

Sporting participation in Colombia: An empirical approach from Sports Economics

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1. Aim

- Analyze empirically the factors associated with the decision of participating in sport activities of the inhabitants of Bogotá, Medellín, Cali, Barranquilla and Cartagena.
- The five main Colombian cities concentrate the half urban population. The period analyzed: 2008-2015.

2. Motivation

- **In Latin America and Colombia:** few studies consider the economic approach of participation in sports activities. Public policies more focused on supply; knowledge about people's decisions (demand) is scarce.
- **Studies on sports in Colombia:** mainly focused on physical activity for some population groups.
- **Dataset in our study:** Colombia does not have a sporting habits survey.
- **Main challenges:** improve understanding of context (social and economic inequality, poverty, residential segregation, among others) → making decisions → improve sports policies.

3. Dataset and Methodology

- **Dataset:** provided by the Citizen Perception Survey (CPS) of the Como Vamos (citizen control programs)
- **CPS:** applied each year to approximately 1,000 households, the results of the survey are available for the period 2008-2015 → 21,702 observations are used.
- **Dependent variable:** Participation in sporting activities:
 - Spectators, and
 - Athletes and physical activity.
- **Explanatory variables:** traditional variables and other novel ones are used to analyze the specificity.
- **Pseudo-panel structure:** The dataset used does not allow the same individual to be traced throughout the analyzed period.
 - Probit models are estimated using the **IV-Probit methodology of instrumental variables**. Individual fixed effects are modeled, and five age and city cohorts are constructed per year (Veerbek, 2008; Moffit, 1993).

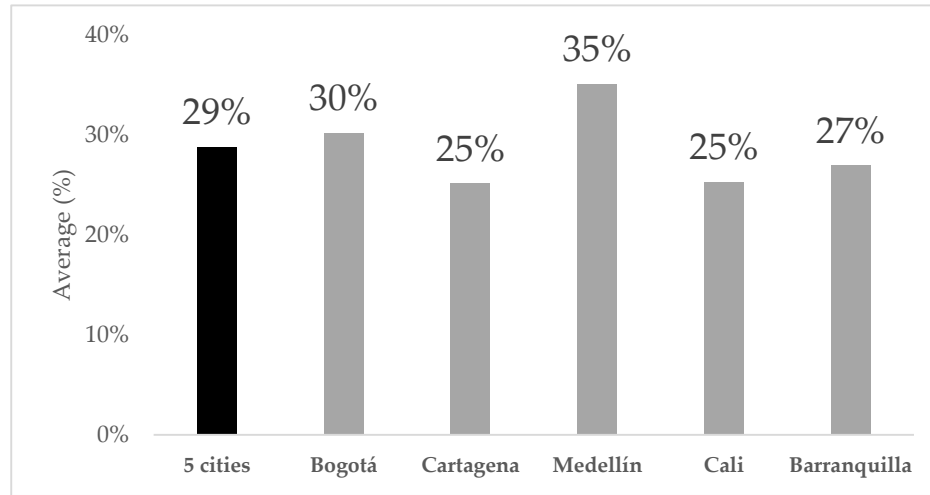
Data (Explanatory variables)

Variable	Definition	Type	Description
Gender	Household head gender	Dummy (D)	1= Man; 0= Woman
Age	Age range of those who participate in cultural activities	Ordered (O)	1= 18 to 25 years; 2= 26 to 35 years; 3= 36 to 45 years; 4= 46 to 55 years y 6= More than 55 years.
Leisure	Are you currently ...?	O	1= Pensioner; 2= Work outside the home; 3= Work at home; 4= Study; 5= Work and study; and 6= Head of the house.
Educational level	Educational level reached	O	1= None; 2= Primary education; 3= High school; 4= University studies (undergraduate); 5= Postgraduate (specialization, master's degree or doctorate).
Subjective poverty	Do you consider yourself poor?	D	1= Yes; 0=No
Objective poverty	Did you stop eating any of the three meals in the last week?	D	1= Yes; 0=No
Presence of children/ Kind of education that children receive	Does this household have children under the age of six? Are there children in the home attending a private / public school?	D	1= Yes (attends private school); 0= No (attends public school)
Socioeconomic status	Socioeconomic stratification	O	Low level= strata 1 and 2; Medium= strata 3 and 4; High= 5 and 6
Economic situation	Rate the household's economic situation (proxy of income)	O	1= It has gotten worse; 2= Follow the same; 3= It has improved.
Satisfaction with parks	Rate the degree of satisfaction with neighborhood and city parks	O	1= Dissatisfied, 2= Neither satisfied nor dissatisfied, 3= Satisfied
Safety in the city	Rate the security degree in the city	O	1= Insecure; 2= Not safe or insecure; 3= Safe
Neighborhood safety	Rate the degree of safety in the neighborhood	O	1= Unsafe; 2= Neither safe nor unsafe; 3= Safe
Social capital	Belong to a community-based organization (Community, Sports, Religious Action Board, etc.)	D	1= Yes; 0=No
Economic inequality	Economic inequality	Continuous (C)	0 to 1
Sport policy	Sports investment per capita with own resources	C	Constant pesos of 2012
Regional effects	City dummies	D	1= Yes (the reference city); 0= No (the rest of cities)
Temporary effects	Year dummies (2008-2015)	D	1= Yes (the reference year); 0= No (the rest of years)

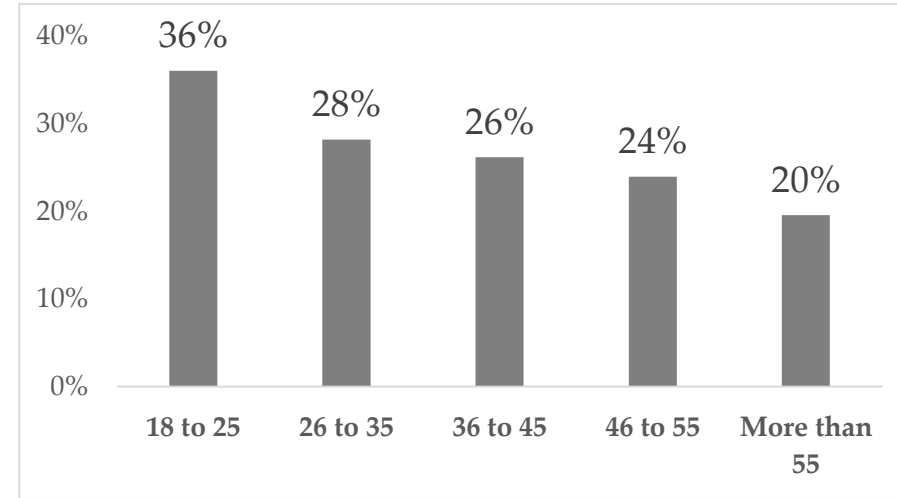
Source: prepared by the authors base on the Surveys of the Quality of Life – Programmes Cómo Vamos from the five cities.

4. Results

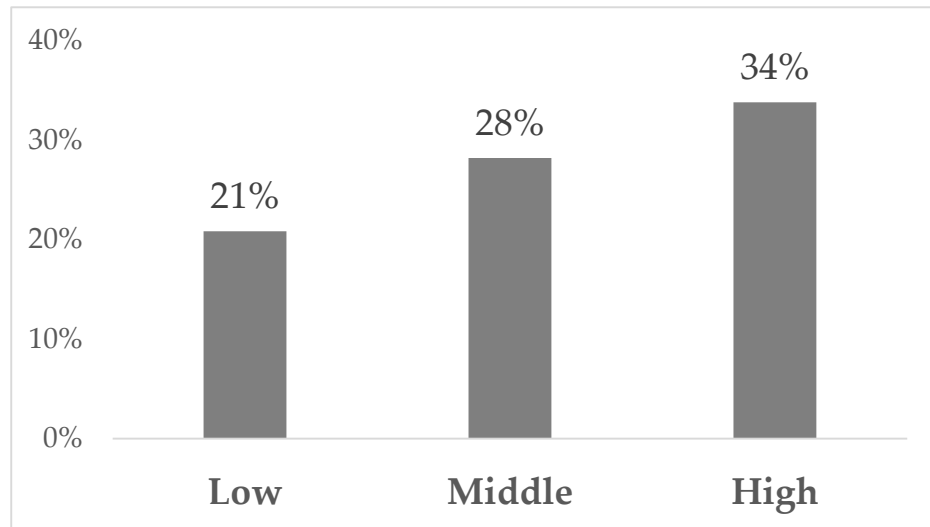
PSA in any activity, 2008-2015 (avg.%)



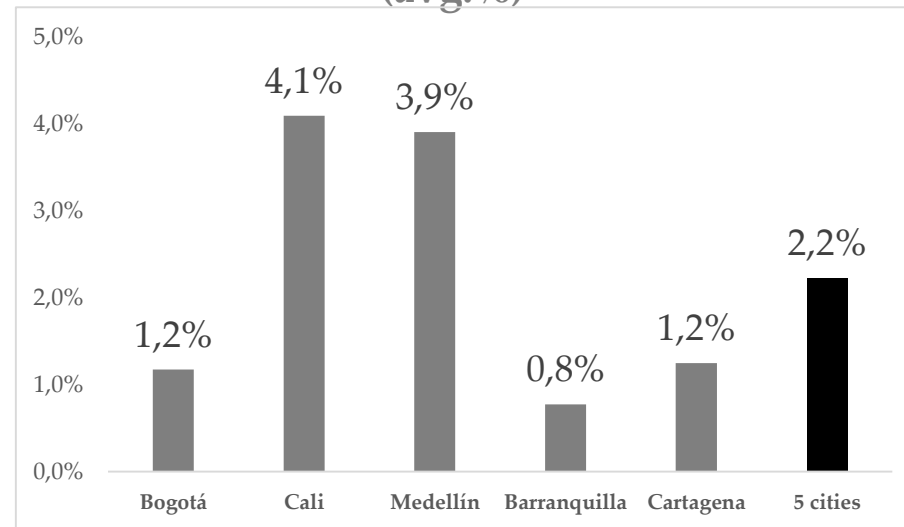
PSA by age (avg.%)



PSA by socioeconomic level (avg.%)



Sport investment in total public investment (avg.%)



Source: prepared by the authors based on programmes Cómo Vamos – Ciudadatos, Cómo Vamos Net, DANE-Mesep and Contaduría General de la Nación.

Table 1. Pseudo panel estimation model of sporting activities, 2008-2015

	Spectators		Physical activity	
Variables explicativas	Pool Probit	Moffit +	Pool Probit	Moffit+
	EM/DE	EM/DE	EM/DE	EM/DE
Gender (Male= 1; Female= 0)	0.042*** 0.005	0.212*** 0.027	0.063*** 0.005	0.335*** 0.025
Leisure time available				
Work outside home	0.015** 0.007	0.076** 0.036	0.039*** 0.007	0.209*** 0.039
Work at home	-0.003* 0.010	-0.018* 0.050	0.040*** 0.010	0.215*** 0.052
Study	0.061*** 0.009	0.311*** 0.048	0.073*** 0.009	0.385*** 0.050
Study and work	0.023* 0.015	0.100* 0.086	0.067*** 0.014	0.369*** 0.087
Head of household	-0.003* 0.008	-0.017* 0.041	0.017** 0.009	0.094*** 0.046
Retiree	0.003 0.009	0.010 0.042	0.019** 0.010	0.104** 0.053
Unemployed	Reference			
Participation in cultural activities	0.070*** 0.005	0.344*** 0.034	0.106*** 0.005	0.571*** 0.038
Per capita Income (Spending Unit)	0.139*** 0.011	0.712*** 0.054	0.028*** 0.010	0.443** 0.057
Objective poverty (Do not consume all of the three daily meals per week)	-0.020*** 0.007	-0.107*** 0.038	-0.016** 0.007	-0.076** 0.044
Socioeconomic level (stratification):				
High	0.026*** 0.007	0.126*** 0.038	0.017*** 0.007	0.096*** 0.034
Medium	0.019*** 0.005	0.088*** 0.028	0.013** 0.005	0.072** 0.024
Low	Reference			
Homicides (per 100,000 people)	-0.001*** 0.000	-0.015*** 0.001	-0.001*** 0.000	-0.017*** 0.001
Social Capital (community participation)	0.048*** 0.005	0.363** 0.235	0.037*** 0.005	0.352** 0.203
Satisfaction with Sport Offer	0.025*** 0.002	0.125*** 0.013	0.024*** 0.002	0.126*** 0.013
% of well-classified observations	84.96%	86.91%	87.48%	87.60%
Observations	21.702	21.702	21.702	21.702

Prepared by the authors based on the CPS-Como Vamos Programs.
 Level of significance of the test: *p<0.1; **p<0.05; ***p<0.01.
 + Instrumented variable: community participation.
 ME: Marginal Effects; SD: Standar Deviation.
 Wald test of exogeneity ($\theta = 0$):
 190.14 Prob > chi2 = 0.0000 (Phisycal activities and sport)
 59.78 Prob > chi2 = 0.0000 (Spectators).

5. Conclusions and Discussion

- i. Decisions to participate in sporting activities: we model a time-intensive good. Opportunities have been reduced since 2012.
- ii. Empirical strategy allows modeling the persistence of habits in sporting participation (fixed effects).
- iii. Traditional variables are adequate to explain this behavior; also the proposed contextual variables. **Gaps:** gender, age, socioeconomic status, educational level.
- iv. Instruments to expand participation are in hands of the local governments and are part of a broader strategy aimed at solving structural issues (to combat poverty and income creation).