

# semPLS: An R Package for Structural Equation Models Using Partial Least Squares

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PLS path modeling (Tenenhaus et al., 2002) can be a powerful method for estimating parameters in a structural equation model. In this talk we present the package `semPLS`, which provides capability to estimate PLS path models within the R programming environment (R Development Core Team, 2009). The method, `sempls`, estimates factor scores using three different weighting schemes, centroid, factorial and path weighting. For the calculation of the outer weights, correlations can be calculated by using Pearson correlations for continuous data or Spearman- or Kendall-correlations, when the scale of the data has rather ordinal character. To deal with missing values in the observed data it is possible to use pairwise correlations instead of correlations on complete cases. In addition to the factor scores and outer weights `sempls` computes loadings, path coefficients and total effects. For the outer loadings and path coefficients bootstrap confidence intervals and standard errors are available. Finally a graphical representation of the model including outer loadings and path coefficients can be plotted. Additionally, we present strategies to specify structural equation models for covariance based estimation using the `sem` package (Fox et. al, 2009) and compare the resulting estimates. All methods are illustrated by means of an application example.

## References

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