R300 Econometrics

Metrics Enjoyers

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1 Lecture 1: Basic Probability. Conditional expectation function.

1.1 Review of continuous distributions

Definition 1.1.1: Cumulative distribution function

The cumulative distribution function of X is defined as $F_X(x) \equiv P(X \leq x)$. By the Fundamental Theorem of Calculus, $\frac{d}{dx}F_X(x) = f_X(x)$ for a continuous r.v. at continuity points of f_X . A function F is a cdf iff:

- 1. $\lim_{x\to-\infty} F(x) = 0$ and $\lim_{x\to\infty} F(x) = 1$;
- 2. $F(\cdot)$ nondecreasing;
- 3. $F(\cdot)$ right-continuous; i.e., $\forall x_0$, $\lim_{x\downarrow x_0} F(x) = F(x_0)$.

1.2 Conditional expectation function (CEF)

1.2.1 Conditional quantile function

- 2 Causal interpretation of regression. Least Squares.
- 2.1 Regression and causality
- 2.2 Estimating population regression by least squares

Theorem 2.2.1. This is a theorem. **Proof.** This is a proof. **Example.** This is an example. **Proof.** This is an explanation. Claim 2.2.1. This is a claim. **Corollary 2.2.1.** This is a corollary. **Proposition 2.2.1.** This is a proposition. Lemma 2.2.1. This is a lemma. Question 1 This is a question. Solution:-This is a solution. Question 2 This is another question. Solution:-This is another solution. Exercise 2.2.1. This is an exercise. Definition 2.2.1: Test This is a definition. Note:-This is a note.