THE ADVANCED MEDICAL RESEARCH DATA ANALYSIS WORKSHOP

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REGRESSION ANALYSIS

- Linear Regression: Helps assess relationships between a dependent variable and one or more independent variables, aiding in prediction and risk assessment.
- Logistic Regression: Suitable for binary outcomes, this method predicts the probability of occurrence of an event based on predictor variables.
- Survival Analysis: Techniques like Cox proportional hazards model estimate survival probabilities and evaluate the effect of covariates on time-to-event data.

MULTIVARIATE ANALYSIS

- Factor Analysis: Identifies underlying relationships between variables, useful in reducing data dimensions and managing correlated data.
- Cluster Analysis: Groups subjects based on characteristics, which can reveal patterns and inform personalized medicine approaches.
- MANOVA: Multivariate analysis of variance extends ANOVA to multiple dependent variables, allowing for comprehensive assessments of treatment effects.

GENERALIZED ESTIMATING EQUATIONS (GEE)

GEE is a statistical method used to estimate the parameters of a generalized linear model with correlated response data, typically in longitudinal settings.

GENERALIZED LINEAR MODEL (GLM)

GLMs extend traditional linear regression to allow for a response variable that has a distribution other than normal, making them suitable for a wider array of data types.

CLINICAL TRIAL

Clinical trials are experimental studies that test the effects of a medical intervention (e.g., drug, procedure) on health outcomes in controlled environments.

LONGITUDINAL DATA ANALYSIS

- Longitudinal data analysis involves collecting data from the same subjects repeatedly over time to track changes and determine trends or effects.
- Statistical Methods: Requires specific methods like mixed models or GEE to appropriately handle correlated data from repeated measures.

COHORT STUDY

A cohort study follows a group of individuals over time who are exposed or not exposed to a specific risk factor to determine the incidence of an outcome.

CASE CONTROL STUDY

A case-control study compares individuals with a specific outcome (cases) to those without (controls) to identify potential risk factors or causes of the outcome.