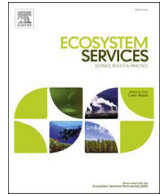




Contents lists available at ScienceDirect

Ecosystem Services

journal homepage: [www.elsevier.com/locate/ecoser](http://www.elsevier.com/locate/ecoser)

# Attached to or bound to a place? The impact of green space availability on residential duration: The environmental justice perspective

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## ARTICLE INFO

### Article history:

Received 28 April 2017

Received in revised form 30 September 2017

Accepted 4 October 2017

Available online xxx

### Keywords:

Residence duration

Place attachment

Urban green space

Environmental justice

Eco-gentrification

Cultural ecosystem services

## ABSTRACT

Socioeconomic inequalities in residential duration may be a reflection of uneven opportunities to develop place attachment thanks to green space availability. This article evaluates the impact of urban green space availability on residential duration, and shows that this impact varies among socioeconomic groups. We used an econometric model to study relationships between geolocalized residential quality survey data and the objective measure of spatial availability of urban green spaces in Lodz, Poland. The results indicate that the length of residential duration of the wealthier residents is not affected by the availability of nearby green space, while the length of residential duration of the less socioeconomically privileged residents is affected negatively by the availability of nearby green space. The abovementioned findings may be a signal of unequal opportunities to develop a relationship with the residents' place of living thanks to the availability of green spaces. Interestingly, inequalities related to residential duration, and their linkages with the strength of place attachment are less explored in the literature, compared to uneven access to other environmental benefits. This study supplements the traditional perspective of environmental justice with the context of residential duration and place attachment.

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## 1. Introduction

“The privileged walk, or fly away; the others take revenge upon each other” – in this way Bauman (1998, p. 37) emphasized that, in unfavorable circumstances high-income groups take advantage of their mobility, while the immobile impoverished groups remain and suffer. Although this referred to the uneven distribution of benefits of globalization, socioeconomic inequalities have broader implications for the way in which people relate to places. The socioeconomically privileged inhabitants can change an unfavorable place of living to one which guarantees multiple ecosystem services. The enforced immobility of the less privileged may force them to live in poor environmental conditions. The less privileged inhabitants may be bound to, rather than attached to, an unfavorable place.

The access to environmental benefits of different socioeconomic status groups is well-described in the context of environmental justice (Marshall and Gonzalez-Meler, 2016; O'Brien et al., 2017;

Rutt and Gulsrud, 2016), although not with respect to inequalities in the length of residential duration. Meanwhile, residential duration is associated with place attachment – one of the cultural ecosystem services (Gómez-Baggethun and Barton, 2013) – which affects various aspects of an individual's existence, such as mental health (Zhang et al., 2015) and well-being (Scannell and Gifford, 2016), and supports pro-environmental behavior (Walker and Ryan, 2008). Insofar as urban green spaces may increase residential duration, and consequently the strength of place attachment (Deforche et al., 2010; Liu et al., 2017), considering the inequalities related to residential duration may further enrich the discussion on environmental justice.

The purpose of this study is to evaluate the impact of urban green space availability on residential duration. Using econometric modelling, we combined geolocalized residential quality survey data of  $N = 860$  residents of Lodz (Poland) with the objective measure of spatial availability of urban green spaces in order to study the impact of green space availability on residential duration among three socioeconomic status groups. In contrast to most of the previous studies which explored the relationship between green space availability and place attachment for general populations (Arnberger and Eder, 2012; Kimpton et al., 2014; McCunn

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and Gifford, 2014), we focus on how the impact of green space availability on residential duration varies among socioeconomic status groups and how this could correspond with place attachment. We hypothesize that the positive impact of green space availability on residential duration might be observed only for those inhabitants who can afford to pay for living close to green spaces. While the inhabitants of high socioeconomic status benefit from the proximity to green spaces and are characterized by longer residential duration (and potentially stronger place attachment), residents of low socioeconomic status do not have such a possibility. Furthermore, we hypothesize that the less privileged may be forced to live away from green spaces, which is manifested by the negative relationship between their residential duration and proximity to urban green spaces. This results in further marginalization of the socioeconomically less privileged vis-à-vis access to cultural ecosystem services from urban green spaces.

The remainder of this article is divided into five sections. Section 2 explains the linkages between residential duration, place attachment and the availability of urban green spaces. In Section 3 we describe our case study city, data sources and regression model. Empirical findings are contained in Section 4, while in Section 5 we discuss them within the context of environmental justice, ecosystem services and local spatial planning. We end with some concluding remarks.

## 2. Relationships between residential duration, place attachment and green space availability in the context of environmental justice

### 2.1. From residential duration to place attachment

The length of habitation is associated with the number of potential experiences with a place, the strength of belongingness, and place attachment. The latter reflects the emotional relationship that an individual develops toward a place of living (Casakin et al., 2015). While strong, positive ties with a place improve the likelihood of remaining in a particular place for a long time, people who are not able to have satisfactory linkages with a place of living become dissatisfied and prone to leave (Casakin et al., 2015). Therefore residential duration was used as the earliest quantitative measure of place attachment (Riger and Lavrakas, 1981), especially by human geographers, who equated place attachment with rootedness – a feeling resulting from long habitation at a certain location (Relph, 1976; Tuan, 1980). Although the imperfections of this measure caused the development of alternative proxies of place attachment (Buffel et al., 2014; Raymond et al., 2010), length of residence is still treated as an important determinant of person–place ties. Insofar as longer residential duration is associated with stronger bonds with a place (Lewicka, 2013), we decided to interpret the findings regarding the length of residence in relation to the inhabitant's age in the context of place attachment.

According to the above and following Speare (1974), we assume that people move when their residential dissatisfaction reaches an intolerable threshold, which we treat as a sign of low place attachment. However, such a general view of the abovementioned relationships includes an assumption that the willingness to stay or move is reflected in decisions regarding residential mobility. This condition might be invalid for those who have the desire to leave but are unable to do so, especially low-income inhabitants who cannot afford a better location. At the same time, those who have a strong, positive sentimental attachment to a place and want to stay there might be pushed away as a result of changing jobs or as part of a family life cycle. Hence, caution is needed because place-attached people are not always rooted, and vice versa. We need to take into account this possible incompatibility of residen-

tial decisions and emotional engagement with a place as we explore the differences in willingness to stay of different socioeconomic groups.

Hence residential duration is unable to capture and fully explain the development of affective bonds with places, and it rather measures the effects of this affection (Lewicka, 2011). If emotional involvement with a place has a stronger impact on the sense of place than real behavior, then an analysis of only residential duration is not enough to draw conclusions about the strength of place attachment. In turn, we focus on explaining the importance of green spaces for residential duration and describe it in the context of place attachment, without exploring the development of the positive feelings toward a place.

### 2.2. Linking place attachment and green space availability

The potential to create a stable, long-term and positive relationship between a person and a place depends on both individual preferences and the attributes of a particular place. Many objective and subjectively perceived features of a place support the development of place attachment, such as the availability of amenities/services (Buffel et al., 2014), neighborhood deprivation (Bailey et al., 2012), and crime (Brown et al., 2003). Thus, the results for green space availability as a determinant of place attachment are mixed, and they depend on how place attachment and green space availability are defined (e.g. using objective vs. subjective measures).

The results obtained by using self-reported measures of place attachment and the perceived availability of green spaces have mostly confirmed the existence of a positive relationship. For example, Arnberger and Eder (2012) noted that the perceived supply and quality of green spaces can foster community attachment. Kim and Kaplan (2004) highlighted the importance of a nearby natural environment (e.g. public greens and footpaths) for the development of a sense of community, while Comstock et al. (2010) found that neighborhood attachment is positively correlated with community garden participation.

Nonetheless, the positive impact of subjectively-measured green space availability might be overstated. This is because the positive feelings and bonds with a place, which define place attachment, affect the perception of green spaces, and vice versa (Kimpton et al., 2014). Insofar as it is unclear if residents who declared a stronger place attachment are more likely to appreciate green spaces, or if positive perception of green spaces improves the strength of place attachment, the causality of the relationship seems to be unresolved. To avoid such a problem, we applied an objective measure of green space availability and analyzed residential duration, which often serves as an objective representation of place attachment (as indicated in the above subsection).

However, in those studies in which self-reported place attachment is combined with an objective measure of green space availability, the findings are mixed. Kimpton et al. (2014) applied two objective spatial predictors: green space proximity and the share of green spaces in a buffer, to capture the effect of green spaces on place attachment, and did not find any positive relationship between living next to green spaces or living in a green community and place attachment. In contrast, McCunn and Gifford (2014) found a statistically significant association between green design attributes (measured using the Green Neighborhood Scale) and place attachment.

The inconclusiveness of the abovementioned results may be due to the weakness of green space measures. Simple measures of green space proximity do not account for the characteristics of green spaces. While the development of place attachment is supported by the perception of a certain combination of ecosystem functions, omitted green space features may affect the estimated impact of green space availability on place attachment (Kimpton

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