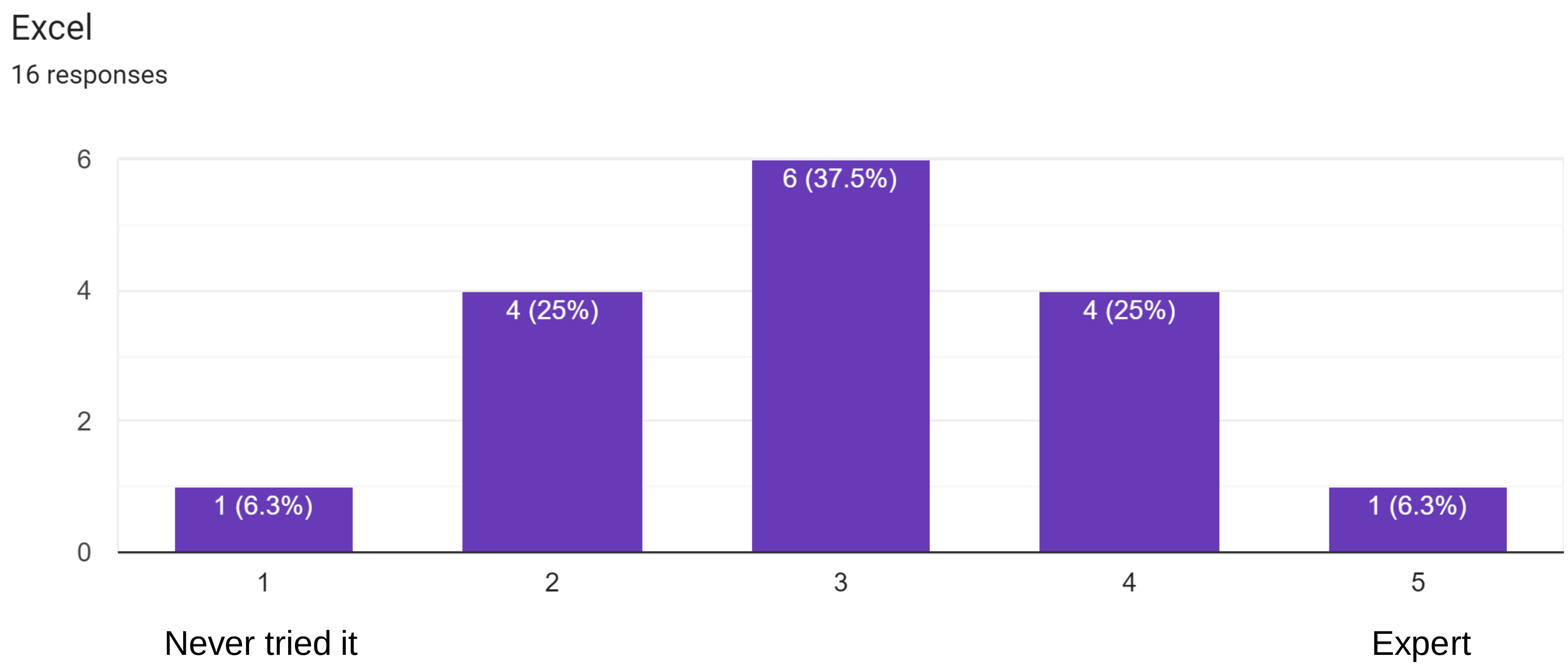
# Intro to Econometrics Software: Excel

Dragos Ailoae
dailoae@gradcenter.cuny.edu

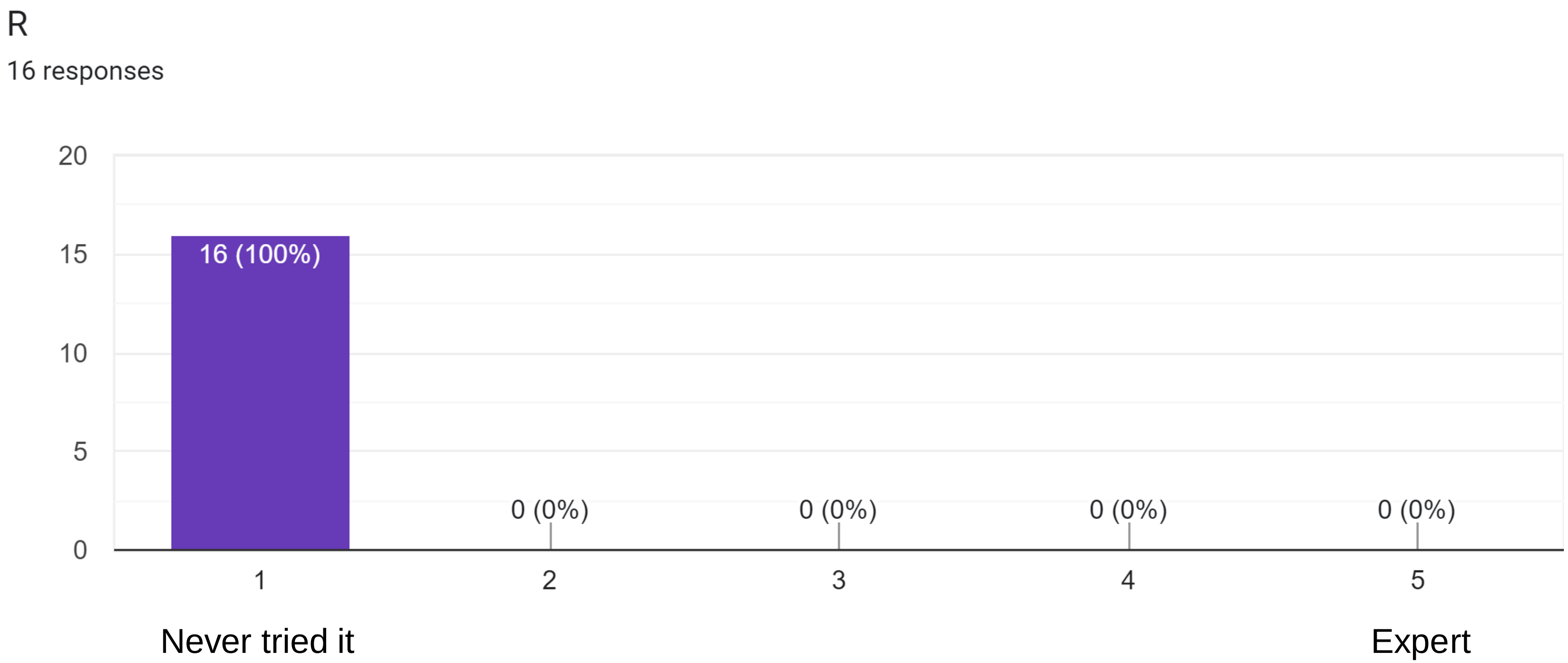
Advanced Economics and Business Statistics
ECON-4400w

Brooklyn College
Spring 2023

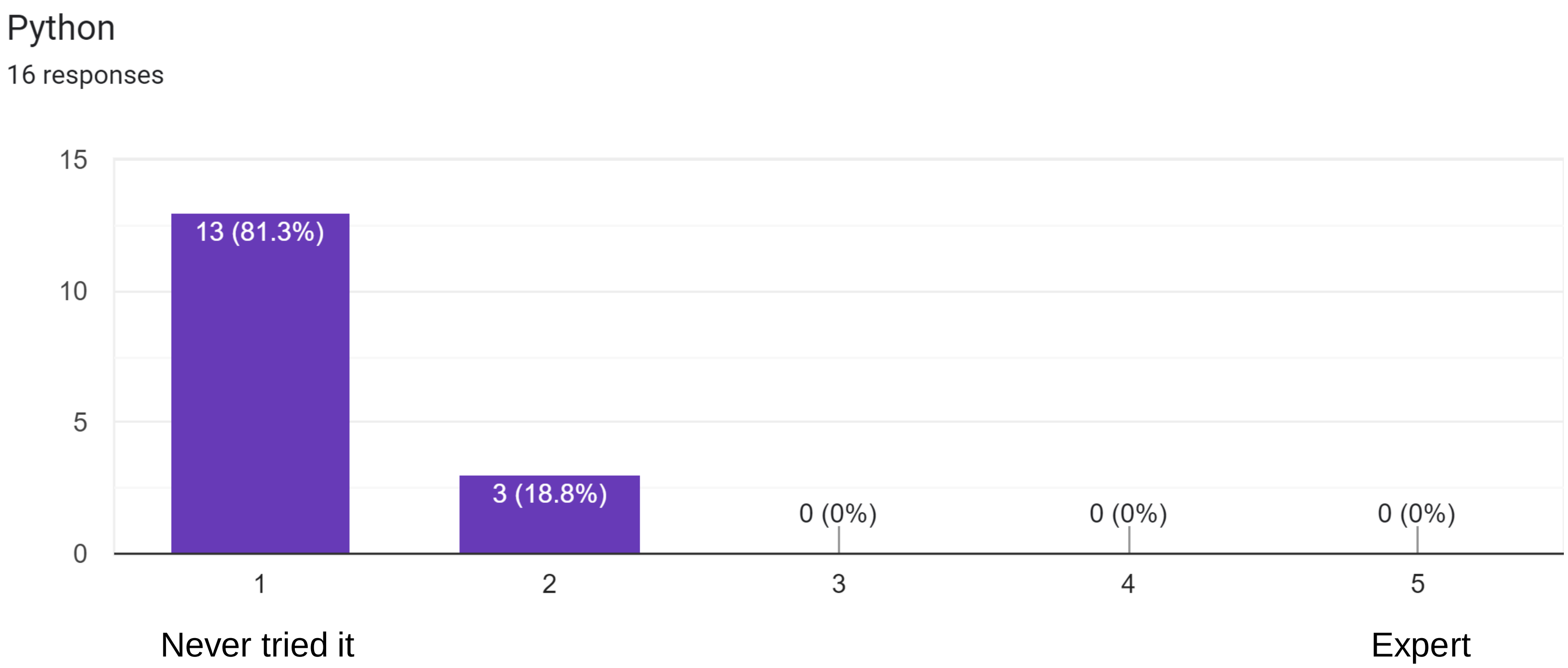
# About You: Software experience



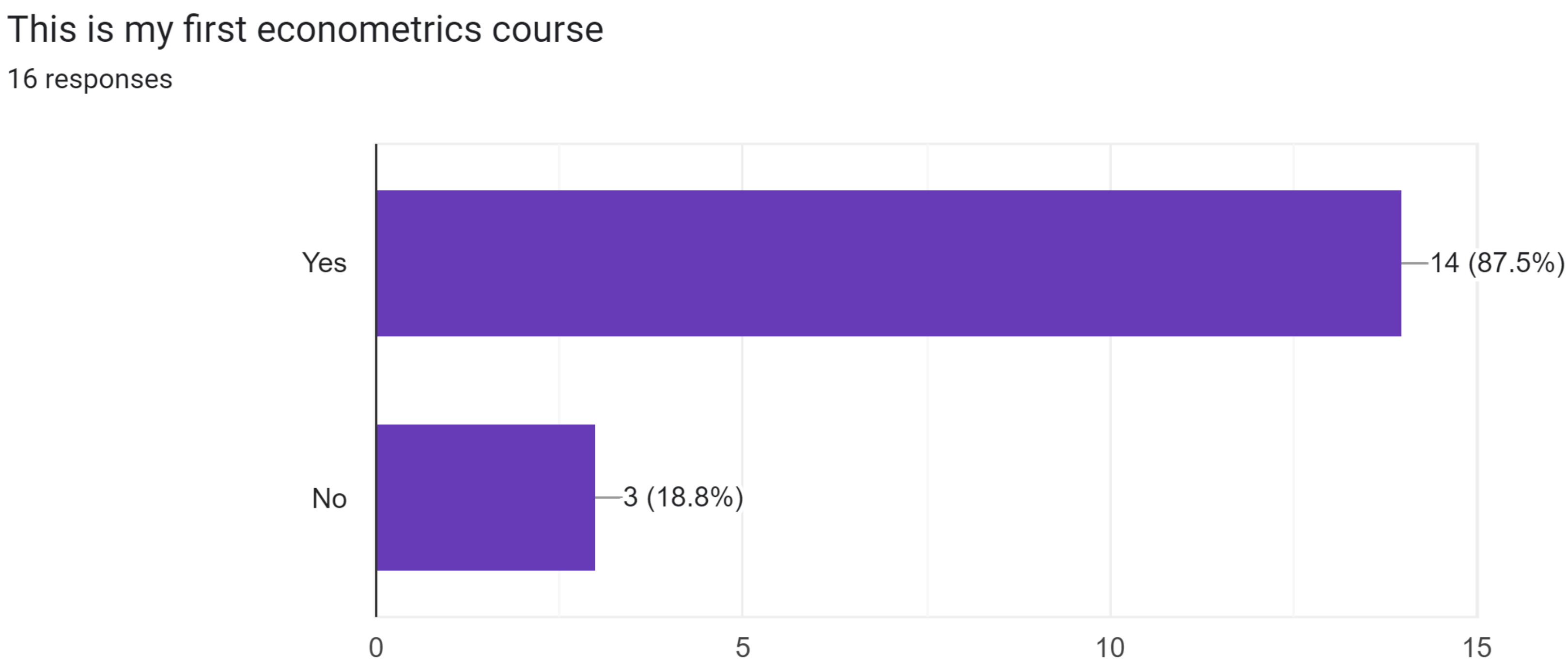
# About You: Software experience



# About You: Software experience



# About You: Econometrics

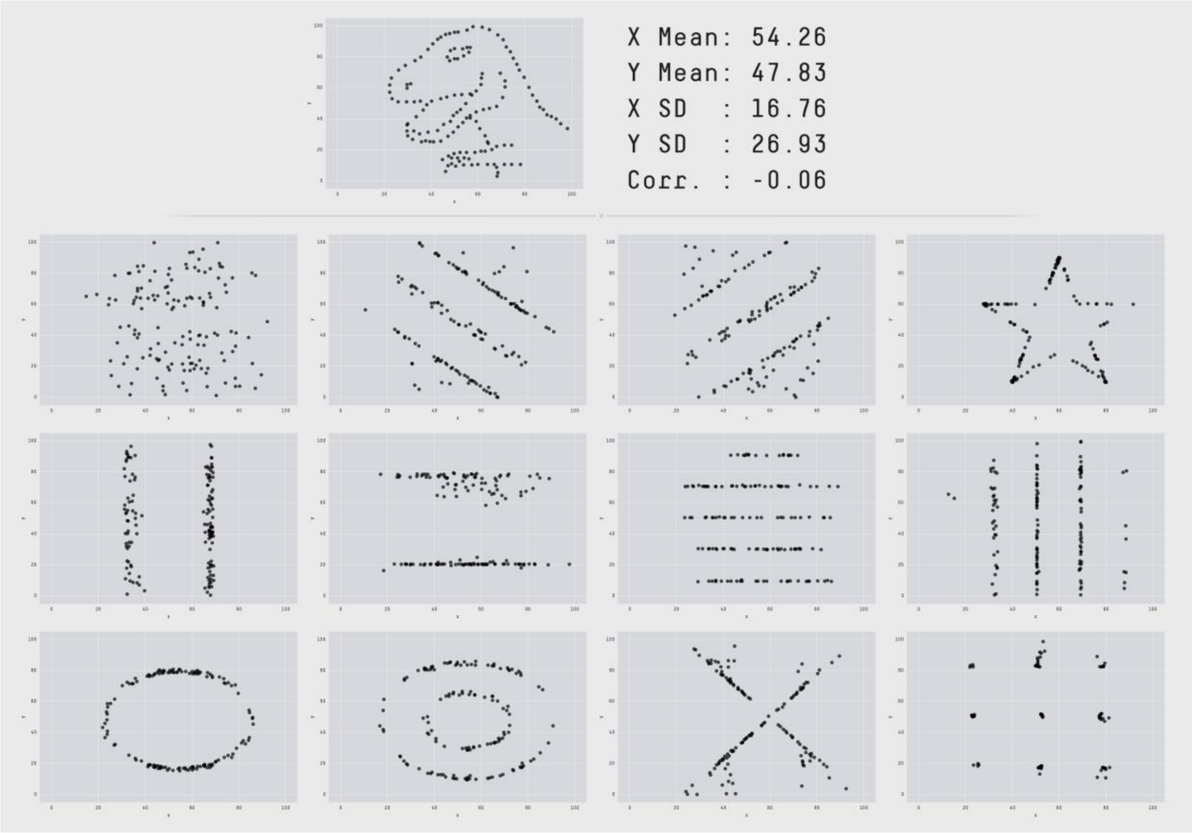


# Intro to Excel for Data Analysis

# Excel Basics

[Excel live session]

# Descriptive statistics not enough: important to visualize our data

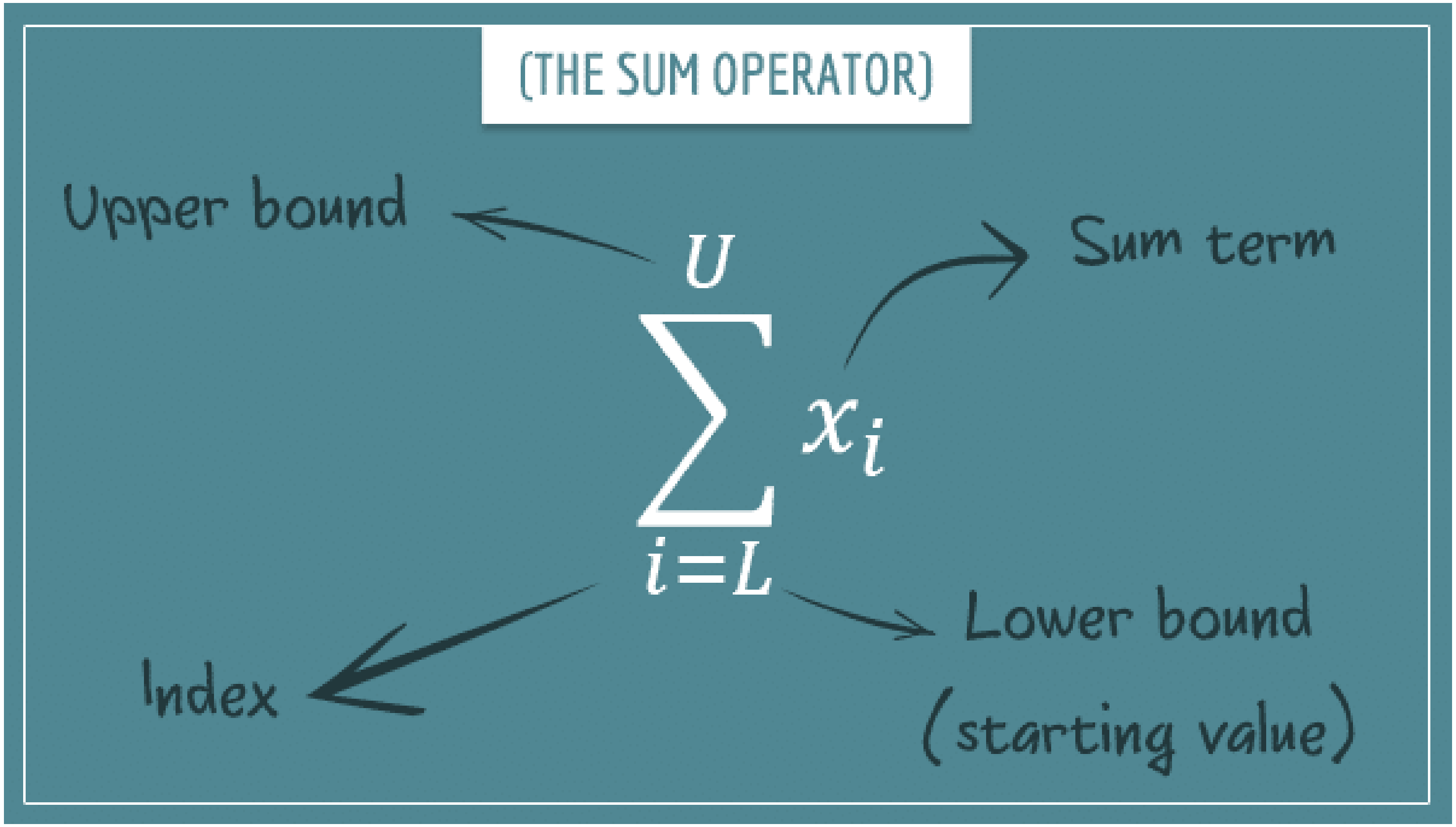



https://www.autodesk.com/research/publications/same-stats-different-graphs

# Next Steps

# Notation

# Summation


(THE SUM OPERATOR)
Upper bound
Sum term
$\sum_{i=L}^{U} x_i$
Index
Lower bound
(starting value)

# Summation rules

$$\sum_{i=1}^{n} x_i = x_1 + x_2 + \cdots + x_n$$

$$\sum_{i=1}^{n} a = na$$

$$\sum_{i=1}^{n} ax_i = a \sum_{i=1}^{n} x_i$$

$$\sum_{i=1}^{n} (x_i + y_i) = \sum_{i=1}^{n} x_i + \sum_{i=1}^{n} y_i$$

$$\sum_{i=1}^{n} (ax_i + by_i) = a \sum_{i=1}^{n} x_i + b \sum_{i=1}^{n} y_i$$

$$\sum_{i=1}^{n} (a + bx_i) = na + b \sum_{i=1}^{n} x_i$$

$$\overline{x} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{x_1 + x_2 + \cdots + x_n}{n}$$

$$\sum_{i=1}^{n} (x_i - \overline{x}) = 0$$

$$\begin{aligned} \sum_{i=1}^{2} \sum_{j=1}^{3} f(x_i, y_j) &= \sum_{i=1}^{2} [f(x_i, y_1) + f(x_i, y_2) + f(x_i, y_3)] \\ &= f(x_1, y_1) + f(x_1, y_2) + f(x_1, y_3) \\ &\quad + f(x_2, y_1) + f(x_2, y_2) + f(x_2, y_3) \end{aligned}$$

# Expected value (mean) is just SUMPRODUCT()

KEY CONCEPT 2.1

## Expected Value and the Mean

Suppose the random variable $Y$ takes on $k$ possible values, $y_1, \ldots, y_k$, where $y_1$ denotes the first value, $y_2$ denotes the second value, and so forth, and that the probability that $Y$ takes on $y_1$ is $p_1$, the probability that $Y$ takes on $y_2$ is $p_2$, and so forth. The expected value of $Y$, denoted $E(Y)$, is

$$E(Y) = y_1 p_1 + y_2 p_2 + \cdots + y_k p_k = \sum_{i=1}^{k} y_i p_i, \tag{2.3}$$

where the notation $\sum_{i=1}^{k} y_i p_i$ means "the sum of $y_i p_i$ for $i$ running from 1 to $k$." The expected value of $Y$ is also called the mean of $Y$ or the expectation of $Y$ and is denoted $\mu_Y$.