Deirdre Lawless, School of Computer Science, TU Dublin City Campus

Principal Components Analysis

SELECT YOUR VARIABLES

- Max. Info. From Min No. of Vars
- Aim is to create a reduced to a smaller set of variables
- Based on proven theory or practice

INSPECT AND DESCRIBE

- Descriptive statistics + graphs
- (SANITY CHECK) Correlation (looking for > 0.3, < 0.8)
- Eliminate variables of concern and repeat if needed

(SANITY) CHECK REQUIREMENTS

- Determinant >0.00001 (something to reduce)
- Bartletts Test of Sphericity (difference from identity matrix) - must be significant
- KMO (amount of variance that could be underlying factors) > .6
- Reliability of scale - Cronbach's alpha > .6

CONDUCT THE REDUCTION

- Extraction method principal components
- Choose Rotation

ASSESS OUTCOMES

- Variance explained by components- Eigenvalues >1, Scree Plot point of inflexion
- Look at component loadings - how manifest vars correlate with uncovered components. Want at least three variables loading onto each component you intend to extract at level >= 0.3
- Look at loadings before and after rotation
- Look at communalities - how much variance in a manifest variable is explained by a component
- Look at Total Variance Explained by the component you want to extract.
- You can eliminate manifest variables that don't suit at this point and repeat

Report on outcomes