

Supplementary Material for Sent Away: The Long-Term Effects of Slum Clearance on Children*

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DATA CONSTRUCTION

In this document we provide a more detailed description of the archival collection and database construction.

1 Archival data: Homeowners

The main goal of our data collection is to find the families who participated in the Program for Urban Marginality, implemented under Executive Order 2552 of 1979. We search, collect, and digitize archival administrative records between 1979 and 1985 associated with the executive order from the Metropolitan Regional Housing and Urban Planning Service of Santiago,¹ located in the National Archives of the Administration (ARNAD, 1985), and from historical records kept by the Municipality of Santiago.²

The administrative records consist of lists detailing the names of individuals and their spouses who received a property deed in a destination neighborhood as part of the program. We focus on urban municipalities and municipalities with variation in treatment (i.e., a municipality with displaced and non-displaced slums), and thus we

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¹Each region of Chile (equivalent to a state) has an Urban Development and Housing Service, dependent on the Ministry of Housing and Urban Development. These services administer and implement housing policies at the regional level.

²The Municipality of Santiago is one of the 32 municipalities in which Greater Santiago is divided, and it is also the capital of the Metropolitan Region.

search for records in 14 out of 16 municipalities. We obtain data for 16,947 unique recipients of public housing in urban municipalities, representing around 61.5% of the total number of recipients, according to the figures in [Molina \(1986\)](#).

We cannot find all records for two reasons. First, the original lists of program beneficiaries were compiled by individual municipalities, and some of these records were kept by municipalities and not sent to the central administration. At the time, municipalities were required to keep administrative records for only five years, after which they were allowed to dispose of them. This issue has been confirmed by several municipalities. The second reason is due to attrition at the ARNAD. There are two instances in the early 1990s where records were lost: first, when ARNAD was separated from the National Historical Archives of Chile, and then during a flood that destroyed part of ARNAD's holdings.

Figure 1 shows a sample of the archival records, which contain data on the recipient of the property deed and a spouse (if present), including full names, national identification numbers (NID), place of registration (municipality where the recipient obtained an NID), the new housing unit's address, and its total cost in UF (inflation-adjusted index). These records are grouped by year of relocation (or urban renewal) and project of destination.

Table 1 summarizes the total number of recipients and archival data obtained. Panel A shows the total number of recipients in the program and Panel B the number of families in urban areas. Panel C presents our archival sample for families with an NID. We keep families in which at least one of the members has a valid NID. This variable is key, as it allows us to identify homeowners' children and match individuals to the administrative data.

In the program, 65% of the families are displaced and 35% are non-displaced (Panels A and B), while in the archival data, we identify 69% as displaced and 31% as non-displaced (Panel C). The differences between Panels B and C indicate fewer slums relative to families. This suggests that, in our sample, the slums are relatively larger and the destination neighborhoods are broader, as shown by a smaller share of displaced slums relative to the total number of slums in the sample, compared to the same ratio measured by the number of families. This discrepancy is mainly due to the prevalence of large destination neighborhoods in the archival sample.

Figure 1: Archival records: Lists of property deeds

ANEXO AL RESUELVO Nº 1

Población : José Miguel Infante

Comuna de : Renca

Project name (neighborhood)

Municipality

Nomina de Asignación de Viviendas Sociales

New address

Nº	NOMBRE A.IGNATARIO Y CONYUGE	C.IDENTIDAD	GABIN.	ROL	DIRECCION MUNICIPAL	CUOTAS DE AHORRO APORT.APLIC.G.NOT.			VALOR	MUTUO
1	Gaete Dour Cardenio S. Rubilar Figueroa María Y.	1.111.111-1 2.222.222-2	Valdivia Valdivia	6	Toconce Nº 1145	220	170	50	283,7663	77,20
2	Puelma Ibarra Raúl F. Aristegui Palma Silvia	3.333.333-3 4.444.444-4	Thno. Stgo.	9	Toconce Nº 1112	100	50	50	283,7663	81,84
3	Navia Fischer Juan Ovando González Lilia	5.555.555-5 6.666.666-6	Ovalle Ovalle	21	Toconce Nº 1968	150	0	150	286,8282	86,83
4	Díaz José Luis del C. Carrasco Gutierrez Ana	7.777.777-7 8.888.888-8	Stgo. Stgo.	23	Toconce Nº 1176	150	100	50	283,7663	79,91
5	Ceses Zúñiga Graciela Aedo Ortiz Modesto	9.999.999-9 10.000.111-1	Ñuñoa Stgo.	25	Toconce Nº 1184	50	0	50	286,8283	86,83
6	Araneda Escobar Fernando García Moyano Cristina	11.111.111-2 12.123.456-6	Stgo. Stgo.	27	Toconce Nº 1192	505	455	50	283,7663	66,20

Family ID	Name	Relation to hh	ID	District	House	Address	Aport.	Aplic.	G.Not	Value
1	Gaete Dour Cardenio S.	1	1.111.111	Valdivia	6	Toconce 1145	220	170	50	283.77
1	Rubilar Figueroa María Y.	2	2.222.222	Valdivia	6	Toconce 1145	220	170	50	283.77

2 Locating slums and destination neighborhoods (housing projects)

Archival records are sorted by destination neighborhoods and not by slums. Thus, a key part in the cleaning process is to assign each family to a slum of origin. To do this, we use information from three main sources. The housing programs of the Chilean dictatorship in the 1980s were contemporaneously studied by the Latin American Faculty of Social Sciences in Santiago (FLACSO). We draw intensively from two of their studies, [Benavides et al. \(1982\)](#) and [Morales and Rojas \(1986\)](#). [Benavides et al. \(1982\)](#) compiled a comprehensive list of existing slums in the year 1982, including characteristics such as land size, while [Morales and Rojas \(1986\)](#) used newspapers to compile a list of all slums treated by relocation and redevelopment by 1985.

We complement the data from FLACSO with data from [Molina \(1986\)](#)—who studies the experience of displaced families under the program—and compile a list of slums and their locations, the number of families relocated in each episode of displacement, and their destination neighborhood from administrative records.

Finally, we digitize two slum censuses conducted by Chile’s Ministry of Housing and

Table 1: Archival data 1979–1985

	Displaced	Non-displaced	Total
<i>A. The program (Molina, 1986)</i>			
Number of families	26,291	14,200	40,491
Share %	65%	35%	100 %
Number of slums	211	67	278
Number of projects	63	67	130
<i>B. The program in urban areas</i>			
Number of families	17,892	9,664*	27,556
Share %	65%	35%	100 %
<i>C. Archival data in urban areas</i>			
Number of families	11,693	5,253	16,947
Share %	69%	31%	100%
Number of slums	58	41	99
Number of projects	37	41	73

Source: Molina (1986) and archival data found by authors. Molina (1986) collects slum-level data only for displaced slums, whereas for non-displaced slums, only estimates of the total number are reported. *Estimate based on shares in Panel A.

Urban Development (MINVU) in 1979 and 1980. These include the original plan of 1979 and an update in 1980. MINVU reports a plan for the neighborhoods of destination for each slum, which allows us to classify each one as displaced or non-displaced.

Combining these three sources, we create a treatment variable for each slum. It is important to note that identifying slums is challenging given their dynamic and informal nature. Their names often changed over time for a myriad of reasons, most of which were not systematic. For instance, after the military coup of 1973, several slums with left-wing-related names changed their names so they would not be identified as communists.

There are two important challenges in allocating families to slums of origin. First, archival records are organized by the date on which they moved to destination neighborhoods and not by origin, and in most cases, they include groups of families with more than one slum of origin. Second, when a non-displaced slum was treated, very often the new neighborhood had a different name from the original slum name. Moreover, adjacent non-displaced slums were sometimes treated in a single new destination neighborhood.

To solve the first challenge, we use the number of displaced families treated at every slum of origin, which we obtain from the sources above, together with the place of registration variable included in the archival records (see Figure 1). Place of registra-

tion is a good proxy for municipality of origin as Greater Santiago was divided in 16 municipalities at the start of the program.³ To address the second challenge, we match the addresses of the destination neighborhoods to the locations of known non-displaced slums and the number of families treated to identify non-displaced slums of origin. Since families were treated at the slum level, we know that all families in the records who were classified as non-displaced were from the same slum of origin. In addition, some of the records for non-displaced families included the type of housing unit they received. Thus, when families received a starting kit (*caseta sanitaria*), we know they went through an urban renewal process since this type of housing was never given to displaced families.

3 Matching process: Children’s sample

The next step in constructing the full database consists of finding the children of each family. Our objective is to match parents to all of their children. Because we originally did not have access to administrative data on family composition at the time of the intervention, we reconstructed the family structures ourselves. We worked with Genealog Chile to web scrape birth and marriage certificates from Chile’s Civil Registry and Identification Service and collect birth certificates for all Chileans who were 18 or older in 2016. The birth certificates contain full name at birth, date of birth, and NID number, as well as parents’ full names and, in most cases, their NID numbers (the probability of finding parents’ NID numbers decreases with age).

We matched the homeowners’ archival data to their children using NID numbers. Figure 2 presents an illustration of the matching process. Since our initial data only consists of couples, we start the process by building a dataset that includes the “family names” for all the families in our sample. In Chile, family names are composed of two last names: the first last name (in order from left to right) is the father’s first last name, and the second last name is the mother’s first last name. Hence, both paternal last names are transmitted from parents to children. As an example, consider that María Pérez Rojas (mother) has a child with Juan Rodríguez González (father). In this case, their children’s family name will be “Rodríguez Pérez.”

We match family names in the archival sample to all birth certificates that had the

³In the records, place of registration is called *Gabinete* and corresponds to the Civil Registry and Identification Service (CRIS) branch where an individual was first registered. Most municipalities in Santiago had a CRIS office at the time. After a new geopolitical division of in 1980, the number of municipalities increased from 16 to 32.

same family name in Chile in 2016. Since birth certificates include the names and NID numbers of parents, we can corroborate if the parents in a matched birth certificate belong to our sample or not. To find the children of single parents, Genealog obtained all birth certificates for the Chilean population in a second stage of the process. We matched by full name when the birth certificate did not contain at least one of the parent’s NID numbers. The matches in this case were almost exact because Chilean names are composed by a first name, a middle name, and two last names. Thus, the likelihood of an incorrect match is very small.

Table 2 shows the total number of children matched to parents in the archival data, corresponding to 15,136 unique families in 99 slums.

Table 2: Children of homeowners in archives

Age at baseline	Individuals
Older than 18	8,454
0 to 18	33,669
Born after treatment	4,949
Total	47,072

Figure 2: Matching process: From parents to children

Rodolfo Márquez Montenegro

Lucía Arjona Contreras

↓

Family name is

“Márquez Arjona”

Resultados

Mostrando resultados para: *marquez arjona* — [\(Buscar otro\)](#)

Nombre	RUT	Sexo
MARQUEZ ARJONA MARCELA ANDREA	[REDACTED]	MUJ
MARQUEZ ARJONA RODOLFO MAURICIO	[REDACTED]	VAR
MARQUEZ ARJONA VERONICA PAMELA	9.876.543-2	MUJ

CERTIFICADO DE NACIMIENTO
Uso exclusivo para ASIGNACION FAMILIAR

Circunscripción : UNIVERSIDAD Registro : E1 Año : 1972

Nro. inscripción : 1.713

Nombre inscrito : VERÓNICA PAMELA MÁRQUEZ ARJONA

R.U.N. : 9.876.543-2

Fecha nacimiento : 15 Marzo 1972

Sexo : Femenino

Nombre del padre : RODOLFO SEGUNDO MÁRQUEZ MONTENEGRO

R.U.N. del padre : [REDACTED]

Nombre de la madre : LUCÍA DEL CARMEN ARJONA CONTRERAS

R.U.N. de la madre : [REDACTED]

* PARA SER PRESENTADO EN INSTITUCIONES PREVISIONALES *

4 Variable definitions

Variable name	Description
<i>Outcomes and treatment</i>	
Labor income	Source: The RSH (RIS, 2021). Self-reported labor earnings are measured in CLP\$ per month. The original variable corresponds to the sum of all earnings in the last year at the time of the interview. It includes earnings from formal and informal employment and excludes pensions and transfers. Data are available biannually from 2007 to 2019.
Employed	Source: The RSH. An individual is considered employed if they report being employed at the time of the interview, including any type of employment, formal or informal. Data are available biannually from 2007 to 2019.
Taxable income	Source: GRIS-Mutuales (2019) . Income is obtained from monthly administrative records on taxable earnings for all workers who contribute to social security. Data are available monthly from 2016 to 2019.
Contract	Source: The RSH. The individual reports working with a formal contract.
Temporary worker	Source: The RSH. The individual reports working on a fixed term.
Years of education	Source: The RSH. This variable represents an individual's completed years of schooling, constructed based on grade completion and levels. An individual can appear multiple times in the RSH with differences in this variable across years. We use the minimum value after the age of 25.
High school graduate	Source: The RSH. The individual reports having successfully completed high school.
College attendance	Source: The RSH. The individual reports having attended at least one year of tertiary education, including two- to three-year colleges or five-year colleges.

Displaced Source: Archives and authors calculations. Based on archival data, MINVU (1979, 1984), Molina (1986), and Morales and Rojas (1986), we construct the displacement dummy at the slum level.

Covariates

Year of intervention Source: Archives and authors' calculations. This variable is determined based on archival data, MINVU (1979), MINVU (1984), Molina (1986), and Morales and Rojas (1986).

Municipality of origin Source: Archives and authors' calculations. This variable is determined based on archival data, MINVU (1979), MINVU (1984), Molina (1986), and Morales and Rojas (1986).

Slum of origin Source: Archives and authors' calculations. This variable is determined based on archival data, MINVU (1979, 1984), Molina (1986), and Morales and Rojas (1986).

Municipality of destination Source: Archives and authors' calculations. This variable is determined based on archival data, MINVU (1979, 1984), Molina (1986), and Morales and Rojas (1986).

Project of destination Source: Archival records and electoral records in 2016. We updated the name of the projects using current names reported in families' addresses in 2016 that we observe in the electoral records.

Home value Source: Archival records. Home value is measured in UF and corresponds to the cost of the housing unit received by a slum family.

Date of birth This variable records the exact date when an individual was born, as verified by birth certificates.

Age at intervention This variable is calculated as the year of the intervention minus the year of birth.

Female This variable records an individual's gender, as verified by birth certificates.

Mother head of household	We proxy head of household's gender using the gender of the individual who received the property deed as it appears in the archival record.
Head of household's marital status	From marriage certificates, we identify if an individual is married or widowed at the time of the intervention. However, the absence of a marriage certificate does not necessarily indicate singleness as older couples are less likely to have their marriage certificates available on the Social Registry website.
Age of mother at birth	This variable is calculated from birth certificates as the year of the intervention minus the mother's year of birth.
Number of siblings	This variable is calculated as the number of children from the same couple minus one. We cannot always observe half-siblings if the parents remarried, as we only observe the last marriage certificate.
Mother's education	Source: The RSH. This variable is constructed the same way as years of education, corrected by weighting the observations by the inverse of the probability of being found in the RSH, \hat{p} . We compute this probability as the fitted values of a logit regression of the probability of being found in the RSH on displaced, dead before 2007, and a full set of demographic controls at the time of the intervention. We then weight each observation by $1/\hat{p}$ if the mother was displaced and $1/(1 - \hat{p})$ if she was not.
Mapuche last name	Source: Archival records and the Mapuche Data Project. We identify each last name as Mapuche if we find it in the list collected by the Mapuche Data Project. Data are available here .

Formal employment	Source: Superintendency of Pensions. This variable is average employment at the slum level, computed as the share of individuals by gender who contributed to social security at least once between 1975 and 1980. The variable used is called “Bono de Reconocimiento,” and it is employed by the Superintendency of Pensions to identify individuals with formal employment before the Pension System Reform of 1980.
Property sold/inherited	Source: Santiago Real Estate Conservator (CBRS, 2023). Current property deeds are obtained through addresses in neighborhoods of destination, and they indicate the last owner and the date when the property was bought or inherited. Data are available for municipalities in the north and east of Greater Santiago.

Slum/neighborhood characteristics

Area	Source: MINVU (1979, 1984). This variable represents the land used by each slum, measured in hectares.
# families	Source: MINVU (1979, 1984), Molina (1986). This variable represents the number of families per slum.
Military name	Source: Constructed by the authors. A slum is considered to have a military name if its name references any military name, heroes of the country, or dates associated with military events in the history of Chile.
Flooding risk	Source: Authors’ calculations based on Zonificación Plan Regulador Metropolitano de Santiago (PRMS) (MINVU, 1994). We create dummy variables for buffer zones with a width of 50, 100, and 250 meters around each flooding zone. Data are available here .
Elevation	Source: Centro de Información de Recursos Naturales (CIREN) and authors’ calculations. Elevation is measured in meters above sea level with a resolution 12.5 meters per pixel. Each slum in the sample is assigned an elevation based on its coordinates. Data are available here .

Slope	Source: Authors' calculations based on elevation data from CIREN. We compute the slope, measured in degrees, for each slum in the sample based on its coordinates.
Distance to CBD	Source: Constructed by the authors. This variable measures the distance in kilometers from a slum/project location to the centroid of the Municipality of Santiago, which contains the CBD.
Distance to river	This variable measures the distance in kilometers from a slum location to the closest riverbank in Greater Santiago. To georeference slums, we use Morales and Rojas (1986) and river locations, available here .
Census district	Source: Population Census of 1992. Shape files of the 1982 census were not available in the National Institute of Statistics, and thus we use the corresponding census districts in 1992, as the differences between 1982 and 1992 in the Greater Santiago were minor. The variable is defined as a smaller geographic unit than a municipality.
HH's schooling	Source: Population Census of 1982. This variable represents the average years of schooling of all household heads between 18 and 65 years old, analyzed by municipality and census district.
HH's unemployment	Source: Population Census of 1982. This variable represents the average unemployment rate of household heads between 18 and 65 years old, by municipality and by census district.
HS dropout students	Source: Population Census of 1982. This variable represents the share of the population who is not in high school but should be measured by their age, measured at the municipality and census district level.

# schools	Source: Ministry of Education. This variable is measured per municipality and per census district, as well as the number of schools per 1,000 students, using the schooling population from the 1982 Census as the denominator. It includes all schools in Chile, their location, type (private or public), and year of inauguration, up to the year 1985.
# health care centers	Source: Ministry of Health. This variable includes all public family care centers in Chile, their location, and year of inauguration. We check the years of inauguration one by one by calling each of the centers that had incorrect dates, and we keep all health care centers until year 1985. The variable is measured per municipality and per census district, as well as the number of centers per 1,000 households, using the total number of households per municipality/district in the 1982 Census as the denominator.
# hospitals	Source: Ministry of Health. This variable includes all public hospitals in Chile, their location, and year of inauguration. We keep all hospitals built until 1985. The variable is measured per municipality and per census district, as well as the number of hospitals per 1,000 households, using as a denominator the total number of households per municipality/district in the 1982 Census.
Distance to subway	Source: Metro de Santiago. This variable measures the distance in kilometers from each slum/project of destination to the closest metro station in Greater Santiago, considering only those stations built on or before 1985. The list includes each station's location and year of construction.
Waiting time	Source: Origin-Destination Survey, Santiago, 1977. This variable represents the average time individuals wait for public transportation at the municipality level, measured in minutes. Unfortunately, it is not available at a more granular geographic level.

Commuting time	Source: Origin-Destination Survey, Santiago, 1991. This variable, measured in minutes, represents the average time spent commuting by public transportation at the municipality level.
Property prices	Source: <i>El Mercurio</i> newspapers. We digitize and clean listings of property sales for the years 1978, 1979, 1984, and 1985. We then geocode them and take the average of the logarithm of the price residuals at the census district level. To maximize the number of observations, we also use a buffer of 2 kilometers around slums and neighborhoods at baseline. This variable is only available in urban municipalities as we did not find many listings in rural areas.
Slum network	Source: Archives. This variable measures the number of families from a slum of origin who moved together to a new project of destination, expressed as a share of the total number of families in the original slum.
Neighborhood size	Source: Archives and Molina (1986) . This variable is the number of housing units in the new project of destination.

REFERENCES

- ARNAD (1985). Archivo Nacional de la Administración. SERVIU Metropolitano: Resoluciones Exentas D.L. 2552 (1979): Listados de Pobladores del Programa para la Marginalidad Urbana.
- Benavides, L., Morales, E., and Rojas, S. (1982). Campamentos y poblaciones de las comunas del Gran Santiago. Una síntesis informativa. *Documento de Trabajo Programa FLACSO-Santiago*, (154).
- CBRS (2023). Conservador de Bienes Raíces de Santiago: Escrituras de propiedad de pobladores del Programa para la Marginalidad Urbana.
- GRIS-Mutuales (2019). Superintendencia de Seguridad Social: Supervisión de Reportes e Investigación.
- MINVU (1979). Ministerio de Vivienda y Urbanismo: Campamentos Año 1979: Radicación-Eradicación.
- MINVU (1984). Ministerio de Vivienda y Urbanismo: Listado de Campamentos de Radicación y Erradicación por Comunas de la Región Metropolitana.
- MINVU (1994). Ministerio de Vivienda y Urbanismo: Memoria del Plan Regulador Metropolitano de Santiago.
- Molina, I. (1986). El Programa de Erradicación de Campamentos en la Región Metropolitana de Santiago (1979-1984): Implicancias Socioeconómicas y Espaciales.
- Morales, E. and Rojas, S. (1986). Relocalización socio-espacial de la pobreza: Política estatal y presión popular, 1979-1985. *Programa FLACSO*, (280).
- RIS (2021). Ministerio de Desarrollo Social y Familia: Registro de Información Social.