

Continuous RVs Review Quiz

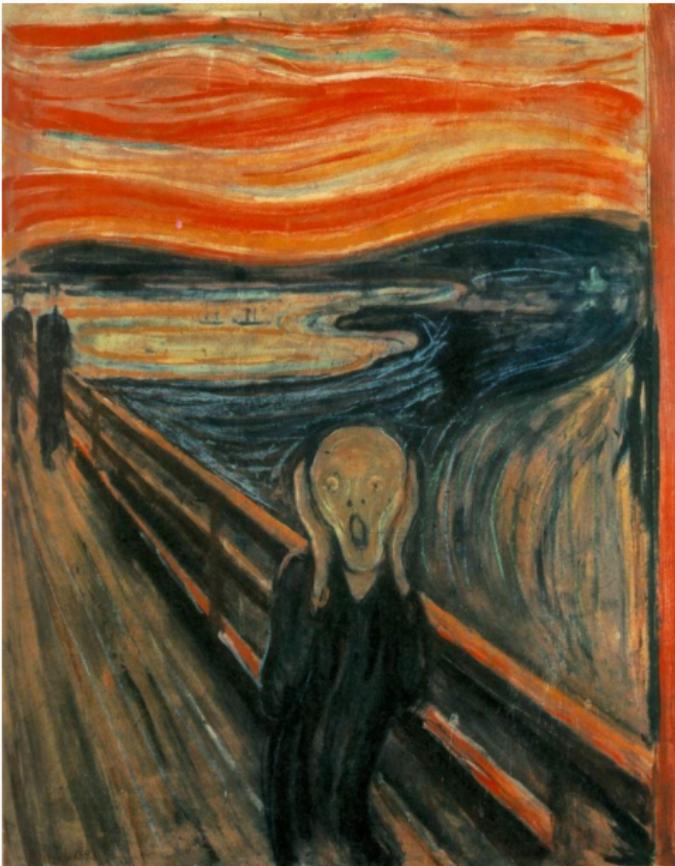
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Class Logistics

1. Have you gathered the data for your R project?
 - The correct answer is “Yes”
2. Have you compiled summary statistics of your data?
 - The correct answer is “Yes,” but I will also accept “I’m working on it.”
 - Feel free to submit your summary stats or other questions over the next few weeks to ensure that you are on the right track!
3. Will the class be curved? How does the curve work?
 - I do not plan on curving the course. My goal is to prepare everyone for Econ 104 and give you a strong statistical background and I want your grade to help you assess that as opposed to your performance relative to your peers.
4. When is the next midterm?
 - 2 weeks

Class Logistics



Real Questions

1. Does the pdf tell the probability of the random variable taking a particular value?
 - No! Individual points have zero probability for continuous random variables
2. What is $E[aY + b^2X]$? X and Y are not independent and X and Y are continuous random variables.
 - $aE[Y] + b^2E[X]$
3. What is $\text{Var}(aX + bY)$? X and Y are not independent and X and Y are continuous random variables.
 - $a^2\text{Var}(X) + b^2\text{Var}(Y) + 2\text{Cov}(X, Y)$

Real Questions

4. What is the difference between the expectation of a discrete RV and a continuous RV?
 - The expectation of a discrete RV X is defined as $E[X] = \sum_{i=1}^n xf(x)$ where $f(x)$ is the pmf. The expectation of a continuous RV Y is defined as $E[Y] = \int_{-\infty}^{\infty} yf(y)dy$ where $f(y)$ is the pdf.
5. What are the cdf and pdf for a uniform random variable?
 - PDF: $f(x) = 1$ if $x \in [0, 1]$ and 0 otherwise
 - CDF: $F(x) = \begin{cases} 0, & x < 0 \\ x, & 0 \leq x \leq 1 \\ 1, & x > 1 \end{cases}$

Real Questions

6. What is the distribution of $Z = aX + bY$ if $X \sim N(\mu_X, \sigma_X^2)$ and $Y \sim N(\mu_Y, \sigma_Y^2)$ and X and Y are independent?
 - $Z \sim N(a\mu_X + b\mu_Y, a^2\sigma_X^2 + b^2\sigma_Y^2)$
7. What is the distribution of $X_1^2 + X_2^2$ if $X_i \sim \text{iid}N(0, 1)$?
 - $\chi^2(2)$
8. What does `qnorm(0.33, mean = 1, sd = 1)` give you?
 - This gives you the 33rd percentile for a $N(1, 1)$ random variable.
9. Ready for the next lecture?

Real Questions

