



ATECENTERS

How To Mine Job Listings To Parse Employer's Need

August 17, 2017

Webinar will begin at 3pm ET



Webinar Details

- For this webinar you will be in listen only mode using your computer or phone
- Please ask questions via the question window
- This webinar is being recorded – you will be sent a recording link

Brought To You By:

CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

With Additional Support by the ATE Collaborative Impact Project

ATECENTERS

Disclaimer: This material is based upon work supported by the National Science Foundation under Grants # 1205077 and # 1261893. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

The CCTA is led by



NETWORKS

- **National Center for Convergence Technology (CTC)** at Collin College in Frisco, TX (lead)
- **South Carolina ATE National Resource Center (SCATE)** at Florence Darlington Technical College in Florence, SC
- **Florida ATE Center (FLATE)** at Hillsborough Community College in Tampa, FL
- **Bio-Link Next Generation National ATE Center for Biotechnology and Life Sciences (Bio-Link)** at City College of San Francisco in San Francisco, CA
- **Networks Resource Center** at the Maricopa Community College District in Phoenix, AZ

CCTA Purpose

- Technical assistance services to DOL TAACCCT and NSF grantees and workforce-oriented programs of all kinds
- Deliverables
 - Topical webinars on existing and new solutions
 - Live/recorded with attendee Q&A
 - Identify and document best practices
 - Host convenings

Poll #1: Your Affiliation

- A. I am involved with an NSF grant
- B. I am involved with a TAACCCT grant
- C. Both
- D. Neither

Poll: How many people are listening with you?

- A. None
- B. 1
- C. 2
- D. 3 or more

Meet the Presenter

- I have had the privilege to be a PI and Reviewer NSF, ED, and NIH grants since 1989
- I have a Workforce Development background from my time at a large Community College District
- I am focused today on evaluation and assessment



Michael Lesiecki
Principal
Luka Partners

How To Mine Job Listings To Parse Employer's Need

The story of my attempts to understand

Acknowledgements:

- John Catapano, Maricopa Community Colleges
- John Carrese, California Centers of Excellence
- Dan Restuccia, Burning Glass Technologies
- Mark Lashinske, Modern Industries
- Leah Palmer, Mesa Community College

Points of View

- Pls, grant developers, workforce development personnel, faculty



NIH Image Gallery, NCI

Today

- Paint the picture of the need and rationale
- How does curriculum keep pace now?
- Methodology: Looking to the Demand side
- What is knowable?
- What are the limitations?
- How this can fundamentally change your relationship with industry?
- Rationale?

Jobs Support Our Gainful Employment Data



U.S. Department of Education

Student Loans

Grants

Laws

Gainful Employment

NOVEMBER 17, 2016

Education Department Releases New Graduate Earnings Data for Career College Programs


Editor's Note 11/23/16: The specific highlight comparing the median earnings of for-profit certificate program graduates to the yearly income of a full-time worker earning the federal minimum wage was updated to more directly reflect the shares of graduates in the for-profit and public sectors.

Gainful Employment

Mesa Community College
Undergraduate certificate in CNC
Machining I
Program Length: 48 weeks

[Print](#)

Students graduating on time

N/A* of Title IV students complete the program within 48 weeks 

*Fewer than 10 students enrolled in this program. This number has been withheld to preserve the confidentiality of the students.

Program Costs*

\$3,268 for in-state tuition and fees

\$12,426 for out-of-state tuition and fees

\$1,014 for books and supplies

\$7,632 for off-campus room and board

Other Costs

Visit website for more program cost information



Connecting Industry With Our Talent Pipeline

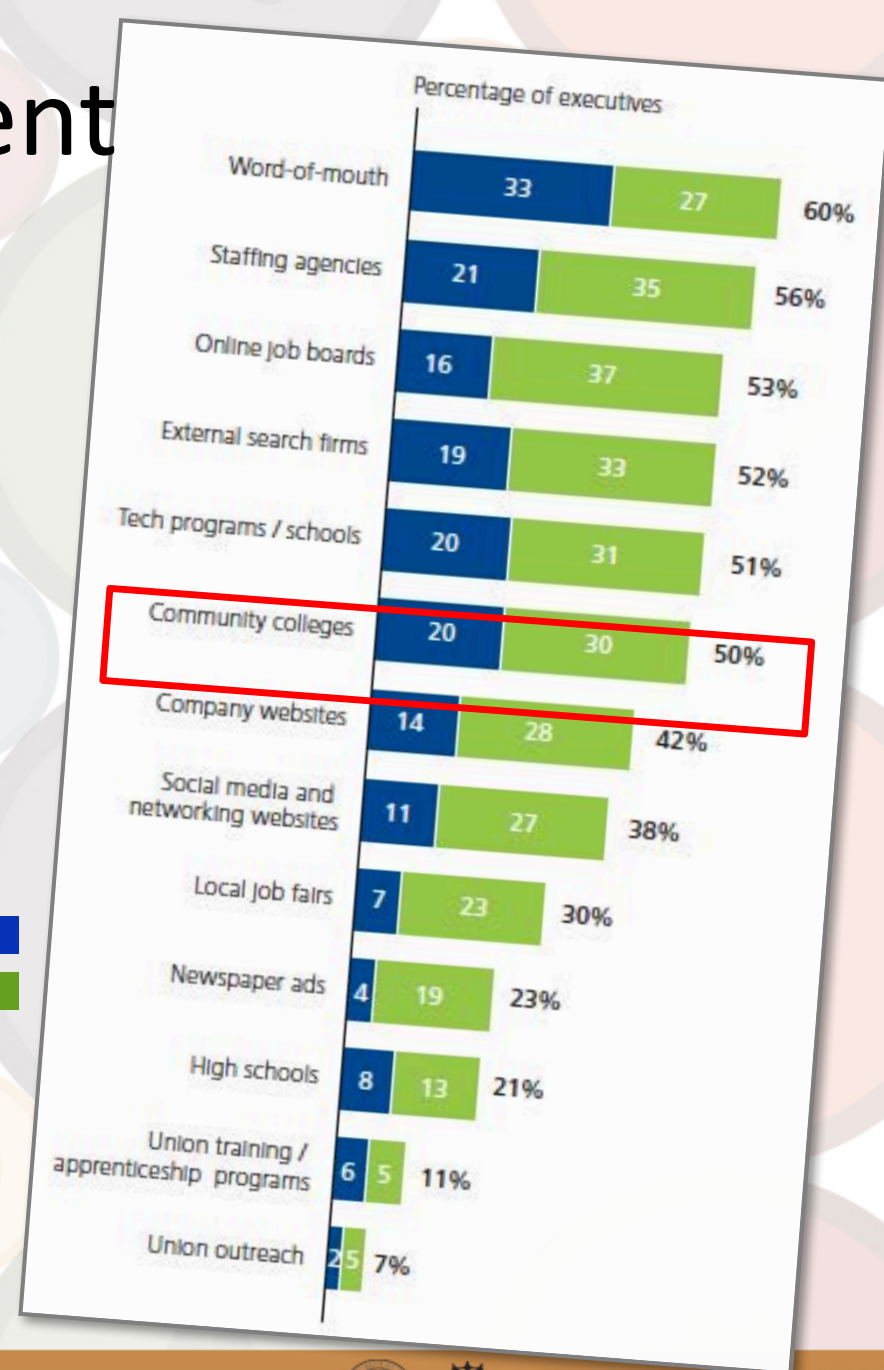
We often struggle with this

Employer Recruitment Efforts

Figure 12:

Identify which of the following are your company's top sources of employee recruitment for skilled production workers, including the effectiveness of each.

Extremely Effective or Very Effective 
Moderately Effective 



Source: The Manufacturing Institute

Employer Preferred Strategies

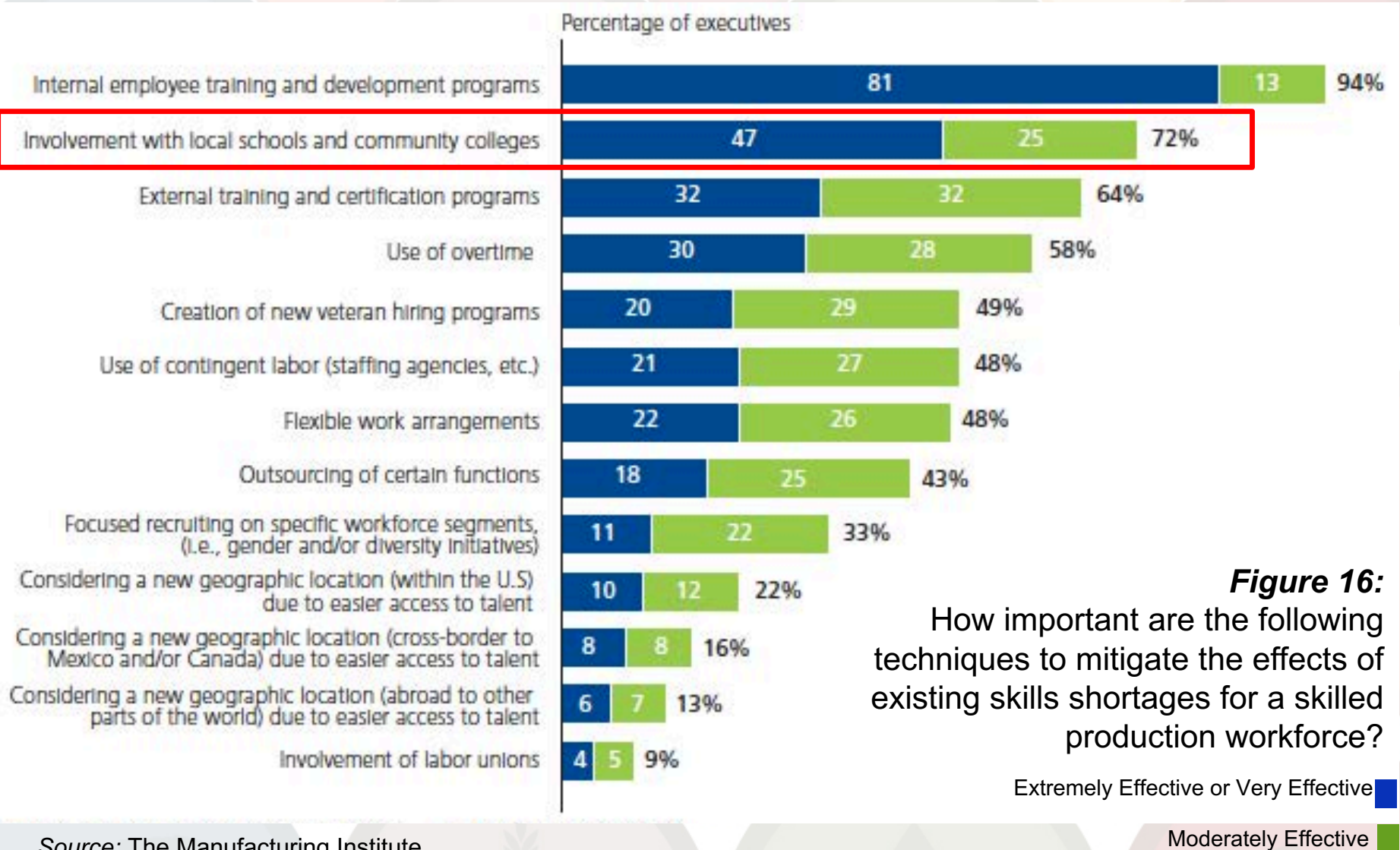


Figure 16:
How important are the following techniques to mitigate the effects of existing skills shortages for a skilled production workforce?

Source: The Manufacturing Institute

It Sometimes Seems

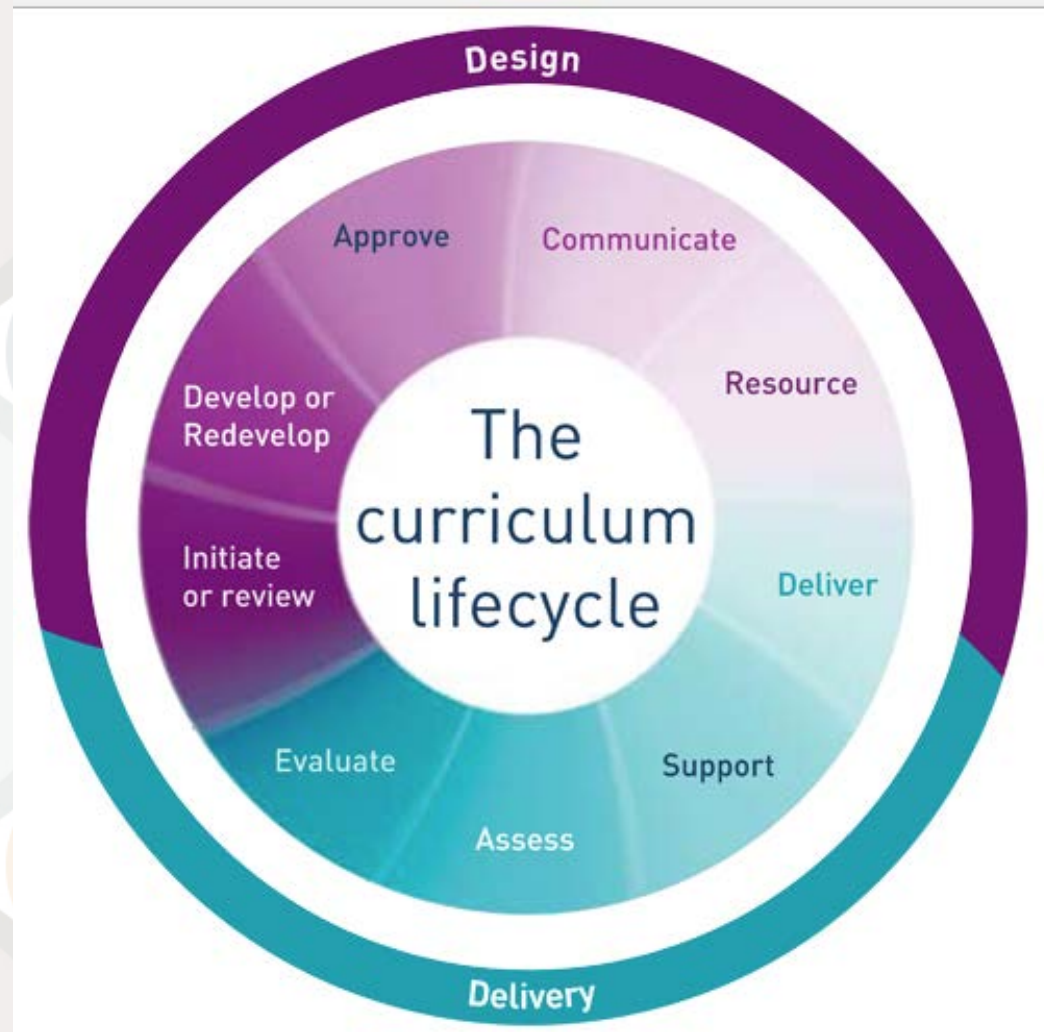
- Fields change overnight
- Desired skills change every week

How can we keep up?

Historically

We rely on our
curriculum process

And our industry
connections



A Rhetorical Question

How many of us swear our programs are tightly aligned to industry's needs?



Second Rhetorical Question

How many of us have written proposal *need* and *rationale* sections, claiming we need to more closely align our programs to industry's needs?

Third Rhetorical Question

- When our industry advisory board meets, do we sometimes struggle when it comes to talking about needed skills?



Question that came into the window

Looking At The Demand Side

- Data from Burning Glass Technologies (and others) used to look at job postings
- Analysis of:
 - Top employers
 - Top skills and certifications
 - Educational requirements
 - Job titles

We Are Not Talking About Workforce Demand

- Clearly the number of jobs is important, but not today



Seattle Times

How It Works

- You use a data miner like Burning Glass Technologies
- There are others



What is Burning Glass?

An Interactive, report-generating application that gives users real-time access to a comprehensive database of demand (jobs) data

Intelligence on the nature and context of the employer demand

Next: Find Your Analyst

They are usually located within Institutional Research Research or Workforce Development



I Sat Down With John

I Sat Down With John

I said: I want intelligence on the nature and context of the employer demand

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I said: I want intelligence on the nature and context of the employer demand

He said: *let's get started*

What Industry?

- He meant what NAICS number

North American Industry Classification System (NAICS), a federal standard to classify industries

What Occupations?

- He wanted to know what was the SOC code

Standard Occupational Classification (SOC)
system

- A federal system that classifies workers into occupational categories

O*NET

I said: *maybe we should use O*NET, the occupational information code system*

<https://www.onetonline.org/find/>

O*NET: Occupational Information Network



O*NET OnLine

[Help](#)[Find Occupations](#)[Advanced Search](#)[Crosswalks](#)

Details Report for: 51-9141.00 - Semiconductor Processors

Perform any or all of the following functions in the manufacture of electronic semiconductor segments; load individual segment into crystal growing chamber and monitor controls; loc

He said: *let's just log in*

Burning Glass Labor Insight, <http://burning-glass.com/labor-insight/>

They say: we mine and code detailed data from each posting describing the specific skills, education, experience, and work activities required for the job – going well beyond the occupation and industry codes offered in other sources.

Create a Report

Create Reports *Select only the details that apply to your question. (24,771,473 job postings)*

Reset

Apply

Last 12 months AND Nationwide

Report Output

Focus on

Skills

Format as

☒ Bar chart

☐ Table

Or view

☐ List of job postings only

Time & Place

Where are these job postings located, and when were they posted?

Time Period

Last 12 months

Show results for

Last 12 months

Show results from

Job Titles & Occupations

What job titles or occupations are advertised in these postings?

+ O*NET Occupation

any

+ Burning Glass Occupations

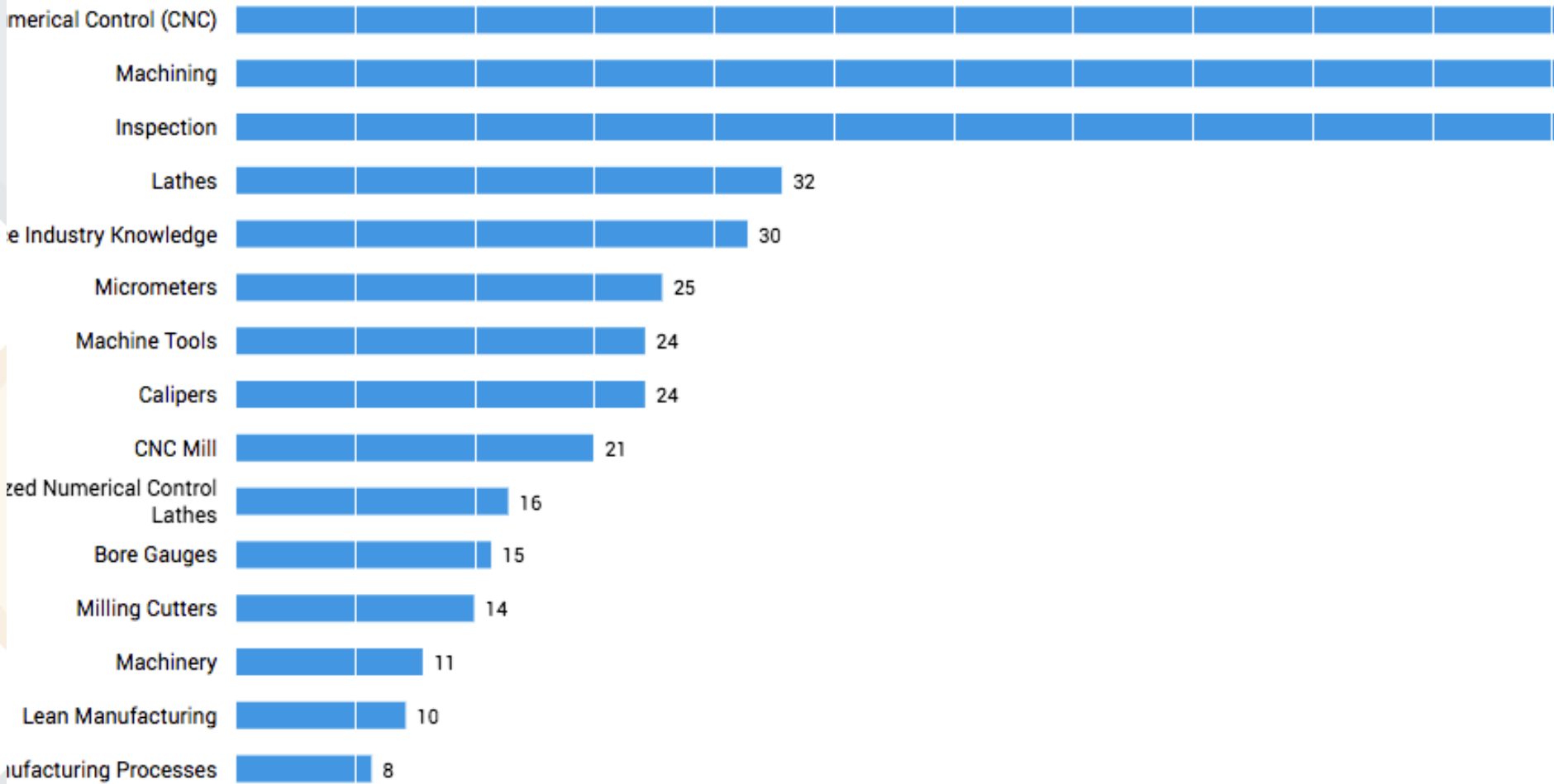
any

+ Job Title

any

We then ran the Skills report

For Manufacturing



Questions?



Poll #3

I have used data mining approaches like this

A. Yes, to determine number of jobs forecast

B. No, not yet

Poll #4

I have used data mining approaches like this:

A. Yes, to determine skill need

B. No, not yet

Back To The Story

I wasn't really sure what this
was telling me yet



I got on the phone



Dan Restuccia | Chief Analytics Officer Burning Glass Technologies



Dan said, we try to predict and understand the future from looking at the recent past

- If we can make skill projections by looking at individual skills and skill growth we can gain insight*
- Insight into how the job market is evolving*

We Care About

Educators care about what are the most common skills

Educators build their programs around those skills

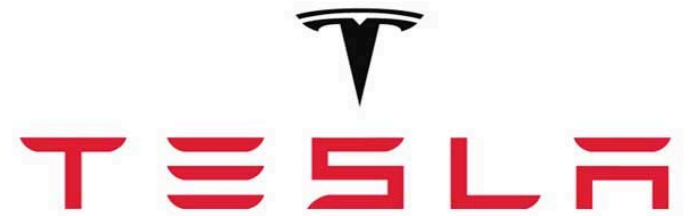
They Care About

Industry cares about what are the most distinctive skills that help them push what they are trying to do

- Certain firms (or hubs), who are the leaders, are identifying the skills that will probably flow down

Consider

Job descriptions at Tesla
look like a tech firm



Job descriptions at Ford
look like a more
conventional manufacturer



That Gave Me An Idea



Lucid Motors, a California startup, will build a \$700 million plant in Casa Grande to manufacture luxury electric vehicles.

TESLA MODEL S MODEL X MODEL 3 ENERGY

Careers

It Manufacturing Support Technician

Department	IT
Location	Fremont, California
Req. ID	54074
Job Type	Full-time



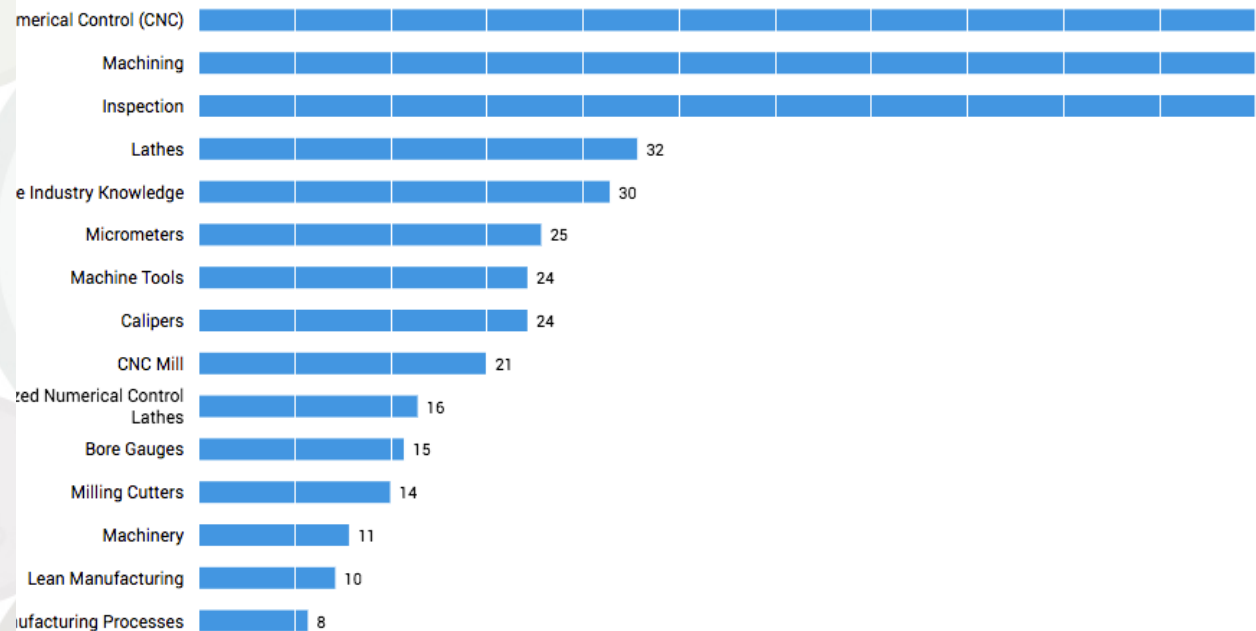
“stealing from the playbook”

Reports

- Best ones to run?
 - Software skills
 - Baseline skills
 - Keyword function
- What about “needed certification” reports?
 - There are very few explicit requests
 - Exception: welding

Dan's Advice

- Worry more about the rank order than the absolute numbers



Industry Advisory Board Meetings

- This changes the equation
- Employers can react to the data
- Job postings are their way of telling you what they want
- At my next meeting of the BILT....

Business and Industry Leadership Team

Our Chair is from Modern Industries



MODERN INDUSTRIES
Depend on modern technology

Conversation

Mark, we ran the data

Our analysis of your postings shows...

Skills at Modern Industries

Skills in Greatest Demand

Aug. 01, 2016 - Jul. 31, 2017

There are 6 postings available with the current filters applied.

There are 0 unspecified or unclassified postings.

Specialized Skills ▼

Numbers ▼

[View Job Postings](#)

Showing 8 results



2nd Highest Skill

Mark, *could this possible be right?*

Mike, *Yes inspection in general is a skill of high demand*

My world changed

This has been a very “local” discussion so far

Let's travel to California and look at a much bigger picture



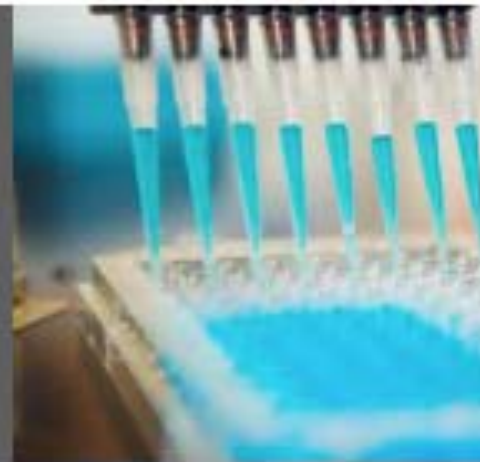
SUPPLY AND DEMAND ANALYSIS

LIFE SCIENCES & BIOTECH

MIDDLE SKILLS WORKFORCE

In California

OCTOBER 2014



http://www.calbiotechcareers.org/wp-content/uploads/2014/11/LS-Biotech-Middle-Skills-Jobs-in-CA_Report_Sept-2014.pdf

Process (On A Lager Scale)

- Defining the Industry through NAICS codes in five industry subsectors
- Defining Occupations: challenges using SOC codes
 - Group 1: 6 SOC codes
 - Group 2: 14 SOC codes
- Analyzing Demand

Demand Side

1. EMSI for projected job demand
2. Burning Glass data for
 - Top employers
 - Top skills and certifications
 - Educational requirements
 - Job Titles

Process (continued)

- This helped them understand the employers in the sector
- They next turned to their own institutors to determine the “supply”
- Then they dove deeper into the data for skills

Skills

Table 6 – Top Required Skills by Employer Job Postings in California (n=2,863)

Technical Skills (Specialized)		Fundamental Skills (Baseline)	
Skill	Number of Job Postings, Jan–Dec 2013	Skill	Number of Job Postings, Jan–Dec 2013
Chemistry*	705	Quality Assurance and Control**	1,100
Inspection	513	Communication Skills	1,027
Good Manufacturing Practices (GMP)	504	Research	898
Biology*	366	Organizational Skills	804
Experiments	352	Writing	749
Laboratory Equipment	346	Microsoft Excel	601
Validation	291	Detail-Oriented	587
Good Laboratory Practices (GLP)	262	Computer Skills	499
Biochemistry	244	Troubleshooting	468
Calibration	225	Problem Solving	345

One Of Their Findings

The community colleges provide important training for these jobs, but might need to expand their capacity and align programs to meet employer demands

Summary:

- You can see the rationale for using this data mining approach
- You hopefully can find someone to help you look at the “demand” side

Summary (continued)

- You could really use this as evidence to support proposal development and program alignment
- You can now talk to industry
- You see how this could be applied locally or more grandly
- You are happy you attended today

Questions

Ask Frequently, Ask Often

Follow Up Questions Welcome

mlesiecki@gmail.com

Join Us – All Webinars 3 pm Eastern

Thursday, September 21, 2017

Preparing for the Future - The Ins and Outs of Succession Planning

Succession planning is an organizational strategy in which employees are recruited and developed so that each key role is consistently and continuously filled. A good plan for succession ensures continuity in organizational and positional knowledge. Join us to learn and share good practices and ideas for ensuring continuous knowledge and how succession planning can impact the sustainability of any organization, including educational consortia.

Presenters: Marilyn Barger, Principal Investigator (PI) & Executive Director, Florida Advanced Technological Education Center
Phil Centonze, Director of Client Engagement
FloridaMakes

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