KEN2130: Probability and Statistics

Homework Assignment 1 (graded)

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Logistics

We recommend that you write solutions in R markdown with RStudio; see Exercises 1 for instructions. For mathematical equations, you can use latex directly within R markdown. If you don't know latex, you can scan your handwritten solutions and include them as figures. The final submission should be one single pdf that you can upload to Canvas.

Question 1 (Named Distributions) [60 points]

An open air movie theater overbooks one of their viewings. They sell more tickets than the number of available beach chairs. They do this often in the hope that not everyone will show up to the show and to maximize profits. The movie theater has 50 seats. But this time they sold 100 tickets! From past experience with a similar weather forecast, the movie theater manager can estimate that 50% of the people who bought tickets will actually show up. Find the probability that there won't be enough beach chairs available. List your assumptions. Provide a mathematical solution and code (preferably in R).

Question 2 (Independence) [40 points]

Give one real world example each:

1. Two random variables that are independent and identically distributed
2. Two random variables that are independent and not identically distributed
3. Two random variables that are dependent and identically distributed
4. Two random variables that are dependent and not identically distributed