ReproRehab

Week 6: Statistical Analysis

ReproRehab POD 1, 11/10/2023

Agenda

- Week 5 activity – any questions?

- Running statistical analysis in MATLAB
  - Summary statistics, One-way ANOVA
  - Repeated Measures ANOVA & Linear Mixed Model (not discussed during the meeting, but example code block is prepared for review)
  - *Visualizing* statistical analysis results

- Activity
  - Change some parts, check results, and push your modified code to the shared repository.

Quick check-in

- We’re ALMOST done

- ~~Week 5: Data visualization in MATLAB + interactive plots~~

- ~~Week 6: Doing Statistics in MATLAB (we’re not saying bye to R!)~~

- Week 7: ???

Questions for you

- Anyone going to SFN?

- Next week

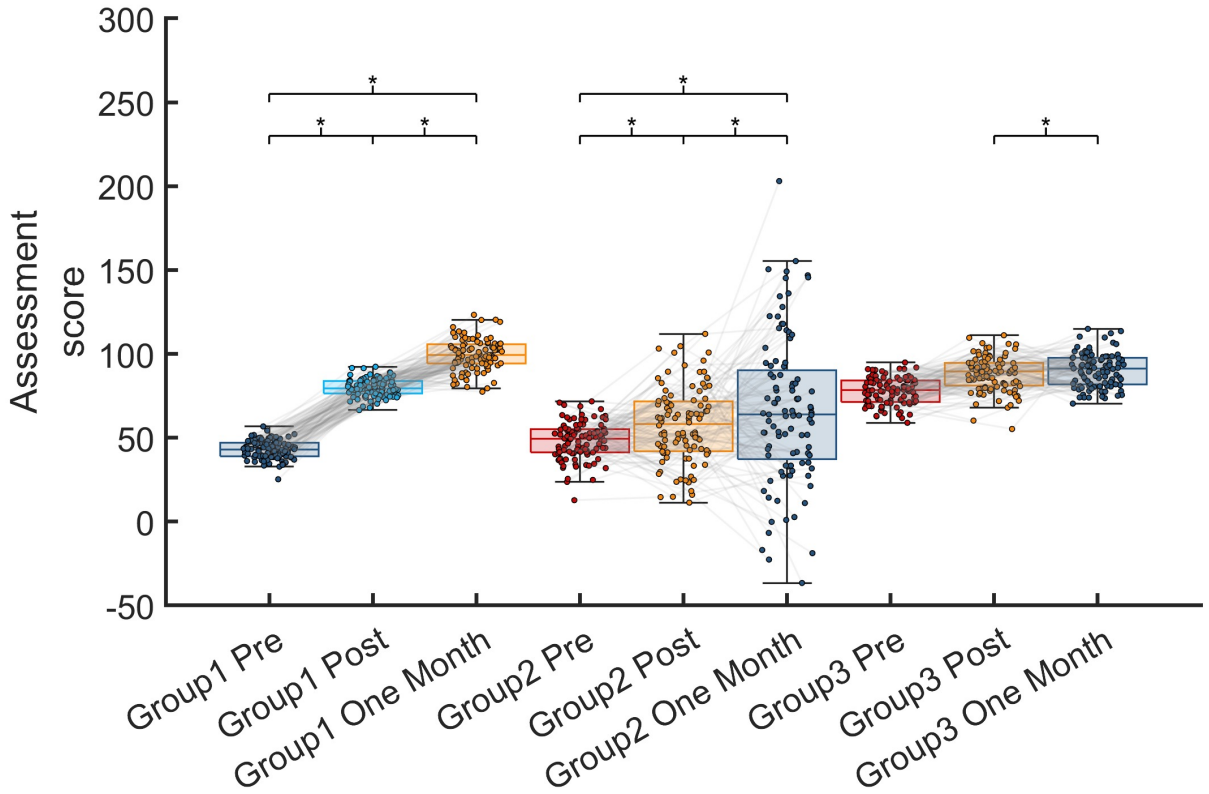
  - are we going to meet?

  - then when? Tuesday 9 PST (11 CST, 12 EST) worked for many, but not all

  - topic(s)? app designer, how to write functions

Week 6 Activity

- Dataset description:
  - 3 groups
  - Each individual – three measurements: pre vs. post vs one-month (repeated measures design)



Week 6 Activity

- Exercise 1:
  - Use grpstats() to calculate each group's median of post- and one-month scores

```
ans =

  3×4 table

            group      GroupCount    median_post    median_onemonth
            _______    __________    ___________    _______________

    Group1  Group1         100          79.577           99.29
    Group2  Group2         100           58.27          64.021
    Group3  Group3         100          89.484           91.15
```

Week 6 Activity

- Exercise 2:
  - First calculate the score difference between pre- and post.
  - Then run one-way ANOVA to check if this difference is significantly different among groups.

```
ans =

  2×5 table

              SumSq     DF     MeanSq      F         pValue
              _____     ___    ______    ______    ________

    group     48716       2     24358    85.293    5.37e-30
    Error     84818     297    285.58
```

Week 6 Activity

- Exercise 3:
  - Obtain the correct p-value to compare pre and one-month time points using the function: *FindPValueFromTable()*

```
% Devin Austin code
function pValue = FindPValueFromTable(table, groupID, timeOneID,timeTwoID)

    %1. find the rows of the table with the correct group number
    groupIndex = table.group == strcat('Group', num2str(groupID));
    %2. find the rows of the table with the correct timeOneID
    timeOneIndex = table.Time_1 == timeOneID;
    %3. find the rows of the table with the correct timeTwoID
    timeTwoIndex = table.Time_2 == timeTwoID;
    %4. find the row of the pvalue column of the table that satisfies step
    %1,2, & 3.
    compoundIndex = groupIndex & timeOneIndex & timeTwoIndex;
    pValue = table.pValue(compoundIndex);

end
```

Week 6 Activity

- When completed, please upload it to the GitHub repository under *Week6/activity*