

# **Reducing Chronic Absenteeism in Preschools in Chile: Evidence from a Comparative Study Using 2011-2017 Ministry of Education Data**



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# About Fundación Educativa Oportunidad and the Chilean educational context



# Chilean education system

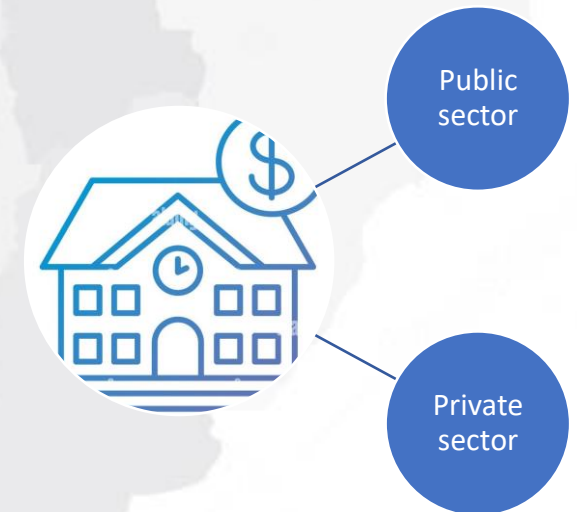


- Population 17.5 million
- Language of instruction: Spanish
- Compulsory Education: 12 years
- Universal access to early childhood education
- Ongoing efforts focused on quality of early childhood education

## • Diagram of Chilean education system



## • Mixed financing system



# Our Purpose

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Fundacion Educacional  
Oportunidad has existed for sixteen  
years to promote the **development  
and learning of children from early  
childhood** using innovating ideas  
and working collaboratively with  
others.





# Foundation for Educational Opportunity

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- **Improving language development of preschool children from rural communities in Chile**

*Building professional capabilities to enhance the school system*

# UBC: A story of perseverance

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## • 2006 - 2010

### Design and experimental phase

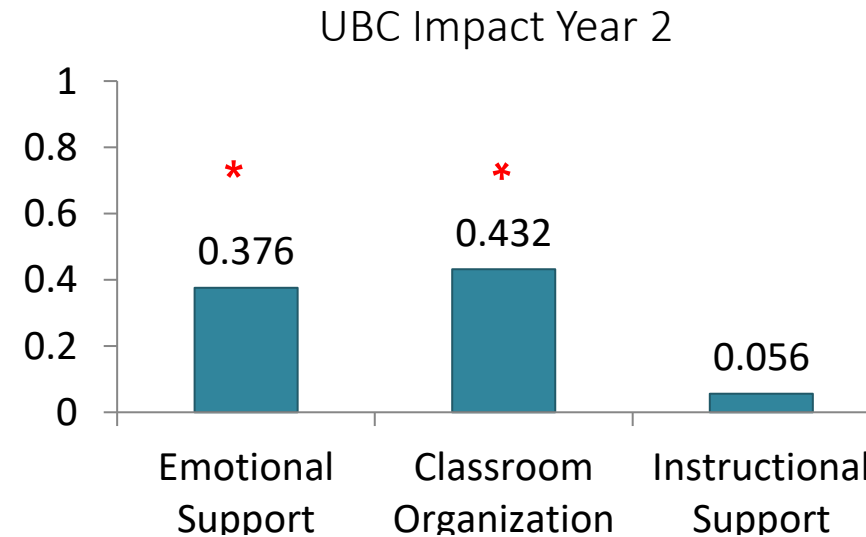
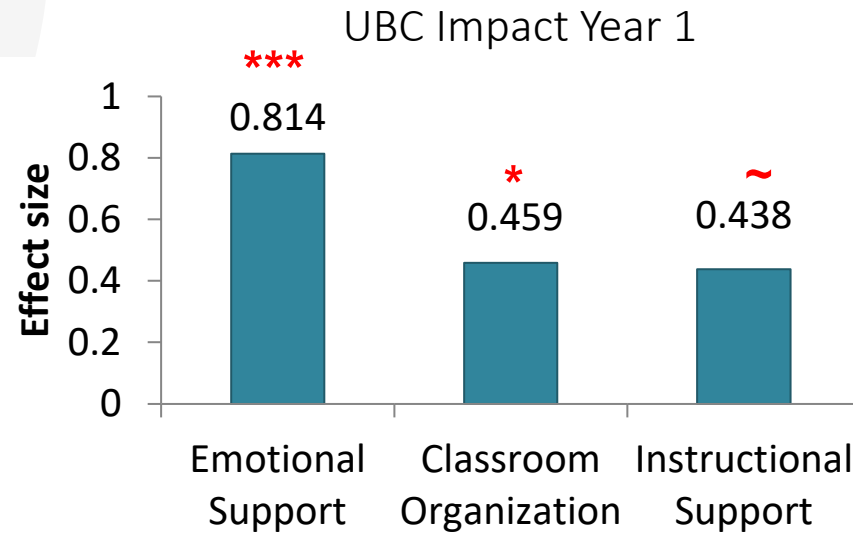
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- Based on best evidence
- Private public collaboration
- Experimental evaluation

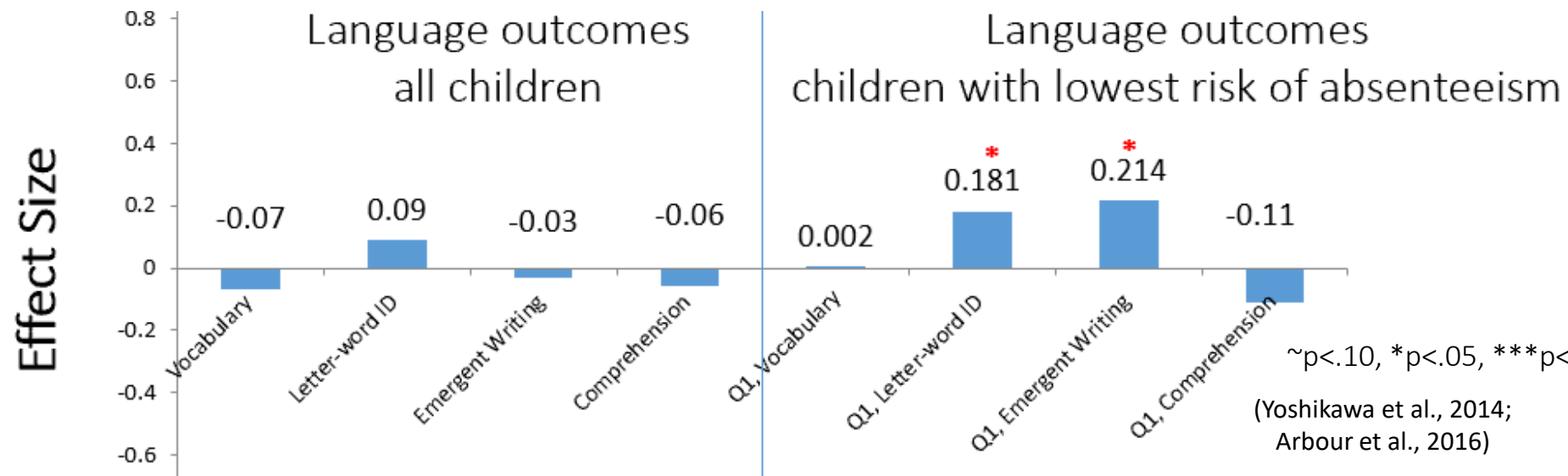
- 6 Municipalities in the Metropolitan Region (Santiago)
- 32 Schools
- 3.200 Children



- UBC had positive impact on classroom quality

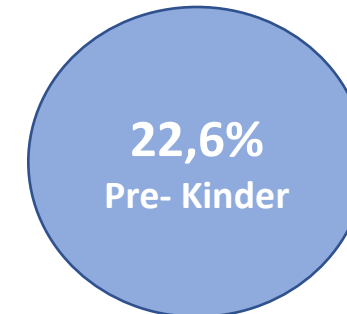
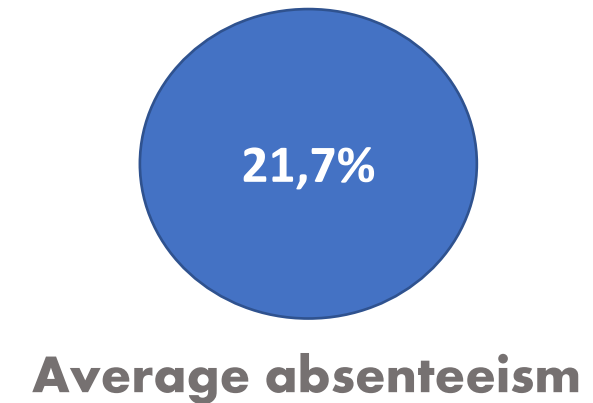


- Effects on child language and literacy skills moderated by absenteeism



- **Learning:** Absenteeism rates among 4- and 5-year-old children attending public preschool

*67% of children have chronic absenteeism*





# UBC: A story of perseverance

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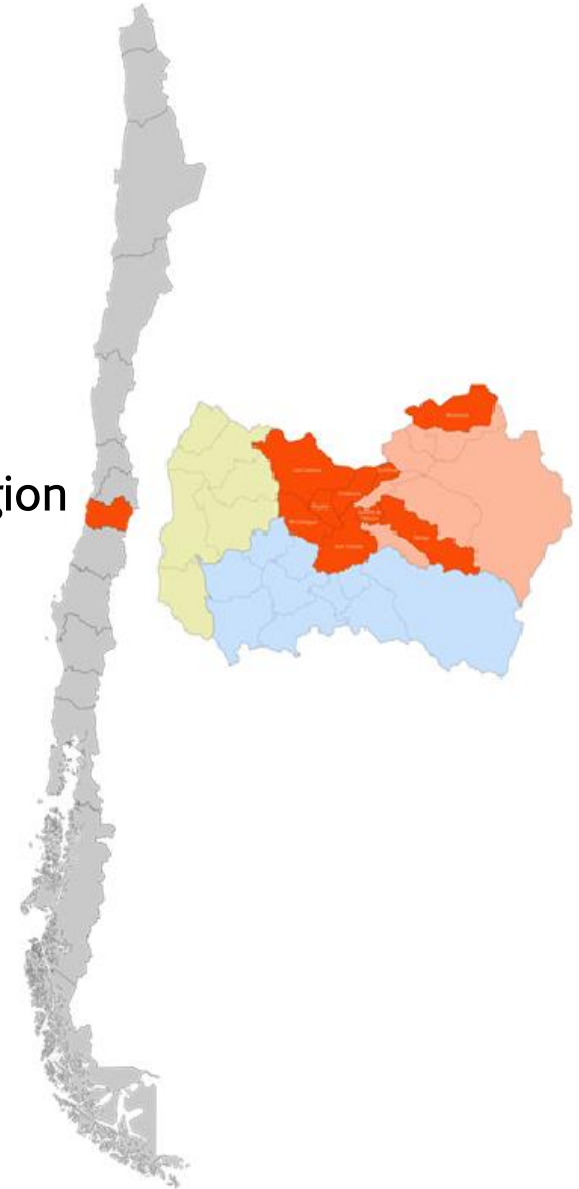
## • 2011 - 2015

### Model consolidation phase

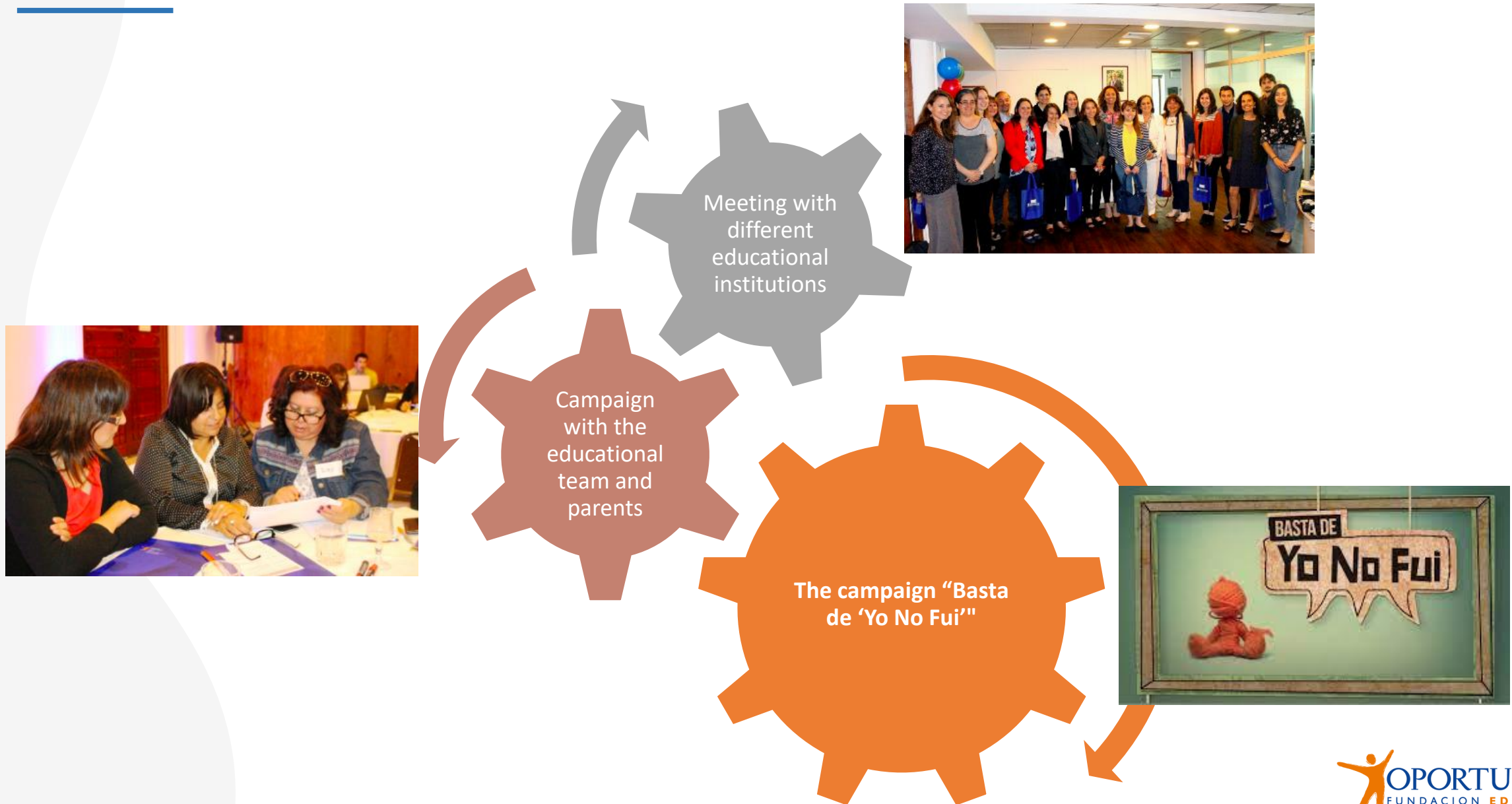
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- Continuous Improvement Model (IHI)
- Voice & participation of teachers and school leaders
- Focus on attendance promotion & absenteeism prevention

- 13 Municipalities in the VI region
- 60 Schools
- 1.636 Children



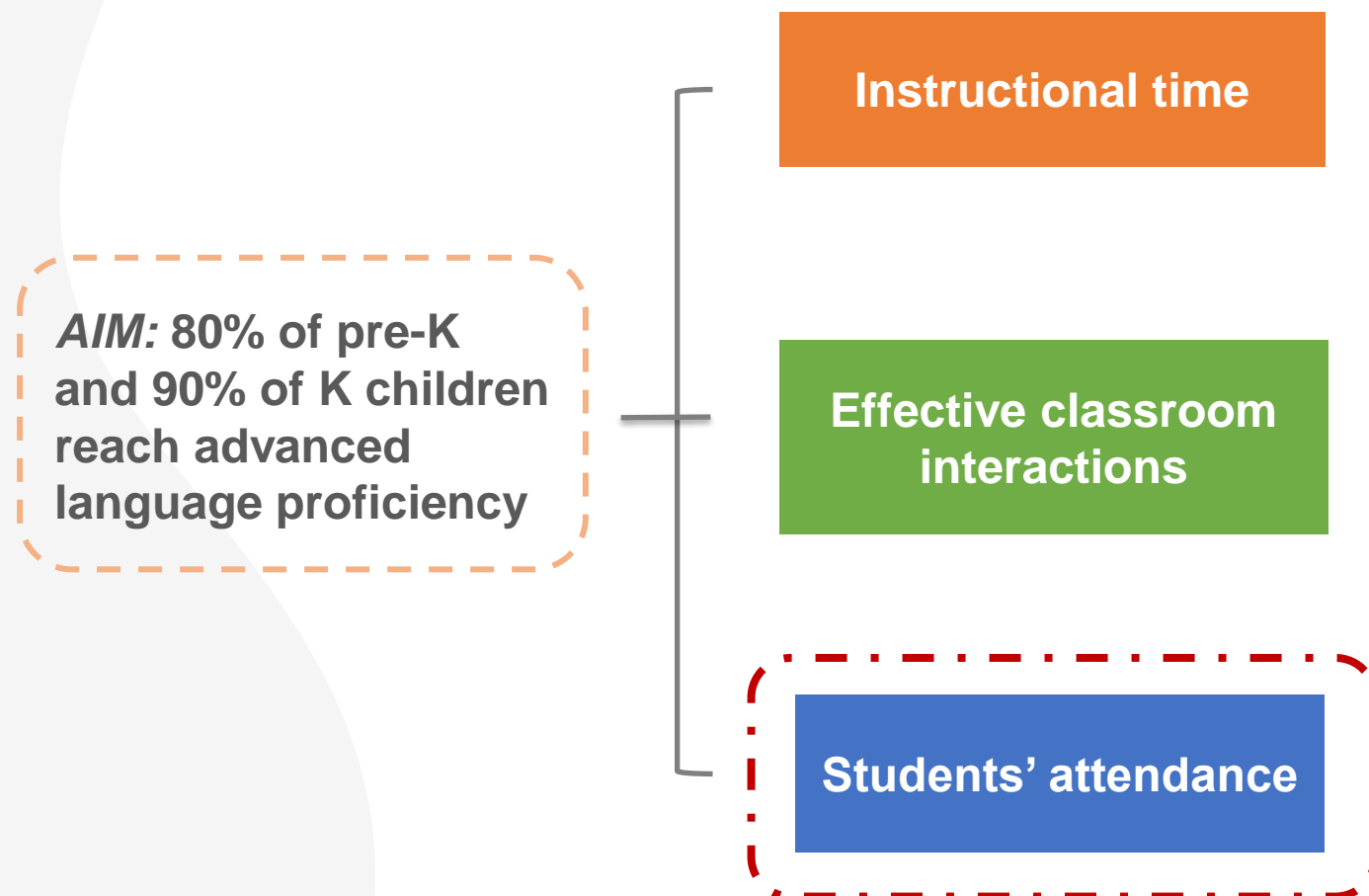
# Cross-Institutional School Attendance Board



# 2012 – onward Adaptive Intervention

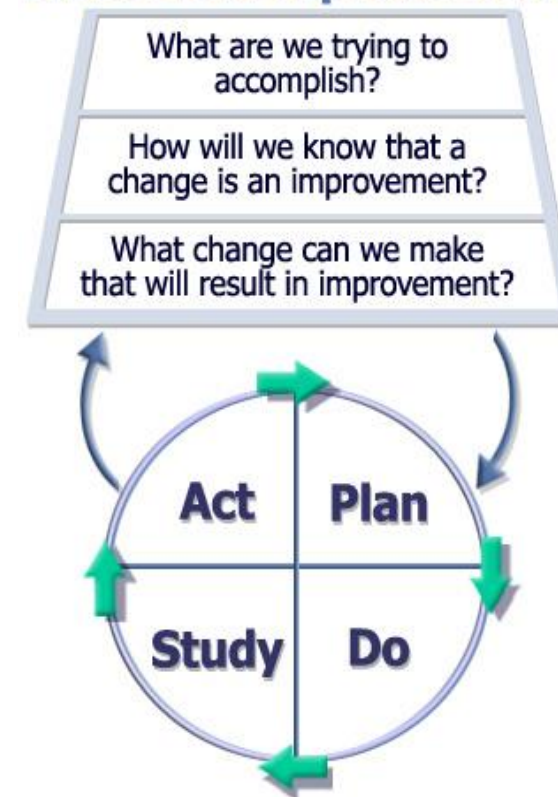
**Implementation content = Driver Diagram  
(Theory of Change)**

*PRIMARY DRIVERS*



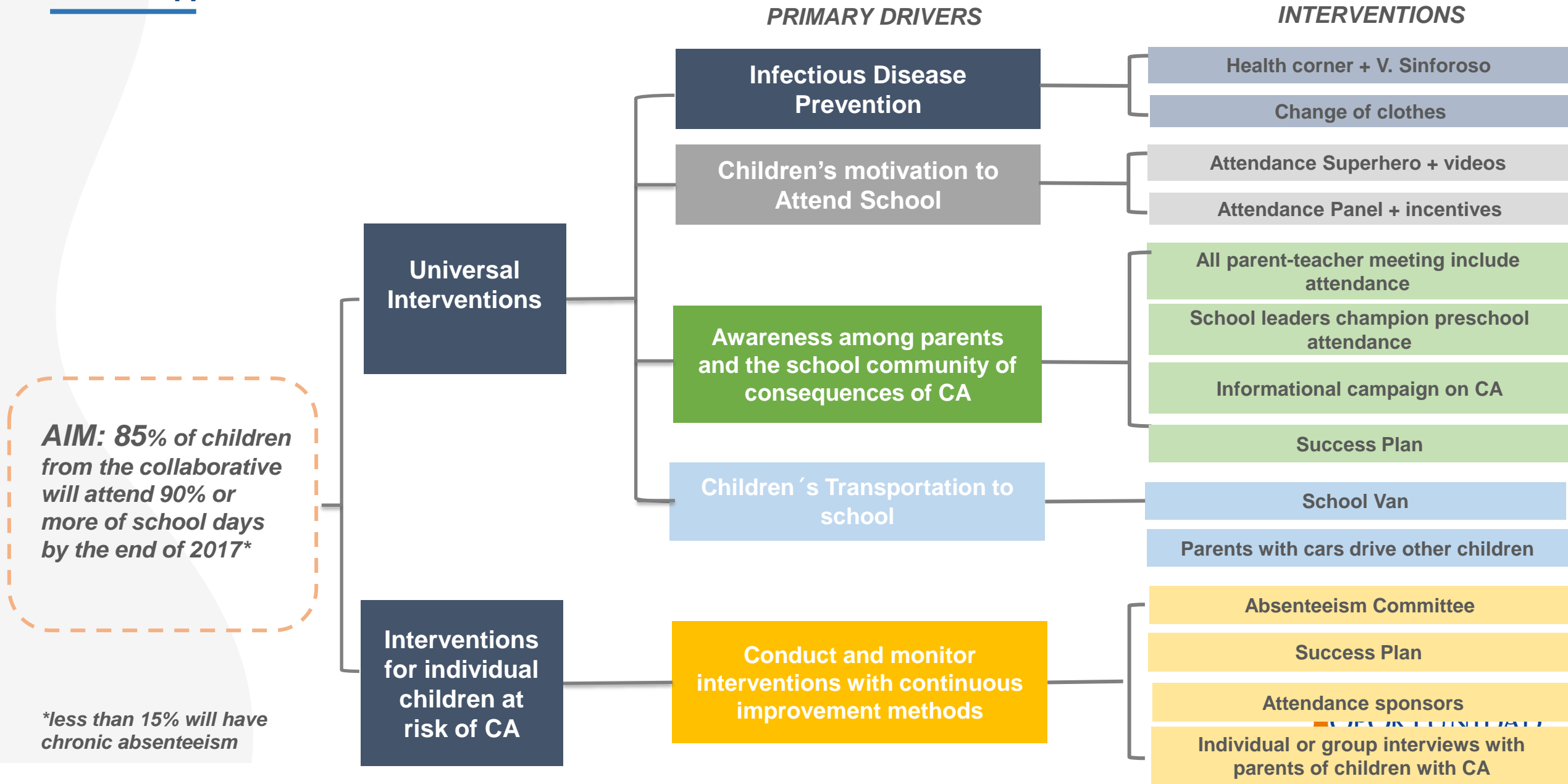
**Strategy = Continuous Quality Improvement**

**Model for Improvement**



# Attendance Driver Diagram: Theory and Interventions

## Multi-tier Approach



# Intervention Strategy: Continuous Improvement Methods to Build Capacity at 3 levels

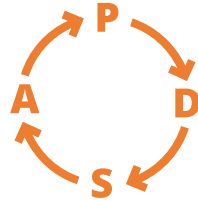
	March	April	May	June	July	August	September	October	November	December
<b>Classroom</b>			*	*		*		*	*	
<b>School</b>			*	*		*		*	*	
<b>Network</b>		*			*					*

## CLASSROOM level strategies



### Teachers:

- Propose ideas
- Test
- Measure
- Evaluate



### Teachers and school leaders:

- **Analyze** data to **make decisions**
- **Adapt** innovations to context

## SCHOOL level strategies



### Teachers and school leaders:

- Conduct school-to-school visits
- Model and observe testing changes in pedagogical practices
- Analyze shared experience based on data analysis

## NETWORK level strategies



### Full teams and sponsors **attend learning sessions**

- Embrace a shared aim
- Analyze progress using common metrics
- Share innovations
- Set new challenges



# School attendance program



## Building capacity at 3 levels

	March	April	May	June	July	August	September	October	November	December
<b>Classroom</b>			*	*	*	*	*	*	*	*
<b>School</b>			*	*	*	*	*	*	*	*
<b>Network</b>		*			*					*

### CLASSROOM level strategies



#### Teachers:

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## Plan de Escuela

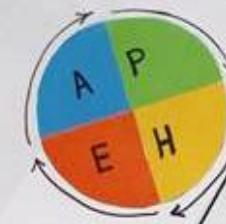
Incorporar el saludo en la rutina diaria de los alumnos.  
Mejorar la comprensión auditiva a través de historias y canciones.

## Descripción de Pruebas de cambio trabajadas

**Equipo directivo:** La prueba de cambio consistió en incorporar el inglés como elemento fundamental de la rutina de los alumnos.  
**Docente:** La prueba consistió en que a partir de historias los alumnos practicarán y mejorarán sus habilidades de comprensión auditiva.

### Equipo de Escuela

Directora:  
Luz Villalón  
Jefe de UTP:  
Verónica Gallardo  
Docente:  
Claudia González



### Planear

Se incorporará el saludo en inglés. Se realizará el profesor encargado.

### Estudiar

No fue bien, ya que 100% de los alumnos responde al saludo inicial en inglés en las canciones que no son de inglés o el taller de inglés.

### Planear

Todos los docentes incorporarán a su rutina diaria el saludo y despedida en inglés.

### Estudiar

No fue bien, ya que paulatinamente los docentes de la comunidad han empezado a saludar y despedir en inglés 60% de los alumnos responde al saludo y despedida.

### Planear

Se incorporaron lecturas en donde los alumnos debían contestar 3 preguntas de comprensión. Esta fue realizada por docente de inglés.

### Estudiar

Los alumnos respondieron a las preguntas de manera incorrecta debido a los primeros alumnos a partir de los primeros 3 los alumnos comienzan a contestar 2 de 3 preguntas.

### Planear

Se diseñaron 3 preguntas de comprensión auditiva, seleccionando algún orden de lista. Para determinar el nivel de respuesta de los alumnos se usó una planilla de nivel con puntaje, para el nivel de base.

### Planear

Se diseñaron 3 preguntas de comprensión auditiva, seleccionando algún orden de lista. Para determinar el nivel de respuesta de los alumnos se usó una planilla de nivel con puntaje, para el nivel de base.

## CICLO PHEA

### Equipo Directivo

#### Hacer

Se realizó lo planificado.

#### Ajustar

Se mantendrá el saludo y se incluirá a todos los docentes de la comunidad. Se incorporará la despedida.

#### Hacer

Se realizó lo planificado con un break de ambiente un día.

#### Ajustar

Se va a mantener el saludo y despedida en inglés. El equipo de profesores seguirá realizando la rutina.

## CICLO PHEA

### Equipo Sala

#### Hacer

Se realizó lo planificado.

#### Ajustar

Se decide desde mantener el ciclo, pero se modifica la selección de alumnos a partir de los alumnos que respondieron a los 3 preguntas.

#### Hacer

Se realizó lo planificado de manera silenciosa.

#### Ajustar



2014-2015: All schools in VI Region offered the choice of receiving UBC professional development

- 27 schools did not participate in UBC (27 Comparison Schools),
- 14 schools participated in UBC in 2014-2015, but did not choose attendance as their priority intervention area
- 5 Schools participated in UBC in 2014-2015 and chose attendance as their priority intervention area

2018: Ministry of Education made available databases with daily, individual student-level attendance 2011-2017

# Data: Publicly Available, Individual-level daily attendance

## Chilean education system

- Laws and legislations that consider attendance



1998 law-ranking decree N2

- *Subsidy to schools*



Norm of evaluation and promotion

- *Promotion from one grade to another*



Law on educational quality assurance

- *Assess the quality of the school*

# Chilean school attendance data

- Attendance process

## 1.- Class roll

DOCENTE		Mes				Parámetros de calificación																Justificado	Injustificado	Atraso	TOTAL								
		Enero				(J) Justificado								(I) Injustificado				(A) Atraso															
CURSO		PARALELO		Año Lectivo: 2018																(A) Dias ausentes													
Nº	NOMBRE		L	M	M	J	J	S	D	L	M	M	J	J	S	D	L	M	M	J	J	S	D	L	M	M	J	J	S	D			
1			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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Research Question 1: What were the rates of absences and chronic absenteeism in preschools in the VI region of Chile between 2011 and 2017?

Research Question 2: . Is there a difference in the evolution of absences and chronic absenteeism between three groups of schools?

# Analytic Approach

2014-2015: All schools in VI Region offered the choice of receiving UBC professional development

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Research Question 1: What were the rates of absences and chronic absenteeism in preschools in the VI region of Chile between 2011 and 2017?

Research Question 2: . Is there a difference in the evolution of absences and chronic absenteeism between three groups of schools?

2.1 Statistical Process Control charts: central line (mean), regression-based control limits (=3 SD)

identify changes in the data that have a less than 5% probability of occurring by chance alone

examine associations between changes in data with timing of UBC attendance strategies

2.2 Interrupted Time Series Analysis: compare pre- and post-intervention intercepts (Level) & slopes (trends)

We estimated an ordinary least squares regression model:

$$Y (\text{percent absent}) = \text{beta} + B_1\text{time} + B_2\text{interventionperiod} + B_3\text{time}*\text{period}$$

ITSA can estimate effects of multiple treatment periods. We compared

Pre-UBC (2011-2012) to Year 1 UBC intervention data (March-Nov 2014) and post-Year2 (2015-2017)

# Results: Analytic Sample

2011–2017	UBC schools that prioritized attendance	UBC schools that did not prioritize attendance	Comparison schools	Total	<i>p</i> -Value <sup>d</sup>
N schools	5	14	27	46	
N rural schools	5	14	20	39	
N municipal schools	5	13	27	37	
N voucher schools	0	1	0	10	
N classrooms	6	19	42	67	
Average N preschool children <sup>a</sup> , total (range)	104 (83–126)	300 (274–317)	814 (742–865)	1,218 (1,099–1,308)	
Average N children per preschool classroom (range)	18 (5–39)	16 (4–45)	19 (1–44)	18 (1–45)	0.01
Average N matriculated children per school (range)	156 (77–254)	159 (72–363)	195 (16–825)	180 (16–825)	0.64
Average N students living in poverty <sup>b</sup> (range)	112 (44–166)	123 (59–252)	147 (11–565)	120 (11–565)	0.62
Average % students living in poverty <sup>b</sup> (range)	71.4 (57.1–80.6)	78.4 (64.0–92.2)	75.1 (58.1–86.1)	75.7 (57.1–92.2)	0.22
Average N students living in extreme poverty <sup>c</sup> (range)	65 (25–79)	80 (36–127)	94 (4–369)	87 (4–369)	0.57
Average % students living in extreme poverty <sup>c</sup> (range)	42.4 (29.9–52.3)	52.3 (34.8–72.9)	46.9 (24.1–65.0)	48.1 (24.1–72.9)	0.19



# Results: Implementation of Attendance Strategies

**Table 1.** UBC Schools that prioritized attendance and the strategies they tested each month.

UBC Schools that prioritized attendance	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sept 2014	Oct 2014	Nov 2014	Dec 2014	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sept 2015	Oct 2015	Nov 2015	Dec 2015
Escuela Básica José Bernales Castillo 5A																				
Escuela Osvaldo Correa Fuenzalida 5A																				
Escuela Básica Pataguas Cerro 5A																				
Escuela Reino de Dinamarca 5ª																				
Centro Educativo Siglo XXI 5A																				

Key to Table 1.

Color	Strategy
	Attendance panel
	Inclusion of the attendance issue in all parent-teacher meetings
	Absenteeism Committee
	Incentives for children
	Incentives for families
	Success Plan
	Health Corner

# Attendance program results: Research Question 1

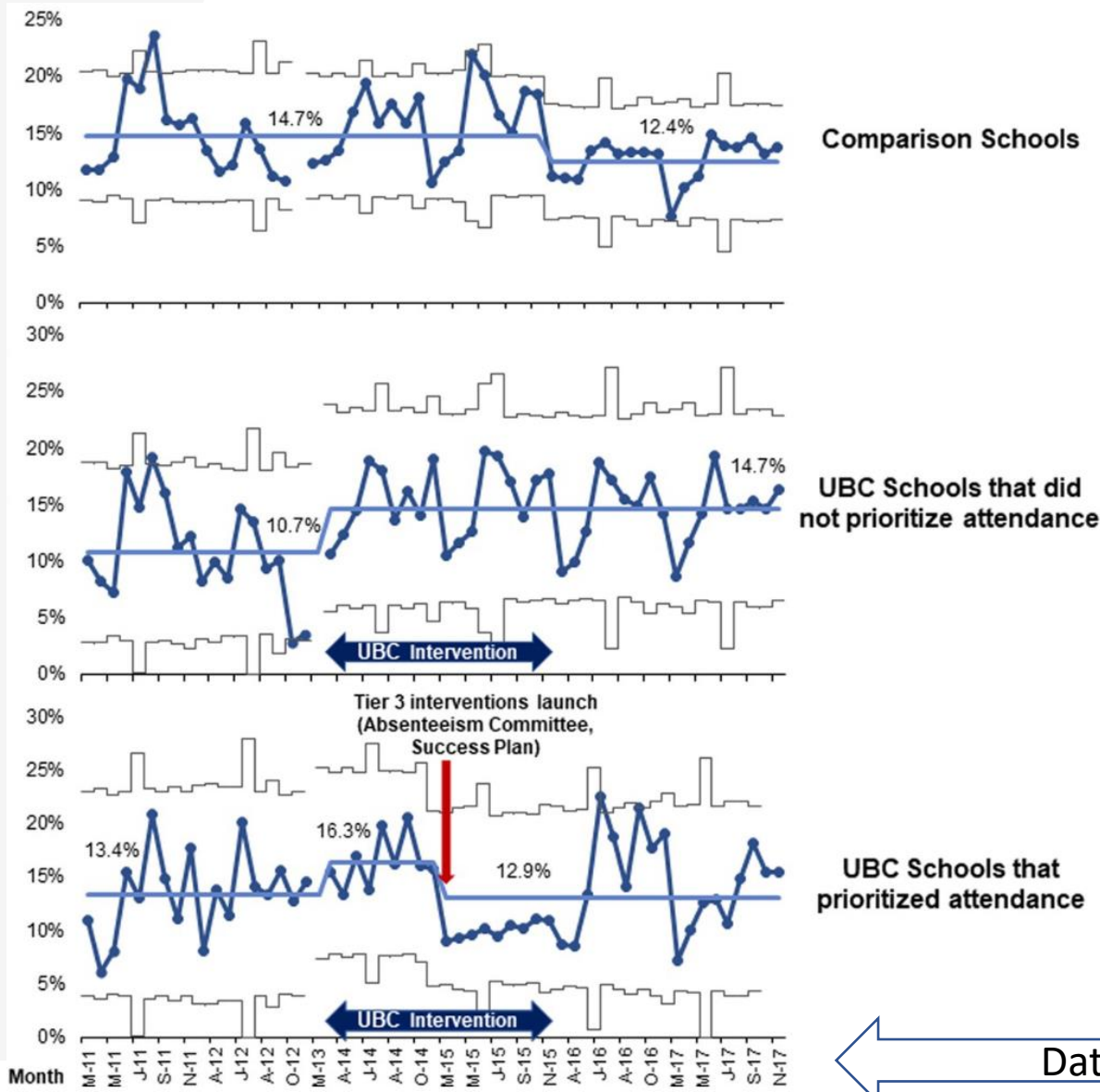
- What were the rates of absences and chronic absenteeism in preschools in the VI region between 2011 and 2017?

Average, 2011–2017	Total	Comparison schools	UBC schools that did not prioritize attendance	UBC schools that prioritized attendance
Percent of days absent per child	14.2 (10.4–17.3)	14.4 (12.1–16.3)	14.0 (10.8–15.3)	14.2 (10.4–17.3)
Percent of children with chronic absenteeism	52.1 (33.5–68.9)	50.9 (33.5–68.9)	51.2 (40.3–57.1)	54.2 (35.3–62.0)

# Attendance program results

- RQ2 Is there a difference in evolution of absenteeism?

## Average percent days absent per child per month

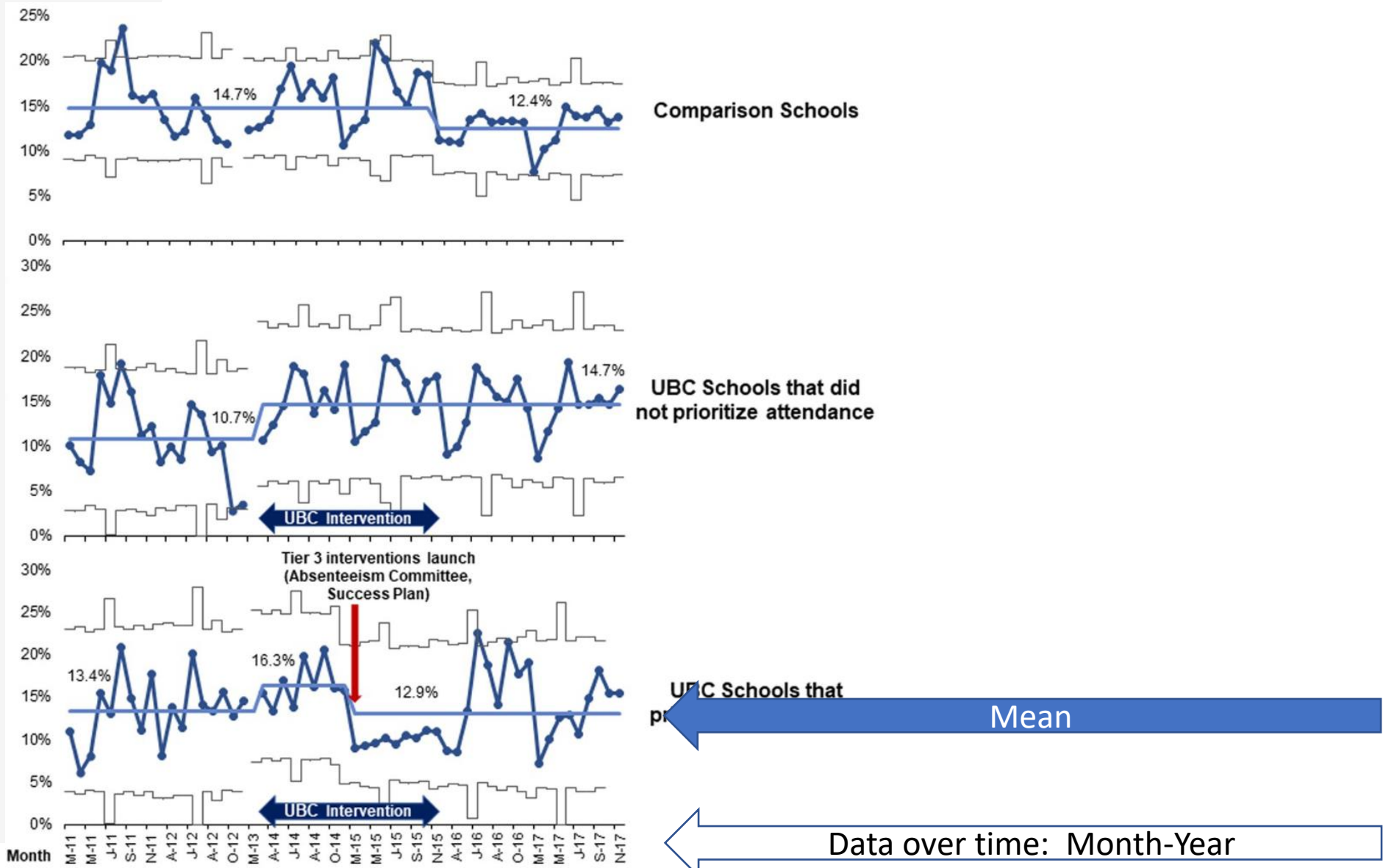


Data over time: Month-Year

# Attendance program results

• RQ2 Is there a difference in evolution of absenteeism?

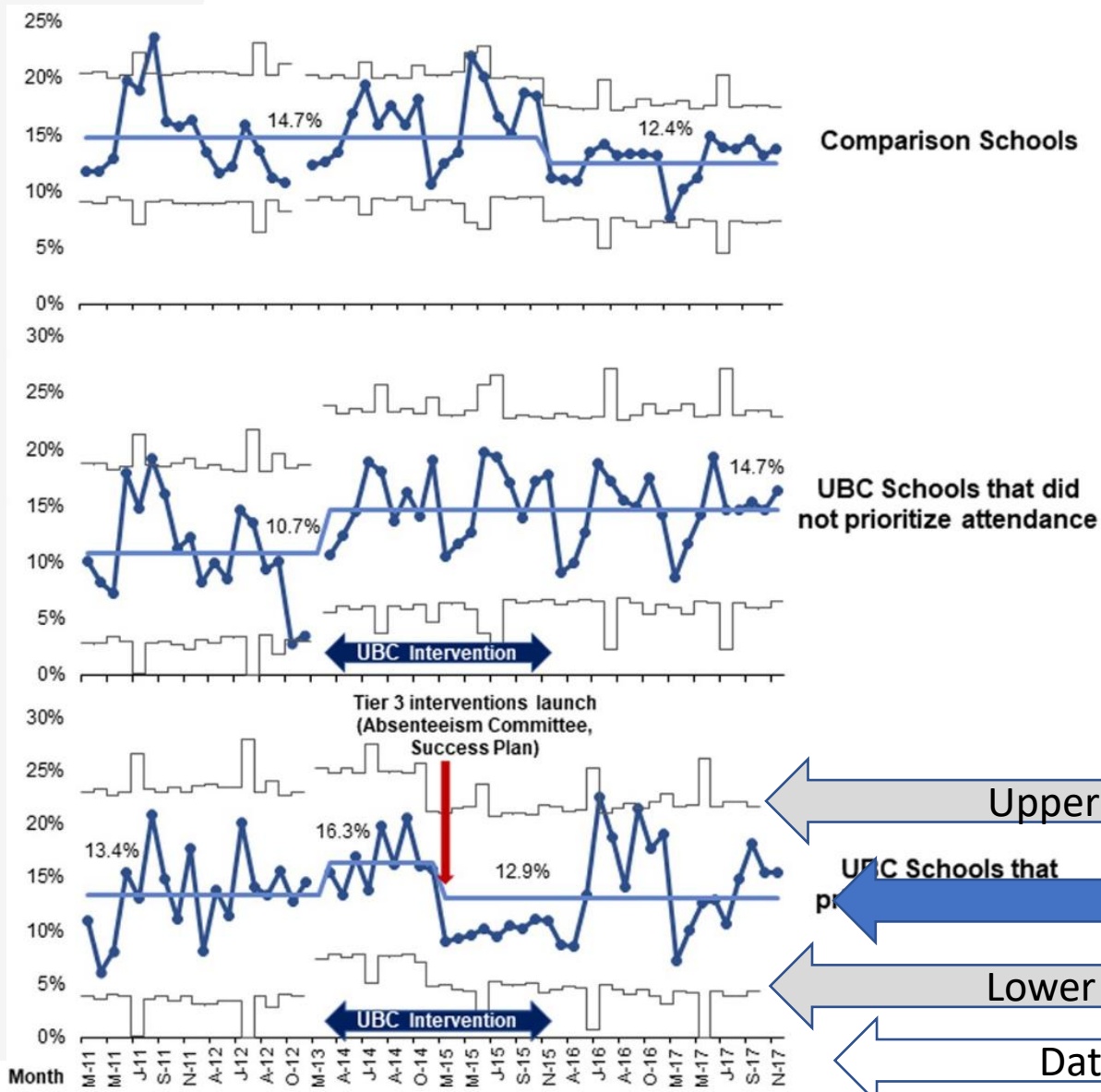
## Average percent days absent per child per month



# Attendance program results

- RQ2 Is there a difference in evolution of absenteeism?

## Average percent days absent per child per month



Rules for identifying changes on SPC charts:

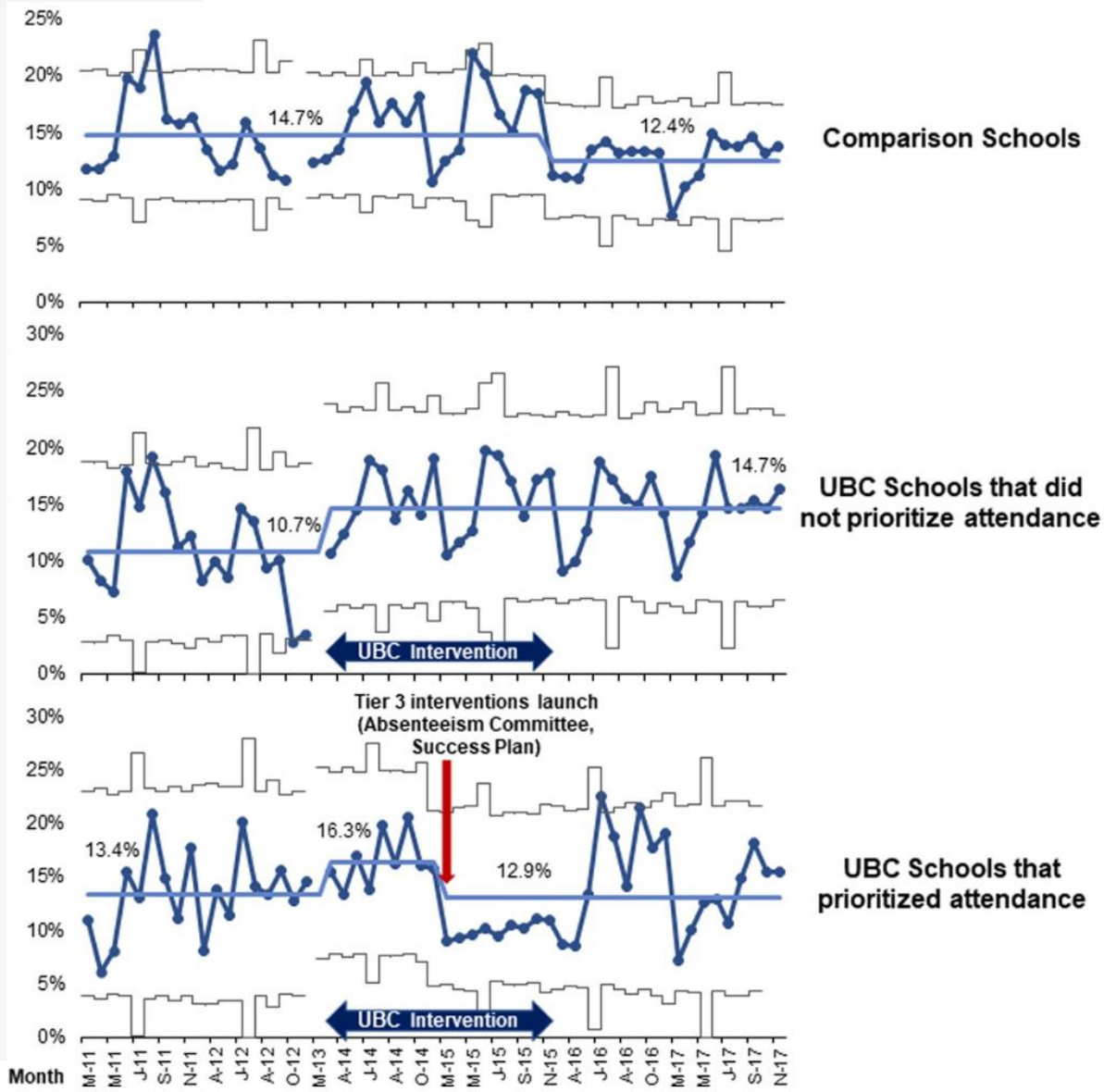
- eight or more points in a row above or below the mean (“shift”),
- five consecutive points increasing or decreasing (“trend”),
- one or more point outside the CL, and
- two of three points outside 2SDs



# Attendance program results

- RQ2 Is there a difference in evolution of absenteeism?

## Average percent days absent per child per month

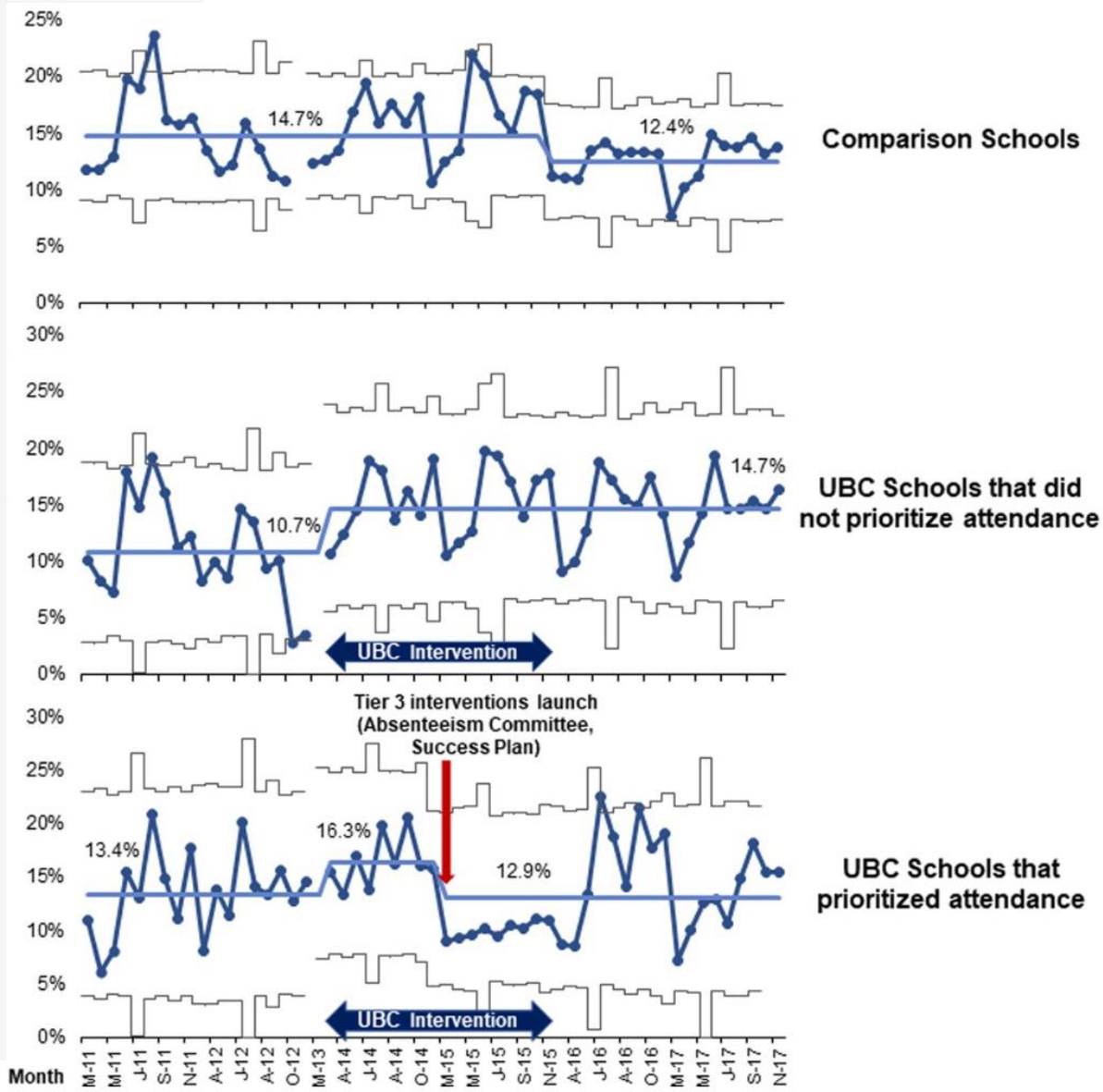




# Attendance program results

- RQ2 Is there a difference in evolution of absenteeism?

## Average percent days absent per child per month



2<sup>nd</sup> year reduction in absences coincide with:

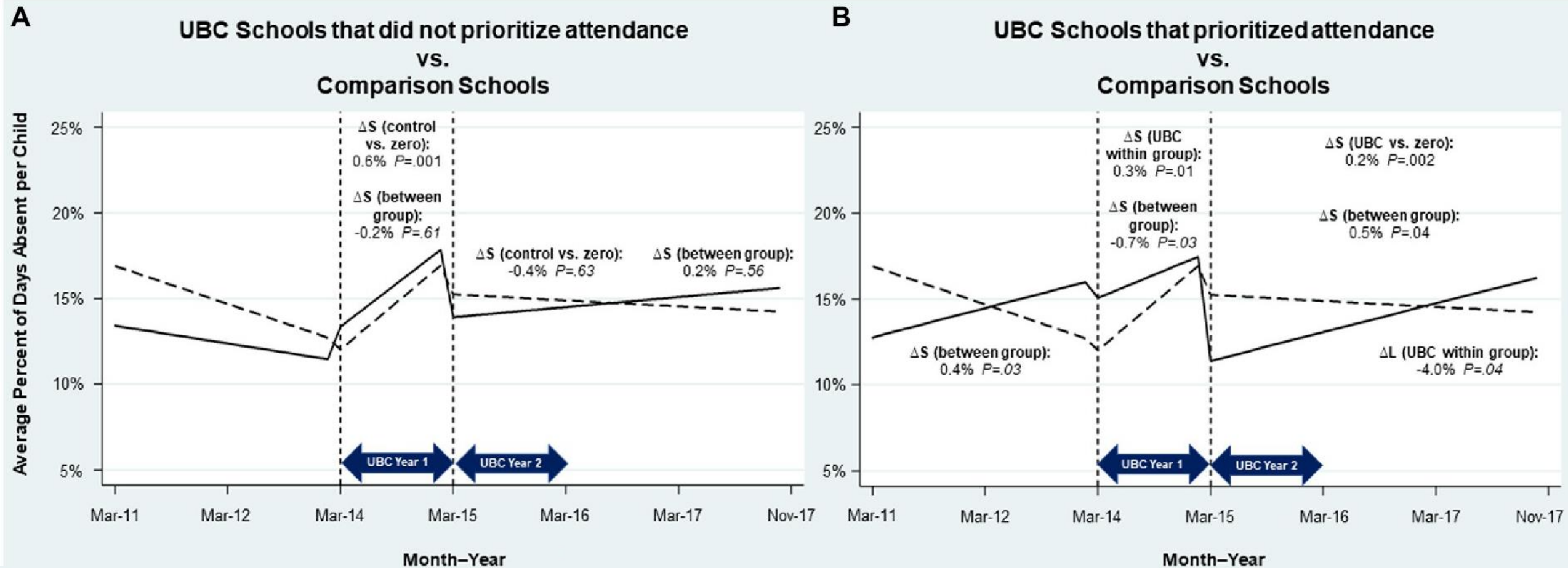
- an increase in the number of times strategies were applied
- Diversification of types of strategies applied and types of attendance strategies that were applied

2014: mostly general strategies for raising awareness

2015: Attendance Committee, a school-level, multidisciplinary team, aimed to accompany children at risk of chronic absenteeism in a personalized way.

# Attendance program results

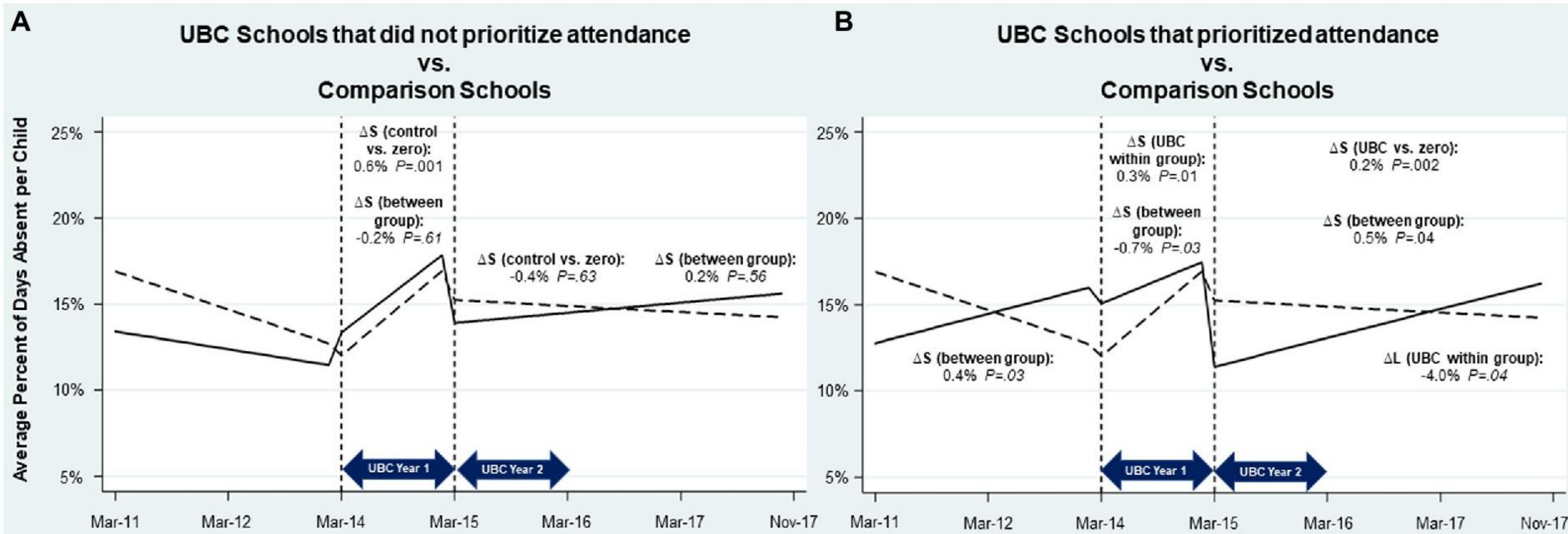
• RQ2 Is there a difference in evolution of absenteeism?



Arbour, M., Soto, C., Alée, Y., Atwood, S., Muñoz, P., Marzolo, M. Absenteeism prevention in preschools in Chile: Impact from a quasi-experimental evaluation of 2011–2017 Ministry of Education data. *Frontiers in Education*. 2022. 7:975092. doi: 10.3389/feduc.2022.975092

# Attendance program results

• RQ2 Is there a difference in evolution of absenteeism?



Comparison Schools and UBC Schools that did not prioritize attendance had similar and stable absence rates before 2014 and again 2015-2017.

In 2014, absence rates rose for both groups by approximately 0.6 percentage points each month ( $P < .001$  for both).

In UBC Schools that prioritized attendance before 2014, absence rates were similar in level to the other two groups, but they were rising.

In 2014, absence rates rose less quickly in UBC schools that prioritized attendance than the other schools

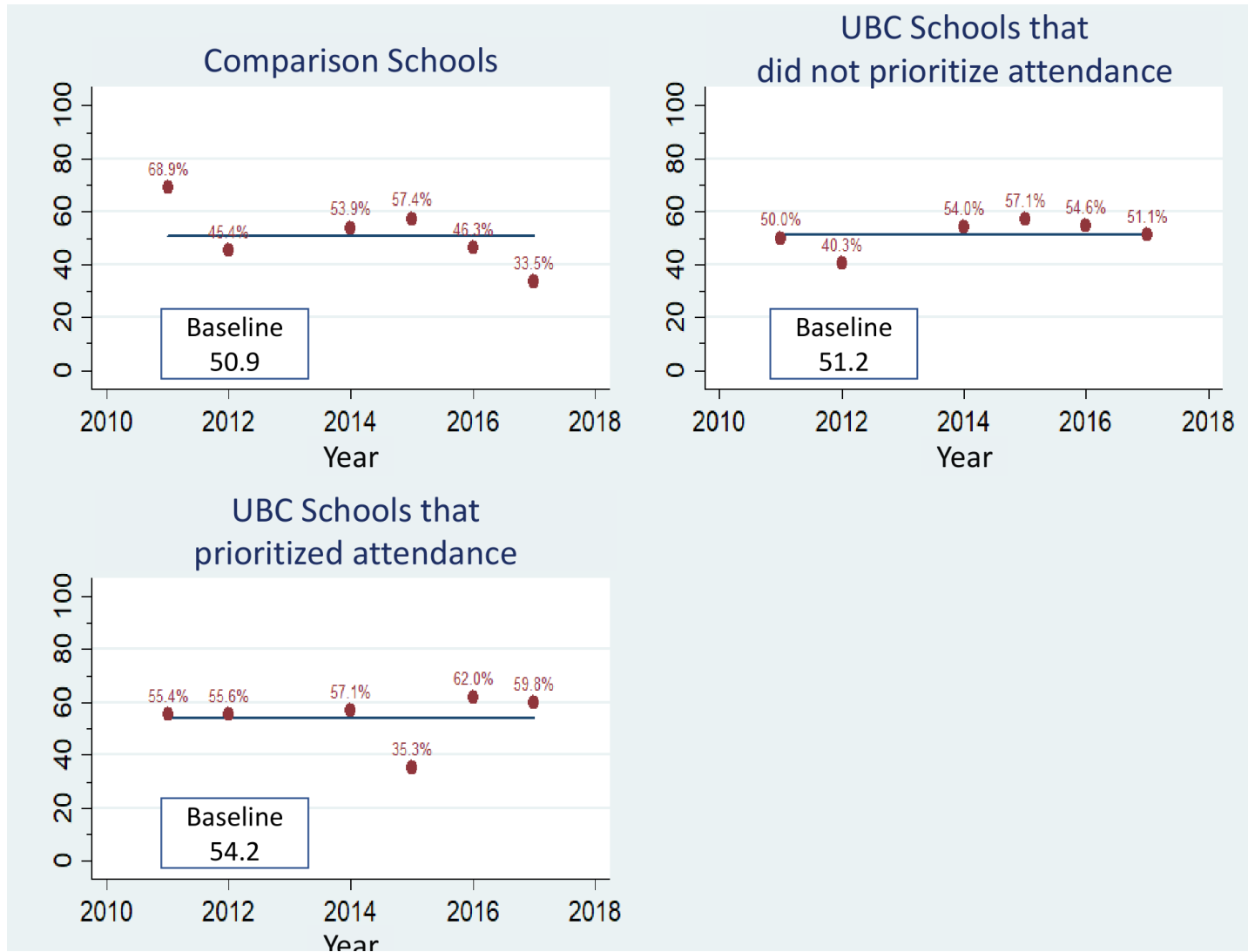
In 2015, absence dropped by 4 percentage points, then rising

# Attendance program results

- RQ2 Is there a difference in evolution of absenteeism?

## Percent of children with chronic absenteeism per year

2011-2017



# Conclusions and Implications

First study to analyze the effects of innovations to promote attendance and reduce chronic absenteeism using national Ministry of Education data of 7,310 children enrolled in public preschool in Region VI over seven years (63,689 child-months of data).

## Replicated Findings:

1. Absenteeism rates among preschool-aged children are high (14%) -- higher than the threshold that
  1. affects skill development in the medium term (Chang and Romero, 2008) and
  2. can reduce or eliminate the impact of high-quality early childhood education (Arbour et al, 2016).
2. more than half of the children enrolled in prekindergarten and kindergarten are absent for more than 10% of school days

## New findings

3. It is possible to reduce absenteeism

These reductions in absenteeism were of large magnitude, as compared to other studies in the literature.
4. Improving attendance and reducing absenteeism requires a tiered approach
  - universal strategies to promote regular attendance by all children and,
  - rigorous and systematic application of strategies that address the specific causes of absences of individual children at risk of chronic absenteeism.
5. Obtaining and sustaining improvements in attendance can be supported using networked peer learning and continuous improvement methodology (i.e., Breakthrough Series Collaborative).



# Questions?



For more...Attend Friday's presentation:

Data + community-based teamwork=

**Effective interventions to promote school attendance and reduce chronic absenteeism in Chile**

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