¹ **Tangle versus imputed values**

Time series data derived from studies involving humans tends to have at least some amount of missing data. Imputation is a popular method used to account for such missingness. For the empirical example employed in this article, a linear interpolation technique was used to account for missingness after removing all time series with $> 20\%$ missing values. However, there is reason to believe that linear interpolation may lower the estimated complexity of a given time series compared to the complexity of that same time series without any missing values. To assess the effect of number of imputed values in a time series on tangle estimates, we conducted robust linear models modeling tangle values as a function of number of imputed time points for all affect time series, all anxiety time series, and all time series together. Results are displayed in Figures 1 - 3. Although there is a constant negative relationship between the number of imputed values and tangle, these values are not statistically significant in the current data set. However, this is an avenue of future research on tangle as there are many possible time series imputation techniques and each may have a unique effect on estimated tangle values.
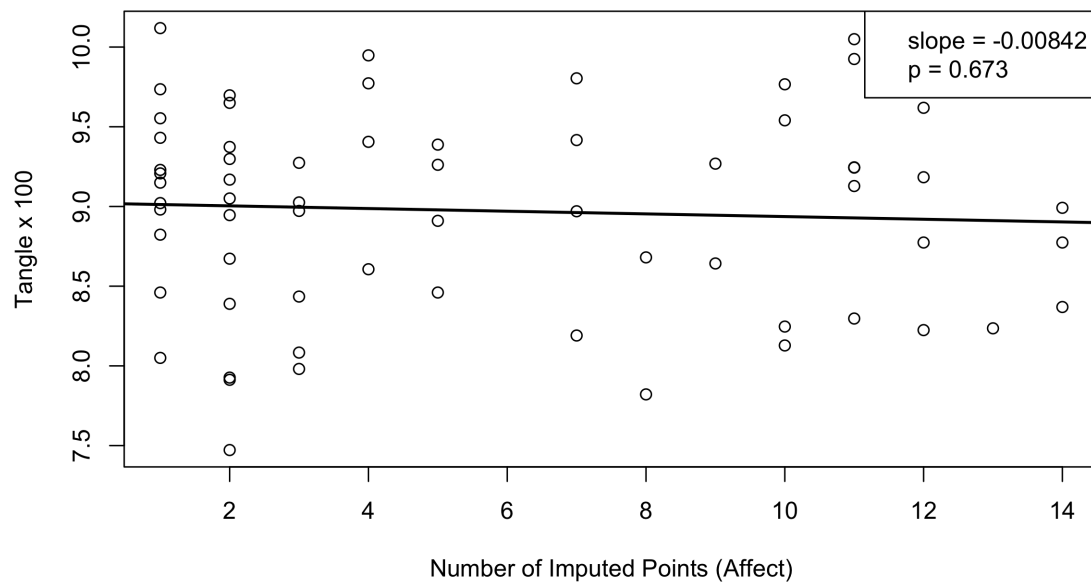
Figure 1. Results from a robust linear model with number of imputed data points for all affect time series. Tangle values are scaled by a factor of 100 for plotting purposes. The estimated slope is negative, however this relationship is not significant.
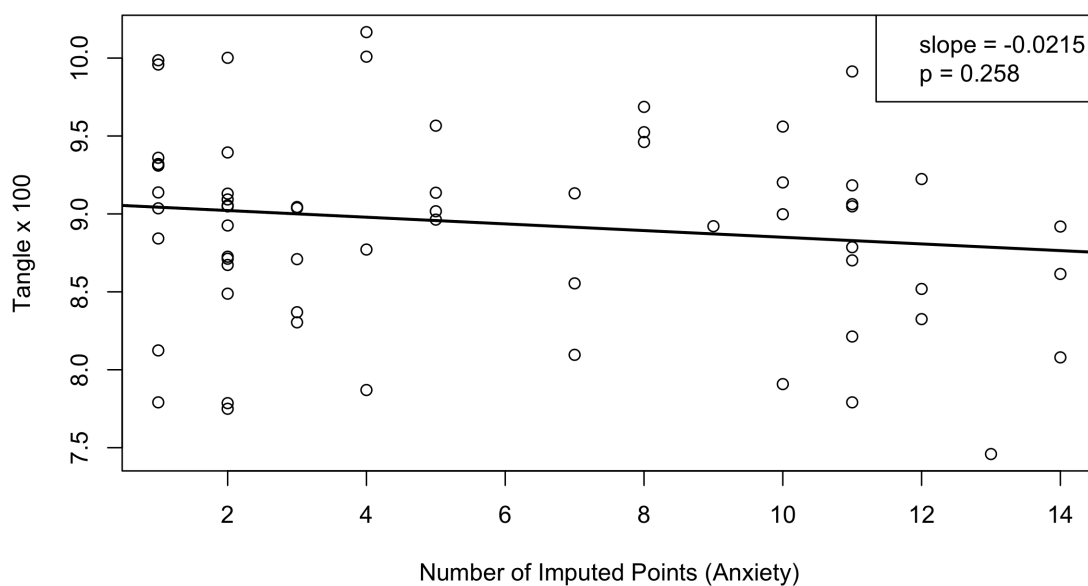
Figure 2. Results from a robust linear model with number of imputed data points for all anxiety time series. Tangle values are scaled by a factor of 100 for plotting purposes. The estimated slope is negative, however this relationship is not significant.
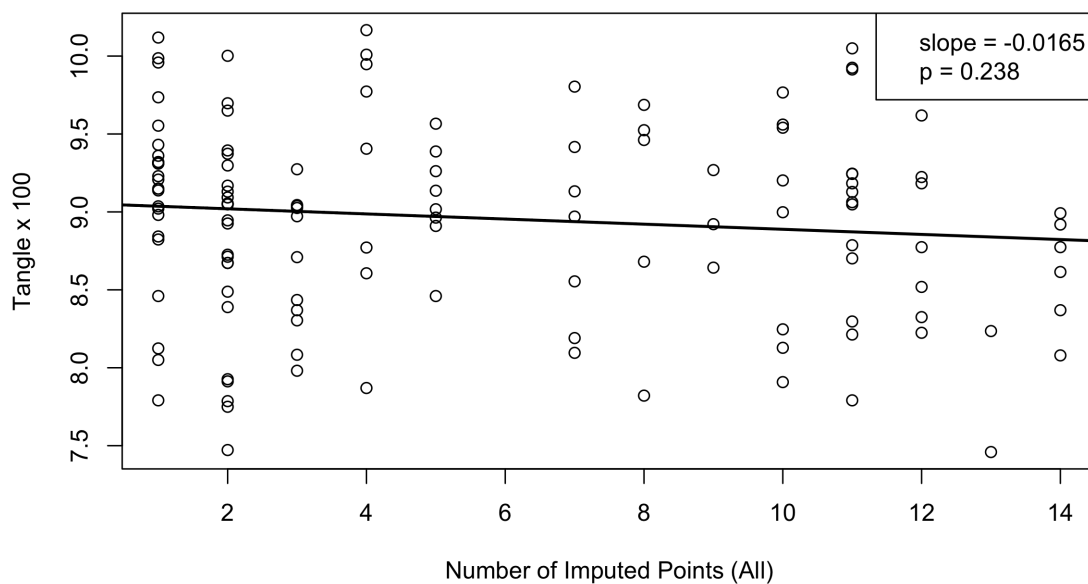
Figure 3. Results from a robust linear model with number of imputed data points for both all affect and all anxiety time series. Tangle values are scaled by a factor of 100 for plotting purposes. The estimated slope is negative, however this relationship is not significant.