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 *PASS-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 PASS-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 PASS-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 PASS-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 \( \ln(\text{OR}) \)

Suppose you know that \( p_1 = 0.8 \) and that \( p_2 = 0.4 \) and you want to find the corresponding value of \( \ln(\text{OR}) \).

1. Load the Odds Ratio and Proportions Conversion Tool by selecting it from the PASS-Tools menu.
2. Select \( P_1 \) under Enter.
3. Select \( P_2 \) under And Enter.
4. Set \( P_1 \) equal to 0.8.
5. Set \( P_2 \) equal to 0.4.
6. Read the result in the Ln(Odds Ratio) box. The result is 1.79176.