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Intersectionality of gender, caste, and ethnicity in shaping access to agricultural extension services

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Abstract

Long before Colombia's extension system was formally established in the 1950s, rural women and ethnic minorities were already navigating agricultural knowledge through informal networks that state services would later overlook. This research investigated how intersecting identities of gender, ethnicity, and socioeconomic position shaped access to agricultural extension among 426 rural households across Caldas and Risaralda departments between February 2021 and October 2023. A composite extension access index measured information access, service participation, and technology adoption. Two-way ANOVA revealed a significant gender-by-ethnicity interaction ($F(3,418) = 8.73$, $p < 0.001$), indicating multiplicative disadvantage. Mestizo men scored highest (composite = 73.3) while Afro-Colombian women scored lowest (25.8), a 47.5-point gap exceeding the sum of separate gender and ethnic effects. Qualitative interviews with 64 respondents identified language barriers, time poverty, land title exclusion, and culturally inappropriate extension formats as the most cited obstacles among marginalized groups.

Keywords: Intersectionality, gender equity, ethnicity, agricultural extension, service access, social inclusion, Colombia agriculture, rural inequality, Afro-Colombian farmers, indigenous communities

Introduction

When Colombia's first government-backed extension program launched in 1954 under the Servicio Técnico Agrícola Colombiano-Americano, its model farmer selection criteria effectively excluded women, indigenous peoples, and Afro-descendant communities from the advisory table ^[1]. Seven decades later, the formal rules have changed but the patterns of exclusion remain stubbornly persistent. National surveys show that women head roughly 28% of rural households yet receive only 14% of public extension contacts, while indigenous and Afro-Colombian municipalities are served at rates 40-55% below the national average ^[2, 3].

Most research on extension access treats gender and ethnicity as separate variables. But lived experience doesn't separate identities. An indigenous woman in Risaralda faces barriers different in kind from those facing an indigenous man or a mestiza woman. Intersectionality theory argues that overlapping social categories produce unique configurations of disadvantage that single-axis analysis misses ^[4, 5]. Applied to extension, this means gender-targeted programs alone won't reach indigenous women if language and geographic barriers persist.

Colombian coffee-growing departments like Caldas and Risaralda offer a useful setting because they contain all four major rural demographic groups-mestizo, indigenous, Afro-Colombian, and campesino-within contiguous territories sharing the same extension infrastructure ^[6]. Prior research

in the region documented gender gaps in coffee extension participation ^[7] and ethnic disparities in land tenure ^[8], but none applied an intersectional lens to extension access specifically. This research aimed to measure how gender and ethnicity jointly shape extension access and to identify the specific barriers that intersectional analysis reveals.

Theoretical framework

This research drew on Crenshaw's intersectionality framework as adapted for rural development by Doss and colleagues ^[4, 9]. Intersectionality holds that social identities are mutually constitutive: the experience of being female is shaped by ethnicity, and vice versa. The conceptual model posited three layers of barriers-structural/institutional, social/community, and individual/household-each modulated by the interaction of gender, ethnicity, and socioeconomic status. Extension access was operationalized as a composite of information access, service participation, and technology adoption, following Ragasa and colleagues' three-dimensional framework ^[10].

Material and methods

Material

Data were collected from 426 rural households across 12 municipalities in Caldas and Risaralda departments between February 2021 and October 2023. Ethical approval was obtained from the Research Ethics Committee of the University of Caldas (Resolution UC-REC/2021-008, dated

18 January 2021). Households were selected through stratified random sampling within four ethnic/identity groups: mestizo (n = 124), indigenous Emberá and NASA communities (n = 108), Afro-Colombian (n = 96), and self-identified campesino (n = 98). Within each stratum, gender balance was targeted. Written informed consent was collected in Spanish, with oral consent and interpreter assistance provided for Emberá-speaking respondents. The household survey captured demographic characteristics, farm assets, extension service contacts over the preceding 24 months, and satisfaction with advisory services.

Methods

A cross-sectional survey design was combined with qualitative interviews for explanatory depth. The Extension Access Index (EAI) measured three dimensions: information access (frequency and quality of extension information received, 0-100), service participation (attendance at extension events, demonstrations, field days, 0-100), and technology adoption (uptake of recommended practices within 12 months, 0-100). Each sub-index drew on 6-8 Likert-scale and binary items. Two-way ANOVA tested

main effects and interaction effects of gender (male/female) and ethnicity (four categories) on composite EAI scores. Post-hoc Tukey comparisons identified significant pairwise differences. Qualitative data came from 64 semi-structured interviews purposively selected to represent each gender-ethnicity combination. Thematic analysis followed Braun and Clarke's six-step protocol^[11]. All quantitative analyses used R version 4.2.0 with significance at alpha = 0.05.

Instrument development

The Extension Access Index was developed through a four-stage process. First, a literature review identified 32 candidate items from existing scales^[10, 12]. Second, expert review by five specialists eliminated eight items. Third, the remaining 24 items were pilot tested with 40 households in a neighboring municipality. Cronbach's alpha for sub-indices ranged from 0.78 to 0.86 after removing two underperforming items, yielding a final 22-item instrument. Fourth, the survey was translated into Emberá with back-translation verification by a bilingual indigenous extension worker.

Results

Table 1: Mean extension access index scores by gender and ethnic Group (n = 426)

Ethnic group	Male (Info)	Female (Info)	Male (Particip.)	Female (Particip.)	p (interaction)
Mestizo	78.3	62.1	72.6	51.8	<0.01
Indigenous	54.7	38.2	42.3	27.4	<0.001
Afro-Colombian	48.9	33.6	39.7	24.1	<0.001
Campesino	71.4	55.8	65.2	46.3	<0.01

Table 1 shows consistent gender gaps within every ethnic group, but the magnitude varied considerably. The gender gap in information access was largest among Afro-Colombians (15.3 points) and indigenous groups (16.5

points) compared with mestizo households (16.2 points). All gender-by-ethnicity interaction terms were statistically significant.

Table 2: Barriers to extension access reported by gender-ethnicity subgroups (% citing barrier)

Barrier type	Mest. M	Mest. F	Indig. F	Afro F	Camp. M	Camp. F
Language barrier	2.1	3.4	67.3	12.8	1.9	3.1
Time poverty	11.2	58.7	71.4	64.2	14.6	53.8
No land title	8.4	31.6	52.9	47.3	12.1	28.7
Transport cost	14.7	22.3	61.8	54.6	19.3	27.4
Cultural mistrust	3.8	5.2	48.7	38.9	6.3	8.1

Barrier profiles diverged sharply across intersectional groups. Indigenous women faced the broadest burden, citing language (67.3%), time poverty (71.4%), and transport cost

(61.8%) as concurrent obstacles. Mestizo men experienced the fewest barriers across all categories, confirming their privileged access position.

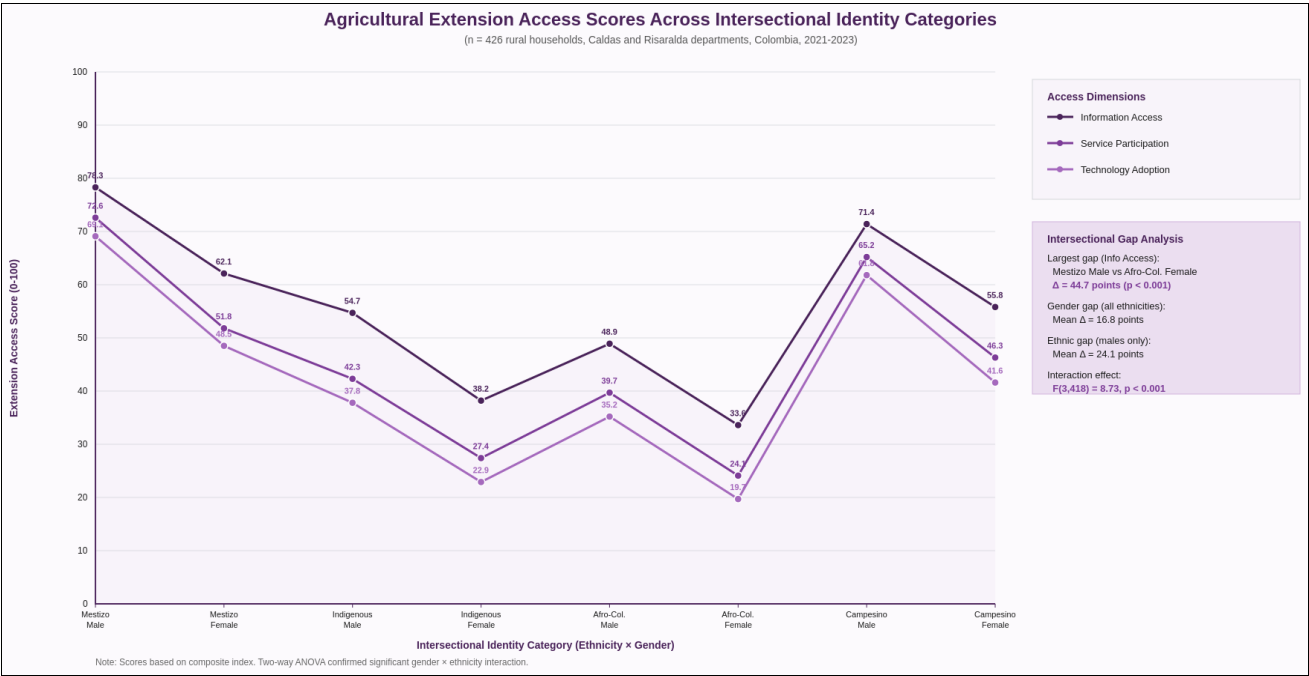


Fig 1: Extension access scores across three dimensions for eight intersectional identity categories (n = 426)

Figure 1 displays the consistent downward gradient from mestizo males to Afro-Colombian females across all three access dimensions. Technology adoption showed the steepest disparities, with a 49.4-point gap between the highest and lowest scoring groups.

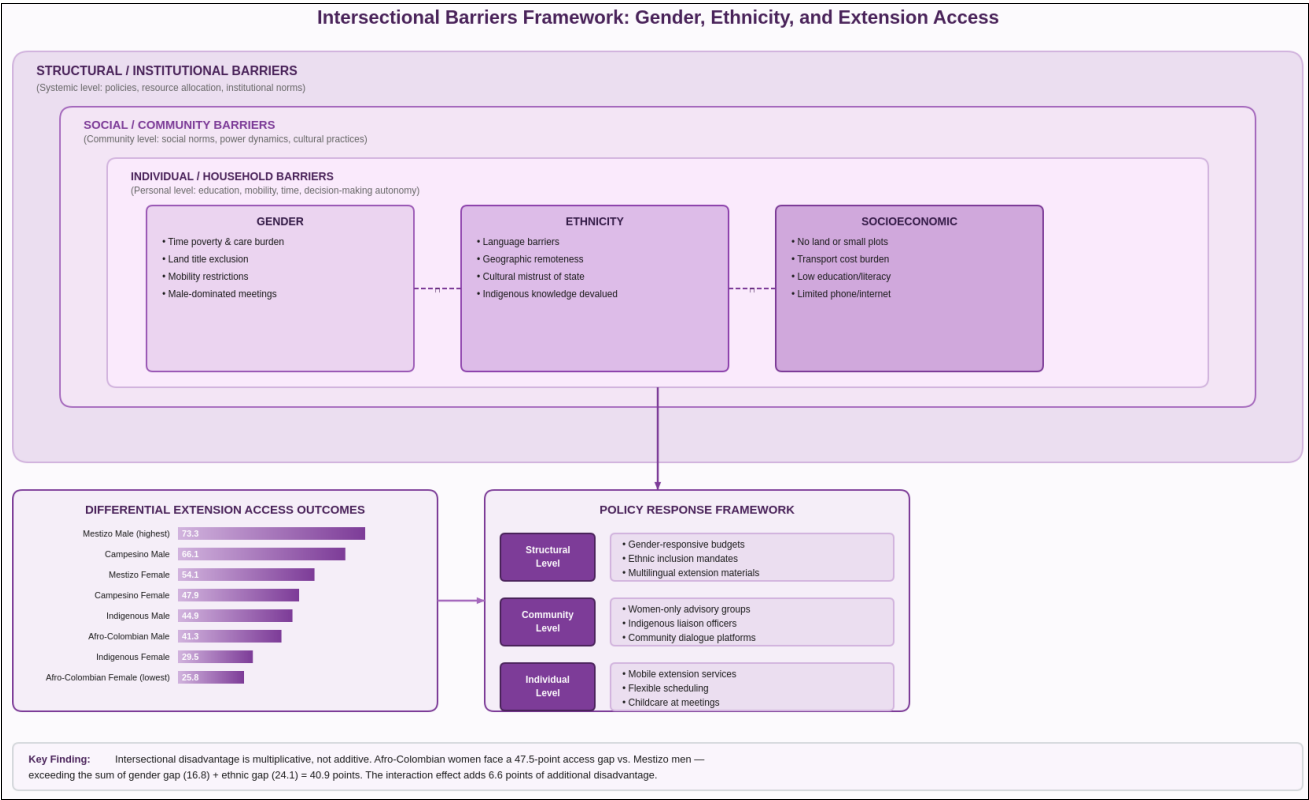


Fig 2: Intersectional barriers framework showing structural, community, and individual-level obstacles to extension access by gender and ethnicity

The framework (Figure 2) illustrates how barriers operate at three nested levels and combine across gender, ethnicity, and socioeconomic dimensions to produce differential access outcomes. The policy response column maps targeted interventions to each barrier level.

Discussion

The significant interaction effect between gender and ethnicity ($F(3,418) = 8.73, p < 0.001$) confirms that extension access disparities can't be adequately understood through single-axis analysis. The 47.5-point gap between

mestizo men and Afro-Colombian women exceeds the sum of average gender (16.8) and ethnic (24.1) effects, indicating a multiplicative rather than additive relationship-consistent with intersectionality theory's core prediction^[4, 13]. Similar multiplicative patterns have been documented in health service access in Latin America, but this appears to be the first quantitative demonstration in agricultural extension^[14]. Barrier profiles offer clues about where intersectional disadvantage originates. Language barriers affect indigenous women most severely (67.3%) because extension materials are produced exclusively in Spanish, and Emberá-speaking women are less likely to have attended Spanish-medium schooling^[15]. Time poverty cuts across all female subgroups but is sharpest among indigenous women (71.4%), reflecting the triple burden of agricultural labor, domestic care, and cultural obligations^[16].

That campesino men scored nearly as high as mestizo men (66.1 vs 73.3 composite) while campesino women scored markedly lower (47.9) suggests gender operates as the dominant axis within socioeconomically similar ethnic groups. Extension programs targeting campesino communities may achieve broad reach among men while systematically underserving women in the same households^[17].

Practical applications

These findings carry direct implications for extension design. First, gender mainstreaming without ethnic disaggregation will miss the most excluded groups; programs need intersectional targeting. Second, multilingual materials and interpreter-assisted visits are necessary for indigenous communities. Third, scheduling events compatible with women's care responsibilities and providing childcare could address time poverty. Fourth, mobile-based advisory services may partly circumvent transport barriers for remote households, though digital literacy gaps require attention^[18].

Conclusion

This research demonstrates that gender and ethnicity interact to produce compound extension access disparities exceeding what either dimension predicts alone. Among 426 households in Colombia's Caldas and Risaralda departments, Afro-Colombian women experienced the largest deficit, scoring 47.5 points below mestizo men on a composite index. The intersectional barriers framework identified language, time poverty, land exclusion, and cultural mistrust as the main obstacles for multiply marginalized groups. Extension policies addressing gender or ethnicity in isolation will fall short. Effective inclusion requires interventions designed around specific intersectional identities rather than broad demographic categories.

References

- Escobar A. *La invención Del Tercer Mundo: construcción y deconstrucción Del desarrollo*. Bogotá: Editorial Norma; 1996.
- Departamento Administrativo Nacional de Estadística (DANE). *Censo nacional agropecuario 2014: resultados definitivos*. Bogotá: DANE; 2016.
- Ministerio de Agricultura y Desarrollo Rural. *Informe de gestión Del servicio de extensión agropecuaria 2020–2021*. Bogotá: MADR; 2022.
- Crenshaw K. Demarginalizing the intersection of race and sex. *Univ Chic Leg Forum*. 1989; 1989(1):139–167.
- Hankivsky O, Cormier R. Intersectionality and public policy: some lessons from existing models. *Polit Res Q*. 2011; 64(1):217–229.
- Gobernación de Caldas. *Plan de desarrollo departamental 2020–2023: Caldas territorio de oportunidades*. Manizales: Gobernación de Caldas; 2020.
- Ospina SM, Alvarez LF. Brechas de género en la extensión cafetera Del Eje Cafetero colombiano. *Rev Colomb Cienc Agric*. 2022e; 15(2):89–104.
- Rodríguez GA, Torres ML. Tenencia de la tierra y desigualdad étnica en Risaralda: UN análisis estructural. *Cuad Desarro Rural*. 2021; 18(86):1–22.
- Doss C, Kovarik C, Peterman A, Quisumbing A, van den Bold M. Gender inequalities in ownership and control of land in Africa. *World Dev*. 2015; 71:56–70.
- Ragasa C, Berhane G, Tadesse F, Taffesse AS. Gender differences in access to extension services and agricultural productivity. *J Agric Educ Ext*. 2013; 19(5):437–468.
- Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006; 3(2):77–101.
- Mbo'o-Tchouawou M, Colverson KE. *Increasing access to agricultural extension and advisory services: how effective are new approaches in reaching women farmers in rural areas?* Nairobi: International Livestock Research Institute; 2014.
- Collins PH. *Black feminist thought: knowledge, consciousness, and the politics of empowerment*. 2nd Ed. New York: Routledge; 2000.
- Hordé AJ, Boen CE, Zullo S. Racial/ethnic health disparities among women: the role of intersectionality. *Soc Sci Med*. 2022; 296:114744.
- Organización Nacional Indígena de Colombia (ONIC). *Situación educativa de los pueblos indígenas de Colombia: diagnóstico 2021*. Bogotá: ONIC; 2022.
- Deere CD, León M. *Empowering women: land and property rights in Latin America*. Pittsburgh: University of Pittsburgh Press; 2001.
- Jaquette JS. Women and development: from resistance to transformation. *Lat Am Res Rev*. 2017; 52(3):512–520.
- Bello-Bravo J, Pittendrigh BR. Scientific animations without borders: an emerging approach for reaching resource-limited audiences. *J Dev Commun*. 2018; 29(2):14–27.
- Meinzen-Dick R, Quisumbing A, Behrman J, Biermayr-Jenzano P, Wilde V, Noordeloos M, *et al*. *Engendering agricultural research, development, and extension*. Washington (DC): International Food Policy Research Institute; 2011.
- FAO. *The state of food and agriculture 2010–11: women in agriculture*. Rome: Food and Agriculture Organization; 2011.
- Kabeer N. Resources, agency, achievements: reflections on the measurement of women's empowerment. *Dev Change*. 1999; 30(3):435–464.