

Gendered Transport Inequalities and Adaptive Preferences in Rural Spain

Public Transport Access, Well-being,
and the Dual Disconnection Mechanism

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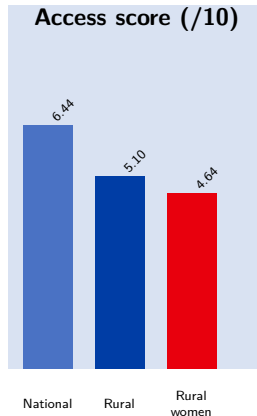
Why Does Transport Matter in Rural Areas?

Transport as Everyday Well-Being Infrastructure

- Gateway to employment, healthcare, education, and social life
- Its absence produces **territorial exclusion** and isolation
- Rural Spain mean access score: **5.10 / 10**
(national average: 6.44)
- Rural women with dependants: **4.64 / 10**

Gender Gap in Mobility

Women show trip-chaining patterns, lower private-car access, and heavier care-work burdens — all amplified in rural contexts.



Three Conceptual Pillars

Capabilities Approach

C

Sen (1999) & Nussbaum (2000): well-being assessed as **real freedom** to be and do what one values.

Transport Justice

J

Martens (2017): design transport systems around **distributive justice**, prioritising those facing the greatest restrictions.

Adaptive Preferences

A

Chronic deprivation leads individuals to **lower their expectations**. Revealed preferences may understate genuine mobility needs.

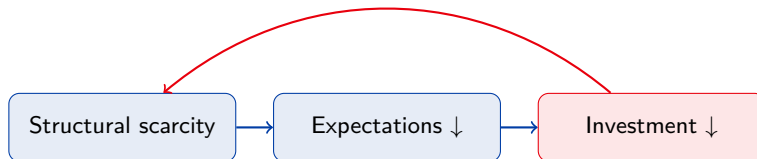
Chronic deprivation → Lowered expectations → **Suppressed demand**

1. Territorial Disconnection

- Rural residence $\Rightarrow$ objectively lower access
- Low frequency, radial networks, car dependence
- Amplifies pre-existing socioeconomic exclusion

2. Perceptual Disconnection

- Prolonged exposure to inadequate services
- Women **reduce stated importance** of transport
- Most acute in high-AROE regions



Primary Source

- Original survey: project *Infraestructuras para la Vida Cotidiana desde la Economía Feminista del Bienestar*
- Funded by the Spanish Ministry of Science and Innovation
- Fieldwork: **February 2024**
- Nationally representative; population ≥ 18 years
- $N = 1,500$ observations (735 women / 765 men)

Key Variables

- **APT**: access to public transport (0–10)
- **IPT**: importance of public transport (0–10)
- **Rural**: municipality $\leq 5,000$ inhabitants
- **AROPE**: regional at-risk-of-poverty / social exclusion rate (INE)
- Controls: age, income, education, dependants, immigrant status

Multilevel Linear Models

- Individuals nested within Autonomous Communities
- **Model 1:** determinants of *access* (APT)
- **Model 2:** determinants of *importance* (IPT)
- Cross-level interactions:
 - Female $\times$ Rural
 - Female $\times$ AROPE
- Enables empirical detection of adaptive preferences

Oaxaca–Blinder Decomposition

- Decomposes the gender gap into:
 - 1 **Endowments:** observable characteristics
 - 2 **Coefficients:** structural returns
 - 3 **Interaction:** joint effect
- Tests whether the rural penalty is gender-specific
- Bootstrap standard errors (1,000 replications)

Table 1 – Mean Access Score (1–10)

	Men	Women
National		6.44
Rural	4.98	5.23

⇒ Territorial gap > 1 point below national average.

Table 2 – Mean Importance Score (1–10)

	Men	Women
Rural	7.47	7.92

⇒ Rural women assign **greater importance** to transport than men (+0.45 pts).

Subjective Well-being (Table 3)

Transport: **lowest-rated** life domain.

Rural: 4.90 (women) / 4.87 (men)

Non-rural: 6.69 / 6.52

Main Findings

- **Rural residence:** strongest negative effect ($\beta = -1.831, p < 0.01$)
- **Pedestrian infrastructure (AUI):** key positive driver ($\beta = 0.437, p < 0.01$)
- Immigrant status: significant penalty ($\beta = -0.704, p < 0.01$)
- **Female×Rural and Female×AROE:** not significant

Territorial Disconnection

Territory is the dominant structural factor.

The rural penalty affects men and women **similarly on average** in terms of access — but the O-B decomposition shows the gender gap is *embedded within* spatial disadvantage.

Models 2a vs. 2b

Variable	Mod. 2a	Mod. 2b
Intercept	6.928***	6.477***
Female	0.659***	1.624***
APT	0.236***	0.237***
Dependants	0.085**	0.083**
AROPE	-0.021*	-0.002 (n.s.)
Female×AROPE	—	-0.036**

Marginal Effect of Gender on IPT

$$\frac{\partial \text{IPT}}{\partial \text{Female}} = 1.624 - 0.036 \times \text{AROPE}_j$$

- Large and positive in low-AROPE regions
- **Approaches zero** in the poorest regions

⇒ **Perceptual Disconnection:**

Women in high-AROPE areas suppress their stated transport valuation due to adapted expectations — not because they need it less.

Access Gap ($\Delta = -0.730$)

Component	Coeff.	%
Endowments	-0.096	13.2%
Coefficients	-0.545	74.7%
Interaction	-0.088	12.1%
<i>rural</i> (coeff.)	-0.385	52.7%

The *rural* coefficient within the structural component explains over half the gap.

Importance Gap ($\Delta = -0.748$)

Component	Coeff.	%
Endowments	-0.062	8.3%
Coefficients	-0.283	37.8%
Interaction	-0.402	53.8%

The valuation gap reflects **heterogeneous responses** to rural conditions by gender: men show a stronger negative rural–valuation association than women.

1. Capabilities-Based Planning

Move beyond revealed-demand logic; guarantee minimum objective access regardless of observed demand.

2. Minimum Mobility Standards

Frequency, waiting times, walkability and affordability as universal service obligations.

3. Care Mobility

Redesign networks beyond radial-commuting models; incorporate trip-chaining patterns.

4. Targeted Subsidies

High-AROE regions (Murcia, Andalusia, Extremadura, Canary Islands): income-tested fare schemes.

5. Data & Participation

- Municipal mobility data disaggregated by sex and age
- Gender impact assessments in transport appraisal
- Participatory planning including rural women with intensive care responsibilities

6. EU Cohesion Funds

Integrate gender and care perspectives into European structural and cohesion funding frameworks.



Main Contributions

- First nationally representative survey in Spain measuring infrastructure access and importance from a feminist political economy perspective.
- Identification and formalisation of the **dual disconnection**: territorial + perceptual.
- The access gender gap is predominantly structural — 74.7% is unexplained by observable endowments.
- Adaptive preferences are empirically detectable: the gender gap in importance attenuates in high-AROE regions, consistent with suppressed demand under chronic under-provision.

Limitation & Future Research

Cross-sectional design; causal identification is not possible.

Future work: GPS/GIS data + qualitative methods + longitudinal panels.

“Planning systems relying solely on revealed demand risk interpreting adapted expectations as genuine preferences.”





Thank you!

