Guidelines for selecting measures of association

1. Level of measurement achieved
   
   **Nominal**
   
   C, *Pearson’s coefficient of contingency*
   
   V, *Cramer’s V*
   
   Φ (phi), (2 by 2 tables)
   
   Q, *Yule’s Q* (2 by 2 tables)
   
   λ (lambda), *Guttman’s coefficient of predictability*

   **Ordinal**
   
   γ (gamma), *Goodman and Kruskal’s gamma*
   
   Dyx, Somers’ Dyx and Dxy
   
   τb, *Kendall’s Tau-b*
   
   τc, Tau-c

   **Interval/Ratio**
   
   Ε² (eta squared), *Correlation Ratio*  [Chapter 9]
   
   ryx, *Pearson’s product-moment correlation*  [Chapter 10]
   
   byx, slope/regression coefficient  [Chapter 10]

2. Purpose to be served by the measure
   
   a. Direction of Influence

      **Asymmetric**
      
      Causal: X → Y
      
      Prediction: Y from X

      **Symmetric**
      
      Reciprocal causation: X ↔ Y
      
      Variables of same logical status (e.g., two measures of the same theoretical concept)

   b. Predictive (PRE) Interpretation

      Proportion-reduction-in-error (PRE) approach

      1) define prediction error
2) rule 1: best procedure for predicting values of Y (dependent variable) without knowledge of X (independent variable).

3) rule 2: best procedure for predicting values of Y from X values.

\[ \text{PRE} = \frac{E_1 - E_2}{E_1} \]

Where \( E_1 \) = errors by rule 1
\( E_2 \) = errors by rule 2

c. Ease of interpretation

d. Technical considerations

e. Reference Pattern of Perfect Association