About Simpson’s Paradox
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About Simpson's Paradox

What is SIMPSON'S PARADOX?

- Simpson's Paradox is a problem that may arise during analysis of two or three-way tables. It is characterized by the reversal of an association seen within individual groups, when those groups are combined. This phenomenon is often caused by "lurking" or confounding variables that are not evident until the groups are combined.

Introduction to Simpson’s Paradox

- In order to refresh on concepts related to Simpson's Paradox, take a moment to look at the learning object "About Proportions."

- As was indicated in the introduction, "lurking" variables are a main contributor to Simpson's Paradox. These "lurking" variables have the ability to negatively or positively affect the outcome of two or more measured variables. Generally, we are more concerned that the effects are not negative, causing detriment to our conclusions.

  An additional concern is that the combination of data sets be performed correctly. Incorrectly combined groups may lead to an improper weighting of results. This mistake is most common when dissimilar groups are combined.

- A lack of care in controlling for Simpson's Paradox can lead to faulty conclusions and inaccurate decisions. This is most concerning when viewed from a real world perspective. For example, in school admission processes or health diagnoses, one wants to be sure the decisions are made on the most accurate information available.
Preventing Simpson’s Paradox

- Prevention of Simpson's Paradox is generally a matter of designing a study well, identifying potential "lurking" variables ahead of time, and developing strategies for dealing with their occurrence. In this vein, during the planning stages, the researcher should ensure groups being studied are of equal size and homogeneous. Another consideration, as with example 2, is the social context under which the information is being drawn.

Having identified the potential causes of Simpson's Paradox within a study, and having properly controlled for them, the researcher should now be able to conduct an effective study.
**Glossary**

"Lurking" Variable: is a variable unmeasured or unaccounted for, in a study, which has some appreciable effect on the relationship between the variables being studied.

Simpson's Paradox: often caused by some "lurking" variable(s), Simpson's Paradox is characterized by an association that is reversed when groups are combined.
References


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