**RQ1.** How much do students think that machine learning systems should be aware of themselves?

Factor analysis

A diagram of a network

Description automatically generated

f1: information for AI support

f2: group-specific information impacting AI support

f3: any increase in accuracy that justifies support

Spearman Correlation Matrix:

***Kruskall-wallis tests:***

data: ai\_added\_3 by gender

Kruskal-Wallis chi-squared = 6.3893, df = 1, p-value = 0.01148

data: f2 by gender

Kruskal-Wallis chi-squared = 9.7939, df = 1, p-value = 0.001751

data: f3 by gender

Kruskal-Wallis chi-squared = 8.1345, df = 1, p-value = 0.004343

***T-test:***

f1 ~ political\_affiliation: t = -2.3541, df = 42.723, p-value = 0.02323

f2 ~ gender: t = -3.3205, df = 109.49, p-value = 0.001221

f3 ~ gender: t = 2.9295, df = 114.38, p-value = 0.004099

***Diverse responses:***

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| ---------- | --- | --- | --- | --- | --- | --- | --- |

| aip1 | 1 | 10 | 12 | 28 | 34 | 27 | 16 |

| aip2 | 2 | 12 | 13 | 19 | 35 | 29 | 18 |

| aip3 | 13 | 14 | 20 | 31 | 25 | 17 | 8 |

| aip4 | 37 | 19 | 25 | 12 | 19 | 9 | 7 |

| ai\_added\_1 | 48 | 80 | | | | | |

| ai\_added\_2 | 22 | 106 | | | | | |

| ai\_added\_3 | 95 | 33 | | | | | |

| aip6 | 47 | 52 | 29 | | | | |

| aip7 | 46 | 51 | 31 | | | | |

**RQ2.** Do students believe there are performance thresholds in machine learning systems that justify the use of sensitive features of students, such as gender?

***Z-tests (0.5)***

ai\_added\_1 any increase in accuracy that justify demographic data

Z-score: 2.828 | P-value: 0.00467 | 95%CI [0.5411315 , 0.7088685]

ai\_added\_2 any increase in accuracy that justify past grades

Z-score: 7.424 | P-value: 1.13 \* 10^-13 | 95%CI [0.7627672 , 0.8934828]

ai\_added\_3 any increase in accuracy that justify political affiliation

Z-score: -5.480 | P-value: 5.24 \*10^-8 | 95%CI [0.182033 , 0.333592]

**RQ3.** When students are given a machine learning model that impacts their own scores, do their opinions change on what types of features can be justified?

Pearson's Chi-squared test

data: chi\_table

X-squared = 127.62, df = 25, p-value = 9.831e-16

0 1 2 3 4 5

0 0 2 0 0 0 0

1 0 8 5 1 1 0

2 0 4 13 10 3 1

3 1 2 4 25 4 2

4 0 2 1 8 20 4

5 0 1 0 1 0 5

A graph with blue squares

Description automatically generated

Stacked bar chart instead for this^ e.g., a red bar for people who changed, a blue bar for people who changed. That makes sense

data: data$beforeLS and data$afterLS

V = 741, p-value = 0.4785

data: data$beforeLS and data$afterLS

t = -0.50204, df = 127, p-value = 0.6165

**mann-whitney U**

data: change by pa

W = 1688.5, p-value = 0.06675

Actual count of change vs no change:

After - before

-4 -3 -2 -1 0 1 2 3

1 3 4 16 71 25 6 2

**RQ4.** Do individual difference measures between students impact how much data they are willing to give to machine learning algorithms meant to better education?

***Wilcoxon whole dataset***

data: data$aip6 and data$aip7

V = 213, p-value = 0.6787

|  |
| --- |
|  |
| **gender**  <int> | **wilcox\_p\_value**  <dbl> |  |  |  |
| 0 | 0.5117637 |  |  |  |
| 1 | 0.8496917 |  |  |  |

*Mann-Whitney U Test in ingroup vs outgroup*

F2 ~ gender V=570 | P-value = 0.006341

pairwise comparisons using t tests with pooled SD

data: data$f2 and data$gender

0

1 0.0013

aiPositionSurvey

aip1 **[likert]** is it ethical to provide students with support that is determined by ai algorithms

aip2 **[likert]** past academic performance data usage

aip3 **[likert]** demographics data usage

aip4 **[likert]** bias against women but model that uses demographic features improves for all

aiPositionSurvey\_2

aip6 **[radio]** ingroup choose between tutors

aip5 **[range]** 70% accurate, how much accuracy increaase to justify using demographic data

attentionCheck1 - B (2)

aiPosititionSurvey\_2\_5

ai\_added\_1 **[radio]** any increase in accuracy that justify demographic data

ai\_added\_2 **[radio]** any increase in accuracy that justify past grades

ai\_added\_3 **[radio]** any increase in accuracy that justify political affiliation

aiPositionSurvey\_3

aip7 **[radio]** outgroup choose between tutors

infoQ **[checkbox]** what types of data can the tutor use

ethicsPositionQuestionnaire

epq1 - epq20 based on paper

introSurvey

race/ethnicity

gender

age

university

politicalParty [1lib - 7con]

learningSession\_2

description of session

learningSession\_3

attentionCheck2 - A (1)

ls2 - ls5 learning session fake questions

learningSession\_4

ls6 **[checkbox]** what types of data can the tutor use after learning session