

Course Preview: Foundations of Development Policy

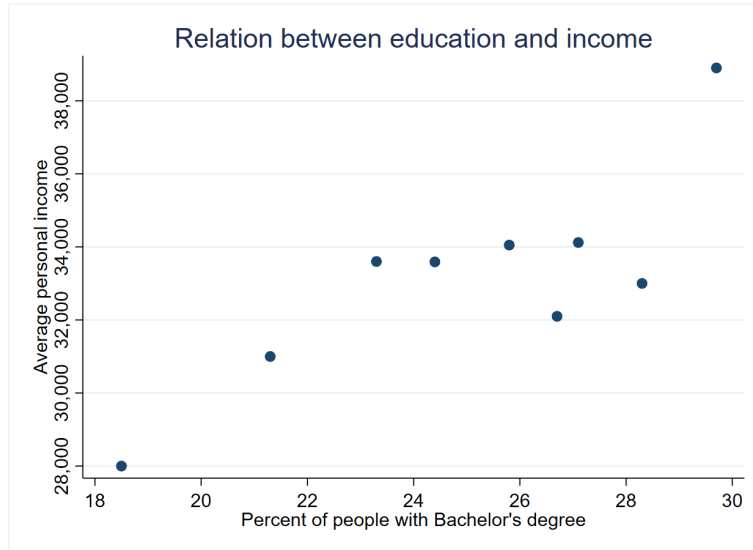
This course preview is meant to give prospective learners the opportunity to get a taste of the content and exercises that will be covered in the course. While there are no prerequisites for this online course, it is recommended that learners have some familiarity with economics or statistics. Each question below is tied to concepts that will appear in this course, all of which it would be good to feel comfortable with. If you are new to these subjects, or eager to refresh your memory, please do consult the available resources below, and be prepared to refer to these resources over the course of the class. Try to first answer these questions without consulting the resources, but fear not if you do consult them - being an agile user of outside resources will help you succeed in this course.

A score of 60% or above in this course preview indicates that you are ready to take this course, while a score below 60% indicates that you should further review some concepts in the attached materials before commencing the course.

Useful Resources:

- *Poor Economics* by Esther Duflo and Abhijit Banerjee: This is the book upon which this online course is based. The two MIT professors who wrote *Poor Economics* are the principal lecturers for this course, and the online course content hews closely to the content covered in the book. If you would like to gain more familiarity with the course material, we recommend that you read *Poor Economics*, which can be found for free under the additional resources tab of the online course of *The Challenges of Global Poverty* (once you enroll). The book can also be purchased online in over 15 languages.
- *Basics of Regression*:
 - [An Introduction to Linear Regression Analysis](#)
 - [Introduction to Regression Analysis: Causal Inference Bootcamp](#)
- *Background on the development aid debate*:
 - Anti-aid: [Bill Easterly: Why doesn't aid work?](#)
 - Pro-aid: [Jeffrey Sachs: The ethics and practicalities of foreign aid](#)
 - RCTs/experimentation: [Esther Duflo: Social experiments to fight poverty](#)

1. **Linear Regressions:** You are trying to determine the effect of education on income. The following graph plots data on the percent of adults with bachelor's degrees in different states (x axis) and average income (y axis).



- How would a linear regression model adjusted to this data look in a graph? (.5 point)
 - If you used an OLS regression to fit a line to the data, would it be BLUE (best linear unbiased estimate)? (.5 point)
 - What type of relationship do these variables seem to have? (.5 point)
 - Is this relationship causal? Why or why not? (.5 point)
2. **Interpreting Regression Results:** The following table contains the results from regressing income on the percent of the population with a Bachelor's degree.

Parameter	Estimate	Standard Error	P-value
Intercept	14772	4086	0.0086
Slope	735	161	0.0026

- What does the intercept value tell us? Hint: recall the intercept is the point where a line crosses the y axis. (1 point)
- What does the slope coefficient tell us? (1 point)
- Is the slope coefficient significant at the 10 percent, 5 percent and 1 percent levels? Hint: recall that the p-value is the likelihood that a value of that size was obtained from a random distribution with a mean of 0. (1 point)
- Are we able to say what the effect of education on income would be for a higher percent of adults with Bachelor's degrees (e.g. more than 30 percent)? (1 point)

3. **Marginal Cost and Benefit:** Assume you are trying to find the optimal quantity of medicines to have in a hospital with fixed capabilities (doctors) and fixed demand. You are interested in buying more medicine only if it is worthwhile in the sense that the acquired monetary benefit of each unit of medicine outweighs the additional cost, which is 10 USD.

Assume the benefit is given by the following equation:

$$B = 20Q - .5Q^2$$

where B = Benefits in USD and Q = Quantity.

- What is the equation for the marginal benefit of medicine? (1 point)
- What is the value of the marginal cost of medicine? (1 point)
- What is the optimal quantity of medicine consumed? (1 point)
- What would happen to the optimal quantity of medicine consumed if new technology reduces the medicine cost to 5? (1 point)