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

Centro de Investigación Avanzada en Educación
Universidad de Chile

UNIVERSIDAD ADOLFO IBÁÑEZ

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Our research agenda

Problems & Opportunities

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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**

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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

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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**

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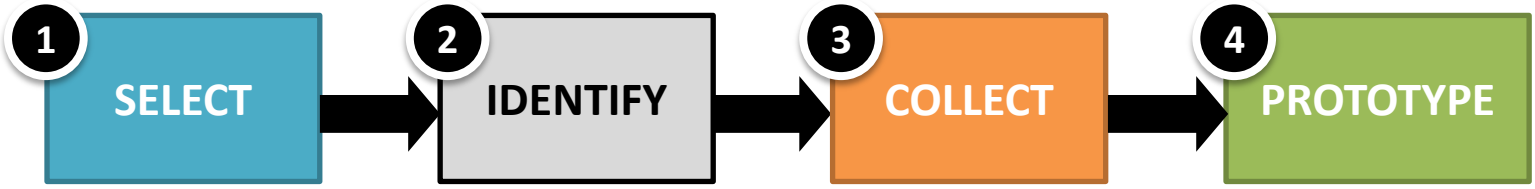
Methodology

A four stages methodology



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Methodology

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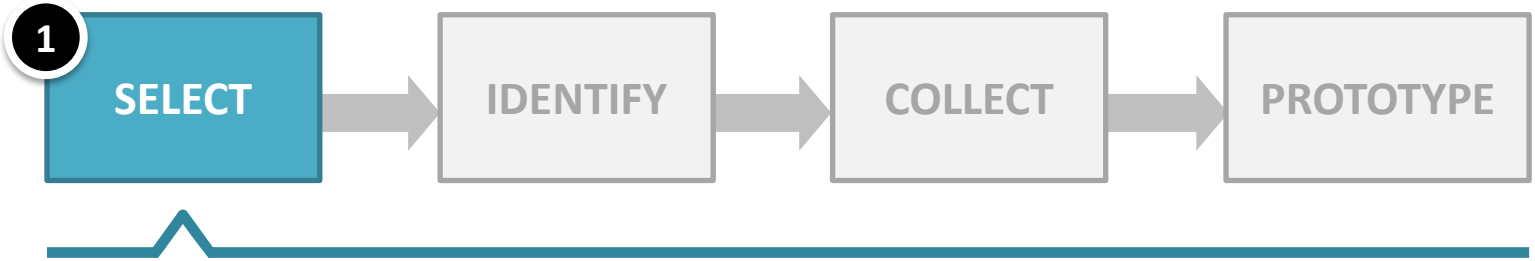

Selecting a particular problem of scientific and operational relevance to define short-term objectives

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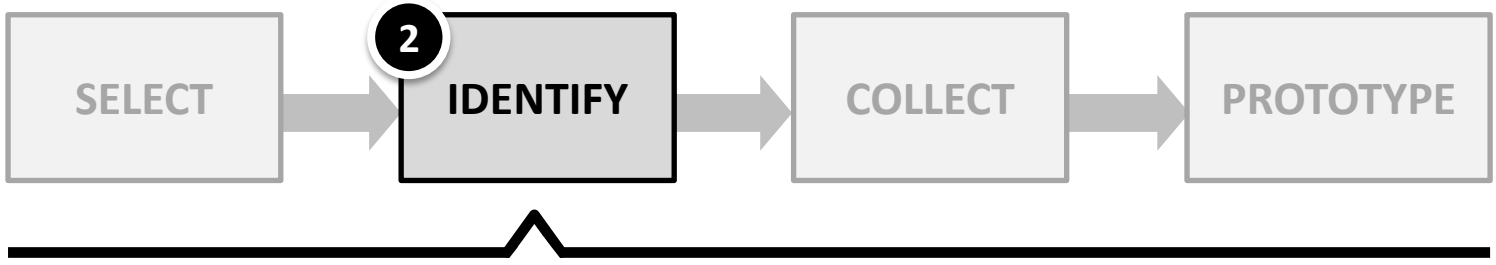

Identify key stakeholders for decisions, policy making and data ownership in the domain

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Methodology

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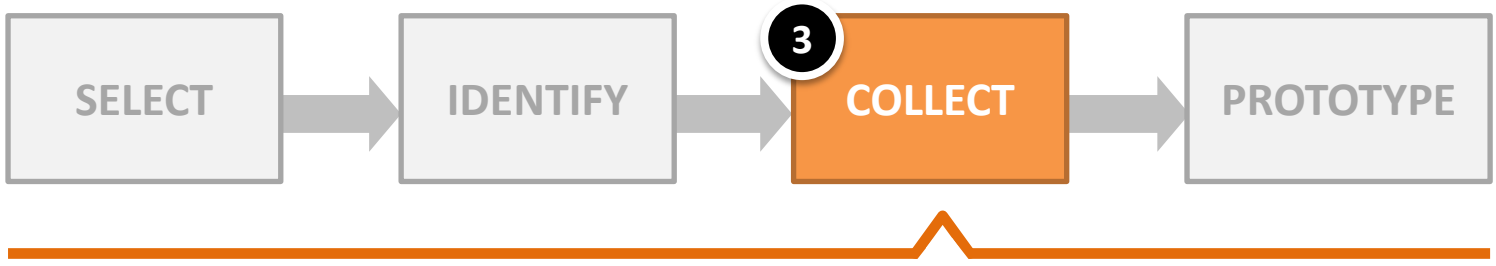

Collect studies, statistics, datasets and databases

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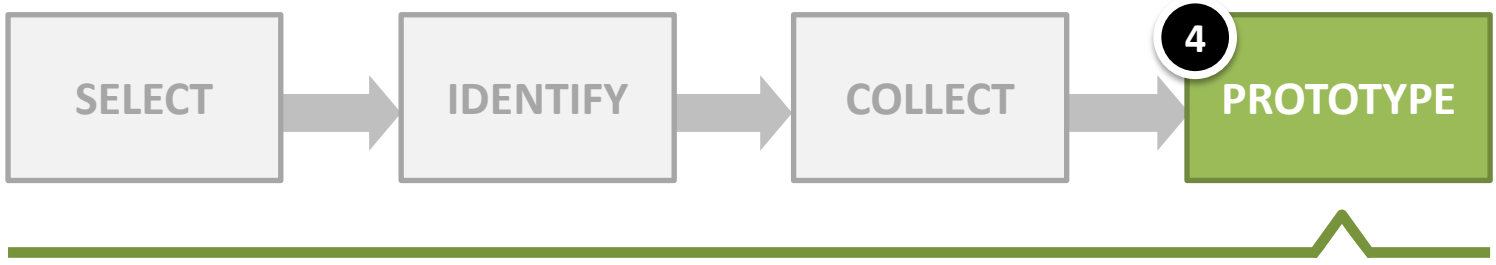
Methodology

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

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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)

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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

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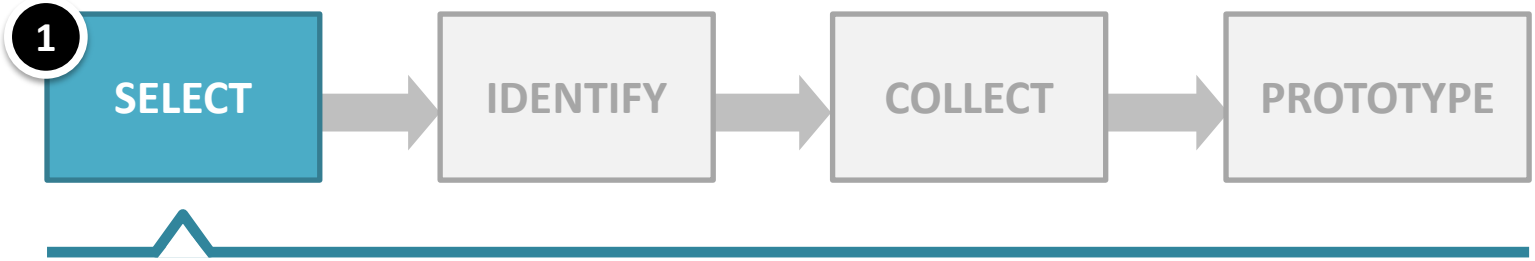
Case of study

Applying the methodology



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

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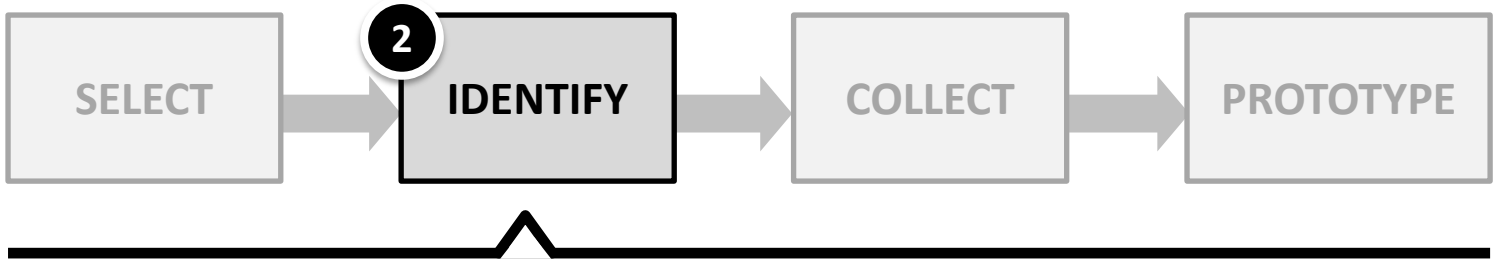
Case of study

Applying the methodology



Decision and policy makers & data stakeholders:

- Ministry of Education: Research centre (centroestudios.mineduc.cl)
- Opendata initiative (datos.gob.cl) from Ministry of Policy Coordination (www.minsegpres.gob.cl)

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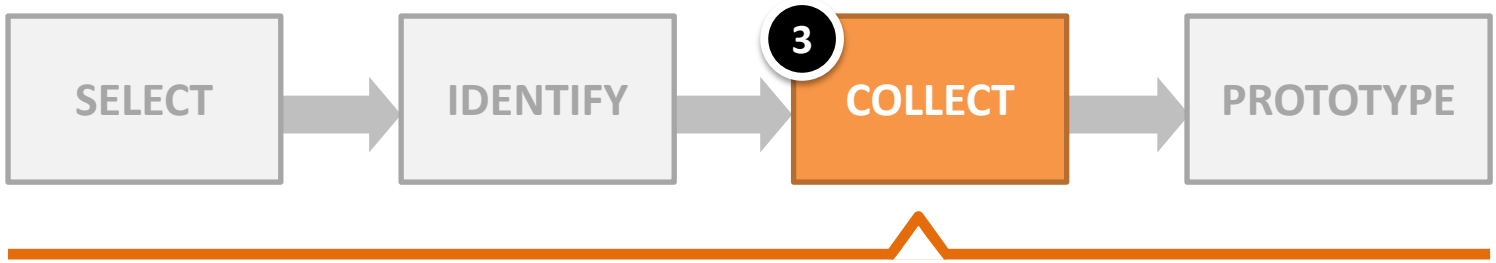
Case of study

Applying the methodology



Previous studies analyzing student displacement:

- Donoso, S., Arias, O., Cancino, V., Castro, M., Davis, G. & Benavides, N. (2010) **Access to school education and social & territorial discrimination in Chile**: Analysis of the problem. Revista Chilena de Estudios Regionales. Año 2, Nº 2, pp. 6-22.
- Donoso, S. & Arias, O. (2011) **Differences on scale of public education systems in Chile**. Ensaio: aval. pol. públ. Educ., Rio de Janeiro, v. 19, n. 71, p. 283-306, abr./jun. 2011
- Donoso, S., Arias O.,. , Castro, M. (2011) **Educational opportunities and Territory: An analysis of Public Education enrollment's migration in Maule Region, Chile**. Panorama Socioeconómico. Año 29, Nº 43, Pp. 123 -138
- Donoso, S. & Arias, O. (2013) **Everyday displacement of students between districts in Chile: evidence and policy recommendations for a new public education institutionality** EURE. Nº 116, January 2013

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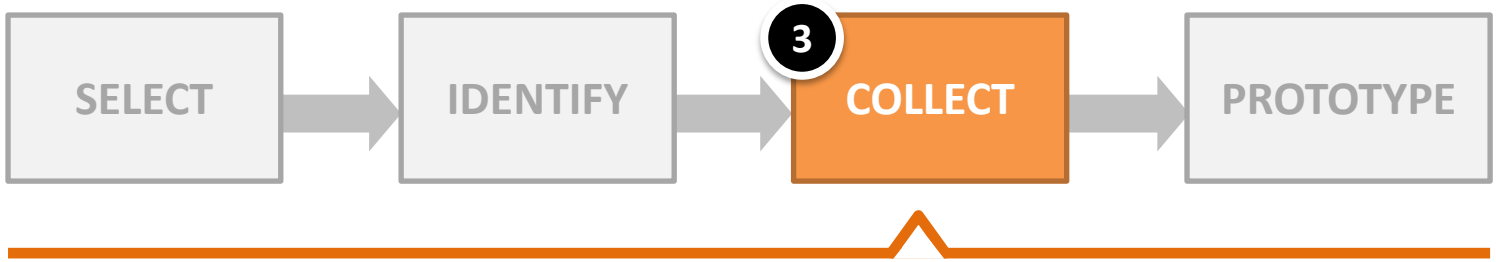
Case of study

Applying the methodology



Limitations:

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

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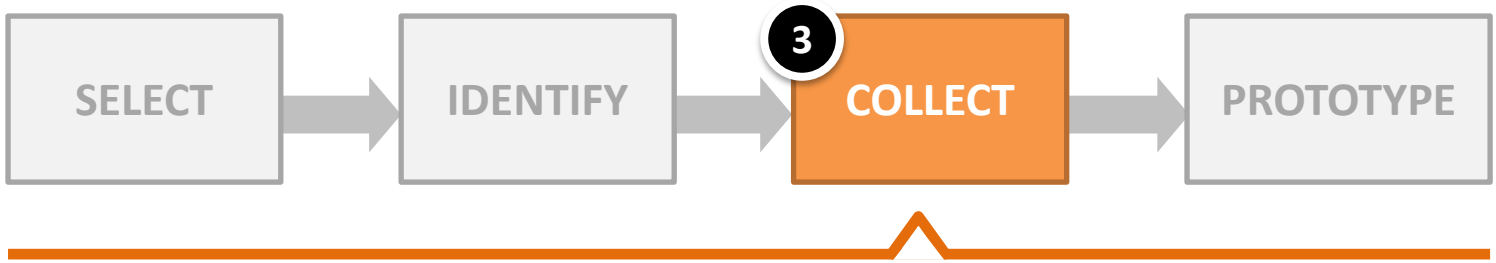

Datasets:

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

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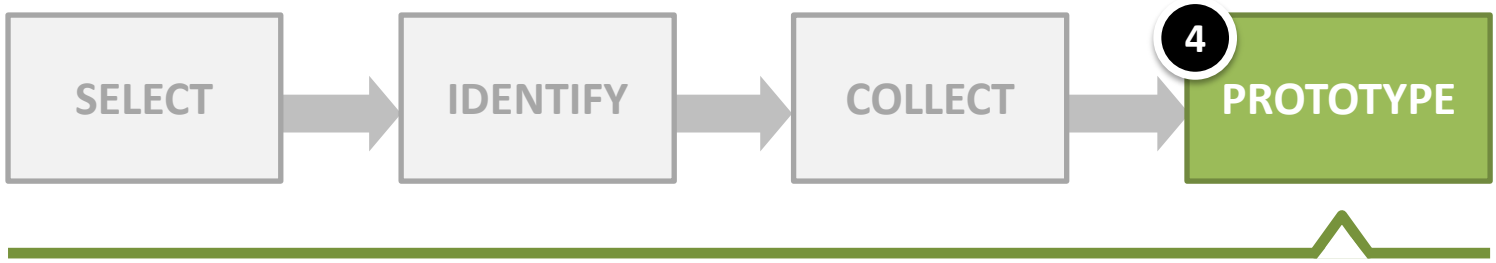

Explore interactive visualization to show evolution on time

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

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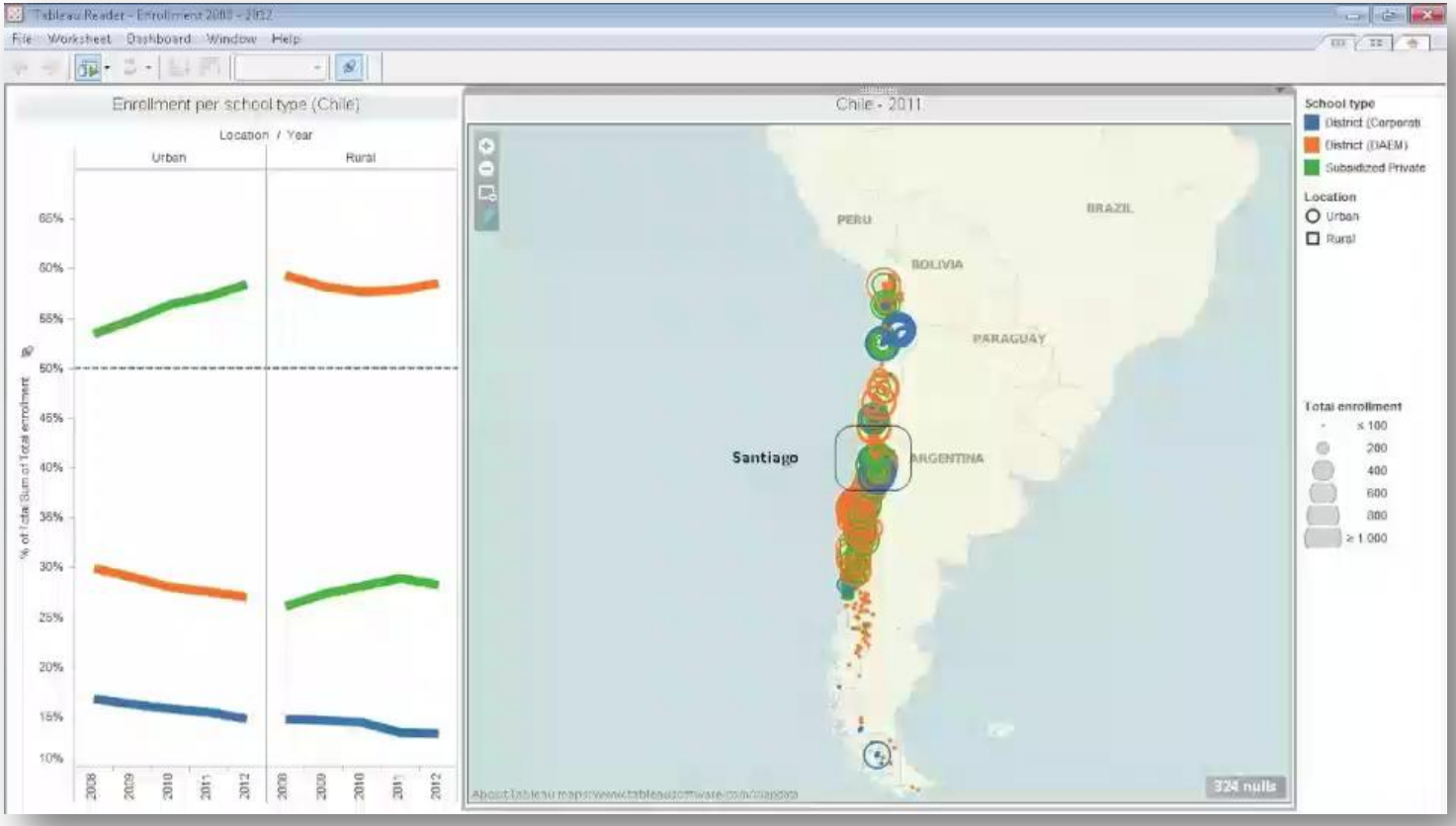
Case of study

Applying the methodology



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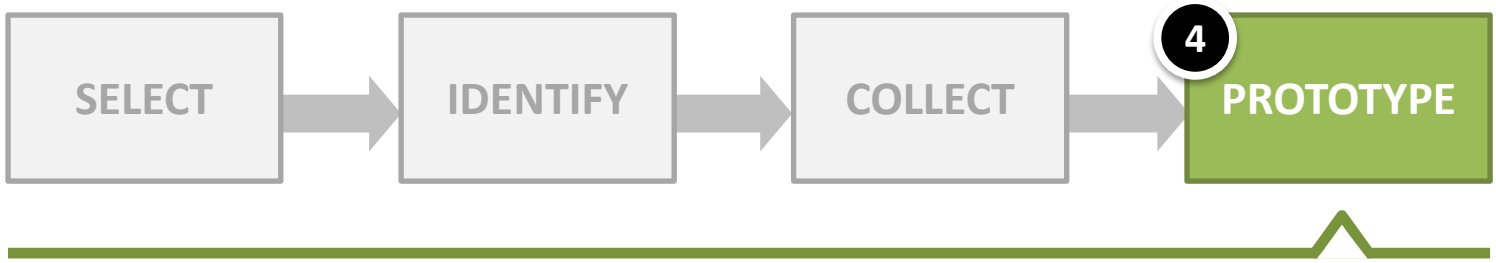

Preliminary findings:

- 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

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Recommendations

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?

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Recommendations & Following steps

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**

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Thank you!

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This project is funded by CONICYT-under grants FONDECYT #**11110424** and Advanced Human Capital program #**79112008**

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