Example: Is there an influence of the following three SES on preterm delivery rates?

Socio-Economic status	Preterm Birth	Normal Birth
Upper/Upper-middle	25	85
Middle	33	64
Lower/Lower-middle	112	149

A. Yes, we reject the null hypothesis
B. No, we fail to reject the null hypothesis
C. Yes, we fail to reject the null hypothesis
D. No, we reject the null hypothesis

Contingency Analysis

Example: Is there an influence of SES on preterm delivery rates

Socio-Economic status	Pre term Birth	Normal Birth
Upper/Upper-middle	25	85
Middle	33	64
Lower/Lower-middle	112	149

Step 1:

Ho: SES and Preterm delivery rates are independent variables

Ha: SES, Preterm rates are **NOT** independent variables

Example: Is there an influence of SES on preterm delivery rates

Socio-Economic status	Pre term Birth	Normal birth
Upper/Upper-middle	25	85
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Step 1:

Ho: SES and Preterm delivery rates are independent variables

Ha: SES, Preterm rates are **NOT** independent variables

Step 2:

The test: **X^2 Contingency Analysis**

P(Upper) = 110/470; P(Middle) = 97/470; P(Lower) = 263/470

P(preterm) = 172/470; P(regular) = 298

Example: Is there an influence of SES on preterm delivery rates

Socio-Economic status	Pre term Birth	Normal birth
Upper/Upper-middle	25 **(110*172)/470 =40.25**	85**(110*298)/470 = 69.75**
Middle	33**(97*172)/470=35.50**	64**(97*298)/470 =61.50**
Lower/Lower-middle	114**(263*172)/470 =96.25**	149**(263*298)/470 =166.75**

Step 1:

Ho: SES and Preterm delivery rates are independent variables

Ha: SES, Preterm rates are **NOT** independent variables

Step 2:

The test: **X^2 Contingency Analysis**

P(Upper) = 110/470; P(Middle) = 97/470; P(Lower) = 263/470

P(preterm) = 172/470; P(regular) = 298

$X^2 = (25-40.25)^2/40.25+(33-35.50)^2/35.50 +(114-96.25)^2/96.25 +(85-69.75)^2/69.75+(64-61.50)^2/61.50+(149-166.75)^2/166.75 =14.56$

Example: Is there an influence of SES on preterm delivery rates

Socio-Economic status	Pre term Birth	Normal birth
Upper/Upper-middle	25 **(110*172)/470 =40.25**	85**(110*298)/470 = 69.75**
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Step 1:

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$X^2 = (25-40.25)^2/40.25+(33-35.50)^2/35.50 +(114-96.25)^2/96.25 +(85-69.75)^2/69.75 + (64-61.50)^2/61.50+ (149-166.75)^2/166.75 =14.56$

Step 3: df = (3-1)(2-1)= 2; **$X^2_2 = 5.99$**

Step 4: **$X^2 > X^2_2$ so we reject the null hypothesis. SES an preterm delivery are not independent.**