

# Notes/FAQ/Special Cases

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*This vignette is based upon LearnPCA version 0.3.4.*

LearnPCA provides the following vignettes:

- Start Here
- A Conceptual Introduction to PCA
- Step By Step PCA
- Understanding Scores & Loadings
- Visualizing PCA in 3D
- The Math Behind PCA
- PCA Functions
- Notes
- To access the vignettes with R, simply type `browseVignettes("LearnPCA")` to get a clickable list in a browser window.

**Vignettes are available in both pdf (on CRAN) and html formats (at Github).**

This vignette collects bits of information and answers to questions we have received from our readers, as well as some tips and warnings that may be useful.

## 1 Warning When Analyzing Time Series and Spatial Data

Shinn reports that PCA on data which may be shifted in space or time can give “phantom oscillations” that don’t exist in the data. His context is neuroscience but one should be careful with this type of data.

## 2 Working with Nominal or Ordinal Response Data

A reader asked if one should center ordinal survey responses, for instance responses on a 1-5 scale. We didn’t know the answer, but after some discussion and research we found there is an R package Gifi designed for just this case. There’s also a tutorial here. Both of these resources use concepts published in a book by Gifi (1990).

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### 3 Works Consulted

In addition to references and links in this document, please see the Works Consulted section of the *Start Here* vignette for general background.