Course Preview: The Challenges of Global Poverty

Answers

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.

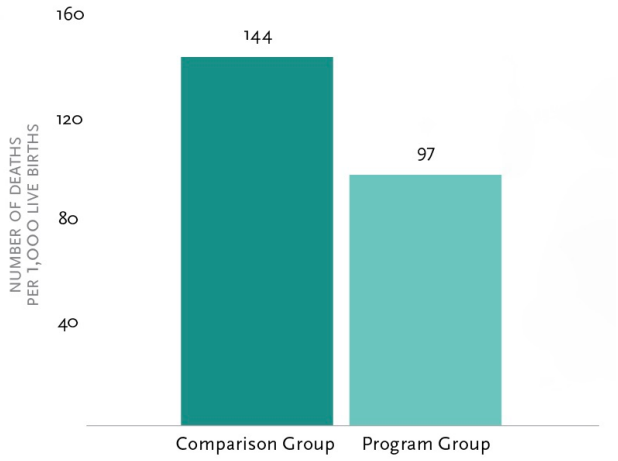
A score of 60% or above in this course preview indicates that you are ready to take this course, while a score below 60% indicates that you should further review some concepts in the attached materials before commencing the course.

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. **Graph Intrepretation:** To address the problem of worker absenteeism, the World Bank has funded community monitoring of health workers, which provides communities with information on the performance of their local health workers. From 2004 to 2006, researchers evaluated a program of community-based monitoring in Uganda. In order to capture the impact of community monitoring, the researchers compared health outcomes in communities with health worker monitoring (program group) to communities without health worker monitoring (comparison group).

   The following graph shows the difference in childhood mortality between the two groups.



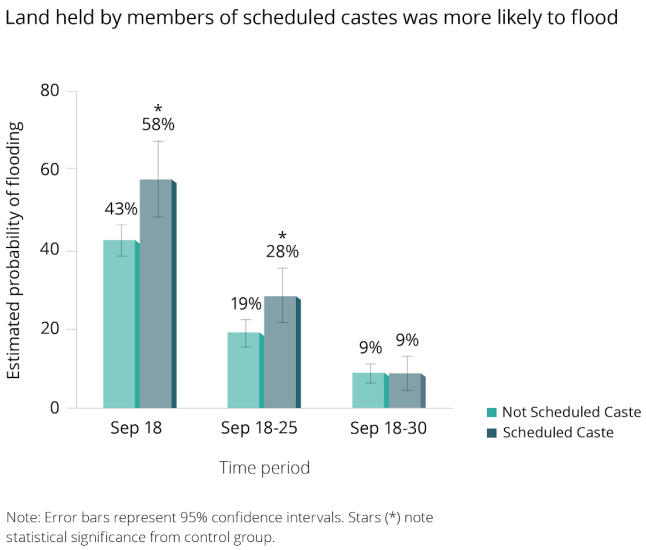
   • What is (a) the actual difference and (b) the percent difference between the comparison and program groups in the number of child deaths? (1 point)

   Solution: Between the comparison and program groups, the actual difference is 47 fewer deaths per 1000 live births and the percent difference is a 32.6% decline in deaths.

   • How do you think that community monitoring of health workers influenced (a) health worker performance and (b) community health? Apart from statistics on childhood mortality, what other information would you like to collect in order to test your theory? (1 point)

   Solution: Community monitoring could influence health monitors by reducing absenteeism and holding individual providers responsible for the health of patients. When health workers know that they are being tracked, the health workers would theoretically respond by offering a higher standard of care. Performance and health could be tracked with data on health worker behavior like days absent from post each month, daily hours worked on average at post, patients seen on average day, average wait time to see a provider, etc. Community health could be tracked with data on birthweight of newborns, immunization rates, school attendance, etc.

2. **Graph Intrepretation:** The following graph shows the vulnerability of land to flooding in Odisha, India, where two tribes live: the historically marginalized "scheduled" caste (ethnic group) and the relatively more wealthy "not-scheduled" caste (ethnic group).



• What is the percentage point difference in the estimated probability of flooding between the land owned by the scheduled and not-scheduled caste/group to floods on September 18? (1 point)

Solution: In the first period of September 18, 58% of the land held by members of the scheduled caste was likely to flood, relative to 43% of the land held by members of the not-scheduled caste. This means that the land held by the scheduled caste is 15 percentage points more vulnerable to flooding, relative to the land of the not-scheduled caste.

• How does the percentage difference between groups in the probability of flooding change from the first (September 18) to the second (September 18-25) to the third time period (September 18-30)? What does this indicate about rainfall in September? (1 point)

Solution: In the first time period, there is a 15 percentage point difference, while in the second time period, there is only an 11 percentage point difference, and in the third time period, there is no difference in the probability of land flooding between the two groups. This change over time indicates: (1) the risk of flooding decreases over time, (2) the land of the scheduled caste is still more vulnerable to flooding, and (3) the rainfall is strongest earlier than later in September.

• If a researcher were to look at the probability of flooding over just the third time period, they might think that there is no difference in the flood probability between the two castes. Why is it important to look at the data from the first two time periods, rather than just the third period? What does looking at the difference across these time periods reveal about the probability of flooding in the land holdings of the two castes? (1 point)

Solution: While there is originally a 15 percentage point difference in flooding on September 18, by the third time period (September 18 to September 30), the land holdings are equally vulnerable to flooding at 9% probability for both groups, indicating that the difference in vulnerability diminishes over time, as the rainy season progresses. Nonetheless, it is clear

that the land held by members of the scheduled caste floods earlier in the season and is vulnerable to flooding more often. It is thus important to look at all three time periods in order to get a more complete picture of the flooding probability in the region, and how this differs over time and across the groups.

• There is a strain of genetically modified rice called Swarna-Sub1 that is more resilient to flooding. Imagine that a nonprofit in the area gained access to a limited supply of this rice, which they initially could only distribute to a segment of the population. Thinking of the graph above, to which segment of the population would you prioritize? Why? (1 point)

Solution: The nonprofit should give the seeds of resilient rice to the scheduled castes, as this historically marginalized caste tends to cultivate crops in areas that are more prone to flooding.

3. **Regression Intrepretation:** An NGO in Argentina conducted a survey of men and women ages 18-30 to try and determine the most important factors for a young person's income.

   Using the data collected from the survey, they came up with the following equation to model the average person's predicted income in pesos/day as a function of age, years of education, and gender:

$$Income = 0.10 + 0.21 * Age + 0.53 * Education + 0.25 * Male$$

   Note: $Male = 1$ if the subject is male, and $Male = 0$ if the subject is female.

   • Based on the equation, what income would we expect a 23 year-old female with seven years of education to have? (2 points)

   Solution: We predict that this woman's income will be 8.24 pesos/day. $Age = 23$, $Education = 7$ and $Male = 0$, so:

$$Income = 0.10 + 0.21 * 23 + 0.53 * 7 + 0.25 * 0 = 8.24$$

   • On average, assuming a man and woman are the same age and have the same number of years of education, how much more does the man make (in income) than the woman? (2 points)

   Solution: We can expect a man's income will be 0.25 pesos greater than a woman's income on average.