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Research Article

The influence of the ‘Fragmented City’ on wellbeing: Do mixed neighbourhoods affect young adults' life trajectories in Bogota?

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ABSTRACT

This article investigates the effects that living in heterogeneous neighbourhoods may have on well-being, in order to shed light on the potential consequences of promoting residential mix policies. Using propensity score matching models, the study investigates whether 120 disadvantaged young adults located in a heterogeneous neighbourhood in Bogota scored differently on a battery of indicators of well-being compared to disadvantaged young adults located in a homogenous neighbourhood. Results suggest that when young adults live close to better-off peers, those in heterogeneous neighbourhoods are more likely to experience reduced capability scores than those in homogenous neighbourhoods.

1. Neighbourhood effects and informational spaces of wellbeing

Quality of urban life, as a measurement of people's achievement and well-being, is an outcome that varies not just between individuals but also between places. In the literature on neighbourhood effects, place attributes are likely to influence individuals' trajectories and levels of quality of life. For instance, for those living in deprived neighbourhoods, place may have lasting consequences in relation to how residents perform and achieve outcomes. Social norms, peer influence and role models, collective socialisation, exposure to violence, and public services (Galster, 2012) are some of the mechanisms by which deprived and non-deprived places experience differential outcomes, indicating that certain effects can be generated by the intrinsic characteristics of the places where people live.

As neighbourhoods are considered to be the primary location where people develop their social lives, research has been overwhelmingly focused on estimating the effects that neighbourhoods have on people's life changes. Since the publication of ‘The Truly Disadvantaged’ (Wilson, 1987), the literature on neighbourhood effects has tested the hypothesis that individuals living in disadvantaged neighbourhoods and contexts of urban poverty are more likely to experience worse outcomes than peers living in better-off urban areas (Brooks-Gunn et al., 1997; Leventhal & Brooks-Gunn, 2000; R. J. Sampson, 2012). Factors that explain how the concentration of poverty affects individual outcomes are diverse in nature, particularly if the multidisciplinary approach to understanding why space and place affects the availability of opportunities for disadvantaged populations is taken into account. While the idea that neighbourhoods matter may appear uncontroversial, Slater (2013), on the contrary, argues that it is people's life choices that affect where they live, and not the other way around. From this point of view, neighbourhood effect studies should reframe their central claims, as poverty and inequality within cities may be explained, for instance, by the cost of land and housing in specific areas. In line with this thinking, aspects such as neighbourhood selection and residential mobility choices have become matters of discussion in order to explain the effects of living in disadvantaged places.

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Within this debate, Galster (2012) points out that most of the scholarly work on neighbourhood effects has been focused on researching the effects of the residential environment by looking at the impact on a set of either behavioural outcomes (Atkinson & Kintrea, 2001; Ellen & Turner, 1997; Jencks & Mayer, 1990) or health outcomes (Pickett & Pearl, 2001; Steinmetz-Wood et al., 2017). From a critical position, particularly regarding how and where the neighbourhood effect research has been carried out, studies have mainly either inspected the identification of potential mechanisms through which neighbourhood effects take place, or focused on quantifying causal pathways for specific individual outcomes. For the latter, it is quite remarkable that little interrogation of specialised literature has taken place in order to scrutinise the type of outcomes against which effects are evaluated. Indeed, the choice of outcome seems to have less relevance when it comes to understanding the mechanisms by which the neighbourhood effect operates. Contemporary literature on neighbourhood effects has focused widely on quantifying the relationship between place effects and individual outcomes, and has been considerably less focused on dealing with which, and how, neighbourhood characteristics affect those outcomes (Ellen & Turner, 1997; Galster, 2012; Levin et al., 2022).

This criticism becomes relevant when a human perspective is taken into consideration in the study of the literature on neighbourhood effects. For instance, scholars (Wilson, 1987; Jencks & Mayer, 1990; R. J. Sampson, 2012) have agreed that urban poverty has become more concentrated over the years; yet this does not address what sort of evaluative space is under scrutiny in making this claim. Traditionally, a focus on individual outcomes has been linked to welfarist approaches where an exclusively utilitarian assessment of well-being is considered, excluding other informative spaces of quality of life that can provide useful insights about how people develop. At the urban policy level, the assessment of urban life takes an even more utilitarian perspective as outcomes are valued almost exclusively in monetary terms. This is the case of urban quality of life indicators that place the emphasis of evaluation on counting the number of goods provided by the urban policy in question (Blečić et al., 2013), without paying attention to the fact that individuals differentiate in their personal characteristics and, therefore, in their ability to transform urban assets into human advantage. It is important to consider that the selection of outcomes to assess differential quality of life between urban settings is not just a mere methodological decision for researchers, but on the contrary, it constitutes a normative decision with clear paradigmatic consequences, as the emphasis of evaluation is not only applied to the causes and mechanisms that are behind the production of neighbourhood effects, but also to the outcome variables where the effect is demonstrated.

To overcome the limitations of neighbourhood effects literature, which often employs a narrow focus on the availability of resources as one of the principal measurements of people's advantages, this paper introduces Sen's capability framework (Sen, 1985). The capability approach (CA) considers that the emphasis of evaluation should be focused on a set of valuable 'being and doings' which can be measured by the available opportunities (capabilities) and the different combinations of outcomes (functionings) that an individual can achieve. Under the capability framework, the 'capability to function' is the outcome of interest, which assesses the effective opportunities people have to undertake those actions they have reason to value. By looking at capabilities, the evaluative space of individuals' quality of life is expanded as the core of evaluation is no longer under the scrutiny of utility-based approaches (e.g., happiness) or resourcism (e.g., income and commodities), but instead in assessing to what extent domains of quality of life have been achieved and what kinds of obstacles may hamper individuals' freedom to choose effective opportunities.

In this paper, the case of spatial polarisation and fragmentation in Bogota is used to examine how the capability approach can be useful in assessing individual outcomes of wellbeing in the context of neighbourhood effects. The paper presents the case of heterogeneous neighbourhoods as a pattern of residential microsegregation in Bogota to test whether living in better off neighbourhoods positively affects objective and subjective measurements of quality of life for young adults.¹ The remainder of this paper is organised as follows. Section 1.2 'Urban Policy and Social Mix in Bogota: between polarisation and fragmentation' introduces the background of social mix policies in Bogota. Section 1.3 'Data' presents the data, study area and variables used. Section 1.4 'Method and Empirical Model' describes the method and the empirical model applied. Section 1.5 'Results' presents the empirical results. Section 1.6 'Discussion' looks at and interprets the findings. Section 1.7 examines the limitations of the study.

2. Urban Policy and Social Mix in Bogota: between polarisation and fragmentation

Social mixing policies are based on the rationale that contact between deprived households and socioeconomically better-off segments of the population can promote upward mobility for the former. Galster and Friedrich define the concept as "a state of relative neighbourhood diversity according to socioeconomic status, in contrast to spatial concentrations of extremely high- or low-status households" (2015, p. 176). In mixed neighbourhoods, it is expected that a process of microsegregation will emerge due to the presence of a variety of households from different socioeconomic backgrounds. In this context, worse-off individuals will benefit from established economic activities at the local level, as they will have access to information flows that indicate where job and educational opportunities are available (Barwick, 2017; Joseph et al., 2007). In this sense, social mix policies are a direct result of earlier studies on neighbourhood effects which on the whole concluded that concentrated poverty has a clear effect on socioeconomic outcomes (Brooks-Gunn et al., 1997; Duncan et al., 1993; Leventhal & Brooks-Gunn, 2000).

Social mix policies ultimately aspire to balance and diversify social environments through the creation of a "moderate heterogeneity"

¹ The understanding of young adults' urban quality of life arises from the need to better understand the functionings and outcomes that need to be achieved during the youth period. It has become increasingly important to understand the obstacles that young people are confronted with during their transition from adolescence to adulthood, and to shed light on how urban contexts can facilitate/obstruct positive wellbeing outcomes. For a more in-depth analysis of these issues, see Bucheli (2019, 2020).

in urban spaces (Gans, 1961). Prior studies of social mixing have focused primarily on the case of the United States, the United Kingdom, Canada, and Australia.² Social mixing policies have been conceived as urban planning theory and implemented through urban strategies of both left and right wing political parties (Galster & Friedrichs, 2015). As an urban strategy, social mix policies have been implemented by policy makers to advance towards urban social inclusion (Arthurson, 2010; Chaskin et al., 2012; Curley, 2010), to create more diverse spaces by building social housing in areas where there are shortages (Lévy-Vroelant, 2014) or simply as a coherent urban strategy as social mixing interventions operate through mediator factors that facilitate social integration. On the other hand, social mixing policies have also been heavily criticised for their ability to enhance social diversity through legitimising the gentrification process (Davidson, 2010; Lees, 2008; Slater, 2013) in which entire disadvantaged communities are displaced or manipulated by more powerful external agents who control community agendas (Bridge et al., 2014). Other authors have raised concerns regarding the lack of substantial neighbourhood effects on labour markets in random assignment experiments such as Moving to Opportunity (Katz et al., 2000; Kling et al., 2007; Ludwig et al., 2008; Sanbonmatsu et al., 2011).

In the case of Bogota, residential segregation patterns have created a city divided by socioeconomic strata, where the most economically depressed areas are located to the south and periphery of the city, while more affluent areas are located in northern areas of the city (Alfonso, 2012). This urban tendency can be described as a process of macrosegregation due to the fact that urban differentiation tends to produce a polarised city where households auto-segregate according to their urban preferences and socioeconomic options. Fig. 1 shows the level of urban polarisation that the city has reached since the initial application of the stratification system.³ This pattern of urban macrosegregation can be seen in maps A and B where a process of self-segregation of elite groups is observed in the northern part of the city. For some commentators, the macrosegregation process is strongly supported by the existence of urban developers' rentier spirit and relaxed state housing provision policies that have contributed to widening the spatial distance between affluent and worse off populations in the city (Alfonso, 2012). Nevertheless, the urban structure of Bogota has begun to be described as a fragmented city, in the sense that a process of social mixing is evolving (Aliaga & Álvarez, 2010). The fragmentation of the urban space in Bogota represents a structural metropolitan transformation that has modified the scale of how socio-territorial segregation develops. A result of this process is the transition towards cities that no longer display the spatial dichotomy – 'rich city' and 'poor city' – typical of polarised cities. Instead, cities with 'enclaves' of poverty and wealth are more evident. Spatial segregation has evolved towards a greater mix in terms of urban landscape, where the combination of income polarisation, and its effect on the urban structure, has consolidated this process of fragmentation within the city – the emergence of 'small units of wealth and poverty that are spatially contiguous but socially isolated from one another' (Thibert & Osorio, 2014, p. 1325). The polarisation of previous years, where segregation took place at the macro level and was visually evident, is now taking place at the micro level (Figs. 1–, Map C), where local spaces are in competition with each other.

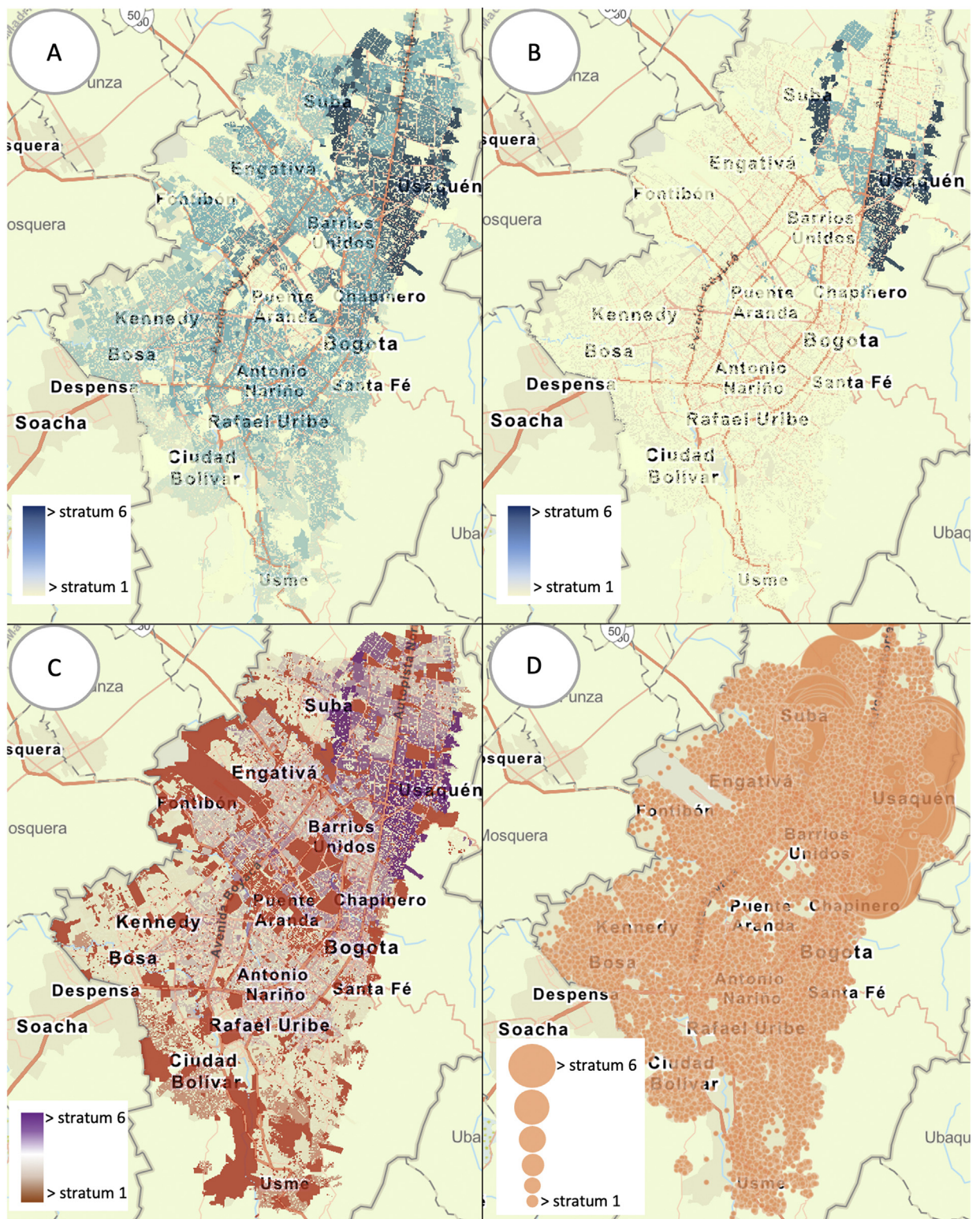
Mixed communities are now evident in the urban space of Bogota, reflecting a change in the geographic scale of segregation, which is becoming more micro and localised than previously. These changes in the patterning of segregation in Bogota might give the impression that processes of cohesion and integration among heterogeneous groups can be achieved more spontaneously, as degrees of segregation tend to reduce with time. Indeed, a less polarised city contributes towards a greater social mix in overall terms (Arthurson, 2013; Bond et al., 2011; Galster, 2007; Joseph, 2008; Kearns et al., 2013). However, the current process of de-polarisation and the intensification of enclaves of social and class differentiation among communities has intensified residential segregation but now in smaller, and consequently, more intimate spaces where social integration is jeopardised.

Urban policies aimed at social mixing and reduction of inequalities through spatial integration have traditionally been implemented by using housing policy mechanisms. As urban land management has been used as a mechanism to regulate the production of social housing, local governments have been challenged to address the housing shortage in cities. Since the ratification of Act No. 388 of 1997 (the Regional and Urban Development Act), the process of decentralisation has introduced a series of urban planning mechanisms to allow municipalities and districts to regulate and intervene in the land market, particularly in the generation of land suitable for social housing.

A more recent attempt to tackle this situation can be traced back to the administration of Gustavo Petro (2012–2016). The 'Development Plan of Bogota Humana' (SDP, 2012) adopted as its general framework the 'reduction of all kinds of social, economic, spatial and cultural segregation by increasing the capabilities of the population' (p. 19). In the case of spatial inequalities, the development plan advocated for increased affordable housing for poor households - in particular for internally displaced people arriving in Bogota due to the internal conflict - in urban renewal projects in the central business district (CBD) of the city. The profile of anti-segregation policies was raised even further when in November 2014, the mayor's office announced the plan to build social housing in affluent neighbourhoods in Bogota, in a clear strategy to progress towards the creation of mixed communities in the city (Poor households in affluent neighbourhoods, 2014). The announcement generated a fierce debate between policymakers and affluent residents, who understood the strategy more as a populist decision than an incentive to increase the social mix of the city. Following the public debate, the initiative was abandoned, and public intervention was focused on identifying areas close to the CBD to be developed for social housing.

² The perspective of the global south on social mix and mixed communities has been more limited. However, there is a emergent literature from countries such as China, Chile, Singapore, South Korea, and Turkey (Bayram et al., 2012; Chu et al., 2019; Kumar, 2020; Tian et al., 2007; Vergara, 2021; Yang et al., 2018).

³ The 'stratification system' is a socioeconomic mechanism that ranks residences from one to six strata, aiming to focalise subsidies to calculate utility bill tariffs (Uribe & Pardo, 2006). The stratification system works not just as a mechanism to classify the urban population but also as an income based spatial division that contributes to the polarisation of the city between poor and rich inhabitants (SDP, 2021).



(caption on next page)

Fig. 1. Process of urban fragmentation in Bogota

Note: Fig. 1 shows different processes of urban segregation in Bogota. Map A shows the distribution of all six socioeconomic strata across the city. Map B shows the location of more affluent populations (strata 5 and 6), Map C presents the extremes of the stratification system, that is, strata 1 and 2 for the most disadvantaged populations and strata 5 and 6 for the location of better off inhabitants. Map D shows the tendency of better off populations to move to more septentrional locations as worse off populations began to consolidate their social and cultural activities in the south (Aliaga & Álvarez, 2010; Dureau et al., 2007). Data shown has been provided by the Capital District's Spatial Data Infrastructure (IDECA).

To date, there is no deliberate urban policy in Bogota that looks at the creation of neighbourhoods in which populations are mixed, as is the case with the initiatives documented in neighbourhood effects studies of mixed community strategies in the United States and Europe (Andersson et al., 2007; Arthurson, 2013; Cheshire, 2009; Galster, 2007; Lupton & Tunstall, 2008; Musterd et al., 2014; Ostendorf et al., 2001). The case of Bogota tends to be more atypical, as mixed communities are created more under the influence of market-driven processes than state intervention. The institutional framework that has been introduced has left a significant gap in how to move towards mixed communities. Although the objective of the legal framework promised better integration in the city, the implementation of the norm was being captured by the segregationist logic of the city where affordable housing is pushed out to the south and periphery of the city.

In the context of urban policy, 'mixed community' policies are a controversial strategy. There is limited evidence that these kinds of urban settings have a substantial effect on individual outcomes, particularly in reducing poverty. In fact, there is a tendency to overstate the positive effects of this type of urban setting, where much of the literature tends to rely on reviews or summaries of the evidence rather than on primary data (Bond et al., 2011). The assumption that social mixing is an appropriate strategy to address the negative effects which are present in deprived neighbourhoods (Glossop, 2008; Kearns & Mason, 2007; Lupton & Tunstall, 2008; Wilson, 1987) requires further investigation, particularly when social mix is not a deliberate policy implemented by the state or local authorities. Therefore, this paper focuses on testing the hypothesis of whether living in a context of social mix improves the quality of life of worse-off residents. To do this, the paper attempts to overcome two limitations in how neighbourhood effects are commonly investigated. Firstly, the analysis looks at the integration of objective and subjective approaches to human advantage by using primary data collected in an urban area where a process of fragmentation is present. Although several studies have focused on understanding which objective and subjective variables need to be considered (Najafpour et al., 2014; Powell & Sanguinetti, 2010), studies often analyse them separately and do not consider their associations and effects on the development of aggregated indices of quality of life.

Secondly, this paper investigates the effect of heterogeneous neighbourhoods upon capabilities and preferences using the method of propensity score matching (PSM) to overcome the problem associated with selection into neighbourhoods (Ginther et al., 2000; Harding, 2003; Morgan & Harding, 2006). As most studies of neighbourhood effect rely on observational data, researchers are hampered by the difficulty of determining why people live in different neighbourhoods. The presence of unobserved conditions produces a selection bias that makes it difficult to ascertain whether differences between neighbourhoods are caused by the neighbourhood context or simply because the people who inhabit them are different. If residential self-selection bias is present, it is difficult to differentiate between the effect of neighbourhood conditions on individual outcomes from the choice to live close to these features (Lamb et al., 2020). What we have seen so far is that estimates of neighbourhood effects on individual outcomes have tended to vary widely between studies, suggesting the omission of relevant individual and household characteristics. This can be confirmed by neighbourhood effect studies focused on these particular methodological concerns (Dietz, 2002; Weinberg et al., 2004; R. Sampson, 2008; Burdick-Will et al., 2010; Hedman & Ham, 2012; Lamb et al., 2020). To correct for selection bias, the matching method identifies comparable young adults living in a context of mixed communities, comparing them to a counterfactual (disadvantaged neighbourhood) to estimate to what extent living in a better-off neighbourhood affects quality of life. It is important to note that in order to respond to the challenge of selection bias, the discussion in the literature has been significant, and several authors have addressed these issues with multiple approaches, with the use of econometric methods to analyse observational data (Cao and Jason, 2010; Cao et al., 2010; Kawachi & Subramanian, 2007) and experimental designs (Kling et al., 2007; Briggs, 1997; Burdick-Will et al., 2010; Clampet-Lundquist & Massey, 2008; R. Sampson, 2008; Sharkey, 2013; Chetty et al., 2015).

3. Data

3.1. Study area

In order to understand how mixed neighbourhoods affect young adults' life changes in Bogota, it was necessary to identify urban areas where a process of microsegregation was in place. This would allow for the measurement of different indicators of wellbeing to compare differences with similar peers living in urban areas with a contrasting process of segregation (homogeneous neighbourhoods). A critical aspect in the research design was the selection of urban areas to ensure adequate comparisons between young adults who are affected by different patterns of urban segregation. To do that, the selection of urban districts was based on two main criteria to detect mixed income and homogeneous neighbourhoods. The first criterion consisted of identifying urban places where residential segregation occurs according to a dynamic of intense/non-intense segregation. To account for this, the index of residential segregation (SRS) was used to measure levels of diversity⁴ in Bogota's urban districts, to identify macro and micro patterns of residential segregation. The index of socioeconomic residential segregation is a measure calculated by the Planning Secretariat of Bogota which shows the relationship

⁴ Diversity between households can also be measured in terms of other variables of interest such as expenditure, and years of school attendance.

Table 1
Socioeconomic residential segregation index, Bogota (2017, 2014).

Urban district	2017	2014
Ciudad Bolivar	0.30	0.33
Bosa	0.34	0.3
Usme	0.33	0.25
San Cristobal	0.41	0.34
Rafael Uribe Uribe	0.43	0.38
Tunjuelito	0.4	0.36
Kennedy	0.62	0.5
Engativa	0.59	0.61
Puente Aranda	0.51	0.55
Los Martires	0.57	0.54
La Candelaria	0.77	1.32
Santa Fe	0.89	0.65
Fontibon	0.99	0.92
Antonio Nariño	0.66	0.61
Suba	1.07	1.41
Barrios Unidos	0.92	0.96
Teusaquillo	1.39	1.63
Usaquen	1.83	1.36
Chapinero	2.41	2.34

Source: Planning Secretariat of Bogota, 2019.

between households' ability to pay and the city's housing market. It takes into account the variance of factors such as the composition of the household, employment levels and subsidies in order to create an index of dispersion that calculates levels of homogeneity and heterogeneity between households (SDP, 2019, p. 35).⁵ According to results from the SRS (Table 1), the Chapinero and Ciudad Bolivar urban districts are the spatial units which display the highest and lowest levels of segregation respectively in Bogota. In the case of the Chapinero urban district, results for 2017 show a SRS score of 2.41 ($SRS > 1$), indicating the lowest level of residential segregation compared to other urban districts. Conversely, patterns of urban homogeneity were identified in the urban locality of Ciudad Bolivar. Results from the SRS showed that Ciudad Bolivar has the highest levels of segregation in Bogota, 0.30 ($SRS < 1$) (SDP, 2019, p. 35).

A second approach to the selection areas of analysis was to identify neighbourhoods which display similar economic conditions within each identified urban locality. To do this, it was considered appropriate to use the Colombian stratification system to track similar economic conditions across households in each urban locality. Bogota uses a socioeconomic stratification system, which classifies households according to the conditions of buildings.⁶ Taking this into account, the selection of comparable young adults was based on prioritising those who were living in the urban districts of Chapinero and Ciudad Bolivar, and, additionally, who were classified within strata 1 and 2. This meant that it was possible to compare young adults' outcomes across diverse (microsegregated) and homogeneous (macrosegregated) urban settings. Following this criteria, in the case of the urban district of Chapinero, it was relatively easy to identify neighbourhoods which were classified within strata 1 and 2 and which were closer to neighbourhoods classified within strata 5 and 6. Finally, the neighbourhood of 'Juan XXIII' was prioritised with respect to other similar neighbourhoods (for instance, Granada, Olivos and Bosque Calderon) as it is closer to better-off neighbours and not isolated by main roads, rivers, large parks or other physical barriers which may result in a distinct separation between groups.

The selection of the control group (the homogeneous neighbourhood) was carried out in the urban locality of Ciudad Bolivar. A set of spatial and socioeconomic characteristics were considered in the selection of the comparison group in order to identify the neighbourhoods which were most similar to Juan XXIII in the urban locality of Chapinero (Table 2). Firstly, a total of 21 neighbourhoods matched the socioeconomic criteria. Following a second assessment, and considering exclusively spatial variables (area and distance) and accessibility (security aspects), three neighbourhoods were identified as potential control groups: Primavera I, Perdomo Alto and Quinta del Sur.

An active dialogue was established with local organisations and the public offices of the local mayor of Ciudad Bolivar with the aim of selecting the appropriate neighbourhood. After receiving authorisation from local organisations and taking into consideration several security issues, the neighbourhood of Perdomo Alto was selected as the control group to conduct the survey. Table 3 summarises the differences between the two selected case studies, the neighbourhood of Juan XXIII in Chapinero, and Perdomo Alto in Ciudad Bolivar (Fig. 2).

⁵ The SRS will be equal to or greater than 1 when the variability in a spatial unit of the city is equal to or greater than the variability of the whole city. In this case, a SRS score greater than 1 will show that households present a low association and heterogeneity in the evaluated variables. Conversely, a SRS score of less than 1 will indicate that the spatial unit being studied displays a higher level of association between variables, corresponding to homogeneity among households.

⁶ This system has been developed to charge households different rates with regards to the consumption of electricity, water, gas, and drainage services, among other utilities. As such, it is also a mechanism for geographic focalisation of social expenditure, since depending of the location of the building the contribution to utility charges will be different.

Table 2
Spatial and socioeconomic criteria for control group selection.

Neighbourhood characteristics	Chapinero	Ciudad Bolívar
	Juan XXIII	Perdomo Alto
Area (ha)	4.275	5.018
Distance (the closest) (km)		
Main integral transport system	0.71430	0.5261
Green area	0.07040	0.0646
Health centre	0.58220	0.8059
Public school	0.35070	0.2097
Bus stop	0.06910	0.1004
Cadastral (no.)		
Lots	353	250
Blocks	30	16
Houses	585	591
Socioeconomic		
Stratum	1 and 2	1 and 2
Residential density (houses/ha)	136.82	117.77
Price m ² (average price, USD)	205.950	213.112

Note: Data from the Capital District's Spatial Data Infrastructure (IDECA).

3.2. Questionnaire design and sampling procedure

The selection of normative standards of quality of life among young adults followed a process of identification of relevant capabilities by using Sen's Capability Approach. This identification of relevant capabilities among young adults in Bogotá was based on the idea that any list of capabilities should be developed through a process of public deliberation and participation. In contrast to more legal and moral normative approaches (such as Nussbaum's capability list), the identification of capabilities for young adults in the context of spatial inequality requires a context-specific approach where place-based perspectives are taken into account. In line with this, the methodology used to identify the relevant capabilities for young adults followed four main stages and was based on Robeyns' (2003, 2005) five criteria to identify basic capabilities.⁷ Robeyns' criteria were used as a starting point for identifying relevant⁸ capabilities during focus group discussions (FGD) and interviews with young adults in both selected urban settings. Framework analysis was used to aggregate identified capabilities into domains of quality of life, which were then incorporated into a questionnaire through a multiple-question Likert scale.⁹ The questionnaire was tested for internal consistency using Cronbach's (α) alpha, ensuring the same directionality of all variables through reverse coding. Results showed a highly reliable α (53 items; $\alpha = 0.806$) for the entire capability section of the questionnaire¹⁰. In addition to capability-based questions, the questionnaire administered in Chapinero and Ciudad Bolívar urban districts also included questions regarding hedonic and cognitive subjective well-being (Diener, 1984; Kahneman et al., 1999), as well as a 10-item personality inventory (TIPI) (Gosling et al., 2003), measuring personality traits and socioeconomic status variables. Before the administration of the survey, a census survey of all households was conducted in order to identify the location and total number of young adults in each urban setting.¹¹ In total, 300 young adults were identified in both urban settings of which 231 were surveyed.¹² The size of the selected urban settings as well as the population density of young adults suggested that the administration of a census survey was preferable to collecting data using a sample survey.¹³

⁷ The five criteria are: (i) *explicit formulation*: have an explicit, discussed and defended list of relevant capabilities; (ii) *methodological justification*: justify the methodology that has been used to generate the list of relevant capabilities; (iii) *sensitive to context*: the identified list should seek to be both abstract and practical in order to satisfy different audiences; (iv) *different levels of generality*: identify relevant capabilities that are not only comprehensive of ideal domains of quality of life but that are also feasibly achievable; and (v) *exhaustion and non-reduction*: the list of relevant capabilities should include all dimensions that are important to well-being. Equally important under this criterion is that no dimensions identified should be reducible to other elements. By using Robeyns' criteria, the selection of domains of quality life attempts to reduce possible bias.

⁸ See forthcoming article (Bucheli, 2022).

⁹ The questionnaire is not included for the sake of brevity but is available upon request.

¹⁰ The questionnaire was also piloted with a self-selecting sample of 100 students from a private university in Bogotá, helping to adapt the structure of the questionnaire, amend the wording of some questions and test the time of application.

¹¹ In most cases, the census and questionnaire were conducted at the same time in order to reduce the cost of administration and to ensure the whole young adult population in each urban setting was covered.

¹² In total, 231 young adults were surveyed of which 120 young adults were located in Perdomo Alto (control group) and 111 in Juan XXIII (treatment group). The remaining 69 young adults were either not located or did not give consent to be interviewed.

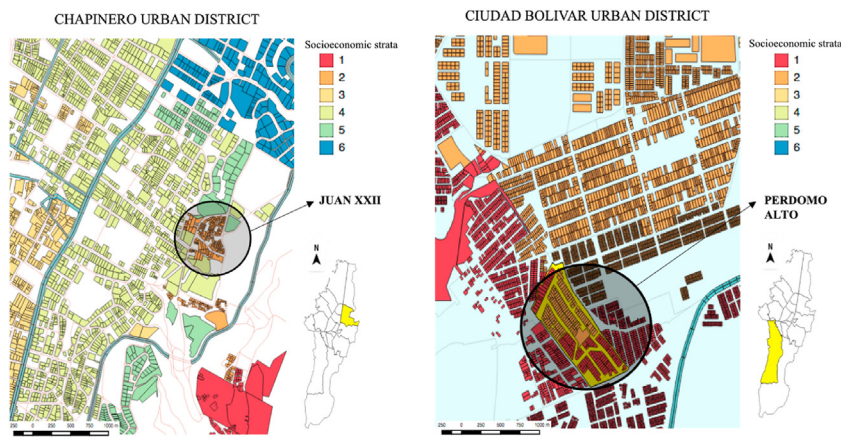
¹³ A non-monetary incentive was used to stimulate participation among young adults and those who participated in the survey were asked to sign a consent form to ensure full awareness regarding potential risks and benefits from their participation in the study. The young adult population census survey was carried out with support of the local neighbourhood association in Juan XXIII and the Community Association 'Cuyeca' in Perdomo Alto, respectively.

Table 3

Selected case studies: Chapinero and Ciudad Bolívar urban settings.

Description	Case 1	Case 2
Residential segregation process	Polarisation	Fragmentation
Scale of analysis	Macrosegregation	Microsegregation
Income-based composition	Homogeneous	Mixed/heterogeneous
Type of sorting	Similarity (clustering)	Dissimilarity (outliers)
Urban setting	Ciudad Bolívar	Chapinero
Neighbourhood setting	Perdomo Alto	Juan XXIII
Criteria 1 (level of diversity)	SRS = 0.30 (2017)	SRS = 2.17 (2017)
Criteria 2 (neighbourhood setting)	Strata 1 and 2	Strata 1 and 2

Source: elaborated by the author.

**Fig. 2.** Study areas of social mix (Chapinero) and social homogeneity (Ciudad Bolívar)

Note: Data using shapefiles from Capital District's Spatial Data Infrastructure (IDECA).

3.3. Outcome variables

This paper conceptualises quality of life as a multidimensional construct where objective and subjective measurements account for young adults' well-being and agency. In the case of subjective measures, the analysis uses emotional (experience) and cognitive (evaluation) components of well-being (Diener, 1984). For the emotional component of well-being, which attempts to make a hedonic assessment of feeling, desires and emotions, the questionnaire included the question: 'Overall, how happy did you feel yesterday?' (HAPP); and for the cognitive component, which assesses people's judgements related to expectations and ideal life (Hoorn, 2008) (SATI), the question included was: 'Overall, how satisfied are you with your life in general these days?'

Two additional subjective measures were also included: a variable to measure the level of achievement of well-being (Morrison, 2010) based on quality of life criteria (QoL), and a variable to assess perceptions of available opportunities (OPP). These last two variables enquire directly about how much the place of residence affects well-being achievement and the availability of opportunities, respectively. In order to develop a comprehensive multidimensional measure for young adults' advantage, the analysis incorporated two continuous variables. SCALE is a variable that provides a global assessment of young adults' urban life, based on a scale of 0–100, where 0 represents the worst possible quality of life and 100 represents the best possible quality of life.

A second continuous variable, CAPA, calculates individual scores of capabilities. CAPA is a latent variable based on domains of active functionings identified by young adults.¹⁴ The questionnaire collected data in all relevant domains and calculated a score of capabilities for each individual using principal component analyses. Domains used to calculate scores of capabilities were those capabilities that were assessed as more influential for them in the context of residential segregation. A summary of all outcome variables used is presented in Table 4.

¹⁴ The identification of CAPA domains took place following an inductive approach of prioritisation of domains of quality of life for young adults in Bogota.

Table 4

Outcome variables and questionnaire items.

Variable	Code	Item	Type	Domain of evaluation
Happiness	HAPP	How happy or unhappy did you feel yesterday?	Categorical (ordinal)	Affective well-being
Satisfaction	SATI	All things considered, how satisfied are you with your life in general these days?	Categorical (ordinal)	Cognitive well-being
Urban quality of life	QoL	What would you say that overall your quality of life is?	Categorical (ordinal)	Achievement well-being
Available opportunities	OPP	Overall, what do you think your opportunities for living here are?	Categorical (ordinal)	Opportunities
Evaluation satisfaction	SCALE	Write a number from 0 to 100 that best describes your quality of life in your neighbourhood	Continuous	Life satisfaction
Capabilities/functionings	CAPA	Calculated using PCM	Continuous (Capability index)	Capabilities

Source: HAPP and SATI (Dolan et al., 2011), QoL (Morrison, 2011)

Table 5

Descriptive statistics of outcome and covariance variables.

Variable	Treatment (n = 110)	Control (n = 120)	Total
Outcome variables			
HAPP (5 ordered outcomes)	4.17 (0.855)	3.86 (0.888)	(-2.892)**
OPP (5 ordered outcomes)	3.92 (0.65)	3.91 (0.44)	(-0.260)
QoL (5 ordered outcomes)	3.94 (0.865)	3.38 (0.801)	(-5.122)***
SATI (7 ordered outcomes)	5.97 1.12	5.71 (1.33)	(-1.283)
SCALE	79.36 (13.77)***	65.29 (18.01)***	
CAPA	31.75 (0.164)***	58.79 (0.181)***	
Independent variables			
Age	24.2 (3.13)***	21.86 (3.06)***	
Male (%)	48.18 (0.50)*	63.33 (0.48)*	
Ethnicity (white) (%)	10.0 (0.30)	14.16 (0.35)	
Time living in urban setting	208.49 (125.96)**	163.18 (95.63)**	
Educational attainment			
Primary education (%)	4.54 (0.20)***	20.83 (0.40)***	
Secondary education (%)	42.39 (0.49)	51.66 (0.50)	
Vocational education (%)	34.54 (0.47)	23.33 (0.42)	
University education (%)	16.36 (0.37)***	4.16 (0.20)***	
Postgraduate education (%)	1.81 (0.13)	0 (0)	
Total net income	3.64 (1.15)***	2.49 (1.41)***	
Tenure (%)	64.54 (0.48)	52.5 (0.50)	
TIPI (dimensions of personality)			
Extraversion	4.43 (1.10)	4.28 (1.27)	
Agreeableness	4.24 (1.11)	4.45 (1.20)	
Conscientiousness	4.25 (1.12)	4.43 (1.14)	
Emotional stability	4.5 (1.02)	4.43 (1.34)	
Open to new experiences	4.32 (1.13)	4.09 (1.40)	
Violent assault in the neighbourhood	0.02 (0.16)**	0.14 (0.35)**	
Commuting time to work (min.)	36.72 (25.36)***	60.47 (39.75)***	
Neighbourhood inclusion	0.93 (0.24)	0.85 (0.35)	
House adaptability	0.81 (0.38)***	0.55 (0.49)***	

Note: Standard deviations in parentheses. *t*-test for continuous variables, and Fisher's exact test and Mann-Whitney *U* Test for categorical variables; *, **, and *** indicate significance levels of 5%, 1% and 0.1%, respectively.

3.4. Independent variables

Table 5 presents a summary of the descriptive statistics for outcome and covariance variables. Independent variables were divided into three different models. The first model corresponds to socioeconomic variables. Here, socioeconomic variables included young adults' age, gender, ethnic group, income and spending level (monthly), educational attainment and household tenure. A second model included neighbourhood conditions. In this model, variables included number of people living at home, time living in the neighbourhood and commuting time to a place of work. A third model included young adults' personality traits, which included five personality dimensions: extraversion, openness, conscientiousness, neuroticism and agreeableness (Gosling et al., 2003).

4. Method and Empirical Model

4.1. The counterfactual framework for estimation of treatment effects

Overcoming the problem of selection bias is a key consideration when assessing the effects of residential segregation on capability scores and subjective measurements of well-being. In the context of neighbourhood effects literature, the selection problem is considered to be one of the main difficulties in identifying causal effects on deprived neighbourhoods, as individuals do not randomly choose where they live; with personal and family conditions playing an important role in this decision (Clampet-Lundquist & Massey, 2008; Jencks & Mayer, 1990).

The result is that it is very difficult to know whether being located in a deprived neighbourhood negatively affects people's life trajectories, or whether the correlation between spatial poverty and lower individual outcomes is a pattern of residential selection, where disadvantaged individuals self-select into or out of neighbourhoods (Clampet-Lundquist & Massey, 2008; Hedman & Ham, 2012). From the perspective of evaluation standards and policy evidence, the simple correlation of mechanisms of residential mobility (observed and unobserved individual characteristics) and deprived conditions can be wrongly assumed to constitute true neighbourhood effects (Hedman & Ham, 2012). Therefore, the lack of random assignment in observational studies forces researchers to control for self-selection mechanisms and individual characteristics in order to estimate valid treatment effects.

Additionally, to calculate the effects that microsegregation has on young adults' capabilities and preferences it is necessary to know the difference between the outcomes of young adults who are living in the context of microsegregation and those who are not. As it is not possible to look at the difference in outcomes of the same young adults in both urban settings at the same time – a fundamental problem of causal inference – an alternative approach is to find a separate group of young adults (control group) who have similar characteristics to those who are living in the context of microsegregation (McDool, 2017). The existence of a control group allows for the possibility of assessing what would have occurred if those young adults living in the context of microsegregation did not live there (counter-factual).

4.2. Model specification and matching variables

Matching techniques appeal to researchers because of their capacity to produce estimates with potential for causal interpretation (Angrist & Pischke, 2009). In this section, the central proposal is to investigate whether being located in a heterogeneous urban setting has an effect on how capabilities are perceived by young adults. By using matching as a strategy to determine causation, the research aims to determine the average effect of treatment on the treated (ATT).

$$ATT \equiv E[y_i^1 - y_i^0 | X, D_i = 1] = E[y_i^1 | X, D_i = 1] - E[y_i^0 | X, D_i = 1] \quad (1.1)$$

Following Heckman et al. (1997) and Wendimu, Henningsen and Gibbon (2016), ATT is the average treatment effect on capability scores of being located in a heterogeneous neighbourhood, y_i^1 denotes the capability outcome for a young adult located in a heterogeneous neighbourhood and y_i^0 the outcome for the same young adult if they were not located in a heterogeneous neighbourhood; X is a vector of observed individual characteristics which may affect the probability of being located in a heterogeneous neighbourhood; and D indicates participation in the programme or in this case, whether a young adult is located in the treatment area ($D = 1$) or in the control group area ($D = 0$).

As the term $E[y_i^0 | X, P = 1]$ cannot be inferred from observational data, it is necessary to substitute it (the expected capability value of young adults of not being located in a heterogeneous neighbourhood) for the expected capability value of young adults who are not located in heterogeneous neighbourhoods: $E[y_i^0 | X, P = 0]$. This means that unobserved outcomes from the treatment population ($E[y_i^0 | X, P = 0]$) can be obtained from observed distribution for the matched nonparticipant group that is subject to the counterfactual condition (Smith & Todd, 2005). In this analysis, young adults from heterogeneous (Juan XXIII) and non-heterogeneous (Perdomo Alto) neighbourhoods are matched using observational characteristics that influence capability scores (outcome variable).¹⁵ The average difference in capability scores from both groups, after controlling for aspects that might yield differences between groups, can be inferred as the effect of location (microsegregation) on the production of capabilities.

Therefore, the causal effect of being located in mixed neighbourhoods on capability scores for young adults can be described as:

$$ATT \equiv E[y_i^1 - y_i^0 | X, P = 1] = E[y_i^1 | X, P = 1] - E[y_i^0 | X, P = 0] \quad (1.2)$$

Rosenbaum and Rubin (1983) suggest that in order to identify ATT, it is necessary to assume a strong ignorability (unconfoundedness), so independence between the treatment assignment and the outcome variable can hold. In this study, the matching strategy consisted in adjusting for differences in a set of pre-treatment observable characteristics X , so that assignment to any of the two conditions is independent of the potential outcomes once covariates, proposed theoretically, are kept constant (Guo & Fraser, 2014).

The variables in the survey that affect both the decision to participate and the outcome variable were considered simultaneously in the matching process (Caliendo & Kopeinig, 2008). Bernal and Peña (2011) suggest that researchers can be guided by econometric models or studies that have been used previously to understand a particular phenomenon. To the best of the author's knowledge, there is no previous study that researches the effects of mixed communities in Bogota. More importantly, the case study under investigation here

¹⁵ The estimated treatment effects of the model are evaluated in terms of their sensitivity "with respect to deviations from this identifying assumption" (Becker & Caliendo, 2007).

does not constitute an example of the deliberate policy of moving well-off households to areas of heterogeneous conditions,¹⁶ as is usually the case with studies of mixed communities.

Residential self-selection for the treatment and control groups can be controlled by socioeconomic conditions such as housing, and preferences are likely to be similar between them. Thus, one potential way to deal with this is to assume exclusively socio-demographic and economic variables to control for in the matching process, as they are likely to simultaneously affect the participation of a mixed community project and the outcome variable under investigation. It is important to note that these matching variables were at play in conjunction with the spatial and socioeconomic criteria for selecting the control group to ensure that the matched controlled group could provide an unbiased treatment effect estimate. Therefore, once differences between the treatment and the control group are controlled, both groups are considered homogeneous, so the fact of being located in a mixed neighbourhood can be regarded as a random event.

5. Results

5.1. Propensity score estimation

To estimate propensity scores, a binary logistic regression equation was calculated as the treatment can only have two possible values (i.e. $D = 1$, $D = 0$). A probit function was selected to indicate the probability of being located in a heterogeneous neighbourhood, regardless of whether a given young adult was or not. Earlier *t*-test results showed some variables do not approach significance level, suggesting that differences between the treatment and the control group might not necessarily be accounted for by matching techniques. It is important to highlight that differences between groups are produced by the multiplicative effects between independent variables towards the outcome variable of interest, and not just by the bivariate relationship between them. Therefore, it is still relevant to use matching techniques to account for possible differences in outcome variables between treatment and control once a set of possible covariances is at play.

Results of the probability of participation in heterogeneous neighbourhoods reveal that young adults with a higher level of education tend to be more likely to live in heterogeneous neighbourhoods. Older young adults with higher incomes and shorter commuting times are also more likely to live in a heterogeneous neighbourhood. Young adults who have lived in the neighbourhoods for longer, with respondents defining their ethnicity as white and renters also more likely to receive the treatment. Personality trait results were not significant in the probit regression; however, the sign of the coefficients indicates that young adults who are more self-confident, assertive and who seek a high level of external stimulation (extraversion), as well as those who are more intellectually curious and more unconventional (openness), are more likely to receive the treatment. Conversely, those young adults who display behaviours towards control and self-regulation (conscientiousness) tend to be less likely to participate. The estimated results from the probit regression are presented in Table 6.

The analysis then progressed to calculate a propensity score which estimated the probability that each young adult would be exposed to a heterogeneous urban setting, given the control variable determined earlier. For each matching strategy, all confounding variables displayed better balancing after matching since all covariates obtained a much lower level of bias. Standardised differences in means for matched variables were less than 0.25 as is recommended by Stuart and Rubin (2008).

The analysis was restricted to the region of common support, which indicated that for each treated observation there is a comparison observation with a close propensity score, so an optimal overlap can be ensured.¹⁷ Finally, different matching strategies were performed to estimate the average effect of treatment (ATT).¹⁸ Table 7 presents unmatched and matched values for outcome variables using nearest-neighbour (N1) matching. ATT is positive and statistically significant for SCALE and OPP, and negative and statistically significant for CAPA. This result suggests that young adults living in heterogeneous neighbourhoods on average feel more satisfied with life than those who inhabit homogeneous settings. Young adults in mixed communities tend to have a higher level of affective well-being (HAPP) than young adults located in homogeneous settings. However, the effects for QoL and HAPP do not reach statistical significance.

Other matching techniques were used to test for robustness of findings. Caliper and radius matching were used to improve the risk of potential bad matches if neighbours are far away between treated and controls.¹⁹

Table 8 reports the results of all different matching strategies employed. Estimated ATTs in each matching strategy show the positive effect of heterogeneous neighbourhoods on young adults' subjective well-being, measured by the level of satisfaction and the level of

¹⁶ During the administration of Gustavo Petro (2012–2016), the construction of affordable housing in mixed neighbourhoods was part of the urban strategy to tackle levels of residential segregation in the city. The political agenda of 'Bogota Humana' consisted of reducing spatial inequalities through building integration spaces of different parts of the city. After Petro's administration, public policy in this regard was abandoned, or at least public debate on the subject has been reduced (Hernandez & Becerra, 2017).

¹⁷ The 'trimming level' was calculated following Smith and Todd's (2005) suggestion of defining the region of common support by including only those values where there is a positive density.

¹⁸ The standard errors of ATT estimators were obtained by bootstrapping based on 1000 replications.

¹⁹ A caliper is set to impose a maximum propensity score distance, so bad matches are not taken into consideration in the analysis. A possible drawback of this matching technique is that treated individuals are excluded from the analysis if no matches can be found within the caliper (Smith & Todd, 2005). Kernel matching was also employed in the analysis. In this type of matching, weighted averages of all untreated individuals are used within the bandwidth (0.01) ensuring a lower level of variance, as much information is considered in the analysis (Caliendo & Kopeinig, 2008). The analysis also used stratification matching to allow the common support to be partitioned in a set of intervals in order to calculate the effects within each interval by looking at the mean difference between treated and control (Caliendo & Kopeinig, 2008, p. 42).

Table 6

Probit regression for propensity score matching.

Dependent variable	Heterogeneous neighbourhood				
Independent variable	Coef.	Std. Err.	Z	P > z	95% conf. Interval
Age	0.072	0.034	2.11	0.035*	0.005, 0.140
Male	−0.293	0.213	−1.37	0.169	−0.711, 0.124
Ethnicity (white)	0.003	0.003	1.01	0.314	−0.003, 0.011
Time living in the urban setting	0.001	0.001	1.79	0.074	0.4269, 0.142
Education attainment	0.426	0.142	3.00	0.003**	0.147, 0.706
Income level	0.285	0.086	3.30	0.001***	0.115, 0.454
Tenure (rent)	0.504	0.233	2.16	0.031*	0.046, 0.962
Extraversion	0.088	0.090	0.98	0.327	−0.088, 0.265
Agreeableness	−0.031	0.101	−0.31	0.755	−0.229, 0.166
Conscientiousness	−0.206	0.105	−1.96	0.050*	−0.412, 0.000
Emotional stability	−0.064	0.107	−0.60	0.545	−0.275, 0.145
Open to new experiences	0.099	0.100	0.99	0.545	−0.0975, 0.295
Cons	−3.709	1.322	−2.80	0.005	−6.302, −1.116

Note: *, **, and *** indicate significance levels of 5%, 1% and 0.1%, respectively.

Table 7

Average treatment effect among the treated based on nearest-neighbour matching (1-NN).

Variable	Sample	Treated	Control	Difference	Std. Err.	T-stat
HAPP	Unmatched	4.150	3.840	0.309***	0.123	2.51
	ATT	4.154	3.976	0.178	0.202	0.88
OPP	Unmatched	3.935	3.353	0.581***	0.117	4.95
	ATT	3.940	3.428	0.511***	0.193	2.64
SATI	Unmatched	5.967	5.672	0.294	0.178	1.65
	ATT	6.000	5.841	0.158	0.264	0.60
QoL	Unmatched	3.892	3.902	−0.010	0.077	−0.13
	ATT	3.892	4.035	−0.142	1.119	−1.20
SCALE	Unmatched	79.032	64.65	14.377***	2.278	6.31
	ATT	79.059	62.76	16.297***	4.194	3.89
CAPA (%)	Unmatched	0.319	0.590	−0.271***	0.023	−11.33
	ATT	0.311	0.490	−0.179***	0.035	−5.06

Note: *, **, and *** indicate significance levels of 5%, 1% and 0.1%, respectively.

Table 8

Average treatment effect among the treated on subjective and objective measures of well-being. Results from different matching methods.

Estimation method	HAPP	OPP	SATI	QoL	SCALE (%)	CAPA (%)
t-test	0.30**	0.56***	0.26	0.01	14.07***	−0.27***
Regression with dummy	0.08	0.54***	0.32	−0.06	14.73***	−0.23***
Nearest-neighbour (NN = 1)	0.18	0.51***	0.16	−0.14	16.29***	−0.18***
Caliper	0.06	0.50**	0.33	−0.10	13.29**	−0.20***
Kernel	0.08	0.53**	0.35**	−0.10	14.40***	−0.19***
Stratification	0.16	0.50***	0.41**	−0.04	14.30***	−0.19***

Note: Regression models for categorical variables used ordered probit regressions to consider the order of integers rather than the distance. *, **, and *** indicate significance levels of 5%, 1% and 0.1%, respectively.

opportunities perceived in the urban environment. Equally, there is a negative effect of living in heterogeneous settings on the level of capabilities. Results show that CAPA has a much lower sensitive response among the different matching methods in comparison to OPP and SCALE. Nevertheless, the effects of heterogeneous settings on CAPA, OPP and SCALE remain significant and robust in each matching strategy.

Affective (HAPP) and cognitive (SATI) measurements of well-being have a positive relationship with being located in a heterogeneous setting, however the effect is not statistically significant. The significant correlational claim arising from HAPP and treatment does not survive the test of causal effects. Similarly, there is no evidence that living in heterogeneous neighbourhoods has an effect on perceptions of quality of life, however it raises the question of whether the relationship between quality of life and heterogeneous settings can produce detrimental effects.

If there are unobservable factors that were correlated to the treatment variable, it is recommended to use instrumental variables to replace them. As variables used in the analysis come from primary data, there are no additional variables that can serve as instrumental variables or that have the property to be uncorrelated to unobserved factors and that can be provide information on the process of

microsegregation. An alternative option to test for effects of unobserved variables is to carry out a sensitivity analysis to account for some of the covariance that the analysis was not able to identify.²⁰

6. Discussion

The aim of this paper was twofold. First, the analysis attempts to extend the literature on neighbourhood effects by looking at how divergent dynamics of residential segregation in Bogotá produce effects on young adults' well-being and agency. The second aim was to use matching techniques with primary data to compare results of subjective and objective measures of well-being. This method allowed us to investigate to what extent mixed neighbourhoods affect quality of life, by controlling for factors affecting both residential segregation and objective and subjective domains of quality of life.

Overall, the findings suggest conflicting results between objective and subjective measurements of well-being. On the side of subjective measures of well-being, results show that there is no evidence that living within diverse communities has an effect on emotional well-being. Results show a positive effect on HAPP but effects do not reach statistical significance, meaning that it is not possible to sustain the thesis that being located or living in diverse communities explains young adults' happiness. This result suggests that more research is needed to collect better variables to account for 'geographies of subjective well-being', particularly those that can encapsulate the relationship between the spatial organisation of urban amenities and individual satisfaction and that can be assessed by using construct and criterion validity. With regard to cognitive measures of well-being, results are significant. Young adults in heterogeneous settings report a positive level of satisfaction on measurements of SCALE and SATI. For the case of SCALE, statistically significant differences were found. Young adults in Juan XXIII (microsegregated) report that they are 16% more satisfied with their lives than their peers in Perdomo Alto (macrosegregated). Conversely, normative measures of well-being based on capabilities and functionings report an opposite result. Here, a statistically significant decrease of 18–20 perceptual points of CAPA is reported for young adults living in heterogeneous neighbourhoods compared to their peers in homogeneous settings.

The greater adaptation of young adults in Juan XXIII may be a sign of the lack of autonomy and the difficulty in defining substantive freedoms compared with their peers in Perdomo Alto. This finding is in line with previous studies that point to the problem of adaptation when people's aspirations are modified in adverse contexts (Clark, 2009; Qizilbash, 2006). Adaptability formation is linked to ways of coping with the frustration of not having the material resources to enhance their quality of life at the same rate as their well-off neighbours. Therefore, the constant process of catching up with peers in social and economic domains, and the fact that, as a minority, they are less targeted by public policy due to dispersal, young adults from heterogeneous neighbourhoods tend to accept the given order and adapt their perceptions and social arrangements more easily than young adults in homogeneous settings. The fact that people adapt preferences when they face uneven situations makes them "implicit accomplices" as they legitimise unequal orders (Watts, 2009, p. 430). This serves to explain why young adults in Juan XXIII show a rather lower level of political engagement and social participation than their peers in Perdomo Alto. Based on the qualitative results of previous studies (Bucheli, 2019), worse-off young adults from Juan XXIII described themselves as more apathetic and indifferent towards change, showing their preference for assuming an adaptive position that is represented by their behaviour of following the status quo prevailing in the urban setting in which they are located. In comparison, young adults from Perdomo Alto tend to adapt their preferences at a lower rate. For them, contestation and struggle are mechanisms to preserve autonomy, so they are able to ask for and demand the fulfilment of basic rights, which represents less acceptance of the context of inequality they live in and less adjustment of young adults' aspirations.

The acceptance by young adults in Juan XXIII of the need to lower their expectations with regards to inaccessible options (employment, acquisitions, status) is also represented by the high levels of perceived availability of opportunities. Treated individuals reported a positive effect on the variable OPP which measures to what extent opportunities are more available to them due to their location in heterogeneous neighbourhoods. The significant level of this variable might indicate that restrictions to identifying certain choices can be at play, as opportunities are in most cases provisional or do not provide long-term solutions.²¹ Living close to better-off neighbours does not represent a real case for upgrading opportunities but a deliberative manipulation of wants where the accessibility of alternatives and options is mainly conditioned by the ability to pay and the existence of influential social relations.

7. Conclusions

This paper shows the detrimental impact of segregation on capabilities of young adults in two urban districts in Bogotá at a micro scale. This is in line with previous research, which arrives at similar conclusions using different well-being information spaces (Luttmer, 2004; Morrison, 2010). The paper also complements findings that argue that heterogeneous neighbourhoods have a modest effect on the amount of social mixing and social integration that they promise to achieve (Chaskin et al., 2012; Tach, 2014). There is conflicting evidence regarding the effects of social mixing on reducing social inequality, as several studies have found that social mixing does not translate into meaningful interactions when people are living close to each other (Curley, 2010; Goetz & Chapple, 2010). Other studies show that there is no social contact at all between different communities despite their proximity (Arthurson, 2012; Kleit, 2001, 2013).

²⁰ Sensitivity analysis assesses the extent to which matching estimates are robust to the presence of unobserved variables that simultaneously have an effect on treatment assignment and outcome variables (Rosenbaum, 2002).

²¹ For instance, young adults in Juan XXIII identify that living close to better-off families has increased access to job options such as domestic work, dog walking, babysitting, home maintenance and so on, but they are not durable solutions to unemployment as these types of occupations tend to exacerbate informality and job insecurity.

From an evidence-based policy perspective, the findings presented here provide an important contribution to the question of whether place has an effect on how urban life is shaped. More importantly, the finding of adverse effects of heterogeneous neighbourhoods provides a clear rationale to assess mixed neighbourhood initiatives critically from the perspective of capabilities. If an integrative approach of objective and subjective measurements of well-being is taken into account, heterogeneous neighbourhoods can be considered as a potential cause of detrimental impacts on young adults' opportunities and autonomy.

This finding adds to the current literature on neighbourhood effects in two directions. Firstly, the use of capabilities as an informational space to assess well-being allows us to deviate from paternalistic approaches in the analysis of urban public policies that take for granted predefined domains to quantify urban life. The fact that the analysis included an outcome variable (CAPA), the scores of which reflect achievement outcomes in the domains that young adults have reasons to value, implies an expansion of the evaluative space within which quality of life is assessed. Secondly, in methodological terms, the analysis presented here contributes to strengthening the quantitative evidence on the effects of social mixing policies. However, as the analysis and method employed in this study do not allow us to completely claim causal effects in the results, the detrimental effects of heterogeneous neighbourhoods on capabilities compared to homogeneous settings raise doubts concerning arguments that residential segregation exclusively reflects social and economic inequality rather than causing it (Cheshire, 2012; Ostendorf et al., 2001). Residential social mixing in Bogotá are far from being harmless in producing additional disadvantages for worse-off young adults. However, this conclusion does not preclude the idea that urban poverty and social exclusion are strongly influenced by other structural and agency factors that also produce inequality. The importance of better understanding residential mobility in Bogotá is relevant, not just because it can explain contemporary patterns of urban segregation in the city, but because it can also advance towards understanding whether neighbourhood effects are constant among deprived neighbours or whether the transmission of low capability scores is neighbourhood-specific.

Research interests

Young adults, youth, operationalisation of the capability approach and measurement of well-being, subjective well-being.

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Conflict of interest

The author declares that there is no conflict of interest with any financial organisations regarding the materials reported in this manuscript.

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