# Integrating Disability Inclusion Components Into Data Science Pedagogy

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## MOTIVATION

More than **1 in 5** undergraduates reported having a disability (National Center for Education Statistics, 2023)

Students are more and more identifying with the disability term, but need more institutional support and visibility around disability.

Disability Inclusion Components in Data Science Courses → Data Science Skills and Attitudes toward Data Science

**RQ: What is the impact of the integration of disability inclusion components on data science skills and on attitudes toward data science among undergraduates?**

## METHODS

**Disability Inclusion Datasets:**
- Current Population Survey
- National Household Travel Survey

Disability Inclusion associated readings

→

**Introduction to Data Science Course:**
Mini Projects:
- Data Visualization
- Data Wrangling
- Mapping

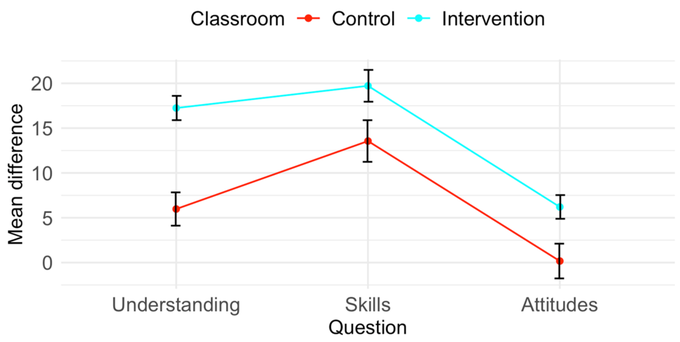
- Participants: 127 students (86 intervention; 41 control) across three semesters from Fall 2023 to Fall 2024. Intervention classrooms included 69 underrepresented students (POC, first-gen, international, and disabled).
- Mixed Designs: Compared data science skills and attitudes between intervention vs. control classrooms (pre- and post-course surveys).
- Linear Models: Examined how understanding data science in the disability inclusion context relates to skills and attitudes (intervention classroom).
- Density Plots: Visualized change of data science skills and attitudes among underrepresented vs. non-minority students (intervention classroom).

## PRELIMINARY RESULTS

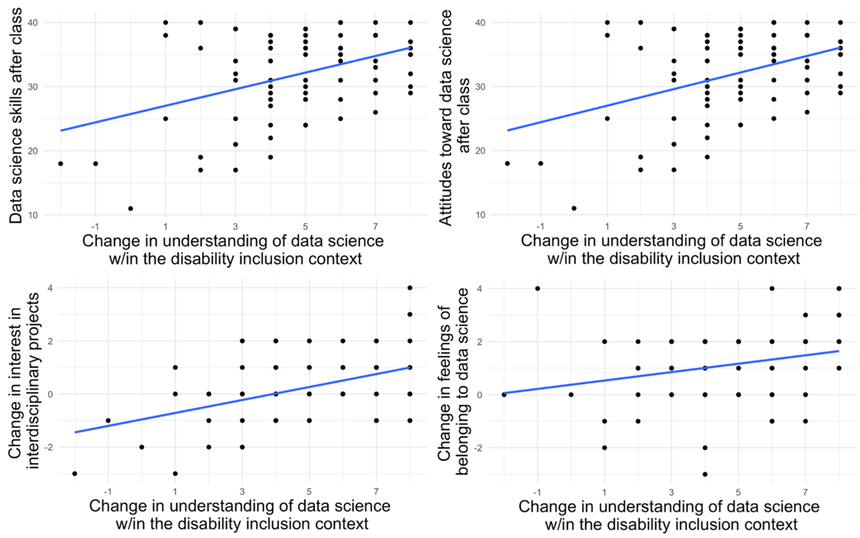
Statistically significant difference between sum of scores across classroom and question.

| Effect | DFn | DFd | F | p |
|---|---|---|---|---|
| (Intercept) | 1 | 125 | 3975.82 | < .05 |
| class | 1 | 125 | 16.07 | < .05 |
| question | 5 | 625 | 218.90 | < .05 |
| class:question | 5 | 625 | 24.75 | < .05 |

Mean differences in pre- and post-sum of scores of three series of questions by classroom




Statistically significant positive relationships between students' increased understanding of data science within the disability inclusion context and their data science skills/their attitudes toward data science




In general, underrepresented students had higher mode sum of scores.

- Data science skills: Before the course, underrepresented students' scores were right-skewed; after the course, they were left-skewed.
- Attitudes toward data science: After the course, underrepresented students were still "ahead", and the scores were left-skewed.
- Interest in interdisciplinary projects: After the course, all students' scores were less spread out, especially non-minority students; underrepresented students scored slightly higher compared to pre-course.
- Feelings of belonging to data science: Before the course, non-minority and underrepresented students had similar distributions; after the course, a greater number of underrepresented students scored higher.