Aftershocks of Chile's Earthquake on an Ongoing, Large-Scale Experimental Evaluation

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MATHEMATICA
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Presentation Overview

- **The Intervention and the Evaluation**
- **The Earthquake and its Aftermath**
- **The Challenges, the Options, and the Decision**
- **Lessons Learned**

The Intervention and the Evaluation

The Intervention

- ***Un Buen Comienzo (UBC) Program***
- **Early childhood intervention targeted at:**
 - Teachers in public (municipal) schools
 - Impoverished children attending public schools
- **Goals:**
 - Improve teacher capacities for supporting language and socio-emotional development
 - Improve children health
- **Sponsored by Fundación Educacional Oportunidad in Chile**

The Intervention

- **Offers services during two years to the whole preschool (prekinder and kindergarten)**
- **Staggered implementation:**
 - 2008: 1 municipality (*comuna*) with 6 schools
 - 2009: 2 municipalities with 29 schools
 - 2010: 3 municipalities with 29 schools
- **Municipalities are purposively selected:**
 - Located in urban area of Santiago
 - At least 30% of their students are at or below poverty level

The Evaluation

- **Research question: How can pre-school education be improved?**
- **All schools in a municipality are eligible to participate**
- **Schools are randomized through a public lottery for transparency**
- **The evaluation compares:**
 - Intervention 1: Full UBC program
 - Intervention 2: Different and limited treatment

The Evaluation

- **Evaluation follows for 2 years students entering pre-kindergarten**
- **For each cohort, students are assessed at:**
 - Start of pre-kindergarten (baseline in March-May)
 - End of pre-kindergarten (October-November of year of enrollment)
 - End of kindergarten (October-November of the following year of enrollment in pre-kindergarten)
- **Impact analysis will pool the data of the three cohorts**

The Earthquake and its Aftermath

February 27, 2010 at 3:34 a.m.; 8.8 magnitude

The Aftermath

- **Internal validity is unaffected because of the clustered randomized design**
- **External validity is compromised because of staggered implementation of the intervention**
 - UBC schools had a similar proportion of vulnerable students (30%) than other non-UBC schools in Santiago
- **Evidence suggests that the earthquake did not compromise randomization:**
 - Cohort 3 compliance higher than cohort 2 (91% vs. 80%) after a full year of participation

The Challenges, the Options, and the Decision

The Challenges

- **Effects of the earthquake to normal life left three challenges:**
 - Potential effects on the implementation of the intervention and evaluation for cohort 3
 - Potential effects on remaining round of data collection for cohort 2
 - Potential effects on the feasibility of pooling data across cohorts

The Options

- ***Suspend the study in 2010 and reinitiate it in 2011***
- **Hypotheses:**
 - School infrastructure was damaged
 - Data collection could take longer than under regular conditions
 - Substantial psychological impacts on students and teachers
 - Intervention may need to change substantially
 - 2010 not comparable to 2008 or 2009
- **If hypotheses proved true, large cohort effect**

The Options

- ***Maintain the evaluation calendar***
- **Hypotheses:**
 - The earthquake's effects were temporary and minor in Santiago
 - Data collection was not going to be heavily affected by the earthquake
 - The cohort effect of a 1-year delay could be similar to the earthquake's psychological effect on children and teachers
 - Delaying the project could reduce funds and disrupt retention of trained staff
- **If hypotheses proved true, negligible cohort effect**

The Decision

- **Based on data collected in 1 week**
- **The implementation team visited the 3 municipalities and their schools**
- **The evaluation team discussed speeding up data collection with schools and municipalities and interviewed teachers and parents**
- **Consulted the Foundation on the impacts of the two options**
- **Consulted education and evaluation experts on how to deal with the situation**

The Decision

- **Continue the study as planned**
- **Intervention to include stress management sessions for teachers and children**
- **Only 1 control school suffered damages but shared space with another school**
- **Cohort 3 parents reported:**
 - **Structural damages at home: 4%**
 - **Children with sleep problems: 19%**
 - **Changes in family income: 23%**
- **No statistically significant differences between Intervention 1 and Intervention 2 schools**

Lessons Learned

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- **Most adjustments to the intervention in response to the 2010 earthquake are specific to Chile**
- **Most likely nontransferable to other settings**
- **Other lessons could conceivably become the basis for developing contingency plans for the implementation of evaluations and programs**

Lessons Learned

- **From a methodological perspective:**
 - Unlikely worth planning for an extremely rare shock
 - Experimental design preserved the evaluation's internal validity
 - Effects of shock must be measured in relation to the evaluation design and the proportion of the sample affected
 - Examine if shock had differential effect on the treatment and control groups or across sites
 - Collect data to understand the interplay between shock and claims of causality
 - Limit staggered program implementation or evaluation

Lessons Learned

- **From an implementation perspective:**
 - Assess the extent to which the intervention needs to change to offer additional services
 - Consider how long must the interruption of the program last
 - Consider the psychological effects on implementers and evaluators, and survival needs, such as health care
 - Maintain excellent communication among implementers, evaluators, and key decision makers
 - Have plans for alternative means of communication
 - Consult all relevant stakeholders
 - Follow a deliberative process

- Available in *Evaluation Review* at:

<http://erx.sagepub.com/content/early/2011/04/01/0193841X11400685.abstract>

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