



### Abstract

Youth in Need is a nonprofit that offers mental and physical health resources to kids under the age of 19 in the St. Charles area. They have been in operation for 50 years. Youth in Need is concerned that their services may have been negatively impacted by the pandemic. They have asked Lindenwood's PIC Math group to review their data over 2015-2023 and identify trends. Identifying these trends may help the client optimize their resources. So far, the group has identified trends when the intake of new clients occurs as well as trends between the counselors' client-scores and clients' self-scores at the beginning and end of treatment. The group has also identified improvements to the questionnaire used to determine the youth's risk score.

Risk Rating	CGAS Score
1 (High Risk)	1-14 Extremely Impaired
2 (High Risk)	15-24 Very Severely Impaired
3 (High Risk)	25-34 Severe Problems
4 (High-Moderate Risk)	35-44 Serious Problems
5 (Moderate Risk)	45-54 Obvious Problems
6 (Moderate Risk)	55-64 Some Noticeable Problems
7 (Moderate-Low Risk)	65-74 Some Problems
8 (Low Risk)	75-84 Doing Alright
9 (Low Risk)	85-94 Doing Well
10 (Low Risk)	95-100 Doing Very Well

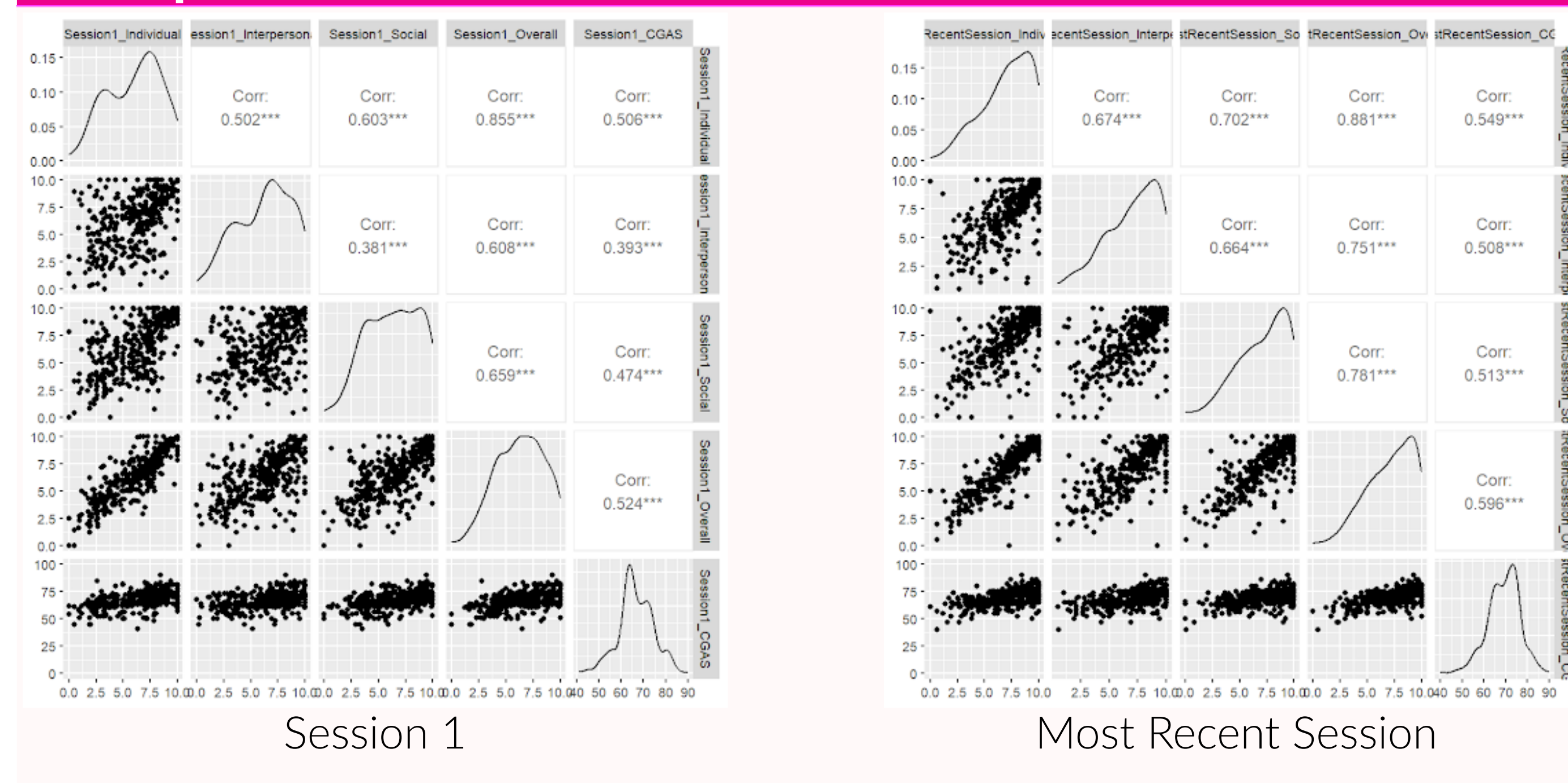
### Outcome Rating Scale (ORS)

The Outcome Rating Scale is a self-rating scale that the clients score themselves on to assess their health. Clients are asked to rate themselves on a scale of 1-10 in the following categories which sums up to the ORS.

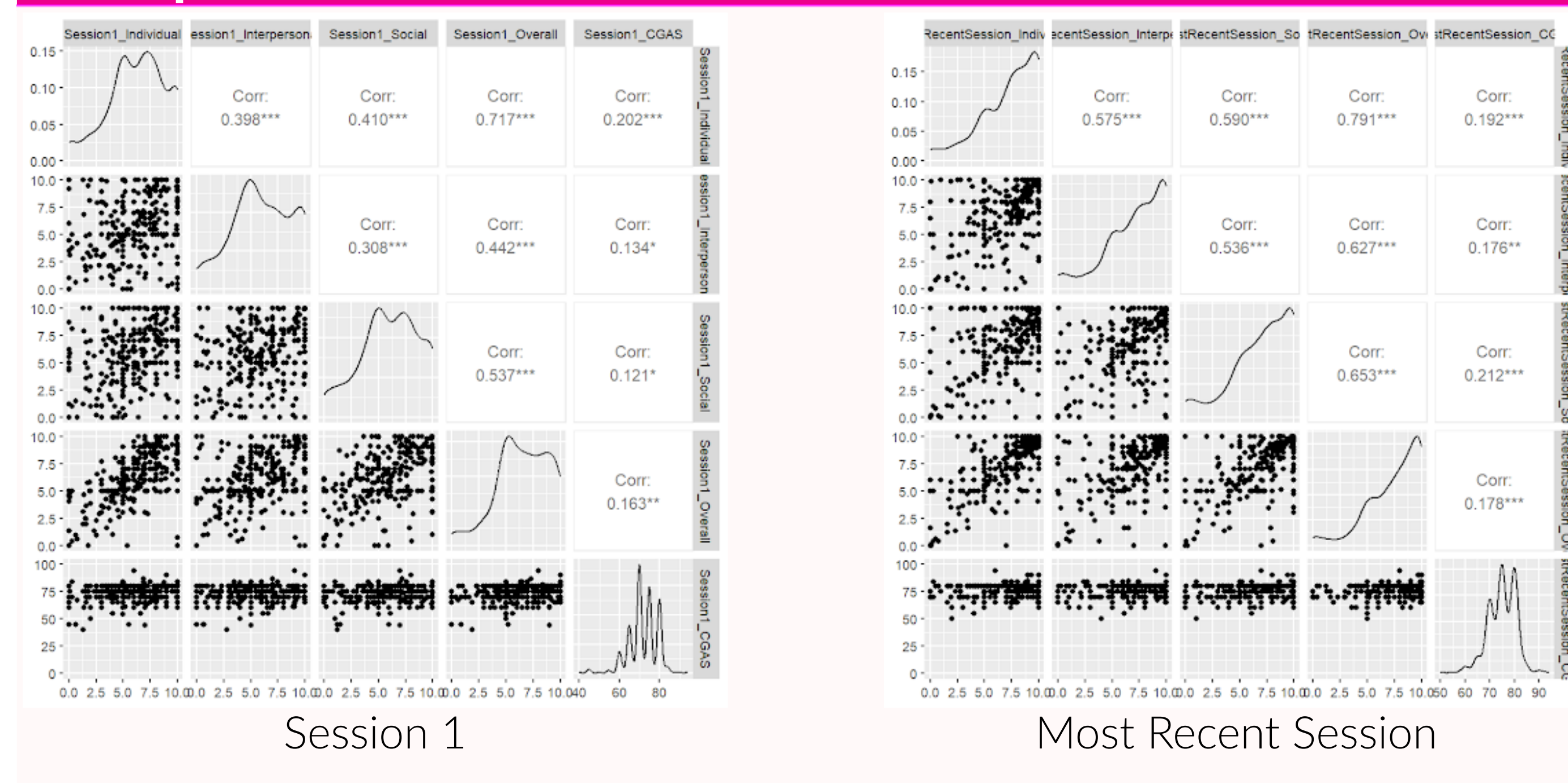
- Individual:** Personal well-being
- Interpersonal:** Family, close relationships
- Social:** Work, school, friendships
- Overall:** General sense of well-being

Youth In Need's goal is for a client's ORS to increase six points from their first session to being discharged.

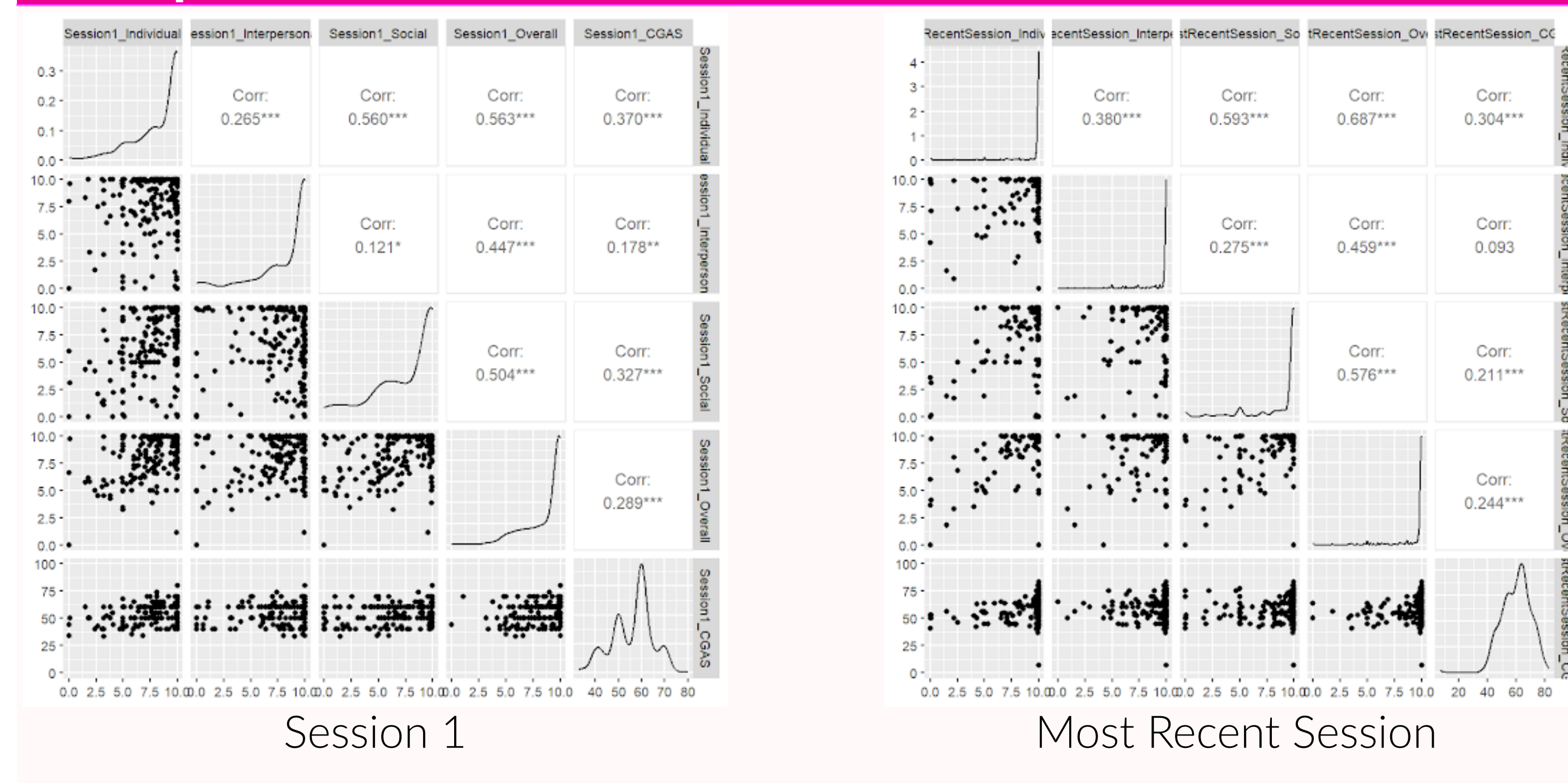
### Therapist A



### Therapist B



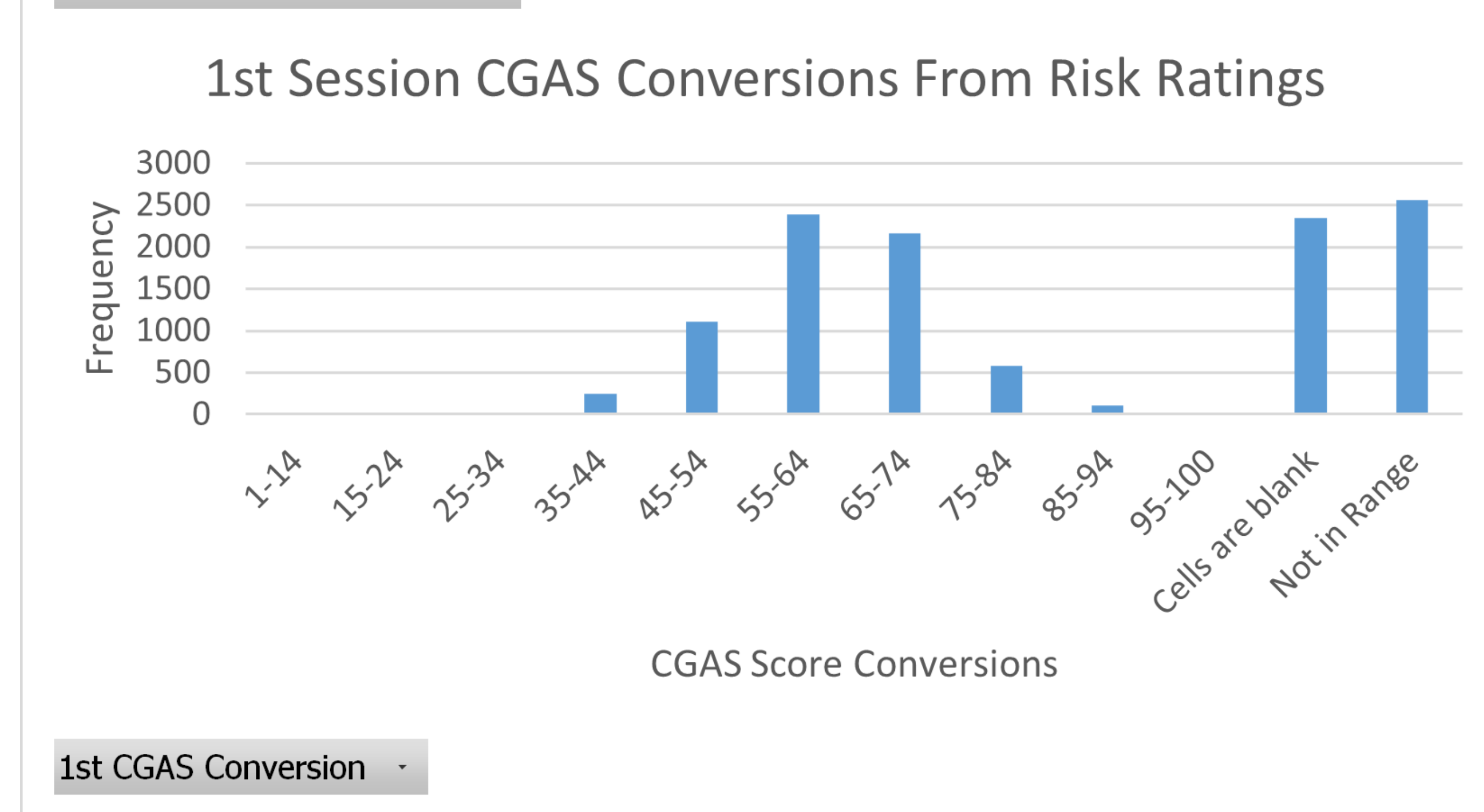
### Therapist E



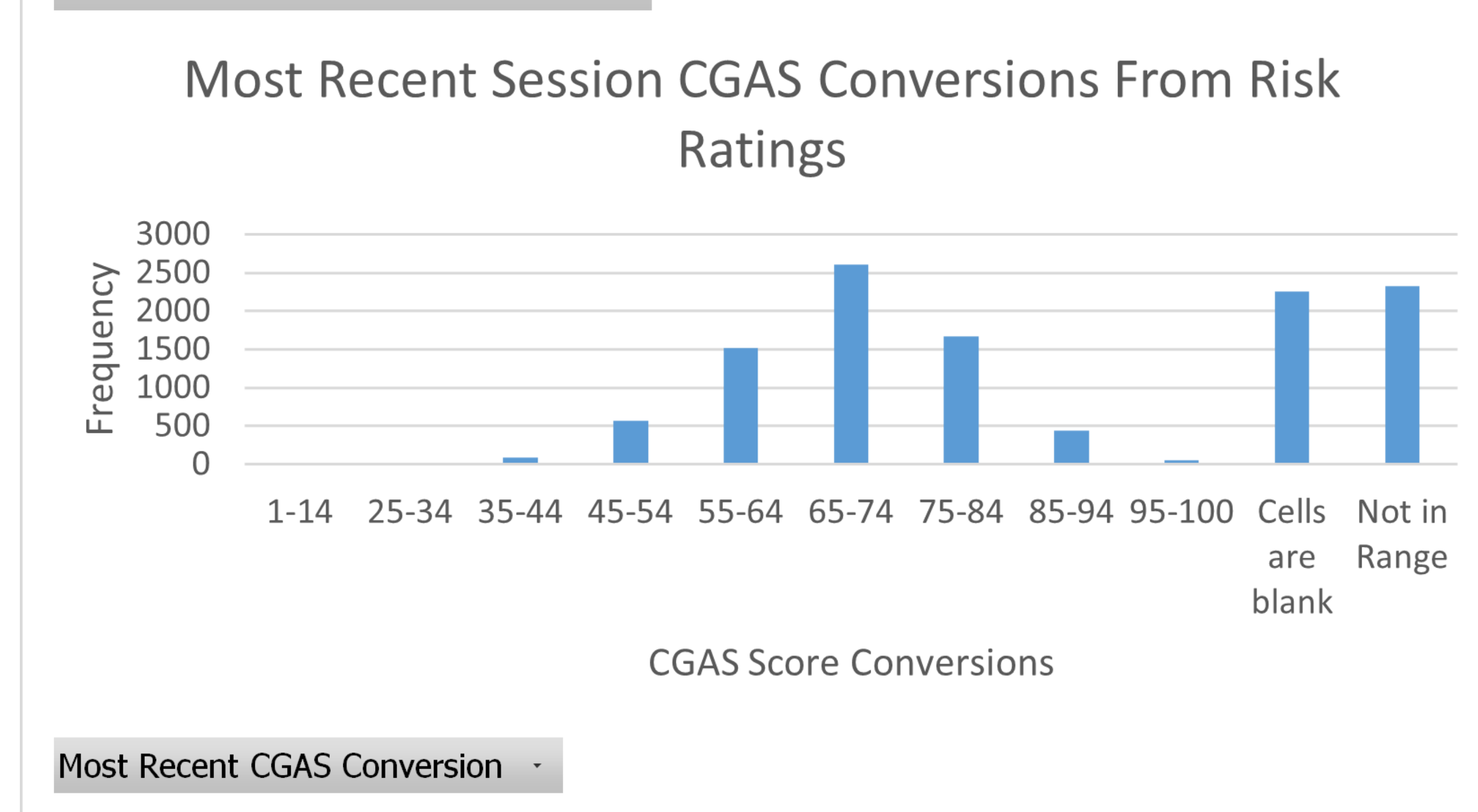
### Therapist Correlation Plots Overview

Across the correlation plots for Therapist A, B, and E there are a couple of noticeable trends. The correlation score between Individual and Overall were the highest across all of the graphs. There also appears to be distinct values that each therapist establishes as their starting range that typically sit above 40. The graphs also show the unique ways that different therapists view and apply the same scaling rubric to each of their clients. Most often, the graph trends differ from Session 1 to the Most Recent Session but still average higher values showcasing general improvement across both the ORS and CGAS scores.

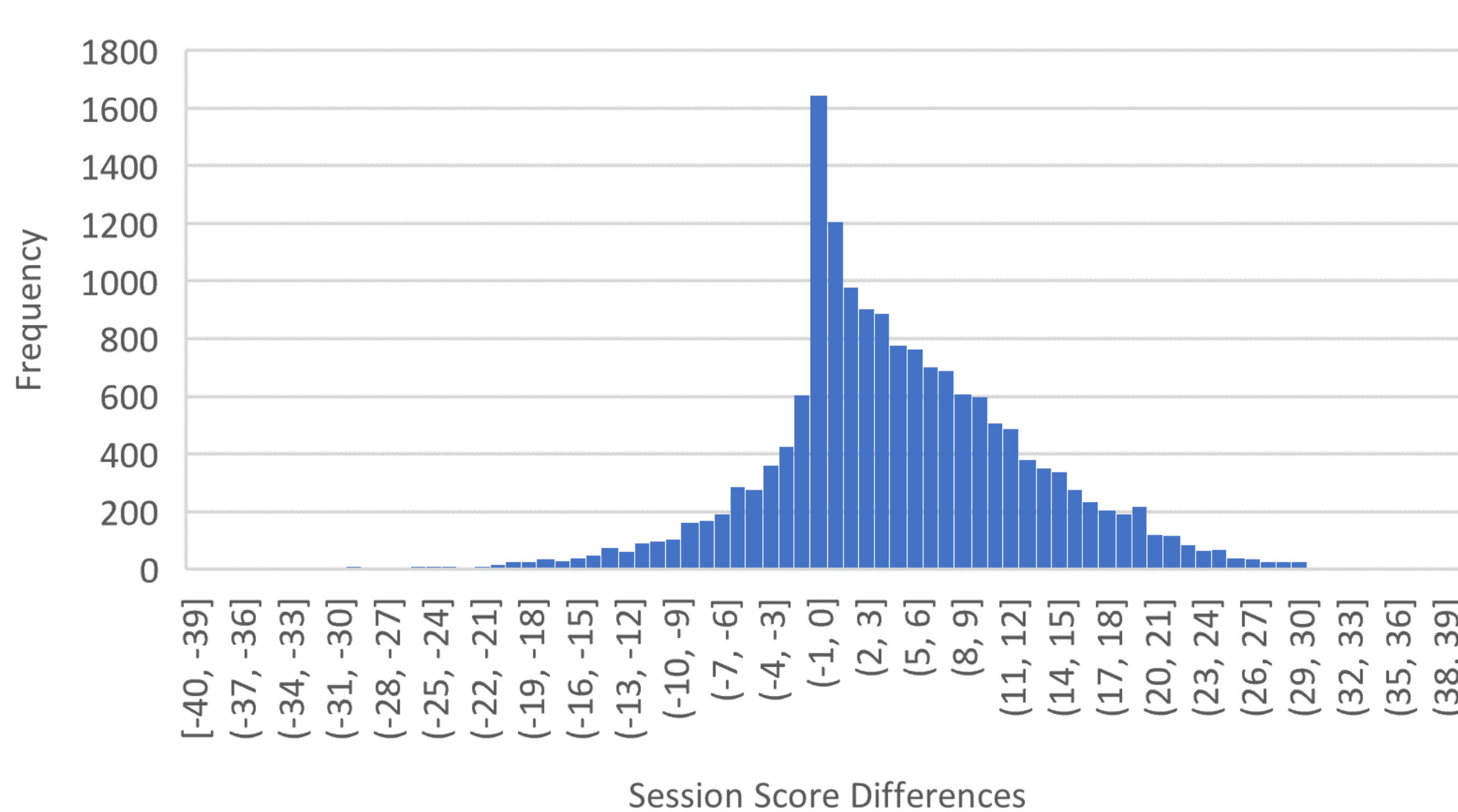
Count of 1st CGAS Conversion



Count of Most Recent CGAS Conversion



### Difference in Most Recent Session and Session 1 Scores



### Analyzing a Difference in ORS Scores

This graphic represents the distribution of ORS score changes for the entire data set. This resembles a normal distribution centered around a mean of zero. Since this is a self-evaluated score, there will be a bias around zero in the case that a first self score is 40. Regardless of this bias, the data still appears to be left-skewed indicating positive self reflection results. Furthermore, there is a large portion of clients reporting an increase in the ORS of at least six points, which is one of Youth In Need's goals.

### Data Entry Problems

Since the CGAS and risk rating are correlated, this analysis delves into the accuracy of therapists' input of CGAS scores and their corresponding risk ratings. The Session 1 and Most Recent Session graph both have approximately 2,500 instances of misentered data from therapists. This yields around 20% of incorrect data entry in total for the CGAS score from the therapist.

### Future Goals

- Research trends in the data before/during/post covid
- Analyze individual clients session scores who have repeatedly returned to Youth In Need over a period of time

### Conclusion

Youth In Need's data showcases a positive trend in improving client's ORS scores. The high correlation between Individual and Overall scores suggest a need to reconsider the current wording of the ORS definitions to help address different areas going forward. The amount of data entry errors were also quite substantial and would require addressing. The variability in the trends for each therapist shows the need to standardize the way therapist rate their clients.