

Impact evaluation of the Ondas Program - Colciencias



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Objectives of the evaluation

The Ondas Program is a strategy of the Colombian government that aims to promote in children and young people the interest in research and the development of attitudes and skills that allow them to be actively inserted in a culture of science, technology and innovation.

The program finances research projects in schools and colleges and provides advice to teachers and research groups, allowing the approximation of basic and secondary education students to research.

Objectives of the evaluation

The objective of the evaluation is to measure the effects attributable to the program on the beneficiaries in:

- 1) Dropout in basic and secondary education
- 2) Performance in standardized tests in grade 3, 5, 9 and 11
- 3) Access to higher education
- 4) Permanence in higher education
- 5) Access to programs for the best students in poverty measured by proxy means test
- 6) Access in research groups in higher education

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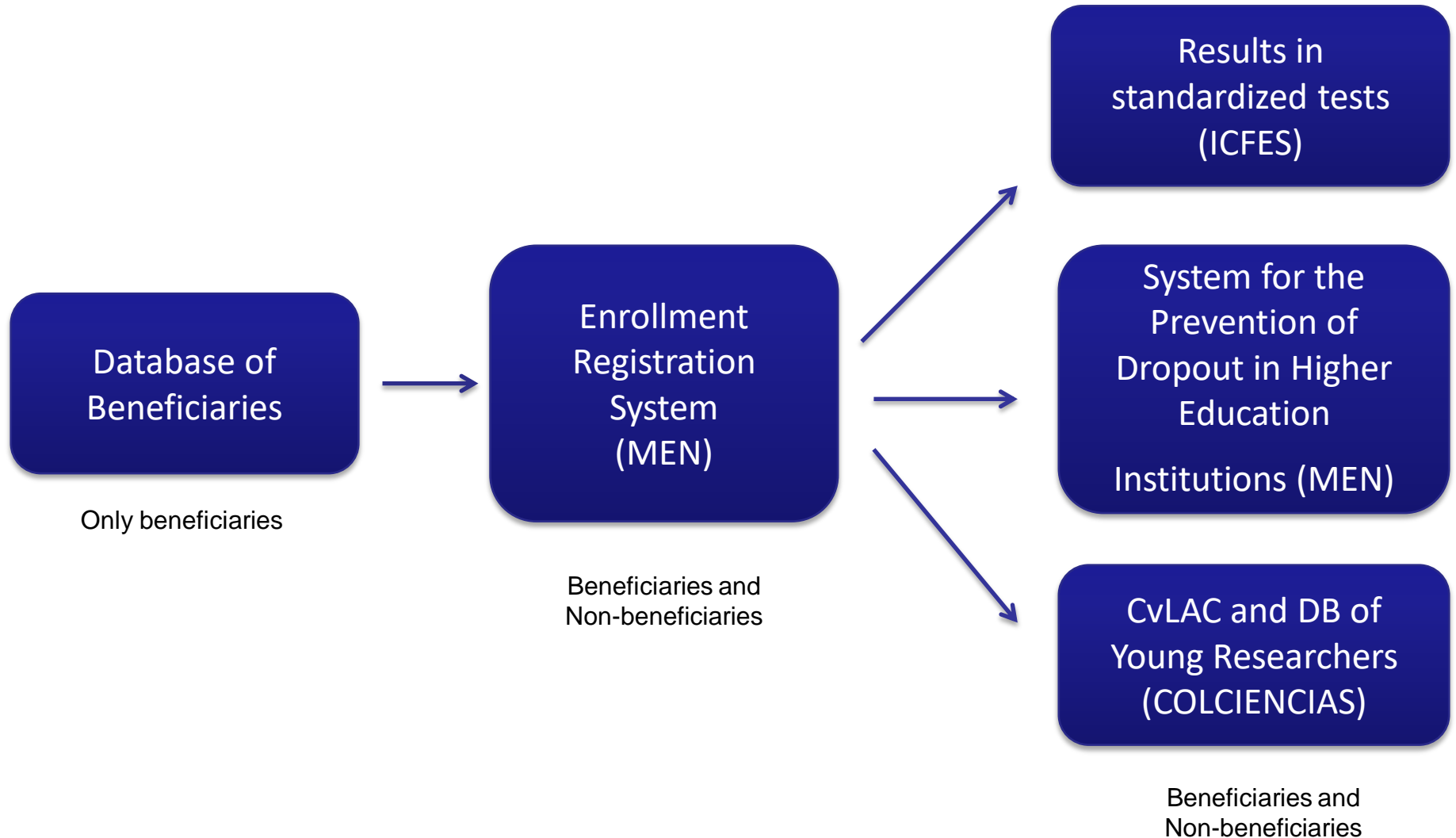
Grupos de tratamiento y control

- For the evaluation we need to identify a counterfactual for the beneficiary children and their schools.
- The group of beneficiaries was built from the database of beneficiaries of the Ondas Program
- The control group is made up of children and young people who are not beneficiaries but who were in the same class and Educational Institution of the beneficiaries of the program.
- In the case of schools, the treatment group corresponds to the schools in which the young beneficiaries of Ondas studied; The control group is composed of institutions with similar characteristics.
- Later we control for the characteristics of students and schools

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Information sources



Summary Information sources used

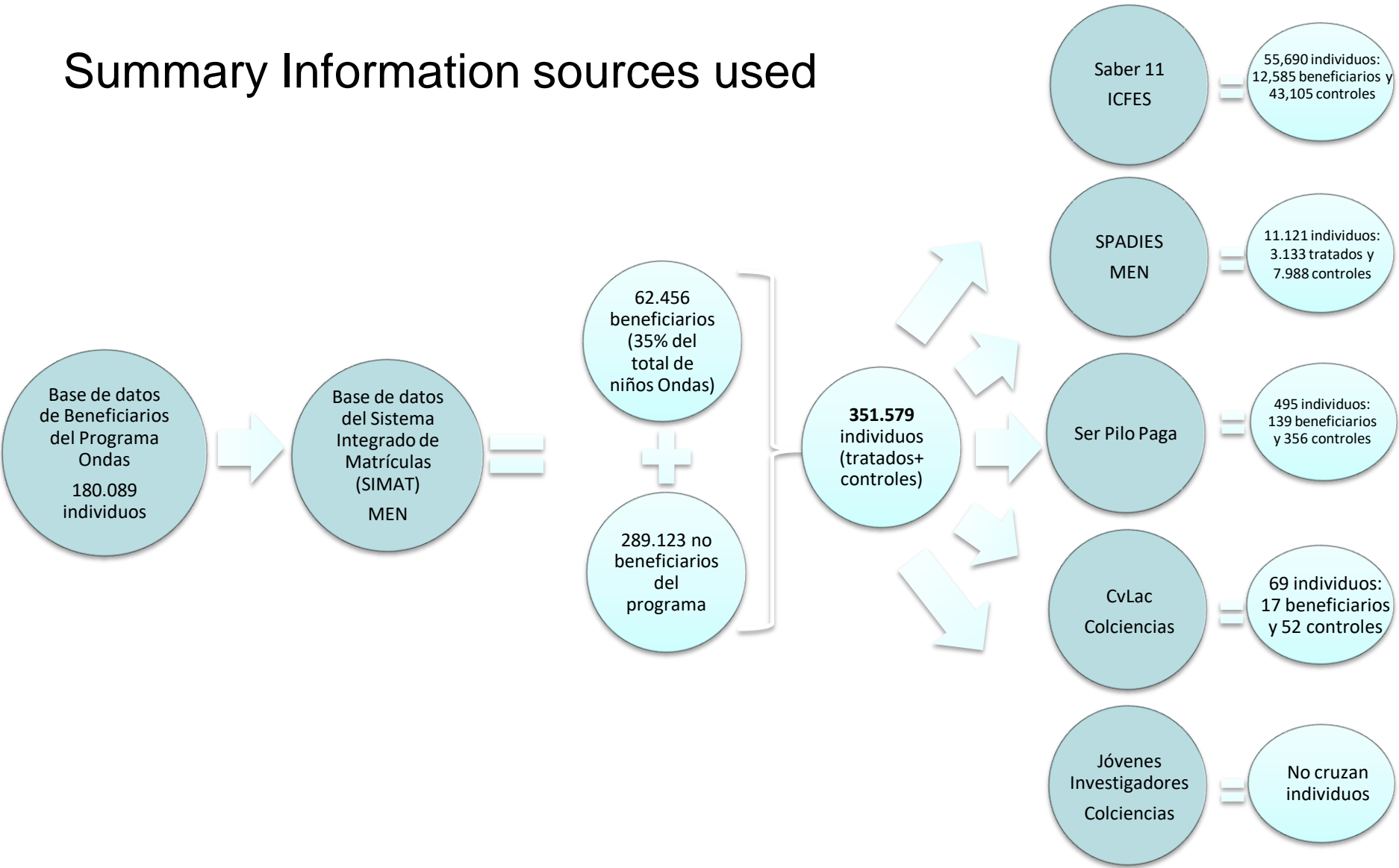


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Variables de Resultado

Variable	Definition	Source	Method
Grade repetition	Variable equal to one if the child or young person has repeated a school year	SIMAT	PSM & GM
Dropout basic education	Proportion of young people who stop appearing at least one year in the database and during that time does not advance the same number of grades	SIMAT	PSM & GM
Dropout secondary education	Ibid	SIMAT	PSM & GM
Standardized Tests	Deviation to the national average in the Standardized Test grade 11	ICFES	PSM & GM
Access to Higher Education	Variable equal to one if the young person finished the secondary education and acceded to the University	SPADIES	PSM & GM
Dropout from higher education	Variable equal to one if the young man accessed the university but stopped being registered in the database in some period	SPADIES	PSM & GM
Access to poor population	Variable equal to one if the young person presented the test knowing 11 and accessed the program Ser Pilo Paga	MEN	PSM & GM
Schools Standardized Tests	Score obtained by the Institution in the standardized tests grade 3, 5, 9 and 11	ICFES	Diferencia en diferencias

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SCHOOL DROPOUT

School Dropout

There are impacts in repetition, but there are no impacts on school dropout.

Outcome	Difference of means			Impacts		
	Treated	Controls	Difference	All	Men	Women
Repetition rate: proportion of young people who have repeated years	0.070	0.088	-0.02***	-0.032*** (0.011)	-0.05*** (0.016)	-0.014 (0.015)
Dropout rate: Proportion of young people who stop appearing at least one year in the database and during that time does not advance the same number of grades	0.014	0.017	-0.003***	-0.003 (0.006)	-0.001 (0.009)	-0.005 (0.009)
Dropout rate: proportion of young people whose last registration in SIMAT was in 2013 or before and has not submitted the Saber 11 test or does not appear as a graduate in the database	0.266	0.186	0.08***	0.014 (0.017)	0.032 (0.024)	- 0.005 (0.024)

QUALITY OF EDUCATION

Impact on the results of the standardized tests (grade 11) according to the number of years that participated

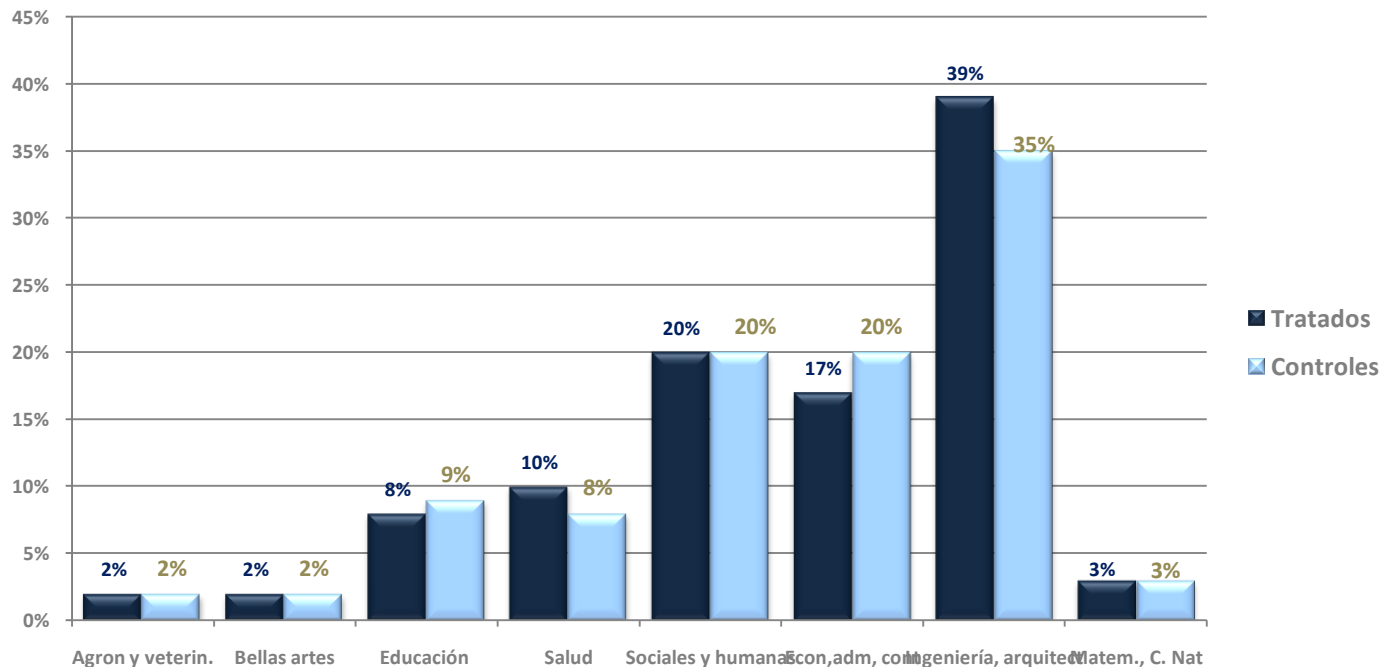
Outcome	One year impact	Impact of two or more years
Total standardized test	1.22*** (0.082)	2.671*** (0.506)
Maths	1.434*** (0.11)	2.029*** (0.602)
Natural Sciences	1.272*** (0.09)	2.352*** (0.405)
Social Sciences	1.251*** (0.1)	3.024*** (0.404)
Reading comprehension	0.922*** (0.09)	3.825*** (0.845)

ACCESS AND PERMANENCE IN HIGHER EDUCATION

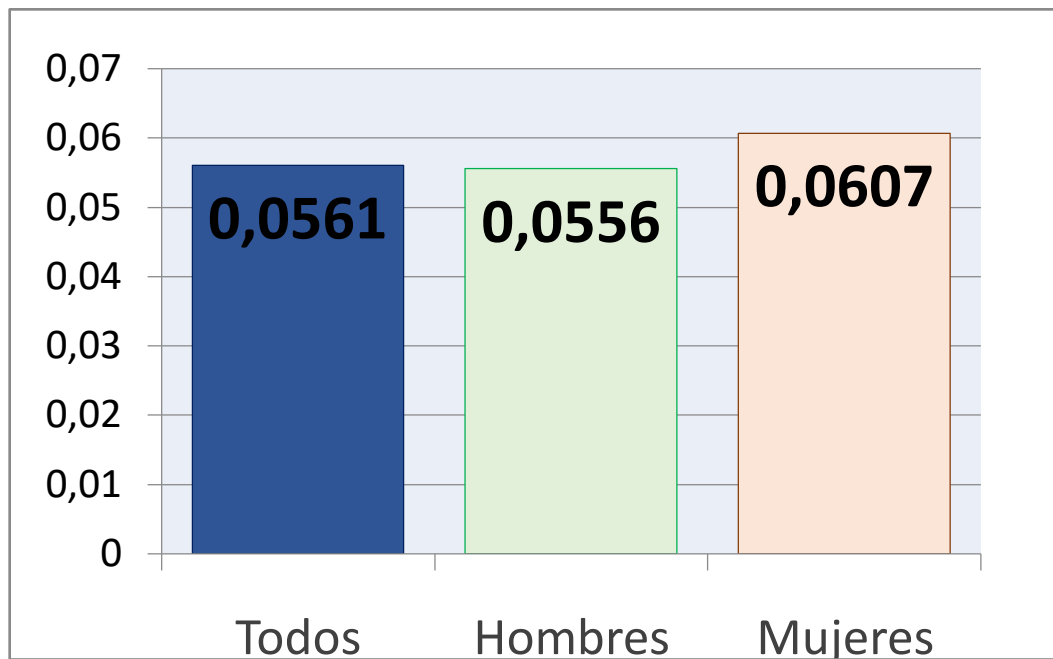
Access to higher education

From the total number of students who took the standardized test, 15% of the beneficiaries and 11% of the non-beneficiaries had access to the university.

Areas of study selected by the beneficiaries



Impact on Access to Higher Education



The results are significant at 1%

Source: Own calculations based on Colciencias, SIMAT, ICFES

Impact on permanence in higher education

The beneficiaries have a lower dropout rate from higher education, but there is no significant impact of the program on this variable

Outcome	Difference of means				Impact
	Treated	Controls	Difference	Stand E	
Dropout one or more periods of higher education	0.38	0.46	-0.08***	0.01	-0.004

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Conclusiones (I)

- The Ondas program has effects on the quality of education measured by standardized test. The impact is 1.53 units in deviation to the national average score.
- When disaggregated according to large areas, it was found that the highest impacts occur in areas of natural sciences (biology, physics and chemistry), 1.98 units; followed by the impacts in mathematics, 1.54 points in deviations to the national score.
- There are no impacts at the College level. Generating externalities of a small group of student researchers in an entire Educational Institution could be something not expected and that exceeds the scope of the program

Conclusiones (II)

- The beneficiaries also have higher access to higher education, the impact on the access rate was five percentage points
- The beneficiaries who access higher education prefer academic programs in the areas of engineering (39%), social sciences (20%), economic sciences (20%) and only 3% select careers related to natural sciences and mathematics.
- The program presents a very positive outlook, indicating that efforts must be made to scale it
- The efforts in **Science and Technology** must start from the first years of education of the people