Global Environmental Health: Economics and Policy
Fall 2014

Time and Location: Tues/Thurs 11:45 am-1 pm
Room: Rubenstein 151

Instructor: Marc Jeuland
Rubenstein 188
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Office Hours: Wednesday 2:30-4:30 pm; or by appointment

Teaching Assistant: Robin Millican (robin.millican@duke.edu); Office hours / location: TBD

Course summary
Social science perspective on global environmental health. Students will learn to identify primary environmental causes of high burden diseases such as malaria, diarrhea, and respiratory infections; describe how to measure socio-economic impacts of global environmental health diseases; discuss key policies to control global environmental health problems based on private prevention and therapeutic behaviors; and propose frameworks to empirically monitor and evaluate global environmental health policies.
Prerequisites: Introductory course in statistics.

Objectives
By the end of the course, students should be able to:
  • Define environmental health in the context of public health, conservation & development policy;
  • Gain exposure to a selection of key papers, books and reports related to global environmental health issues;
  • Gain exposure to tools of impact evaluation and economic analysis for understanding environmental health behaviors, and analyzing and designing more effective policy solutions;
  • Apply statistical methods to examine the empirical bases of environmental health puzzles, particularly for environmental quality valuation, and evaluation of health behavior interventions; and
  • Write a paper that draws on 1-4 to describe a concrete empirical application.

Readings
There is no textbook for the course; all readings are posted on Sakai.

You might consider buying and using a copy of the following thin and cheap book. We will use portions of it in the class, and it might be the one thing you will remember about the course long after you lose access to the electronic materials.

**Grading**

Student grades will be computed as follows:

- Attendance and general participation – 10%
- Problem sets (4) - 40%
- Response to readings, shared orally with class - 10%
- Final paper - 40%

If you have questions about how your grade will be calculated, or about a grade received on one of these assignments/components, please feel free to ask the instructor outside of class.

**Participation.** Active participation in class is expected and encouraged, and will be factored into your final grade. In general, strong contributions will be rewarded as improving your grade, whereas repeated absences or lack of engagement during class meetings will result in lowering of your grade. Participation entails demonstrated preparation for class, contribution to discussions and general attentiveness in class, and response to other student response papers (see below).

**Problem sets (4).** Details on each of these assignments will be provided during the course. They will involve quantitative analysis and practice using data sets, and will follow the schedule shown below (subject to change as needed). In general, it is acceptable to work with others during the initial stages of the problem set analysis, but the write-up and interpretation you submit should be entirely yours, and you should understand all STATA coding that produced the results you present.

One of the problem sets (#2) will be a group assignment in which you will conduct a meta-analysis (an example will be provided) on adoption of averting behaviors to reduce some environmental health risks (e.g., toilets, point-of-use water treatment, cookstoves, bed nets, vaccines). The group composition will be announced just after the end of add/drop, once the class roster has been finalized. The meta-analysis will consist of a review of no fewer than 15 empirical papers related to the particular problem selected by the group; group members will jointly code the data in order to a) draw inferences about key determinants of behavior change; b) identify knowledge gaps; c) comment on potential directions for future research; and d) provide interpretations of the external validity and generalizability of study results.

**Expected schedule for problem sets:**

- Assignment 1: Simple regressions and descriptive analysis (Due Sep. 11)
- Assignment 2: Meta-analysis and meta-regression (Due Sep. 29)
- Assignment 3: Impact evaluation (Due Oct.16)
- Assignment 4: Cost-benefit analysis (Due Nov. 4)
Student response to readings (1). You will each be responsible for preparing a response to select readings – Schedule TBD. This response will consist of a short (1 paragraph) summary of key aspects of the paper / reading, followed by a critical discussion of the methodology or basis for the conclusions put forward in it. Your response will conclude with a list of no more than three questions shared with the class to help complement and seed class discussions. The entire response paper should be 1-2 pages, with 1.5 line spacing.

Term paper. The term paper is the most significant output you will produce in this course, and as such is weighted heavily in your final grade. It should comprise a research effort that is relevant to global environmental health, but need not be one of the specific topics covered in lectures or class readings. It must also be empirical in nature, such that it allows you to apply and further develop skills developed in problem sets. You can work with primary or secondary data sets – some suggestions for potential data sources will be provided on Sakai.

A series of assignments related to the term paper will be due over the course of the semester, in order to motivate progress with timely feedback and stem the urge to procrastinate. These intermediate steps, and expectations for the final product, are detailed below, along with their relative weighting:

a. Topic selection and annotated bibliography (Due Sep. 18). Select a topic that seems amenable to quantitative analysis that you would like to research, and read at least 5 publications (peer-reviewed) related to the topic. Develop an annotated bibliography for these publications that includes an abstract and summary of main lessons from each paper, and highlights gaps that could be informed by further data analysis and research. Then explain in one page your research topic/question, explain why it is an important issue, what data you might use to consider it, and what you hope to say in terms of policy by the time you complete your research. (3%)

b. Description of data and empirical strategy (Due Oct. 7). Describe your data set and the methods you will use to analyze it, and present your empirical model for conducting the assessment. (5%)

c. Oral presentation of initial findings (Nov. 13, 18, 20). Present the initial findings you’re your literature review and empirical analysis to the class. (7%)

d. Final paper submission (Dec. 10 at midnight). Your final paper must address the following issues: a) Why is your topic important; b) What previous research has been done on it, and what gaps exist in our knowledge of it?; c) How are you analyzing the issue (what data and methods have you used?); d) What are your main findings?; e) What, if any, are the implications of your findings for policy and program design? You should generate figures and tables that support your arguments and analyses. (25%)

Tentative Meeting Schedule

A. Unit 1: Introduction

1. Welcome and brief overview (Aug. 26)
2. Global burden of disease: Environmental fraction (Aug. 28)
3. Transitions and dynamics (Sep. 2)

B. Unit 2: The major environmentally-related diseases

1. Diarrhea (Sep. 4)
2. Acute respiratory illness (Sep. 9)
3. Nutrition (Sep. 11)
4. Climate-related / ecosystems (Sep. 16)
5. Malaria (Sep. 18) – Dr. Randy Kramer

C. Unit 3: Economic framework for environmental health behavior

1. Household production of environmental health (Sep. 23)
2. Behavior change interventions: Example of cookstoves (Sep. 25) – MPP Graduate Laura Morrison
3. Economics: Role of preferences (Sep. 30)

D. Unit 4: Impact evaluation

1. Intro to IE: Experimental design (Oct. 2)
2. IE: Quasi-experimental evaluation strategies (Oct. 7)

E. Unit 5: Other useful perspectives

1. Social / psychological aspects (Oct. 9)
2. Strategic behavior (Oct. 16)

F. Unit 6: Supply & implementation drivers

1. Intro: Who and how to supply? (Oct. 21)
2. Cost-benefit analysis (Oct. 23, 28)
3. The role of government (Oct. 30)
4. Private sector, NGOs, PSP, etc. (Nov. 4)
5. Community-driven development (Nov. 6) – PhD Student Jie-Sheng Tan Soo
6. Scaling-up (Nov. 11)

G. Student presentations (Nov. 13, 18, 20)

H. Course wrap-up (Nov. 25)
Detailed reading list

Unit 1: Introduction

Aug 26: Motivation and brief overview


Aug 28: Global burden of disease: Environmental fraction


Sep 2: Transitions and dynamics


Unit 2: The major environmentally-related diseases

Sep 4: Diarrhea


Sep 9: Respiratory illness


Optional


Sep 11: Nutrition


Sep 16: Climate / ecosystems-related


Optional


Sep 18: Malaria


Unit 3: Economic framework for environmental health behavior

Sep 23: Household production of environmental health


Optional


Sep 25: Behavior change interventions: Example of cookstoves


Pattanayak et al. (2014). “Designing & Evaluating Behavior Change Interventions to Improve the Adoption and Use of Improved Cookstoves.” Report to USAID: Duke University TRAction project; Durham, NC.

Sep 30: Economics: The role of preferences


Optional


Unit 4: Impact evaluation

Oct 2: Intro to IE: Experimental design


Oct 7: IE: Quasi-experimental evaluation strategies (Oct. 7)


Unit 5: Other useful perspectives

Oct 9: Social / psychological aspects


Optional


Oct 16: Strategic behavior


Unit 6: Supply & implementation drivers

Oct 21: Who should intervene and intro to supply-side issues


Optional


Oct 23/28: Valuation and cost-benefit analysis


Optional


Oct 30: The role of government / public sector provision


Nov 4: Private sector, NGOs, PSP, etc.


Optional


Nov 6: Community-driven development


Nov 11: Scaling-up

