

# Scales of Measurement

- Quantitative (Interval and Ratio)
- Ordinal
- Nominal<sup>3</sup>

Scale	Basic Empirical Operations	Mathematical Group Structure	Permissible Statistics (invariantive)
NOMINAL	Determination of equality	Permutation group $x' = f(x)$ $f(x)$ means any one-to-one substitution	Number of cases Mode Contingency correlation
ORDINAL	Determination of greater or less	Isotonic group $x' = f(x)$ $f(x)$ means any monotonic increasing function	Median Percentiles
INTERVAL	Determination of equality of intervals or differences	General linear group $x' = ax + b$	Mean Standard deviation Rank-order correlation Product-moment correlation
RATIO	Determination of equality of ratios	Similarity group $x' = ax$	Coefficient of variation

<sup>3</sup> S. S. Stevens, Science, New Series, Vol. 103, No. 2684 (Jun. 7, 1946), pp. 677-680