

# Natural Disasters and Multidimensional Poverty in Colombia

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# Motivation

- Over the past forty years, natural disasters in Colombia have caused an average annual loss of US\$177 million.
- Over 62 percent of these natural disasters were related to rainfall, with landslides causing the greatest number of deaths and flooding the largest loss of property (Sanchez and Calderon, 2012).
- Areas of settlement which cannot provide adequate support for human inhabitants with regards to housing, such as informal settlements, inhabited primarily by the poorest members of society (Van Gelder , 2013), bear the effects of more than half of the housing loss caused by natural disaster as between 1970 and 2011, 51 percent of the residential buildings destroyed by natural disasters were destroyed because their location was not suitable for housing (Campos et al., 2011)

# Research question

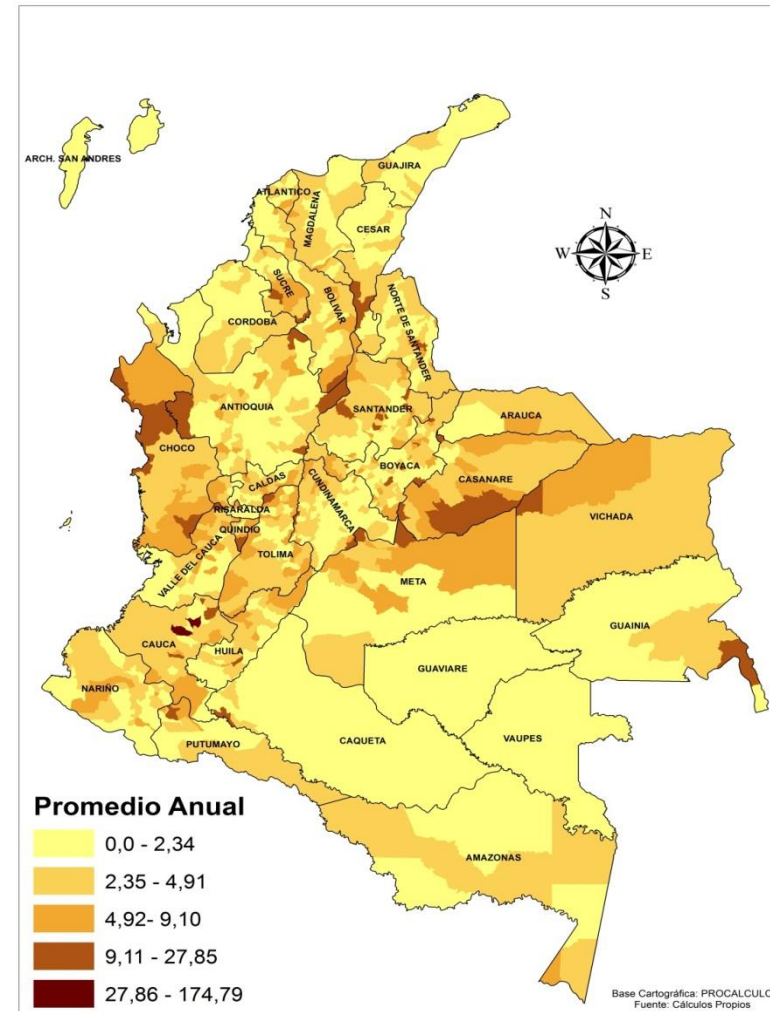
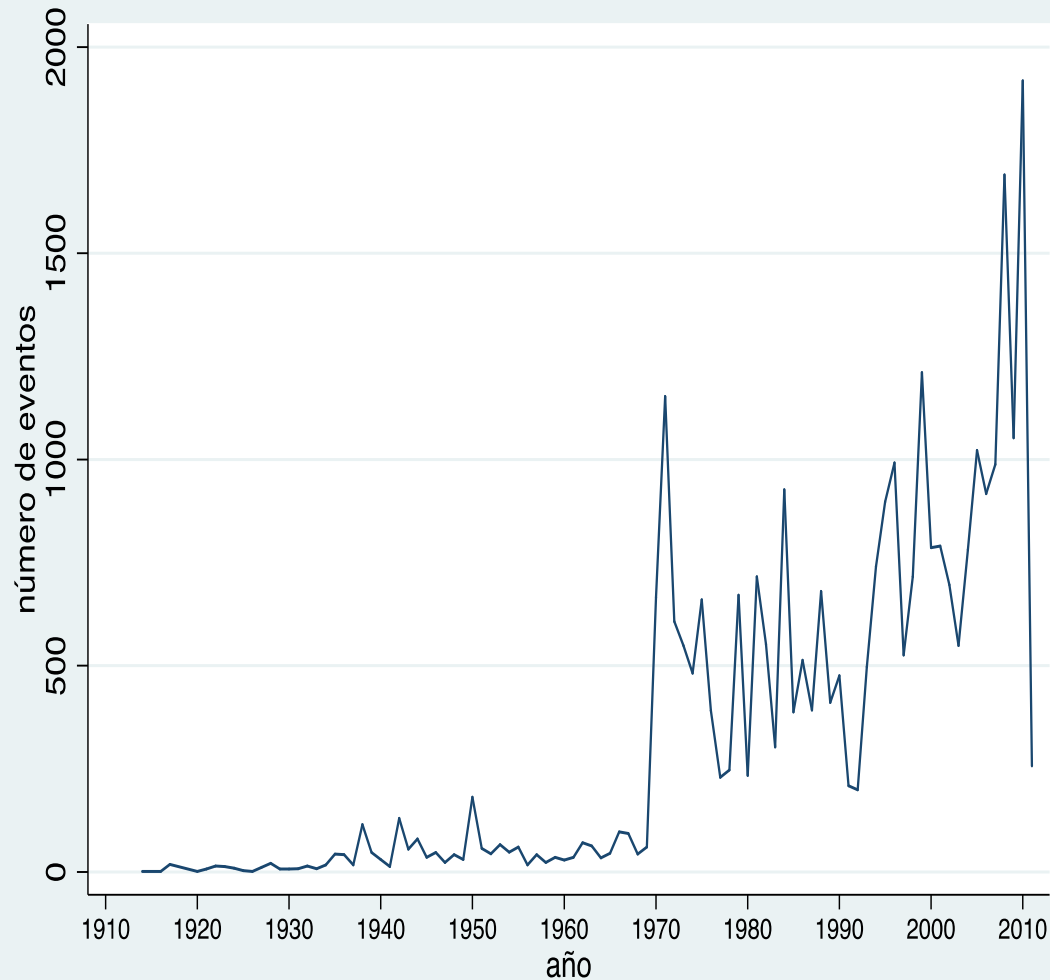
- **What is the impact of natural disasters on Multidimensional Poverty at the municipal level in Colombia between 1976 and 2005?**
- This paper
  - Takes advantage from long run data on natural disasters in Colombia (Desinventar dataset);
  - Identify the causal effect of natural disasters in Colombia using an instrumental variable model (tertiary rivers close to the municipality)

# Data

Desinventar dataset (UNISDR) + *Encuesta de Calidad de Vida (ECV)*

Annual events in Colombia, 1970-2010

Average rate of disasters per mun



# Dimensions of Colombia official MPI

<b>MPI Dimension</b>	<b>MPI Variable</b>
(weight in brackets)	(weight in brackets)
<b>Education conditions</b> (for households) (0.2)	<b>Educational achievement</b> (0.1)
	<b>Literacy</b> (0.1)
<b>Childhood and youth conditions</b> (0.2)	<b>School attendance</b> (0.05)
	<b>No 'school lag'</b> (children older than the average age in a given school year) (0.05)
	<b>Access to child care services</b> (0.05)
	<b>Children not working</b> (0.05)
<b>Employment</b> (0.2)	<b>No one in long- term unemployment</b> (0.1)
	<b>Formal employment</b> (0.1)
<b>Health</b> (0.2)	<b>Health insurance</b> (0.1)
	<b>Access to health services</b> (0.1)
<b>Access to public utilities and housing conditions</b> (0.2)	<b>Access to water source</b> (0.04)
	<b>Adequate elimination of sewer waste</b> (0.04)
	<b>Adequate floors</b> (0.04)
	<b>Adequate external walls</b> (0.04)
	<b>Critical overcrowding in the house</b> (0.04)

# Main results

- 1. Natural disasters have a significant negative impact on MPI in Colombia. An increase in a s.d. in the rate of natural disasters increased 0.63 s.d. of MPI in 2005.**
- 2. The MPI dimensions that are mostly affected by natural disasters are “education conditions” and “childhood and youth conditions.”**
- 3. The number of deaths caused by natural disasters have an important negative impact on MPI at the municipal level. Deaths are associated with an increase in the percentage of population that suffers of low school attendance, schooling lag, child work and low educational achievement.**

# Implications for Policy

- Since poverty magnifies the probability of risk, government programs that reduce the vulnerability conditions of the population at the bottom of the income distribution tends to reduce the incidence of natural disasters.
- Since natural disasters have long-lasting effects on poverty, and particularly on MPI dimensions linked childhood and youth conditions, it is important to define policy interventions focused on early childhood development such as minimizing school dropouts, improving affected school facilities, etc.
- Effective risk management through increasing availability of insurance to vulnerable populations.