

Evaluation of the Public Health Statistical Boot Camp Pilot Project

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Background

Masters in Public Health (MPH) students are required to apply statistical thinking and techniques as part of their capstone project. However many students may not have taken quantitative courses recently, or may have gaps in their knowledge or skills. In the LCOM MPH program, capstone projects are done by teams of 4 – 5 students per team; two students on each team lead the data management and data analysis components, respectively.

MPH program faculty collaborated to develop a series of online, asynchronous self-directed learning modules addressing common areas where students need help in their capstone projects. Topics were identified based on observation of the areas where students have struggled in earlier capstone projects and include:

- Data cleaning and management
- Describing data
- Changing and recoding variables
- Statistical testing and regression
- Regression model building
- Working with weighted datasets

Pilot testing of the modules took place in the MPH capstone course *PH392: Culminating Project Experience* in the fall of 2020.

Methods

Each module contains a mix of instructor videos, screencasts, practice/application exercises and self-assessment/reflection questions. SPSS was the statistical software used, and students were given an example dataset that carried through most of the demonstrations and exercises. Completion time was estimated at 4 – 5 hours total per student, and there was no time limit. Students were allowed to leave and return to the modules, and could repeat the practice exercises and self- assessment and reflection questions.

- To date we have developed 8 modules
- 6 core modules (summarized here)
 - 2 introductory or supplemental modules

Self-assessment data were collected at the end of each module

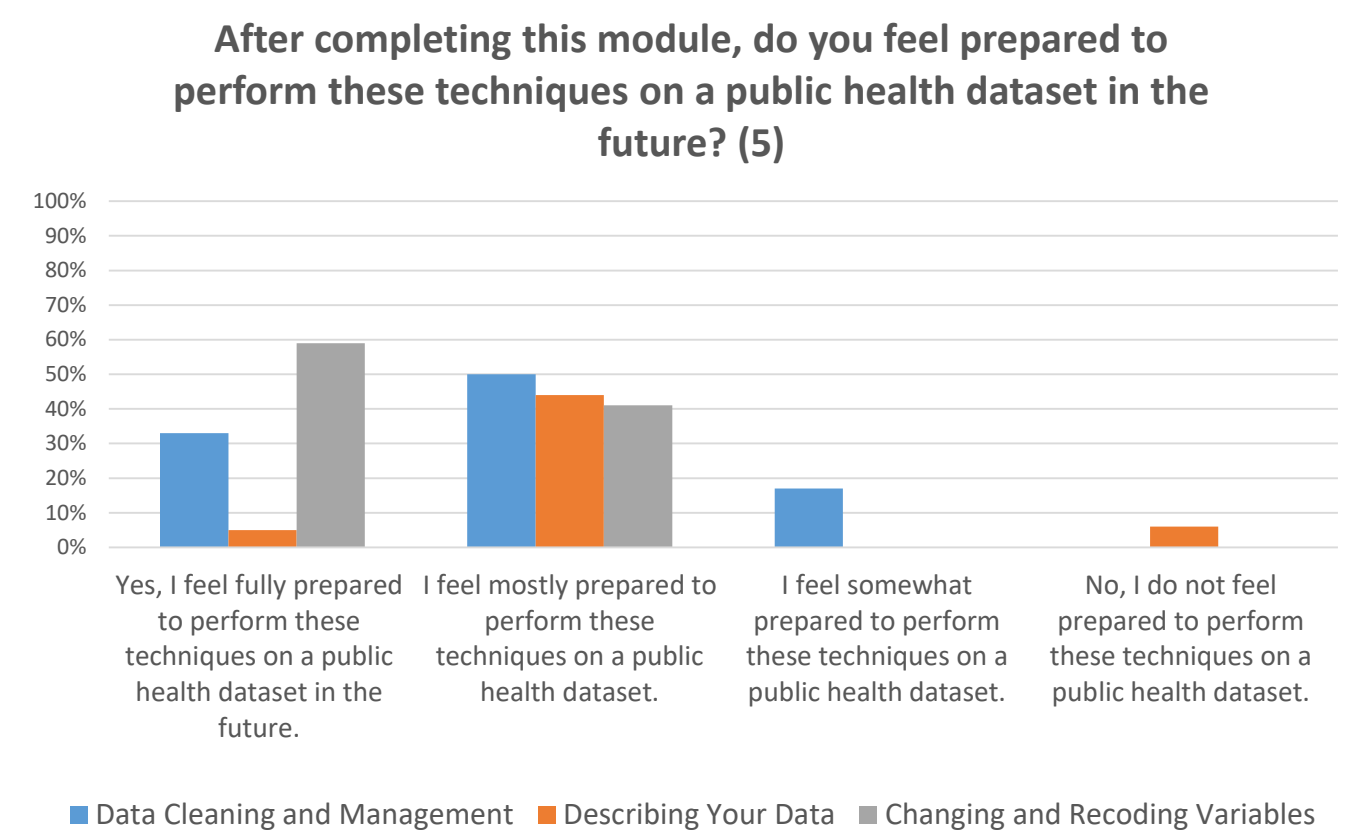
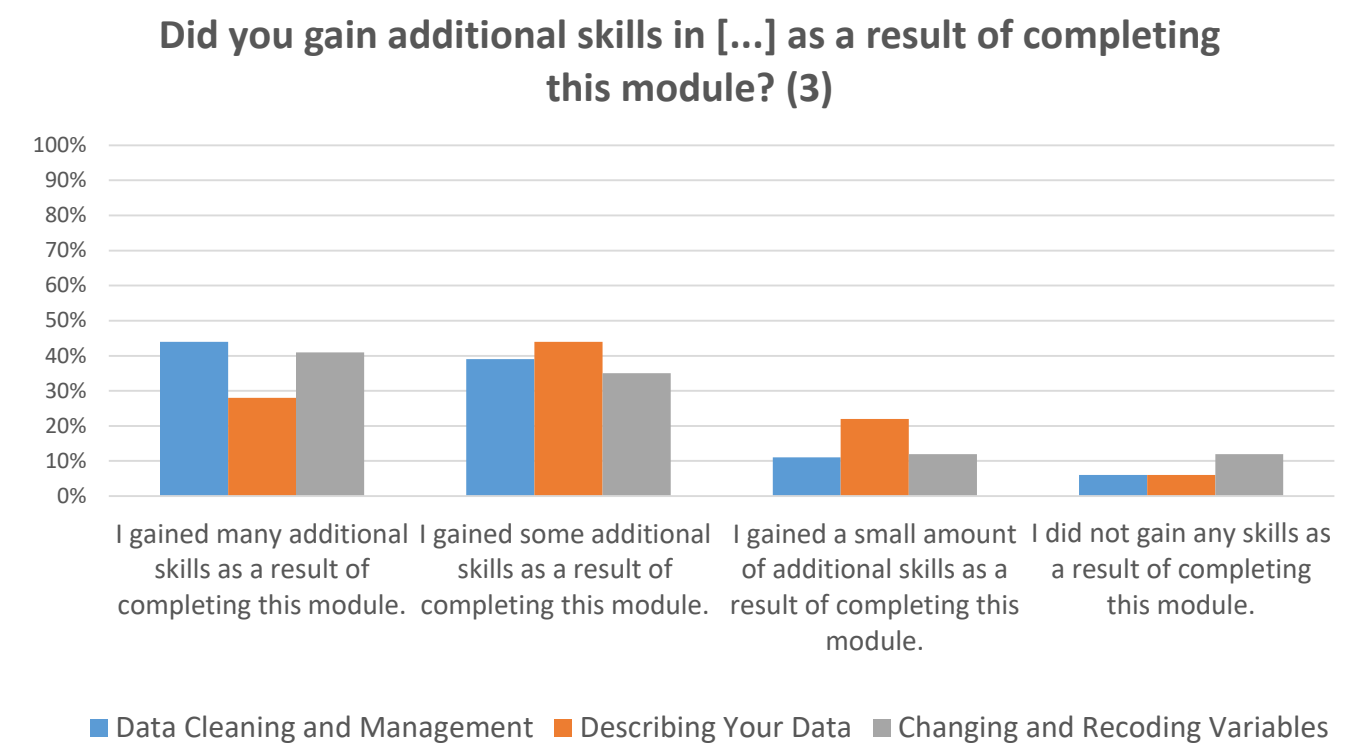
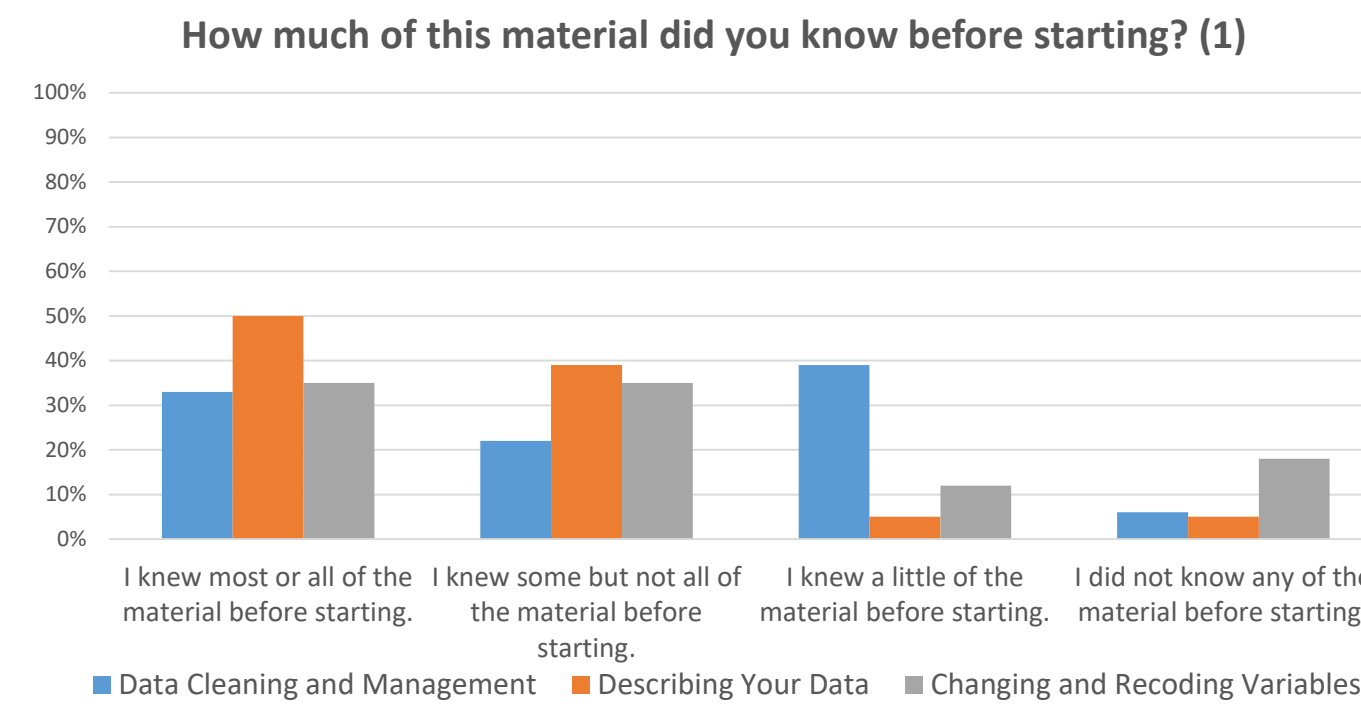
- End of module questions assessed prior knowledge of the topic, acquisition of skills and readiness to apply what was learned
- Summaries were grouped by data preparation and analysis
 - Used a 4 point response scale (displayed on the figures)

Student completion of modules varied from 9 to 20

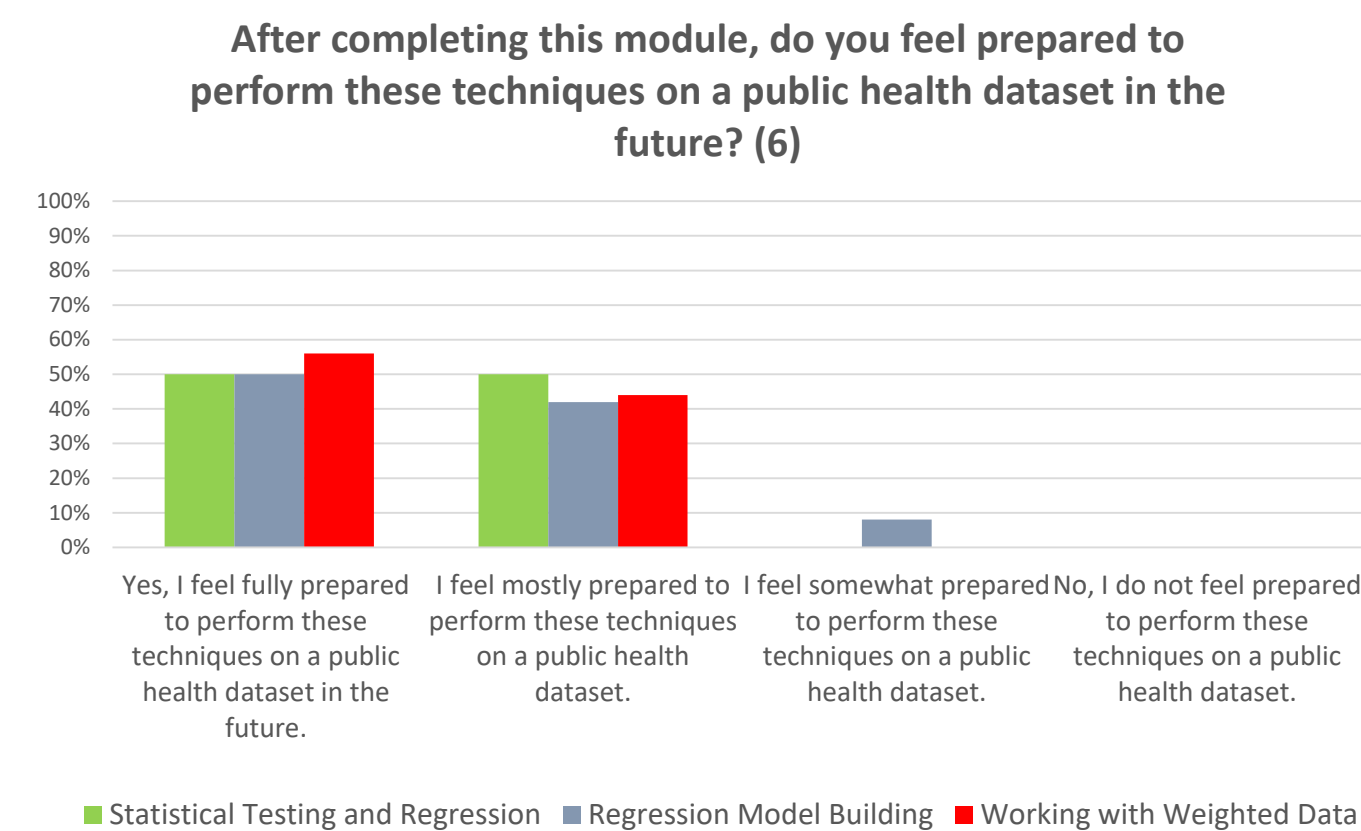
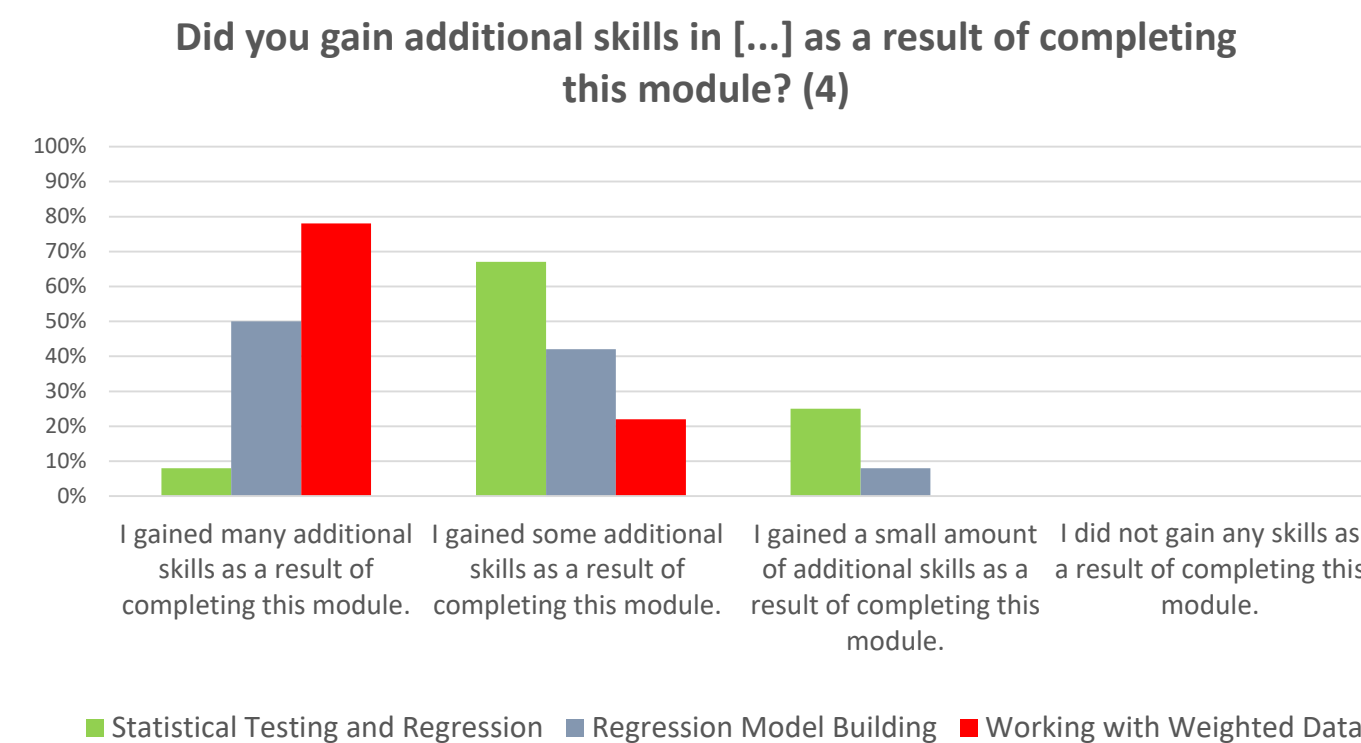
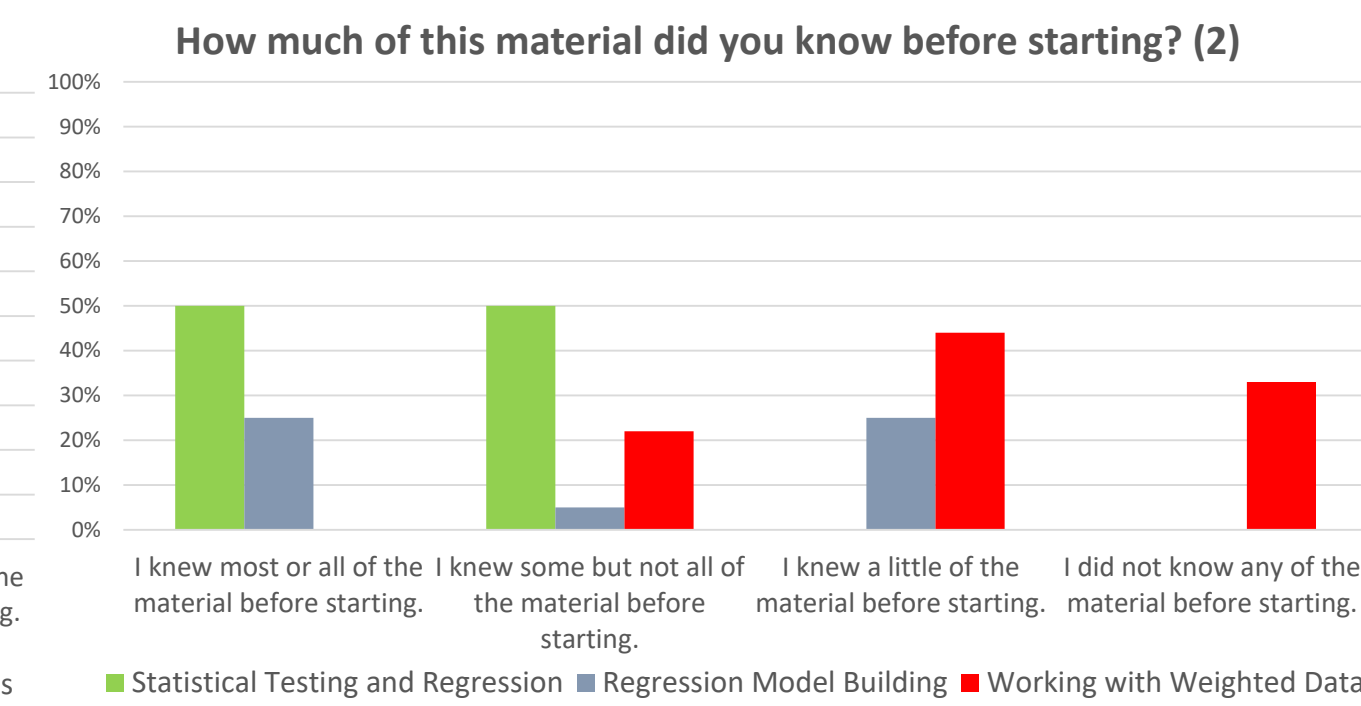
Participation was required for students with a data-specific role.

Results: Assessment/Reflection Questions

Data Preparation Topics



Data Analysis Topics



Conclusions

The UVM LCOM Public Health Statistical Boot Camp appears to be an acceptable and valued educational intervention, based on student feedback.

The different topics varied in terms of students' self-rated comfort and readiness to apply relevant skills and thinking. Very few students indicated higher levels of comfort with their prior knowledge across all of the topic areas. It is possible that future Boot Camp offerings could be tailored to specific areas of need for individual students. Additional topics (modules) will likely need to be added to further strengthen students' readiness to perform data analysis in the capstone projects.

The Boot Camp approach offers students an opportunity to better prepare for applying the quantitative competencies they develop during the MPH program, particularly for students who need to brush up on specific statistical topics.

Limitations

- Descriptive data summary
- No comparison group
- Assessment of changes in knowledge and skills is limited

Next Steps

- Formal qualitative analysis of open-ended responses
- Strengthen assessment of students' learning associated with the modules
- Examine if module performance is associated with application of quantitative skills in capstone projects
- Collect second MPH student cohort (and assess completion time better)
- Check alignment of topics with other MPH programs and curricula
- Expand qualitative assessment of students' experiences

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