Understanding Trajectories and Factors Associated with Primary School Principals' Trajectories from 2015 to 2020

Presenting
Claudio Allende
Center for Advanced Research in Education, Universidad de Chile**.**
Psicology Deparment, Universidad Católica de Valparaiso (PUCV)

Research team
Juan Pablo Valenzuela
Center for Advanced Research in Education and Institute of education, Universidad de Chile**.**

Alejandro Sevilla
Center for Advanced Research in Education, Universidad de Chile.

Sergio Galdames
Education Department, Universidad de Santiago de Chile (USACH)

Outline

➢ **Evidence about Principals´ trajectories**

➢ **Data and Methods**

➢ **Main Results**

➢ **Conclusion**

Evidence about School Principals' Trajectories

❑ Principals are key in school improvement processes as well as in improving student performance (Day et al., 2011; Sebastian et al., 2016).

❑ The effect of leaders on school improvement is gradual and cumulative; likewise, they require long periods to achieve and sustain improvements in students' learning (Miller, 2013).

❑ Research on aspiring principals has often explored the interest, motivation and barriers that teachers, middle leaders and assistant principals experience on their way to principalship (Cooley and Shen, 2000).

Evidence about School Principals' Trajectories

❑ Findings concur that teachers' interest in leadership is closely related to the amount of formal professional development opportunities to sustain leadership roles within schools (Galdames & González, 2016; Earley, 2009).

❑ Findings also show that women face greater barriers to accessing leadership positions within schools (Chan et al., 2016).

❑ Lankford, O'Connell & Wyckof (2003) find that female teachers in New York are less likely than male teachers to become mid-range directives, but share the same likelihood of becoming female directors

Main Objectives

There are various ways of understanding management trajectories, in this research we focus on what Ribbins (2008, p.64) calls 'becoming a manager'. Thus, this research has two focus,

I.   First, on the identification of previous positions aiming to unravel the steps that many educational professionals follow towards a principal career.

II.   Second, inquiring into their personal and contextual characteristics, we seek to explain factors that affect the likelihood that a person will become a principal in a short period of time (6 years).

Data

- The analysis conducted in this research considers the 2020 cohort of Chilean primary schools principals, that is, all those who in 2020 were working as principals.
  - Urban and rural schools with an enrolment of 100 or more students
  - Belonging to the regular education system
  - Principals of primary education

- A backward panel data was constructed for the period 2015 to 2020 generated from a series of publicly available databases at the Chilean Ministry of Education → Teaching Suitability (Idoneidad Docente); General Student Information System (SIGE); Chilean National Registry of Schools.

- The final database included variables such as:
  - positions held before becoming directors in 2020,
  - gender,
  - age,
  - teaching specialty,
  - A set of variables associated with internal efficiency of schools (rate of retention; dropout rate; attendance rate among others)

Methods

1) ## Sequence analysis (Abbott, 1983, Abbott y Forrest 1986)

   (Eisenberg-Guyot et al., 2020; Widmer & Ritschard, 2009) → representative typologies of trajectories prior to becoming principals.

   - R program → packages TraMineR, (Gabadinho et al., 2021), TraMineRextras (Ritschard et al., 2021) and WeightedCluster (Studer, 2013).
   - Optimal number of clusters (Average Silhouette Width or Silhouette method)

2) ## Main factors associated to principals' trajectories →

   - Multinomial logit model for panel data in order to obtain the marginal effects.

   - The categories considered through time were
     - ✓ Principal,
     - ✓ Teacher,
     - ✓ Middle leader or mid-range directive (deputy director, counsellor, head of technical pedagogical unit) and
     - ✓ School professional staff or mid-range professional (e.g. member of the principal team or the technical pedagogical team).

Results
2020 Principals' Cohort Trajectories

Results → Descriptive analysis through time

Figure 1: Trajectories by Main Function in the Schools (2015-2020) (N=5.314)
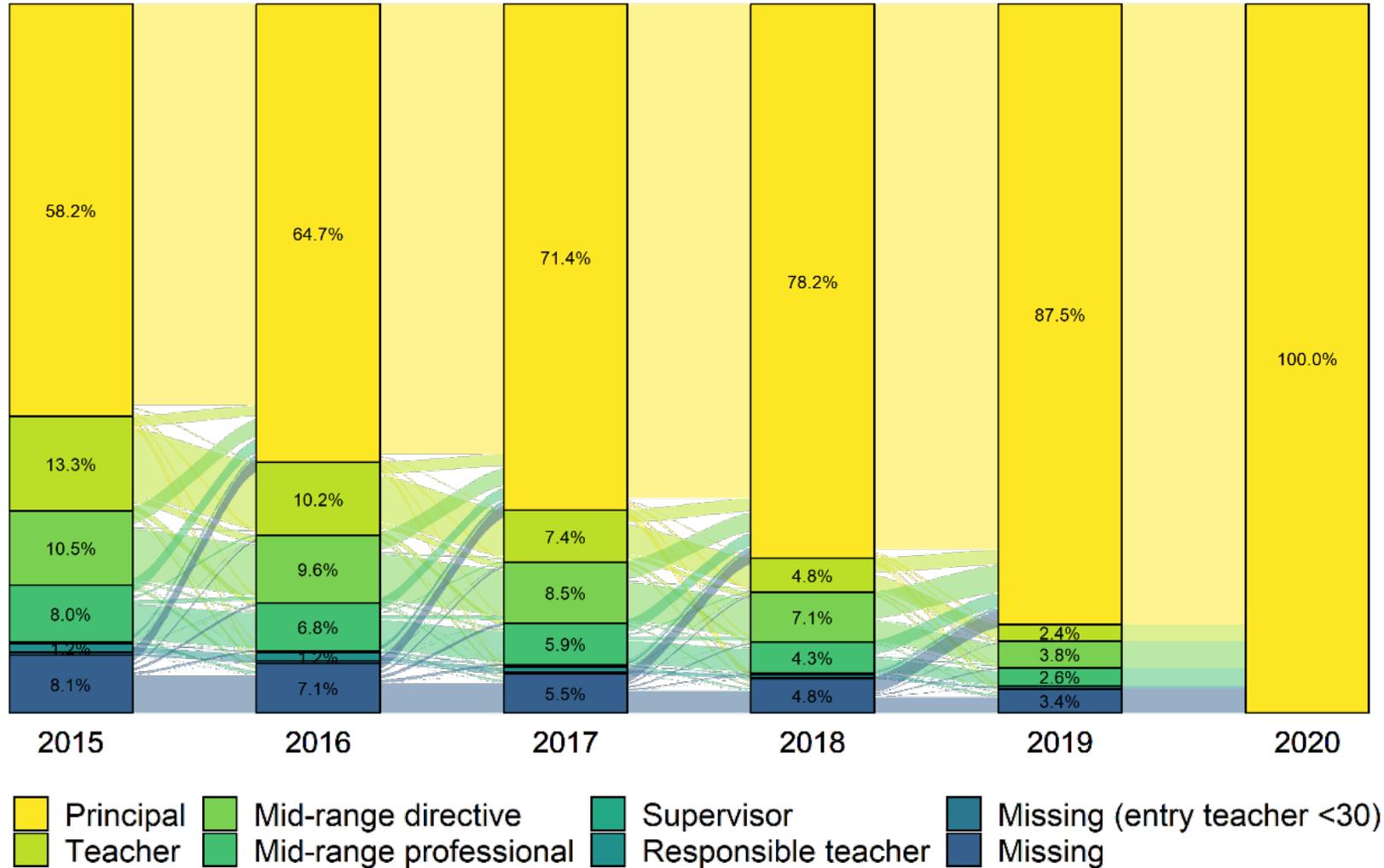
Note: Labels of stratums with less than 1% not shown.

Results → Sequence analysis → Clusters generated

Table 8: Average Silhouette Width by Groups. Five clusters in all groups.

	ASW	Tipo de Clúster
Todos	0,701	PAM-Jerárquico(DIANA)
Mujeres	0,702	PAM-Jerárquico(median)
Hombres	0,708	PAM-Jerárquico(single)
Menores de 45	0,542	PAM-Jerárquico(average)
45 a 54	0,657	PAM-Jerárquico(median)
55 a 64	0,764	PAM-Jerárquico(single)
65 o más	0,847	PAM-Jerárquico(centroid)

Nota: PAM=Partitioning Around Medoids, DIANA=Divisive Analysis Clustering.

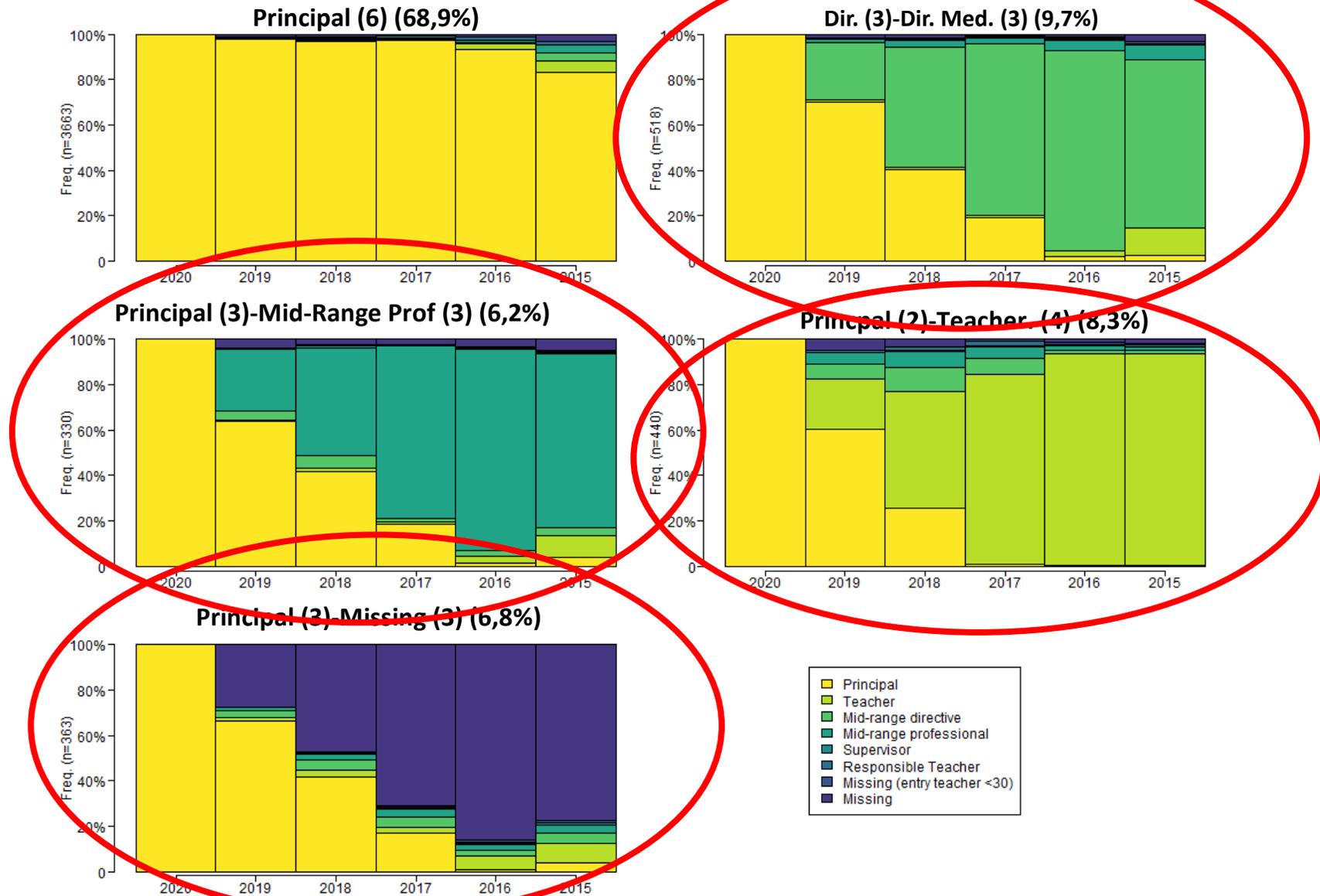**0.71 – 1.0** cluster structure is strongly homogeneous.

0.51 – 0.70 cluster structure is razonable homogeneous.

0.26 – 0.50 cluster structure is weak. Test other algorithms

≤ 0.25 without define structure

Results → Sequence analysis → Clusters generated

Figure 2: Five most relevant trajectories identified between 2015-2020 (N=5.314)

Results
Factors Associated to Principals' trajectories

Table 1: Panel data multinomial logit marginal effects

	Principal	Teacher	Middle leader	School professional staff
Sex	-0.011***	0.006***	0.001	0.004***
	(0.003)	(0.001)	(0.002)	(0.001)
Age				
45-54	0.083***	-0.052***	-0.023***	-0.008***
	(0.005)	(0.004)	(0.003)	(0.002)
55-64	0.107***	-0.061***	-0.032***	-0.013***
	(0.005)	(0.004)	(0.003)	(0.002)
65+	0.131***	-0.071***	-0.040***	-0.020***
	(0.005)	(0.004)	(0.003)	(0.002)
Teacher speciality				
Language	-0.015***	0.005**	0.007***	0.003*
	(0.004)	(0.002)	(0.002)	(0.002)
Mathematics	-0.005	0.006**	-0.001	0.0004
	(0.005)	(0.002)	(0.003)	(0.003)
History	0.009*	-0.007***	-0.002	0.0002
	(0.005)	(0.002)	(0.003)	(0.002)
Physical education	0.005	-0.003	-0.005*	0.003*
	(0.004)	(0.002)	(0.002)	(0.002)
Biology	-0.015***	-0.004	0.012***	0.007***
	(0.005)	(0.003)	(0.003)	(0.002)
Subrogate	1.072***	-0.356***	-0.413***	-0.303***
	(0.035)	(0.028)	(0.019)	(0.020)

	Principal	Teacher	Middle leader	School professional staff
Enrollment				
>=251 & <=500	-0.016***	0.006***	0.006***	0.004**
	(0.003)	(0.002)	(0.002)	(0.002)
>=501 & <=1000	-0.039***	0.014***	0.015***	0.010***
	(0.006)	(0.003)	(0.003)	(0.003)
>=1001	-0.071***	0.027***	0.021**	0.023***
	(0.014)	(0.009)	(0.008)	(0.006)
Internal efficiency				
Teachers				
>=16 & <=20	0.001	-0.002	0.001	0.00003
	(0.003)	(0.001)	(0.002)	(0.001)
>=21 & <=30	-0.008**	0.002	0.004	0.002
	(0.004)	(0.002)	(0.002)	(0.002)
>=31	-0.013**	0.004	0.004	0.005**
	(0.005)	(0.003)	(0.003)	(0.002)
Grade retention rate	-0.346***	0.140***	0.128***	0.078***
	(0.038)	(0.020)	(0.020)	(0.016)
Dropout rate	-0.360***	0.099***	0.179***	0.082***
	(0.026)	(0.014)	(0.014)	(0.012)
Withdrawal Rate	-0.034	0.008	0.014	0.012
	(0.021)	(0.010)	(0.013)	(0.010)
Attendance rate	0.080***	-0.038***	-0.035**	-0.006
	(0.025)	(0.013)	(0.014)	(0.011)
Number of Observations		29,217		

Conclusion

❖ We show that 40% of 2020 cohort were not principals 6 years ago.

❖ Those who begin their work experience as classroom teachers, who then occupy middle leadership positions and then become principals, is not generalized in Chile

❖ Our analysis indicates that a particular set of variables affect a large proportion of the likelihood to become principal.

❖ This research provides valuable information for generating policies and/or incentives aimed at retaining effective directors for longer periods.

❖ These results can support the development of strategies that contribute to the creation of policies that provide a career pathway that is effective in attracting, retaining and developing effective directors.

Thank Y😊u!