11.S953 – Measuring socioeconomic vulnerability: customized indicators for better public policies

Instructors: Esteban Otto Tomasz ethomasz@mit.edu and Mariano Eriz meriz@mit.edu
Faculty Advisor: Bish Sanyal sanyal@mit.edu

IAP January 23 to 27, 2017
MTWRF 9:00AM - 12:00 PM
Room 9-450B

“Assessing vulnerability has moved from being an academic exercise to being a political necessity”
Hinkel (2011)

1. Course Description:

Policymakers increasingly recognize the need to measure social vulnerability as a basic step in problem analysis and solution framing. However, the choice of which criteria to use in the selection of variables and in the design of an index of social vulnerability can significantly affect the outcomes and therefore the policy directions.

Within this context, this introductory course will teach participants different ways to measure social vulnerability, outlining limitations of different approaches. It aims to bring up-to-date concepts into the decision making process of different public policies.

Study cases in the US -using data from the census- and from emerging countries -using data from specific surveys- will be presented. Social vulnerability measurement of climate risk at a local level will be a key topic to discuss, taking the area of Boston/Cambridge and its surroundings as a case study.

The course will also have the objective to construct a global network of practitioners and planners who are already working or will be interested in using socio-economic vulnerability assessment in their future project planning and implementation.

2. Requisites

No previous knowledge on the topic or in mathematics or statistics is needed. Students of planning, economics, management, politics, sociology and other social sciences are the main target of this course. Practitioners working in related fields are welcome to audit.
3. Learning objectives:

- Present the concepts of social risk and social vulnerability.
- Understand the difference between variable, proxy, indicator and index.
- Understand the difference between static and dynamic indicators.
- Understand the scope and limitations of aggregate vs. customized indexes.
- Learn how to conceptually blend qualitative and quantitative information.
- Learn to construct a vulnerability index and identify vulnerable populations or households at a country, state or city level.
- Consider all the limitations of a vulnerability measurement and discuss presentation techniques to policy makers.

4. Assignments and Grading

This seminar is a pass/fail course. The final grade is based on attendance, active participation in class and a 10-minute presentation where students will have to highlight a topic of their interest.

5. Calendar Summary:

<table>
<thead>
<tr>
<th>Date</th>
<th>Day#</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday 23rd</td>
<td>1</td>
<td><strong>Concept</strong> of Social risk and social vulnerability. Variables, indicators and indexes.</td>
</tr>
<tr>
<td>Tuesday 24th</td>
<td>2</td>
<td><strong>Metrics</strong>. Aggregation methods. Quantitative and qualitative information blending.</td>
</tr>
<tr>
<td>Wednesday 25th</td>
<td>3</td>
<td><strong>Study case I</strong>: Vulnerability assessment to a focalized group in an urban area. Data from specific survey. <strong>Study case II</strong>: Vulnerability assessment to a focalized group in a rural area. Data from specific survey.</td>
</tr>
<tr>
<td>Thursday 26th</td>
<td>4</td>
<td><strong>Study case III</strong>: vulnerability to climate risk at a city level: approaches taken in Boston and Cambridge. Indexes built from American census information at a track and block level.</td>
</tr>
<tr>
<td>Friday 27th</td>
<td>5</td>
<td>Concluding remarks and students presentations.</td>
</tr>
</tbody>
</table>

Although the first two classes will be mainly theoretical and the last three will focus on study cases, the course will follow a practical approach. Therefore, laptop is recommended in all classes.
5. Classes and suggested readings

1st Class 1/23: Risk and vulnerability concept. Vulnerability indexes.


Social Vulnerability Index (SOVI) for the United States. University of South Carolina. Hazards & Vulnerability Research Institute.


2nd Class 1/24: Metrics


3rd Class 1/25: Case Study I and II.


4th Class 1/26: Case Study III: Social vulnerability to climate risk.


5th Class 1/26: Presentations
Students will be given 5 or 10 minutes to present and highlight a topic of their interest. You will be expected to apply topics and different approaches discussed during classes to a specific problem.