# Scientific Bias Types


PLAY PICMONIC

## DEFINITION

**Bias**

Bi-asses Ass Race

Bias, defined as a systematic error in the design, execution, or analysis of a study, is one of the major considerations in any type of epidemiologic study design planning and analysis. Bias assessment must be taken into consideration and actively performed in every step of any study design keeping it to a minimum, guaranteeing the quality of the design and the results obtained from the study.

## RECRUITING PARTICIPANTS

**Selection Bias**

Election Bi-assed Ass

During the recruitment of participants, the main bias is known as Selection Bias, which is the most common sampling bias. Selection Bias happens when the sample or the treatment allocation for the study subjects not done in a random manner. Selection Bias can be avoided by randomizing samples, either subjects or treatment interventions to select a sample with similar distributions of the known and unknown variables. Ensuring an adequate choice of comparison and reference groups, as well as refined inclusion and exclusion criteria prevents the occurrence of selection bias.

**Berkson Bias**

Bedside Bi-assed Ass Flag

An important example of a Selection Bias in case control studies is Berkson Bias, also known as the "Bedside Bias" which is the selection of cases and control subjects from hospitals, which clearly have a different health status and exposures to non-hospitalized patients, and therefore the results of this study would be biased.

**Attrition Bias**

Attrited Bi-assed Ass

Another type of Selection Bias is Attrition Bias, which occurs when patients lost during the follow up have a different prognosis than those who complete the study, therefore biasing the results obtained.

## PERFORMING STUDY

**Recall Bias**

Bi-Assed Ass Calling

During the actual development of the study there are multiple biases to be aware of in each step of the process. Recall bias usually occurs in retrospective studies, where the people who have an actual altered condition tend to recall in a more accurate or exaggerated way the past events than control subjects.

**Measurement Bias**

Measuring-tape Bi-assed Ass

Measurement bias happens when information is gathered in a systematically distorted manner, either by a non-calibrated equipment or altered method of measurement. To avoid this bias, standardized and previously tested methods of data collection must be used to guarantee data quality.

**Procedure Bias**

Procedure referee Bi-assed Ass

Procedure bias arise as subjects in treatment group spend more time and have a highly specialized care compared to control. This difference between the subject groups treatment leads to data bias. Blinding the treatment and control groups for the subjects and researchers allows to overcome this bias as no one involved directly in the procedure application is aware of the treatment differential.

**Observer-expectancy Bias**

Observing telescope

Observer-expectancy Bias, also known as the Pygmalion effect, appears as researcher´s belief in the expected result of the intervention may alter his or her judgement and therefore the results. The Pygmalion effect is also controlled by double blinding as in procedure bias to avoid the influence of the research judgement over the result documentation and analysis.

## INTERPRETING RESULTS

**Confounding Bias**

Co-founder sponsors and jury

This group of bias occur during the analysis of results phase of the study. The relation between exposure and outcome are always multi-causal phenomena. Therefore, there can be multiple variables acting as confounders, distorting the effect between the elected exposure variable and the outcome of interest. This effect modification or distortion, when uncontrolled, is known as confounding bias.

**Lead-time Bias**

Leading Bi-assed Ass

Lead-time Bias occurs in screening studies when during the survival analysis and discussion of the study, the "lead time" given by the early detection of the disease by the screening or surveillance test, before clinical appearance of the disease, is not considered or taken into account.

**Length-time Bias**

Long legged Bi-assed Ass

Length-time Bias also appears during screening when there is a false apparent increase in survival secondary to the early detection of the disease, which wouldn´t have been discovered at that point without the study screening. Therefore, falsely appearing to improve survival.