So… who are they?

Using hierarchical cluster analysis to describe international immigrants in Chile

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South America

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Why study immigrants in Chile?

a. International immigration to Chile has increased rapidly in the past decade.

b. It is still fairly small scale and immigrants comprise <2% of the total Chilean population.

c. However, immigration has become significant for economic growth and the innovation of services.

d. About 70% of immigrants come from South American countries, mostly Peru, Argentina, Bolivia and Ecuador.

e. No national-level study has been conducted to describe the socio-economic status and health of international immigrants in Chile.

Study design - Instrument

Secondary data analysis of a national representative social survey was used to explore these variables (CASEN survey 2006; sample size 268 873; weighted estimations).

Aims:

The study aimed to explore the socio-economic conditions and the health status of international immigrants in Chile, through the analysis of a national representative survey.

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How was the study conducted?

a. Describing immigrants´ socio-economic status (SES):

- Household income per capita (continuous)
- Educational level (ordinal)
- Employment status (binary)

Preliminary analysis found the immigrants were a very heterogeneous and polarised group.

E.g.: A wider gap of income inequality in this group compared to the Chilean-born.
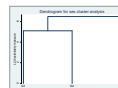
b. Health outcomes

- Disability
- Any chronic condition/cancer past year
- Any hospitalization past year,
- Any mental health treatment last 3 months.

No clear association was found between the health outcomes and the separate SES variables - so cluster analysis was adopted.

c. SES cluster analysis:

Complete-linkage hierarchical cluster analysis was then conducted and three groups were identified:
1. High SES (n=398)
2. Medium SES (n=889)
3. Low SES (n=587)

Methodology:

Due to their great heterogeneity, hierarchical cluster analysis was used to group immigrants into three socioeconomic status categories: Low, Medium, and High SES.

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What did the study find?

a. International immigrants in Chile

1% of the survey respondents reported being an international immigrant.

The most common countries of origin were: Peru (28%), Argentina (26%), Bolivia (6%) and Ecuador (5%).

b. Describing the socio-economic groups after cluster analysis:

Cluster 1	Cluster 2	Cluster 3
Mean age 35 years old	Mean age 33 years old	Mean age 25 years old
48% women	54% women	60% women
60% professional	All except University level	Up to high-school only
60% richest quintile	>50% quintiles 3 & 4	2 poorest quintiles
63% employed	64% employed	42% employed
8% managers 59% private sector	All categories	No heads or managers
Summary: High SES	*Summary: Medium SES*	*Summary: Low SES*

c. Health status of the immigrants by socioeconomic status:

Health Outcomes	High SES %(CI)	Medium SES %(CI)	Low SES %(CI)	Chilean-born population %(CI)
Disability	2 (1-5)	4 (2-6)	6 (3-9)	7 (6-7)
Chronic condition or cancer	3 (1-6)	3 (1-6)	5 (2-12)	6 (5-6)
Hospitalization or surgery	7 (5-11)	5 (3-9)	3 (1-5)	6 (5-6)
Mental health attention	16 (11-21)	12 (9-16)	15 (9-24)	16 (16-17)

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Discussion of the results

a. In this study the international immigrant population in Chile were found to be a very heterogeneous group, polarised by their socio-economic status.

b. Hierarchical cluster analysis provided an appropriate method to group immigrants according to their socio-economic characteristics.

c. The socioeconomic groups identified by the cluster analysis among the immigrant population had consistent variations in their prevalence of health problems.

d. For some variables, the cluster analysis revealed that immigrants had a clear inverse gradient in their health status by socio-economic status.

Conclusions:

1. International immigrants in Chile are a very heterogeneous group.

2. Hierarchical cluster analysis was a useful method for grouping them by their socio-economic status.

3. Cluster analysis revealed a clear social patterning of health status among the immigrants, which was not evident from analysis of separate SES variables.

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