

Data Science Education as an Economic Mobility Intervention



Aboozar Hadavand
School of Computational Sciences
Minerva Schools at Keck Graduate Institute
[@ahdvnd](https://twitter.com/ahdvnd)



DONATE



WYPR 88.1FM HD1
On Point



WYPR Coronavirus Operations Procedures

Freddie Gray, unrest brought federal money to Baltimore

By RACHEL BAYE • APR 22, 2016



Share



Tweet



Email



In response to the unrest, Baltimore's Mayor's Office was awarded **\$5M** by the Department of Labor:

- to deliver **high quality skills training** to disconnected youth and young adult populations
- designed for individuals up to age 29
- and to give access to career placements in **high-growth industry sectors**.

Similar grants were given to Long Beach, Detroit, Ferguson, Camden, N. Charleston, and Houston.

The program in Baltimore is called **One Baltimore For Jobs**.

The money was then distributed among 19 workforce training partners each with a different target demographic.



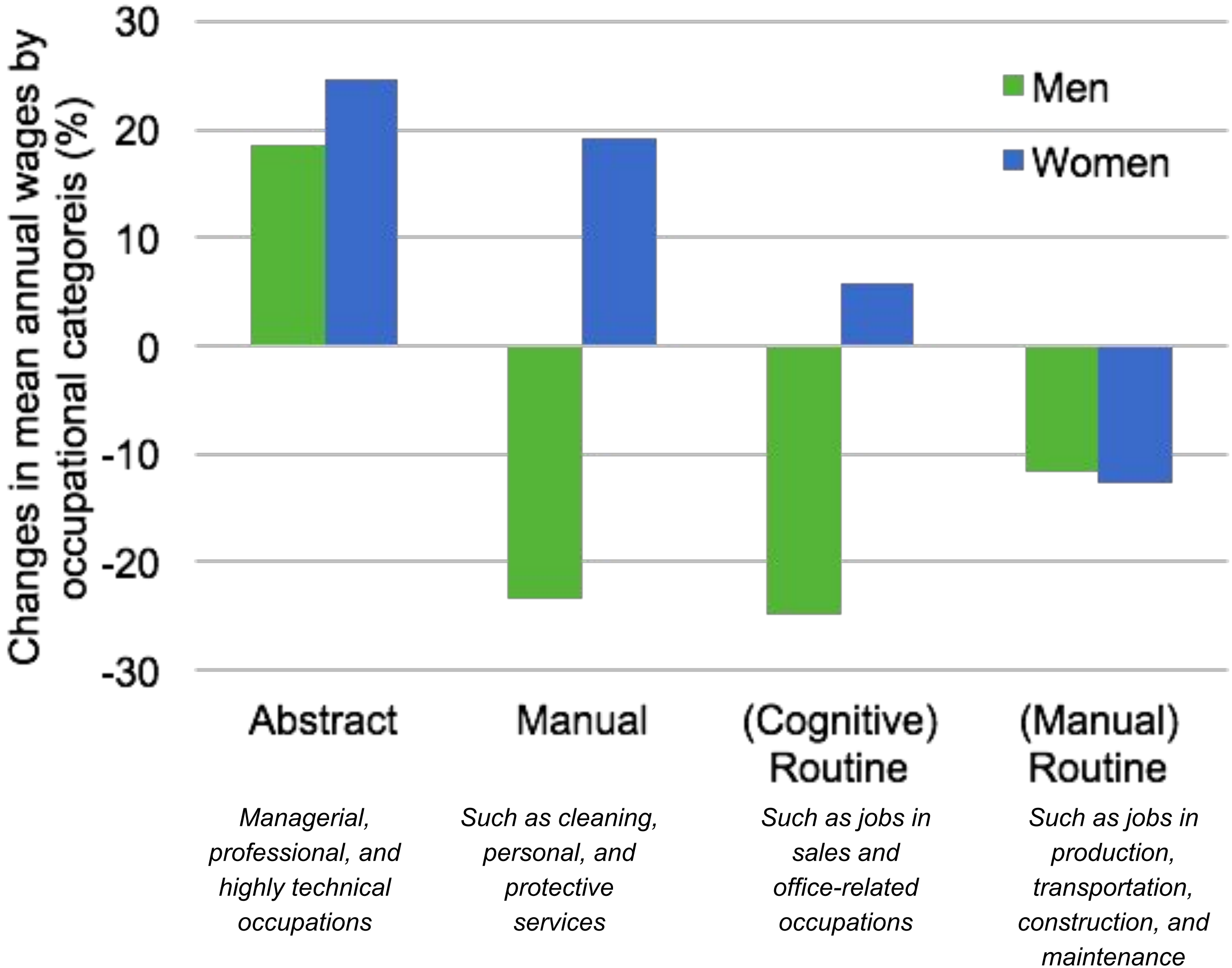


Compared to the costly option of college access, sector-focused training programs can improve employability and lead to higher wages among the disadvantaged population.

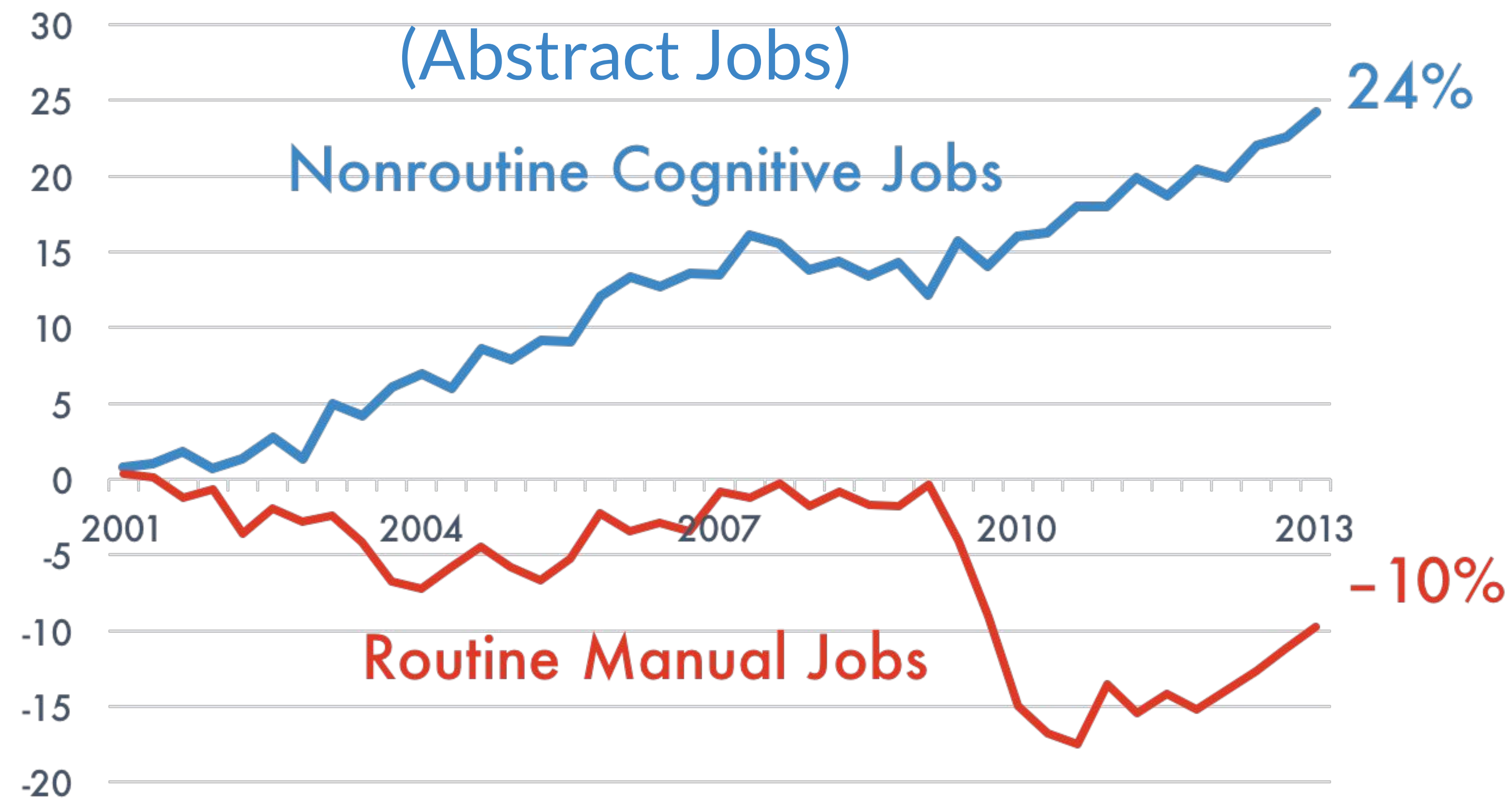
Most of these programs were focused on:

- literacy training
- technical jobs training (welding, automotive technicians, warehousing, construction, etc.)
- low-wage office jobs training

Changes in mean annual wages by occupation categories (%) 1979-2014 (BLS Data)



Percentage Growth in employment since 2001



Job Title, Keywords, or Company

Jobs

Location

Search

50 Best Jobs in America

Awards

Best Places to Work

Top CEOs

Best Places to Interview

Lists

Best Jobs

Best Cities for Jobs

Highest Paying Jobs

Oddball Interview Questions

This report ranks jobs according to each job's Glassdoor Job Score, determined by combining three factors: number of job openings, salary, and overall job satisfaction rating.

United States

2018

0 Shares



1 Data Scientist



4.8 / 5
Job Score

4.2 / 5
Job Satisfaction

\$110,000
Median Base Salary

4,524
Job Openings

View Jobs

Slide from Shannon Ellis

Johns Hopkins University Partners with Coursera to Offer Free Online Classes

THE JOHNS HOPKINS UNIVERSITY
OFFICE OF COMMUNICATIONS
901 S. Bond St., Suite 540
Baltimore, Maryland 21231

July 17, 2012

Media Contacts: Timothy Parsons, 410-995-7619

tmparson@jhsph.edu

Or

Tracey Reeves, 443-287-9960

treeves@jhu.edu

The Johns Hopkins University today announced that it has joined Coursera, an upstart education venture formed to offer high-quality college-level university courses online for free, creating new opportunities for learning worldwide.

[About this Specialization](#)[Courses](#)[Creators](#)[FAQ](#)[Enroll](#)

Starts Oct 10

[Apply for Financial Aid](#)

Data Science Specialization

Launch Your Career in Data Science. A nine-course introduction to data science, developed and taught by leading professors.

About This Specialization

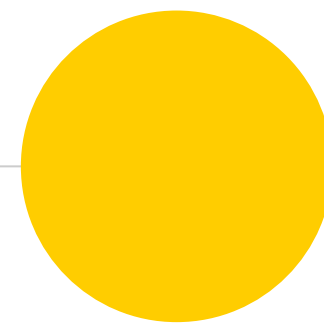


Table 1: List of courses in Johns Hopkins University Data Science Specialization on Coursera.

Course	Description
The Data Scientists Toolbox	Version control and the most common tools used by data scientists
R programming	Fundamentals of how to program in R
Getting and cleaning data	How to obtain data from databases, the web, and other sources, then clean it up
Exploratory data analysis	Plotting and other initial explorations of a data set
Reproducible research	Basics of R markdown, literate programming, and the principles of reproducible research
Statistical inference	Probability and statistical inference
Regression models	Linear models and their application to real data
Practical machine learning	Basics of machine learning and predicting in R
Developing data products	Technologies for building data products like R packages, swirl courses, and Shiny apps
Data Science Capstone	Allowing students to create a usable/public data product

100,000

Sep 2012–Jan 2013

500,000

Sep 2012–Oct 2013

> **6 million enrollments**

up to now

100,000

Sep 2012–Jan 2013

500,000

Sep 2012–Oct 2013

> **6 million enrollments**

up to now

100,000

Sep 2012–Jan 2013

500,000

Sep 2012–Oct 2013

> 6 million enrollments

up to now

> 13,000 students

have completed the entire specialization in the last 7 years

2,600 every year

> 13,000 students

have completed the entire specialization in the last 5 years
2,600 every year

~2,500 students

are graduated every year from master's programs in stat/biostat in the U.S.

Can MOOC Programs Improve Student Employment Prospects?*

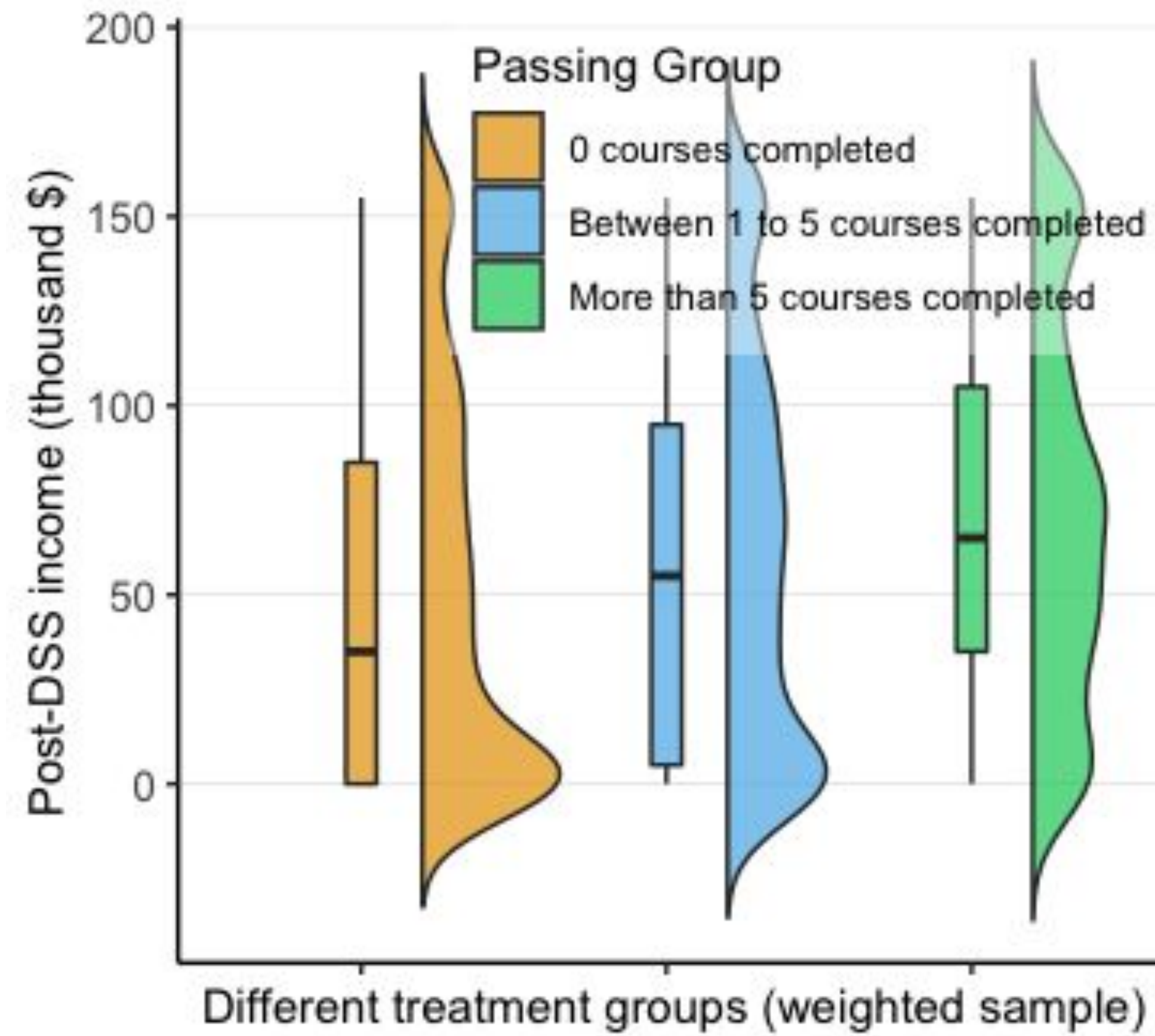
Aboozar Hadavand¹

Ira Gooding¹

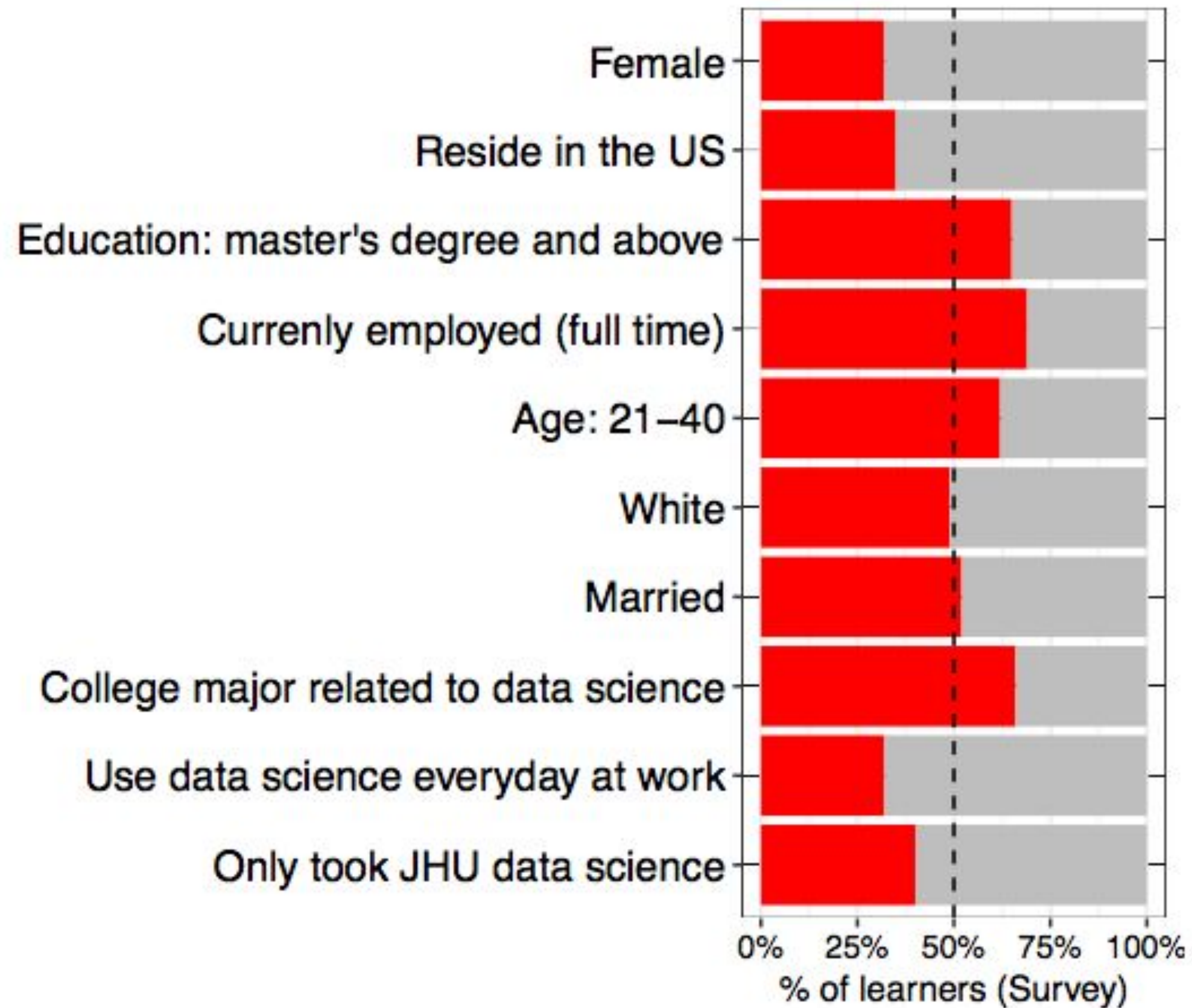
Jeffrey Leek¹

¹Johns Hopkins Bloomberg School of Public Health

October 4, 2018



JHU-Coursera DSS Learner Demographics



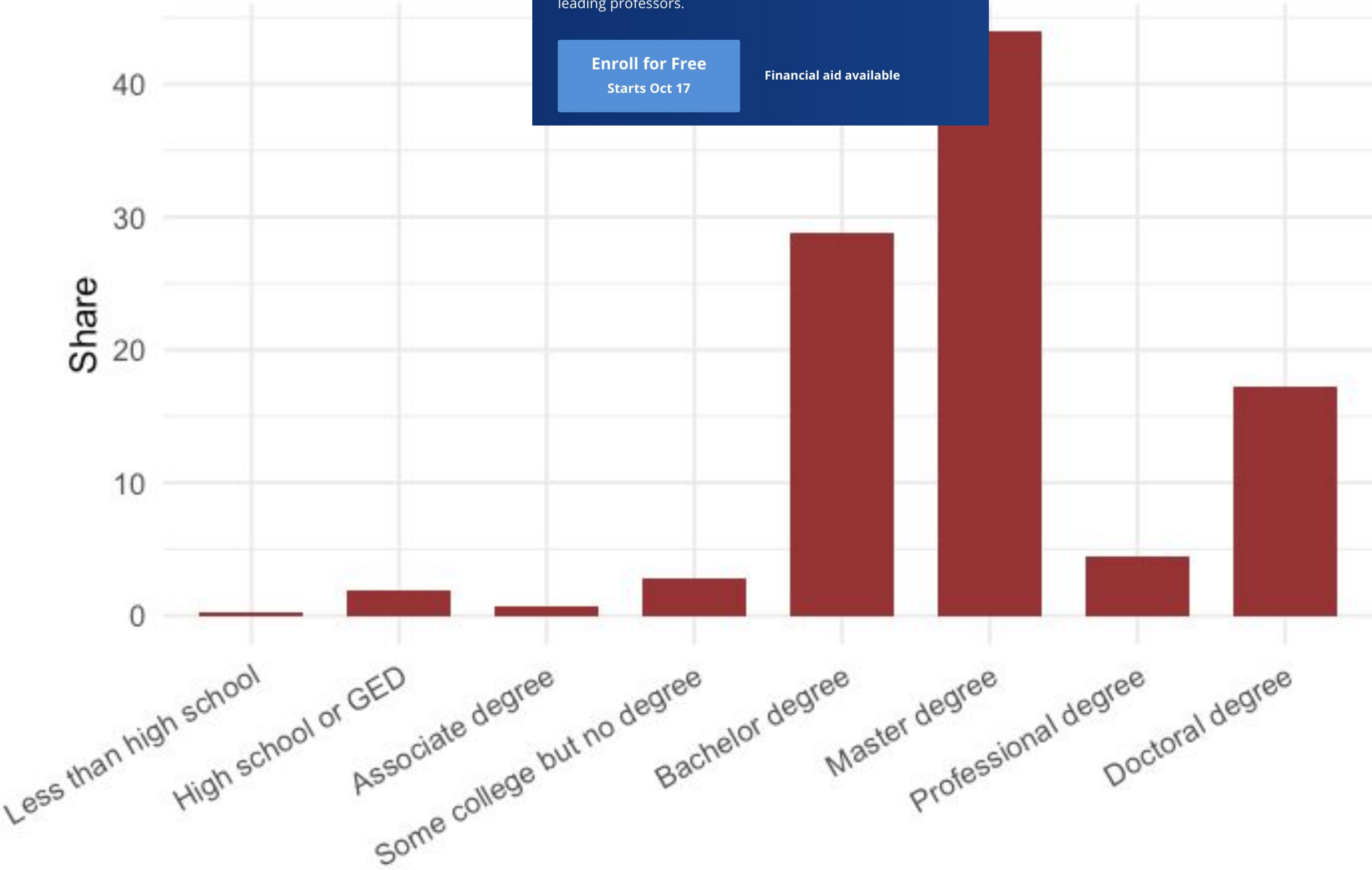


Data Science Specialization

Launch Your Career in Data Science. A ten-course introduction to leading professors.

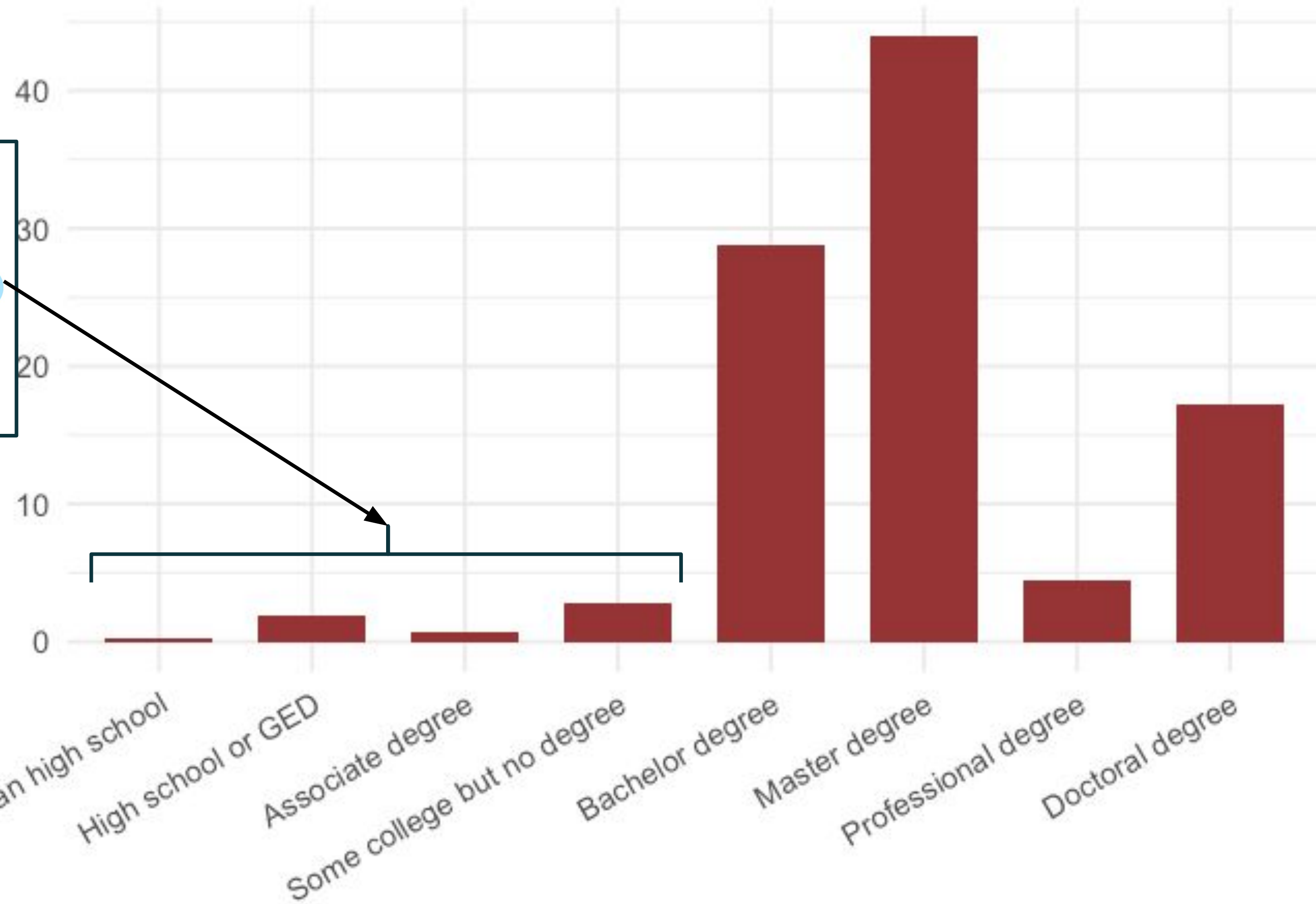
Enroll for Free
Starts Oct 17

Financial aid available





CBDS+



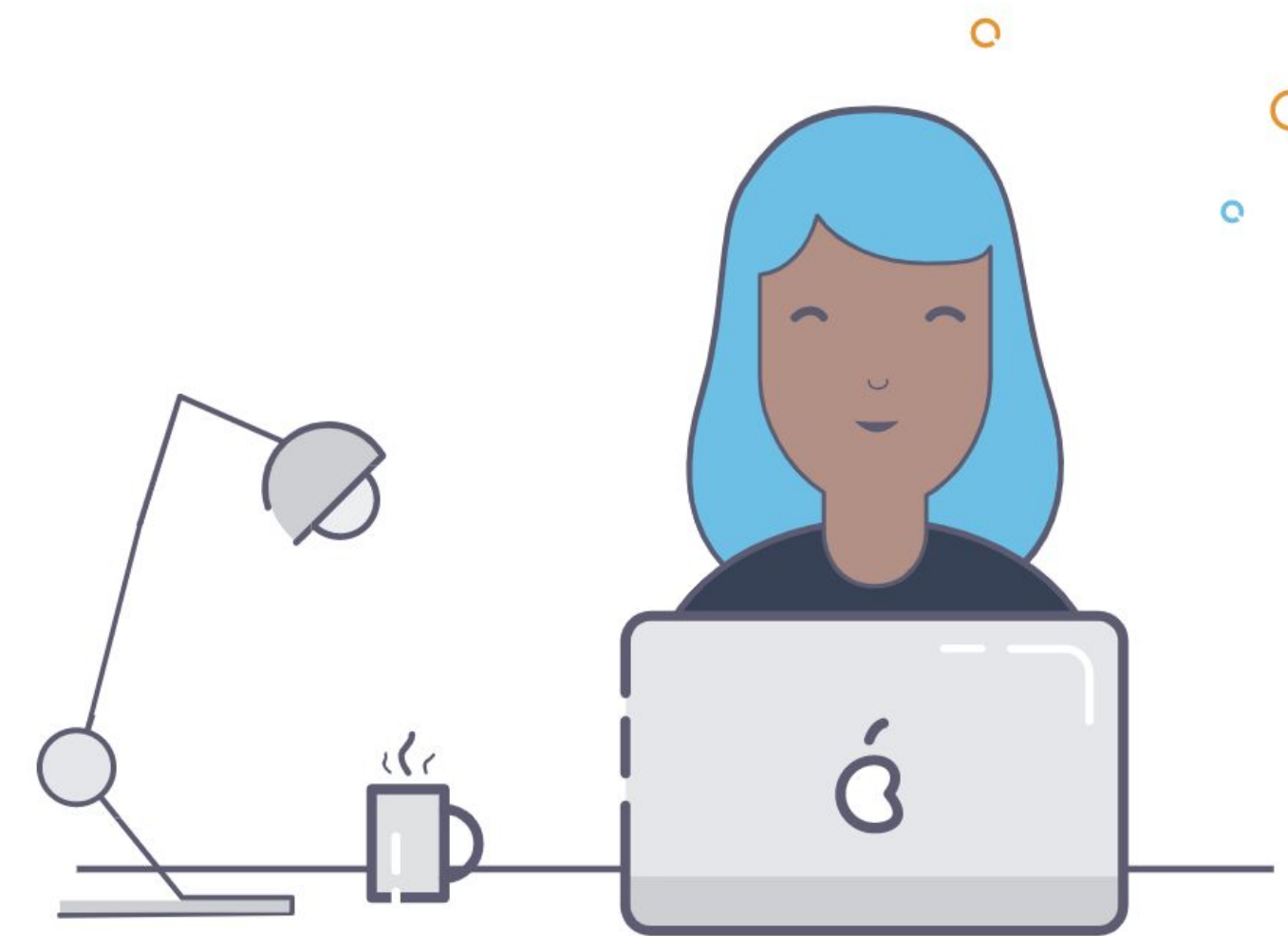
Cloud-Based Data Science

Cloud-Based Data Science (CBDS) consists of two parts. One, a set of pay-what-you-want (including free!) massive open online courses that can be completed on any computer with a web browser and an internet connection.

Two, Cloud-Based Data Science Plus (CBDS+) is a no-cost, paid 14-week educational initiative for young-adult, high school and GED-graduates in Baltimore City. Offered by the Johns Hopkins Bloomberg School of Public Health, in partnership with the Historic East Baltimore Community Action Coalition and Leanpub, CBDS+ aims to equip members of surrounding communities with the necessary skills and support required to work in the booming field of data science.

We aim to equip individuals from underserved populations with the necessary skills and support required to work in the field of data science. A portion of anything you pay for the online courses supports the CBDS+ program.

Take our courses today!



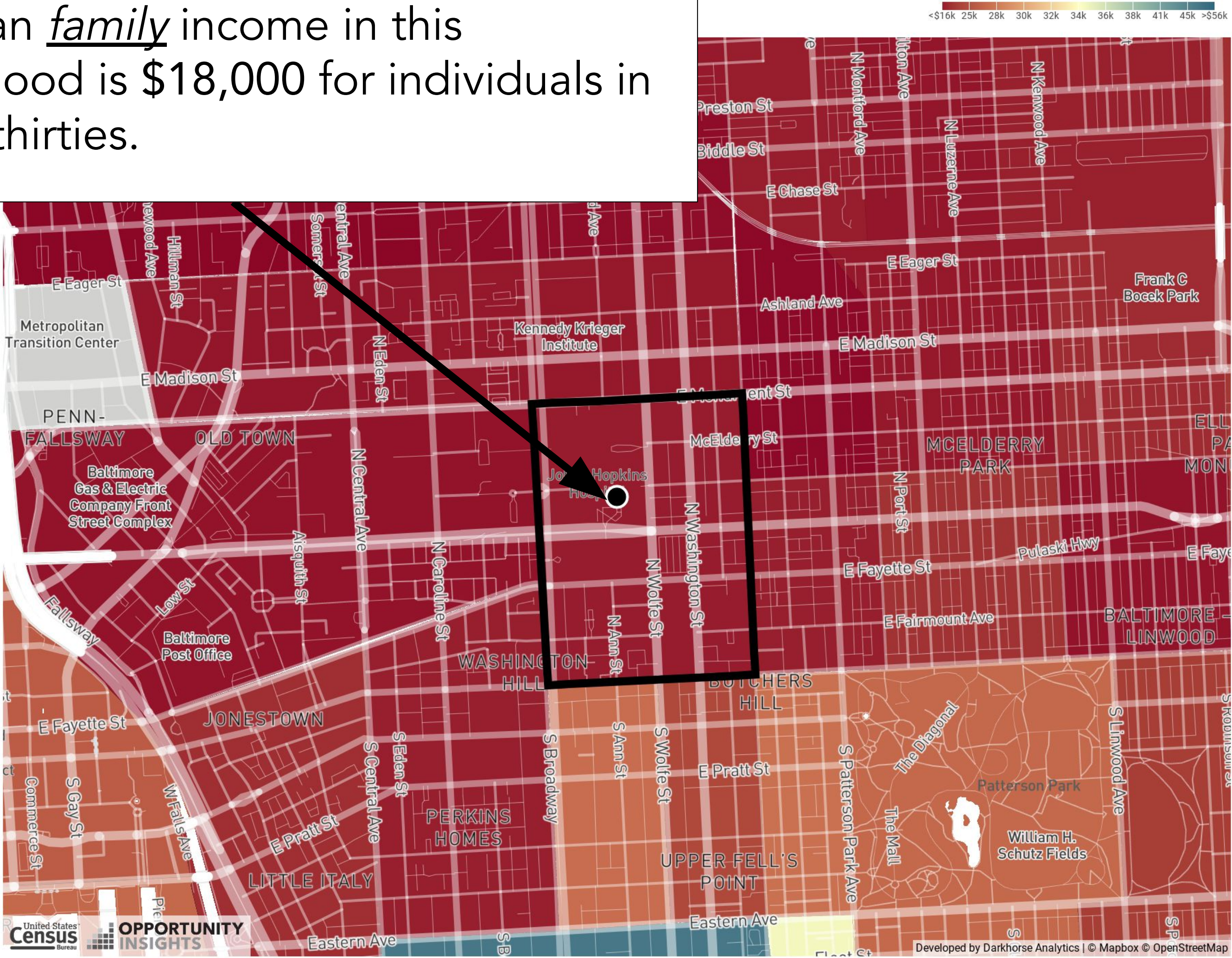
Our Partners



1812 Ashland Store

Poverty is pervasive in East Baltimore, JHU neighborhood

The median family income in this neighborhood is \$18,000 for individuals in their mid-thirties.



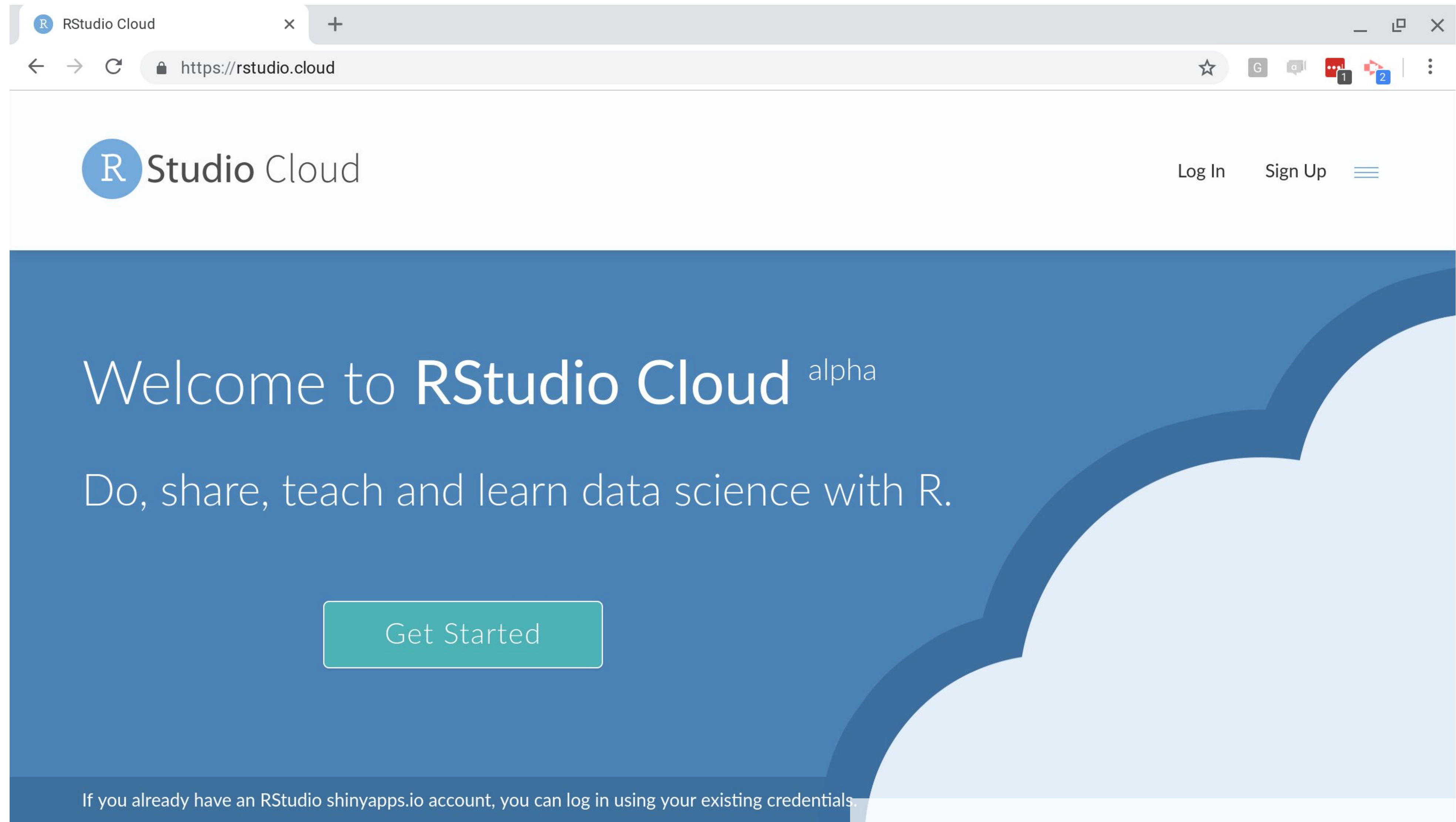
Teaching data science is expensive ...

Teaching data science is expensive ...

Chromebooks: \$450



Teaching data science is expensive ...



The image shows a browser window with the RStudio Cloud website. The browser's address bar shows the URL <https://rstudio.cloud>. The website header features the RStudio Cloud logo on the left and "Log In" and "Sign Up" links on the right. The main content area has a blue background with white text that reads "Welcome to RStudio Cloud ^{alpha}" and "Do, share, teach and learn data science with R." Below this text is a teal "Get Started" button. At the bottom of the page, there is a small note: "If you already have an RStudio shinyapps.io account, you can log in using your existing credentials."

Finding those who are interested is hard ...

Finding those who are interested is hard ...



Historic East Baltimore
Community Action Coalition, Inc.

[About](#) [Our Work](#) [Contact Us](#)



Thriving Baltimore Communities

HEBCAC is a community-based nonprofit whose mission is to build community and provide economic opportunities that support healthy, thriving households and neighborhoods.

OUR WORK ↓



YO! Youth Opportunity

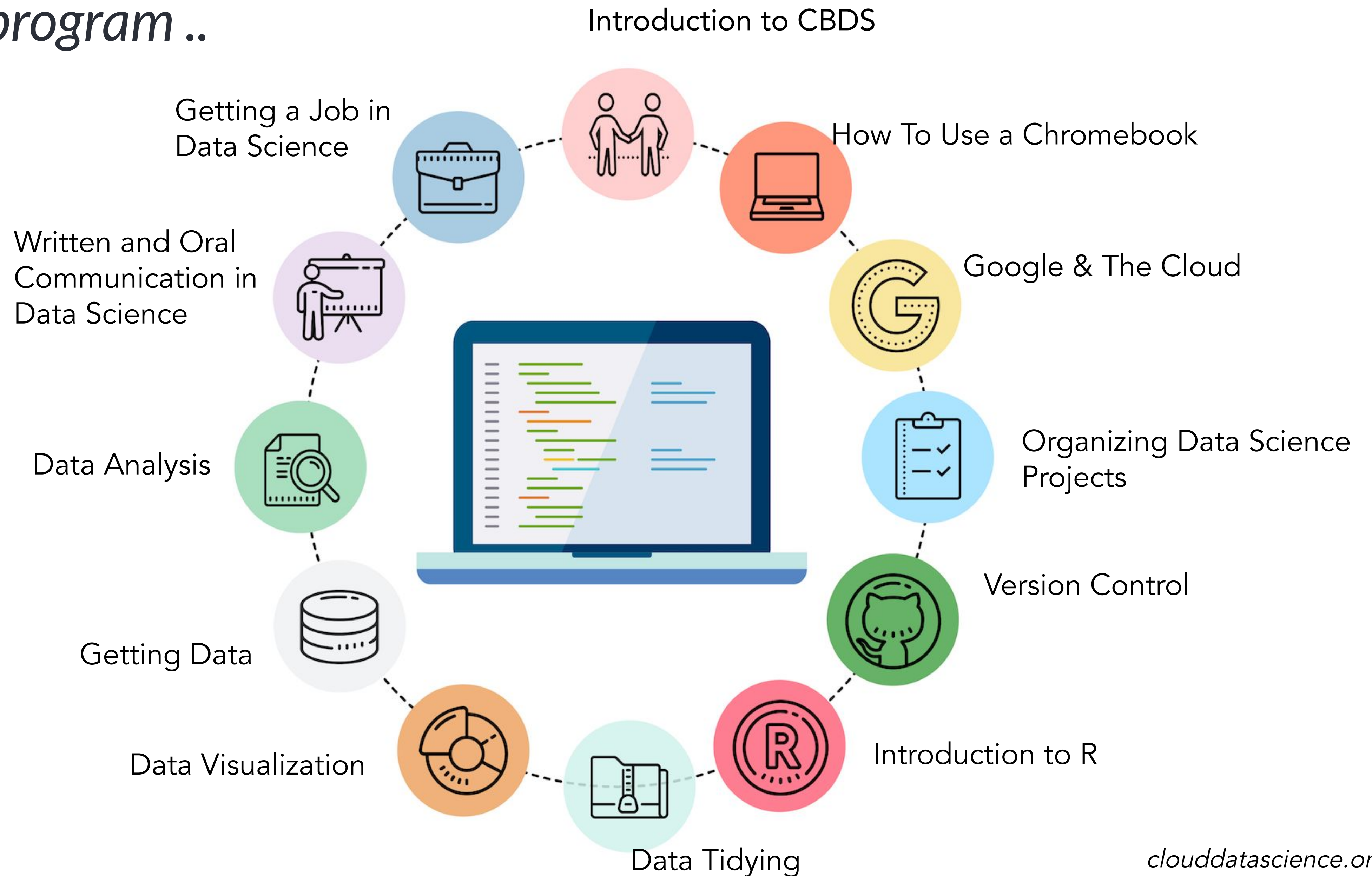
Helping Young People Get Ready

At the YO Program we believe in your future. If you are out of school and out of work, we can help you.

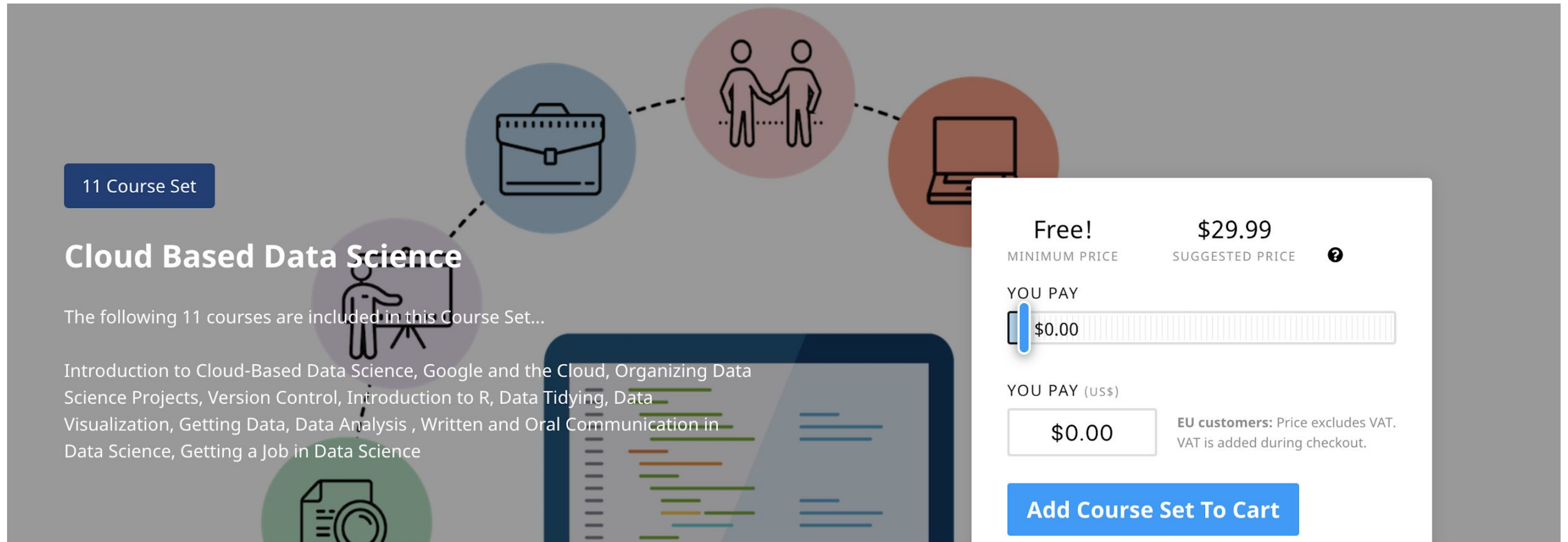
[READ MORE](#)

The right program ..

The right program ..



The right program ..



11 Course Set

Cloud Based Data Science

The following 11 courses are included in this Course Set...

Introduction to Cloud-Based Data Science, Google and the Cloud, Organizing Data Science Projects, Version Control, Introduction to R, Data Tidying, Data Visualization, Getting Data, Data Analysis , Written and Oral Communication in Data Science, Getting a Job in Data Science

Free! \$29.99

MINIMUM PRICE SUGGESTED PRICE

YOU PAY

YOU PAY (US\$)

EU customers: Price excludes VAT. VAT is added during checkout.

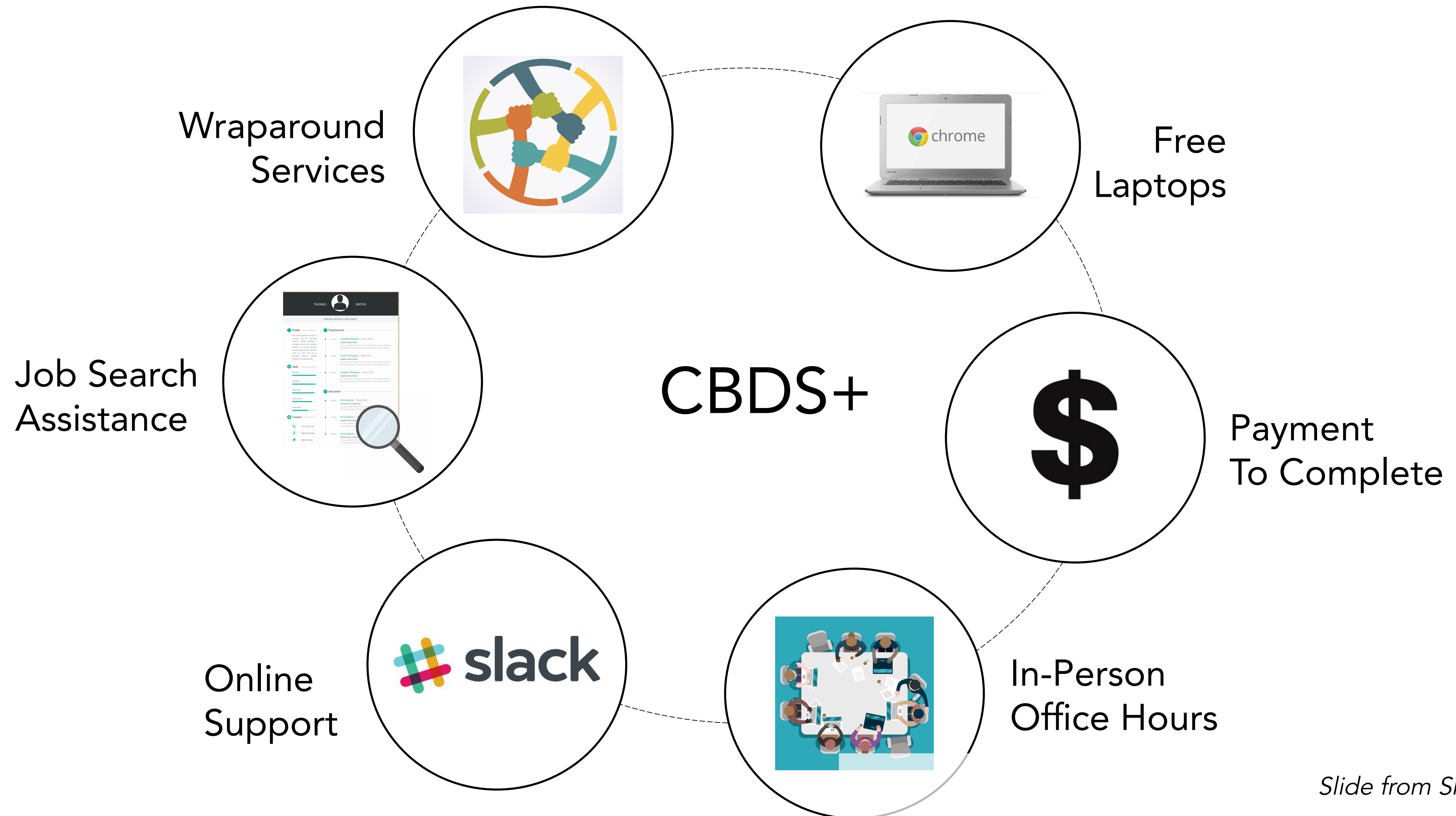
[Add Course Set To Cart](#)

About the Course Set

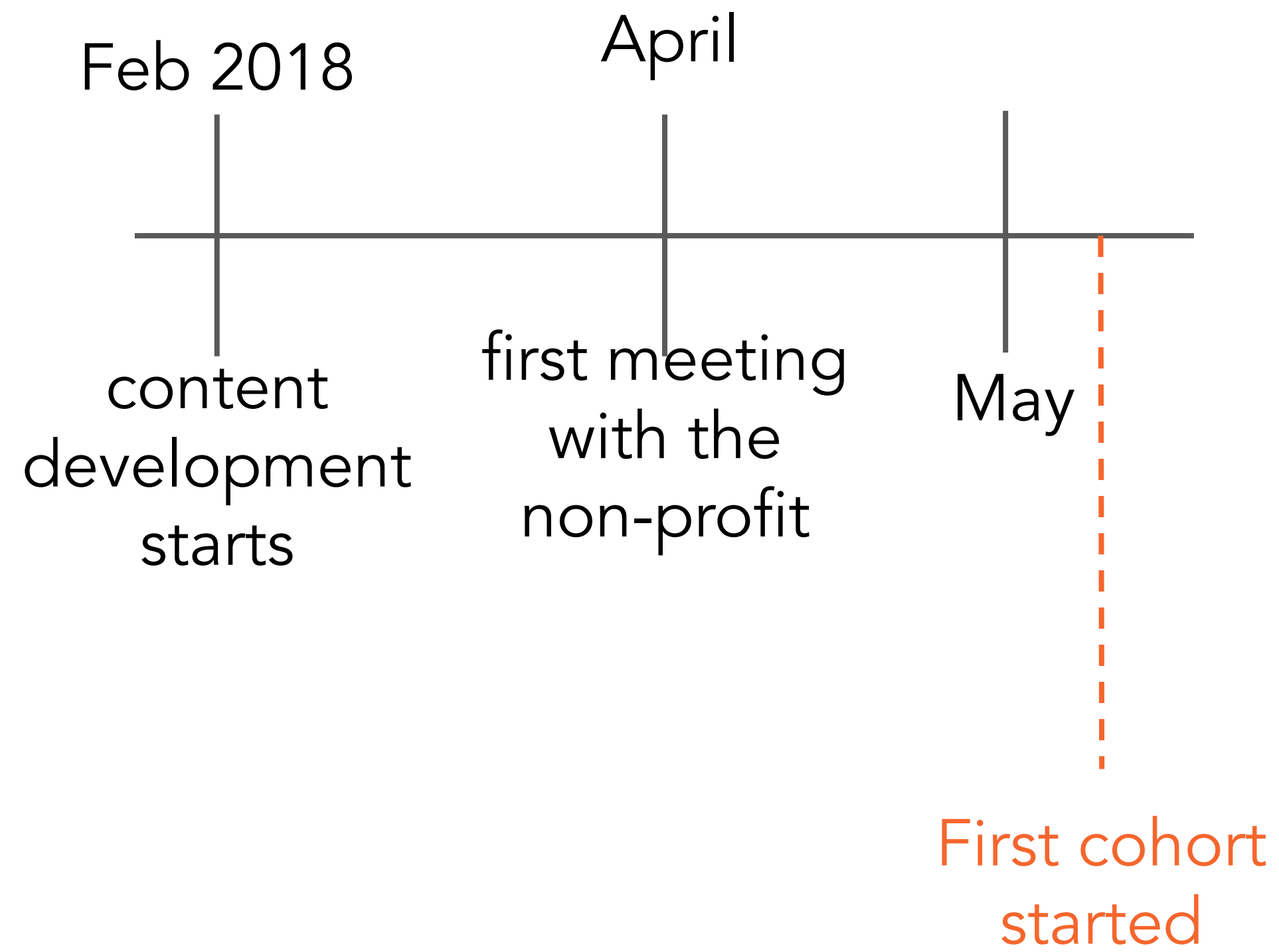
Cloud Based Data Science (CBDS) is a free online educational to help anyone who can read, write, and use a computer to move into data science, the [number one rated job](#). It is a sequence of 11 MOOCs offered by faculty members in the Johns Hopkins Department of Biostatistics, Bloomberg School of Public Health.

For our target population, only online courses aren't enough

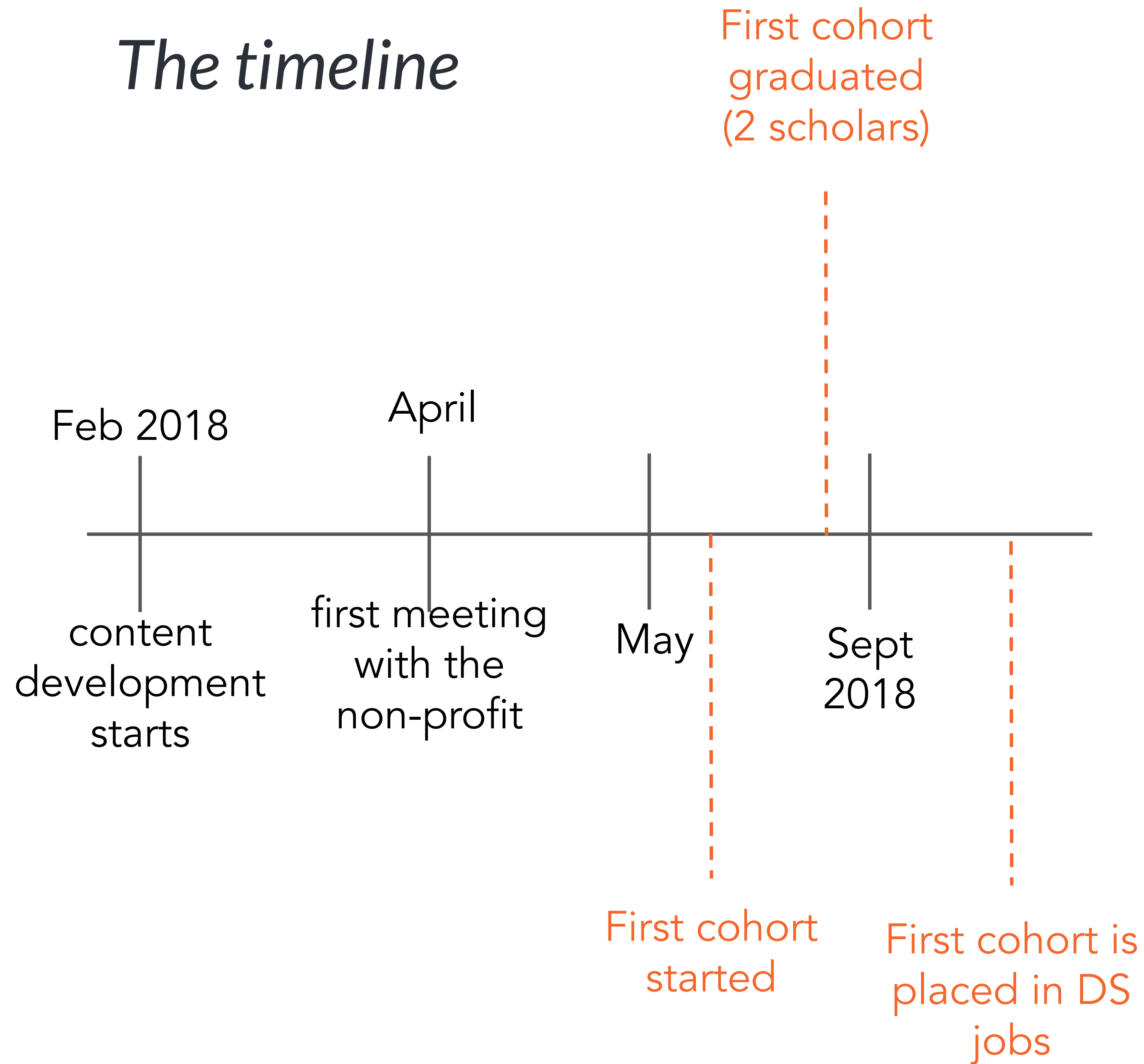
For our target population, only online courses aren't enough



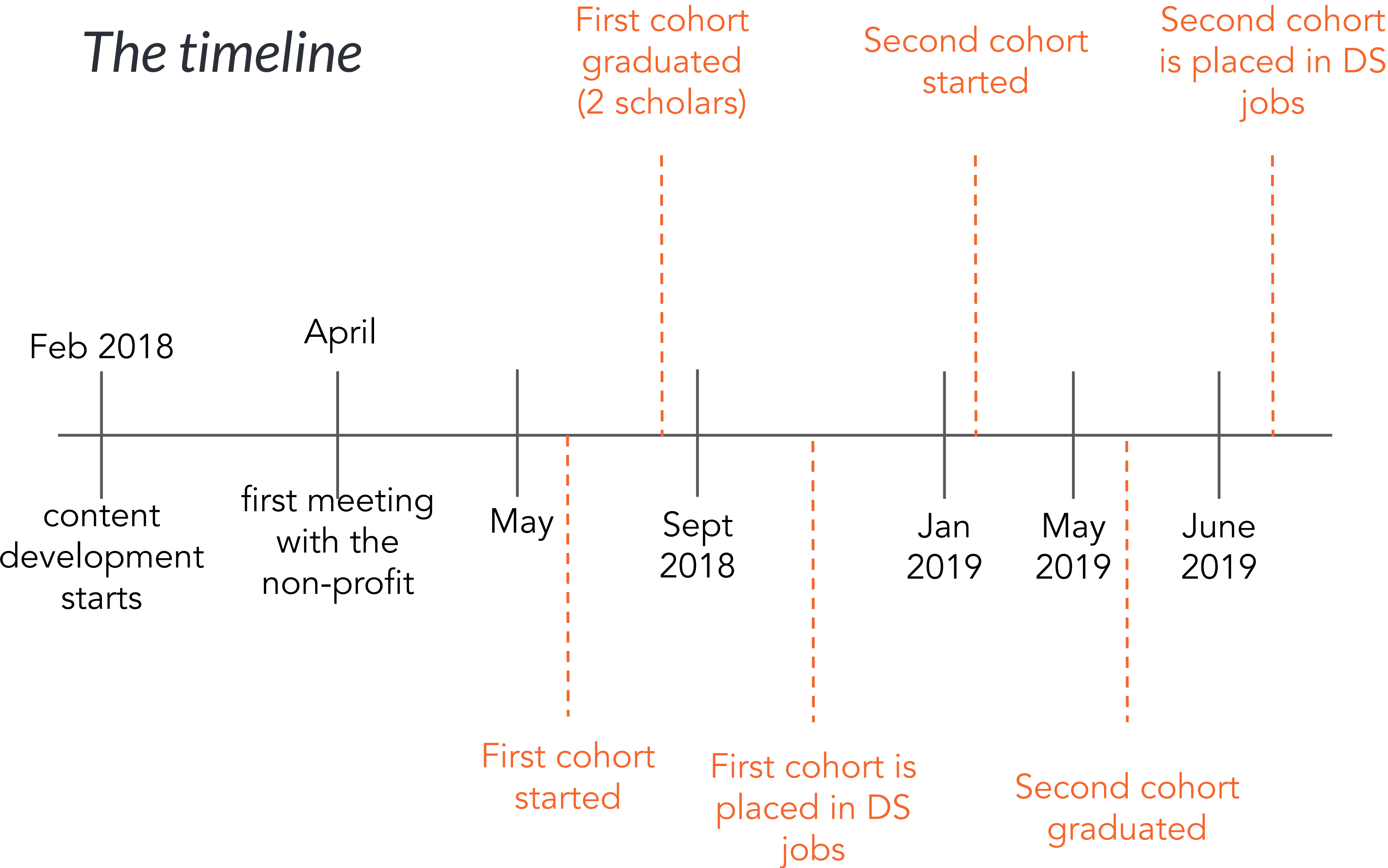
Pilot program timeline



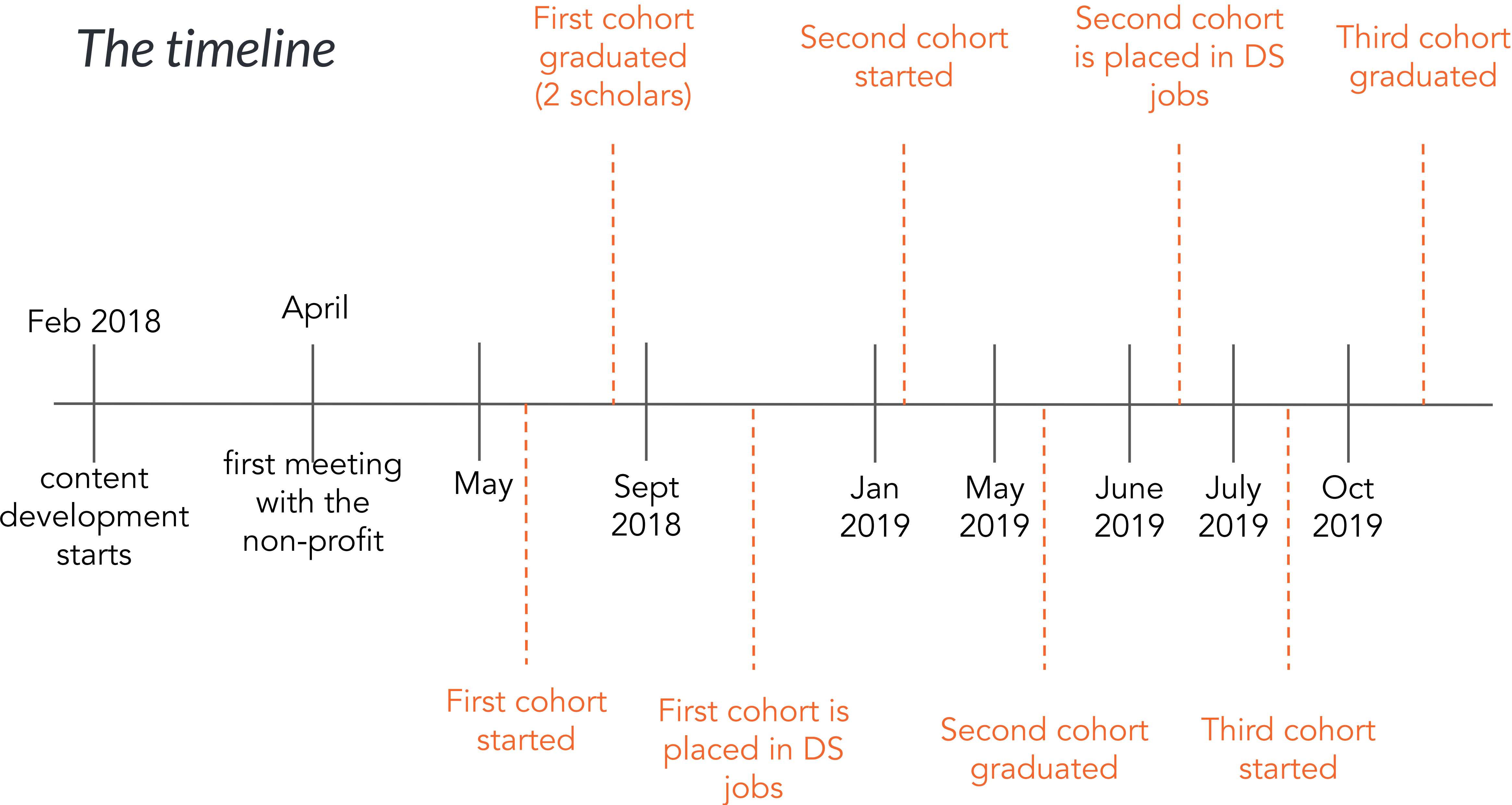
The timeline



The timeline



The timeline



Pilot program statistics

<i># of those enrolled in the program</i>	<i>10</i>
---	-----------

Pilot program statistics

<i># of those enrolled in the program</i>	<i>10</i>
<i># of those graduated</i>	<i>8 (2 dropped for personal reasons)</i>

Pilot program statistics

<i># of those enrolled in the program</i>	<i>10</i>
<i># of those graduated</i>	<i>8 (2 dropped for personal reasons)</i>
<i># of those who got entry level DS jobs</i>	<i>6 (1 pending approval)</i>



Home



Washington Data & Research



Budget



Accounting



Facilities



State Human Resources



IT Systems

State Human Resources

Home » State Human Resources » Compensation & job classes » Compensation administration » Fair Labor Standards Act (FLSA)

Civil service rules

Compensation & job classes

Benefits

Compensation administration

Compensation Q&A

Compensation plan components

Fair Labor Standards Act (FLSA)

Overtime eligible - documenting hours worked

General wage adjustment

Salary

Salary determination policy

Fair Labor Standards Act (FLSA)

What is the Fair Labor Standards Act?

The [Fair Labor Standards Act \(FLSA\)](#) is a federal law which establishes minimum wage, overtime pay eligibility, recordkeeping, and part-time workers in the private sector and

Who is affected by the Act?

All employees that hold positions determined to be non-exempt. Overtime-eligible employees must be compensated for overtime workweek. All overtime-eligible employees r

Related Links



State Human Resources

Who qualifies for exemption from minimum wage and overtime pay?

In order for an exemption to apply, an employee's specific job duties and salary must meet all the requirements of the Department of Labor's regulations. Section 13(a)(1) of the FLSA provides an exemption from both minimum wage and overtime pay for employees employed as bona fide executive, administrative, professional, computer and outside sales employees.

Compensation plan components

Agreements

General wage adjustment

Salary

Salary determination policy

[Time and Attendance Record](#)

Slide from Jeff Leek



Leek

Johnson

Sawyer

Ellis

Hadavand

Muschelli

Kross

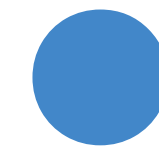
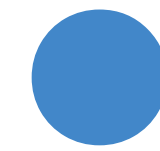
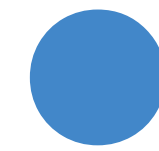
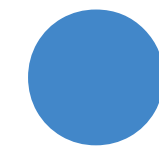
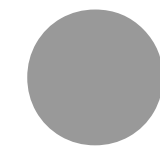
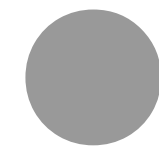
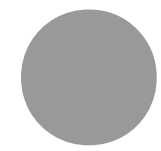
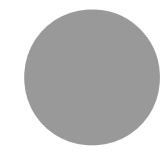
Collado-Torres

Jager

McClymont

Myint

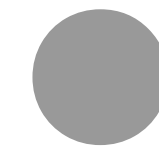
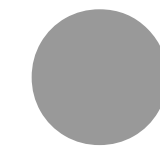
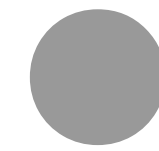
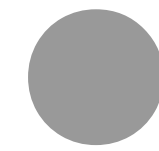
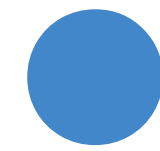
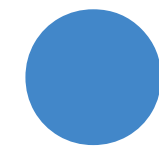
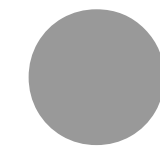
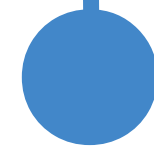
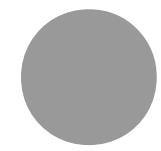
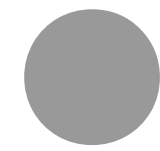
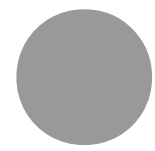
Content Development



Administration & Tutoring



Technology



Scholar Support



Cloud-Based Data Science

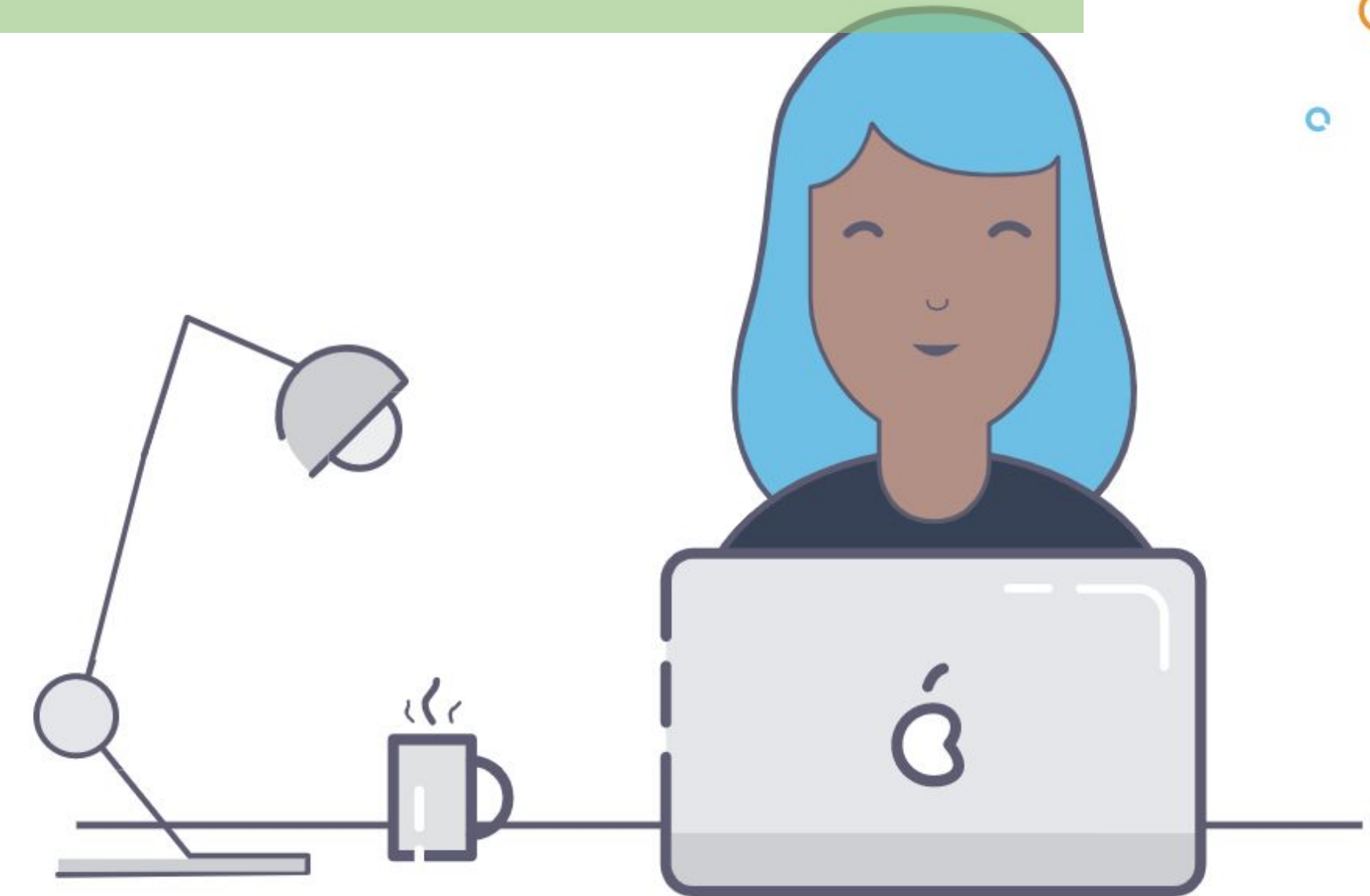
www.cloudatascience.org

Cloud-Based Data Science (CBDS) consists of two parts. One, a set of pay-what-you-want (including free!) massive open online courses that can be completed on any computer with a web browser and an internet connection.

Two, Cloud-Based Data Science Plus (CBDS+) is a no-cost, paid 14-week educational initiative for young-adult, high school and GED-graduates in Baltimore City. Offered by the Johns Hopkins Bloomberg School of Public Health, in partnership with the Historic East Baltimore Community Action Coalition and Leanpub, CBDS+ aims to equip members of surrounding communities with the necessary skills and support required to work in the booming field of data science.

We aim to equip individuals from underserved populations with the necessary skills and support required to work in the field of data science. A portion of anything you pay for the online courses supports the CBDS+ program.

Take our courses today!



Cloud-Based Data Science

www.clouddatascience.org

Cloud-Based Data Science (CBDS) consists of two parts. One, a set of pay-what-you-want (including free!) massive open online courses that can be completed on any computer with a web browser and an internet connection.

\$100	Home internet access for one scholar
\$450	Laptop for one scholar
\$3,000	Stipend and in-person training for one scholar
\$15,000	Stipend and in-person training for an entire cohort of 5 scholars

Take our courses today!

THANKS!