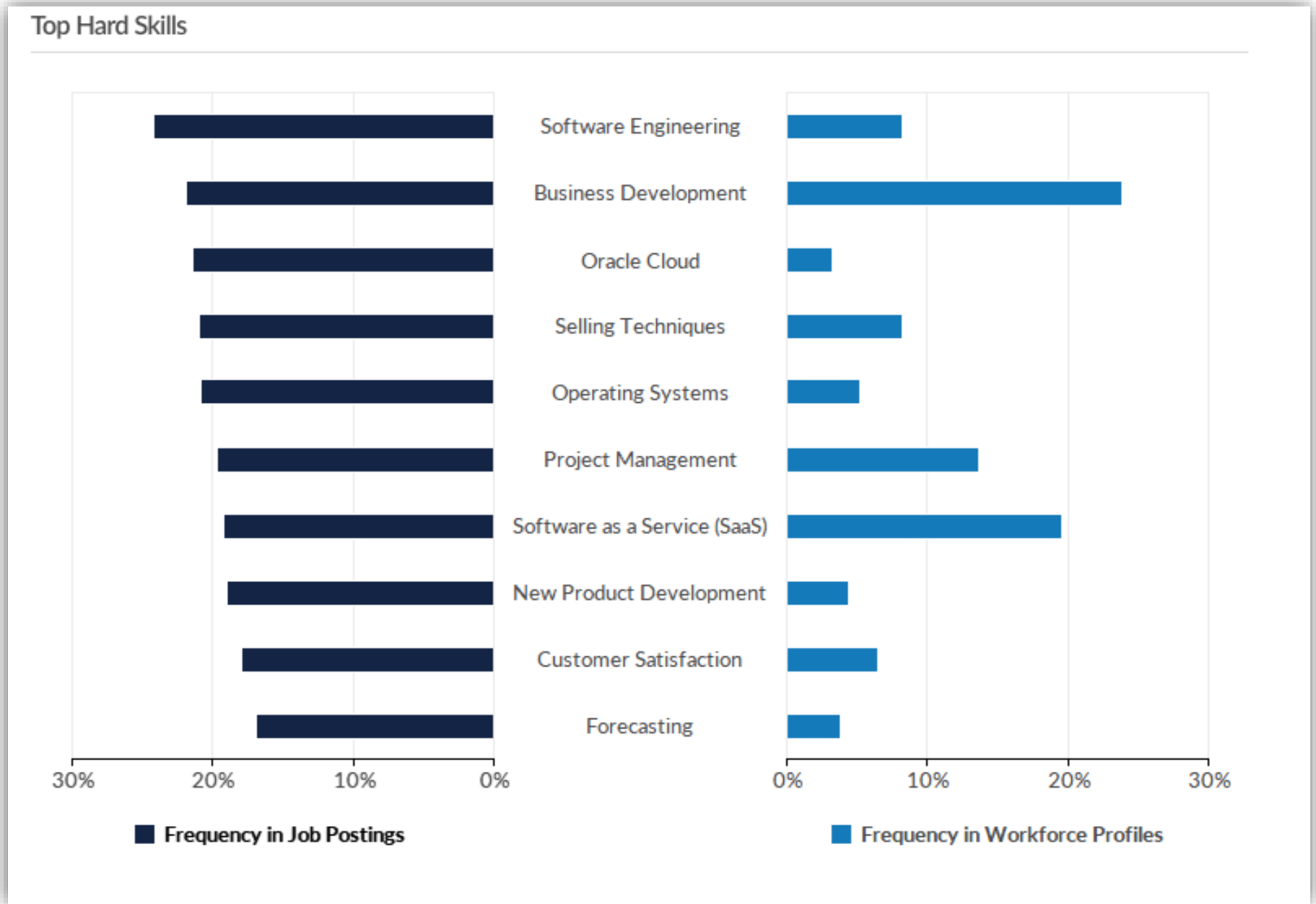
Top Posted Occupations

Occupation (SOC)	Total/Unique (Jun 2019 - Jan 2020)	Posting Intensity	Median Posting Duration
Software Developers, Applications	6,053 / 1,505	4 : 1	27 days
Computer Occupations, All Other	4,105 / 1,033	4 : 1	33 days
Marketing Managers	3,494 / 1,025	3 : 1	21 days
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	10,541 / 964	11 : 1	47 days
Sales Managers	4,159 / 757	5 : 1	43 days
Sales Representatives, Services, All Other	3,311 / 403	8 : 1	43 days
Sales Engineers	2,488 / 349	7 : 1	39 days
Computer and Information Systems Managers	1,326 / 348	4 : 1	45 days
Computer Systems Analysts	1,827 / 344	5 : 1	38 days
Management Analysts	1,267 / 330	4 : 1	45 days

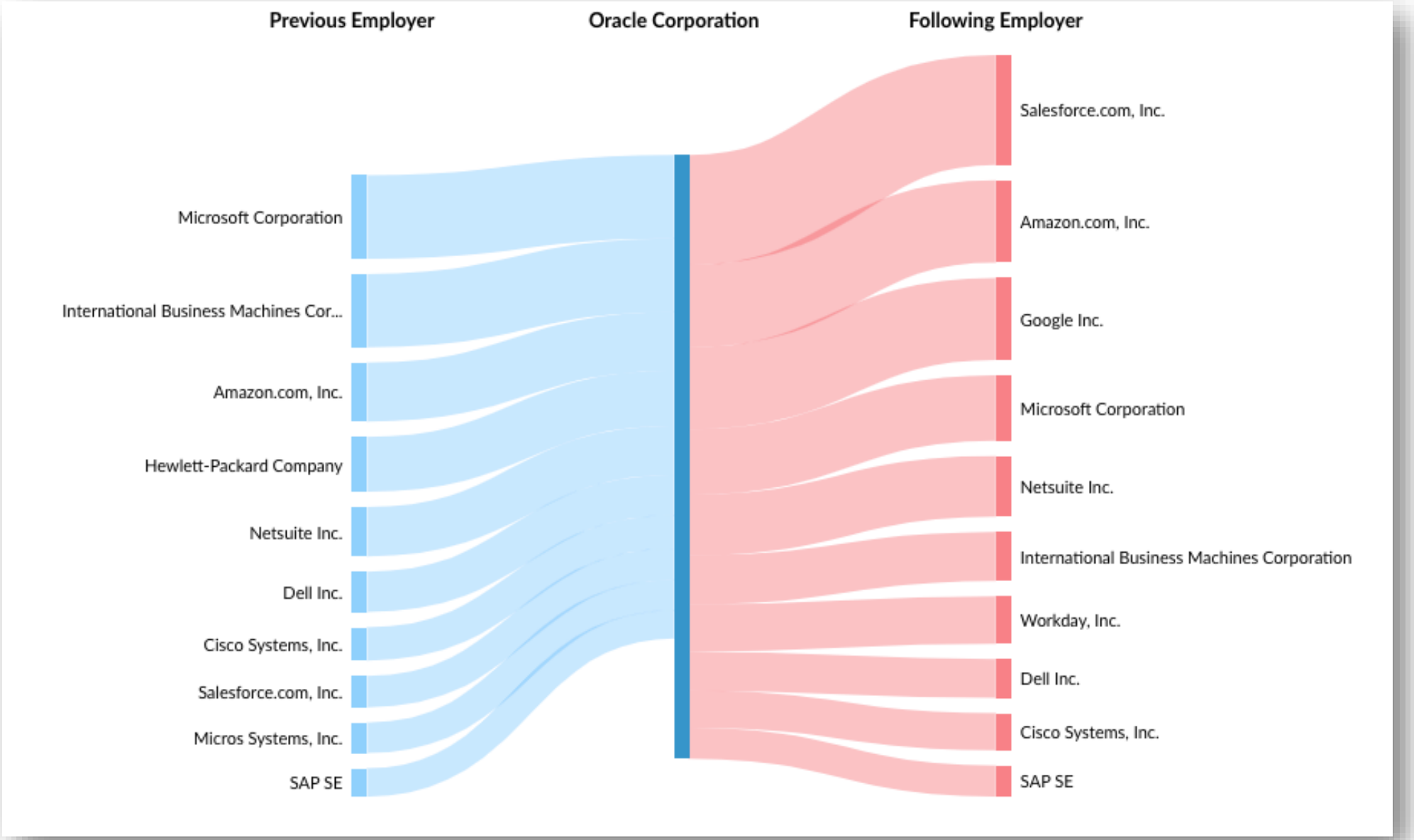
Job Postings data: Skill demand trends at Oracle



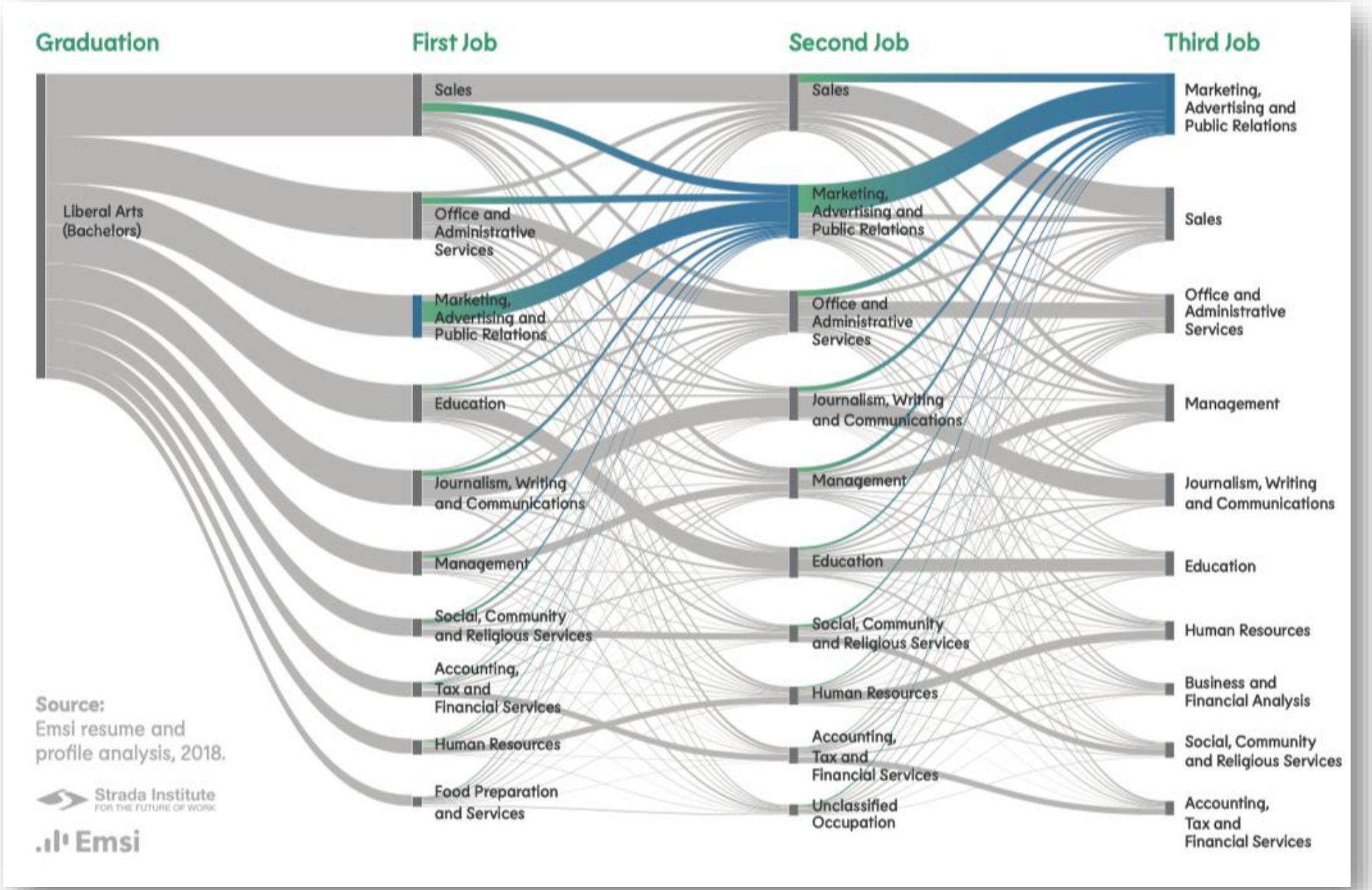
Postings vs Profiles data: Skill demand vs supply



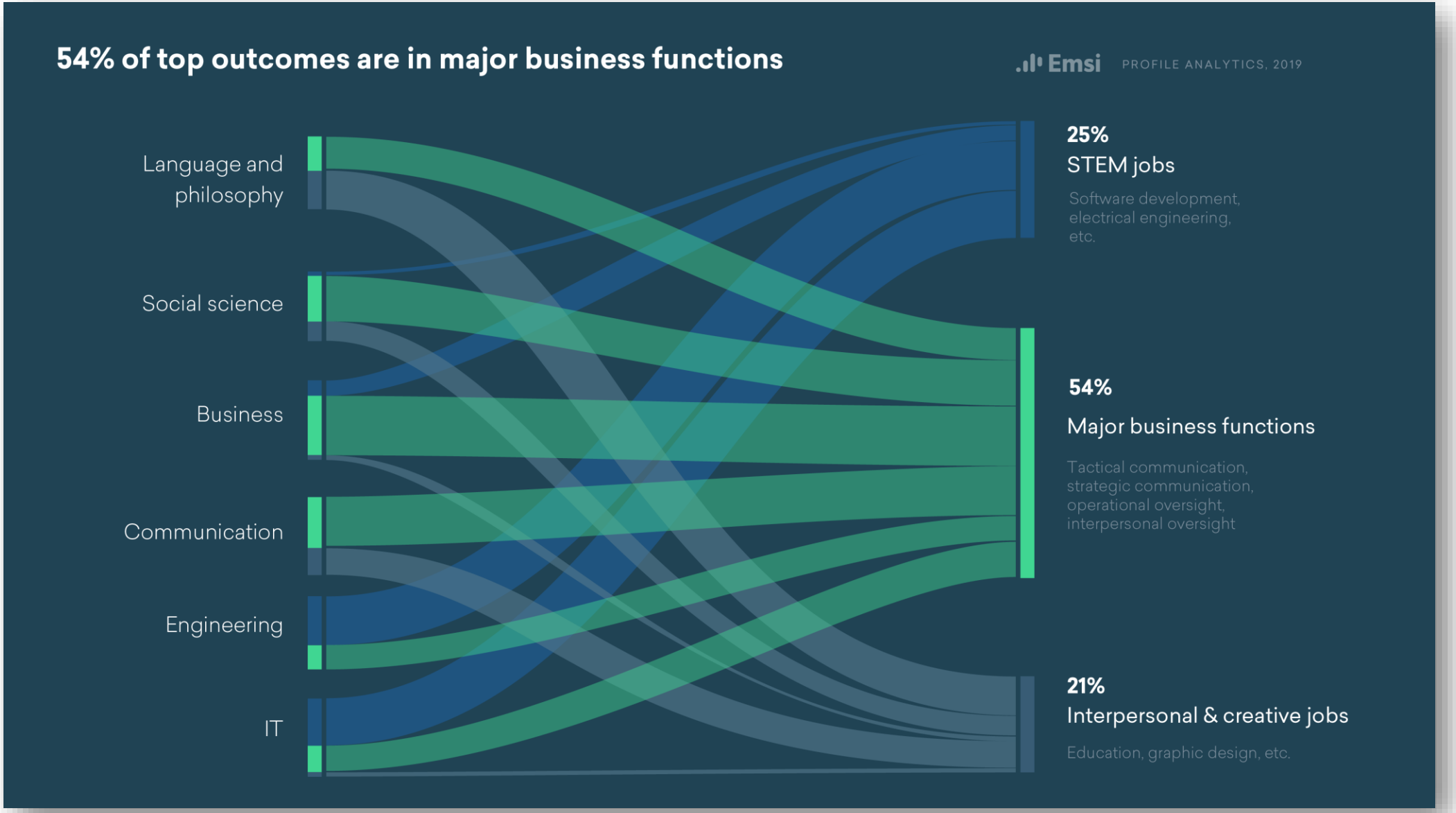
Profiles data: Career Pathways for Companies



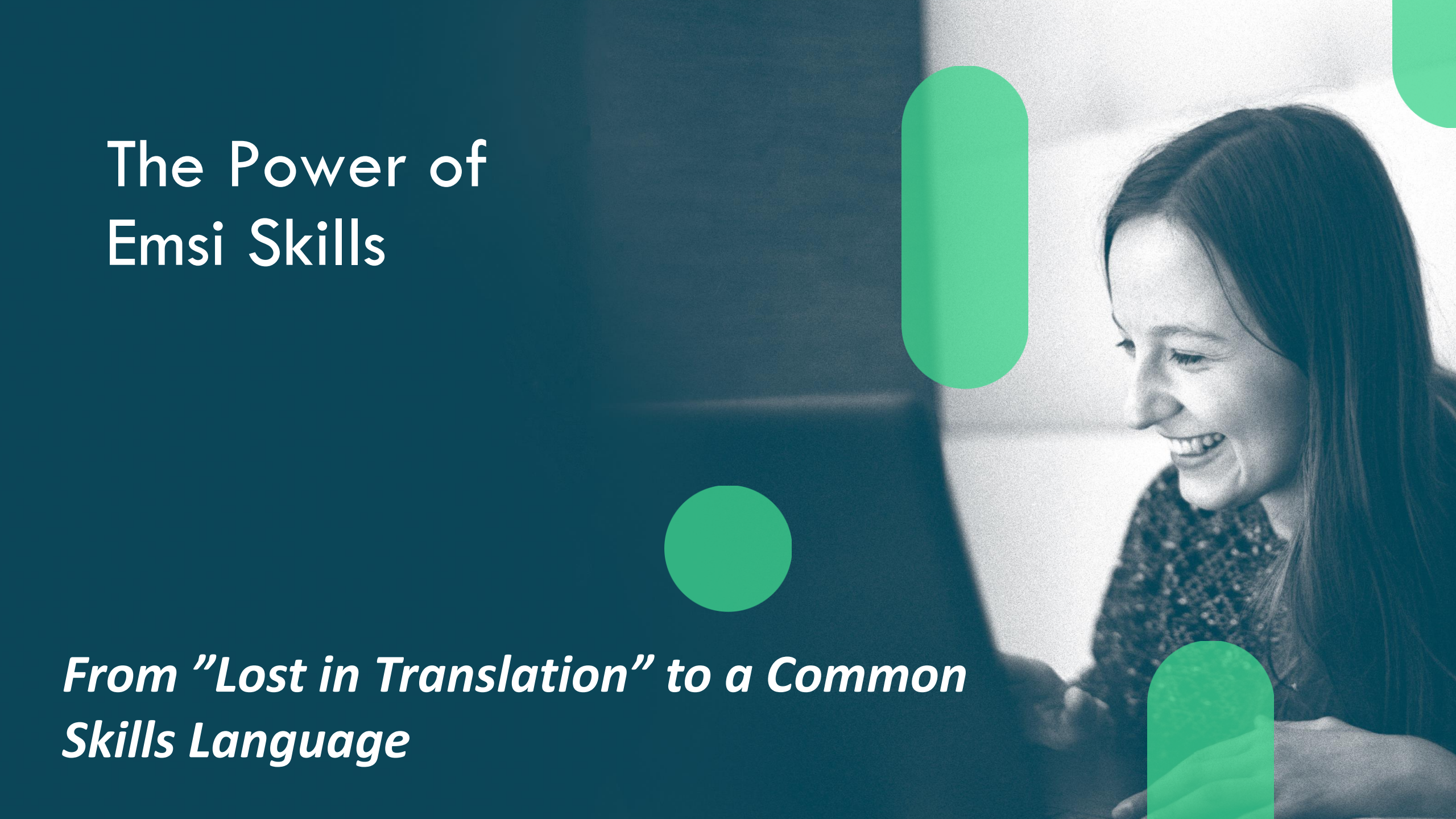
Profiles data: Career Pathways for Programs



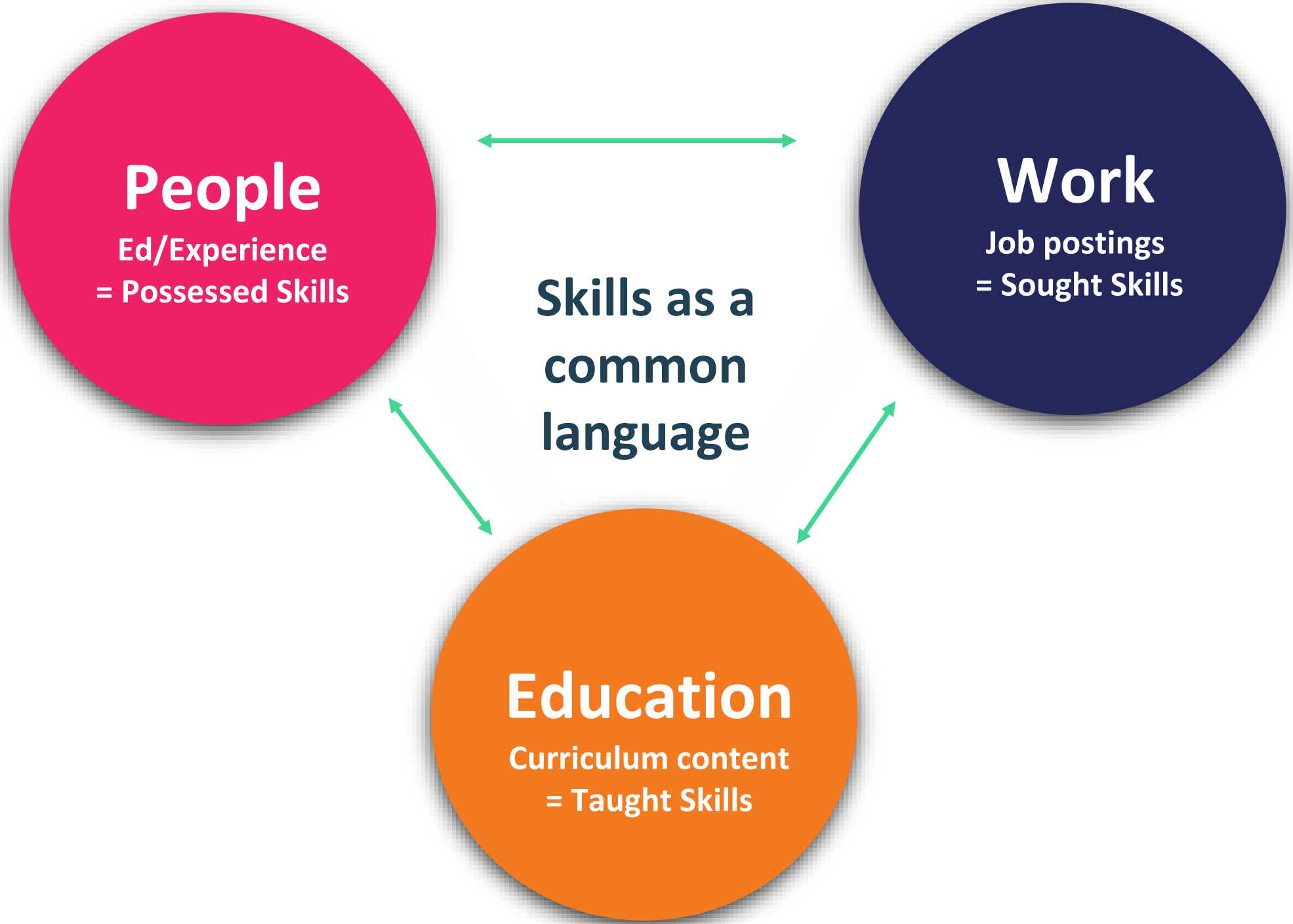
Profiles data: Regional/Institutional Outcomes



The Power of Emsi Skills

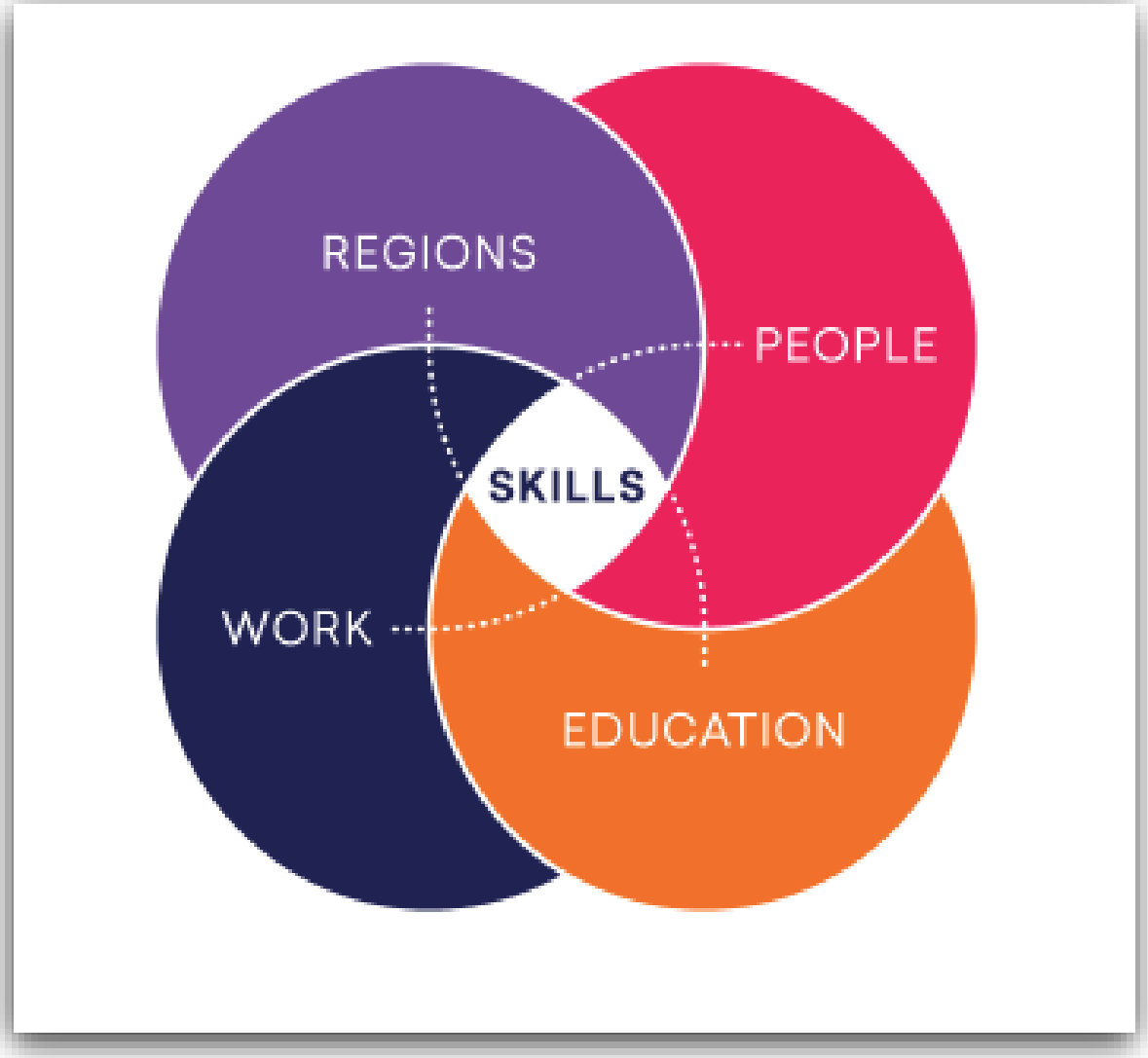


From "Lost in Translation" to a Common Skills Language


People
Ed/Experience
= Possessed Skills
Work
Job postings
= Sought Skills
Skills as a common language
Education
Curriculum content
= Taught Skills

WHY MONEY WAS INVENTED
SORRY, I'VE GOT NOTHING SMALLER

Use Emsi Skills to align regional markets, talent, employers, and educators *at the scale of skills*



Emsi’s Approach to Skills

Emsi Skills - Lexicon that serves as a common language

Helps communicate value in consistent language:

- Companies (in **job postings**),
- People at work (in **resumes/profiles**), and
- Education (in **curriculum**).

Emsi Skills – Operating Principles

- Emsi Skills are freely accessible (available via API)
- “Skills” includes skills, knowledge areas, personal attributes, tools, and techniques
- Basically, any capability that the market might want from an individual
- We do not address “*level of expertise*” in a skill (at this stage)
  - This is a feature, not a bug!
  - Priority is to connect people, education and work using a common language of skills
  - Once we’ve cracked the connection problem we can take on additional levels of sophistication

The relationships between skills are critical

Skill Clustering describes Relationships

Taxonomic Approach

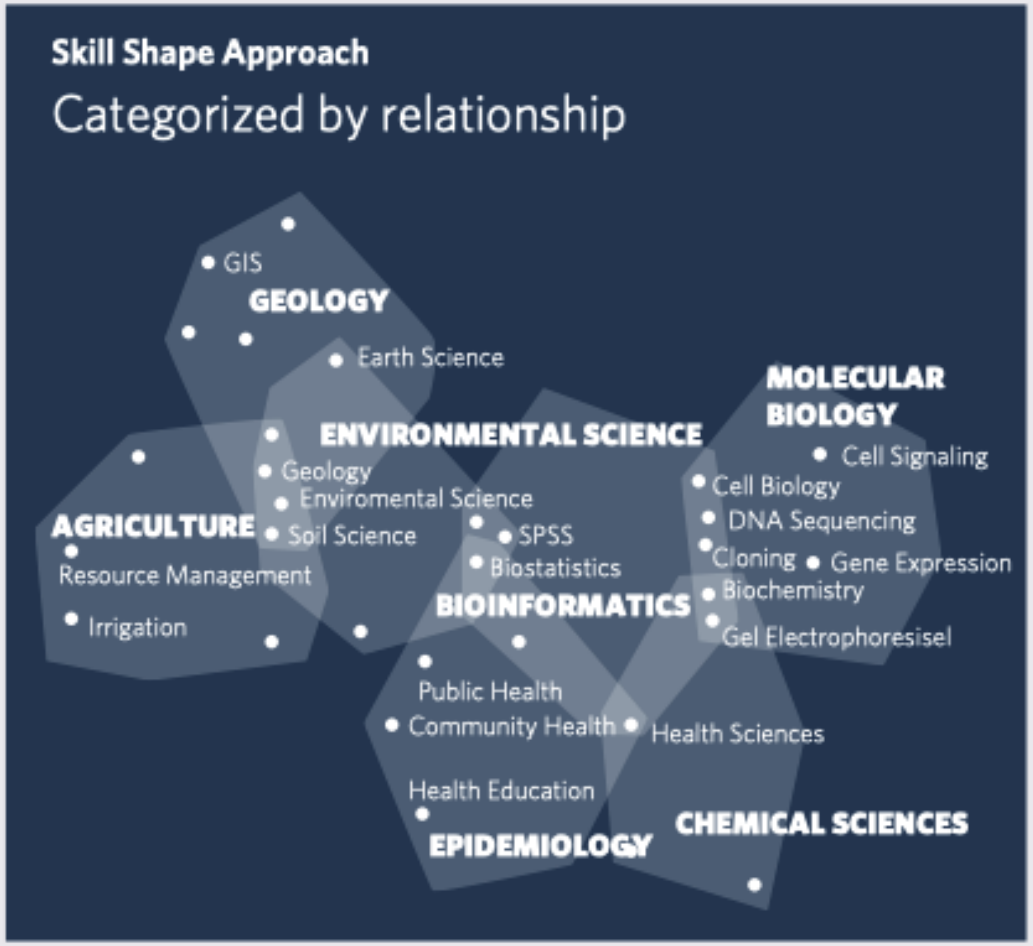
Related by category

19-0000 Life, Physical, and Social Science Occupations

- **19-1000 Life Scientists**
  - **19-1011 Animal Scientists**
    - 19-1012 Food Scientists and Technologists
    - 19-1013 Soil and Plant Scientists
  - **19-1021 Biochemists and Biophysicists**
    - 19-1022 Microbiologists
    - 19-1023 Zoologists and Wildlife Biologists
  - **19-1029 Biological Scientists, All Other**
- **19-2000 Physical Scientists**
  - **19-2011 Astronomers**
    - 19-2012 Physicists
    - 19-2021 Atmospheric and Space Scientists

Skill Shape Approach

Categorized by relationship



Source: U.S. Bureau of Labor Statistics, Emsi Profile Analytics 2019

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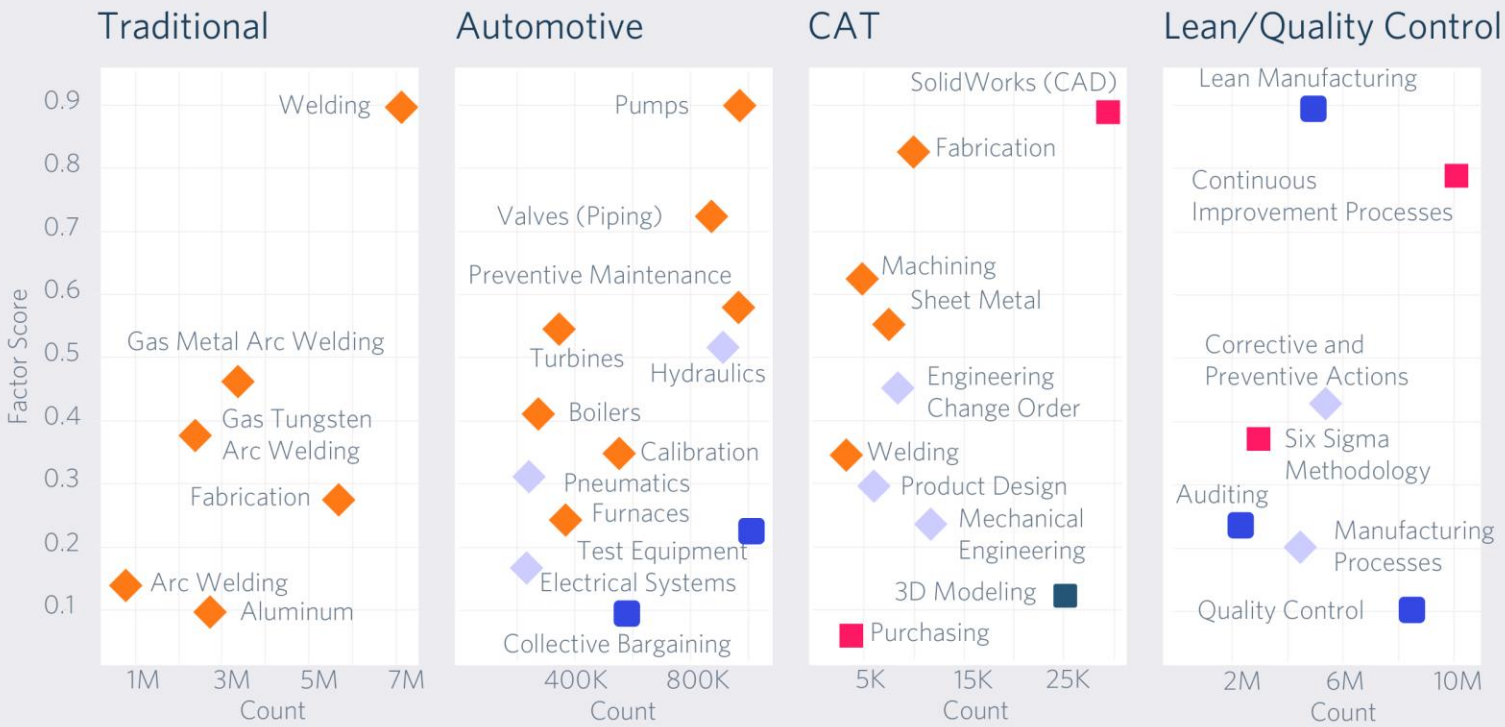
Emsi Skills in Action

Application I

Take your understanding of market demand to the next level

Skills provide new granularity to communicate, decide, and build

Nationally, manufacturing skills cluster into four lanes: traditional, automotive, CAT, and quality control/lean manufacturing.



Production/ Manufacturing | Business | Engineering | IT/Math | Quality/ Compliance

Source: Emsi Job Postings and Profile Analytics, 2019

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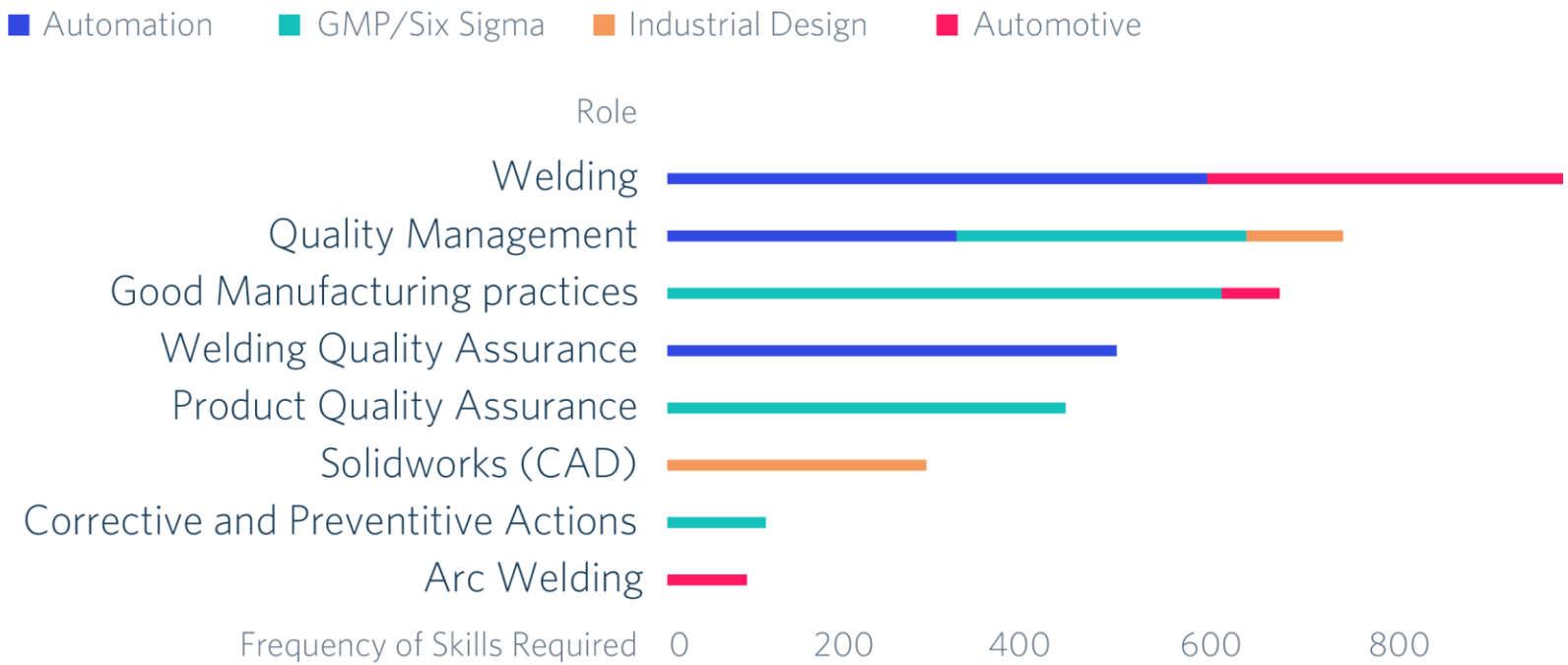
In Southern California, the skill shape of manufacturing roles emphasizes manufacturing process controls, quality assurance and process improvement.

Source: Emsi Job Posting Analytics, 2019

In Northern California, the skill shape of manufacturing roles includes a mix of understanding automation and quality control



Source: Emsi Job Posting Analytics, 2019

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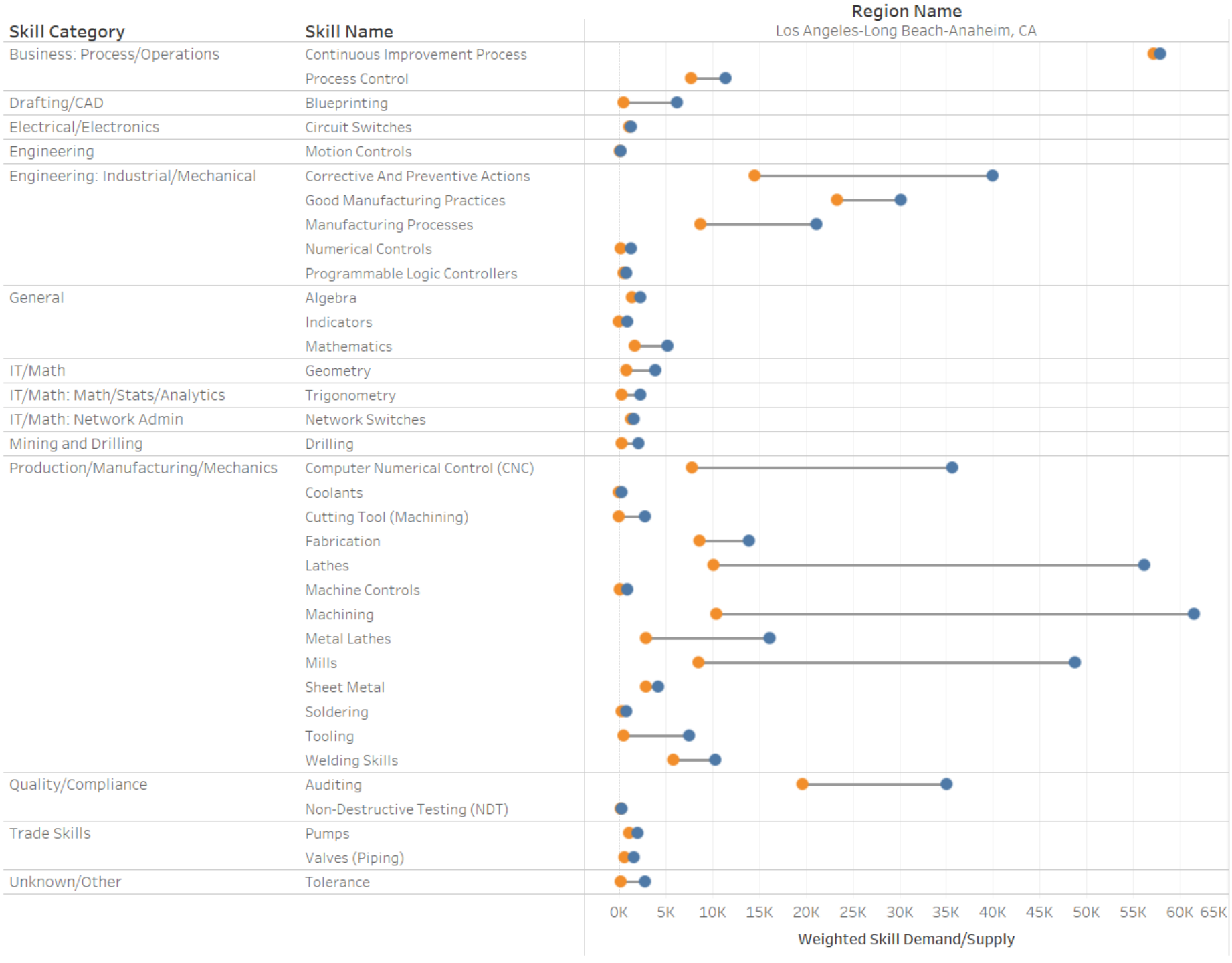
Local Skill Gaps



- Manufacturing & Production in LA MSA
- Skill Demand
- Skill Supply

Application II

Translate your curriculum into the language of labor market skills

Taught vs Sought Skills

Skills Extractor

Engineering Technology Cerritos College
www.cerritos.edu/et

Three Certificates of Achievement are available

- Electrical and Electronic Engineering Technician
- Mechanical Engineering Technician
- Industrial Engineering Technician

AA Degree Is Also Available

ELECTRICAL AND ELECTRONIC ENGINEERING TECHNICIAN
CERTIFICATE OF ACHIEVEMENT

- ET 101 Principles of Engineering Technology (3 Units)
- ET 102 Electronics for Engineering Technologists (3 Units)
- ENGT 103 Introduction to Engineering Design Using Inventor (3 Units)
- ENGT 131 Design Fundamentals Including Solid Modeling (3 Units)
- ENGT 299 Directed Studies (2 Units)

- or NPD 105 Mechatronics Integration In New Product Development (3 Units)

All Skills

- Aerospace Engineering
- Arc Welding
- Computer Numerical Control (CNC)
- Electronic Engineering
- Electronics
- Engineering Design Process
- Hydraulics
- Industrial Engineering
- Integration
- Mechanical Engineering
- Mechatronics
- Motor Control
- New Product Development
- Plastic Materials
- Pneumatics
- Process Control
- Programmable Logic Controllers
- Robotics
- Solid Modeling
- Welding
- Woodworking

HARD SKILL

Aerospace Engineering

Learn about this skill

Tagging Confidence

100%

You wrote: **Aerospace Design**

Show Context

Related Skills

Mechanical Engineering
Electrical Engineering
Systems Engineering
MATLAB
Computer Engineering

50 Free Skills Tags for Curriculum

Understand your Program's "Taught Skills"

Select a Program: Program Title: Data Intelligence | Award Level: Micro-credential | Search for Skills: (All)

KEYS & SETTINGS

KEY: Types of Skill Category

- Art
- Business
- Education
- Human Skills
- IT/Math
- Marketing/Communications
- Other
- Public Admin/Services
- Quality/Compliance
- Sciences

KEY: Emsi Skill Classification

- Hard Skill
- Soft Skill

SETTING: Manage Duplicates

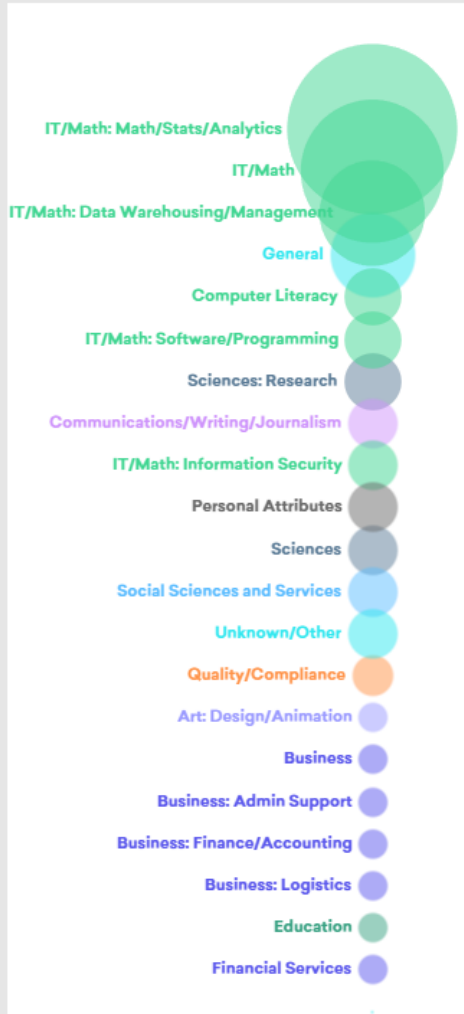
Count All

Compare Taught Skills across Program Courses

Skill Category	Standardized Skill Name	Programming for Data Analysis (Python, R, and Java)	Database Concepts Using Microsoft Access	Survey of Mathematics	Statistics	Statistical Data Analysis	Data in Our World - Introduction to Data Literacy
IT/Math: Math/Stats/Analytics	Statistics	■		■	■	■	■
	Data Visualization				■	■	■
	Graphing			■	■	■	
	Histogram			■	■	■	
	Probability			■	■		■
	Scatter Plots	■			■	■	
	Standard Deviation	■			■	■	
	Linear Regression				■	■	
	Normal Distribution				■	■	
	R (Programming Language)	■				■	
	Regression Analysis				■	■	
	Sampling (Statistics)				■	■	
	Simple Linear Regression				■	■	
	Statistical Hypothesis Testing					■	■
	Confidence Intervals				■		
	Data Classification					■	
	Data Cleansing						■
	Data Science					■	
	Descriptive Statistics					■	
	Estimation Theories				■		
	Factorials			■			
	Linear Equations			■			
	Linear Model					■	
	Logistic Regression	■					
	Machine Learning	■					
	Machine Learning Algorithms	■					
	Natural Language Processing	■					
	NumPy	■					
	Permutation			■			

Program Courses

Taught Skills by Skill Category

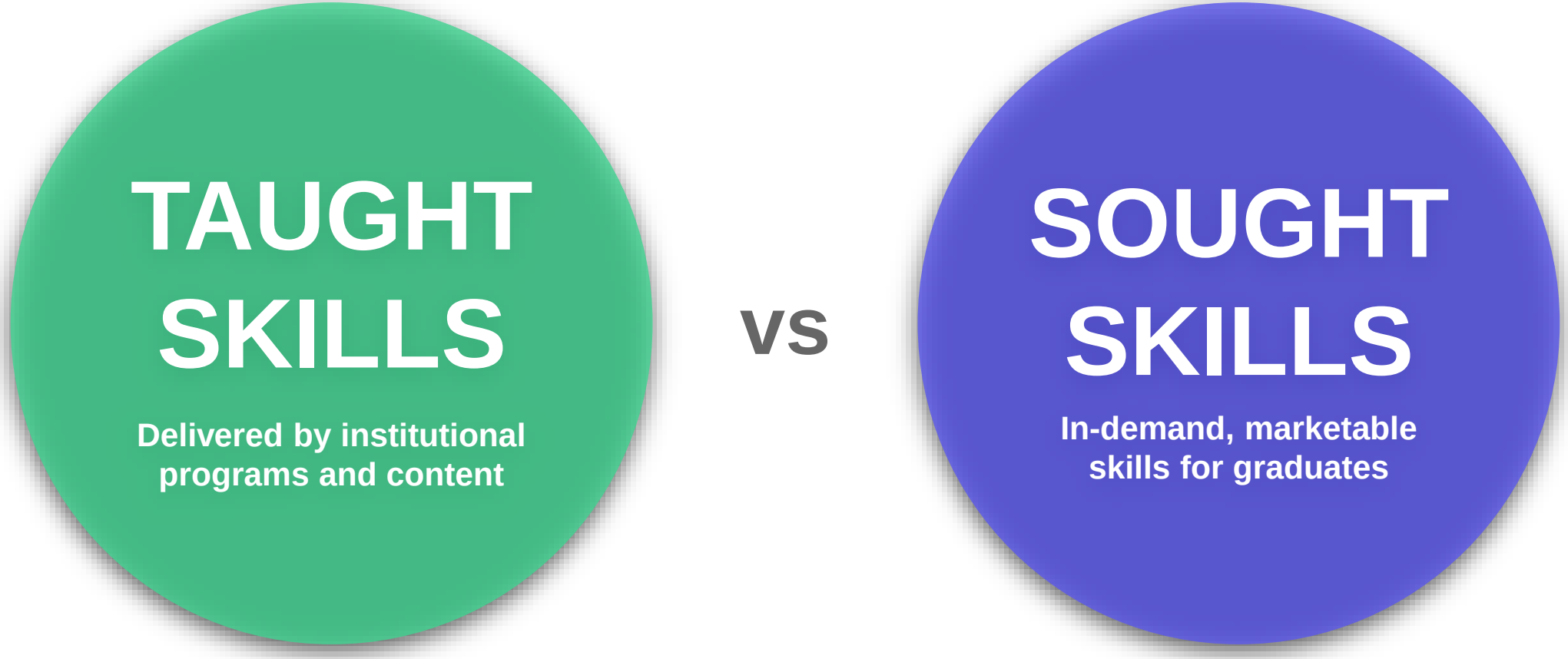


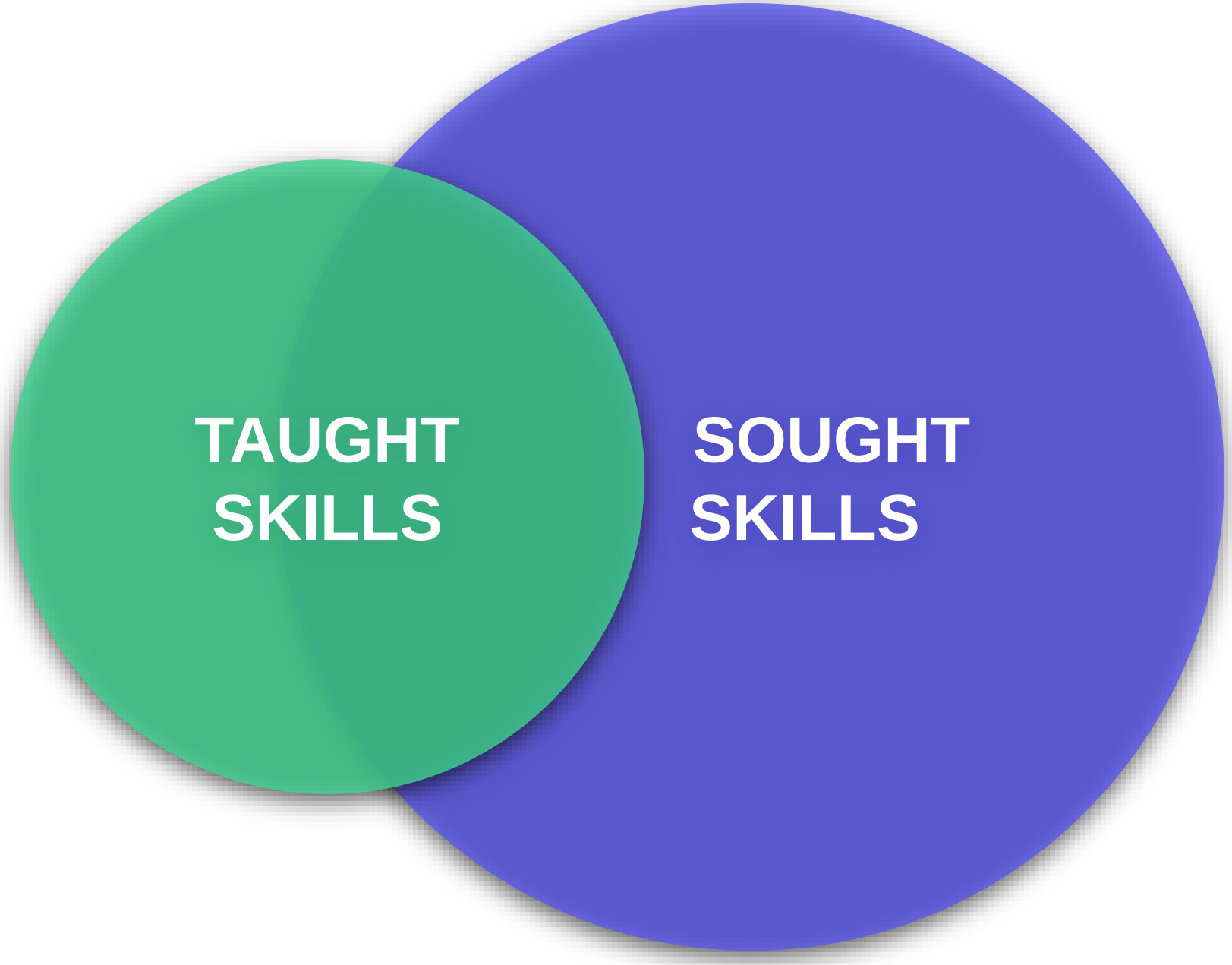
Application III

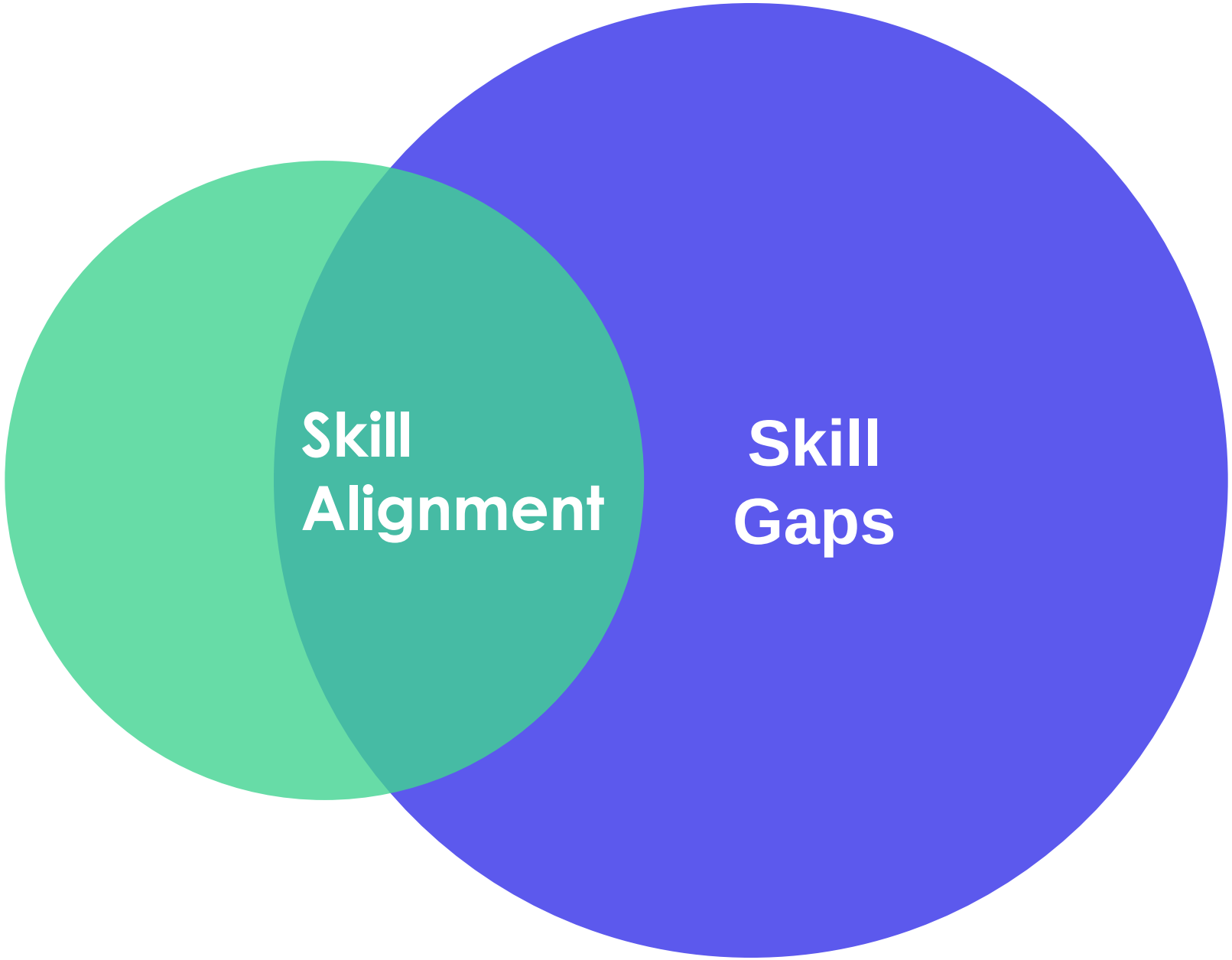
Compare your “taught skills” to the market’s most “sought skills”

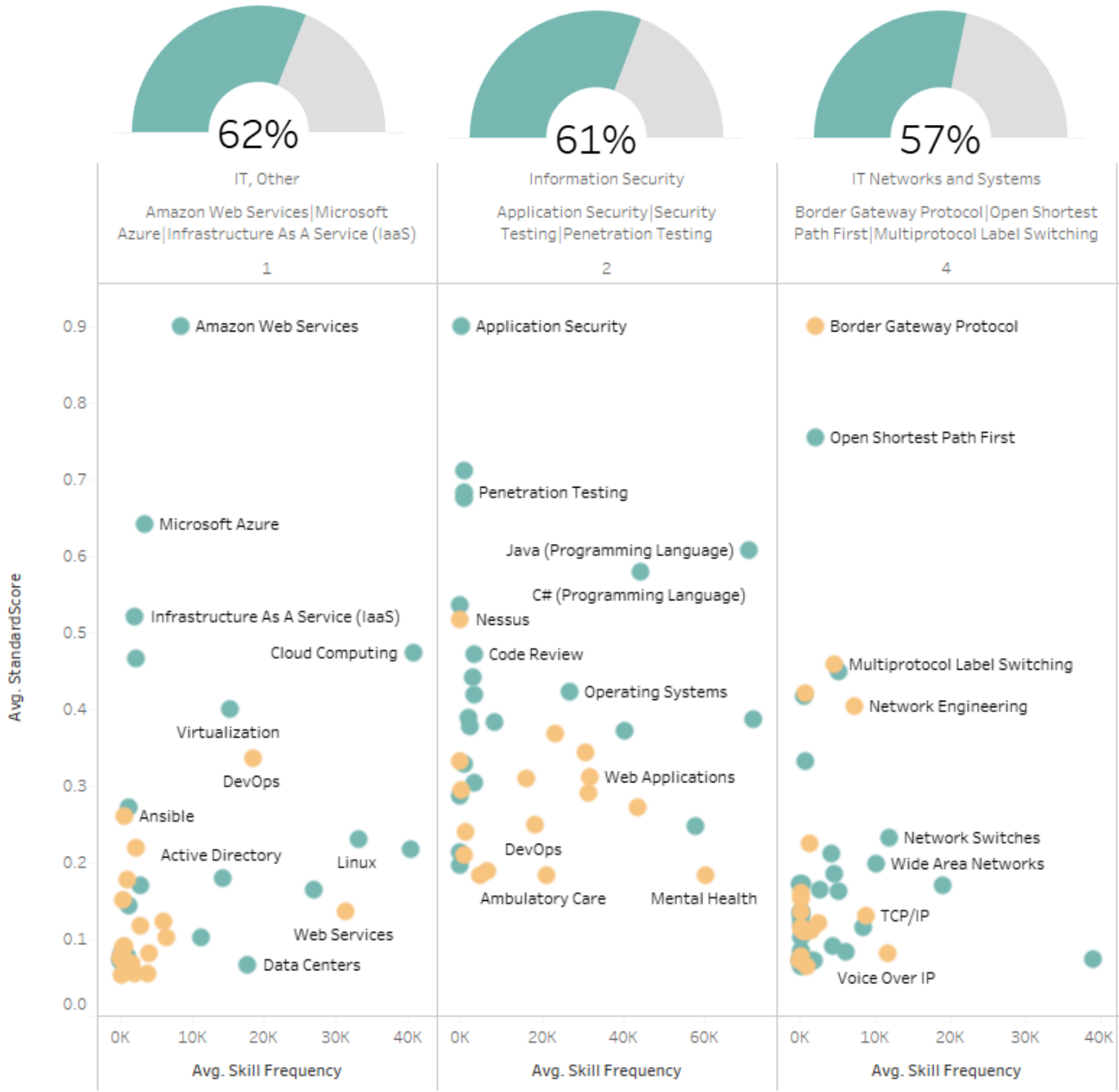
Taught vs Sought Skills

Align education to labor market via *SKILLS*

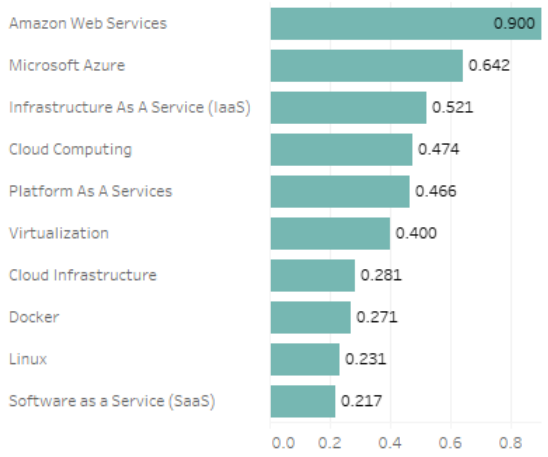



TAUGHT
SKILLS
SOUGHT
SKILLS

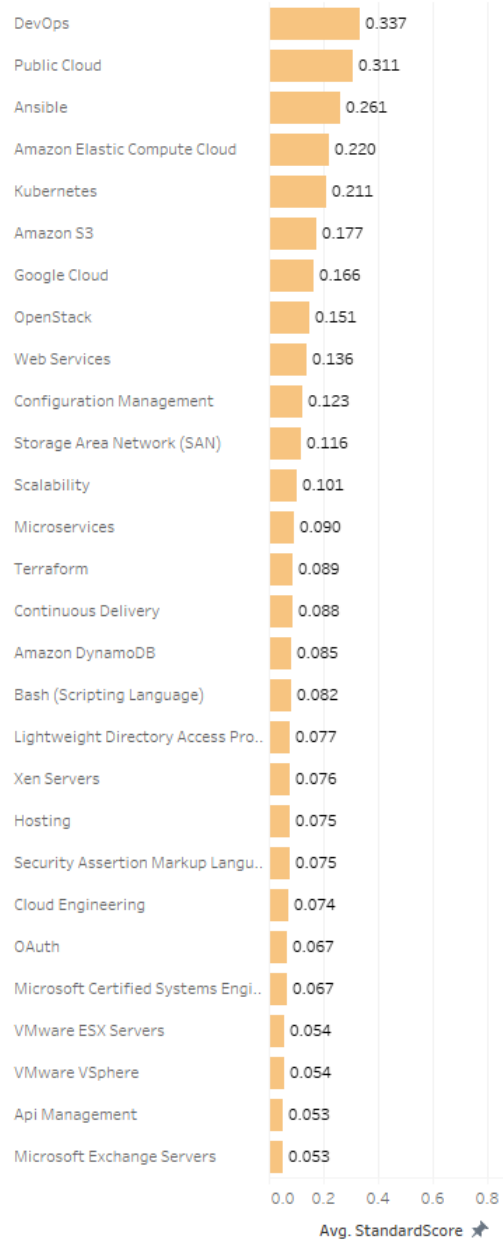

Skill
Alignment
Skill
Gaps



Top Skills Taught



Top Skills Missing



Surface **top taught skills** & **top sought skills**

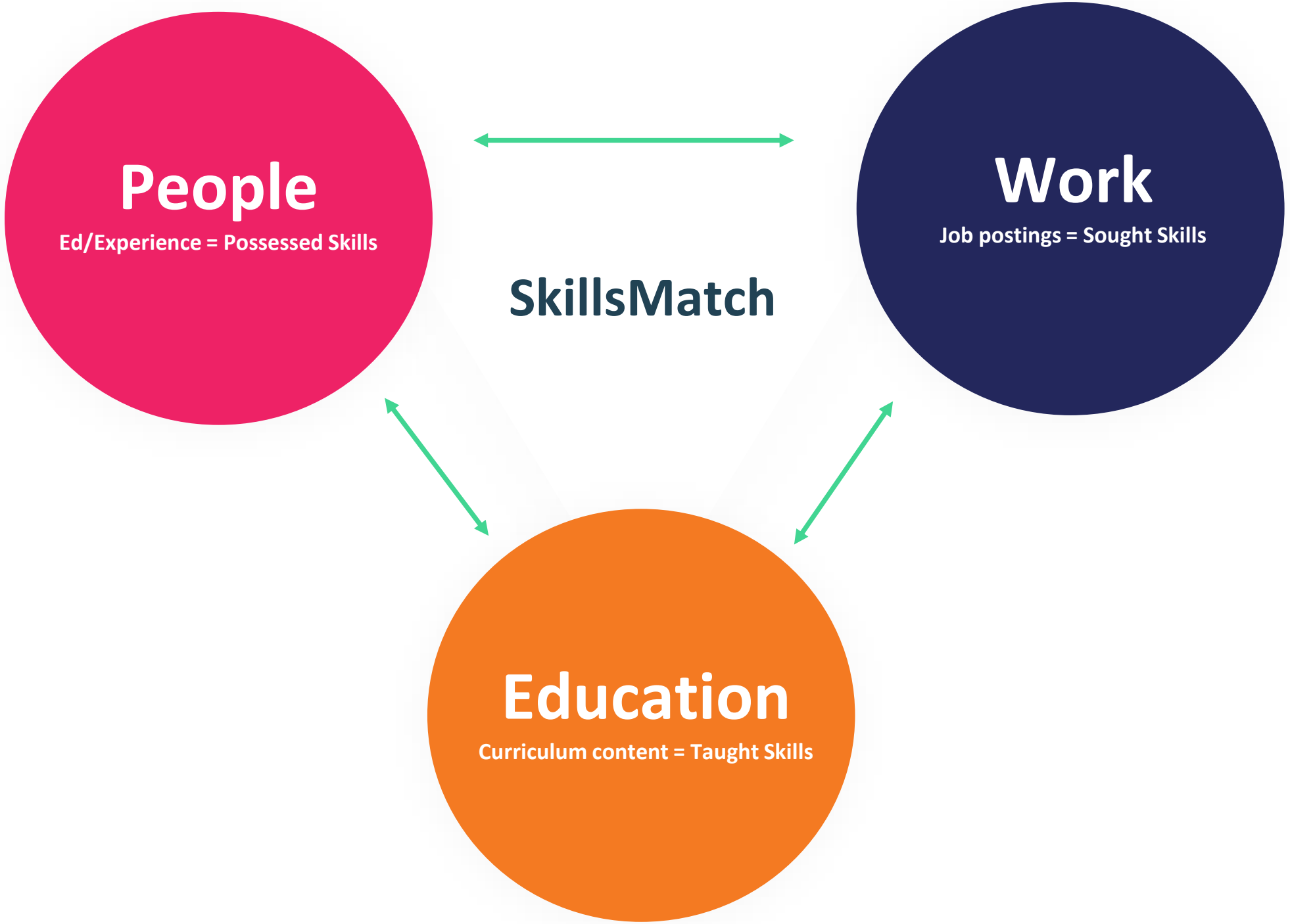
See **taught skills** overlaid on **sought skills**

Application 4

SkillsMatch: Integrated skill insights for individuals

Help individuals (traditional/adult learners, or even employees)

- Identify the skills in their past education & experience
- Understand what careers these support
- See what skills they still need
- Find relevant course/program offerings or job postings


People
Ed/Experience = Possessed Skills
Work
Job postings = Sought Skills
SkillsMatch
Education
Curriculum content = Taught Skills

Emsi SKILLS MATCH

- Intro
- Your Goal
- Your Education
- Your Skills
- Your Matches

Welcome to Skills Match!

Here's how it works...

Careers are groups of skills.

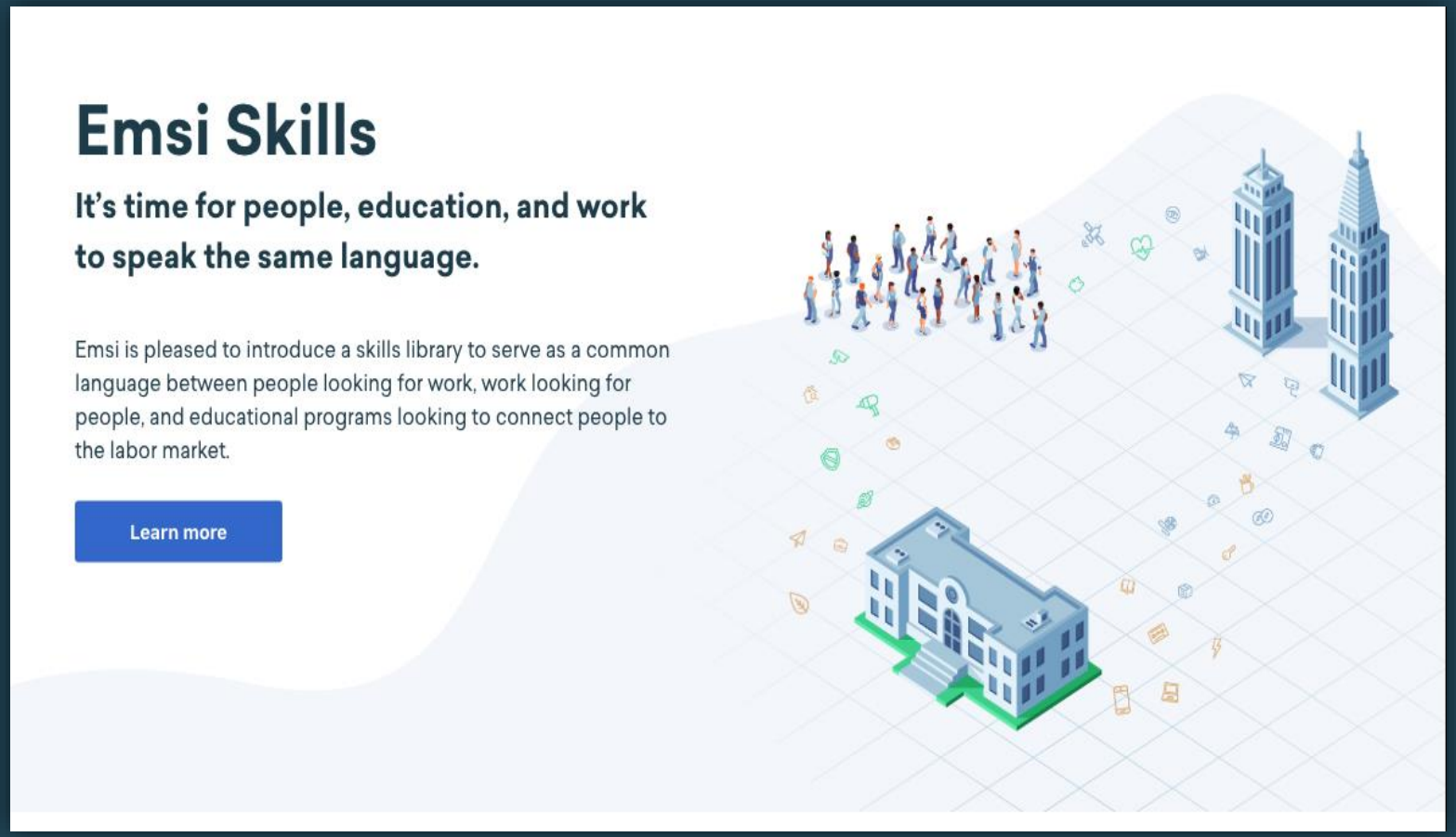
Tell us about skills you've acquired...

...and we'll match you to opportunities.

Let's dive in →

Privacy Policy | Disclaimer | © Copyright 2019. All Rights Reserved.

Skills Match is powered by Emsi data.



Skills.EmsiData.com