ENABLE 2020: Building an Online Healthcare Data Analytics Training Program in the COVID-19 Era

Eric Cui, Fall 2020

BMHI Internship Presentation

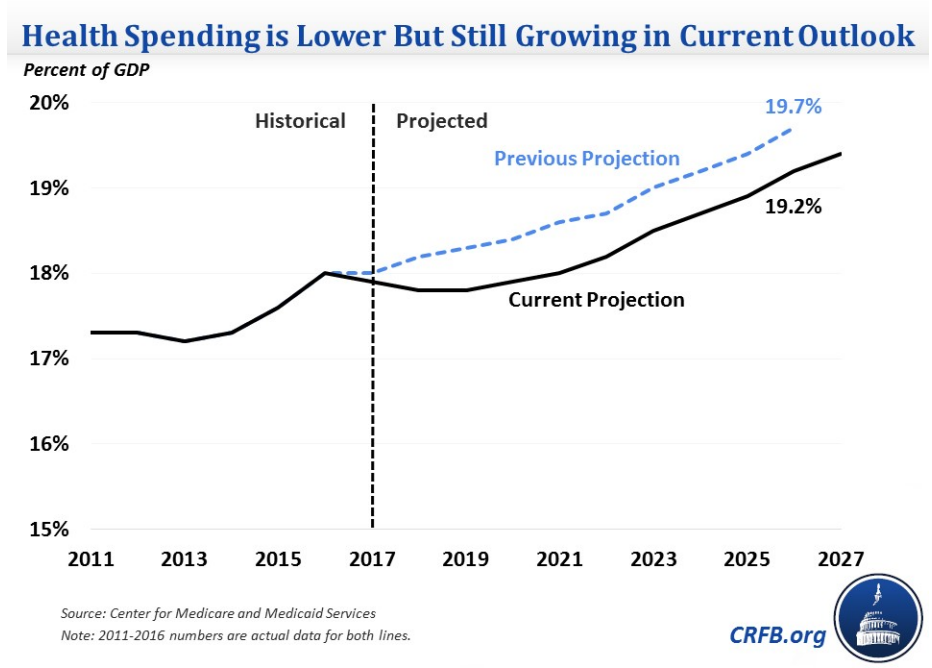
ONLINE TRAINING MODULES

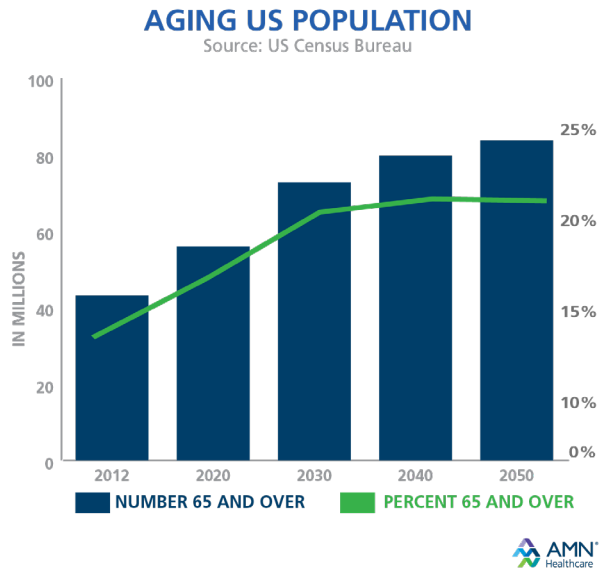
Online Module Form | Zoom Office Hours | FAQs | Contact Us

The Carolina Health Informatics Program (CHIP) has developed a few online training modules called ***An Introduction to Data Science through a health care lens*** to expose learners to the field of data science.These online modules are accessible to anyone who is interested, and require no prior training or knowledge in data science. The modules will be released on May 20th, 2020. If you complete the entire set of modules – the entire "short course" – and successfully pass a simple final assessment, you will receive a certificate of completion.

Rising Healthcare Demand

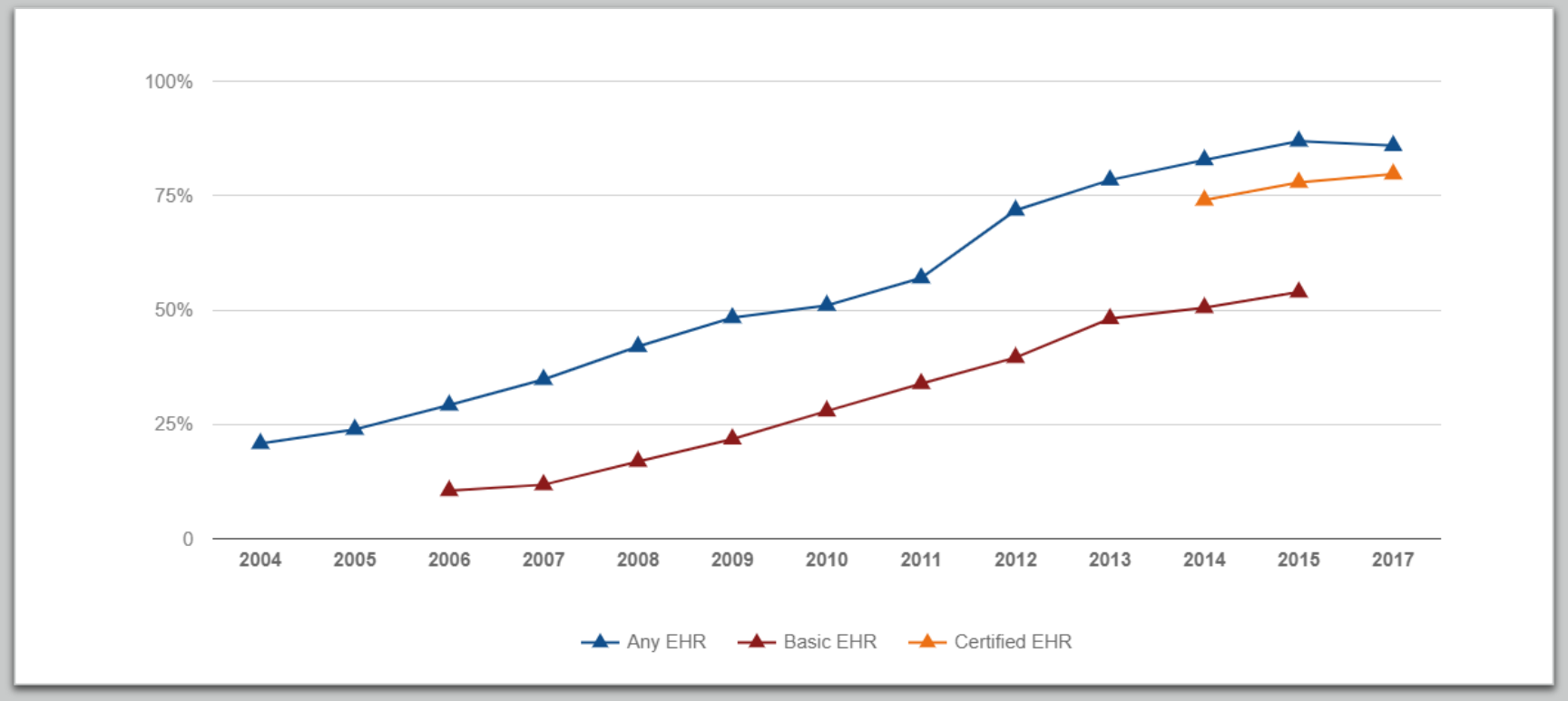
- Swelling population
- Graying population
- Increasing number of physician visits per patient





Rising Demand for Health Informaticians

- 2013 analysis estimated that health IT job ads tripled as a share of healthcare job postings
- 2018 analysis estimated 19,852 – 153,115 more FTE personnel may be required



ENABLE History

- Established in 2018
- Partnership between United Health Foundation and the Carolina Health Informatics Program (CHIP)
- Program designed to train underrepresented students and professionals in biomedical and health informatics

ENABLE Program Goals

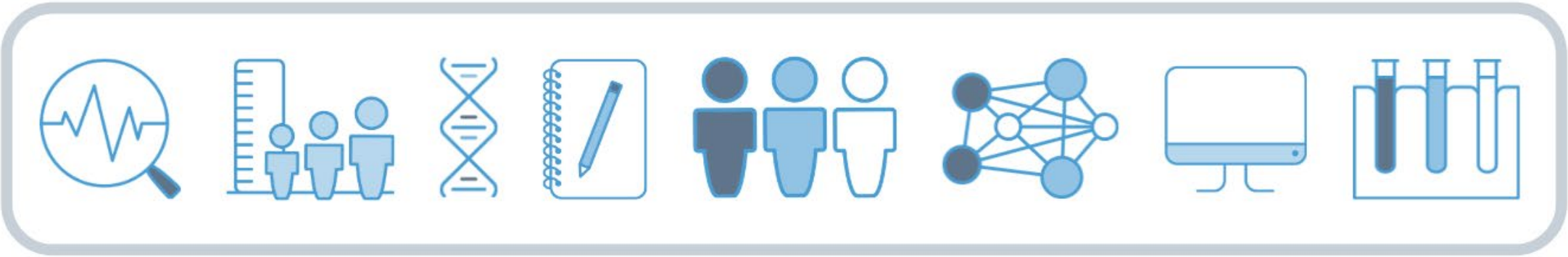
"Creation of in-person summer boot camps for minority undergraduate students from local HBCUs to expose students to health informatics principles and encourage them to explore advanced training and health informatics careers."

"Development of new health informatics online course content, based upon the boot camps, that introduces health informatics to a cross-section of students and working professionals."

"Creation of a new online master's degree to help working professionals develop expertise in health informatics, with a focus on data analytics, visualizations, statistics and database systems."

COVID-19 and ENABLE

- In-person program cancelled due to COVID-19
- Program transitioned to online modules
- Modules developed in partnership with Program for Precision Medicine in Healthcare



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Introduction to Data Science Curriculum

Text Mining

- Module 1: Text Preprocessing
- Module 2: Exploratory Analysis of Text Data
- Module 3: Information Extraction
- Module 4: Feature Representation for Text
- Module 5: Predictive Analysis of Text Data

Data Mining

- Module 1: Preparing Data
- Module 2: Univariate Analysis
- Module 3: Bivariate Analysis
- Module 4: Feature Selection
- Module 5: Predictive Analysis

To receive a certificate of completion, please complete the final quiz. The quiz comprises of questions from all the text mining and data mining modules. Please complete the final quiz only after you have completed all the modules. You will receive the final score after we have finished reviewing your answers.

Final Quiz

Text Mining Project

Use your skills to analyze text and produce relevant insights. Possible dataset topics include drug reviews, health news, COVID-19 tweets, and conversational search.

Open Project Notebook

Data Mining Project

Use your skills to analyze a healthcare dataset and produce relevant insights. Possible dataset topics include stroke, diabetes, and heart disease prediction.

Open Project Notebook

Certificate

Longitudinal Approach

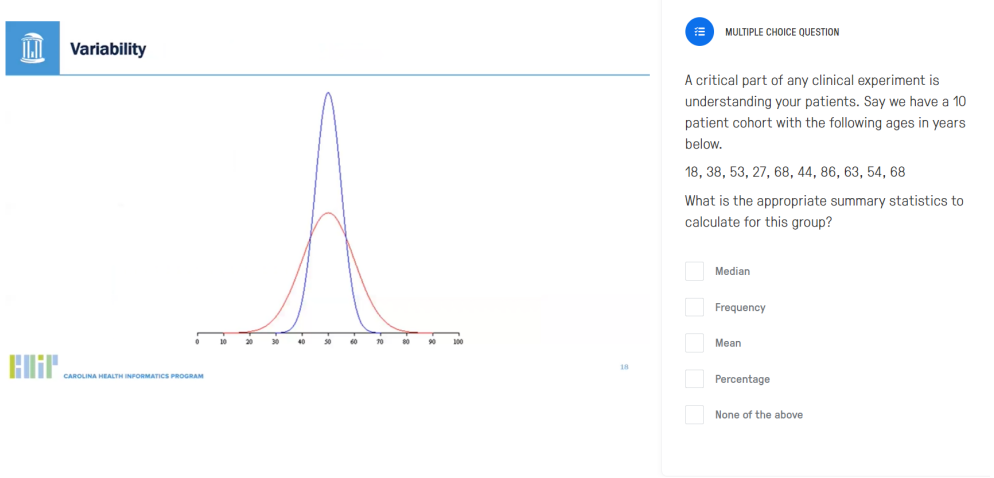
1) Reading and Preparing Data
2) Univariate Analysis
3) Bivariate Analysis
4) Feature Selection
5) Predictive Analysis

Module Contents

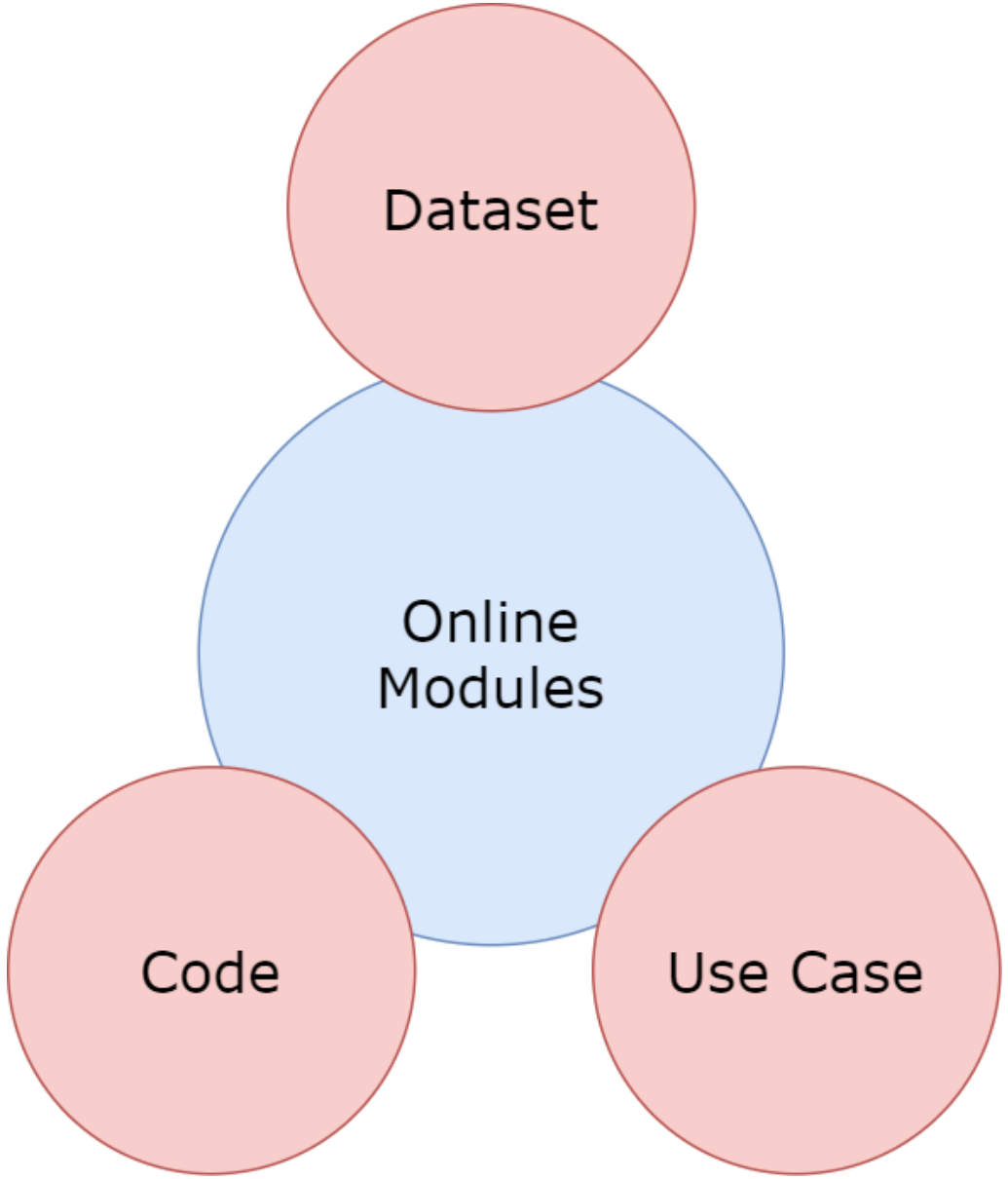
- Lecture video
- Instructional text and multimedia
- Interactive code
- Questions with immediate feedback
- Hands-on exercises

Active Learning

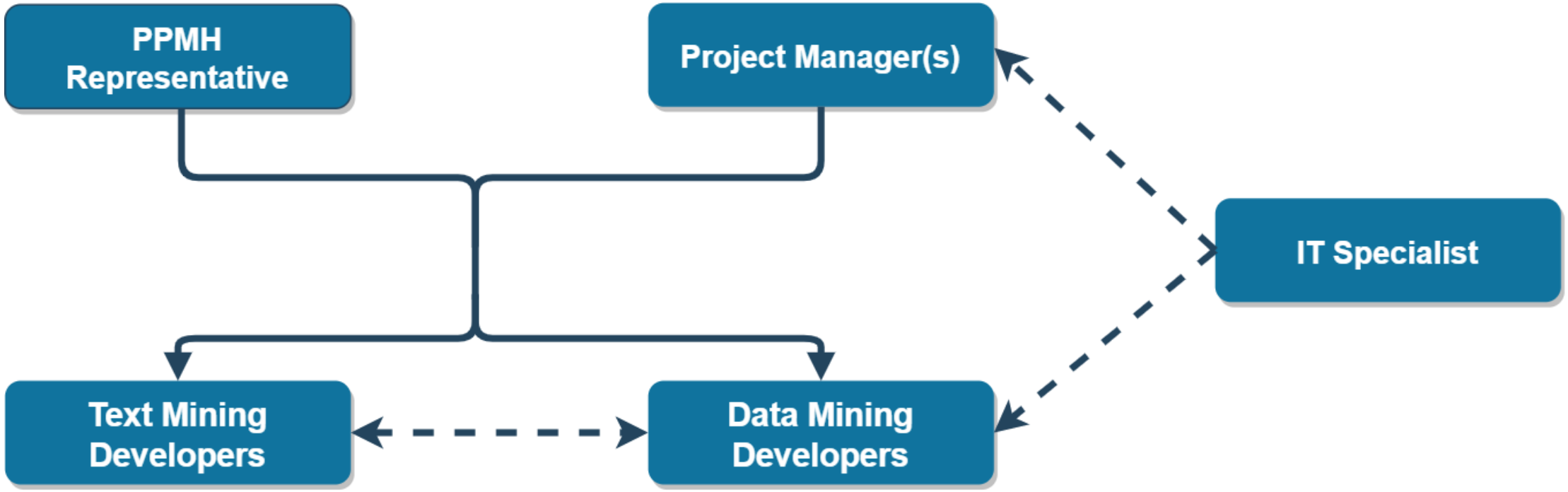
- Active learning includes:
  - Problem-based or case-based learning
  - Cooperative learning
  - Think-pair-share
  - Inquiry-based learning
  - Discovery learning
  - Technology-enhanced learning



Data Mining Project


Dataset
Online Modules
Code
Use Case

Team Structure



Server

amazon web services™ | EC2

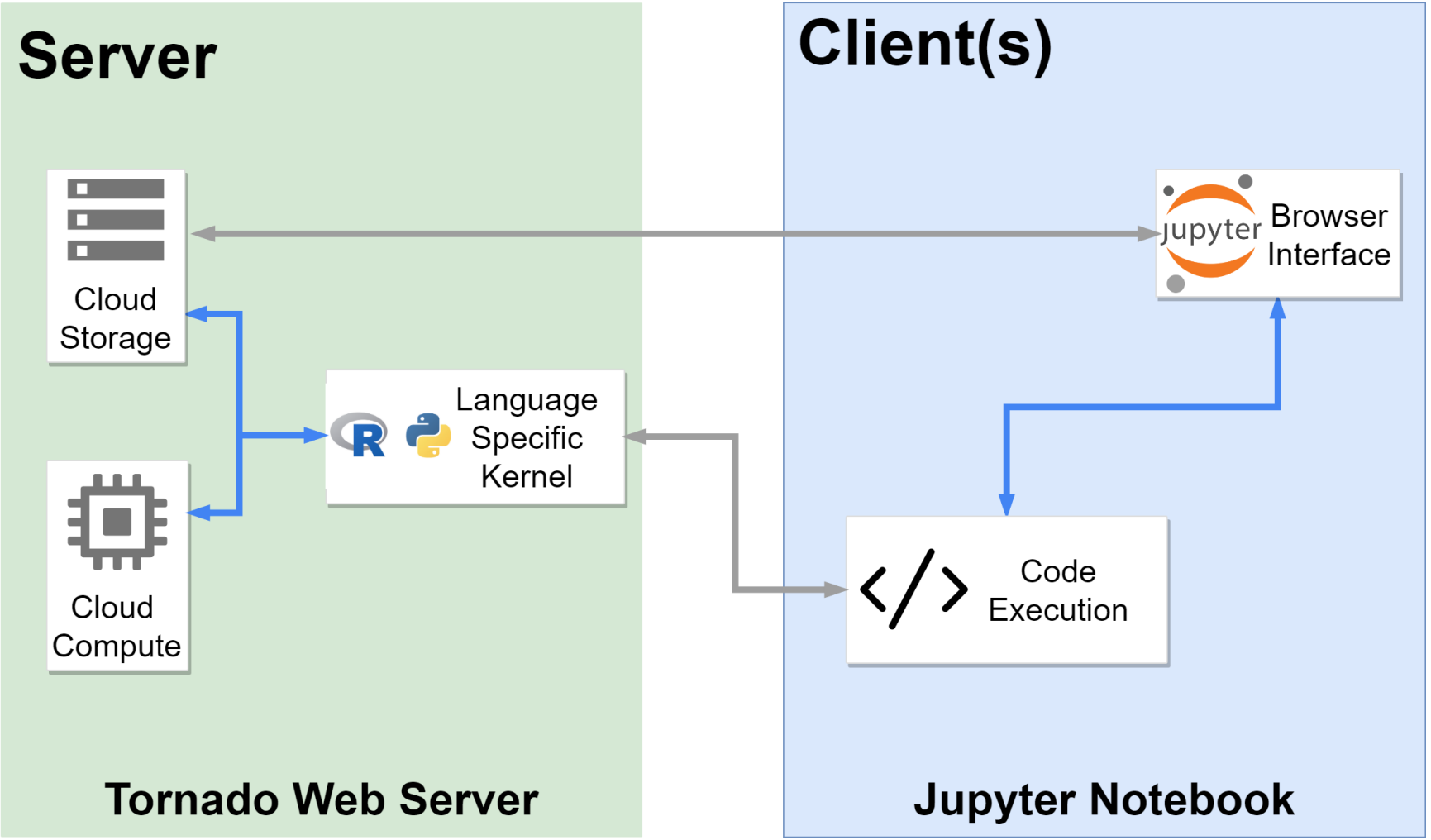
Tornado

Content Management

git + GitHub

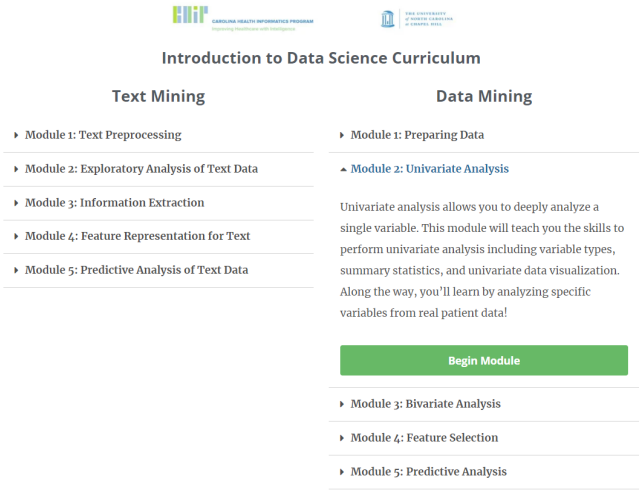
jupyter

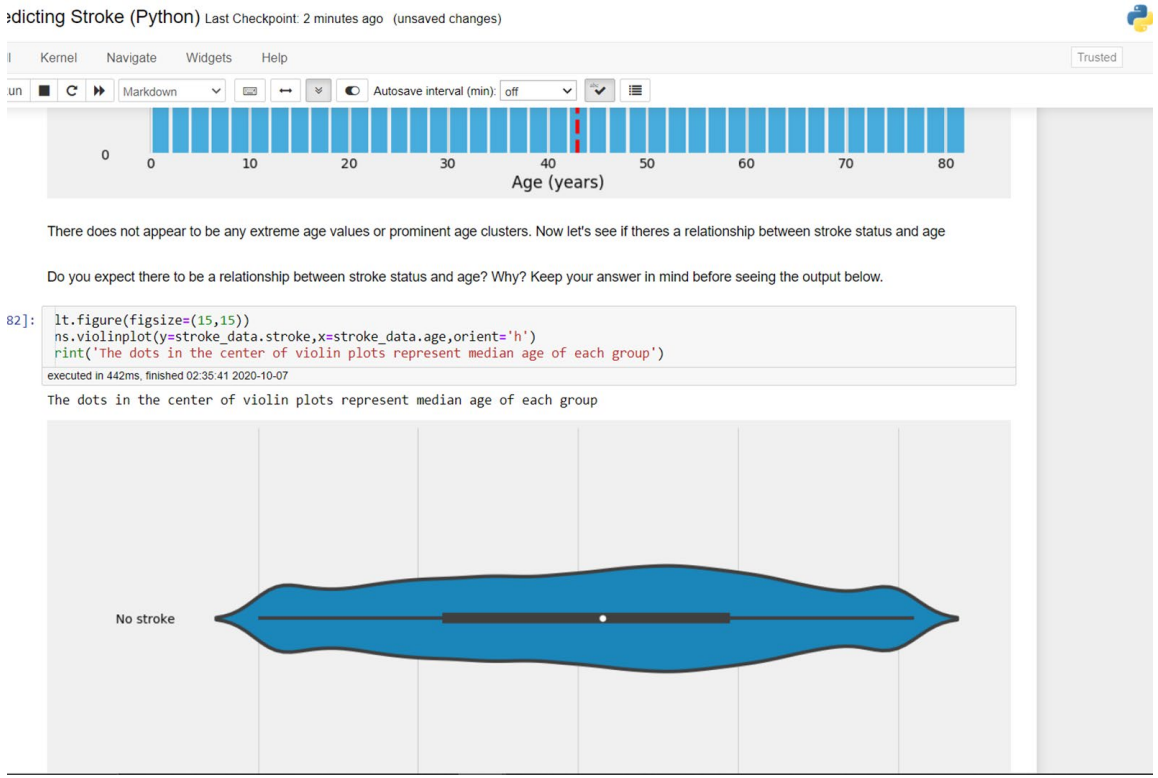
Content Development



The server-side system runs on Amazon Web Services Elastic Compute Cloud

Implementation





Program Outcomes

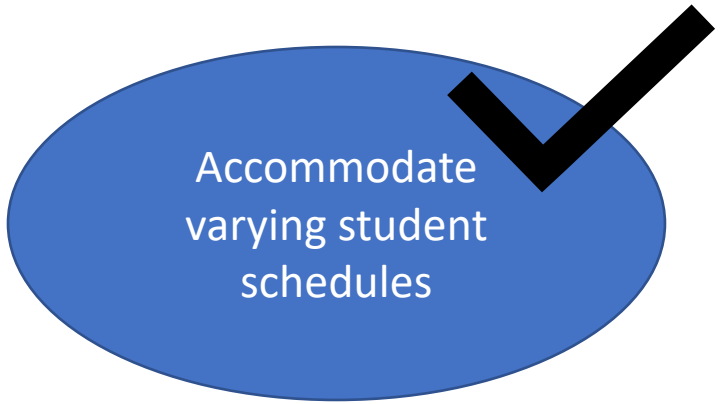
165 students expressed interest

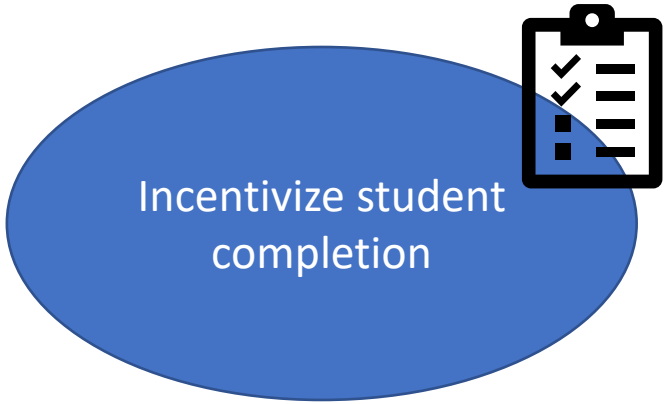
8-10 students joined office hours

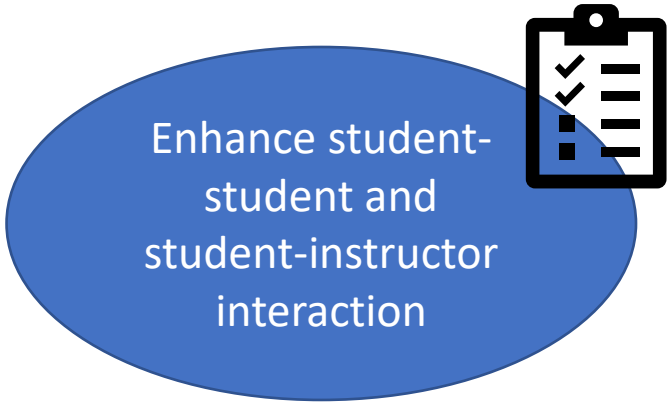
17 students completed program

Comparison to MOOC Performance

- 2013 analysis estimates 7.5% MOOC completion rate
- Survey of MOOC courses found completion rates ranging from 0.9% - 36.1%
- Summer completion rate was approximately 10%







Lessons Learned

- Interdisciplinary expertise is important
- Minimize barriers to entry
- Emphasize clear and simple user interfaces

Conclusion

Thank you! Any questions?

References

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