Providers of Postsecondary Alternatives to a College Degree

December 2018

Biocomplexity Institute & Initiative

AGENDA

- Postsecondary Data Infrastructure
- Providers of Alternative Postsecondary Credentials
  - Postsecondary Credentials Labor Market Training and Credentialing
    - Certificate Programs
    - Work-based Training
    - Skill-based Short Courses
  - MOOCs and Online Microcredentials
  - Competency-based Education
- What Burning Glass Data Will Provide
- Next Steps

Postsecondary Data Infrastructure

The is a growing recognition among institutions, policymakers, researchers, and students that the current postsecondary data infrastructure is insufficient to navigate the changing postsecondary landscape. There is a push for actionable information and tools that aid student decision making and outcomes and metrics for institutional performance.

Workforce success relies on transparent postsecondary data, National Skills Coalition, August 2018, https://www.nationalskillscoalition.org/resources/publications/file/Workforce-success-relies-on-transparent-postsecondary-data_web.pdf

A Blueprint for Better Information: Recommendations for a Federal Postsecondary Student Level-Data Network, Institute for Higher Education Policy, October 2017, http://www.ihep.org/sites/default/files/uploads/docs/pubs/a_blueprint_for_better_information_ihep.pdf

Empowering Students and Families to Make Informed Decisions on Higher Education, Institute on Higher Education Policy, May 2017, https://edworkforce.house.gov/uploadedfiles/voight_written_testimony_final.pdf

National Research Council. (2012). *Improving Measurement of Productivity in Higher Education. Panel on Measuring Higher Education Productivity: Conceptual Framework and Data Needs*. Teresa A. Sullivan, Christopher Mackie, William F. Massy, and Esha Sinha, Editors. Committee on National Statistics and Board on Testing and Assessment, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press

Postsecondary Data Infrastructure

When we think about data needs for uncovering and quantifying alternative STEM pathways, our wish list might include the following student level data:

- Demographic data at the level of the student,
- Labor market training and credentialing completed while in high school and post-graduation that includes the provider and the skills learned,
- Federal loan recipient status,
- Employment and wage outcomes.

This information also has the potential to improve student decisions and outcomes.

Postsecondary Data Infrastructure

Recent legislation in Congress will help to provide actionable intelligence for students and metrics for institutional performance –

- 2017 College Transparency Act (S. 1121/H.R. 2434)
- 2015 Student Right to Know Before You Go (S. 1195/H.R. 2518)
- 2014 Higher Education Affordability Act (S. 1195/H.R. 2518)

– but none have passed.

Better Data on the Horizon: An Analysis of the Evolving Student-Level Data Legislation, Institute on Higher Education Policy, June 2017, http://www.ihep.org/sites/default/files/uploads/postsecdata/docs/data-at-work/sldn_legislative_comparison_memo_oct._2018.pdf

Data that would be collected…

	ACCESS	PROGRESSION	COMPLETION	COST	POST-COLLEGE OUTCOMES
PERFORMANCE	Enrollment	Credit Accumulation Credit Completion Ratio Gateway Course Completion Program of Study Selection Retention Rate Persistence Rate	Transfer Rate Graduation Rate Success Rate Completers	Net Price Unmet Need Cumulative Debt	Employment Rate Median Earnings Loan Repayment and Default Rates Graduate Education Rate Learning Outcomes
EFFICIENCY	Expenditures per Student	Cost for Credits Not Completed Cost for Completing Gateway Courses Change in Revenue from Change in Retention	Time/Credits to Credential Cost of Excess Credits to Credential Completions per Student	Student Share of Cost Expenditures per Completion	Earnings Threshold
EQUITY	Enrollment by (at least) Preparation, Economic Status, Age, Race/Ethnicity	Progression Performance by (at least) Preparation, Economic Status, Age, Race/Ethnicity	Completion Performance by (at least) Preparation, Economic Status, Age, Race/Ethnicity	Net Price and Unmet Need by (at least) Economic Status, Preparation, Age, Race/Ethnicity Debt by (at least) Economic Status, Age, Race/Ethnicity, Completion Status	Outcomes Performance and Efficiency by (at least) Preparation, Economic Status, Age, Race/Ethnicity, Completion Status

Key Student Characteristics	
Enrollment Status	Economic Status
Attendance Intensity	Race/Ethnicity
Credential-Seeking Status	Age
Program of Study	Gender
Academic Preparation	First-Generation Status

Key Institutional Characteristics	
Sector	Selectivity
Level	Diversity
Credential/Program Mix	Minority-serving Institution (MSI) Status
Size	Post-traditional Populations
Resources	Modality

Empowering Students and Families to Make Informed Decisions on Higher Education, Institute for Higher Education Policy, May 2017, https://edworkforce.house.gov/uploadedfiles/voight_written_testimony_final.pdf

Alternative Postsecondary Providers & Credentials

In a 2018 April, a research report by Credential Engine, "Counting U.S. Secondary and Postsecondary Credentials", counted at least 310,660 postsecondary credentials in the U.S.:

- 213,913 degree programs – Title IV Institutions
- 66,997 for-credit certificate programs – Title IV eligible
- 13,656 federally registered apprenticeships (partial),
- 8,864 state-issued occupational licenses (partial),
- 5,465 certifications (partial),
- 1,718 bootcamp certificates (partial),
- 23 online alternative degree programs MicroMasters
- 24 online alternative degree programs Nanodegrees.

April 2018, *Counting U.S. Secondary and Postsecondary Credentials*, Credit Engine.
https://www.credentialengine.org/Content/Articles/Counting_US_Secondary_and_Postsecondary_Credentials_April_2018.pdf

Alternative Postsecondary Providers & Credentials

1. Labor market training & credentialing:
    - Certificate programs
    - Work-based training
    - Skill-based short courses (bootcamps)

2. MOOCs & online micro-credentials

3. Competency-based education programs

Jessie Brown and Martin Kurzweil, *The Complex Universe of Alternative Postsecondary Credentials and Pathways* (Cambridge, Mass.: American Academy of Arts & Sciences, 2017)

Labor Market Training & Credentials:

These are credentials from, certificate programs work-based training (apprenticeships), and skill-based short courses (bootcamps).

- They all certify the holder of the certificate possesses the basic skills needed to enter an occupation.

- They are nondegree credentials, that include certificates, industry-recognized certifications, and licenses, and the pathways to achieving them.

Certificate Programs

Definition: A certificate designates requisite knowledge and skills of an occupation, profession, or academic program.

(http://purl.org/ctdl/terms/Certificate)

- **Providers**: mainly community colleges and for-profit schools, some four-year public and private not-for-profit institutions

- **Participants**: mostly women, African Americans, and students from families with lower incomes with less educational attainment than enrollees in academic associate's or bachelor's degree programs; a little more than half of completers in these programs are between the ages of 18 and 29

- **Types of Programs**: skills-based and demand-driven training in fields such as health care (the most popular option), business, information technology, manufacturing, agriculture, and consumer services

- **Length of Programs**: short-term certificate programs that last for less than a year, medium-term certificate programs that last from one to two years, and longer-term programs that take from two to four years to complete

Jessie Brown and Martin Kurzweil, *The Complex Universe of Alternative Postsecondary Credentials and Pathways* (Cambridge, Mass.: American Academy of Arts & Sciences, 2017)

Data sources: There is no comprehensive source of certificate providers. Certificate programs that are Title-IV eligible provide data to the National Center for Education Statistics (NCES) but:

- some institutions only report their Title-IV certificate programs, and
- other report all of their certificate programs.

There are approximately 3,000 for-profit institutions that are not eligible to receive financial aid under Title-IV.

Jessie Brown and Martin Kurzweil, *The Complex Universe of Alternative Postsecondary Credentials and Pathways* (Cambridge, Mass.: American Academy of Arts & Sciences, 2017)

A **Certification Finder** tool, **CareerOneStop**, is located on the **Dept. of Labor's Employment & Training Administration** website. The tool is an online directory of third-party organizations that provide verification of skill or knowledge attainment based on generally accepted skill standards for an occupation. Certifications are classified by SOC, ONET, and NAIC codes.

In the most recent dataset release, July 2018, there were 9,488 certifications from 1,513 certifying organizations.

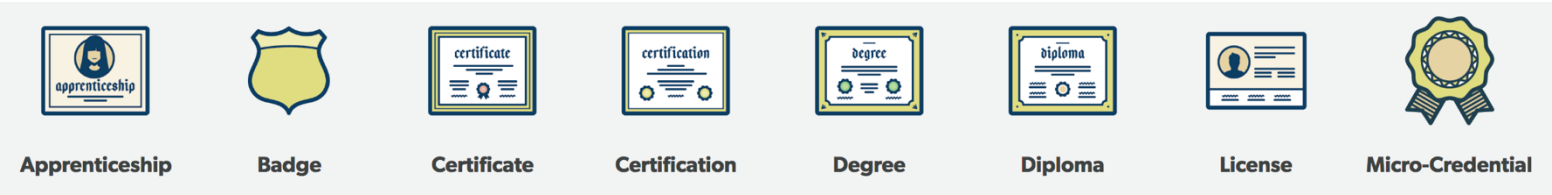
Certification Finder: https://www.careeronestop.org/Toolkit/Training/find-certifications.aspx
Data Downloads: https://www.careeronestop.org/Developers/Data/data-downloads.aspx

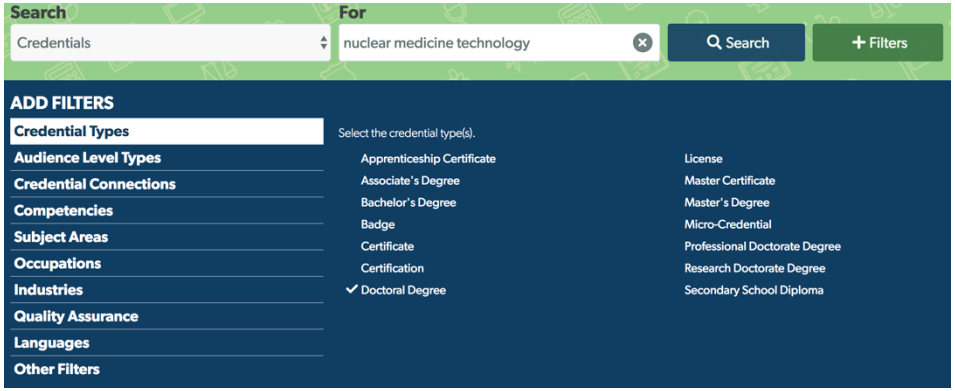
Credential Engine™

Moving Credentialing Forward

"**Credential Engine** is a non-profit whose mission is to create credential transparency, reveal the credential marketplace, increase credential literacy, and empower everyone to make more informed decisions about credentials and their value."

Credential Registry (232)/Credential Finder (5,255)





Work-based Training

Work-based learning through,

- employer-provided or employer-sponsored training;
- work-force development partnerships with nonprofit organizations, educational institutions, industry groups, and federal programs; and
- apprenticeships;

that may help an employee progress toward a certificate, an industry-recognized certification, a license, or a degree.

Certificate programs often prepare students directly for industry-recognized certification assessments, and corporations frequently partner with educational institutions so that students earn an employer-recognized certification and job-relevant training as they earn a certificate or degree.

Apprenticeship Programs

Definition: A credential earned through work-based learning and earn-and-learn models that meet standards and are applicable to industry trades and professions. An industry-recognized apprenticeship program (IRAP) is validated by a proven industry accreditor. A registered apprenticeship program (RAP) is validated by the Dept. of Labor or a State Apprenticeship Agency.

Definition Apprenticeship: (http://purl.org/ctdl/terms/ApprenticeshipCertificate)

Definition IRAP: (https://www.apprenticeship.gov/industry-recognized-apprenticeship-program)

Definition RAP: (https://www.apprenticeship.gov/registered-apprenticeship-program)

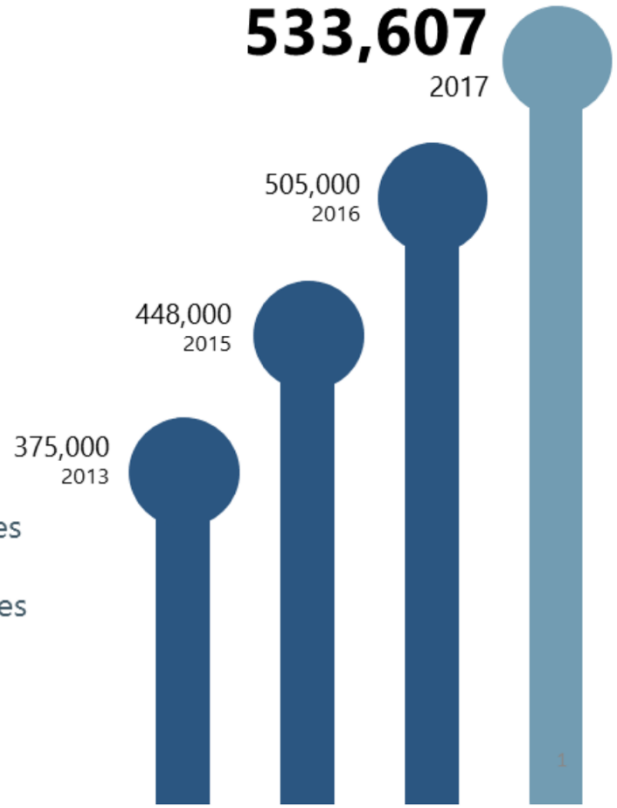
- **Providers**: industries such as manufacturing, energy, construction, healthcare, finance and business, hospitality, information technology, telecom, transportation, and unions

- **Participants**: lower-income adults who do not have access to or preparation for traditional degree programs

Apprentices
National Growth Cart

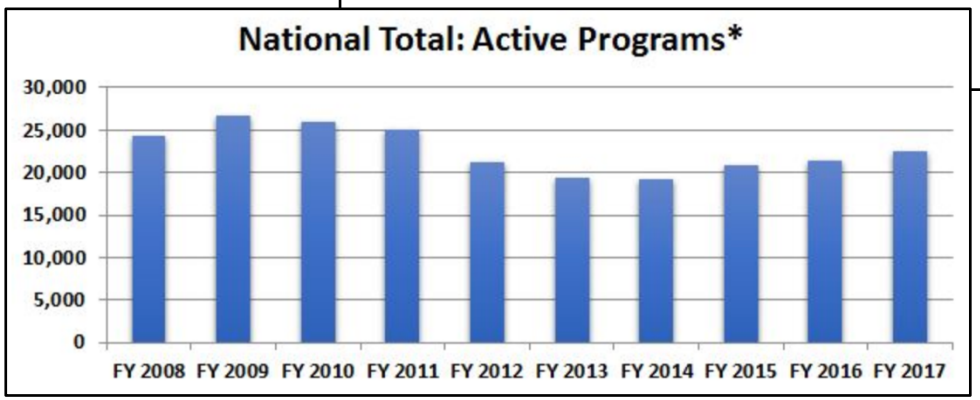
42%

GROWTH SINCE 2013



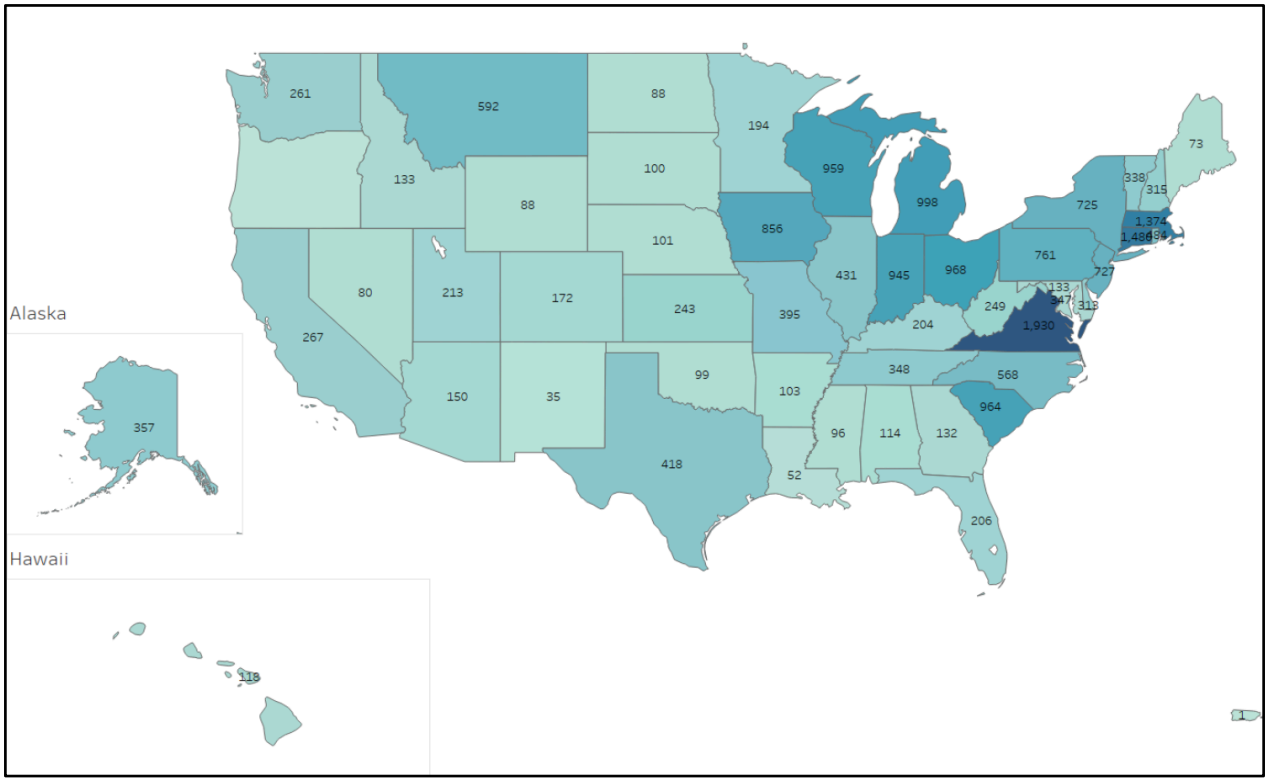
Key Facts

- The annual average of active apprentices for the last 20 years = 425,416.
- The current number of active apprentices is 125% higher than the 20 year annual average (533,607/425,416).



https://doleta.gov/oa/data_statistics.cfm

Apprenticeships Programs across the U.S.



- In 2017, more than 190,000 individuals nationwide entered the apprenticeship system.
- 64,000 participants graduated from the apprenticeship system in 2017.

https://doleta.gov/oa/data_statistics.cfm

Data sources: There is no comprehensive source of apprenticeship programs and the credentials they provide.

- Registered programs are overseen in different places there is no comprehensive repository of information about all registered apprenticeship programs; some are administered by state apprenticeship (SAA), others by the DOL's Office of Apprenticeships (OS).

- The concept of an unregistered apprenticeship program is not consistently defined, there is no reliable data source.

There is an **Apprenticeship Finder** tool located on the **Dept. of Labor's** website.

A list of apprenticeship occupations can be downloaded; included is the occupation ONET code. There is a Registered Apprenticeship Partners Information Data System (RAPIDS 2.0) which contains apprentice and provider information.

Apprenticeship Finder: https://www.apprenticeship.gov/apprenticeship-finder
Data Downloads Available Occupations: https://www.doleta.gov/OA/occupations.cfm
Data Downloads Apprenticeship Sponsor Database: https://oa.doleta.gov/bat.cfm

Skill-based short courses

Short-term certificate programs and skills-based short courses to build career-specific skills and earn credentials

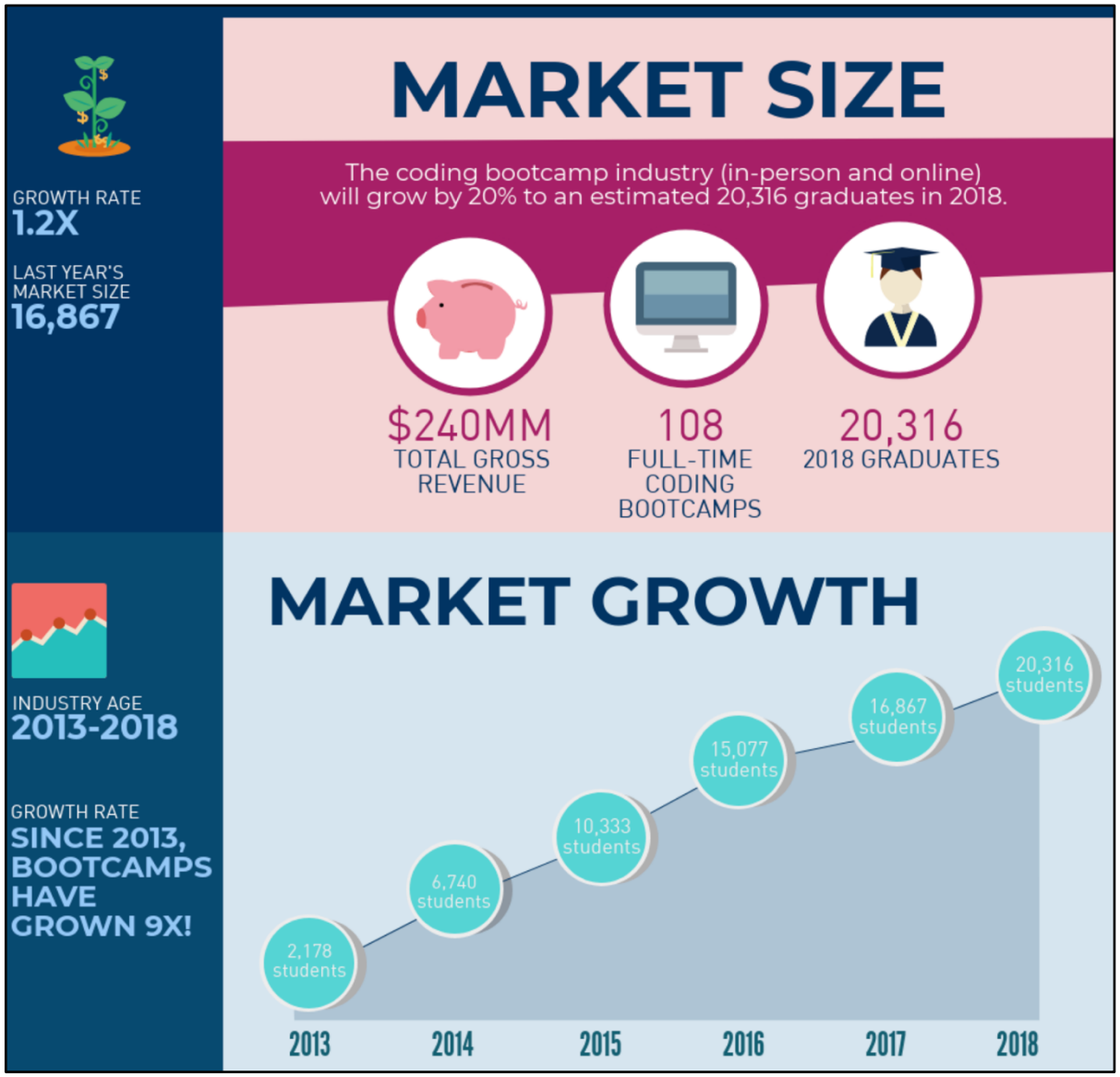
Providers: Title IV for-profit and nonprofit institutions, extension programs at four-year schools, unaccredited trade schools, professional schools, schools of continuing education, and for-profit bootcamps

Participants: average bootcamper is 29 with 6 years of work experiences with at least a bachelor's degree; 36% female (https://www.coursereport.com/reports/coding-bootcamp-job-placement-2017)

Coding Bootcamps

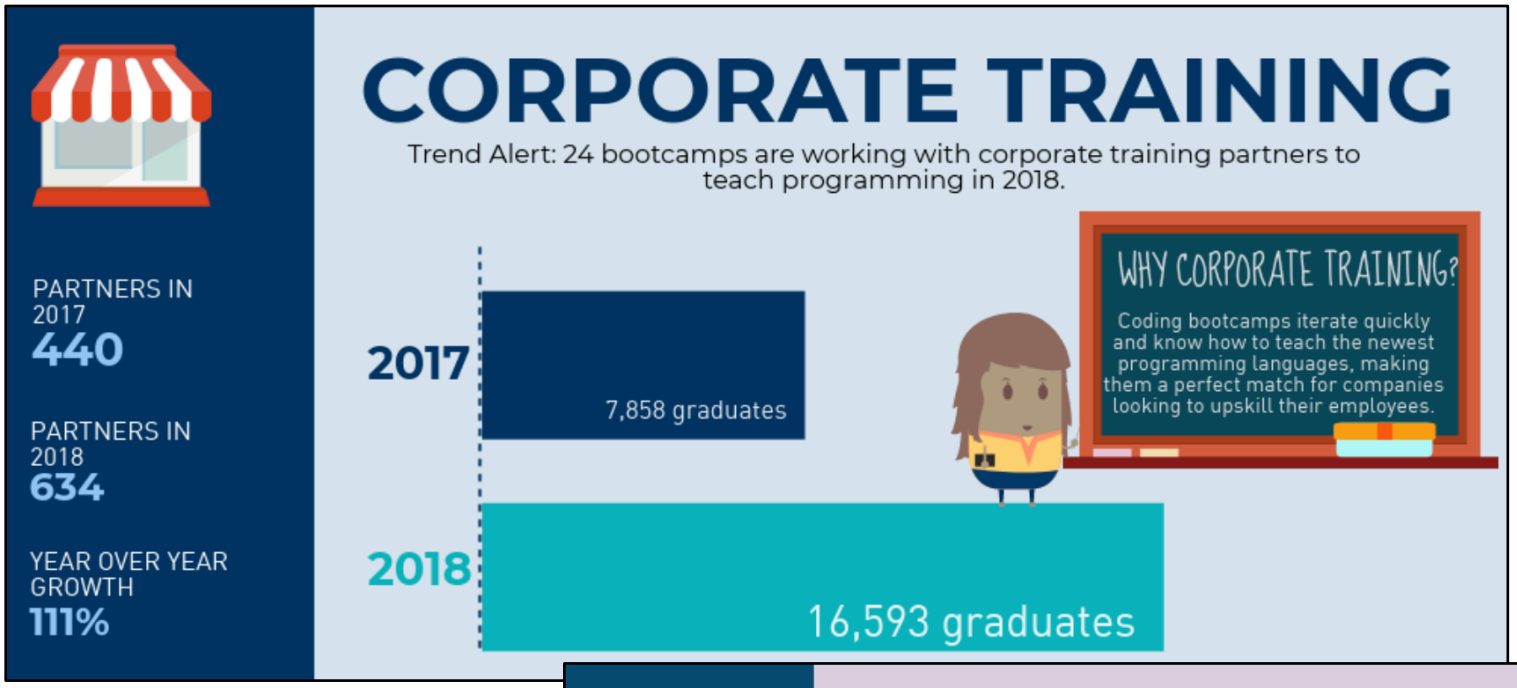
These programs usually last around 12 weeks, are full-time, and equip students with the skills needed for high-demand jobs as developers, designers, or data scientists in the technology industry.

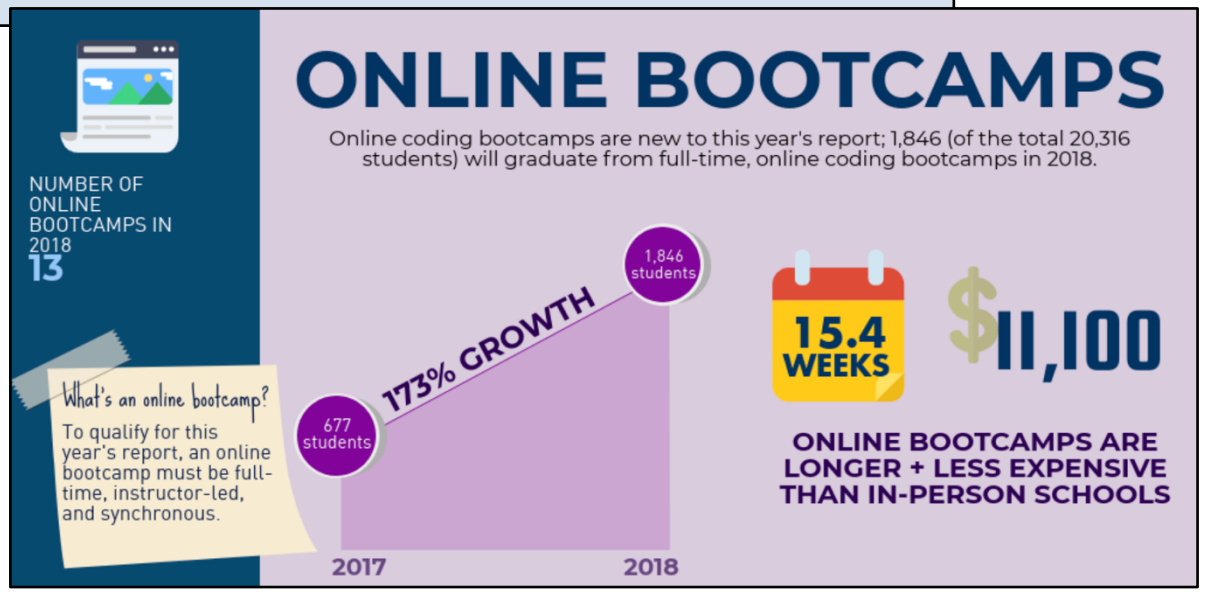
Bootcamps often partner with specific employers, have robust job placement programs, and focus on helping students build a portfolio of work to take with them out on the job market.



From a **Course Report** 2018 survey of 108 coding bootcamps (93% response rate).

https://www.coursereport.com/reports/2018-coding-bootcamp-market-size-research





https://www.coursereport.com/reports/2018-coding-bootcamp-market-size-research

MOOCS: Massive Open Online Course

MOOCs emerged from the open educational resources' movement.

- Online courses aimed at unlimited participation and open access via the web.
- MOOCs were first introduced in 2006.
- The term MOOC was first introduced in 2008.

In 2013, the first MOOC microcredentials were offered.
A **microcredential** is any one of a number of new certifications that covers more than a single course but is less than a full degree.
The microcredentials on the market today share many features in common:

- typically, they are structured as a series of courses, requiring less than a year (usually around 6 months) to complete;
- prices range from a few hundred to a few thousand dollars;
- often, learners can choose to pay for each course individually, or can pay upfront for the full series at a slight discount;
- most (though not all) microcredentials cover work-relevant subjects such as business, computer science, and data analysis.

Pickard, Laura (July 18, 2018) Analysis of 450 MOOC-Based Microcredentials Reveals Many Options But Little Consistency, https://www.class-central.com/report/moocs-microcredentials-analysis-2018/#_ftn1,

Microcredentials are:

- trademarked and platform-specific, and often very different in terms of the time it takes to complete them, level of difficulty, and price;
- are not accredited, recognized, or evaluated by third party organizations (except insofar as they pertain to university degree programs);
- not standardized which poses a problem for both learners and employers, as it makes it difficult to compare the various microcredentials;
- a trend toward modularity and stackability in higher education, the idea being that each little piece of an education can be consumed on its own or can be aggregated with other pieces up to something larger.

Who are the major MOOC providers?

 is a non-profit startup from Harvard & MIT founded in 2012. It now has over 130 global institutional partners, offers 2,498+ courses, and has 14 million registered users. (https://www.edx.org/schools-partners)

First to launch microcredentials in 2013:

- Micromasters Program: graduate-level, for career advancement or a degree path (176)
- Professional Certificate: from employers or universities to build today's in-demand skills (88)
- Online Master's Degree: top-ranked programs, affordable, and fully online (9)
- Global Freshman Academy: freshman year courses for university credit from Arizona State University (4)
- XSeries: series of courses for a deep understanding of a topic (28)

is a for-profit MOOC founded in 2012 by two Stanford professors. It is the largest MOOC provider in the U.S. with 30 million registered users and 180 global partners offering 3,744+ courses.

Credentials offered as of 11/2018:

- Course Certificate: shareable electronic course certificate
- Specialization Certificate: a series of courses and hands-on projects to master a specific career skill
- Professional Certificate: job ready training programs from universities/companies
- Master Track™ Certificate: online Master's program modules, if accepted will count towards a Master's degree
- Degree: modular degree learning, receive the same credentials as students who attend campus classes as you work toward. Your degree

is a for-profit MOOC founded in 2012. It is the 3rd largest MOOC provider in the U.S. with 8 million registered users, offering 231+ courses, Udacity emphasizes collaborations with tech companies, not colleges, to offer career-focused courses.

Nanodegree: project and skills-based educational credential program

STEM MOOC Microcredentials

: autonomous systems, programming and development, data science, artificial intelligence

: data science, digital product management, artificial intelligence, sustainable energy, algorithms and data structures, emerging automotive technologies, internet of things, statistics, robotics, cybersecurity, solar energy engineering, cloud computing, big data, cloud computing, bioinformatics, block chains

: data science, computer science, information technology, public health

Potential Data Sources on MOOCs:

Class Central is a free online MOOC aggregator:

- they track 41 non-university (for profit and nonprofit) providers and 880 university providers;
- they list 11,160 courses, 6,491 of which are STEM.

https://www.class-central.com/report/mooc-course-report-july-2018/

Competency-based Education Programs

Competency-based education (CBE) is an educational process or program that measures knowledge, skills, and experience in- lieu of or in addition to the use of the traditional college credit hours.

There are two forms:

1. Well-established prior learning assessments which grant credits for content that a student has previously mastered (i.e., advanced placement tests); and
2. Newer competency-based coursework, where students progress toward a degree as they demonstrate mastery of new academic content.

Robert Kelchen, "The Landscape of Competency Based Education: Enrollments, Demographics, and Affordability," American Enterprise Institute Series on Competency-Based Higher Education (January 2015), https://www.luminafoundation.org/files/resources/competency-based -education-landscape.pdf

Next Steps:

- A review of what the states are doing with regard to postsecondary data and their work with national organizations on credentialing and postsecondary education.
- Select two states for deep dive to start mapping the STEM pathways.
- Map the pathways using the burningglass data.
- Evaluate how the STEM pathways from the two sources differ/agree.

Extra Slides

How did we get here?

Only after WWII with

- the introduction of the GI bill,
- federal Pell grants and student loans, and
- state investment in post-secondary institutions,

did a college degree become commonplace – rising from 4.6% in 1940 to 33.4% in 2017.

Census Bureau, Highest Educational Levels Reached by Adults in the U.S. Since 1940, https://www.census.gov/newsroom/press-releases/2017/cb17-51.html, (visited *11/15/2018*)

Employers began to use college degrees as a screening mechanism for entry level jobs. The prevailing view became that if you wanted a good job, you needed a college degree.

Craig, Ryan (2018) A New U Faster + Cheaper Alternatives to College, BenBella Books, Inc., Dallas TX

Unemployment rates are lower for college graduates with a bachelor's degree, 2.5%, compared to high school graduates with no college degree, 5.7%, and less than a high school degree, 7.7%.

Bureau of Labor Statistics, U.S. Department of Labor, *The Economics Daily*, Unemployment rate 2.5 percent for college grads, 7.7 percent for high school dropouts, January 2017 on the Internet at https://www.bls.gov/opub/ted/2017/unemployment-rate-2-point-5-percent-for-college-grads-7-point-7-percent-for-high-school-dropouts-january-2017.htm (visited *11/15/2018*).

The college wage premium, the percent by which hourly wages of four-year college graduates exceed those of otherwise equivalent high school graduates, was 49.5% in 2017 dollars.

Economic Policy Institute, *State of Working America Data Library*, College Wage Premium, analysis of Current Population Survey Outgoing Rotation Group microdata, https://www.epi.org/data/#?subject=wagegap-coll (visited *11/15/2018*).

What has changed?

The rising cost of a college education…

Key Findings

- A year at a public 4-year college costs more than $20,000 in tuition, fees, and room and board; up from $8,300 in 1971 (in 2016 dollars).
- To save enough to pay for a year at a public 4-year college, a student would need to earn $38.63 an hour working full-time for the summer; $87.25 an hour for a private college.
- College students have differing life experiences and responsibilities; nearly 4 in 10 attend part-time; nearly 4 in 10 are over the age of 24; and, around 1 in 4 is a parent.
- The maximum Pell Grant only covers 60 percent of tuition at a public 4-year college.
- The average undergraduate borrows 6.5x more per year than they did 35 years ago.

The College Affordability Crisis in America, November 2017, https://www.jec.senate.gov/public/_cache/files/5270bffa-c68e-44f0-ac08-693485083747/the-college-affordability-crisis-in-america.pdf, (visited *11/15/2018*).

What has changed?

The post-industrial economy is more intricate...

- Accelerating cycle of skill obsolesce
- Unbundling of higher education; aligned with the of skill-based short courses
- Applicant tracking systems to manage resumes which search for specific skills
- 45% of college graduates say they are underemployed (https://www.insidehighered.com/news/2018/05/23/college-graduates-whose-first-job-doesnt-require-bachelors-degree-often-stay)

- Graduates need "last-mile" skills to get a good job; too many graduates getting bachelor's degrees that aren't aligned with the job market."