Infrastructure as a Structural Determinant of Violence Against Women: Perceptions and Evidence from Spain

Abstract

This study examines the perceived importance of different types of infrastructure in relation to gender-based violence, an underexplored topic in the academic literature. Using original data from the *Survey on Infrastructures for Everyday Life* conducted in Spain, the analysis combines structural equation modelling and logistic regression to identify key determinants of this perception. The results show that healthcare, childcare, public lighting, and transport infrastructures are considered particularly relevant. Women, individuals with higher educational attainment, and those who strongly value infrastructures exhibit higher levels of perception. Overall, the findings highlight the role of infrastructures as structural factors shaping awareness of gender-based violence, with implications for gender-sensitive public policy.

Keywords: Violence against women; Infrastructure; Perceptions of violence; Gender; Spain;

1. Introduction

Well-being is widely regarded as one of the key indicators for approaching essential issues related to gender discrimination. However, there is no consensus regarding the most appropriate measure of well-being, and different theoretical approaches coexist in the literature. Among them, the capability approach (CA) stands out, as it focuses on the empowerment of individuals' capabilities (such as physical and mental health, social relationships, labour market participation, education, mobility, leisure, and emotional life) rather than solely on the resources available to them. Equally relevant is the theory of subjective well-being (SWB), which argues that the most appropriate method for assessing an individual's well-being is to ask people directly about their own perceptions and experiences.

This latter approach constitutes the main analytical framework of the present study. Specifically, we draw on data from the survey *"Infrastructure for Everyday Life and Well-Being"*, conducted within the research project *"Infrastructure for Everyday Life from a Feminist Economics of Well-Being Perspective"* (PID2022-141305OB-I00),

funded under the 2022 Knowledge Generation Projects programme (Type B Oriented Research) by the Spanish Ministry of Science and Innovation.

Our analysis builds on the conviction that public investment in infrastructure is far from neutral and may exert substantial, differentiated effects on women's subjective well-being and on gender inequalities, depending on how such investments are designed, implemented, and managed. The absence of a gender-sensitive approach in infrastructure planning and provision can reinforce existing gender inequalities. In contrast, the explicit incorporation of a gender perspective has the potential to enhance women's subjective well-being and autonomy, often with effects that are more pronounced than those observed for men (Alarcón et al., 2025a, 2025b).

In this respect, investments in both physical and social infrastructure (including education, health, and care services) have been shown to reduce gender gaps in employment and economic empowerment, although the magnitude and direction of these effects vary depending on the context and the specific type of infrastructure involved (Small et al., 2023). For instance, women rely more heavily on public transportation than men for commuting to work, particularly in low-income countries (Assoumou, 2020). Consequently, investments in transportation systems tend to improve women's labour market outcomes (Martínez et al., 2020).

Urban planning has also been identified as a critical determinant of social well-being in general and of women's well-being in particular. Alderton et al. (2020) emphasise that cities function not only as physical spaces but also as social habitats that shape individuals' quality of life. Their study highlights the risks associated with inadequate urban management, especially when gender perspectives are absent, an issue also underscored in the Spanish context by Alarcón et al. (2025b).

A further clear example of how infrastructure affects women's well-being concerns investments in care-related infrastructure, particularly for dependent populations such as older adults and children. A growing body of research concludes that such investments increase opportunities for achieving sustainable improvements in women's well-being (e.g., Sinha, 2022; Folbre, 2014). Specifically, access to childcare infrastructure facilitates women's entry into the labour market, increases income levels, and strengthens economic independence (Kawabata, 2014; Barros et al., 2013). Conversely, Moussié (2021) shows that the absence of such infrastructure often pushes women into informal and precarious forms of work. Interest in the relationship between infrastructure and

women's well-being has thus been increasing, with several comprehensive reviews offering valuable syntheses of existing evidence (Small et al., 2023; Panyin et al., 2025).

Against this background, the present study focuses on a specific and still under-researched dimension: the role of infrastructure in relation to gender-based violence in Spain. Using data from the *"Infrastructure for Everyday Life and Well-Being"* survey, which explicitly includes items addressing the perceived importance of infrastructure in relation to gender-based violence, we examine two main issues. First, we analyse the perceived importance of different types of infrastructure for individual perceptions of gender-based violence, as well as the overall importance of infrastructure considered jointly. This latter construct is not directly observable and therefore requires estimation as a latent variable.

Second, we investigate (through logistic regression models) the factors that exert the most significant influence on the generated latent variable. These factors include personal, economic, and social characteristics, as well as access to infrastructure and the perceived importance attributed to it. Importantly, the variables capturing the importance of infrastructure in relation to gender-based violence, along with those measuring access to and importance of infrastructure included in the survey, are not directly observable and therefore also require the estimation of latent variables. To this end, we employ structural equation modelling (SEM) techniques.

The results allow us to address highly relevant questions, such as differences in the importance attributed to infrastructure in relation to gender-based violence across different types of infrastructure, as well as for the overall set of infrastructures considered. Furthermore, the findings identify the variables that most strongly influence perceptions of such importance, with gender and, more specifically, being a woman, emerging as one of the most significant determinants.

Finally, we compare our findings with the scarce existing empirical evidence on this topic in Spain and at the international level.

2. Literature review

The present study seeks to examine the importance of different types of infrastructure (physical, health-related, social, digital, and others) in shaping perceptions of gender-based violence. This issue remains a problem of major significance in Spain and continues to undermine the progress achieved in the fight against gender discrimination. For decades, social demand for the implementation of public policies addressing gender-

based violence has remained persistent, while concerns regarding their effectiveness have intensified in recent years. As a result, scientific output addressing multiple dimensions of gender-based violence has grown remarkably.

Most existing studies focus on identifying the factors associated with the probability of experiencing gender-based violence (Small et al., 2023; Guaita-Fernández et al., 2024; Ricoy-Cano et al., 2025), alongside a strong concern for identifying effective solutions. These include calls for prevention policies, specialised services to support victims, and equality-oriented education from an early age. Nevertheless, it is difficult to argue that a substantial social transformation has already taken place, or that the resources devoted to combating gender-based violence are sufficient.

Within this extensive body of literature, the role of infrastructure in relation to gender-based violence has received comparatively limited attention. However, some studies point to investment in infrastructure (whether physical, social, or digital) as a key factor both in the persistence and in the prevention of gender-based violence, highlighting infrastructural deficiencies as a major obstacle to its reduction (Tiznado-Aitken et al., 2024). Poor lighting, inadequate sanitation, and the lack of safe public spaces constitute significant threats to women's safety and increase the risk of gender-based violence (Mwazvita et al., 2020).

The absence or inadequacy of infrastructure has been examined primarily in Latin American contexts (Aguilar & Soto, 2021; Martínez et al., 2020), as well as in selected African and Asian countries (Mwazvita et al., 2020; Sinha & Sedai, 2022; Parker et al., 2023). Across these studies, conclusions are strikingly consistent: deficient infrastructure, or infrastructure that is not planned and implemented from a gender perspective, restricts women's freedom of movement. As a result, women tend to limit their mobility to well-lit and supervised areas, avoiding spaces that are perceived as dark, isolated, or dangerous (Toro & Ochoa, 2017).

With respect to urban infrastructure, research such as Rogers (2012) demonstrates that infrastructures may foster and embody multiple forms of violence against women, ranging from highly visible and immediate acts to more gradual, every day and intimate forms of violence. Disconnections and the absence of essential infrastructure (such as water and sanitation, public transportation, and public toilets) separate peripheral and low-income neighbourhoods from resources, rights, and mobility within the city and in daily life, imposing particularly high costs on women (Parker et al., 2023). In line with this, Roman and Reid (2012) observe that areas served by metropolitan public transport

stops exhibit significantly lower prevalence of gender-based violence compared to areas without such access.

Another topic that has received growing attention in recent literature is gender-based violence occurring within public transportation systems themselves (Infante-Vargas et al., 2022; Tiznado-Aitken et al., 2024; Ison, 2024; Useche, 2024). This form of violence (which includes sexual harassment, physical and verbal assaults, and threats) restricts equitable access to the city and perpetuates structural inequalities. Gender-based violence in public transport is highly prevalent in cities across Latin America, Asia, Africa, and Europe, with a large proportion of women reporting experiences of harassment or violence. Victims suffer emotional, psychological, and economic consequences, including fear, stress, changes in daily routines, restricted mobility, and lost educational or employment opportunities.

Among notable initiatives aimed at improving infrastructure to reduce gender-based violence, the programme launched in 2018 by the Subsecretariat of Gender Policies of the Province of Santa Fe (Argentina) deserves particular attention. The *Women in Municipalities and Communes* programme focused on the renovation of public spaces (such as squares and open neighbourhood areas) by incorporating gender-sensitive design criteria to enhance perceptions of safety and promote women's use and enjoyment of public spaces. A central component involved the installation of lighting systems and urban design interventions to reduce feelings of insecurity, particularly at night, thereby promoting spatial quality, safety, and enjoyment, especially for women (VVAA, 2023).

Despite these efforts, progress in addressing women's safety and development needs in urban spaces has been slow. Considerably more action is required to tackle gender-based violence, alongside further research, particularly in areas such as transportation and its interaction with gender. Mwazvita et al. (2019) call on government bodies to provide open data for studies evaluating safety in public spaces, while Aguilar et al. (2021) similarly stress the need for expanded research in this area. A further priority concerns the incorporation of gender sensitivity into public infrastructure budgets, ensuring that they explicitly address the problems identified and prioritise concrete measures to mitigate them (De Pablos, 2022a, 2022b).

In light of these considerations, and given the novelty of examining gender-based violence through the lens of infrastructure, two major contributions of the project underpinning this study should be highlighted. First, the geographical and political context of the analysis (Spain, a European country classified as part of the developed

world) represents a significant addition to a literature largely focused on Latin America, Asia, and Africa. To date, the impact of infrastructure on well-being in relation to gender-based violence has rarely been examined in so-called "first-world" contexts. Our findings challenge this implicit assumption by demonstrating that infrastructure also affects women's and men's well-being in differentiated ways throughout Europe (Alarcón-García et al., 2025a).

Second, this study is grounded in welfare economics, using subjective well-being measures**,** whereas most existing research on this topic has been situated primarily within urban studies, sociology, or geography. By adopting a feminist welfare economics perspective, this work contributes an alternative and complementary analytical framework to the study of gender-based violence and infrastructure.

3. Data and Methodology

3.1. Data

The empirical analysis is based on data from the *"Infrastructure for Everyday Life" Survey*, conducted within the framework of the research project PID2022-141305OB-I00. The target population comprises the general population of both sexes aged 18 years and older residing in Spain.

The sample design follows a non-proportional allocation, which requires the application of weighting coefficients when analysing the sample as a whole. **A** multi-stage, stratified cluster sampling design was implemented. Stratification was based on municipal population size, divided into three categories: municipalities with 5,000 inhabitants or fewer; municipalities with 5,001 to 400,000 inhabitants; and municipalities with more than 400,000 inhabitants.

The selection of final sampling units (households) was carried out randomly, applying quotas for sex and age. The final sample consists of 1,502 respondents, and the questionnaire includes 25 questions, the majority of which are qualitative. Assuming an infinite population within each stratum and given that 500 interviews were conducted per stratum, with P = Q = 50% and a confidence level of K = 2σ (95.5%), the sampling error is E = ± 4.5% for each stratum. For the overall sample (approximately 1,500 interviews), the sampling error is E = ± 2.6%.

3.2. Methodology

a) Structural Equation Modelling

Structural Equation Modelling (SEM) is a multivariate statistical technique that combines aspects of multiple linear regression and factor analysis. This methodological approach allows for the estimation of complex dependency relationships between variables, explicitly incorporating measurement error into the estimation of structural coefficients. Moreover, SEM enables the analysis of relationships between latent variables and observed variables**.**

SEM is based on covariance structure analysis and is used to test the existence of causal relationships between observed and latent constructs. Observed variables are those that can be measured directly, whereas latent variables cannot be directly observed and must therefore be inferred from multiple observed indicators.

In the *"Infrastructure for Everyday Life" Survey*, the perception of the overall importance of infrastructure in relation to gender-based violence (variable P3) is not directly observed. Instead, this latent variable depends on eight different dimensions of infrastructure for which respondents provided specific evaluations.

The infrastructure dimensions considered are:

- Childcare centres
- Health centres and hospitals
- Facilities for people with care dependencies
- Sidewalks, pedestrian streets, parks, public lighting, and green areas
- Markets and shopping centres
- Public transportation
- Leisure areas
- Industrial parks

Similarly, variables P1 and P2 (relating respectively to respondents' access to infrastructure and the importance attributed to different types of infrastructure) are also not directly observable. Given their relevance to the analysis, these variables are likewise estimated as latent constructs using structural equation models.

This methodological approach has proven particularly valuable for identifying the most relevant dimensions within the phenomenon under study—namely, determining the relative importance of different infrastructures in shaping perceptions of gender-based violence. At the same time, it allows for the construction of a synthetic indicator, represented by the estimated latent variable, which summarises the information captured by all observed variables. This indicator can subsequently be treated as an additional

variable for descriptive analysis and for inclusion in the regression models developed in this study.

b) Logistic Regression Models

Logistic regression models are particularly useful when the dependent variable is categorical and the objective is to estimate the probability that a given characteristic occurs or not. In this study, logistic models are employed to analyse the factors that most strongly influence the importance attributed to infrastructure in shaping perceptions of gender-based violence.

The latent dependent variable is qualitative and comprises more than two categories. The logistic distribution function, which defines the probability of a given outcome, is expressed as follows (Hosmer & Lemeshow, 2000; Greene, 2003):

$$P_i = E\left(y = 1/x_i\right) = \frac{1}{1+e^{-(\beta_0+\beta_1 x_1+\cdots.+\beta_k x_k)}} \qquad (1)$$

Where, β_i , i=0,1,…,k denote the model parameters, and x_i represent the explanatory variables.

In addition to estimating predicted probabilities, it is particularly informative to compute odds ratios, which allow for the assessment of the likelihood of observing a given outcome relative to its absence. Taking the natural logarithm of the odds yields a linear representation of the model:

$$L_i = ln\frac{P_i}{1-P_i} = \beta_0 + \beta_1 x_1 + \cdots.+\beta_k x_k \qquad (2)$$

For testing the statistical significance of individual coefficients in the estimated logistic models, the Student's *t*-test is not appropriate due to the categorical nature of the dependent variable. Instead, the Wald statistic is used. The hypotheses tested are:

$$H_0: \beta_i = 0$$

$$H_1: \beta_i \neq 0$$

If the null hypothesis is accepted, the corresponding explanatory variable is not statistically significant. Conversely, rejection of the null hypothesis indicates that the explanatory variable significantly influences the dependent variable.

To assess the overall goodness of fit of the estimated model, the traditional R^2 measure cannot be applied because the dependent variable is qualitative. Accordingly, model fit is evaluated using the Nagelkerke pseudo R^2 statistic.

Having outlined the principal methodological aspects, the following section presents the main empirical results derived from the estimated logistic regression models.

4. Variables used: observed and latent variables

4.1. Observed Variables: Description of Personal and Socioeconomic Characteristics

All independent variables included in the empirical models are drawn from the *"Infrastructure for Everyday Life" Survey* described above. Specifically, the following variables are considered.

Personal and Social Variables:

- Gender**:** categorical variable coded as Male = 1; Female = 2
- Age**:** numerical variable
- Autonomous Communities (Comunidades Autónomas)
- Marital status**:** categorical variable coded as married or cohabiting = 1; single = 2; widowed, separated, or divorced = 3
- Place of residence**:** categorical variable including city centre, rural area, hamlet, residential development, and other
- Highest level of education completed**:** categorical variable including no formal education; primary education; secondary education; upper secondary education (baccalaureate), vocational training, and university education

Economic Variables

- Net disposable income after deductions**:** numerical variable treated as continuous in the models. For descriptive purposes, income is grouped into ten categories ranging from EUR 300 to EUR 6,000 or more per month.
- Employment status**:**
    - Self-employed with employees
    - Self-employed without employees
    - Public sector employee (civil servant)
    - Private sector employee
    - Retired / pensioner
    - Homemaker
    - Student
    - Unemployed

Basic descriptive statistics for these variables are presented in the figures included in Appendix 1**.** As shown in Figures A.1 and A.2, the majority of respondents are over 45 years of age (61%), with a substantial proportion aged 65 and over. The share of young respondents aged under 30 (representing the 18-30 age group included in the survey) is

relatively small (16%), and remains low even when considering those under 44 years of age (23%).

In terms of gender, the distribution of respondents is relatively balanced, with a slightly higher proportion of women than men (51% versus 49%). Age distributions by gender are generally similar, with the exception of the group aged 65 and over, where women are notably overrepresented (14% of women compared to 11% of men).

Regarding the regional distribution of respondents across Autonomous Communities, response rates largely reflect population size, with higher representation in Andalusia, Catalonia, and Madrid (Figures A.3 and A.4). In contrast, Autonomous Communities such as Navarre, Cantabria, and La Rioja account for a comparatively small proportion of responses. Overall, the survey data closely mirror Spain's demographic structure.

With respect to marital status, most respondents are married or living with a partner (54%). Single respondents constitute the next largest group, while divorced or separated individuals account for just over 10%. Widowed respondents represent the smallest group (Figures A.5 and A.6), and it is within this category that women clearly predominate.

In terms of educational attainment, the largest group comprises respondents with university education (43%). The number of women with university degrees exceeds that of men (327 women compared to 313 men). Additionally, 22.9% of respondents report having vocational training, 17.8% upper secondary education, 9.7% primary education, and 6.6% secondary education, while only 1.2% report having no formal education. Women are overrepresented among respondents without formal education (Figures A.7 and A.8).

Income responses reveal clear gender disparities: men report higher levels of monthly net income, and the gender gap widens as income increases. Most respondents report monthly net income between EUR 900 and EUR 2,400 (Figures A.9 and A.10). Employment status further reinforces this pattern, as no men report being dedicated exclusively to household work, while the number of unemployed women is significantly higher than that of unemployed men.

Finally, the majority of respondents report living either in city centres (33%) or rural areas (36%). A substantial proportion live in peripheral urban areas (16%), while relatively few reside in hamlets or small population centres (6%) (Figures A.11 and A.12). Overall, gender differences in place of residence are limited, although men are somewhat more likely to live in city centres.

4.2. Latent Variables

a) Latent Variable: Importance of Infrastructure in the Probability of Experiencing Gender-Based Violence

The core objective of this study is to assess the subjective and individual-level importance attributed to different types of infrastructure in shaping perceptions of gender-based violence. The survey variable capturing this dimension is P3**,** which is formulated as follows: *"importance attributed by respondents to infrastructure in reducing the probability that a woman may experience sexual assault or other episodes related to gender-based violence."*

Eight categories of **i**nfrastructure are considered:

- Childcare centres for children under three years of age
- Health centres and hospitals
- Facilities for people with care dependencies
- Sidewalks, pedestrian streets, parks, public lighting, and green areas
- Markets and shopping centres
- Public transportation
- Leisure areas (including sports facilities)
- Industrial parks

An initial descriptive analysis of the observed variable (see Table 1), taking into account that responses regarding the perceived importance of infrastructure range from 1 to 10, allows us to conclude that, overall, respondents attribute a high level of importance to infrastructure in relation to the probability of experiencing gender-based violence.

Among the different types of infrastructure considered, health centres and hospitals**,** childcare centres**,** and sidewalks, pedestrian streets, and public lighting exhibit the highest mean scores. In contrast, industrial parks and markets and shopping centres receive the lowest average evaluations. Median responses are closely aligned with mean values, while the most frequent response (mode) is very high across nearly all categories, with the exception of industrial parks.

Table 1. Descriptive statistics for variable P3: *Perceived importance of infrastructure in relation to gender-based violence*

	Escuelas infantiles	Centros salud y hospitales	Centros personas dependientes	Aceras, C/peatonales, alumbrado público	Mercados C. comerciales	Transporte público	Ocio Cultural Deportivo	Parques Industriales
Media	6	7	6	7	6	6	7	5
Mediana	7	8	7	8	6	7	7	5
Moda	10	10	10	10	10	10	10	1
Desv. Tip	3,5	3,2	3,3	3,1	3,1	3,2	3,0	3,3
Q1	3	5	3	5	4	5	5	1
Q2=Mediana	7	8	7	8	6	7	7	5
Q3	10	10	9	9,75	8	9	9	8

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

Table 2. Relative frequencies of variable P3: "Perceived importance of infrastructure in relation to gender-based violence"

	Escuelas infantiles	Centros salud y hospitales	Centros personas dependientes	Aceras, C/peatonales, alumbrado público	Mercados C. comerciales	Transporte público	Ocio Cultural Deportivo	Parques Industriales
1	15%	11%	14%	11%	14%	12%	10%	21%
2	3%	3%	3%	2%	3%	2%	2%	5%
3	3%	2%	4%	3%	4%	4%	3%	4%
4	2%	3%	3%	3%	4%	3%	4%	5%
5	9%	9%	12%	11%	14%	12%	12%	20%
6	10%	5%	12%	7%	12%	11%	8%	8%
7	9%	12%	10%	13%	12%	10%	16%	8%
8	13%	13%	13%	16%	14%	14%	15%	9%
9	9%	11%	8%	9%	6%	9%	9%	5%
10	27%	31%	21%	25%	18%	24%	21%	15%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

Table 2 reports the percentage distribution of responses ranging from 1 to 10 for each type of infrastructure. The results clearly show that higher scores are the most frequent responses across all infrastructure categories. A score of 10 is the most common response for all types of infrastructure considered, with the exception of industrial parks. In the latter case, 21% of respondents assign the lowest possible level of importance, indicating a substantially weaker perceived relationship with gender-based violence.

Table 3. Percentage frequencies for variable P3 by gender (Men-Women): "Perceived importance of infrastructure in relation to gender-based violence**"**

	Escuelas Infantiles		Centros salud y hospitales		Centros personas dependientes		Aceras, C/peatonales, alumbrado público zonas verdes		Mercados C. comerciales		Transporte público		Ocio Cultural Deportivo		Parques Industriales	
	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M
1	8%	7%	6%	5%	7%	7%	6%	5%	7%	7%	6%	6%	5%	5%	10%	10%
2	1%	2%	2%	2%	2%	1%	1%	1%	2%	1%	1%	1%	1%	1%	3%	3%
3	2%	2%	1%	1%	2%	2%	2%	1%	2%	1%	2%	2%	2%	1%	2%	2%
4	1%	1%	2%	1%	2%	2%	1%	2%	2%	2%	2%	1%	2%	2%	3%	3%
5	4%	5%	4%	4%	6%	6%	5%	5%	7%	8%	5%	7%	5%	7%	10%	10%
6	2%	3%	3%	2%	6%	6%	4%	3%	7%	6%	6%	5%	5%	4%	3%	4%
7	5%	4%	7%	5%	6%	4%	7%	6%	6%	6%	6%	4%	9%	7%	4%	4%
8	6%	7%	6%	7%	6%	7%	8%	7%	7%	7%	7%	7%	8%	8%	5%	4%
9	4%	5%	6%	5%	4%	4%	4%	5%	2%	3%	4%	5%	4%	5%	2%	3%
10	12%	15%	12%	19%	9%	12%	11%	14%	8%	10%	10%	14%	9%	12%	6%	9%
TOTAL	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

An analysis of the frequency distribution by gender (Table 3) reveals that women consistently assign higher levels of importance than men to all types of infrastructure considered. In contrast, lower scores (below 5) show relatively similar distributions across genders. The largest gender gap is observed for health-related infrastructure, where 19% of women assign the maximum score (10), highlighting its perceived relevance in reducing the risk of gender-based violence.

Table 4. Importance of infrastructure in relation to gender-based violence: Latent variable

	Escuelas infantiles	Centros salud hospitales	Centros personas dependientes	Aceras, C/peatonales, alumbrado público	Mercados C. comer.	Transporte público	Ocio Cultural Deportivo	Parques Industriales	
	P3_1	P3_2	P3_3	P3_4	P3_5	P3_6	P3_7	P3_8	SUMA ponderaciones
Ponderaciones SEM	**1**	**0,98**	**1**	**0,93**	**1,1**	**1**	**0,98**	**0,87**	7,86

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

Table 4 presents the results obtained from the estimation of a structural equation model, namely the estimated weights used to construct the latent variable *"overall importance of infrastructure in the probability of experiencing gender-based violence"*. An important methodological note concerns missing responses in the survey, which were addressed by assigning the observed mean value.

These estimated weights are applied to each respondent's answers, yielding the latent variable *"importance of infrastructure in the perception of gender-based violence"*, which is subsequently used as an explanatory variable in the empirical models developed in this study.

Table 5. Percentage frequency distribution of the latent variable "Overall importance of infrastructure in the probability of experiencing gender-based violence"in relation to observed independent variables

VIOLENCIA																				
	GENERO			EDAD			RENTA*				ESTADO CIVIL**			EDUACACION***				LUGAR DONDE VIVE****			
IN VIOLENCIA	Hombre	Mujer	Total	<50=0	>50 =1	Total	Alta	Baja	Media	Total	1	0	Total	1	2	3	Total	1	2	3	Total
<5	14%	15%	29%	14%	15%	29%	4%	11%	14%	29%	16%	14%	29%	5%	17%	7%	29%	11%	12%	6%	29%
>5	35%	36%	71%	35%	35%	71%	10%	25%	35%	71%	39%	32%	71%	12%	43%	15%	71%	28%	29%	13%	71%
Total	49%	51%	100%	50%	50%	100%	14%	36%	49%	100%	54%	46%	100%	18%	60%	22%	100%	40%	41%	19%	100%

*RENTA baja<1500;media entre 1500 y 2500; alta >2500
**ESTADO CIVIL 1= Casados+Perajas; 0=solteros, viudos, separados
***EDUCACIÓN 1=PRIMARIA, SECUNDARIA, SIN ESTUDIOS; 2= UNIVERSIDAD+BACHILLERATO; 3=FP
****LUGAR DONDE VIVE 1=urbanización, centro; 2= rural+pedania; 3=periferia

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

Table 5 reports the percentage distribution of the latent variable in relation to the observed independent variables selected for the model. In the first column, the latent variable is operationalised as a discrete indicator with two response categories: values greater than 5 and values equal to or below 5.

The results confirm one of the patterns already identified in the descriptive analysis: the percentage of women who attribute greater importance to infrastructure in relation to gender-based violence is slightly higher than that of men. Age does not appear to be a determining factor, as no substantial differences are observed between respondents aged above or below 50 years.

Respondents with low and medium income levels demonstrate a higher perception of the importance of infrastructure, as do those with university education. Individuals living in rural areas and hamlets also attribute greater importance to infrastructure in relation to gender-based violence.

b) Latent Variable: Access to Infrastructure

The *"Infrastructure for Everyday Life" Survey* includes a question that is particularly relevant for analysing the factors influencing the importance attributed to infrastructure in relation to perceptions of gender-based violence. This is variable P1A, formulated as follows: *"What is your level of access—or has been your level of access—to each of the eight types of infrastructure mentioned above?"*

The main descriptive statistics for this variable reveal several relevant patterns. Access to childcare centres does not appear to constitute a major problem, as indicated by high values for the mean, median, and mode (7, 8, and 10, respectively). A similar situation is observed for health centres and hospitals, sidewalks and public lighting, and markets and shopping centres.

By contrast, the mean value for public transportation is lower, suggesting that access is less fluid. Survey data also indicate limited access to facilities for people with care dependencies and to industrial parks. Access to sports and cultural facilities is, however, rated as relatively high.

Table 6. Descriptive statistics for the variable *"Access to infrastructure"*

	Escuelas Infantiles	Centros salud y hospitales	Centros personas dependientes	Aceras, C/peatonales, alumbrado público	Mercados C. comerciales	Transporte público	Ocio Cultural Deportivo	Parques Industriales
Media	7	8	6	8	7	6	7	6
Mediana	8	8	6	8	8	7	7	6
Moda	10	10	1	10	10	10	8	1
Desv. Tip	3	2	3	2	3	3	2	3
Q1	6	6	3	6	6	4	5	3
Q2=Mediana	8	8	6	8	8	7	7	6
Q3	10	10	8	10	9	9	9	8

Source: Infrastructure for Everyday Life Survey. *Authors' own elaboration.*

When analysed by gender, women report higher levels of access across nearly all types of infrastructure. This finding is consistent with previous research documenting greater use of public transportation by women (Assoumou, 2020).

Table 7. Relative frequencies by gender for variable P1A: *"Access to infrastructure"*

	Escuelas Infantiles		Centros salud y hospitales		Centros personas dependientes		Aceras, C/peatonales, alumbrado público zonas verdes		Mercados C. comerciales		Transporte público		Ocio Cultural Deportivo		Parques Industriales	
	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M
1	5%	5%	1%	1%	9%	9%	1%	1%	3%	3%	5%	4%	2%	3%	8%	10%
2	1%	1%	1%	1%	2%	2%	0%	1%	1%	1%	2%	3%	1%	1%	2%	2%
3	2%	1%	1%	1%	3%	2%	1%	1%	2%	1%	3%	3%	2%	2%	2%	2%
4	3%	1%	2%	1%	2%	3%	2%	1%	2%	2%	3%	3%	2%	2%	2%	2%
5	3%	4%	4%	4%	6%	7%	4%	4%	4%	5%	5%	5%	5%	5%	6%	6%
6	4%	4%	5%	4%	7%	6%	5%	4%	4%	4%	4%	3%	6%	5%	6%	5%
7	7%	6%	6%	7%	6%	5%	7%	7%	7%	7%	5%	5%	8%	9%	7%	6%
8	9%	7%	10%	9%	6%	6%	10%	9%	10%	8%	7%	6%	10%	10%	8%	7%
9	6%	5%	7%	7%	3%	3%	6%	6%	7%	6%	6%	5%	6%	5%	4%	3%
10	11%	17%	12%	15%	6%	8%	12%	16%	10%	12%	9%	12%	7%	9%	6%	6%
TOTAL GENERAL	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%

Source: Infrastructure for Everyday Life Survey. *Authors' own elaboration.*

The weights obtained from the structural equation models for access to each type of infrastructure are reported in the first row of Table 4. As in the previous case, these weights are applied to individual respondents' answers in order to estimate the latent variable *"access to infrastructure."*

Table 8. Weights for the latent variable: *Access to infrastructure*

ACCESOS INFRAESTRUCTURAS	Escuelas infantiles P1_I1	Centros salud hospitales P1_I2	Centros personas dependientes P1_I3	Aceras, C/peatonales, alumbrado público P1_I4	Mercados C. comer. P1_I5	Transporte público P1_I6	Ocio Cultural Deportivo P1_I7	Parques Industriales P1_I8	SUMA ponderaciones
Ponderaciones SEM	**1**	**1,2**	**1,2**	**0,97**	**1,4**	**1,5**	**1,4**	**1,1**	9,77

Source: Infrastructure for Everyday Life Survey. *Authors' own elaboration.*

Table 9. Percentage frequency distribution of the latent variable *"Access to infrastructure"* in relation to observed independent variables

ACCESO INFRAESTRUCTURAS																				
	GENERO			EDAD			RENTA*				ESTADO CIVIL**			EDUCACION***				LUGAR DONDE VIVE****			
IN_ACCESO	Hombre	Mujer	Total	<50=0	>50 =1	Total	Alta	Baja	Media	Total	1	0	Total	1	2	3	Total	1	2	3	Total
<5	4%	3%	7%	3%	4%	7%	1%	2%	4%	7%	4%	3%	7%	1%	4%	2%	7%	2%	5%	1%	7%
>5	45%	48%	93%	47%	46%	93%	14%	34%	45%	93%	50%	43%	93%	16%	57%	20%	93%	38%	37%	18%	93%
Total	49%	51%	100%	50%	50%	100%	14%	36%	49%	100%	54%	46%	100%	18%	60%	22%	100%	40%	41%	19%	100%

*RENTA baja<1500;media entre 1500 y 2500; alta >2500

**ESTADO CIVIL 1= Casados+Perajas; 0=solteros, viudos, separados

***EDUCACIÓN 1=PRIMARIA, SECUNDARIA, SIN ESTUDIOS; 2= UNIVERSIDAD+BACHILLERATO; 3=FP

****LUGAR DONDE VIVE 1=urbanización, centro; 2= rural+pedania; 3=periferia

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

Table **9** presents the percentage frequency distribution of the correlation between the latent variable *access to infrastructure* and a large proportion of the independent variables included in the model. In the first column, the latent variable is operationalised as a discrete indicator with two response categories: values greater than 5 and values equal to or below 5.

The results largely mirror those obtained for the first latent variable analysed. Women are more likely than men to report greater access to infrastructure, as are respondents with low and medium income levels and those with university education. Age does not appear to exert a significant influence on access. Individuals living in urban centres, as well as those in rural areas and hamlets, also report higher levels of access to infrastructure.

c) Latent Variable: Importance of Infrastructure

Table 10 highlights the high level of importance that respondents attribute to different types of infrastructure. Both the mean and the modal values are higher than those observed for the access variable, indicating that respondents generally assign greater importance to infrastructure than the level of access they actually experience.

The only infrastructure category for which both the mean and the median decline noticeably is industrial parks. This may reflect a certain lack of awareness regarding their

indirect impact on everyday life. Mean values are also lower for facilities for people with care dependencies, whose perceived relevance is strongly conditioned by respondents' age and personal or family circumstances.

Table 10. Descriptive statistics for the variable *"Importance of infrastructure"*

	Escuelas Infantiles	Centros salud y hospitales	Centros personas dependientes	Aceras, C/peatonales, alumbrado público	Mercados C. comerciales	Transporte público	Ocio Cultural Deportivo	Parques Industriales
Media	8	9	7	9	8	8	8	6
Mediana	9	10	8	9	8	9	8	7
Moda	10	10	10	10	10	10	10	8
Desv. Tip	3	2	3	2	2	2	2	3
Q1	7	9	6	8	7	7	7	4
Q2=Mediana	9	10	8	9	8	9	8	7
Q3	10	10	10	10	10	10	10	8

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

By gender, women assign substantially higher importance to almost all types of infrastructure considered, with the exception of industrial parks. It is common for women to assign the maximum score of 10, while very few women indicate that infrastructure is entirely unimportant. Notably, only 6% of women assign no importance to childcare centres, 5% give a score of zero to facilities for people with care dependencies, and 8% assign the same low valuation to industrial parks. Similarly, very few men report assigning low importance to infrastructure.

Table 11. Relative frequencies by gender for variable P1I: *"Importance of infrastructure"*

Escuelas Infantiles		Centros salud y hospitales		Centros personas dependientes		Aceras, C/peatonales, alumbrado público zonas verdes		Mercados C. comerciales		Transporte público		Ocio Cultural Deportivo		Parques Industriales	
H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M
5%	6%	0%	0%	6%	5%	1%	0%	1%	1%	3%	2%	1%	1%	5%	8%
1%	1%	0%	0%	1%	1%	0%	0%	0%	0%	1%	1%	0%	1%	2%	2%
1%	1%	0%	0%	1%	1%	1%	0%	1%	0%	1%	1%	0%	0%	1%	3%
1%	0%	0%	0%	2%	1%	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%
3%	3%	2%	1%	3%	4%	2%	1%	4%	3%	3%	2%	3%	2%	6%	6%
2%	1%	1%	1%	3%	2%	2%	2%	5%	3%	2%	2%	3%	3%	5%	5%
4%	3%	2%	2%	5%	4%	5%	3%	8%	7%	5%	4%	8%	7%	7%	7%
7%	5%	6%	4%	7%	5%	10%	8%	13%	11%	8%	6%	12%	12%	8%	7%
8%	6%	8%	7%	6%	6%	8%	10%	6%	8%	8%	7%	9%	9%	4%	4%
18%	25%	29%	35%	16%	22%	20%	27%	10%	17%	19%	26%	13%	17%	8%	6%
49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%	49%	51%

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

The weights estimated through structural equation modelling for the importance attributed to each type of infrastructure are reported in Table 11. As in the previous cases, these weights are applied to individual respondents' answers in order to estimate the latent variable *"importance of infrastructure."*

Table 11. Weights for the latent variable: *Importance of infrastructure*

	Escuelas infantiles	Centros salud hospitales	Centros personas dependientes	Aceras, C/peatonales, alumbrado	Mercados C. comer.	Transporte público	Ocio Cultural Deportivo	Parques Industriales	
IMPORTANCIA INFRAESTRUCTURAS	P1_I1	P1_I2	P1_I3	P1_I4	P1_I5	P1_I6	P1_I7	P1_I8	SUMA ponderaciones
Ponderaciones SEM	**1**	**0,65**	**1,1**	**0,79**	**0,56**	**0,98**	**0,81**	**0,78**	6,67

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

Table 12. Percentage frequency distribution of the latent variable *"Importance of infrastructure"* in relation to observed independent variables

IMPORTANCIA DE LAS INFRAESTRUCTURAS																					
	GENERO			EDAD			RENTA*				ESTADO CIVIL**			EDUCACION***				LUGAR DONDE VIVE****			
IN_IMPORT.	Hombre	Mujer	Total	<50=0	>50 =1	Total	Alta	Baja	Media	Total	1	0	Total	1	2	3	Total	1	2	3	Total
<5	3%	2%	5%	2%	3%	5%	0%	2%	3%	5%	3%	2%	5%	1%	2%	1%	5%	2%	3%	0%	5%
>5	46%	49%	95%	48%	47%	95%	14%	34%	47%	95%	52%	44%	95%	17%	58%	21%	95%	38%	38%	19%	95%
Total	49%	51%	100%	50%	50%	100%	14%	36%	49%	100%	54%	46%	100%	18%	60%	22%	100%	40%	41%	19%	100%
	*RENTA baja<1500;media entre 1500 y 2500; alta >2500																				
	**ESTADO CIVIL 1= Casados+Perajas; 0=solteros, viudos, separados																				
	***EDUCACIÓN 1=PRIMARIA, SECUNDARIA, SIN ESTUDIOS; 2= UNIVERSIDAD+BACHILLERATO; 3=FP																				
	****LUGAR DONDE VIVE 1=urbanización, centro; 2= rural+pedania; 3=periferia																				

Source: Infrastructure for Everyday Life Survey. Authors' own elaboration.

Table 12 reports the percentage frequency distribution of the latent variable *importance of infrastructure* in relation to the independent variables included in the model. The results are consistent with those obtained for the two previously estimated latent variables. Women are more likely to assign greater importance to infrastructure, as are respondents with low and medium income levels and those with university education. Individuals living in urban centres, as well as those residing in rural areas and hamlets, also attribute higher importance to infrastructure overall.

5. Factors shaping the perception of the importance of infrastructures in gender based violence. Results of the models.

To analyse the factors explaining the likelihood of perceiving the importance of infrastructures in the context of gender-based violence, two logistic regression models were estimated. In the first model, the dependent variable is the perceived importance of infrastructures in gender-based violence. The independent variables include the latent constructs access (ACCN) and importance of infrastructures (IMPN), as well as the following observed variables: age, income, gender, marital status, educational attainment, place of residence, and employment status. All variables are categorical, with the exception of age and income, which are continuous. The second model extends the first by additionally incorporating the Autonomous Community of residence as an explanatory variable.

Table 13 presents the results of the first logistic regression model, estimated using robust standard errors to correct for potential heteroskedasticity or misspecification in the variance. These estimates allow the identification of the factors influencing the probability of perceiving the importance of infrastructures in relation to gender-based violence.

Table 13. Results of the logistic regression model estimating the perceived importance of infrastructures in gender-based violence.

IN_L	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
LEDAD	.7731034	.1223725	-1.63	0.104	.5668956	1.054319
LRenta	1.051872	.0989159	0.54	0.591	.8748183	1.26476
IMPN	1.438299	.0677072	7.72	0.000	1.311534	1.577318
ACCN	1.031347	.0255936	1.24	0.214	.9823847	1.08275
1.Genero	1.245581	.1515777	1.80	0.071	.9812666	1.58109
1.Primaria	.2498643	.1875664	-1.85	0.065	.057376	1.088124
1.Secundaria	.196777	.1495035	-2.14	0.032	.0443879	.8723365
1.Universitaria	.2247227	.1644497	-2.04	0.041	.0535484	.9430776
1.FP	.2648875	.1951776	-1.80	0.071	.0624984	1.122675
1.Bachillerato	.1705456	.1256721	-2.40	0.016	.040235	.7228969
1.CasadParej	1.117578	.1708255	0.73	0.467	.8282639	1.507949
1.Viudos	1.119537	.317535	0.40	0.691	.6421135	1.951935
1.SeparDivord	1.218066	.2735058	0.88	0.380	.7844066	1.891475
1.Periferia	1.958728	1.227688	1.07	0.283	.5734023	6.690966
1.Centro	1.945149	1.210309	1.07	0.285	.5745378	6.585474
1.Rural	2.024215	1.256648	1.14	0.256	.5995483	6.834218
1.Pedania	2.981178	2.044253	1.59	0.111	.777503	11.43072
1.Urbanizacion	1.986477	1.29567	1.05	0.293	.5532115	7.133058
1.Estudiante	2.209474	1.973451	0.89	0.375	.3837209	12.72221
1.TCAjSPriv	2.042832	1.712628	0.85	0.394	.3950206	10.56442
1.Funcionario	1.819452	1.550793	0.70	0.483	.3423159	9.670618
1.Jubilado	1.57821	1.326186	0.54	0.587	.3040122	8.192914
1.AutonomoNosal	1.528154	1.361653	0.48	0.634	.2665073	8.762448
1.AutonomoSisal	1.596826	1.370107	0.55	0.585	.2971056	8.582315
1.SLabores	1.282273	1.169286	0.27	0.785	.2146752	7.659123
1.Parado	1.839351	1.59779	0.70	0.483	.335159	10.09435
_cons	.3457411	.5309399	-0.69	0.489	.017045	7.01302

Logistic regression — Number of obs = 1,502
Wald chi2(26) = 94.72
Prob > chi2 = 0.0000
Log pseudolikelihood = -842.18771 — Pseudo R2 = 0.0558

Based on these results, the following conclusions can be drawn:

- Among the indices included in the model, only the infrastructure importance index (IMPN) shows a statistically significant and substantively meaningful effect. Specifically, IMPN is positively and significantly associated with the perception of the importance of infrastructures in relation to gender-based violence (OR = 1.438; 95% CI: 1.312–1.577; $p < .001$). This indicates that, for each additional unit increase in this index, the odds of perceiving infrastructures as important in the context of gender-based violence increase by approximately 44%, holding all other factors constant. This finding identifies IMPN as the main explanatory factor shaping perceptions within the analysed sample.
- In contrast, the access index (ACCN) does not reach statistical significance (OR = 1.031; $p = .214$), suggesting that differential levels of access are not associated with variations in this perception.

- Other continuous covariates, such as age (OR = 0.773; p = .104) and income (OR = 1.052; p = .591), are also not statistically significant. This suggests that, within the sample, the probability of perceiving the importance of infrastructures does not differ systematically across age groups or income levels.
- Regarding categorical variables, a consistent pattern emerges for educational attainment. Using individuals with no formal education as the reference category, those with secondary education (OR = 0.197; p = .032), university education (OR = 0.225; p = .041), and upper secondary education (Bachillerato) (OR = 0.171; p = .016) show statistically significant effects. These coefficients indicate reductions in the odds of perceiving the importance of infrastructures ranging from approximately 75% to 83% relative to respondents without formal education. When adopting a 10% significance level, similar effects are observed for primary education (OR = 0.250; p = .065) and vocational training (OR = 0.265; p = .071). Overall, this pattern suggests that any level of formal education is associated with a lower probability of perceiving the relevance of infrastructures compared to individuals without schooling, pointing to the potential role of cognitive, informational, or experiential mechanisms linked to formal education.
- Gender is statistically significant at the 10% level. The odds ratio (OR = 1.246; p = .071) indicates that women have approximately a 24% higher probability of perceiving the importance of infrastructures in the context of gender-based violence compared to men.
- Categories related to marital status, residential location, and employment status are not statistically significant (p > .10) and exhibit wide confidence intervals. This suggests that, in this sample, these variables do not account for systematic differences in perceptions, possibly due to substantial heterogeneity within categories.

In summary, the results highlight the central relevance of the infrastructure importance index (IMPN) and educational attainment in explaining perceptions of violence as related to infrastructures. Gender also plays a role, although with marginal statistical significance. Conversely, other traditional sociodemographic characteristics—such as age, income, marital status, type of residence, and employment situation—do not display significant effects.

Taken together, these findings suggest that the perception of gender-based violence is not solely shaped by structural sociodemographic factors, but is more strongly associated

with specific elements linked to personal experience, access to information, and respondents' educational background.

Table 14. Table of classification

```
             -------- True --------
Classified |         D            ~D  |      Total
-----------+--------------------------+-----------
     +     |      1048           361  |       1409
     -     |        32            61  |         93
-----------+--------------------------+-----------
   Total   |      1080           422  |       1502

Classified + if predicted Pr(D) >= .5
True D defined as IN_L != 0
--------------------------------------------------
Sensitivity                     Pr( +| D)   97.04%
Specificity                     Pr( -|~D)   14.45%
Positive predictive value       Pr( D| +)   74.38%
Negative predictive value       Pr(~D| -)   65.59%
--------------------------------------------------
--------------------------------------------------
Correctly classified                        73.83%
```

Based on the results presented in the previous table, the model exhibits high sensitivity (97.04%), indicating that it correctly identifies the vast majority of individuals who actually perceive violence. However, specificity is low (14.45%), revealing difficulties in accurately recognizing cases in which violence is not perceived.

The positive predictive value (74.38%) indicates that, among those classified by the model as perceiving violence, approximately three quarters truly belong to that category. Conversely, the negative predictive value (65.59%) shows that roughly two thirds of those classified as not perceiving violence are correctly identified as such.

Taken together, these results suggest that the model is particularly effective in detecting positive cases (high sensitivity), but considerably less precise in distinguishing negative ones (low specificity). Consequently, the model correctly classifies the majority of violence perceptions, while facing limitations in identifying individuals who do not perceive violence.

This pattern of high sensitivity combined with lower specificity is consistent with the ROC curve (Figure 1), as the area under the curve (AUC) is 0.6514 (close to 0.7), indicating that the model achieves a reasonably good (though not optimal) level of discriminatory capacity. This performance is common in models applied to social phenomena, especially those involving perceptions, which are often shaped by psychological factors or contextual elements not fully captured by survey-based data.

Figure 1. ROC curve

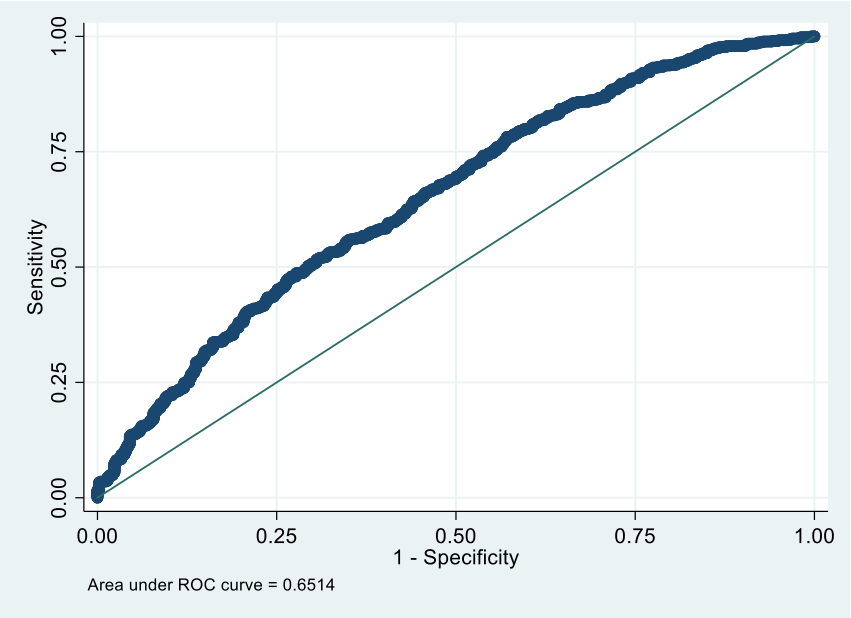

Table 15. Model fit and discriminatory capacity

R2	
McFadden	0.056
McFadden(adjusted)	0.026
Cox-Snell/ML	0.064
Cragg-Uhler/Nagelkerke	0.092
Efron	0.068
Tjur's D	0.068
Count	0.738
Count(adjusted)	0.069

With regard to model fit, table 15 indicates a modest overall goodness of fit (McFadden $R^2 = 0.056$; adjusted McFadden $R^2 = 0.026$; Cox–Snell $R^2 = 0.064$; Nagelkerke $R^2 = 0.092$; Efron $R^2 = 0.068$). These values are to be expected in logistic regression models applied to perceptual phenomena characterized by high levels of complexity and heterogeneity. Tjur's coefficient of discrimination (0.068) points to a moderate separation between the predicted probabilities of the positive and negative outcome groups. Within this context, the adjusted Count R^2 (0.069) reflects a modest improvement over classification based solely on the majority outcome category.

The second estimated model incorporates, in addition to the variables already included in the first specification, a set of dummy variables identifying the respondent's Autonomous Community of residence (Table 16). The aim of this extension is to examine whether differentiated territorial patterns exist in the perception of the importance of infrastructures in relation to gender-based violence.

Table 16. Results of the logistic regression model estimating the perceived importance of infrastructures in gender-based violence, including Autonomous Communities.

IN_L	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
LEDAD	.7755466	.1284225	-1.54	0.125	.5606059	1.072897

LRenta	1.061428	.1009466	0.63	0.531	.8809223	1.278921
IMPN	1.444918	.0697088	7.63	0.000	1.314552	1.588213
ACCN	1.026103	.026286	1.01	0.314	.9758556	1.078938
1.Genero	1.224433	.1502539	1.65	0.099	.962679	1.557358
1.Primaria	.2471669	.194908	-1.77	0.076	.0526938	1.159367
1.Secundaria	.1867685	.148401	-2.11	0.035	.0393516	.8864303
1.Universitaria	.2134898	.164479	-2.00	0.045	.0471613	.9664261
1.FP	.2508591	.1941898	-1.79	0.074	.0550194	1.143785
1.Bachillerato	.159065	.1231228	-2.38	0.018	.0348907	.7251691
1.CasadParej	1.065869	.1725153	0.39	0.693	.7761285	1.463775
1.Viudos	1.180184	.3493039	0.56	0.576	.6607175	2.108062
1.SeparDivord	1.167648	.264766	0.68	0.494	.7486877	1.821056
1.Periferia	1.941537	1.253328	1.03	0.304	.5478558	6.880582
1.Centro	1.970805	1.264418	1.06	0.290	.5604468	6.930315
1.Rural	2.07258	1.327456	1.14	0.255	.5906491	7.272653
1.Pedania	3.002229	2.119273	1.56	0.119	.7526285	11.97586
1.Urbanizacion	2.104652	1.415915	1.11	0.269	.5630286	7.867383
1.Estudiante	2.350866	2.023495	0.99	0.321	.435072	12.70266
1.TCAjSPriv	2.288132	1.83101	1.03	0.301	.4767957	10.98069
1.Funcionario	2.004424	1.635375	0.85	0.394	.4050505	9.91905
1.Jubilado	1.72605	1.382583	0.68	0.496	.3591144	8.296099
1.AutonomoNosal	1.679254	1.444894	0.60	0.547	.3109642	9.068228
1.AutonomoSisal	1.721173	1.412442	0.66	0.508	.3445919	8.596943
1.SLabores	1.433791	1.254465	0.41	0.680	.2580746	7.965747
1.Parado	1.964029	1.627208	0.81	0.415	.3871891	9.962602
1.Andalucia	1.455948	.6905954	0.79	0.428	.5746426	3.688873
1.Aragon	1.223361	.6401785	0.39	0.700	.4386572	3.411804
1.Baleares	2.885388	1.710144	1.79	0.074	.9030347	9.219428
1.CMadrid	1.862463	.9390696	1.23	0.217	.6932737	5.003463
1.CValenciana	1.446908	.7288891	0.73	0.463	.5390671	3.883641
1.Canarias	1.847797	1.027012	1.10	0.269	.6216612	5.492307
1.Cantabria	.9667927	.6325384	-0.05	0.959	.2681774	3.485335
1.CastMancha	1.193665	.6452597	0.33	0.743	.41376	3.443631
1.CastLeon	1.13303	.5769723	0.25	0.806	.4176232	3.073961
1.Cataluña	2.306852	1.127393	1.71	0.087	.8851661	6.011939
1.Extremadura	1.579867	1.061485	0.68	0.496	.4233634	5.895597
1.Galicia	2.421424	1.441564	1.49	0.137	.7539088	7.777192
1.LaRioja	1.071028	1.084177	0.07	0.946	.1472818	7.788482
1.PAsturias	1.084568	.784491	0.11	0.911	.2627634	4.476606
1.PVasco	2.222479	1.36574	1.30	0.194	.6664445	7.411589
1.RMurcia	1.385049	.701346	0.64	0.520	.5133849	3.736692
_cons	.1977598	.3158121	-1.01	0.310	.008646	4.523376

Note: _cons estimates baseline odds.

Logistic regression — Number of obs = 1,502; Wald chi2(42) = 111.92; Prob > chi2 = 0.0000

Log pseudolikelihood = -832.57415 — Pseudo R2 = 0.0666

When comparing both models, the coefficients of the explanatory variables previously analysed (latent indices, age, income, gender, educational attainment, and other sociodemographic characteristics) retain similar signs, magnitudes, and levels of statistical significance. This indicates that the inclusion of Autonomous Communities does not substantially alter the explanatory structure of the model. Accordingly, the results of the first model can be considered robust to the incorporation of territorial factors.

The infrastructure importance index (IMPN) remains the main predictor, with an odds ratio almost identical to that reported in the initial model (OR = 1.445; $p < .001$). Likewise, the negative pattern associated with different levels of educational attainment persists, with statistically significant effects for secondary education, university

education, and upper secondary education (Bachillerato). The remaining variables also maintain their previous behaviour, further reinforcing the stability of the model.

The inclusion of Autonomous Communities allows for an assessment of potential regional differences in the perception under examination. Overall, most regions do not display statistically significant effects, indicating that, within this sample, territorial location is not a decisive factor in shaping how individuals perceive the importance of infrastructures in relation to gender-based violence.

Nonetheless, some Autonomous Communities exhibit elevated odds ratios and significance levels close to conventional thresholds, suggesting patterns that merit attention. Specifically:

- The Balearic Islands show a notably high odds ratio with marginal statistical significance (OR = 2.885; p = .074), suggesting that residents in this region may be almost three times more likely to perceive infrastructures as important in relation to gender-based violence compared to residents in other Autonomous Communities.
- Catalonia also presents an elevated effect (OR = 2.307; p = .087), pointing to a pattern of higher sensitivity to, or awareness of, violence in this region.
- Galicia exhibits a similarly high odds ratio (OR = 2.421; p = .137). Although this effect does not reach conventional levels of statistical significance, its magnitude suggests a trend that warrants consideration.

In all these cases, while the wide confidence intervals indicate a degree of imprecision, the estimated effects point toward a potential higher level of institutional or social awareness regarding gender-based violence or the role of infrastructures. Such patterns may be associated with specific public policies, awareness-raising campaigns, or distinct sociodemographic characteristics at the regional level.

The remaining Autonomous Communities (Madrid, the Valencian Community, Andalusia, Aragon, the Canary Islands, Castile and León, Castile-La Mancha, La Rioja, Asturias, the Basque Country, Murcia, Cantabria, and Extremadura) present non-significant odds ratios with wide confidence intervals. This suggests an absence of territorially structured differences, substantial internal heterogeneity within regions, or the lack of region-specific factors that systematically influence the perception analysed.

Overall, this pattern indicates that, at an aggregate level, territorial variation does not play a determining role, particularly once educational attainment, gender, and the latent indices are taken into account.

Table 16. Correlation matrix

	IV	LEDAD	LRenta	IMPN	ACCN
IV	1.0000	-0.0069	0.0311	0.3006	0.1739
LEDAD	-0.0069	1.0000	0.0022	-0.0040	-0.0636
LRenta	0.0311	0.0022	1.0000	0.0228	0.0213
IMPN	0.3006	-0.0040	0.0228	1.0000	0.3231
ACCN	0.1739	-0.0636	0.0213	0.3231	1.0000

The correlation matrix (Table 16) supports the robustness of the analysis. IMPN is the quantitative variable most strongly associated with the perception measured by the violence index (IV), whereas age, income, and ACCN display weak associations. In addition, the moderate relationship between the two latent indices (IMPN and ACCN) indicates conceptual coherence without statistical redundancy, reinforcing the appropriateness of their simultaneous inclusion in the model.

6. Discussion and conclusions

This study pursues a particularly novel objective and, as a result, draws on a limited body of prior literature. It seeks to assess the extent to which the existence of infrastructures is perceived as important in relation to gender-based violence—a key determinant of women's well-being—and to analyse the factors shaping such perceptions. The database used corresponds to the *Survey on Infrastructures for Everyday Life*, developed within the framework of research project PID2022-141305OB-100, and therefore constitutes original data generated specifically for this study.

An initial approach to the topic is undertaken through the analysis of descriptive statistics for the survey variable measuring the importance assigned by respondents to different types of infrastructures in relation to gender-based violence. This analysis shows that health centres and hospitals, together with early childhood education centres, sidewalks, pedestrian streets, and public lighting, are the infrastructures considered most important. By contrast, industrial parks and shopping centres or markets receive the lowest importance scores. From a gender perspective, women assign higher levels of importance to almost all infrastructures considered. This gender gap is particularly pronounced for health-related infrastructures: 19% of women assign the maximum score (10), compared to 12% of men. A similar pattern is observed for early childhood education centres, where 15% of women and 12% of men assign the highest possible

rating. Overall, women tend to value infrastructures highly in themselves, regardless of their specific influence on gender-based violence, and only a small proportion of women assign them no importance at all. Notably, only 6% of women assign no importance to the existence of early childhood education centres, 5% do so for care facilities for dependent persons, and 8% for industrial parks. Likewise, few men assign low importance to infrastructures.

Our descriptive findings are consistent with earlier research by Sinha (2022) and Folbre (2014), although those studies focus more broadly on women's well-being. These authors conclude that infrastructures oriented toward childcare, such as early childhood education centres, increase opportunities for sustainable improvements in women's well-being. Kawabata (2014) and Barros et al. (2013) likewise emphasise that such infrastructures facilitate women's labour market participation and contribute to higher income levels and greater economic independence.

Mwazvita et al. (2020) highlight the lack of public lighting and the absence of safe public spaces as significant threats to women's safety and as factors increasing the risk of gender-based violence. This finding is reinforced by other studies (Aguilar & Soto, 2021; Martínez et al., 2020; Mwazvita, 2020; Sinha & Sedai, 2022; Parker et al., 2023), which stress that moving through well-lit and supervised spaces helps prevent dangerous situations and reduces exposure to gender-based violence. Our results similarly underscore the importance of public lighting and safe urban environments.

Another relevant descriptive result is the higher valuation women assign to public transport compared to men, with 26% of women and 16% of men awarding the maximum score. Previous studies have likewise observed that areas with metropolitan public transport stops exhibit significantly lower prevalence of gender-based violence compared to areas without such access (Roman & Reid, 2012).

Turning to the results of the estimated logistic regression models, three factors emerge as particularly important in shaping the likelihood of perceiving infrastructures as relevant in relation to gender-based violence: the latent infrastructure importance index (IMPN), gender, and educational attainment. Other sociodemographic characteristics (such as income level, place of residence, Autonomous Community, or employment status) exhibit null or imprecisely estimated effects. The infrastructure importance index (IMPN) shows a positive and substantively meaningful association with the perception of violence. Specifically, a one-unit increase in this index is associated with an approximately 44% increase in the probability of perceiving violence, holding all other

variables constant. This finding identifies IMPN as the main explanatory factor influencing perceptions of violence in the analysed sample.

A consistent pattern is also observed with respect to educational attainment. Using individuals with no formal education as the reference category, respondents with secondary education, university education, and upper secondary education show a higher probability of perceiving violence compared to those without schooling.

Gender reaches statistical significance at the 10% level, indicating that, according to the parameters of the model, women exhibit a perception of the violence index approximately 24% higher than that of men.

These model-based results are coherent with previous empirical findings. Studies such as Tiznado-Aitken et al. (2024) emphasise the importance of infrastructures, both physical and social, as fundamental factors in both the perpetuation and prevention of gender-based violence, highlighting infrastructural deficiencies as a major obstacle to its reduction.

The contributions of this study are both novel and relevant. The underlying data are original, current, and entirely self-produced. Moreover, this research constructs latent indices in three key dimensions: the importance of infrastructures in relation to gender-based violence, the intrinsic importance of infrastructures, and access to infrastructures. These indices are rigorously analysed and integrated into the empirical models.

The analysis of both observed and latent variables highlights, as a central conclusion, the high relevance that all infrastructures considered hold for respondents and, by extension, for the Spanish population. It also allows for the identification of those infrastructures perceived as particularly important, namely early childhood education centres, hospitals and health centres, public transport, and public lighting. Model estimation further suggests that being a woman, possessing formal education, and assigning high intrinsic value to infrastructures are the main factors underlying the perception of their relevance in relation to gender-based violence.

The inclusion of Autonomous Communities barely alters the results obtained from the first model, reinforcing the robustness of the initial specification. The infrastructure importance index (IMPN) and educational attainment remain the key explanatory factors, while other sociodemographic variables continue to display non-significant effects.

Although territory does not emerge as a structurally decisive factor, some Autonomous Communities (particularly the Balearic Islands and Catalonia), display elevated odds ratios, potentially pointing to regional contexts characterised by greater sensitivity or

institutional attention to gender-based violence. Nevertheless, the lack of strong statistical significance requires these findings to be interpreted with caution and considered as indicative trends that merit further exploration in future research.

Overall, the findings are consistent with results reported for other countries and offer novel and highly relevant insights for the Spanish context. These conclusions should be taken into account in public policy decision-making and incorporated as recommendations in the formulation of gender-responsive budgeting processes.

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Appendix 1.

Source: Survey on Infrastructures for Everyday Life. Authors' own elaboration.

Figure A.1
Distribution of respondents by ages

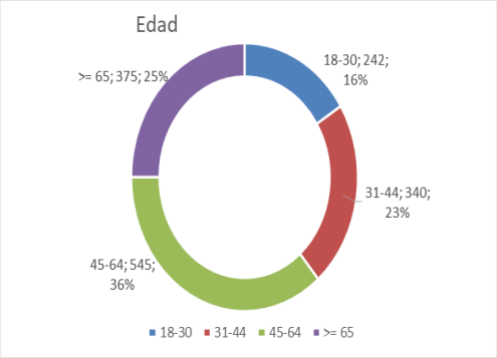

Figure A.2
Distribution of respondents by age and gender

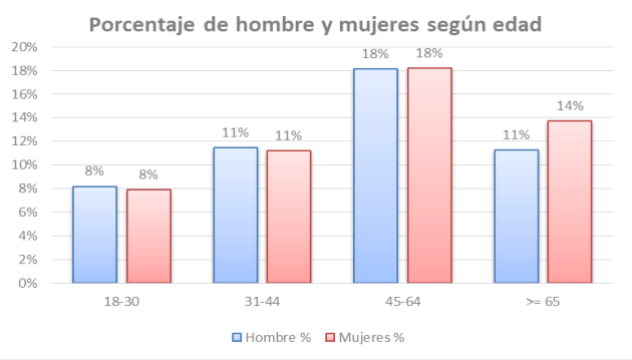

Figure A.3 Distribution of respondents by Autonomous Community

Figure A.4 Distribution of respondents by Autonomous Community and gender

Figure A.5
Distribution of respondents by marital status

Figure A.6
Distribution of respondents by marital status and gender

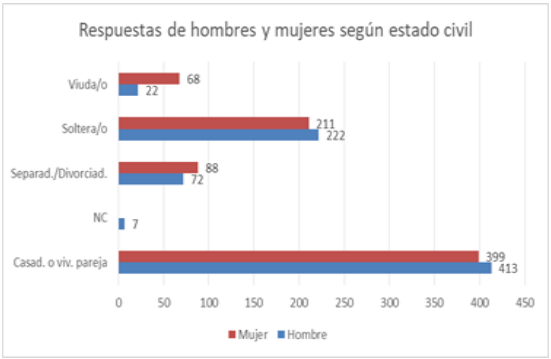

Figure A.7
Distribution of respondents by educational attainment

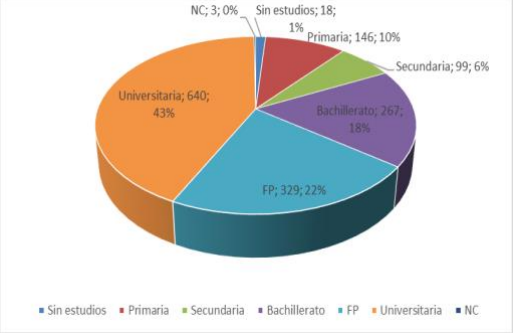

Figure A.8
Distribution of respondents by educational attainment and gender

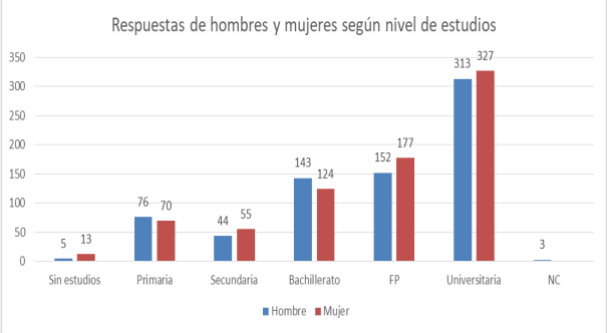

Figure A.9

Distribution of respondents by income level

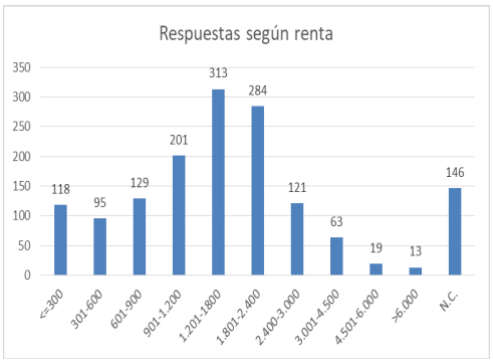

Figure A.10

Distribution of respondents by income level and gender

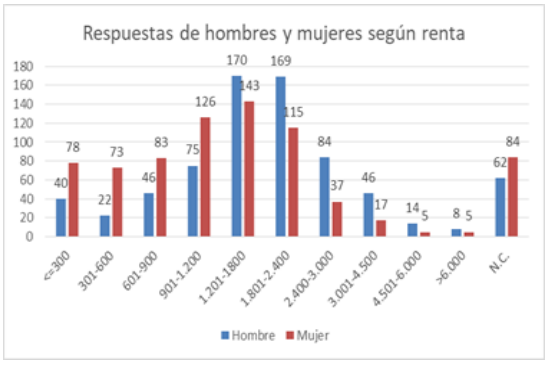

Figure A.10

Distribution of respondents by place of residence

Figure A.11

Distribution of respondents by place of residence and gender

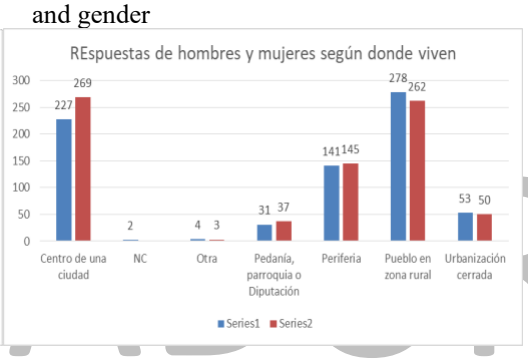

Figure A.12

Distribution of respondents by employment status

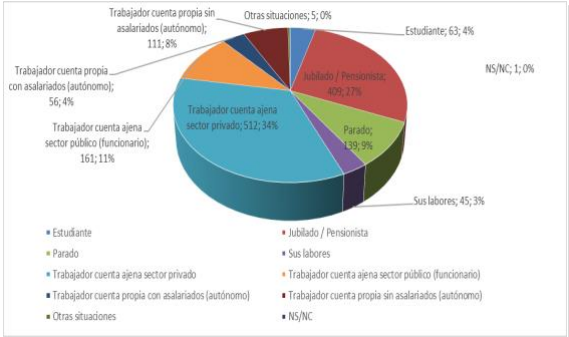

Figure A.13

Distribution of respondents by employment status and gender