Chapter 910

# Odds Ratio and Proportions Conversion Tool

## Introduction

The Odds Ratio and Proportions Conversion Tool calculates $p_1$, $p_2$, the difference, ratio, odds ratio, *ln*(OR), odds 1, or odds 2 from various combinations of these parameters. In this tool, $p_1$ and $p_2$ are the proportions in groups one and two, respectively. This tool is most often used when planning the sample size for a test involving two proportions. The tool may be loaded by selecting *Odds Ratio and Proportions Conversion Tool* from the *Tools* menu.

The ratio of the proportions is defined as

$$Ratio = \frac{p_1}{p_2}$$

The odds of obtaining the response of interest in group 1 are $p_1/(1 - p_1)$ and the odds of obtaining the response in group 2 are $p_2/(1 - p_2)$. The ratio of these odds, called the odds ratio, is defined as

$$OR = \frac{p_1/(1 - p_1)}{p_2/(1 - p_2)}$$

The natural log of the odds ratio, *ln*(OR), gives a measure that has a range of negative infinity to positive infinity.

# Examples

This window lets you calculate $p_1$, $p_2$, the difference, ratio, odds ratio, *ln*(OR), odds 1, and odds 2 from $p_1$ or $p_2$ and one of the other two parameters.

## Example 1 – Solving for P1

Suppose you know that $p_2 = 0.2$ and that *OR* = 4 and you want to find the corresponding value of $p_1$.

1. Load the **Odds Ratio and Proportions Conversion Tool** by selecting it from the *Tools* menu.

2. Select **P2** under **Enter**.

3. Select **Odds Ratio** under **And Enter**.

4. Set **P2** equal to **0.2**.

5. Set **Odds Ratio** equal to **4**.

6. Read the result in the P1 box. The result is **0.5**.

## Example 2 – Solving for P2

Suppose you know that $p_1 = 0.6$ and that *OR* = 1.5 and you want to find the corresponding value of $p_2$.

1. Load the **Odds Ratio and Proportions Conversion Tool** by selecting it from the *Tools* menu.

2. Select **P1** under **Enter**.

3. Select **Odds Ratio** under **And Enter**.

4. Set **P1** equal to **0.6**.

5. Set **Odds Ratio** equal to **1.5**.

6. Read the result in the P2 box. The result is **0.5**.

## Example 3 – Solving for Odds Ratio

Suppose you know that $p_1 = 0.8$ and that $p_2 = 0.4$ and you want to find the corresponding value of the odds ratio.

1. Load the **Odds Ratio and Proportions Conversion Tool** by selecting it from the *Tools* menu.

2. Select **P1** under **Enter**.

3. Select **P2** under **And Enter**.

4. Set **P1** equal to **0.8**.

5. Set **P2** equal to **0.4**.

6. Read the result in the Odds Ratio box. The result is **6**.

# Example 4 – Calculating ln(OR)

Suppose you know that $p_1 = 0.8$ and that $p_2 = 0.4$ and you want to find the corresponding value of *ln*(OR).

1.  Load the **Odds Ratio and Proportions Conversion Tool** by selecting it from the *Tools* menu.

2.  Select **P1** under **Enter**.

3.  Select **P2** under **And Enter**.

4.  Set **P1** equal to **0.8**.

5.  Set **P2** equal to **0.4**.

6.  Read the result in the Ln(Odds Ratio) box. The result is **1.79176**.