Dealing with simple two-way tables using SAS PROC FREQ

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Outline

Introduction

- Categorical/qualitative data (Gender, age group Yes/No, D/$\bar{D}$ etc.)
- Mostly categorical variables summarized in frequency tables
- One-way, two-way, multi-way tables etc. used to show distribution of categorical data

2x2 tables

- Simplest, 2x2 because cross-tabulation of two categorical variables, each with only two categories.
- One is row and the other is the column variable
- For Case-control, cohort studies etc.
- Sensitivity, specificity, PPV, NPV
- 2x2 table - key to understanding higher dimensional tables

Contd...2x2 Tables: Example of a 2x2 tables

Table 1: Example of a 2x2 table

Row variable	Column variable: 1	Column variable: 0	
1	a	b	a+b
0	c	d	c+d
	a+c	b+d	a+b+c+d

Comments: a is the no. of cases that are in category 1 of column variable and category 1 of row variable. b is the no. of cases in category 0 of column and 1 of row variables and so on.

PROC FREQ

- Only to generate tables of frequencies, but, producing test statistics and other measures to analyze categorical data based on cell frequencies
- χ^2 test of independence/association, Fisher's exact, McNemar's tests, measures of association
- Today, dealing with 2x2 tables using options available in FREQ

FREQ syntax

Syntax

- PROC FREQ *options*;
  BY variable-list;
  WEIGHT variable ;
  TABLES requests/*options*;
  OUTPUT <OUT=SAS-data-set><output-statistic-list>;
  FORMAT;
  EXACT statistic-keywords;
  TEST options;

Example table from FREQ

The FREQ Procedure
Table of exposure by response

exposure Frequency Percent Row Pct Col Pct	response No	 Yes	 Total
Low	6	2	8
	26.09	8.70	34.78
	75.00	25.00	
	60.00	15.38	
High	4	11	15
	17.39	47.83	65.22
	26.67	73.33	
	40.00	84.62	
Total	10	13	23
	43.48	56.52	100.00

Demonstration in SAS & custom report

- **Let's look at the demonstration in SAS**