

Stat 400 Discussion 6

Spring 2021 (Yu)

Exercise 1

Let X_1, \dots, X_n be an independent sample where the pdf of each X_i is $f(X_i|\theta) = \frac{1}{\theta} x^{\frac{1-\theta}{\theta}}; 0 < X_i < 1, 0 < \theta < \infty$.

- a) What is the Method of Moments estimator, $\tilde{\theta}$ of θ ?
- b) What is the Maximum Likelihood estimator, $\hat{\theta}$ of θ ?

Exercise 2

The NCAA tournament, beginning with 64 teams, has 63 games. Razia has a lot of time on her hands, and she watches every one. Suppose, just before each game, Razia randomly picks a winner, believing each game is an i.i.d. Bernoulli(1/2). For the purposes of this question, let's run with that assumption.

Razia figures she will predict at least 40 games correctly. Let X denote the number of games she calls correctly. Use the Central Limit Theorem to approximate $P(X \geq 40)$.