

Research Paper

Is living close to a drug treatment centre associated with stigma?

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ABSTRACT

Background: Multiple studies have documented stigma towards people who use drugs, but a less well studied aspect of stigmatisation is the phenomenon known as “not in my backyard.” The aim of this study was to analyse the relationship between living near a drug treatment centre and the degree of perceived public stigma, as well as to identify differences among sociodemographic profiles.

Methods: Based on the Barcelona Health Survey (N=3270), public stigma was defined as scores at or above the 66th percentile of an index of 2 questions on the general population’s perceptions of people who use drugs as failures and as dangerous (Cronbach’s alpha = 0.84). Survey participants were categorised into 3 areas based on their proximity to a drug treatment centre: in a buffer within 150 metres, between 150 and 300-metres, and the rest of the city. Logistic regression models were used to evaluate the association between perceived public stigma and spatial proximity to a drug treatment centre, as well as variations among sociodemographic profiles.

Results: Living within 150 metres of a drug treatment centre increased the probability of perceived public stigma (odds ratio=1.85 95%CI 1.12–3.07). At the city level, higher public stigma was associated with the older population, those with a lower educational level, and those born in a low-income country. However, the increase in public stigma within the 150-metre buffer was driven by groups that showed low levels of stigma at the city level.

Conclusion: Public stigma in the city is high and increases with proximity to a drug treatment centre, especially among groups that exhibit low levels of stigma at the city level. Identifying social groups showing high levels of “not in my back yard”-related stigma may help to redesign harm reduction interventions focusing on specific groups.

Introduction

Perceived public stigma refers to how much an individual believes society collectively stereotypes or discriminates against a stigmatised individual or group (Corrigan, 2004). This stigma persists partly due to structural stigma, in which laws, regulations and policies appear to endorse prejudice and discrimination against people with behavioural health disorders (Jones & Corrigan 2014; McNeil, 2021). Multiple studies have documented stigma towards people who use drugs (PWUD) and those with mental health issues (Pettigrew & Tropp, 2006; Lloyd, 2013; Zamorano et al., 2023; Parcesepe & Cabassa, 2013). Public stigma can lead to private suffering through internalised stigma, in which individuals accept society’s negative attitudes and incorporate them into

their personal value systems and sense of self (Corrigan et al., 2006). Internalised stigma leads to social segregation, diminished self-efficacy, and limited access to resources (Jones & Corrigan 2014; McNeil, 2021; Lloyd, 2013; Parcesepe & Cabassa, 2013), without effectively reducing drug use (Palamar et al., 2013).

A less well studied aspect of stigmatisation is the phenomenon known as “not in my backyard” (NIMBY), in which residents view the accommodation or relocation of certain populations to their neighbourhoods negatively. For instance, residents near a drug treatment centre (DTC) may fear that these services will attract undesirable or dangerous individuals (Rouhani et al., 2022). NIMBYism can reinforce stigma against PWUD (Earnshaw, 2020). Conversely, contact theory suggests that closer physical proximity encourages intergroup contact

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and reduces prejudice, discomfort, distrust, and fear among different social groups (Pettigrew & Tropp 2006; Lloyd, 2013). However, negative intergroup effects can also occur, as problematic interactions between the stigmatised and non-stigmatised groups may lead PWUD to avoid any interactions with their neighbours, thereby increasing stigma (Lloyd, 2013).

Research on community perceptions of PWUD and related facilities reveals complex attitudes. While supervised consumption facilities can reduce health risks for PWUD, they often face NIMBY opposition from local residents concerned about potential public nuisance (Kolla et al., 2017). Objection to DTC in the local community can take several forms, including rhetorical or ideological objection as well as physical protest (Smith, 2010). These findings highlight the need for evidence-based discussions on community-level benefits and risks of harm reduction initiatives. From a policy perspective, it is important to identify the sociodemographic characteristics of those who stigmatise and those who are stigmatised to anticipate NIMBY attitudes and design effective information strategies to gain local support for harm reduction centres (Zamorano et al., 2023; Rohani et al., 2022). In Spain, a systematic review covering the period between 2010 and 2020 found evidence of stigma towards persons with mental health problems in all dimensions, including cognitive beliefs, emotional prejudices, and discriminatory behaviours (Zamorano et al., 2023). Higher levels of stigma were reported among older populations and those with lower socioeconomic status, with most studies finding no differences by sex. One study found that greater social distance was a predictor of stigma regarding mental health, along with other stigmatising attitudes and attributions, as well as less progressive political views (González-Sanguino et al., 2023). However, to our knowledge, no prior study has examined the relationship between proximity to a DTC (the ‘NIMBY effect’) and public stigma in a southern European city.

Barcelona has established a strong network of drug dependency care services, initiated with the Barcelona Action Plan on Drugs and Addictions (BAPDD) in 1987. This comprehensive network includes outpatient centres offering harm reduction services and treatment programmes within the same facility (Parés et al., 2020). In 2022, there were 4312 new treatments for PWUD, mainly for alcohol, cocaine, cannabis, opioids and other substances. This study is part of the BAPDD 2021–2024, which aims to raise awareness, reduce stigma towards PWUD, and facilitate neighbourhood acceptance of DTCs through community action. The objective was to analyse the relationship between proximity to a DTC and perceived public stigma, identifying differences among sociodemographic profiles.

Methods

Study design and population

This cross-sectional study used data from the 2021 Barcelona Health Survey (BHS). The BHS is an official survey conducted every 5 years in a representative sample of the population of the city of Barcelona (located in the north-east of Spain) aged 15 years and older. The BHS is part of the statistical actions of interest of the Government of Catalonia and is included in the Annual Statistical Action Programme (PAAE). Like other surveys, the BHS aims to characterise the health status of the population and its determinants and supports research in general. Respondents provide explicit consent and are informed of their rights under current data protection and confidentiality regulations. The 2021 BHS is anonymous and confidential and complies with Law 6/2007 of 17 July on opinion polls and surveys in Catalonia. The confidentiality of the data is guaranteed by Organic Law 3/2018 on Personal Data Protection and the guarantee of digital rights.

The sampling framework was non-proportional and was stratified by the 10 districts of Barcelona. Individuals were randomly selected from the official register of inhabitants based on quotas of sex and 5-year age groups within each district. Data collection took place over a full year

from February 2021 to February 2022, ensuring equal monthly proportions in all districts and quotas to avoid seasonal bias. Interviews were conducted face-to-face at home by trained interviewers using computer-assisted techniques. The total sample size was 3270 calculated to have a sampling error of $\pm 1.8\%$ for the whole city and $\pm 5\%$ for each district. Non-respondents were replaced with individuals from the same quotas until the target sample size was achieved ($N=3270$). In 2021, participants were asked for the first time about their opinion on drug use stigma. Sampling weights were applied in all calculations to ensure representativeness. For the purpose of this study, the specific geographical location of the resident was registered using the exact coordinates in the European reference system.

Measures

Spatial Proximity. The 17 DTCs were geographically located and overlaid with the individual survey records on the same geographical layer. According to urbanistic data, the most typical housing grid in central Barcelona is 113 m in length. However, it has been rounded up to 150 m to account for the street’s width on both sides. As a result, 300 m would be equivalent to two blocks and represent a further field of effect. Therefore, survey records were classified into 3 levels according to the distance from the DTC: >300 metres, 150–300 metres and <150 metres.

Perceived Public Stigma. This measure consisted of 10-items assessing public stigma towards specific drugs by inserting the name of the drug into each question (Palamar et al., 2011). Designed for use in the general public, the items were developed through a literature search and from previous scales, reviewed by 2 experts, tested in a pilot sample, and further revised by a panel of experts (Spata et al., 2024). The BHS used a shorter 2-item questionnaire from the original perceived public stigma scale, focusing on the most common stereotypes reported in studies on stigma and substance abuse (Yang et al., 2017): dangerousness and moral failure. The statements were: “Most people believe that people who use (cannabis, cocaine and heroin) are dangerous” and “Most people think that using (cannabis, cocaine, heroin) is a sign of personal failure”. These 2 statements were rated on a 5-point Likert-type scale ranging from “strongly disagree” to “strongly agree”. In total, there were 6 questions (2 items for each of the 3 substances). Cronbach’s alpha for internal consistency was 0.84. Scores were summed into a continuous variable and a dichotomous variable was created. The rationale for dichotomising the continuous score was, first, to better capture differences in the distribution with substantial stigma. Second, this approach facilitated interpretation of the results by showing changes in the likelihood of stigma against a risk factor, rather than raw scores. To determine the cut-off point for stigma, we run a series of regressions with the continuous variable and spatial proximity in the 50th, 60th, 70th, and 80th percentiles. Consistent results for the quantile regressions were obtained above the 60th percentile (Supplementary file Table A1). The specific cut-off point was set at the 66th percentile which maintains an adequate sample size and has been employed in other studies (Aznar et al., 2016).

People (or Person) Who Use Drugs (PWUD.) BHS participants were asked whether they had used drugs in the last 30 days: “Within the last 30 days, have you taken (cannabis, cocaine, or heroin), without a prescription and for non-medical purposes?” Persons responding affirmatively to any use of the 3 drugs were classified as PWUD.

Sociodemographic Factors. These included sex, age group (15–44, 45–64, 65–74, and 75 years and older), education level (primary or less, secondary, university), being foreign-born (low- vs high-income countries), and time living in the neighbourhood (more than 6 years, 3–6 years, and 2 years or less). The inclusion of foreign-born may be relevant because Barcelona has undergone a demographic transformation from 1% foreign population in 2001 to 22.4% in 2021, and the majority of them are recent first-generation immigrants. Therefore, we believe that they are a population that is not necessarily assimilated and that may have a specific perception of stigma (Borell et al., 2015).

Statistical analysis

The geographical analysis involved placing survey records and DTC locations in the same geographical layer and then computing the 3 areas of analysis: the 150-metre buffer, the 150 to 300-metre area around each DTC, and the rest of the city. In the descriptive analysis, we used the chi-square test to assess differences in stigma across sociodemographic characteristics at the city level, as well as differences in population characteristics and stigma among areas.

The association between perceived public stigma and proximity to the DTC was calculated using 2 logistic regression models to obtain odds ratios (OR). The odds ratio indicates the likelihood of a person expressing stigma when a risk factor (e.g., proximity to a DTC) is present compared to when it is not (e.g. non-proximity to a DTC). The first model determined the association between stigma and proximity, considering all socioeconomic covariates for the entire city as well as the association with the socioeconomic covariates stratified by proximity to a DTC. The second model was designed to identify potential variation in stigma by proximity areas and population characteristics, that is, the 'NIMBYim effect'. In this second model, we stratified the association between stigma and proximity areas by each category of the sociodemographic variables, using the area beyond the 300-metre buffer as the reference and adjusting for all other variables. To restore representativeness of the survey sample at the city level, all results included sampling weights.

The geographical and statistical analyses were performed using QGIS version Bucarestv3.12 and Stata v15 software, respectively.

Results

Fig. 1 shows the location of survey participants and the DTCs on the map of Barcelona city. The participants were distributed randomly according to the BHS survey design. The geographical distribution of DTCs showed a slight concentration of centres in the old city centre, which also has a higher concentration of PWUD.

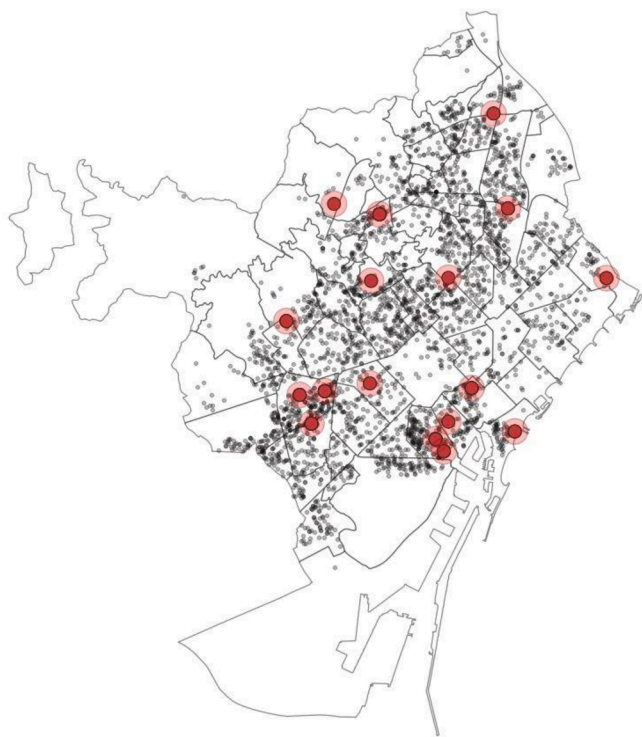


Fig. 1. Distribution of survey records (black dots) and drug treatment centres with 150-metre and 150–300-metre buffer rings (intense red point, and light red, respectively) in Barcelona city.

The perception of public stigma towards PWUD was 29.0% for the overall city, indicating that 29% of the Barcelona population was above the 66% percentile of the stigma score. While no statistically significant differences were observed between sexes or time lived in the neighbourhood, higher levels of public stigma were reported by respondents aged 75 and older, those with lower educational level, immigrants from low-income countries, and PWUD (Table 1).

Analysis of sociodemographic differences according to proximity to the DTC revealed that the 150-metre buffer had a higher proportion of men and residents living for a shorter time in the neighbourhood (compared to the rest of the city). Public stigma was consistently higher within the 150-metre buffer (48.5%) than in other areas. Higher stigma within the buffer was observed among men (48.5%), in the group aged 45 to 64 years (46.2%), those with higher incomes (44.5%), those with longer residency in the neighbourhood (46.8%), and people who did not use drugs (45.5%).

The multiple regression model (Table 2) revealed that the probability (odds ratio, OR) of public stigma in the 150-metre buffer was twice as high as in the rest of the city (OR = 1.85, 95%CI = 1.12–3.07). Among the covariates for the overall city, there was a higher likelihood of public stigma among the population aged 75 years and older, those with a lower level of education, and those born in a low-income country. Perception of public stigma was lower among PWUD than among people who did not use drugs (OR = 0.66, 95%CI = 0.46–0.91). These results hold when stratifying by spatial proximity, except for the area within 150 m where stigma is no longer associated with older people, the immigrant population from low-income countries, and drug users. To explicitly show the 'NIMBYim effect', we analysed differences in stigma by area for each sociodemographic characteristic, adjusting for all other covariates (Table 3), the significant increases within the 150-metre buffer compared to the rest of the city (>300 metres) appeared to be driven by men who did not use drugs, persons aged 45–64 years, those born in high-income countries, and those who had lived for a long time in the area. Similar results were obtained in a regression sensitivity analysis at or below the 75th percentile of stigma.

Discussion

Using geographical information and health survey records for Barcelona in 2021, we found that living close to a DTC increased the probability of perceived public stigma towards PWUD. Public stigma varied according to sociodemographic characteristics. Perception of public stigma was lower among PWUDs than among the general population.

Despite the constraints of comparison with other studies by the use of different scales, the estimated proportion of public stigma towards PWUD for the total population of Barcelona city (29.0%) is slightly higher than that previously reported for Catalonia (24.9% at the 66th percentile of the Community Attitude towards the Mentally Ill instrument) (Aznar et al., 2016). The characteristics of the general population reporting higher levels of stigma are also similar to those found in the literature in the Spanish context: the older population and persons with lower socioeconomic status (Zamorano et al., 2023; Palamar et al., 2011), as well as immigrants from low-income countries and people who do not use drugs. Of note, the older population lived through the heroin epidemic, which may have influenced their beliefs about the profile of specific PWUD. In this study, a higher educational level seemed to reduce the probability of stigmatisation; this finding is similar to that reported in a representative sample in Spain (González-Sanguino et al., 2023) and Catalonia (Aznar et al., 2016). Stigma varied by gender: after adjustment for other sociodemographic variables, no association was found between stigma and being male at the city level, but an association was found within the <150 metre buffer area. This pattern was not observed in women. However, the literature on stigma towards the population with mental health problems report mixed results. Two Spanish studies reported that being a woman was associated with less

Table 1

Sample descriptive of stigma and sociodemographic for the overall city and spatial proximity.

	Overall			>300m			150–300m			<150m			p-value
	n	%	% stigma	n	%	% stigma	n	%	% stigma	n	%	% stigma	
Total	3270	100	29.0	3025	91.6	28.9	179	6.3	25.4	66	2.1	43.3	0.017
Sex													
Men	1547	47.3	29.5	1422	47.0	29.0	84	46.7	29.7	42	64.0	48.5	0.021
Women	1723	52.7	28.5	1603	53.0	28.8	95	53.3	21.6	24	36.0	34.2	0.242
p-value ^a			0.538								0.018		
Age group													
15–44	1530	46.8	30.1	1401	46.3	29.8	96	53.8	31.4	33	50.5	40.1	0.390
45–64	1037	31.7	22.6	968	32.0	22.5	50	27.7	15.5	19	28.9	46.2	0.022
65–74	376	11.5	29.6	348	11.5	30.6	22	12.2	9.4	7	10.9	42.8	0.074
>75	327	10.0	43.5	308	10.2	43.1	11	6.3	49.0	7	9.7	52.3	0.792
p-value ^a			0.000								0.370		
Education level													
University	1334	40.8	23.9	1228	40.6	24.2	85	47.3	18.4	21	32.0	34.0	0.207
Secondary	942	28.8	29.6	880	29.1	29.2	41	23.2	30.5	21	32.4	45.4	0.314
Primary or less	994	30.4	35.2	917	30.3	34.9	53	29.5	33.4	24	35.6	49.9	0.270
p-value ^a			0.000								0.168		
Foreign born													
High income	2619	80.1	27.6	2423	80.1	27.5	144	80.2	24.3	53	80.4	44.5	0.011
Low income	651	19.9	34.4	602	19.9	34.6	35	19.8	30.1	13	19.6	38.7	0.817
p-value ^a			0.001								0.997		
Time in neighbourhood													
More than 6 y	2220	67.9	28.9	2063	68.2	28.9	111	62.0	23.0	45	68.8	46.8	0.008
From 3 to 6 y	654	20.0	28.6	608	20.1	28.4	40	22.5	31.1	8	11.5	30.7	0.905
2 y or less	396	12.1	30.0	354	11.7	29.9	28	15.5	26.7	13	19.7	38.7	0.762
p-value ^a			0.895								0.043		
People who use drugs													
No	3051	93.3	29.5	2822	93.3	29.4	169	94.7	26.0	60	90.0	45.5	0.013
Yes	219	6.7	21.9	203	6.7	22.1	10	5.3	14.6	6	10.0	24.0	0.822
p-value ^a			0.028								0.392		

^a the first column p-value refers to the differences in overall stigma; the second refers to sociodemographic differences by area; p-values correspond to the Chi2.**Table 2**

Odds ratio (OR) of the association between stigma and sociodemographic at the overall city level and stratified by spatial proximity to the drug centre with 95% confidence interval (95%CI).

	Overall		>300m		150–300m		<150m	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Spatial proximity								
>300m	1		-	-	-	-	-	-
150–300m	0.85	(0.60 - 1.21)	-	-	-	-	-	-
<150m	1.85*	(1.12 - 3.07)	-	-	-	-	-	-
Sex								
Men	1		1		1		1	
Women	0.92	(0.79 - 1.08)	0.96	(0.82–1.12)	0.62	(0.30–1.29)	0.49	(0.16–1.49)
Age group								
15–44	1		1		1		1	
45–64	0.68***	(0.56 - 0.83)	0.69***	(0.57–0.84)	0.42†	(0.04–1.10)	1.03	(0.29–3.61)
65–74	0.96	(0.73 - 1.25)	1.02	(0.78–1.35)	0.21†	(0.04–1.01)	0.60	(0.10–3.61)
>75	1.63***	(1.24 - 2.14)	1.66***	(1.25–2.20)	1.97	(0.50–7.73)	1.05	(0.15–7.25)
Education level								
University	1		1		1		1	
Secondary	1.23*	(1.05 - 1.56)	1.19†	(0.98–1.46)	1.94	(0.77–4.90)	1.51	(0.40–5.75)
Primary or less	1.49***	(1.22 - 1.89)	1.45***	(1.19–1.78)	2.45*	(1.02–5.89)	1.82	(0.47–7.02)
Foreign born								
High income	1		1		1		1	
Low income	1.42***	(1.14 - 1.73)	1.47***	(1.18–1.82)	0.89	(0.32–2.44)	0.61	(0.14–2.66)
Time in neighbourhood								
More than 6 y	1		1		1		1	
From 3 to 6 y	0.96	(0.77 - 1.19)	0.94	(0.75–1.18)	1.36	(0.50–3.68)	0.66	(0.11–3.97)
2 y or less	0.98	(0.76 - 1.27)	0.99	(0.75–1.30)	1.18	(0.36–3.89)	0.81	(0.19–3.41)
People who use drugs								
No	1		1		1		1	
Yes	0.66*	(0.46 - 0.91)	0.70*	(0.49–0.99)	0.25	(0.04–1.68)	0.34	(0.04–2.65)

p-value: ***<0.001; **<0.01; *<0.05; †<0.1.

stigma (Aznar et al., 2016; Ruiz et al., 2022), but numerous other studies found no significant differences (Gonzalez-Sanaguino et al., 2023; Zamorano et al., 2023).

The largest increases in stigma within the 150-metre buffer area, that is, the ‘NIMBYism effect’, were observed among the social groups with a lower perception of public stigma at the city level (men, middle-aged

Table 3

Odds ratio (OR) of the association of stigma by spatial proximity for each sociodemographic control with 95% confidence interval (95%CI).

		>300m	150–300m	<150m		
			OR	95%CI	OR	95%CI
Sex						
Men	1	1.05	(0.64 - 1.72)	2.29*	(1.22 - 4.30)	
Women	1	0.70	(0.42 - 1.16)	1.27	(0.53 - 3.04)	
Age group						
15–44	1	1.09	(0.69 - 1.70)	1.57	(0.77 - 3.20)	
45–64	1	0.64	(0.29 - 1.41)	2.70*	(1.04 - 6.98)	
65–74	1	0.24*	(0.06 - 1.05)	1.51	(0.31 - 7.36)	
>75	1	1.26	(0.37 - 4.21)	1.36	(0.28 - 6.66)	
Education level						
University	1	0.69	(0.39 - 1.22)	1.50	(0.59 - 3.82)	
Secondary	1	1.03	(0.52 - 2.06)	2.16†	(0.89 - 5.25)	
Primary or less	1	0.96	(0.53 - 1.74)	1.79	(0.77 - 4.14)	
Foreign born						
High income	1	0.86	(0.58 - 1.28)	2.06*	(1.17 - 3.63)	
Low income	1	0.86	(0.41 - 1.81)	1.04	(0.33 - 3.32)	
Time in neighbourhood						
More than 6 y	1	0.78	(0.49 - 1.23)	2.07*	(1.13 - 3.81)	
From 3 to 6 y	1	1.14	(0.56 - 2.30)	1.23	(0.25 - 5.93)	
2 y or less	1	0.86	(0.36 - 2.07)	1.34	(0.41 - 4.37)	
People who use drugs						
No	1	0.87	(0.61 - 1.25)	1.90*	(1.12 - 3.23)	
Yes	1	0.61	(0.10 - 3.94)	1.27	(0.19 - 8.33)	

p-value: ***<0.001; **<0.01; *<0.05; †<0.1; Each model by area is adjusted by all other variables except for the main explanatory variable shown in each model

adults, those born in high-income counties, and long-term residents of the neighbourhood). Interestingly, the association between stigma and NIMBYism suggests a difference between general opinions of PWUD and specific experience. However, prior qualitative research has reported experiences of stigma towards people who inject drugs and people who use methadone even from health support services (Paquette et al., 2018). Nonetheless, the greater stigma in areas close to DTCs might reflect local residents' fear of having a DTC in their neighbourhood. Further research could help to elucidate the context and mechanisms at play in relation to stigma and NIMBYism. Presumably, greater reluctance can be expected initially than over time, as locals realise that the presence of a DTC does not negatively impact their neighbourhood as much as they feared. There may be a number of reasons for this, such as increased opportunity to attend "open days," which are hosted by some centres; involvement in community events planned by the centre's educators; and getting to know neighbours who could become patients in the future. From an intervention perspective, several reviews show that stigma can be reduced by educational programmes and interventions that increase interpersonal contact (Corrigan et al., 2012; Griffiths et al., 2014).

This study has several limitations. First, the small sample size within the DTC buffer may limit the statistical power to detect differences between groups and prevent more detailed analysis of stigma in the population. Second, the cross-sectional nature of the study does not allow causality to be inferred or determination of whether the results change based on the length of time since establishing a DTC in an area. Third, this study focused on 2 common stereotypes of perception of public stigma: dangerousness and moral failure. While these are often cited in the literature, they may not fully capture the complexity of stigma, limiting construct validity and interpretability. Moreover, the used scale has not been validated for the Spanish population. Lastly, the indirect formulation of the 2 questions (e.g. "Most people believe that people who use cannabis are dangerous") instead of the direct question ("Do you believe that people who use cannabis are dangerous") may further hamper interpretation of the results and limit their generalisability. Despite these limitations, and in view of the congruence of the results, we believe that this study provides an accurate overview of stigma towards PWUD in the city.

Conclusion

Public stigma in the city is high and increases with proximity to a DTC, especially among groups showing low levels of stigma at the city level. Identifying the social groups showing increased NIMBY-related stigma could help improve harm reduction interventions by focusing on specific target groups.

Funding

None.

Ethics approval

Not necessary. All the analysis is based on anonymized data.

Data availability

Data will be made available on reasonable request

CRediT authorship contribution statement

Xavier Bartoll-Roca: Writing – original draft, Methodology, Conceptualization. **Maria Gabriela Barbaglia:** Writing – review & editing, Validation. **Elisa Puigdomènech:** Writing – review & editing, Validation. **Catrina Clotas:** Writing – review & editing, Validation. **Montse Bartoli:** Writing – review & editing, Validation. **Katherine Pérez:** Writing – review & editing, Validation.

Declaration of competing interest

None to declare.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.drugpo.2025.104707](https://doi.org/10.1016/j.drugpo.2025.104707).

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