

FLC Implementation Analysis

presented by Juan Cortes





Project Summary

Project DA-FANH is a cooperative agreement between two HSI colleges in the California State University system to enhance the quality of postsecondary education. This project aims to retain and graduate highly qualified students from traditionally underrepresented communities who are capable of enhancing the nation's food, agriculture, natural resources and human science (FANH) professional and scientific workforce.

(Obj3) A Faculty learning community to integrate DS skills into curriculum that support FANH programs and to increase interest and aptitude among faculty and students. Promoting culturally relevant pedagogy and modeling incorporation of DS technologies in the **FANH curriculum will dismantle existing stereotypes about who belongs and build a pathway for Students of Color in DS and FANH careers**



Focus: Objective 3 Faculty Development & Enhancement of Teaching

Facilitate new and improved curriculum that support the integration of Data Analytics into the FANH college curriculum to increase interest and aptitude among faculty and students. Promoting culturally relevant pedagogy and modeling incorporation of DS technologies in the FANH curriculum will dismantle existing stereotypes about who belongs and build a pathway for Students of Color in DS and FANH careers.

- Activity 3a. Develop and offer a FLC to develop culturally relevant, project-based and data-driven curriculum that uses modern DS tools (e.g. R, Python, SAP Analytics, GitHub) in the classroom.
- Activity 3b. Provide direct and indirect support for traditional and alternative methods of implementation of the newly developed curriculum. Evaluate the curriculum from both the **student** and faculty perspective



From Grant Proposal

Program materials developed from this project will benefit approximately 90 faculty, 80 graduate and 800 undergraduate students, and 100 professionals working on current state-wide USDA grants. Project benefits will be used to increase future grant proposal competitiveness, and strengthen statewide campus collaborations, potentially leading to multi-institution online degree programs.

- At least 200 students exposed to new curriculum
- All 10 FLC faculty implement the new curriculum within 2 years.
- At least 30% of exposed students' reporting an increase in interest, engagement or learning.



Overview

- Total number of unique student surveys: 123
- Number of pre: 85
- Number of post: 56
- Number of matched pre and post (up next)



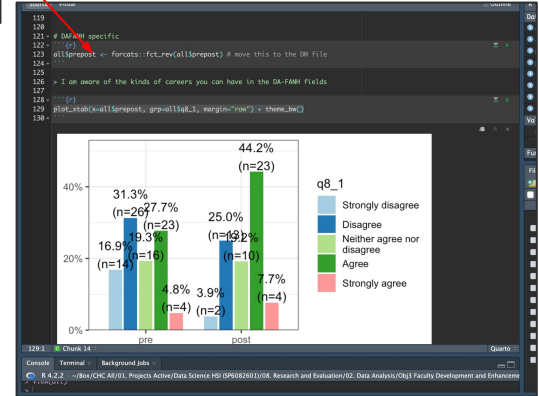
Experience

Course Syllabus: Please select the appropriate scale rating for each question:

How clear was the course content?	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
How organized was the content?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How relevant was the content?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How responsible in number was the material?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How helpful were the worksheets?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How well did the appendices?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

```
1 # Import and clean the Qualtrics student survey
2 # Read in the data
3 # Author: Juan Cortes, Isabel Ramos
4
5 # Read necessary packages
6 library(tidyverse)
7 library(readr)
8 library(dplyr)
9 library(ggplot2)
10 library(lubridate)
11 # library(reshape2) - only used once
12
13 # Function to get responses and get all their empty questions to fill for questions all "prefer"
14 prep_unanswered_to_naes = function(pdf, data, pnaes) {
15   these_cols = grep("prefer", colnames(data))
16   naes = read_csv(pnaes, these_cols)
17   answer = replace_na(answer, paste = "prefer not to answer", NA)
18   fill(answer ~>, these_cols) ~> NA
19   return(data)
20 }
21
22 # Import Survey
23 # This data is contained in Qualtrics, we need an API to access this data
24 # Import base data from previous source script, clean names and filter out non-answers
25 survey_raw = read_csv("data/IL_Student_Survey_raw_Ada") %>%
26   filter(!is.na(survey_raw))
27
28 # Import sheets with QDR completion rate
29 filter_progress = 100 %>%
30   # Remove unneeded column
31   select(-c("data_source", "finished", "progress", "response_id", "consent"))
32
33 # Demographics
34 # Age
35 # Pre
36 # Post
37 # Survey raw
38 # Survey raw
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100 # Survey raw
```

Question	Response	Age	Gender	Pre	Post
How clear was the course content?	Strongly disagree	18-24	Female	16.9%	19.3%
How clear was the course content?	Disagree	25-34	Male	9.3%	7.7%
How clear was the course content?	Neither agree nor disagree	35-44	Female	31.3%	23.0%
How clear was the course content?	Agree	45-54	Male	4.8%	3.9%
How clear was the course content?	Strongly agree	55-64	Female	44.2%	47.7%

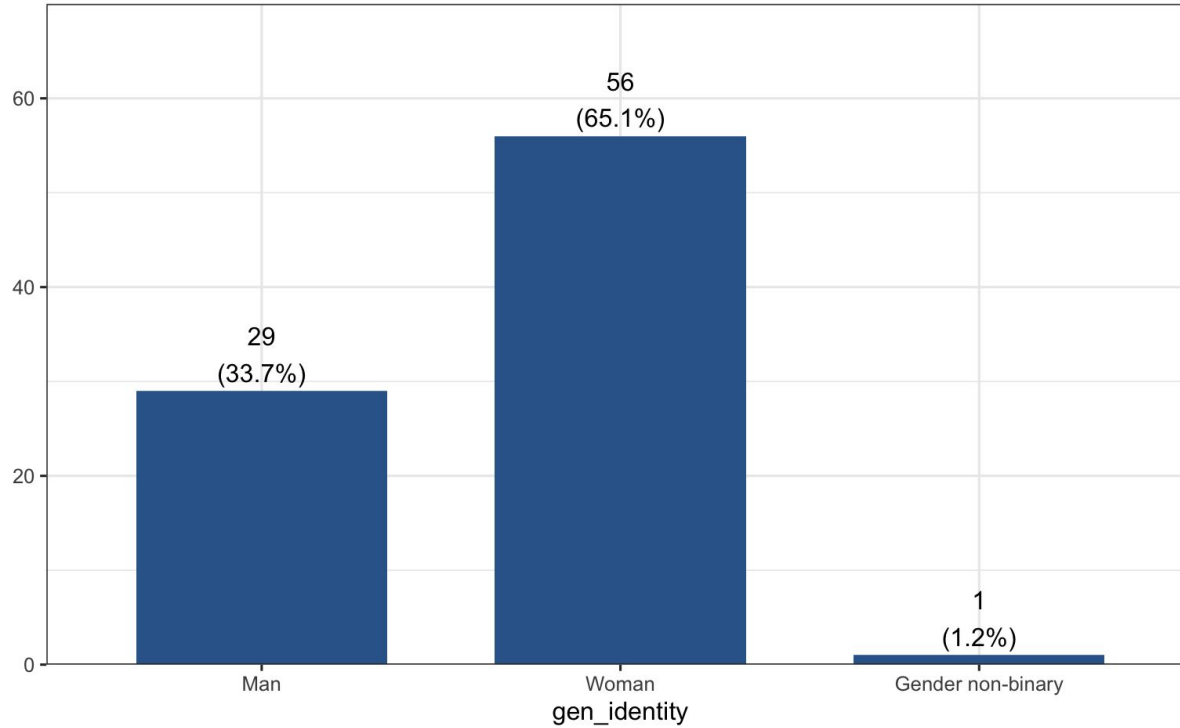




Participant Characteristics (pre survey only)

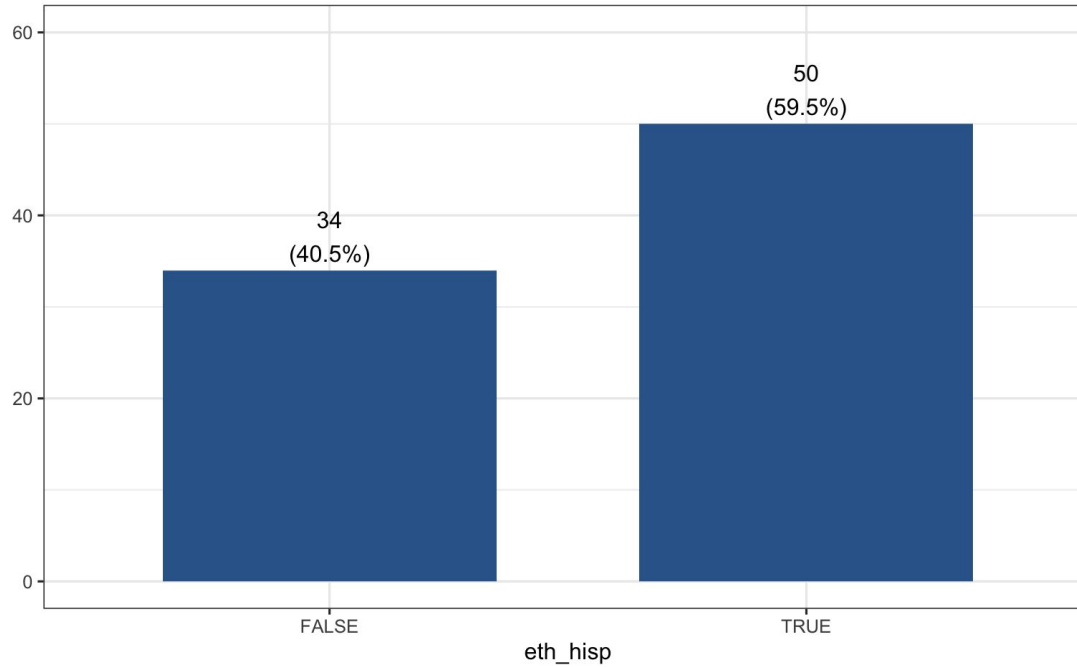


Gender



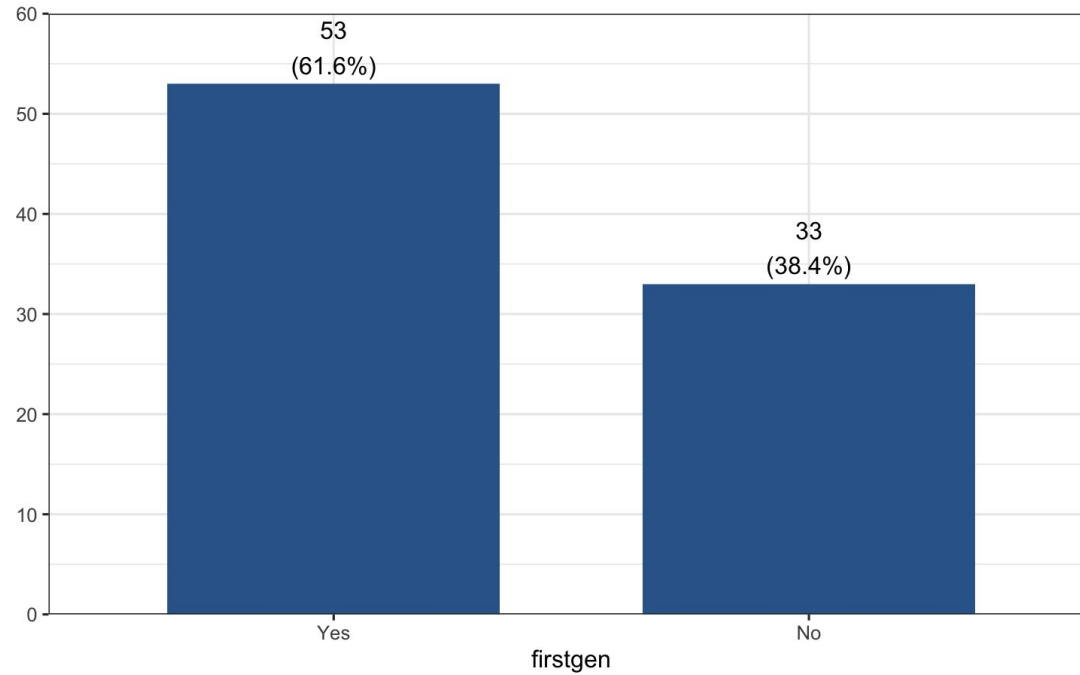


Hispanic Identity



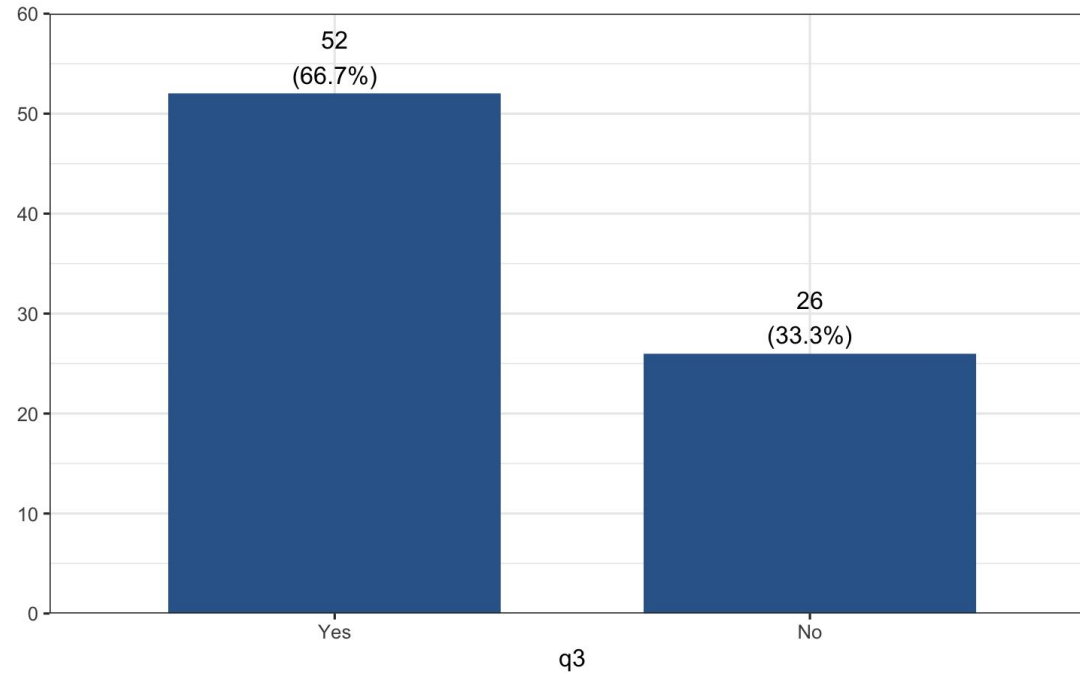


First Gen



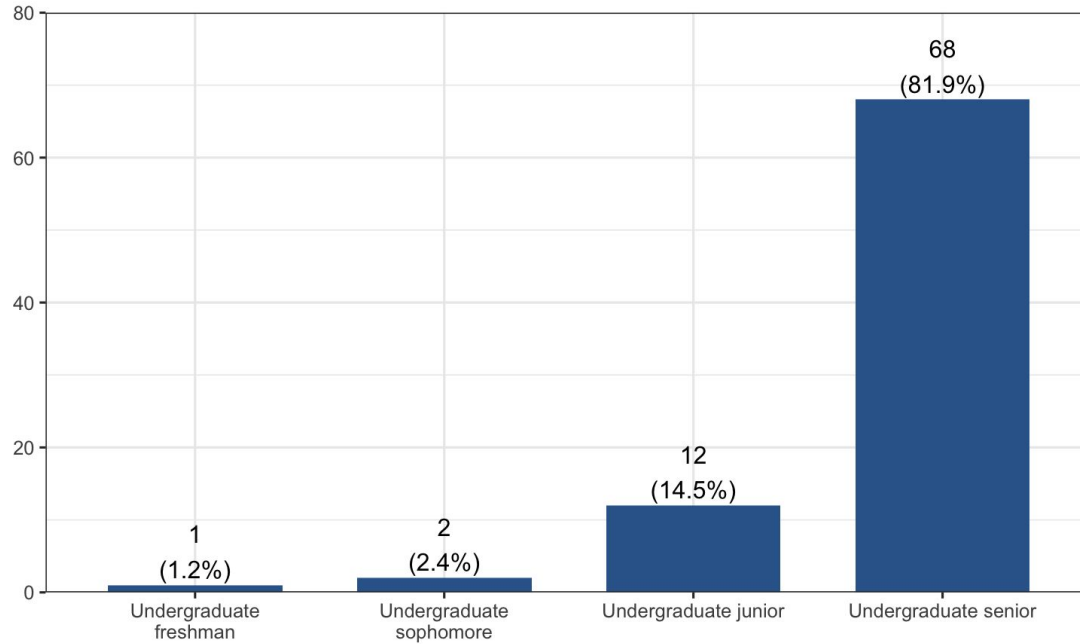


Barriers





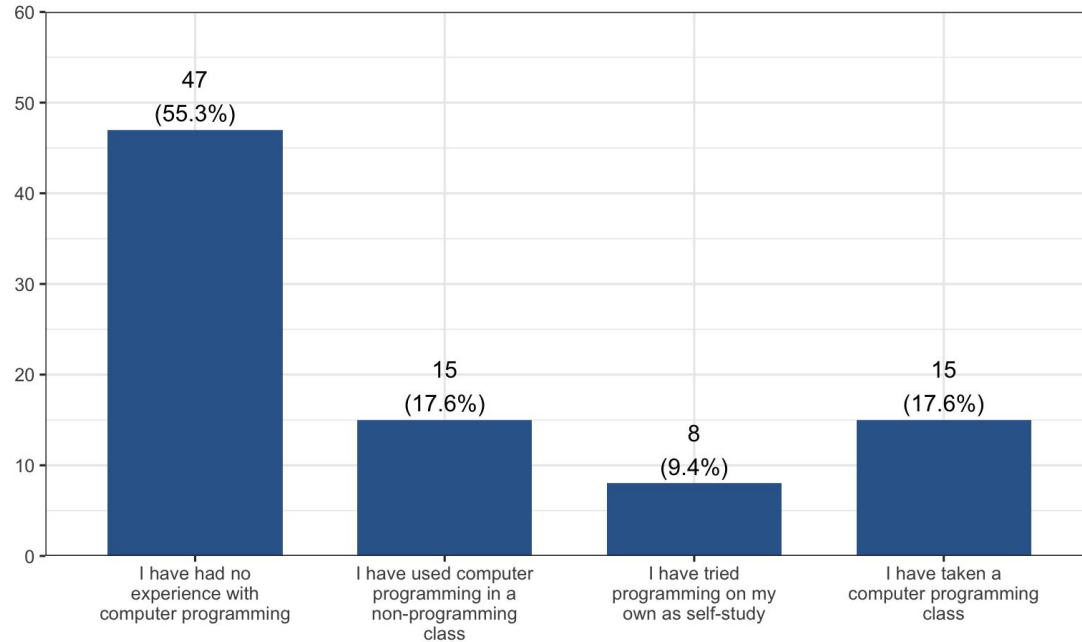
Academic Status



q4

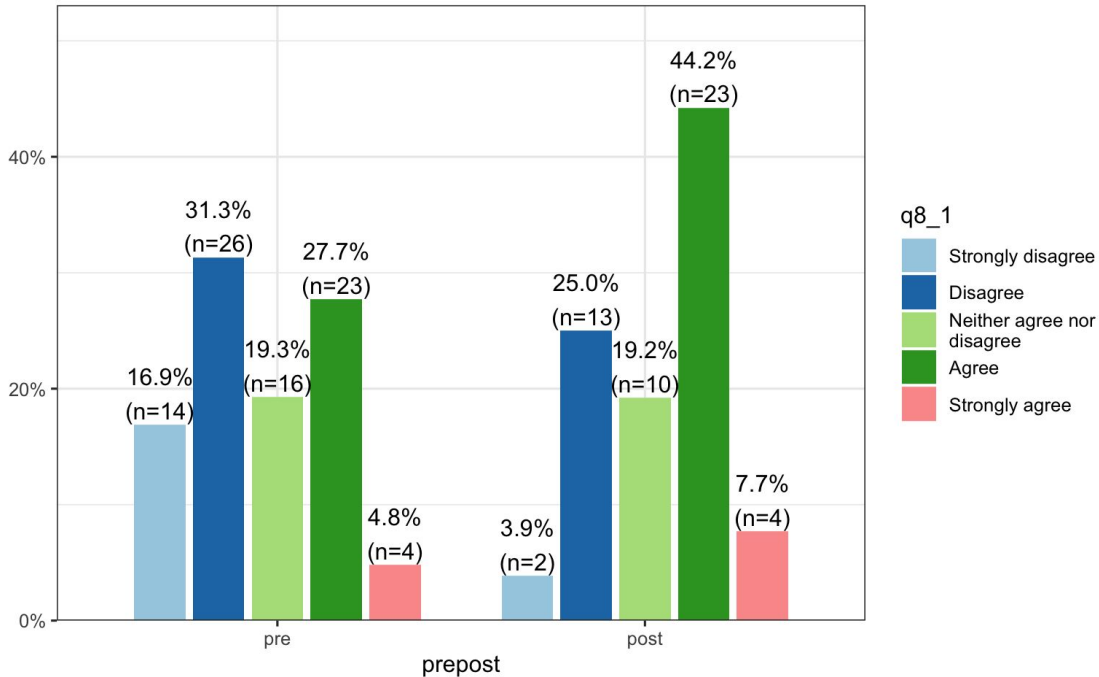


Prior Exposure to Data Science programming



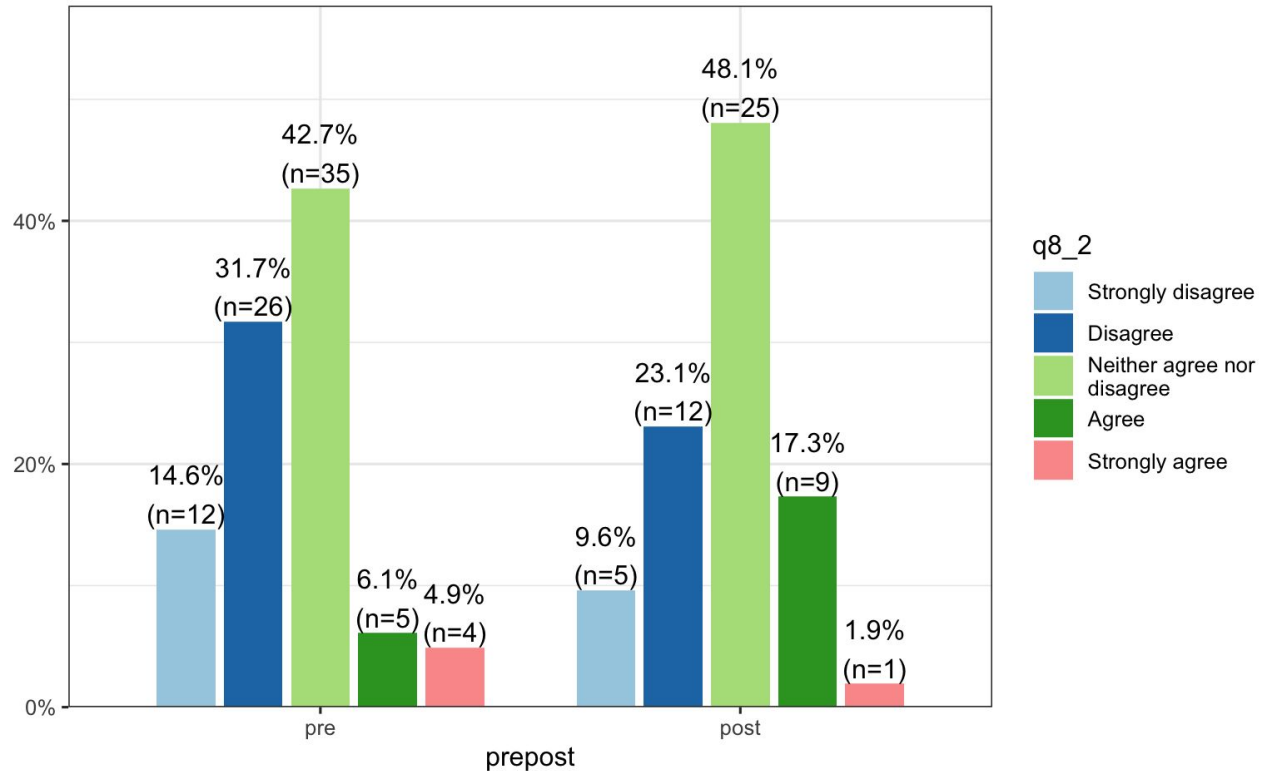


I am aware of the kinds of careers you can have in the DA-FANH fields

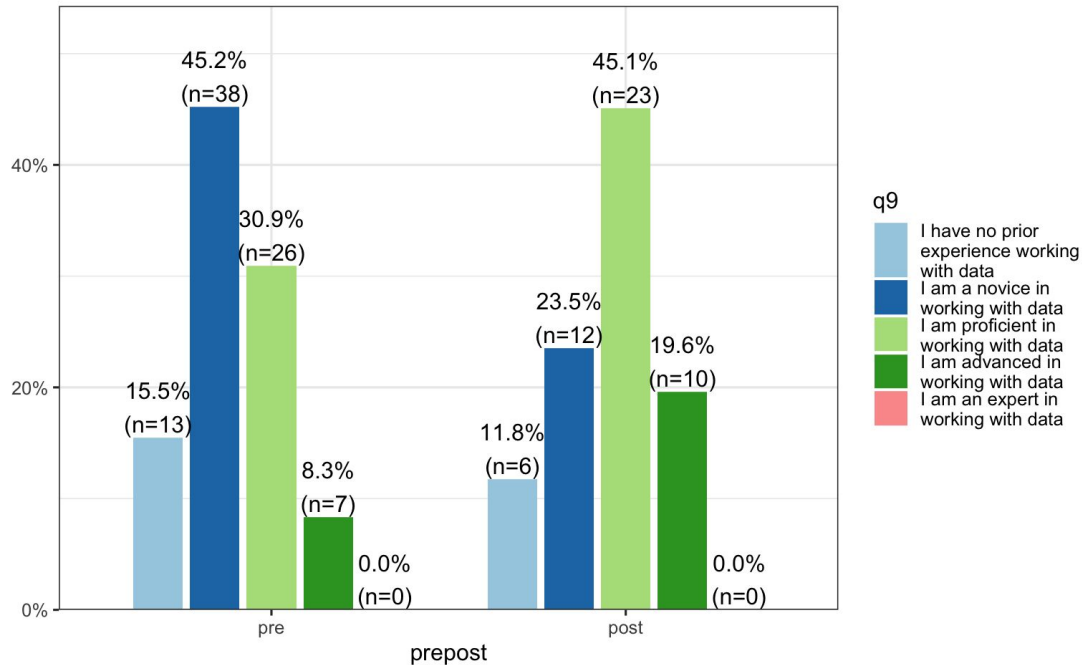




I am considering a career in the DA-FANH field



How would you rate your ability to work with data in your field of study?

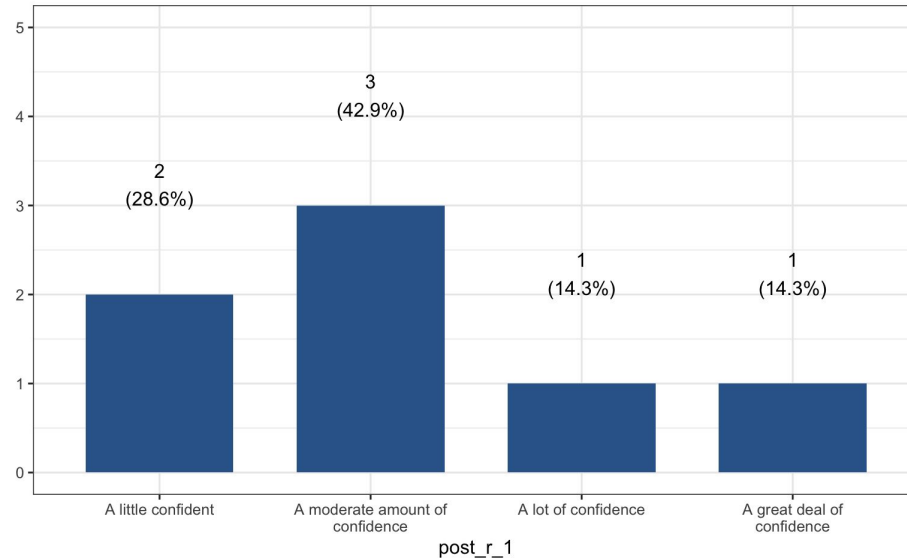




Post Questions

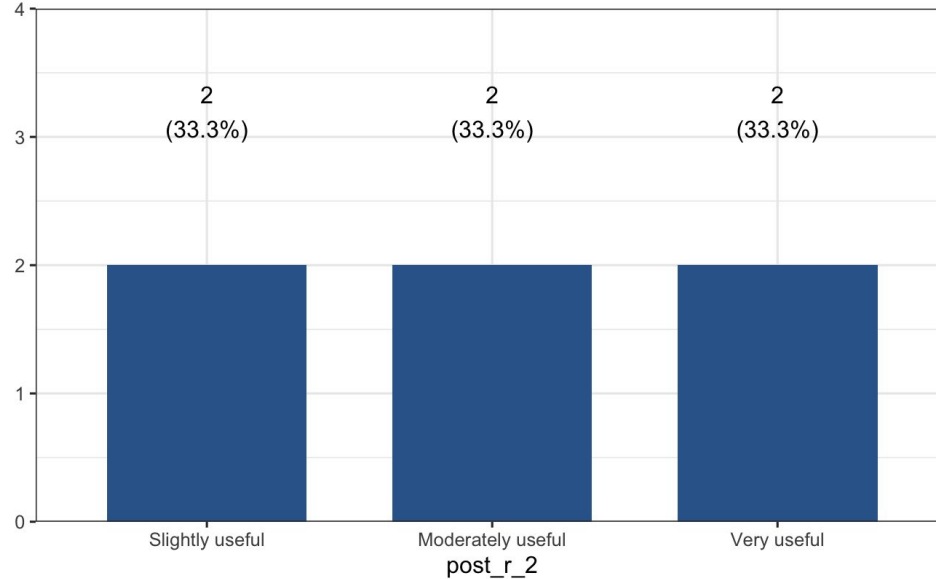


How confident are you that you could use R to analyze a new dataset?



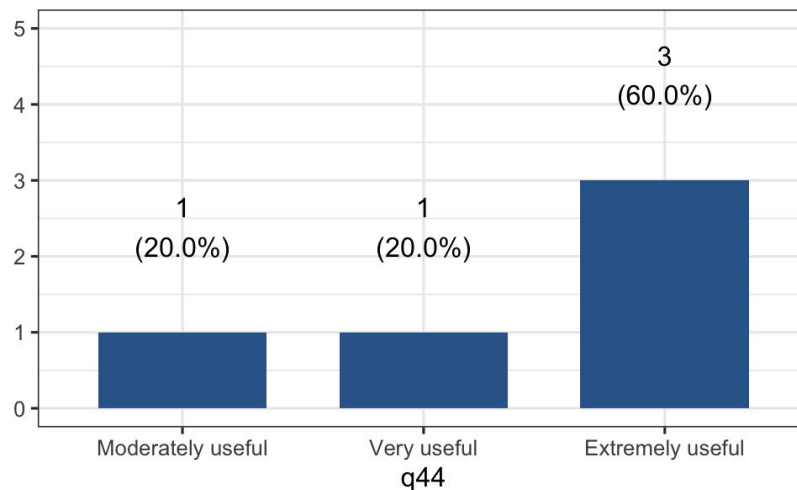


How would you rate the usefulness of a coding language (such as R/R Studio) in answering scientific questions relevant to the topics in this class?



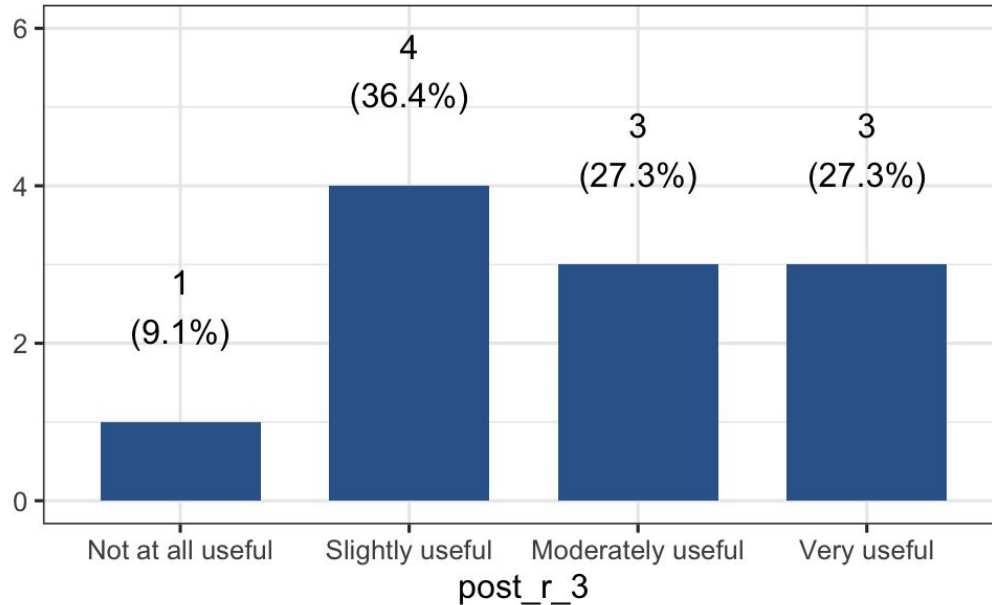


How would you rate the usefulness of a coding language (such as R/R Studio) in answering scientific questions relevant to the Analytical Chemistry?



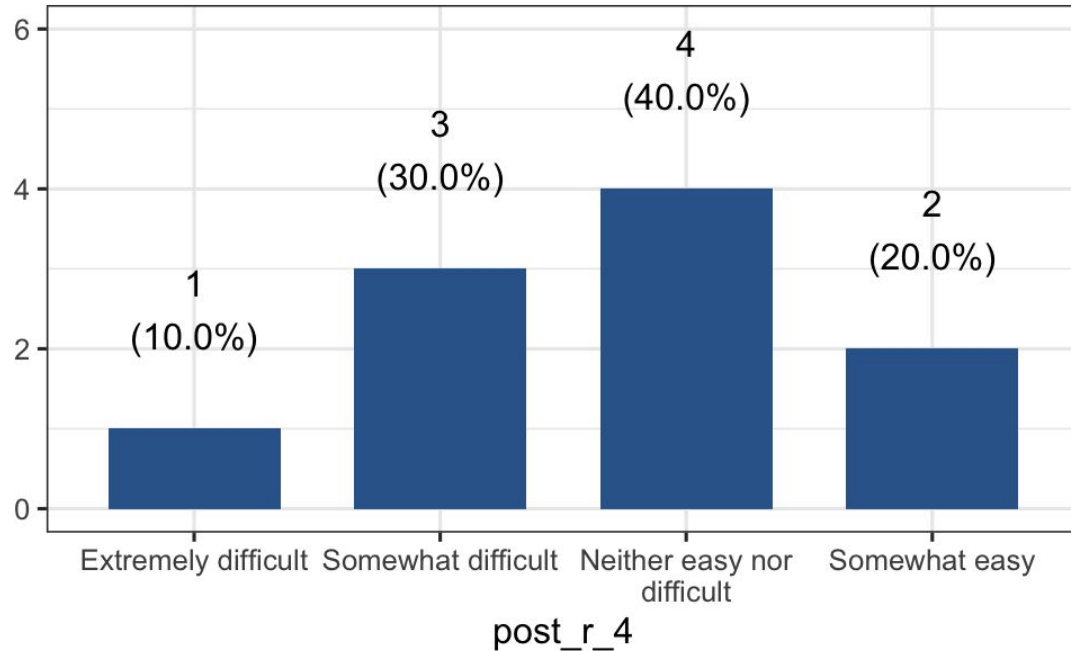


How useful do you think the skills you learned with R will be for your future career goals?



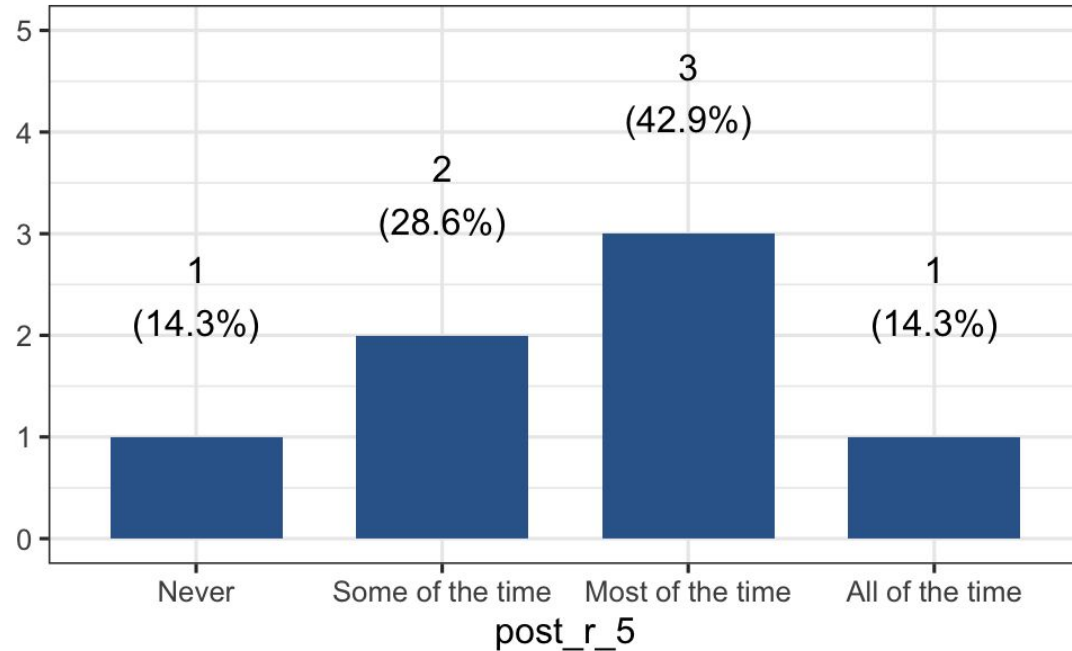


How easy or difficult did you find it to be in working with R?



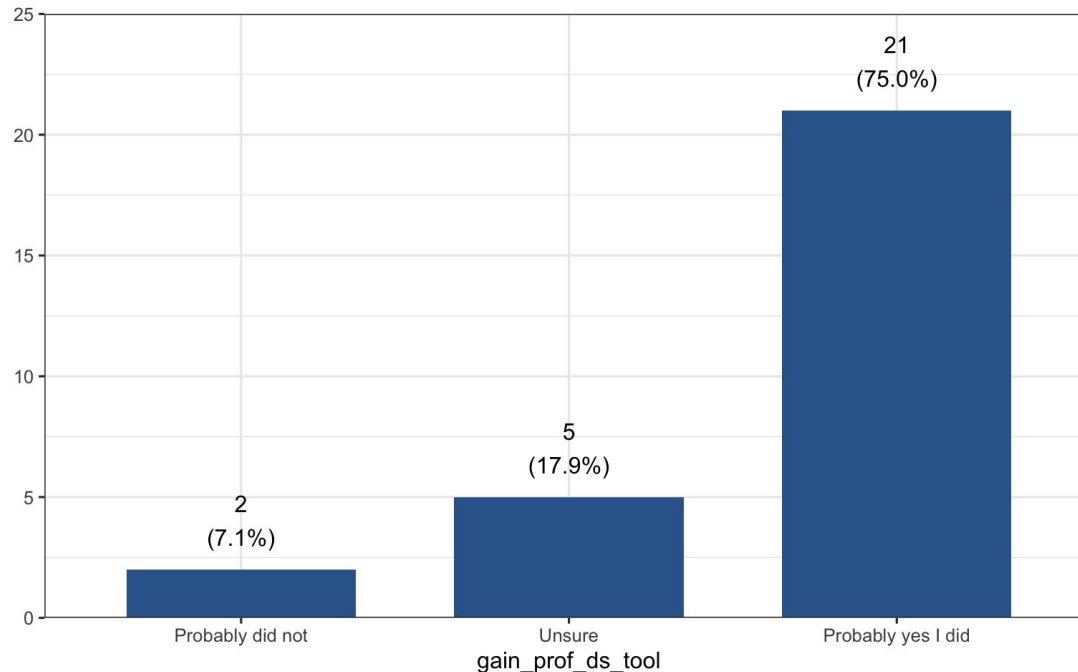


How often did you find it enjoyable to work with R?





Did you gain basic proficiency in at least one new Data Science/analytical technical tool?





Moving Forward

- **What is one thing the instructor(s) did well, and that you think they should continue to do?**
- **What is one thing the instructor(s) should consider revising for next time?**
- **t.test: * number of matched pre and post**