Using ICT to support policy making based on evidence at national level

The case of the distribution of educational opportunities in Chile

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EIPPEE 2013, Frankfurt, Germany
March 5th, 2013

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Our research agenda

Problems & Opportunities
Our research agenda

Problems & Opportunities

- Increasing complexity of educational markets:
  - Accountability
  - Monitoring and evaluation
  - Quality and Equity

- Existing divide between available evidence, policy making, mass media and public
Our research agenda

Problems & Opportunities

- Huge amount of datasets about education available from:
  - Governments
  - International organizations
  - Researchers

- Availability of new tools:
  - Data visualization, business intelligence and analytics
  - Low-cost on-demand scalable computing capabilities
Our research agenda

Proposal

1. Explore current specific needs of evidence in Chile
   - For decision and policy makers
   - For educational system actors (e.g., teachers, parents)
   - General public

2. Provide tools to visualize and interact with evidence

3. Facilitate the evidence use in current public policy debate
Methodology

A four stages methodology

1. SELECT
2. IDENTIFY
3. COLLECT
4. PROTOTYPE
A four stages methodology

1. **SELECT**
2. **IDENTIFY**
3. **COLLECT**
4. **PROTOTYPING**

Selecting a particular problem of scientific and operational relevance to define short-term objectives.
Methodology

A four stages methodology

1. SELECT
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Identify key stakeholders for decisions, policy making and data ownership in the domain
Methodology

A four stages methodology

1. SELECT
2. IDENTIFY
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4. PROTOTYPE

Collect studies, statistics, datasets and databases
A four stages methodology

Develop a prototype of a system to:

1. Visualize, manipulate and/or analyze data on demand
2. Provide a tool for decision and policy making
3. Perform usability tests
Case of study

Context of Chilean educational system

• Three types of schools:
  – Municipal (‘public’): run by the districts, they can’t screen students
  – Subsidized private: run by private owners, receive government subsidy and can screen students
  – Private: elite schools where parents paid all the complete tuition of students

• Voucher system:
  – Government pays a tuition subsidy for every child attending classes
  – Payment is independent of students’ conditions (either a Municipal or Subsidized private school)
  – A new subsidy was introduced based on individual vulnerability of students (2007)
Case of study

Context of Chilean educational system

• **System situation:**
  – Schools are highly segregated by socio-economic level (SES)
  – After correcting by SES, there is no difference in students’ attainment of subsidized private and ‘public’ schools
  – In public schools, spends are structurally greater than incomes

• **Current policy debate — new options for funding and management of public schools:**
  – Association of districts
  – Sub-national administration at meso level (province, region)
  – National centralized system
Inform policy makers and legislators about new funding and management options:

- Dependency relationship between schools within and outside the district
- Location (urban/ rural)
- Educational risk
Case of study

Applying the methodology

SELECT → IDENTIFY → COLLECT → PROTOTYPE

Decision and policy makers & data stakeholders:

• Ministry of Education: Research centre ([centroestudios.mineduc.cl](http://centroestudios.mineduc.cl))
• Opendata initiative ([datos.gob.cl](http://datos.gob.cl)) from Ministry of Policy Coordination ([www.minsegpres.gob.cl](http://www.minsegpres.gob.cl))
Previous studies analyzing student displacement:


Case of study

Applying the methodology

- SELECT
- IDENTIFY
- COLLECT
- PROTOTYPE

Limitations:

- Analysis at one type and school level (e.g. primary and municipal schools)
- One year analysis (2006)
3

Case of study

Applying the methodology

Datasets:

- Students database: enrollment 2004 – 2012 (Ministry of Education)
- Schools database: geolocation, funding source, levels, type (Ministry of Education)
Case of study

Applying the methodology

SELECT → IDENTIFY → COLLECT → PROTOTYPE

Explore interactive visualization to show evolution on time

- Business Intelligence & Analytics software: Tableau Desktop (www.tableausoftware.com)
- Subsets: Specific regions and districts, last 5 years data
Case of study

Applying the methodology
Preliminary findings:

- Consistent with the results of Donoso et al. (2013), visualization shows interactions in educational systems at district level.
- But also allows to explore other dimensions of ‘in fact’ relationships, not previously studied:
  - Variation in time
  - Interactions at school type and levels
1. Develop an active relationship with policy makers and stakeholders for bridging the evidence gap in specific areas

2. Show the value of your proposal:
   • Demonstrate it: ‘Interactive visualization’ is a too abstract concept to figure out how this could look like.
   • Use concrete and relevant cases to shows the potential at local, national or international level:
     – From the case: How can the schools (or districts) be arranged for a better administration? Where are new schools needed?
3. **User interaction design and testing is key:**
   - The system is not for you, is for them.
   - Development complexity ≠ poor user experience
   - Maybe users *don’t know* what they *need*, but certainly *do know* what they *don’t want*
Thank you!
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This project is funded by CONICYT-under grants FONDECYT #11110424 and Advanced Human Capital program #79112008