Total Sample Size vs. Relative Lift
(baseline: 15.0%, alpha=0.05, power=80%)

5%: 72,613
10%: 18,508
15%: 8,380

Power vs. Total Sample Size
(baseline: 15.0%, alpha=0.05, lift=5%, two-tailed)

minimum sample size for power=80%

50/50 split

Control

Treatment

Total Sample Size: 72,613
Control Sample Size: 36,307
Treatment Sample Size: 36,306
Split: 50:50
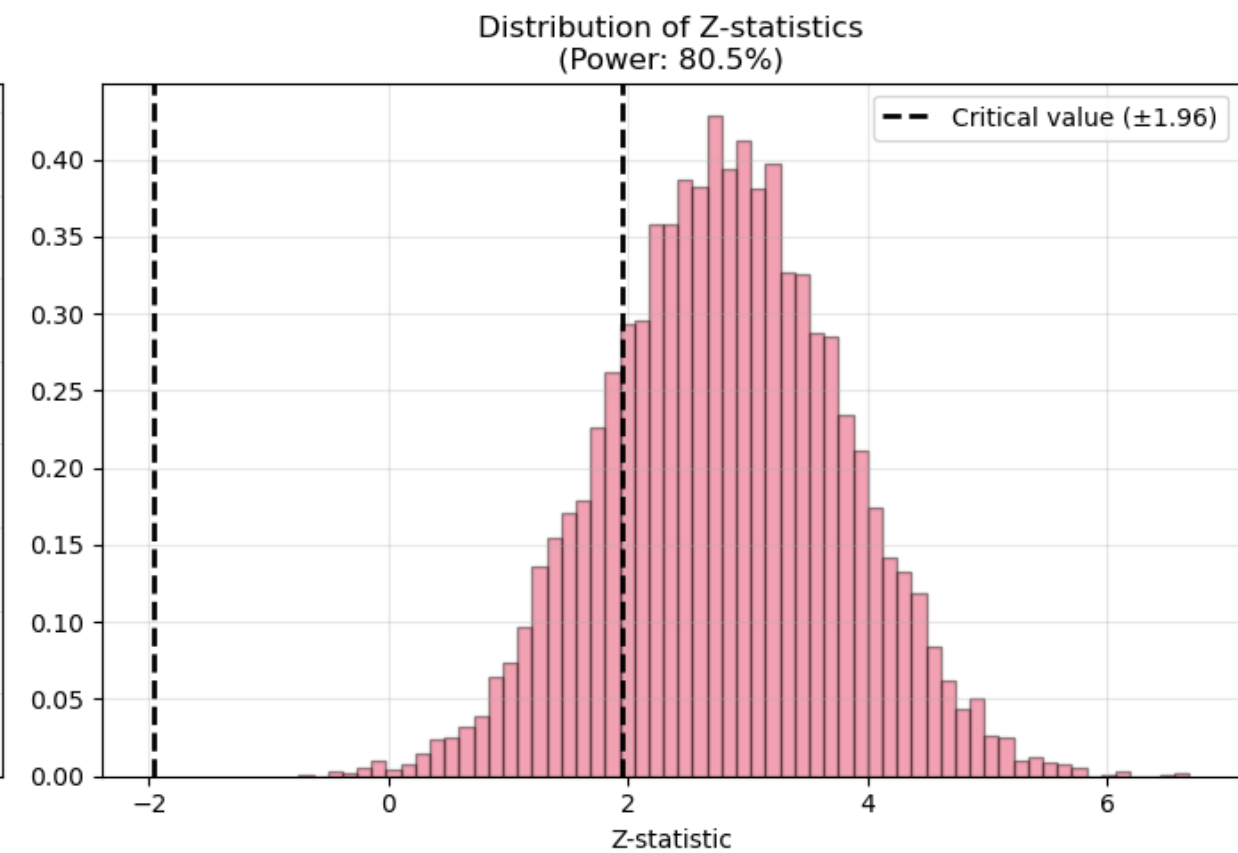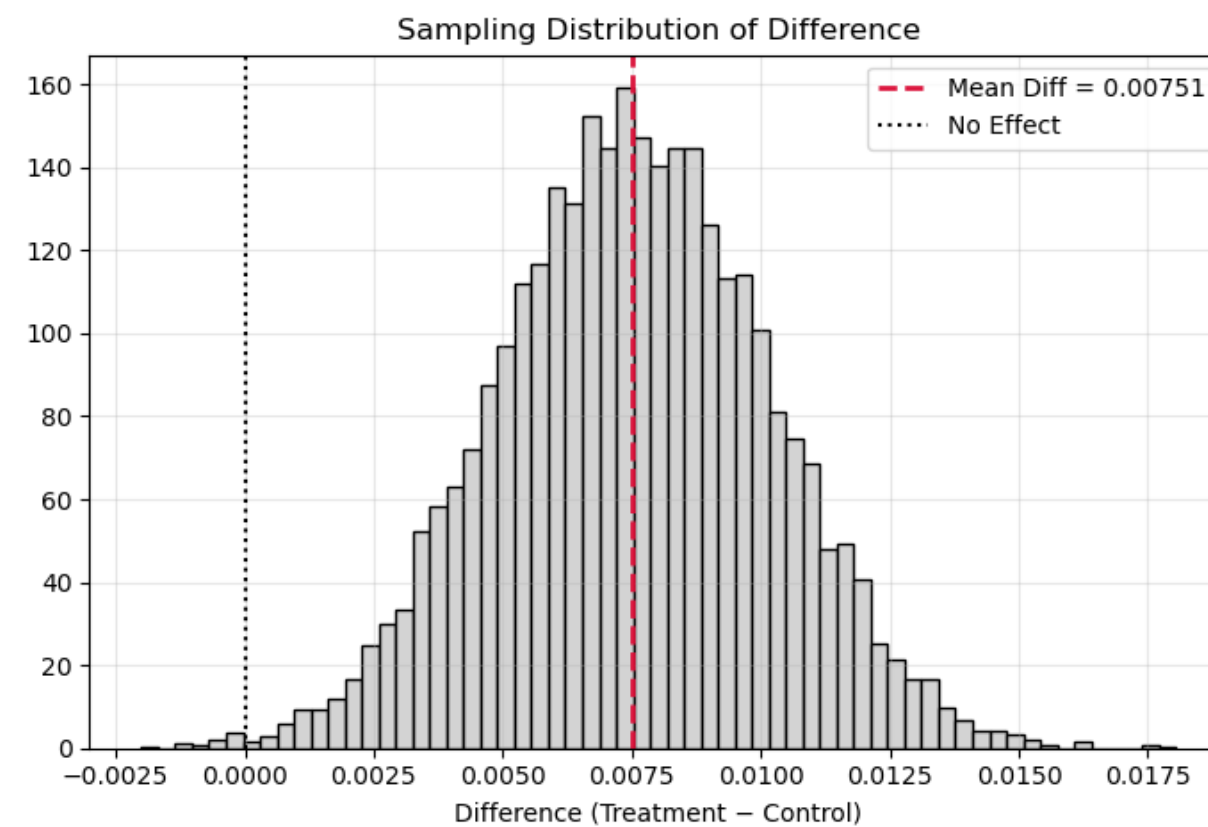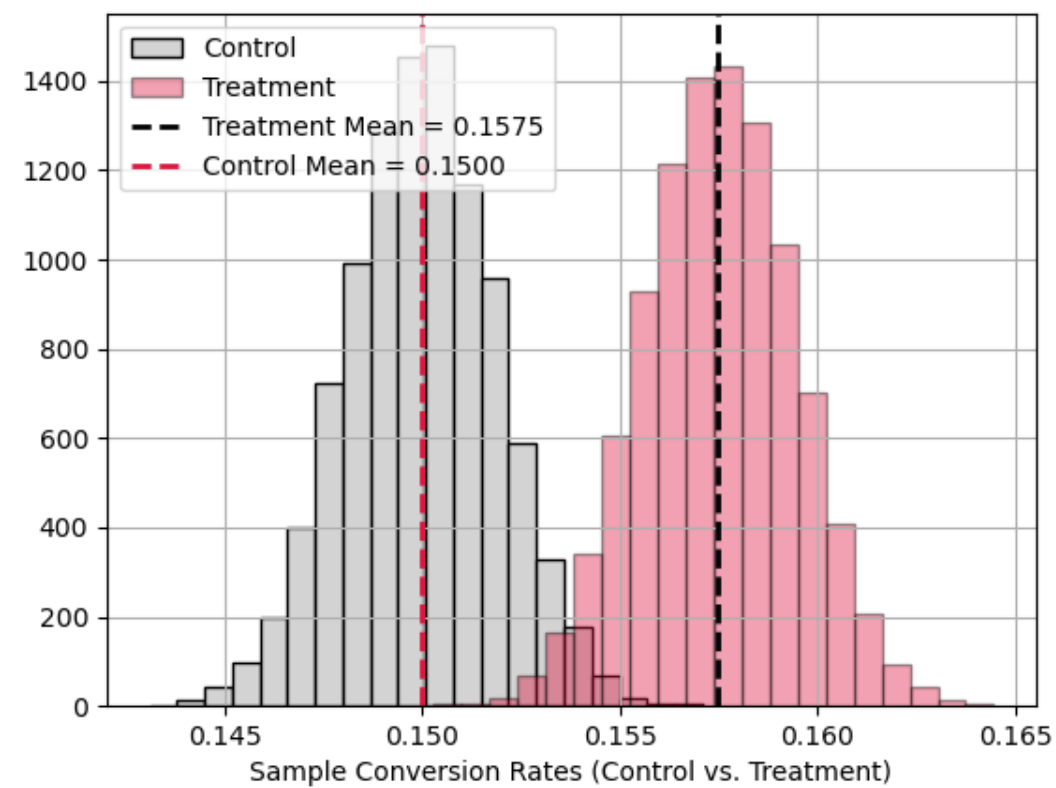
Control Conversion Rate: 15%

Relative Lift: 5%
Absolute Lift: 15% * 5% = 0.75%

Alpha: 5%
Power: 80%
Two-Tailed Z Test

Control
Treatment
Treatment Mean = 0.1575
Control Mean = 0.1500

Sampling Distribution of Difference

Mean Diff = 0.00751
No Effect

Distribution of Z-statistics
(Power: 80.5%)

Critical value (±1.96)

Sample Conversion Rates (Control vs. Treatment)

Difference (Treatment − Control)

Z-statistic

Monte Carlo simulation to estimate **sampling distribution** of conversion rates