

MITx: 14.310x Data Analysis for Social Scientists

Heli



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   Fundamentals of
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# **Kernel Regression - Quiz**

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#### **Question 1**

1/1 point (graded)

True or False: Kernel regressions give you the causal impact of X on Y.

a. True

🕨 b. False 🗸

## **Explanation**

The functional form of your estimator does not affect whether or not your estimates are causal. Just like with OLS, the source of your variation is what affects the interpretation of your estimates. So whether your kernel regression estimator can be interpreted causally or not, that ultimately depends on your experimental or quasi-experimental design.

Submit

You have used 1 of 1 attempt

- Module 5: Moments of a Random Variable,
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   Intro to Regression
- Module 6: Special
   Distributions, the
   Sample Mean, the
   Central Limit Theorem,
   and Estimation
- Module 7: Assessing and Deriving Estimators -Confidence Intervals, and Hypothesis Testing
- Module 8: Causality,
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   Experiments, &
   Nonparametric
   Regression

#### **Causality**

Finger Exercises due Nov 21, 2016 at 05:00 IST

# <u>Analyzing Randomized</u> <u>Experiments</u>

Finger Exercises due Nov 21, 2016 at 05:00 IST

✓ Correct (1/1 point)

## Question 2

0/1 point (graded)

True or False: A kernel regression is equivalent to drawing a line through the weighted average of points for a given x in each interval.

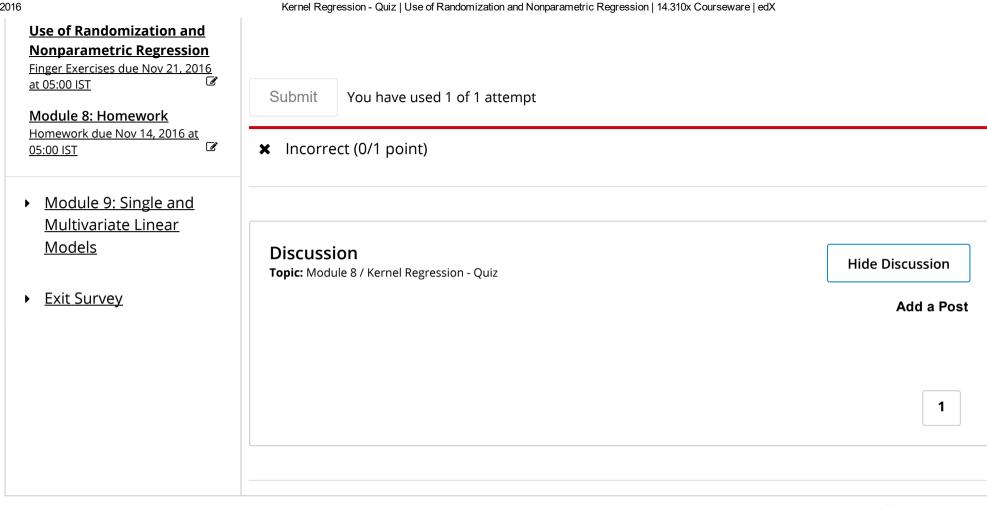
- a. True X
- b. False

## **Explanation**

Kernel regression is a technique that is used to estimate the conditional of expectation of y given x. As Professor Duflo showed in class, by Bayes' rule, this is given by:

$$E(Y|X=x)=rac{\int y(f(x,\,y)dy}{f(x)}$$

In kernel regression, the joint density f(x,y) and f(x) are replaced by their empirical counterparts: the kernel density estimators. The resulting estimator, for a given x, is a weighted (local) sum of the  $y_i$ , where the weights are inversely proportional to to the distance of the corresponding  $x_i$  from x. This is not the same as drawing a line of best fit through your points.



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