Continuous and Categorical Traits

Continuous or complex traits do not follow Mendel’s laws. They may be either polygenic or multifactorial.

Polygenic traits are determined by more than one gene and vary continuously in expression.

Multifactorial traits are determined by a combination of a gene or genes and the environment.

Some disorders resulting from the combined action of the alleles from more than one gene are heart disease, diabetes, Neural tube defects and some cancers.

Their presence depends upon the simultaneous presence of several alleles. Continuous multifactorial traits determine the vast majority of human characteristics.

Multifactorial describes models in which environmental factors interact with genetic predisposition.

To measure multifactorial inheritance you need to measure the empiric risk, heritability within your population, and the coefficient of relationship.

The risk among a general population of expressing a multifactorial trait follows a bell-shaped curve, with a certain threshold necessary for manifestation.

The curve shifts for blood relatives of affected individuals, placing them at greater risk than the general population.

Categorical variables are sometimes called “Qualitative Variables.” Qualitative variables are measured on a nominal scale. Nominal measurement consists of assigning items to groups or categories.

Nominal scales are therefore qualitative rather than quantitative. Religious preference, race, and sex are all examples of nominal scales.

Frequency distributions are usually used to analyze data measured on a nominal scale. The main statistic computed is the mode.