

Intergenerational Mobility After Expanding Educational Opportunities: A Quasi Experiment

Francisco Meneses

Ph.D. in Public Policy, Sanford School Duke University

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Paper Summary

- Can an expansion of educational opportunities increase intergenerational income mobility?
- Context: Chile, a country with an open enrollment school system.
- Literature: Intergenerational mobility and school choice.
- Quasi-Experiment: A subway expansion that increased school choices.
- Results: Upward Intergenerational Income Mobility

Motivation

- Meritocracy
- Intergenerational mobility
- Can policies promote intergenerational mobility?
- Much of the evidence comes from the US.
- Distinguishing education from neighborhood effects is very hard.

Inequality and the Land of Opportunities

- Inequality is a global problem affecting developing and developed countries.
- Inequality affects social cohesion, trust, and economic and political stability.
- Many countries are currently facing social crisis due to inequality and lack of social cohesion.

Chile Today



Inequality

The New York Times

Chile Learns the Price of Economic Inequality

Protesters are demanding a larger share of the nation's prosperity — a reality check for its celebrated economic model.

By The Editorial Board

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Oct. 22, 2019



Intergenerational Mobility

- Intergenerational mobility could help income inequality and democracy to coexist (Corak, 2013).
- Association between parents' and adult children's status (social class, occupation, earnings, education, or family income).
- Stronger associations mean more intergenerational transmission of advantage and less mobility.
- Weaker associations indicate less persistence and more mobility.

Trends in the Literature

- The literature on intergenerational mobility has been energized by new administrative data sets.
- Research in the USA and other developed countries currently focuses on the factors that promote this mobility.
- Mobility is affected by factors like genetics, family characteristics, early education, neighborhood, college education, role models, and social class, etc. (Chetty & Hendren, 2018; Heckman, Stixrud, & Urzua, 2006; Streib, 2011; Torche, 2011, 2015; Zimmerman, 2019).

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- (c)

Policy Debate to Promote Intergenerational mobility

- Debate: housing subsidies versus open enrollment.
- Some authors have promoted housing subsidies.
- Instead of moving to a different neighborhood, it could be possible to increase the school choice set that families have.
- Allow low-income students to attend schools in other neighborhoods.
- With open enrollment, families maintain their social networks, students have better educational opportunities, and it is less expensive.

Theoretical Framework: Parental School Choice

Families choose schools maximizing their utility given a set of restrictions for students i and school j .

$$U_{ij} = \alpha + \beta_k X_i + \gamma Z_{ij} + \epsilon_{ij}$$

X_i are the student and family and specific controls (SES).

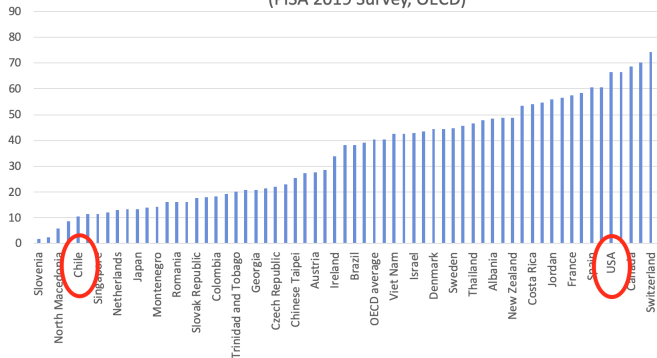
Z_{ij} is a vector of school- and student-specific controls (distance, travel cost, tuition).

Ω_i is the set of possible schools.

$$\text{Max}_{\Omega} U_{ij} = \alpha + \beta_k X_i + \gamma Z_{ij} + \epsilon_{ij}$$

Open Enrollment versus Residence as a Restriction for School Enrollment

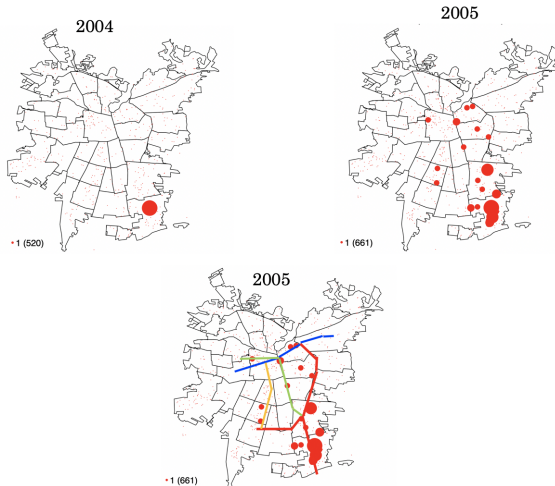
Residence as an Admission Criterion
(PISA 2019 Survey, OECD)



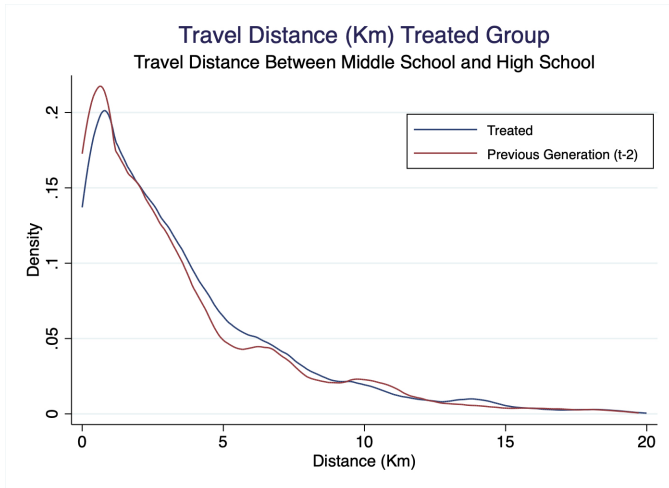
Background: Quasi-Experiment in Chile

- Quasi-Experiment: A new subway line in Santiago, 2005.
- National voucher school system (93% of schools).
- Parents can choose schools from any neighborhood.
- The subway line increased educational opportunities for students by reducing their transport time to schools beyond their neighborhoods.
- New subway promoted school switches (Asahi, (2014), Herskovic (2020)).

New Subway Line: Students Changing Schools



10% Increase in Traveled Distance

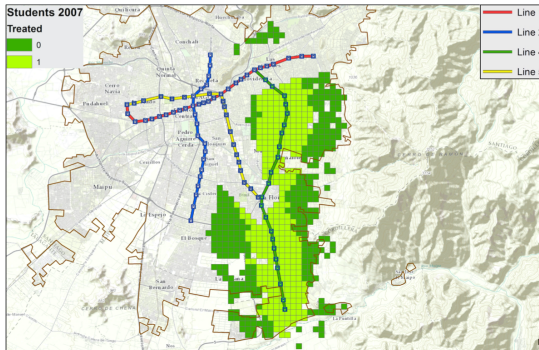


School Choice Research

Subway promoted school changes, increased traveled distance (6%) and choice for educational quality (Herskovic, 2020). No clear effect on overall quality. Asahi (2014)

L. Herskovic

Economics of Education Review 78 (2020) 102021



Ministry of Education

- Ministry of Labor

- Data

Framework and Data Treatment

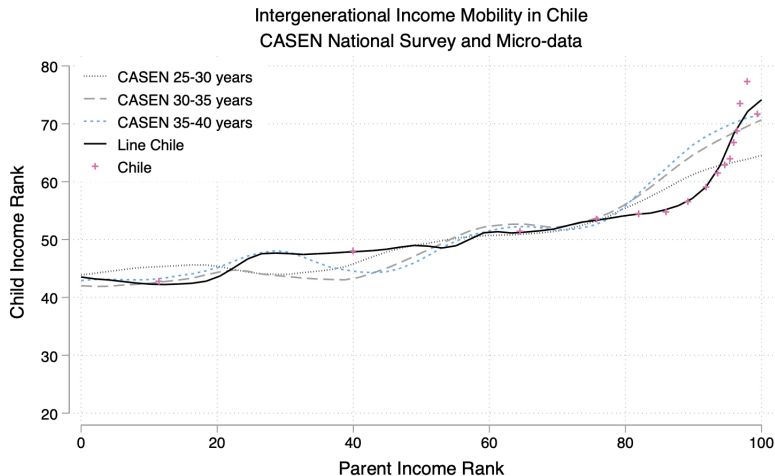
- Follow Chetty et al. (2014)
 - Rank parents according to their income (year 2004)
 - Rank children according to their wages (year 2017)

$$Child\ Rank_j = \beta_0 + \beta_1 Parental\ Rank_j + \varepsilon_j$$

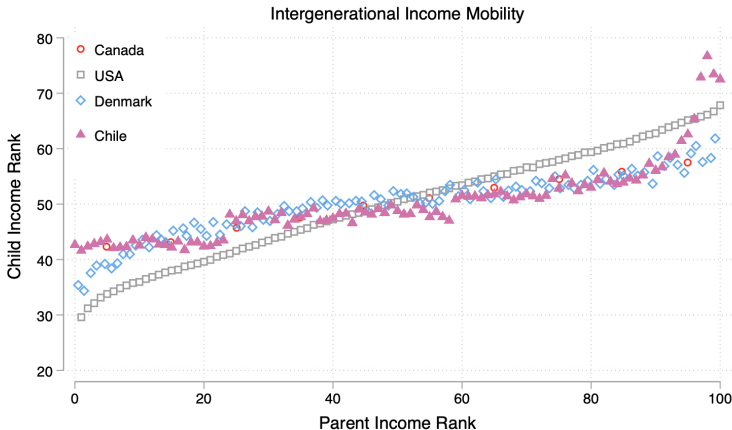
- The coefficient of interests β_1 , is the rank-rank correlation

- ▶ comparison wages and total income

Child Rank - Parental Rank: CASEN survey

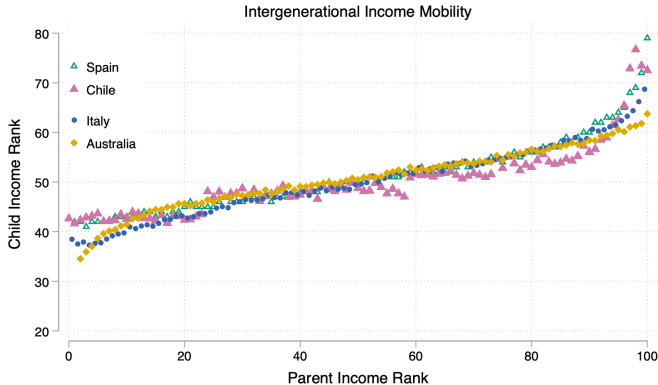


Child Rank - Parental Rank : USA, Den., Can. & Chile



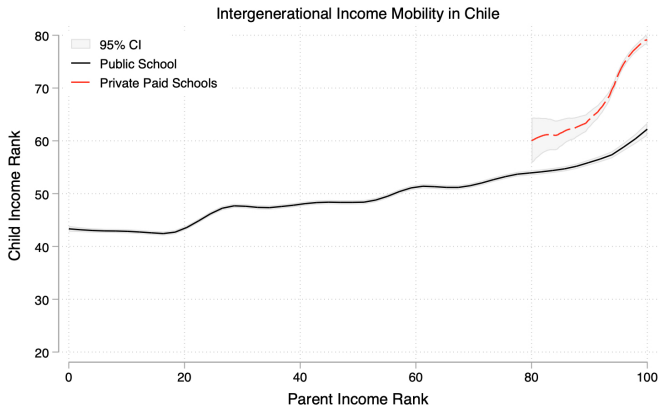
Data from Canada by Corak and Heisz (1999), USA by Chetty et. al. (2014), Denmark by Boserup, Kopczuk, and Kreiner (2013)
Data from Spain by Llaneras, Medina & Costas (2020). Chile by francisco.meneses@duke.edu. In Chile, child wage rank age 27
Israel by Oren Heller (2017). Italy by Acciari, Polo & Violante (2019). Australia by Deutscher and Mazunder (2020)

Child Rank - Parental Rank: Italy, Spain and Others



Data from Canada by Corak and Heisz (1999), USA by Chetty et. al. (2014), Denmark by Boserup, Kopczuk, and Kreiner (2013)
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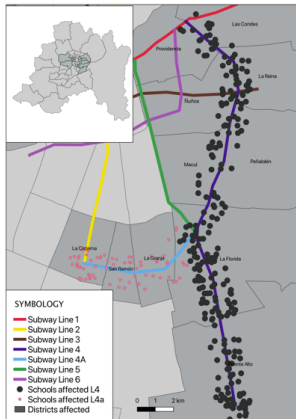
Child Rank - Parental Rank and School Type



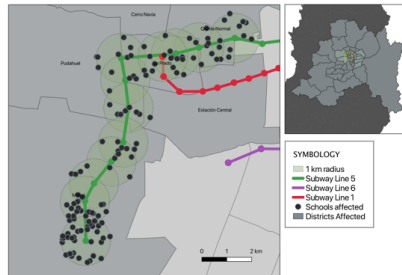
Public School include all State funded schools in Chile. Child wage rank age 27

Treatment and Control: K-8 Grade

Treatment (2005)



Control (2011)



Students are identified by their schools in 8th grade.

Schools around the new subway stations are identified as treatment and control groups

Define Subjects: Distance Geocoded Students

TABLE A1— DISTANCE FROM HOME TO SUBWAY STATION (KILOMETERS)

	Median	Mean	SD	N
Students in Treated Middle Schools	1.13319	1.653742	1.840893	3,444



Data Sets: Treatment and Control

TABLE 3—VARIABLES OF INTEREST AND SAMPLE SIZE

Treatment					
Variable	Obs.	Mean	Std.	Min	Max
Income Rank Child	3,610	52	28	0	100
Income Rank Parents	3,610	50	24	0	100
SIMCE Test Score	3,610	249.27	43.51	130	388
Parental Education Level	3,022	1.9	0.95	1	8
Work 2017	3,610	0.77	0.326	0	1
Control					
Variable	Obs.	Mean	Std.	Min	Max
Income Rank Child	1,846	51	27	0	100
Income Rank Parents	1,846	51	24	0	100
SIMCE Test Score	1,846	245.07	42.44	129	368
Parental Education Level	1,535	1.87	0.93	1	8
Work 2017	1,846	0.79	0.324	0	1

Methodology

Estimate the Intention-To-Treat (ITT) using Difference-in-Difference approach. Start with traditional intergenerational mobility formula:

$$Child\ Rank_i = \beta_0 + \beta_1 Parental\ Rank_i + \varepsilon_i$$

$$Y_{1i} = \beta_0 + \beta_1 Y_{0i} + \varepsilon_i$$

Transform intergenerational Mobility variables to panel data set.
 The Diff-in-Diff outcome will be:

$Y_{1i} - Y_{0i}$ = Intergenerational income mobility of Child

$$Y_{ti} = \beta_0 + \beta_1 Exposure_{it} + \beta_2 T_{it} + \beta_3 T_{it} Exposure_{it} + \varepsilon_{it}$$

Results

TABLE 4—DID REGRESSION RESULTS ON INTERGENERATIONAL INCOME MOBILITY

	DID	Effect on Wages
Coefficient	1.83*	4,7%
Observations	9,114	

Source: Author's calculations using diff command in Stata:

Parental Income, Parental educational level and SIMCE test scores as controls.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Other Affected Schools

TABLE 5—DID REGRESSION RESULTS ON INTERGENERATIONAL INCOME MOBILITY

	DID	DID	DID
	All	Not forced to	Forced to Switch ^a
DID Estimator	0.637	-0.824	1.83*
Observations	17,418	8,402	9,114

Source: Author calculations using diff command in Stata:

* Parental Income, Parental educational level and SIMCE test scores as controls.

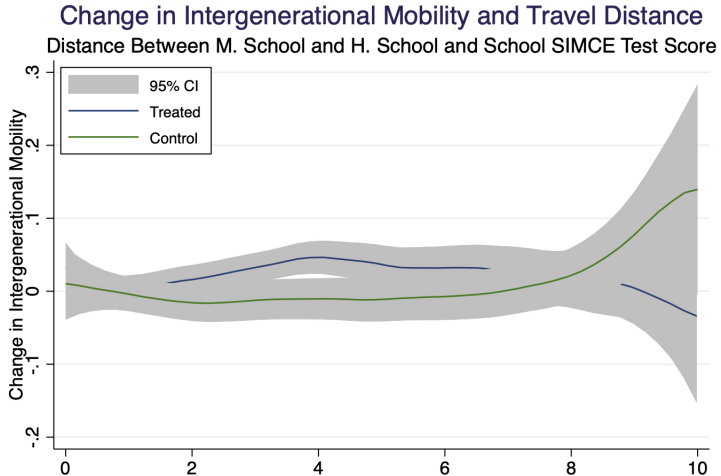
^a Schools that ended in 8th grade.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Increase Mobility Related to Travel



Channels of Transmission

- What happened?
- **Students Moved to Better Schools (Asahi, (2014), Herskovic (2020))**
- Did tests scores of the students increase?
- Higher education enrollment or graduation?
- Areas of study?
- Vocational or college?

Channels of Transmission: Area of Study

Table: DID Regression Results: Channels of Transmission

	DID
SIMCE Test Scores★	-3.483***
Financial Aid Applicationn★	0.038**
Higher Education Graduation★	0.0132
Humanities, Arts and Social Sciences (HASS)★	-0.0238***
Observations	9,114

★ Parental Income, Parental educational level and SIMCE test scores as controls.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Conclusions

- Increased educational options promoted upward income mobility (1.8 rank points).
- Equivalent to an increase in wages by 4.7%.
- Test scores, high school and higher education graduation rates did not increase.
- Decreased enrollment in low-profitable higher educational degrees.
- ↓ Humanities & Social Sciences, while ↑ Engineering & Health

Conclusions

- This is a research also highlights the importance of similar endeavours in developed countries that have residency restrictions for school enrollment.
- There are lessons to be learn for developing countries that have tuition and transport restrictions for students.
- Allowing families to choose schools can promote intergenerational income mobility.
- The impact of different educational opportunities are subtle.
- Overall, this paper adds to the literature that shows that policy can impact and improve intergenerational mobility.

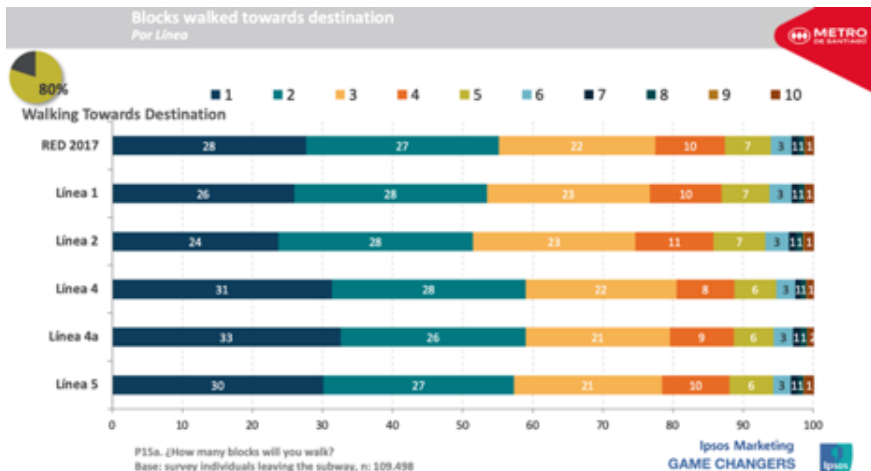
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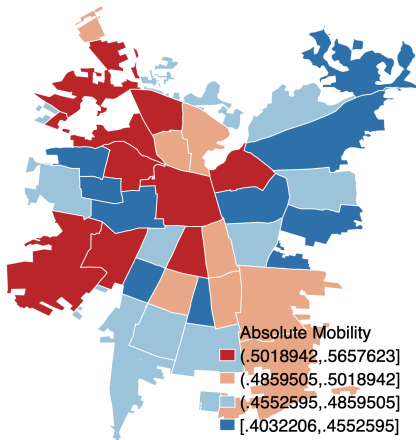
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Metro Survey of Traveled Distances

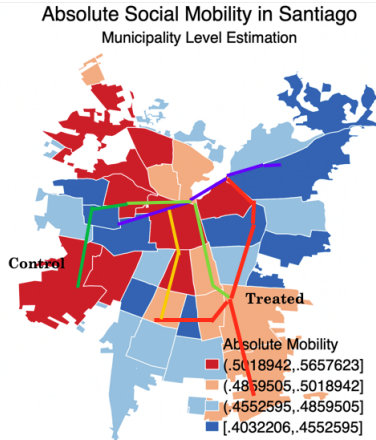


Absolute Mobility in Santiago

Absolute Social Mobility in Santiago
Municipality Level Estimation



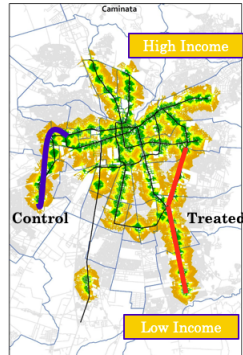
Absolute Mobility in Santiago



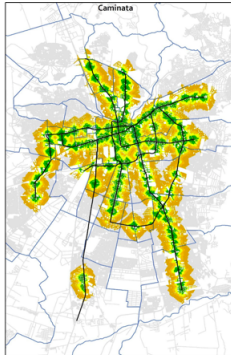
Treatment and Control Group

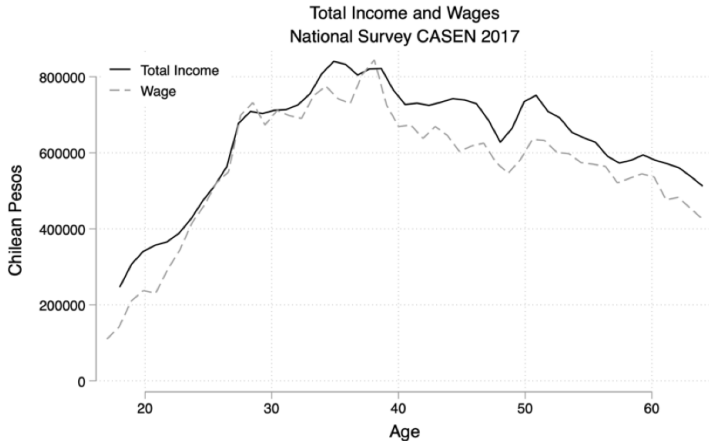
TREATED AND CONTROL

- Students in Middle schools that end in 8th grade.
- Treated: Students affected by new subway line in 2005
- Control: Students affected by subway extension in 2011



Treatment and Control Group





For household heads, variables yaut=income from work and properties (does not include subsidies). y0101h=main wage