Basic Probability Distributions Report

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1 Introduction

This short report introduces two fundamental probability distributions: the standard normal distribution and a binomial distribution with parameters $n = 10$ and $p = 0.3$. Both graphs were generated using Python.

2 Standard Normal Distribution

The standard normal distribution is defined as:

$$f(x) = \frac{1}{\sqrt{2\pi}} e^{-x^2/2}.$$

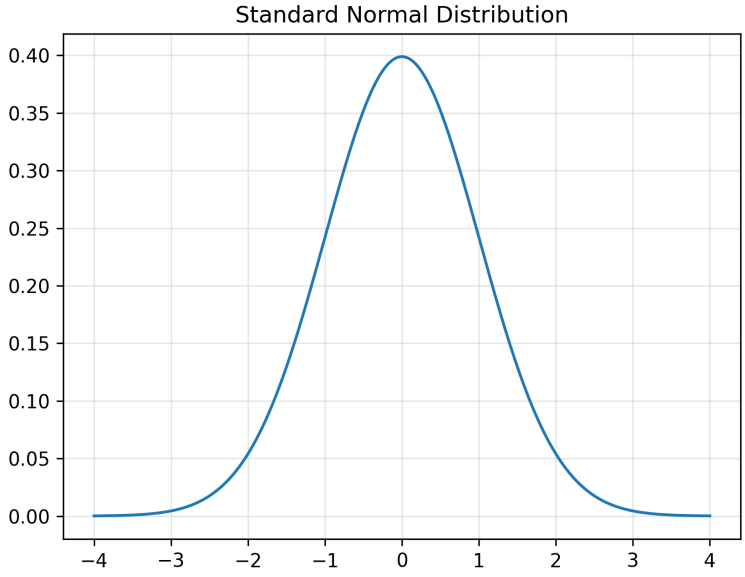

Figure 1: Standard Normal Distribution

3 Binomial Distribution

The binomial distribution with parameters $n = 10$ and $p = 0.3$ has the probability mass function:

$$P(X = k) = \binom{10}{k} (0.3)^k (0.7)^{10-k}, \quad k = 0, \ldots, 10.$$

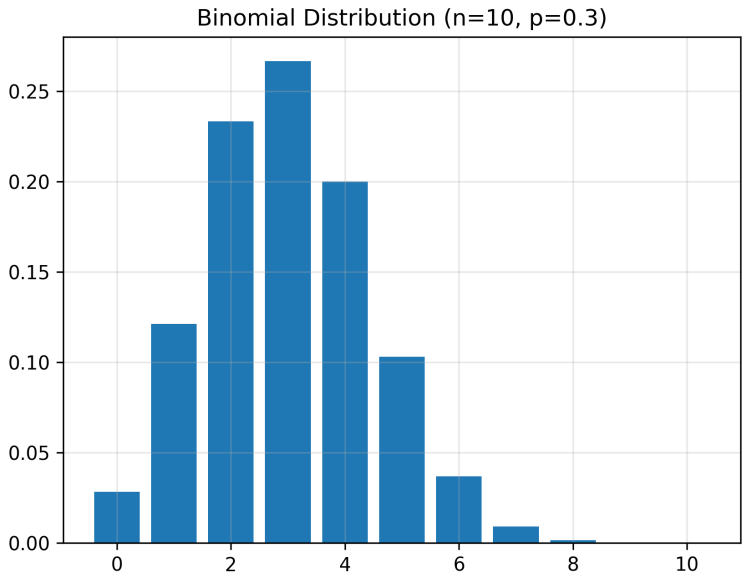

Figure 2: Binomial Distribution (n=10, p=0.3)