Review of Factor Analysis

$$Y = E[Y] + \lambda F + \varepsilon$$

where

λ = *factor_loadings*

p = # *responses*

m = # *factors_indicated_byF*

Assumptions

$$E[F] = 0, Cov[F] = \begin{bmatrix} ? & & 0 \\ & \ddots & \\ 0 & & ? \end{bmatrix}_{1} \quad \begin{bmatrix} ? & & 0 \\ & \ddots & \\ 0 & & ? \end{bmatrix}_{1}$$

$$E[e] = 0, Cov[e] = \begin{bmatrix} ? & & 0 \\ & \ddots & \\ 0 & & ? \end{bmatrix}_{1} \quad \begin{bmatrix} ? & & 0 \\ & \ddots & \\ 0 & & ? \end{bmatrix}_{y_p}$$

covariances

$$\mathrm{cov}[Y] = \Lambda \Lambda' + \begin{bmatrix} ? & & \\ & \ddots & \\ & & ? \end{bmatrix}_1 \quad 0 \quad \begin{bmatrix} ? & & \\ & \ddots & \\ & & ? \end{bmatrix}_p$$

$$\mathrm{cov}[Y, F] = \Lambda$$