

Effectiveness of the Safe Routes to School



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CENTRO DE INVESTIGACIÓN
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Safe Route To School in Barcelona (SRTS)

SRTS in Barcelona since early 2000

The program promotes road safety education and active travel to schools through:

- an educational program conducted within the school and the community,
- and changes in the environment around the school





Background

OPINIONS, IDEAS, & PRACTICE 

Effectiveness of a Road Traffic Injury Prevention Intervention in Reducing Pedestrian Injuries, Barcelona, Spain, 2002–2019

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This study aimed to evaluate the effectiveness of the Safe Routes to School (SRTS) intervention in Barcelona, Spain, at reducing the number of road traffic collisions and injuries in the school environment. It was a pre–post, quasi-experimental evaluation with a matched comparison group. Road traffic injuries were significantly reduced in the intervention schools—especially among school-age pedestrians—but not in the comparison schools. The SRTS program significantly improved road safety among children. (*Am J Public Health*. 2023;113(5):495–499. <https://doi.org/10.2105/AJPH.2022.307216>)

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2023

- Many cities have promoted Safe Routes to School (SRTS) programs to make it easier for children to walk or cycle to school safely.
- Most studies have found that implementation of these programs increases active travel to school and decreases road traffic injuries, although there is controversy because of methodological limitations.

K.Pérez, E. Santamariña-Rubio, J.Ferrando, M.J. López, L.Badiella. Effectiveness of a Road Traffic Injury Prevention Intervention in Reducing Pedestrian Injuries, Barcelona, Spain, 2002–2019. *American Journal of Public Health* 2023; 113, 495_499.

Objective



- To evaluate the effectiveness of the SRTS program carried out in Barcelona between 2006 and 2016 in reducing the number of road traffic collisions and injuries in the school environment.

Methods

Design:

A pre-post quasi-experimental evaluation design, with a matched comparison group, including 64 intervention schools.

Inclusion and exclusion criteria:

- Traffic collisions with casualties occurring in the study area (buffer with a 200-m radius around the schools) during school times.
- Collisions occurring during Christmas and Easter holiday periods were excluded.

Outcomes included:

Collisions, People injured, within a radius of about 200 meters around schools during school hours, (2002-2019)

Sources of information:

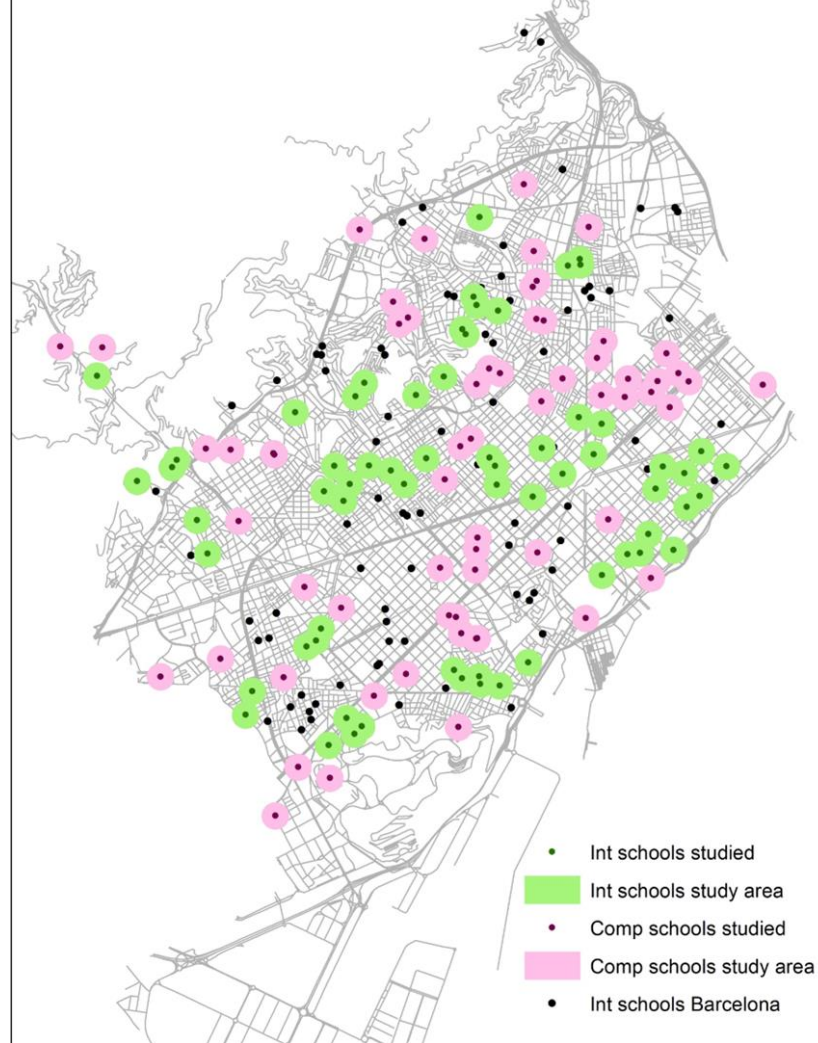
Local police register, and contextual variables.

Analysis:

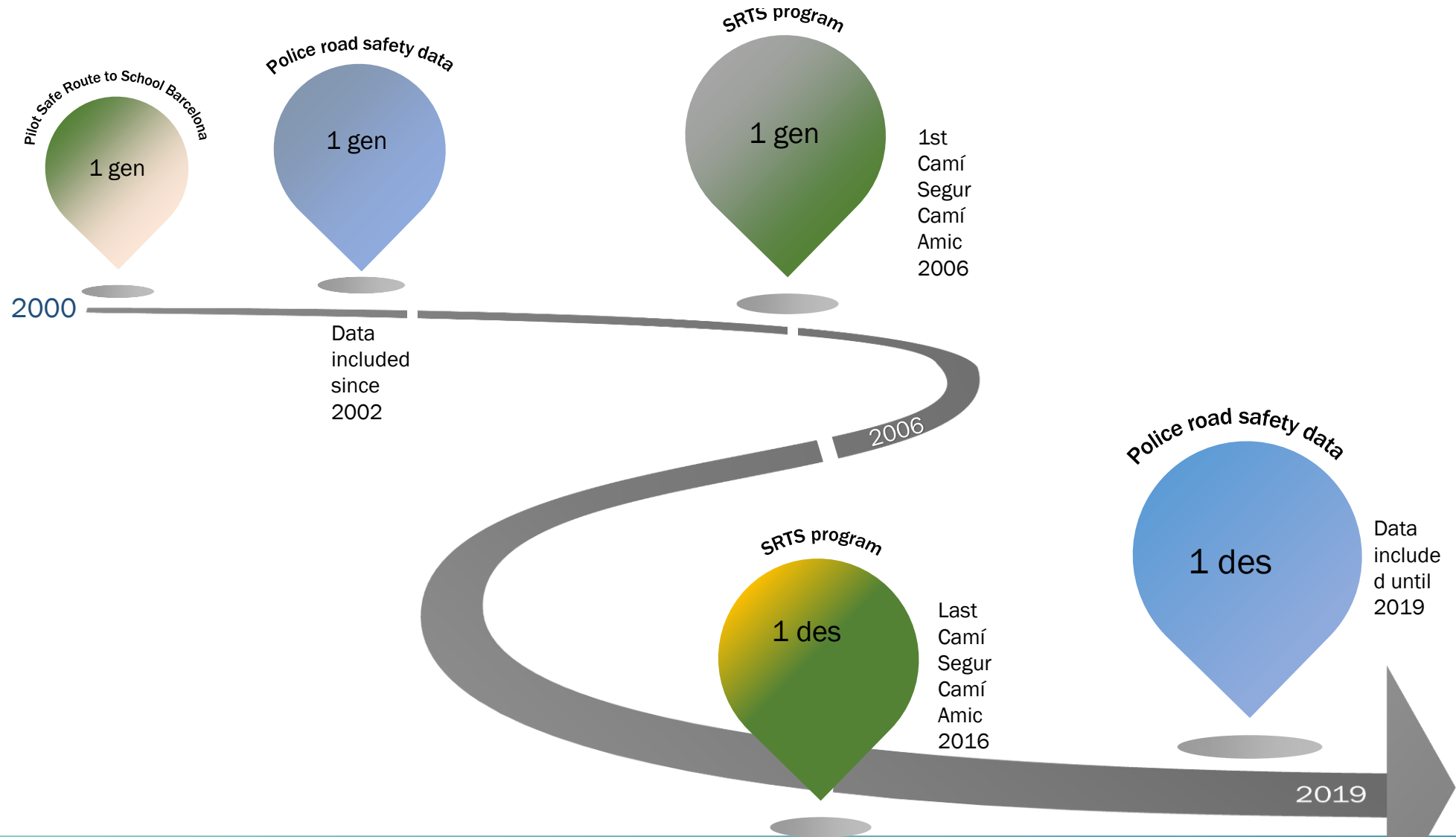
Generalized linear mixed model with Poisson distribution.

Intervention and comparison schools

Intervention schools (SRTS program implemented) and comparison schools, with their study area (200m radius area), Barcelona 2002-2019



Intervention and data timeline



Results

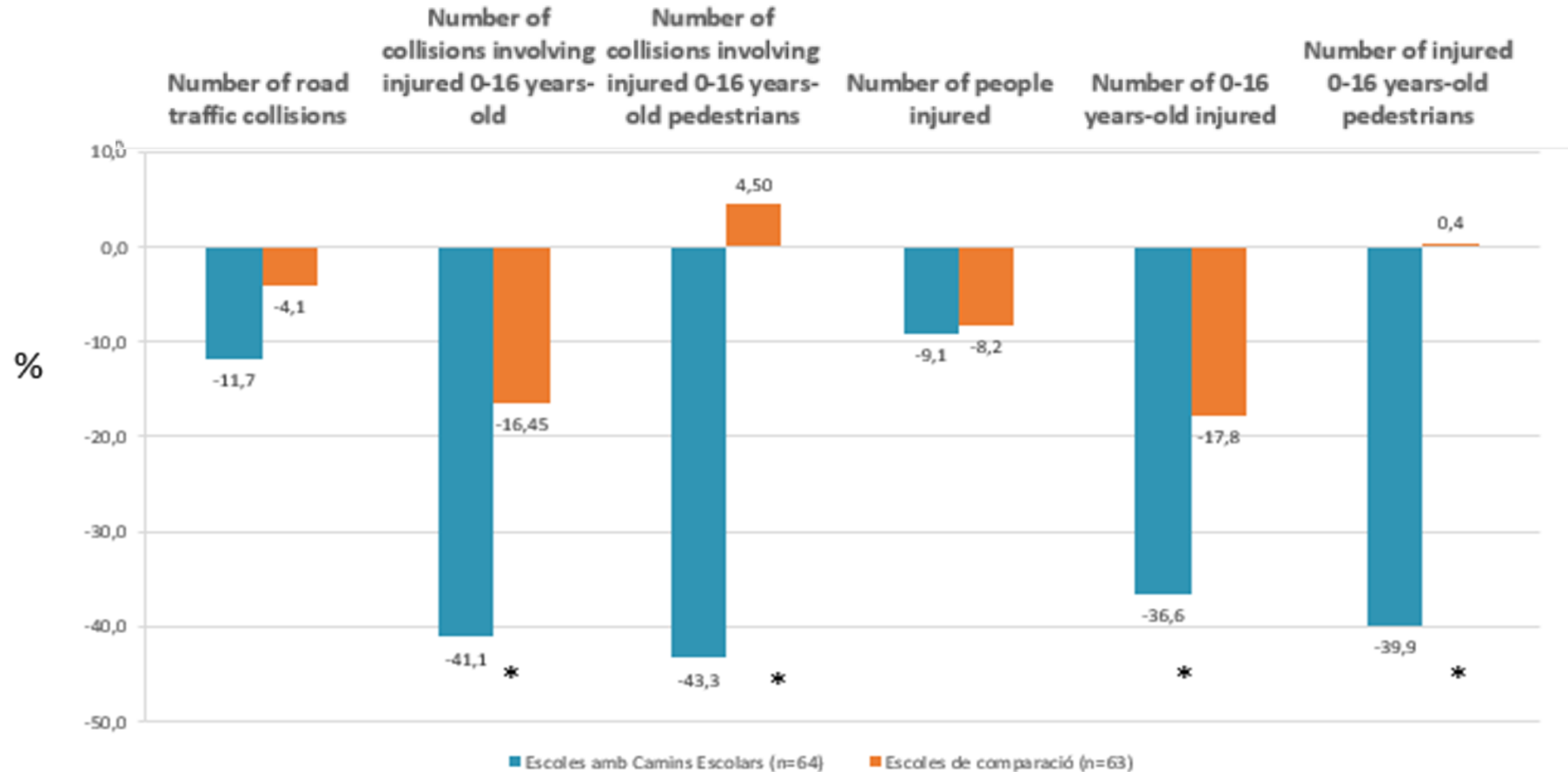
TABLE 1— Injury Traffic Collisions and People Injured in Areas Surrounding Schools With an SRTS Program (200-Meter Buffer) and in Areas Surrounding Comparison Schools, by Intervention Period: Barcelona, 2002–2019

	Intervention Schools (n = 64)				Comparison Group Schools (n = 63)				Per School P ^a (Intervention/ Comparison)
	All Schools Total	All Schools Annual Mean (95% CI)	Per School Range	Per School Annual Mean (95% CI)	All Schools Total	All Schools Annual Mean (95% CI)	Per School Range	Per School Annual Mean (95% CI)	
No. of road traffic collisions with injuries									
Preintervention	2994	272.2 (180.3, 364.1)	0–28	6.0 (5.6, 6.5)	4061	369.2 (249.1, 489.2)	0–37	8.2 (7.5, 8.9)	.001
Postintervention	2284	228.4 (119.9, 336.9)	0–28	5.7 (5.2, 6.2)	3196	319.6 (168.8, 470.4)	0–50	8.2 (7.3, 9.0)	.002
No. of collisions involving any injured person aged 0–16 y									
Preintervention	240	21.8 (13.2, 30.5)	0–4	0.5 (0.4, 0.5)	262	23.8 (14.5, 33.1)	0–4	0.6 (0.5, 0.6)	.033
Postintervention	120	12 (6.6, 17.4)	0–4	0.3 (0.2, 0.4)	169	16.9 (8.9, 24.9)	0–6	0.4 (0.4, 0.5)	.022
No. of collisions involving any injured pedestrians aged 0–16 y									
Preintervention	135	12.3 (6.8, 17.7)	0–3	0.3 (0.2, 0.3)	124	11.3 (6.7, 15.8)	0–3	0.3 (0.2, 0.3)	.76
Postintervention	66	6.6 (2.8, 10.4)	0–3	0.2 (0.1, 0.2)	97	9.7 (4.7, 14.7)	0–4	0.2 (0.2, 0.3)	.053
No. of people injured									
Preintervention	3478	316.2 (207.2, 425.2)	0–34	7 (6.4, 7.6)	4774	434 (292.4, 575.6)	0–47	9.6 (8.8, 10.5)	.001
Postintervention	2715	271.5 (141.7, 401.3)	0–33	6.8 (6.2, 7.4)	3720	372 (199.8, 544.2)	0–58	9.5 (8.5, 10.5)	.005
No. of injured persons aged 0–16 y									
Preintervention	251	22.8 (13.6, 32.1)	0–4	0.5 (0.4, 0.6)	288	26.2 (15.5, 36.8)	0–6	0.6 (0.5, 0.7)	.02
Postintervention	131	13.1 (7.1, 19.1)	0–4	0.3 (0.3, 0.4)	177	17.7 (9.2, 26.2)	0–6	0.5 (0.4, 0.5)	.024
No. of injured pedestrians aged 0–16 y									
Preintervention	136	12.4 (6.8, 17.9)	0–3	0.3 (0.2, 0.3)	131	11.9 (7.0, 16.8)	0–4	0.3 (0.2, 0.3)	.74
Postintervention	70	7 (3.0, 11.0)	0–3	0.2 (0.1, 0.2)	98	9.8 (4.7, 14.9)	0–4	0.3 (0.2, 0.3)	.06

Note. SRTS = Safe Routes to School.

^aSignificance of the nonparametric Wilcoxon rank-sum test (Mann-Whitney).

Percentage of change pre-post intervention



* $p < 0.001$ Significance of the interaction between period and type of school (intervention, comparison), allows to assess whether the differences between intervention and comparison schools can be attributed to the intervention. It shows whether the difference pre-post in the intervention group is significantly different from the difference pre-post in the comparison group.

It is estimated that the intervention of safe route to school has prevented:

Annually avoided road traffic injures

16

collisions with injured children and young people between 0-16 years old

12

pedestrians injured from 0 to 16 years old

If the intervention had been extended to **all schools in the city**, the annual number of avoided collisions and injuries would have been

97

collisions with injured children and young people between 0-16 years old

75

pedestrians injured from 0 to 16 years old

Conclusions

- Road traffic Injuries were significantly reduced in the intervention schools, but not in the comparison schools, with a larger reduction in the number of injured pedestrians, especially school-age pedestrians.
- The SRTS program significantly improved road safety among children and adolescents in an urban setting. ▶
- The decrease observed in the number of collisions and injured people involving children and young people aged 0-16 and minor pedestrians can be attributed to the intervention of school roads.