

Visual Mixed Messaging: The Role of Signage in Public and Private Governance of New York City Interior Privately Owned Public Spaces

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INTRODUCTION

Signage is the technology by which the use of New York City's interior privately owned public spaces (IPOPS) are regulated by public and private entities. This category of urban place presents barriers to entry, visible in the form of building facades and doors of the host buildings whose architecture typically signals corporate exclusivity rather than a general welcome to the public. Signage is how New York City (NYC) welcomes the public into these places that might be mistaken for office buildings open only to authorized visitors. Given that these signs are the primary signals to potential space users about which activities, behaviors, and objects are allowed in these areas, understanding their messaging is an integral part of interpreting the governance of these publicly owned private spaces. Moreover, while the city mandates some signs, others are idiosyncratic and posted by owners in an unstandardized fashion. Such owner signs offer additional governance of these spaces beyond the regulations and accessibility required by the city. We examine the signage found upon entry to IPOPS, including signs mandated by New York City regulations (city signs) and signs provided by private owners at their discretion (owner signs). To what extent does signage convey the public nature of these places? A related question is, does owner signage constrain the definition of the term "public" that is a feature of city signage? Our findings show that city signage conveys welcome to the public, informs about opening hours, and lists amenities for visitors to enjoy. Owner signage, on the other hand, regulates the use of the spaces by enumerating prohibited activities, behaviors, attributes, and items and by signaling enforcement mechanisms.

In IPOPS, signage makes visible the separation of responsibility between two authorities, public and private entities, governing these spaces. The city invites

Abstract

New York City's Interior Privately Owned Public Spaces (IPOPS) provides developers with bonus floor area in exchange for the urban amenity of publicly accessible space. Many issues can arise in jurisdictional overlap when city authorities and private owners govern space. Upon entering the front door of an IPOPS, one may encounter signage placed by private owners stating explicit rules discouraging specific uses, while city-mandated signage must state that the space is "open to the public." Given recent efforts to replace publicly regulated POPS signage, this study provides a timely assessment. The research question is: Do private owners' signs communicate in a manner that narrows the definition of "public"? Our research method includes transcribing all externally visible signage, including city-regulated signage and owner signage and performing a text analysis with R to discover the prevalence of language inviting use and regulating behavior. We analyze the data to discover how in contrast to city-mandated signage, owner signage tends to narrow the definition of "public." We explore the implications for the governance and administration of public space.

Keywords:

signage, interior privately owned public space, urban space, linguistic landscape, language processing

the public into the space; the building owner provides security. We consider how deontic status and stance in signage confer authority upon private entities to enforce an enhanced security atmosphere in nominally public places where people should enjoy all the freedoms of public space. Valverde (2011) asserted that dynamic analyses of security projects should consider logic, scope, and techniques. The scope of our research is a set of nineteen IPOPS in New York City, but it is critical to acknowledge that each IPOPS is a microcosm of jurisdiction with its model of private urban governance existing behind the street wall that typically denotes the membrane between public and private regulation. Kempa et al. (1999) outlined five aspects of the logic of private governance in these spaces that Caldeira (1996) termed “fortified fragments.” Four of these strategies are evident in IPOPS: (a) A sorting process separates “desirables” from “undesirables”; (b) Orderly behavior is rewarded with participation while disorderly conduct is threatened with expulsion; (c) Control strategies are embedded in the design; (d) Order is instrumental, seeking to prevent infringement rather than punish wrongdoing. This work seeks to discover the logic of security in these environments by interrogating the signage technique.

In this research, we examine the language of city signs to determine how inclusive the public welcome is and the language of owner signs to determine whether their prohibitions constrain uses legally permitted in public places. The follow-up question is, do these restrictions target particular groups of people in ways that implicitly exclude them from enjoying the benefits of IPOPS? This question refers to Valverde’s (2011) distinction between *sûreté* and *securité*; we question whether some will read the signs as a signal that the private authorities threaten their presence while others will feel they are being protected. This study is a timely assessment, given that in 2017 all publicly regulated POPS signage was replaced following a publicly engaged design process and has yet to be evaluated. While this research focuses on IPOPS in NYC, the results have broader significance, as POPS have proliferated beyond NYC, and have become prevalent in many cities and countries worldwide (D. Lee, 2022; Németh, 2008).

POPS was created in NYC in the 1960s as a new development incentive permitting developers to build bigger buildings in return for publicly accessible space on privately

owned property. The broad question about POPS is, does this zoning regulation offer a fair trade-off, or does it favor private developers’ interests over the public good?

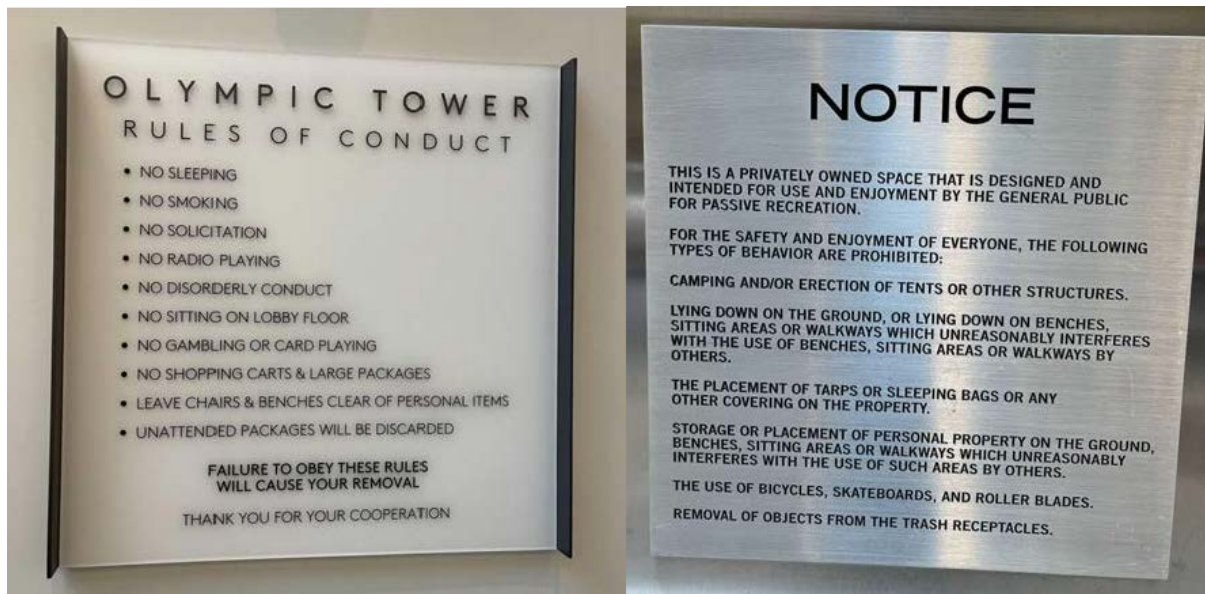
Our research focuses on the role of signage in messaging about the public character of these spaces or who is and who is not welcome in these public urban places located within the walls of private buildings. The study’s methodology is a pioneering application of natural language processing (NLP) to the signage of IPOPS, enabling a comparison of texts of city signage with texts of owner signage to gain insight into the extent to which the intention of public access is or is not supported by these messaging systems. This text-mining process enables us to identify and examine messages about attributes, behaviors, and belongings that may function as proxies for particular social groups. In this article, we provide background information on IPOPS signage, briefly outline the theoretical framework of this study, and discuss the methodology for data collection and analysis. We present and discuss the findings from our analysis, offering conclusions, acknowledging our study’s limitations, suggesting future research directions, and raising implications for public policy.

City Signage

In most cases, IPOPS signage is rarely a “sign system,” but rather a combination of city signs and owner signs. While the initial zoning resolution establishing POPS did not mention the requirement of entry signage, the 1969 Zoning Resolution mandated the inclusion of entry plaque signs at each street frontage or entry point (Section 82-00[a]). The resolution also called for the inclusion of the tree logo signifying public space, the international symbol of access for people with health conditions or impairments, and a title stating that the space is open to the public (Kayden, 2000).

In 2017, the New York City Council adopted local law 116 and subsequent local law 250, requiring signage at all new and existing POPS. The city’s “signage system” presently comprises two components: the “entry plaque” identifying the space as public and the “informational plaque” communicating the amenities provided (Kallós et al, 2017).

Specific information must be included on these signs, including hours of operation, contact information, and a statement on accessibility, including the international



symbol of access. Not required, however, are other accessibility provisions such as braille, additional icons, or languages other than English.

Owner Signage

NYC law neither requires nor restricts owner provision of signage. As observed in this study, many owners have added their own discretionary signage intended to regulate the behavior, attributes, and belongings of users of the space. Signs may announce that the space is intended for “passive recreation.” Certain behaviors, such as loitering, are typically noted negatively, following the word “no” or called out as prohibited. Personal attributes, notably odor, may be prohibited. Certain items, such as shopping carts, large packages, and tents, are prohibited. Signs may include information about the consequences of noncompliance with these regulations, such as “failure to obey these rules will cause your removal.” Figure 1 displays two examples of owner-provided signage within NYC IPOPS.

THEORETICAL FRAMEWORK

This study addresses a gap in existing POPS research. While others (Huang & Franck, 2018; Kayden, 2000; D. Lee, 2022; Mitrasinovic, 2016; Németh, 2012; Smithsimon, 2011; Whyte, 1980) examined the extent to which POPS are publicly accessible places, we focus on the mechanisms by which signage, provided by city mandate and private owner discretion, promotes or denies public access in IPOPS. We examine how signage technology establishes a system of private urban governance by the owners of private real estate enclosing these public urban places.

Figure 1 /

Examples of Owner Signage, Displaying Rules of Conduct Within an IPOPS

Through this literature review, we identified three main lenses that we later used to analyze our findings: (a) IPOPS governance, (b) conscribed sense of public in IPOPS, (c) implicit exclusion in the linguistic landscape.

1. Visualizing the Invisible: IPOPS Governance

The ascendance of POPS has paralleled a more significant trend toward government deregulation and public-private partnerships, which Brenner and Theodore (2002) called the “rolling out” of urban neoliberalization. The neoliberal trend occurring in the past half-century has fueled increased construction of such hybrid spaces as the shopping mall (Sorkin, 1992), the Business Improvement District (Lippert & Sleiman, 2012), and the urban condominium (Lippert & Steckle, 2016). Like these urban typologies, POPS operates in physical space and through an invented legal relationship with a complicated inner-governance structure motivated by profit. The blurred public-private distinction makes POPS unique due to a direct and continued legal commitment to public access (Kayden, 2000). The unclear nature of POPS can lead to misunderstanding by the public about the kind of space a POPS fundamentally is (D. Lee, 2022). Crang and Graham (2007) asserted that visible governance technology has saturated our urban environment, with little thought given to how the public perceives the visibility of such elements.

Other aspects of governance that could be more readily apparent when entering a space are issues of broad overlapping governing jurisdiction, including local, state, and federal laws, along with rules and regulations of a private entity (Valverde, 2011). We argue that signs make the invisible concept of jurisdictional governance visible.

2. Conscripted Public Use in IPOPS

The right to the city is the notion, introduced by Henri Lefebvre, that the public is embedded in the rights to the city discourse:

“The right to the city manifests itself as a superior form of rights: right to freedom, to individualization in socialization, to habitat and to inhabit. The right to the oeuvre, to participation and appropriation (clearly distinct from the right to property), is implied in the right to the city” (1996, pp. 173–174)



Figure 2

No Loitering Sign Found in NYC POPS

Mitchell (2003) agreed with Lefebvre (1996), focusing on the exclusion of unhoused people from public spaces, a denial of the right to inhabit the city and, hence, to participate in the oeuvre, or work of the city. Mitchell wrote about the importance of the way the public is imaged, citing Crilley’s (1993, pp. 153–154) observation that “corporate producers of space tend to define the public as passive.” Mitchell (2003, pp. 202–203) noted the difference and correlation between status (e.g., homelessness and behavior, like sleeping in public).

To discern the extent private urban governance imposes extralegal restrictions on users of IPOPS, it is critical to understand what behavior is regulated by law. New York State Penal Code Article 240 enumerates offenses against public order, public health, and morals. Two relevant offenses are loitering and disorderly conduct. Figure 2 displays a typical loitering sign within a NYC POPS space.

While the commonly used definition of loitering is synonymous with hanging out, the legal definition in New York is constrained to loitering with specific purposes (gambling with cards, dice, or other gambling paraphernalia; using or possessing controlled substances; or engaging in prostitution offenses) or attributes (being masked).

Whyte (1980, p. 65) asserted that the private owner of a public space “has not been given the right to allow only those public activities he happens to approve of,” narrowing the definition of accessibility and not complying with the spirit of the agreement with the city for which the owner has been “specifically, and richly, rewarded.”

Figure 3

On the Left, the Original Rules of Conduct Sign for Zuccotti Park. On the Right: Post-Occupation Rules for Zuccotti Park



Mitchell (2003, pp. 1–9) evaluated NYC after the turn of the millennium following the attacks of September 11th, 2001, and found an increase in “environment change, behavior modification, and stringent policing” resulting from a “fear of inappropriate users,” such as the “homeless, drug dealers, loitering youth-and not inconsequentially, political activists protesting in squares.” Grounding his argument in the right to the city discourse, Mitchell called for “a different kind of order; one built not on the fears of the bourgeoisie but on the needs of the poorest and most marginalized residents” (Mitchell, 2003, p.9). Douglas Woodward contextualized the impact of private urban governance during the “Occupy” era, recounting the significance of owner signage before and after the internationally famed occupation of Zuccotti Park, which sparked the Occupy movement. The preoccupation signs displayed fewer rules and regulations. In contrast, the post-occupancy sign added terms such as “passive recreation” and further rules banning items such as tents and “other structures,” placement of tarps, and prohibiting actions such as lying down on benches. “Despite all the rulemaking, there is still no clear guide as to what constitutes proper behavior in a POPS, or exactly what kind of activities property owners can control” (Woodward, 2012). Woodward references the changes to Zuccotti Park’s rule signs. We visited this site and photo-documented the same findings. Figure 3 below displays the initial rules sign at Zuccotti Park (left) and a newer sign with additional rules (right).

3. Implicit Exclusion in the Linguistic Landscape

Németh and Schmidt (2011, p.5) stated, “Privately owned public spaces are frequently criticized for diminishing the publicness of public space by restricting social interaction, constraining individual liberties, and excluding undesirable populations.” Marginalization and exclusion can take many forms, as prohibiting specific actions can be a proxy for excluding certain groups, effectively limiting the definition of the public. The United States has a long history of exclusion in public space by gender (Day, 1999) and race. One example of how signage excludes can be found in “Black codes,” a colloquial term for Jim Crow-era loitering

laws that gave police broad license to persecute Black people in public spaces. Loitering laws still oppress people of color, particularly youth and transwomen (A. Lee, 2022).

While Landry and Bourhis (1997), originators of the term linguistic landscape (LL) were primarily concerned with languages spoken by members of communities in particular geographic areas, the meaning of the term linguistic landscape has broadened. The editors of *Linguistic Landscape* (2015, as cited by Gorter, 2018, p.2) identified that LL attempts to explore “attempts to understand the motives, uses, ideologies, language varieties and contestations of multiple forms of ‘languages’ as they are displayed in public spaces.”

Deontic Status and Stance in Signage

Svennevig (2021, p.165) noted that signs are “power indices of norms of propriety and social order.” Svennevig discussed the author’s claim to authority in regulating the actions of others and how compliance is enforced. This level of authority is known as deontic status. Stevanovic and Peräkylä (2014, p.190) distinguished between deontic status and deontic stance as follows: deontic stance, “refers to the position that a participant has in a certain domain of action, relative to his/her co-participant(s)”, whereas deontic status is “the speakers’ public ways of displaying how powerful they are.” Gorter (2006) designated “top-down signage” as “official signs placed by a government or institution,” while “bottom-up signage” is considered “nonofficial signs put there by commercial enterprises or by private institutions or persons.” Kallen (2009, p. 273) argued that while it is useful to categorize, the binary distinction is too simplistic, stating that “Any act of signage could be simultaneously top down, bottom up, horizontal, or otherwise oriented depending on the speaker’s intent.”

Trinch and Snajdr (2020, p. 235) asserted that signs regulate “social interaction, users, and usages of space,” noting instances where “privilege is exercised through public texts as forms and models of communication.” Signs can exclude the absence or marginalization of languages. An obvious example is using only one language in a community where a high percentage of the population speaks a primary language other than that displayed on the sign.

METHODOLOGY

Data Collection

Between October 14–16, 2022, we documented 35 signs at 19 IPOPS in NYC and divided them into two groups based on deontic status and stance (i.e., city signs in one group and owner signs in the other). The criterion used for selecting IPOPS to study is that the space must be climate-controlled with a clear threshold between indoors and outdoors. The researchers utilized the Advocates for Privately Owned Public Space (APOPS) database to filter climate-controlled spaces only.

We then transcribed text from the documented signs and entered it into an Excel spreadsheet. The spreadsheet includes additional identifying characteristics: sign address, sign type, city sign or owner sign, presence of braille, and languages included on the sign. We cataloged specific rules and prohibitions on owner signs. This task was performed by a single researcher, ensuring consistency in the process to prevent bias.

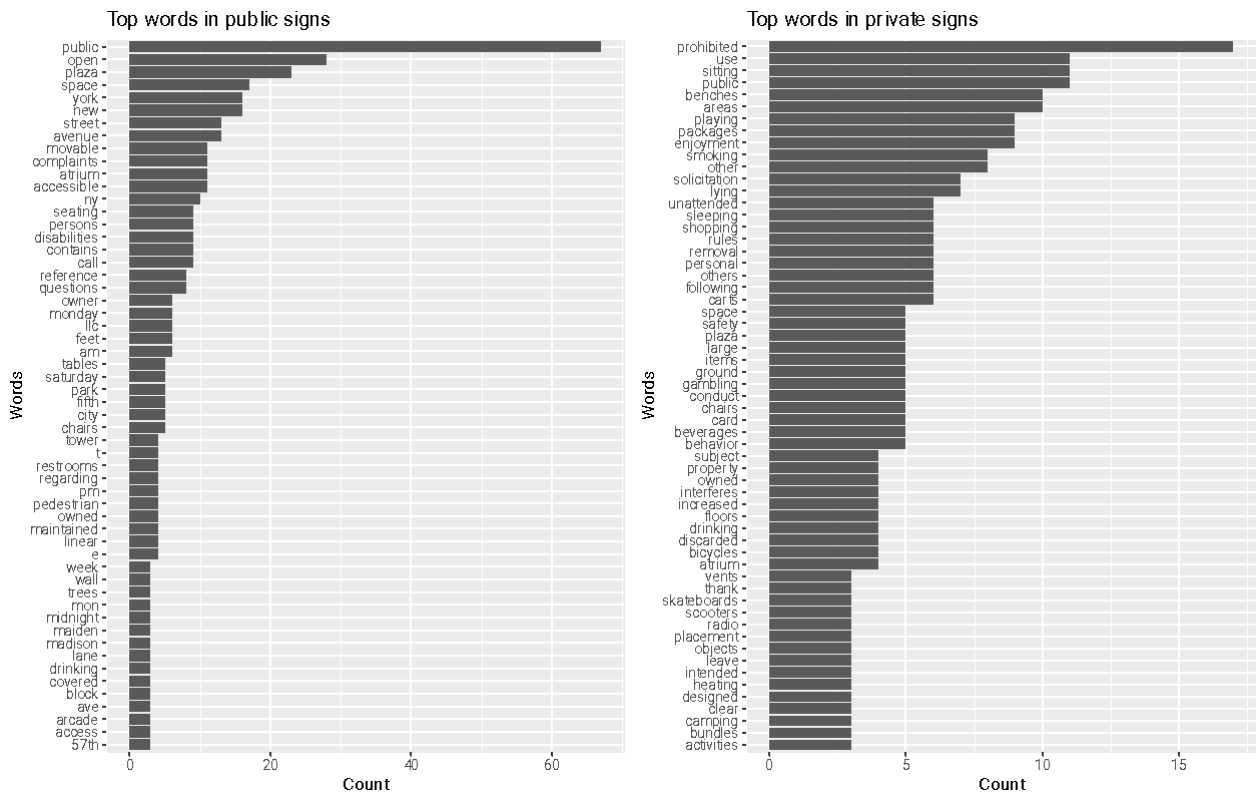
Data Analysis

We analyzed sign text qualitatively and quantitatively to examine common and distinctive themes. Here, we use methods from Natural Language Processing (NLP) and general text analysis to understand the patterns in sign messaging (Silge & Robinson, 2017). We conducted data cleaning, analysis, and visualization using R (R Core Team, 2022). First, we cleaned (e.g., removed punctuation and standardized capitalization) and tokenized the sign text data using the tidytext R package (Silge & Robinson, 2016). Next, we removed stopwords using a process further detailed below. Burns describes stopwords as “lexical ‘noise’ that prevents ‘signal’—semantically or thematically significant content—from being accurately discriminated” (Burns, 2018, p. 4). Using the cleaned data, we compared word frequency and sentiments across the city-mandated and owner discretionary signs. Sentiment analysis is a popular approach for analyzing emotions and perceptions embedded in texts (S. M. Mohammad, 2021; Silge & Robinson, 2017). Some sentiment taggers, such as Bing or AFINN, classify terms into “positive” and “negative” categories (Hu & Liu, 2004; Nielsen, 2011). Others, such as NRC, classify terms into multiple categories, including emotions (e.g., joy, sadness, and anger; S. Mohammad & Turney, 2013). Finally, we analyzed the types of amenities provided in and behaviors or objects prohibited from IPOPS.

Approaching Public Signs as Text

Working with unstructured text data collected from the built environment is not always straightforward. Signs often include information beyond the text itself, which may be encoded in font size, formatting (e.g., bold or italics), and capitalization, in addition to the importance of text placement, iconography and overall sign design. In addition, sign transcriptions may include descriptive text segments such as address numbers or hours of operation, which may be difficult to interpret as text without the broader context of the sign. Another challenge we encountered in applying text analysis approaches to sign text is the way these texts are structured. For example, a sign might begin a section with the phrase: “The following are prohibited”: followed by a bullet list of particular behaviors or objects. From a natural language processing perspective, although we can easily define where the list of prohibitions begins, it may be difficult to identify where it ends. This may require sign text data to undergo an additional reorganization phase or data structuring after transcription.

Removing stopwords from a text is a common practice for removing unnecessary common words from an analysis (Burns, 2018; Silge & Robinson, 2017). However, when applying standard stopword libraries included in tidytext (Silge & Robinson, 2016) to the POPS sign text, we found that these lists also removed words of interest in this particular context. For example, the words “open,” “welcome,” “everyone” and “others” are considered stopwords in these libraries but may be of analytic interest in understanding signage, suggesting that the development of stopword lists specifically for the domain of public signs would be beneficial for increasing the ease of application of text mining approaches to these signs. By constructing custom stoplists, it may be possible to reduce barriers to incorporating text mining into planners, landscape architects, and graphic designers’ analysis of public signage. For this paper, we first used a parts-of-speech tagger and then filtered the terms to include only those tagged as nouns, verbs, and adjectives. We did not change plurality, tenses, or forms of particular words.



FINDINGS

Word Prevalence

After cleaning the transcripts of the sign text, we documented 195 unique words on the owner signs and 184 on the city signs. The texts were somewhat less equal in length, with a total of 493 words on the owner signs and 614 words on the city signs. We compared the most frequent individual words appearing on the city signs and owner signs. The most frequently occurring word on the city signs is “public,” appearing 67 times, followed by “open” ($n = 28$) and “plaza” ($n = 23$), both occurring at a much less frequent rate. Figure 4 conveys the top 50 words occurring on public signs, from which several themes emerged. First, many of the frequent terms describe the place and the amenities one might find there (e.g., “seating,” “chairs,” “contains,” and “restroom”). In addition, some terms reference accessibility and ADA compliance (e.g., “accessible” and “disabilities”), while others refer to contact information (e.g., “call,” “questions,” “regarding”).

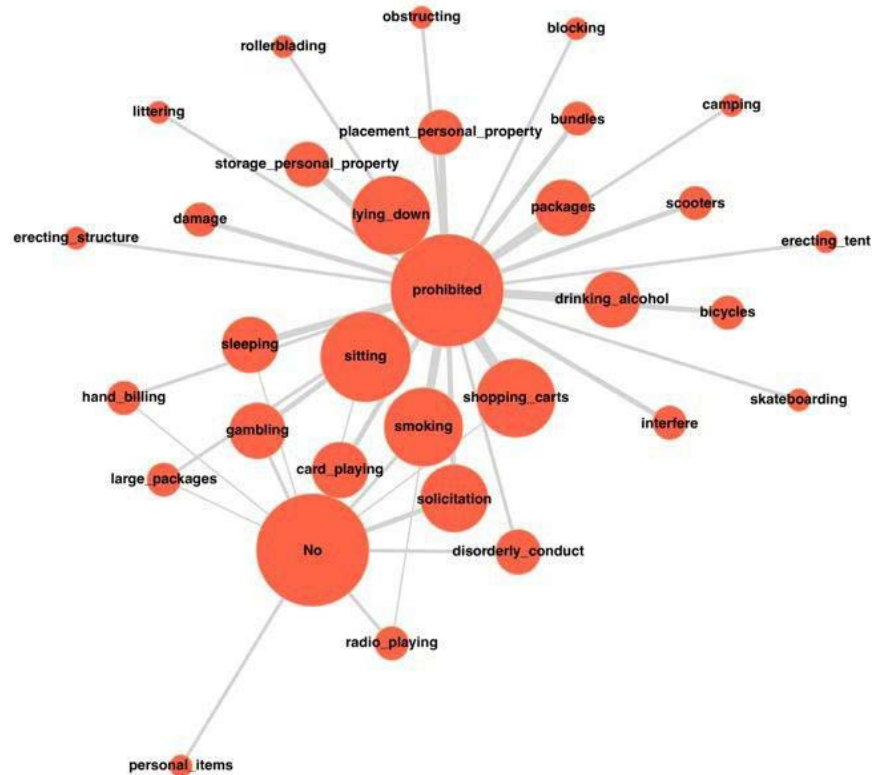
By contrast, the word appearing most frequently on the owner signs is “prohibited” ($n = 17$), followed by “use,” “sitting,” and “public” (each $n = 11$). Similar to the city signs, the owner signs contain some descriptions of amenities (e.g., “benches” and “heating”). However, most terms refer to actions and activities (e.g., “playing,” “sleeping,” “gambling,” “smoking,” and “solicitation”) or are descriptive adjectives that might be used to clarify certain conditions (e.g., “personal,” “safety,” and

Figure 4

Word Prevalence Graphs

Figure 5

Restrictions in Owner Signs, Word Network Diagram of Terms and Phrases Associated with the Words “No” and “Prohibited”



“unattended”). Finally, many of the frequent words on these signs refer to objects: personal belongings and features of the space (e.g., “carts,” “property,” “floors,” and “vents”).

Word Associations

In addition to examining frequent words, we analyzed words and phrases associated with key terms. For the city signs, we examined which amenities were listed as provided in each space, while for the owner signs, we analyzed terms associated with the words “prohibited” and “no.” Further data processing was required to analyze the concepts most associated with these terms. Because many prohibited activities and objects are outlined on signs in a list format, they could not be easily incorporated into a text analysis workflow. Instead, we manually created a word cooccurrence dataset for “prohibited” and “no.” In several cases, we removed prepositions or changed the plurality or form of a word to connect concepts that refer to the same action. Otherwise, these categories were kept consistent with the wording on the signs, meaning some prohibited actions may appear in multiple similar variations

(e.g., rollerblading and rollerblades are treated as distinct items). We found no restrictions on city signs, so the analysis focuses on the 153 references to actions/objects banned in IPOPS according to owner signs at 8 locations. In these references to restrictions on owner signs, 15% use the word “no” ($n = 23$), while the overwhelming majority (85%) use the word “prohibited” ($n = 130$). In total, 69 different restrictions were recorded from owner signs.

Words associated with the terms “prohibited” and “no” can be described as objects and behaviors. The most frequent restriction is “sitting” ($n = 8$) followed by a tie between “lying down,” “shopping carts,” and “smoking,” which occur seven times. Figure 5 illustrates the co-occurrence network of restrictions linked to the terms “prohibited” and “no.” In this figure, nodes are relatively sized based on degree centrality (with some adjustment for “no” and “prohibition,” which are highly connected), with edge widths adjusted for the number of times the two terms are connected. For plotting clarity, terms that appear less than twice are excluded from the graph.

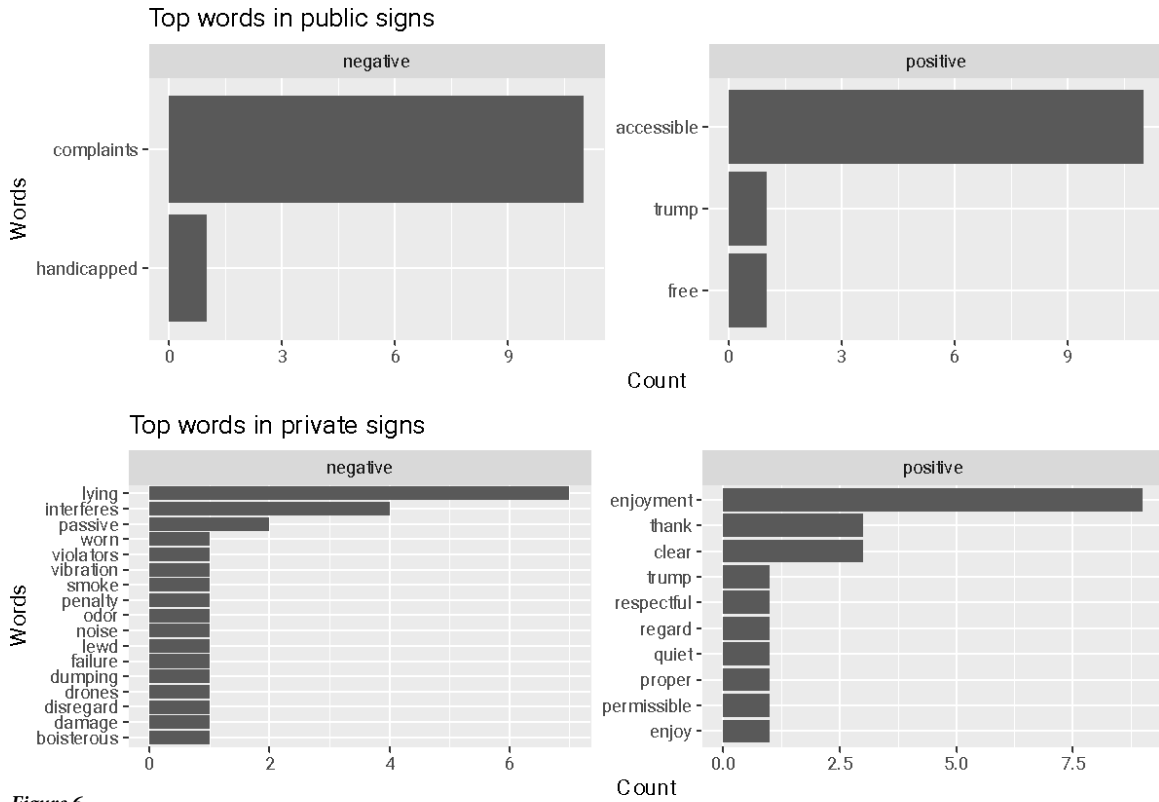


Figure 6

Sentiment Analysis of Top Words in City Signs (Above) and Owner Signs (Below)

The Fruchterman-Reingold layout algorithm is included in the *igraph* R package (Csardi, 2006) and draws on graphical adjustments detailed by Ognyanova (2021). From this figure, the top terms associated with restrictions on owner signs include objects (e.g., bundles, scooters, and bicycles) and behaviors (e.g., disorderly conduct, gambling, and solicitation). Some signs offered more detailed explanations, such as references to restrictions on storage or placement of personal property on benches, the ground, sitting areas, and walkways. Other objects-related restrictions include restrictions on sleeping bags, tarps, and coverings. Here we focus on analyzing the sign text, but future research might work to categorize further and group these restrictions along common themes. For example, many restrictions refer to certain attributes of behaviors and persons, such as “disruption,” “damage,” “interfere,” “disorderly,” “obstructing,” and “blocking.”

Examining the standard amenities mentioned on signs identified features primarily associated with seating, plants, and restrooms. Many signs specified that the IPOPS included movable seating or tables. Other amenities

included water features, Wi-Fi, art features, and drinking fountains. Still, other amenities mentioned refer to entertainment, food, charging stations, and telephones.

Sentiment Analysis

We analyzed sentiment in IPOPS signage using the Bing sentiment lexicon, which classifies terms into “positive” and “negative” sentiments (Hu & Liu, 2004), as included in *tidytext* (Silge & Robinson, 2016). Among the city-mandated signs, only five words were included in the tagging lexicon.

Notably, “handicapped” and “complaints” appear as negative words, while “accessible,” “trump,” and “free” appear as positive terms, suggesting that the sentiment tagging may not capture the meaning of these terms in the specific context of urban signage. We interpret the general lack of polarizing terms as potentially being either related to the relative neutrality of terms appearing in city-mandated signs or to a gap in the types of words included in sentiment tagging lexicons. By contrast, the owner signs featured words coded as positive or negative (Figure 6). The most frequently occurring negative terms include “lying,”

“interferes,” and “passive,” followed by numerous terms that occurred once and are generally associated with actions, objects, and characteristics. Terms tagged with a positive sentiment include “enjoyment,” “thank,” and “clear,” followed by several words appearing once that emphasize quiet, respectful compliance in the spaces.

DISCUSSION

Explanations and Restrictions in Public Signage

Our primary finding from the sentiment analysis is that city signage tends to be excluded from the results of the sentiment tagger, (i.e., the language is neutral rather than flagged as either positive or negative). In contrast, the owner signage tends to emphasize negative sentiment.

Comparing word frequencies reveals clear differences between the city signs and owner signs. While the city signs focus on descriptions of available amenities, owner signs instead delineate the rules about behaviors discouraged in these spaces. One trend is the prevalence of the term “prohibited” on owner signs, while the city signs lack this term entirely. The language in owner signs intends to control and regulate behavior. We conclude that signage technology is deployed to render visible a private governing order in IPOPS. Following Valverde’s (2011) analytical model, we consider the scope of the security project, its scale, and jurisdiction limited to each IPOPS, for each is governed by a property owner that sets forth its version of urban order. However, the text analysis methodology we employed in this research reveals a similarity of logic that permits us to consider the entire set of IPOPS we studied to constitute a system of private urban governance. Utilizing Kempa et al.’s (1999) model to interrogate the logic of signage across the nineteen study sites reveals how the nineteen individual systems may be viewed as a unified security project to create an idealized vision of urban order for public space occurring within the walls of high-end New York City real estate. As Blomley (2004, p. 89) noted, “Real property has long had a special significance in governmental discourse, given its supposed value in the formation of desirable social and political entities.”

Given the notable differences in signage messaging between city signs and owner signs, what factors might

account for this variance? Though a full understanding of building owner motivations, connected to Valverde’s (2011) discussion of “telos,” or discourse and ethical justification, for posting particular signage is outside the scope of the present paper, we offer several suggestions based on the text differences alone, noting that these might be explored in further studies. Establishing that city signs tend to describe operating hours and amenities, it is unsurprising that these features are not replicated on owner signs. Instead, we posit that the owner signs add additional messaging that may be missing or inadequately communicated on city signage. For example, many owner signs contain specific information about restricted behaviors and activities that may be engaged in within the IPOPS. This information is not provided in city signage, meaning there could be miscommunication or conflicts about how these spaces are meant to be used. Notably, the owner signs are the only places that construct the notion that quiet, passive recreation is the ideal norm for IPOPS use. There is no legal requirement for the passive use of IPOPS. There is no universally accepted definition of passive use. For example, some definitions consider camping passive recreation, whereas camping or its attributes appear prohibited in numerous signs. Owner signage is the medium by which the instrumental nature of private governance is conveyed; lists of prohibitions, along with the encouragement of passive use seek to prevent infringement rather than punish transgression. Indeed, the question of punishment for engaging in prohibited but legally permitted activities is fraught; However, expulsion is threatened as a recourse for noncompliance, it would likely be an illegal action itself. Therefore, owner signage is designed to establish the deontic status and legitimacy of the real property owner to establish a private order within a nominally public space.

Certain prohibitions restate New York State Penal Code offenses against public health and morals (gambling and solicitation) or against public order (unreasonable noise and obstructing pedestrian traffic). Other prohibitions, however, such as sitting on floors, placing personal property on chairs, having large packages, card playing, and sleeping, are not illegal in public places in New York. The owner signage serves to set a higher bar for behavior in public spaces within private buildings than is standard

in urban public spaces such as the sidewalk outside the IPOPS, rewarding compliance with the opportunity to enjoy participation and threatening expulsion as punishment for non-compliance (Kempa et al., 1999).

We sought to determine whether the signage texts convey information about who IPOPS are intended to serve and who they are not. City signs refer to the public. We discovered that many of the most frequently occurring terms in owner signs refer to actions or conditions that might serve to exclude or deter certain populations from using the spaces. In particular, some terms are correlated with the language used to discuss unhoused or activist populations (e.g., terms like “sleeping” and “carts”), while others might refer to items that might be associated with youth, (e.g. “skateboards”), and the term “loitering” (found only infrequently) has a history in Jim Crow laws (A. Lee, 2022). The prohibition of radio playing is akin to noise ordinances, which subjectively “target classes of people as unworthy of being in public” (Staeheli, 2010, p. 72, as cited in Ramirez, 2020) and often carry forth norms that are deeply racialized (Ramirez, 2020, p. 158).

Here, it is helpful to refer to Mitchell’s (2003) distinction and correlation between status and behavior. The owner signage does not ban unhoused individuals, public protesters, youth, or people of color, but they do prohibit behaviors and items associated with these groups. This is the mechanism for the “sorting process” that Kempa et al. (1999) identified as a strategy of private governance.

While our analysis has focused on the text of signage, another form of exclusion stems from what must be included on signs. We discovered that most signage texts were written solely in English, whereas nearly half (49.1%) of New Yorkers speak a language other than English at home (NYC, 2015). This suggests that non-English speakers are not welcomed by the city or the owners of IPOPS signage. We observed that, while a wheelchair icon was present, braille was missing from most signs, conveying a welcome and signifying accessibility to people with mobility disorders but not to people with low vision and blindness.

Future Pathways for NLP in Signage Analysis

Several important considerations exist considering the broader applications of text analysis to the study of

public signage. In general, existing text analysis tools need to apply better to public signs.

First, words used in public signage may sometimes have different context-specific meanings than when used in other contexts. This requires careful attention to word use, particularly for terms that may be coded language referring to certain socioeconomic or racial/ethnic groups. This reflects a recognized challenge related to applying general-purpose sentiment lexicons: although many words are used similarly across texts, sometimes there are domain-specific meanings of particular words and phrases (Codon et al., 2005; Hamilton et al., 2016). This has led to the development of domain-specific sentiment lexicons in fields such as medicine and crisis management that can improve the accuracy of extracting useful information from texts, as well as of querying social media or other big data sources for relevant text data (Codon et al., 2005; Olteanu et al., 2014). To our knowledge, no sentiment tagging lexicons are publicly available for landscape architects and urban planners, and none are available for interpreting public signage. This challenge might be addressed by creating domain-specific lexicons for interpreting and tagging public signage.

Second, the format of sign text only sometimes lends itself to easy integration into text mining workflows. For example, a sign may include lists of prohibited behaviors or objects, not all of which directly include the word “no” or “prohibited” near the restricted behavior/object. This requires additional text processing to interpret and organize these restrictions into a data format that can be further analyzed quantitatively.

Finally, general-purpose stop word lists are not necessarily well suited to analyzing sign text. Many terms that may offer little insight in other contexts can be critical to understanding the framing of public signs. This suggests that custom stoplists may be beneficial to furthering quantitative natural language processing approaches to signage. Developing such open-access tools and datasets might foster new forms of interpretation of the textual messages in public signage. With the development of open-source tools, custom stoplists, and domain-specific sentiment lexicons, there will be greater potential to reduce the barriers for NLP and big data approaches to be leveraged for urban planners and allied fields to discover critical social

and political insights related to textual messaging in public spaces such as who might feel welcome or excluded in particular types of places.

CONCLUSIONS

The primary research question was, Do private owners' signs communicate in a manner that narrows the definition of "public"? We applied the three lenses developed in the literature review to our analysis, resulting in three main conclusions: (a) Signage reveals the dual nature of IPOPS governance, with owner signs containing text that aims to control and regulate behavior, while city signs extend welcome and list amenities provided in the space; (b) Owner signs suggest a conscribed form of public use should be the norm within each space, constraining behavior found in fully public spaces; (c) Owner signs could implicitly exclude unhoused individuals, public protesters, youth, or people of color, by language prohibiting behaviors, attributes, and items associated with those groups. Owner signs could exclude people with visual disabilities and non-English speakers because of the lack of English literacy by people in those groups.

1. Signage Reveals the Dual Governance of IPOPS: Owner Signs Regulate while City Signs Welcome

Key differences are present in style and substance between the city signage representing public governance of IPOPS and the owner signage representing private governance of these spaces. First, the two types of signage differ in the tones with which they communicate. City signs are straightforward without affect (sentiment does not show up in the analysis), whereas owner signs tend toward negative messaging and sentiment. City signs proclaim the public character of the spaces, offer amenities, and extend welcome, while owner signs restrict use and prohibit behaviors, activities, attributes, and belongings.

2. Owner Signs Conscribe Public Use and Constrain Behavior

Some of these restrictions go beyond what is legally proscribed in public places, establishing an extralegal order that constrains the publicness of the places. Some of the prohibitions are couched in language shown to correlate

with references to particular socioeconomic groups and political gatherings, suggesting an intent to exclude particular demographic groups using coded messaging. These differences point to distinctions between city visions for public spaces and the concerns of property owners who manage these spaces privately. By passively allowing private owners to create their regulatory frameworks, the city permits the publicness of IPOPS to be diminished.

3. The Language of Signs Could Lead to Implicit Exclusion

Our analysis of the texts—and missing texts—of signage mandated by the City of New York and provided at the discretion of owners of real property that forms the site of IPOPS makes visible a form of private urban governance existing in these nominally public spaces shielded from scrutiny by the reflective glass of their office building facades and by the failure of the city to exercise oversight and accountability for signage. A close reading of the signage texts reveals a shared intention among real property owners to constrain activity within each IPOPS, which could lead to the implicit exclusion of different groups of people. It appears these owners of commercial real estate are seeking to shape the profile of IPOPS users to match the profile of office workers and business patrons who make it past the security guards to gain admission to the private areas of their buildings. This finding suggests a policy recommendation for the City of New York to establish guidelines restricting the ability of private owners of IPOPS to deploy signage to establish exclusionary systems of urban governance in spaces they dedicate to the public good as compensation for the financial gain they receive in the form of floor area bonuses. Both city and owner signage implicitly excludes non-English speakers because communication is restricted to the English language in a city characterized by linguistic diversity among residents and visitors. Likewise, people with visual disabilities are implicitly excluded because the signage is inaccessible.

Policy Recommendations

The following recommendations stem from the research conducted in this article; the authors note that their implementation would require greater collaboration between POPS owners and New York City.

1. The NYC planning department should consider approaches to better coordinate city and owner signs within the space. The disconnect between owner and city signs reflects competing interests and could make the space less legible to those who inhabit it. A potential solution is to approach signage holistically within each POPS. The city-mandated “welcome” and “amenity” sign review process could expand to encompass a city-reviewed POPS sign system package. A full review of a comprehensive sign package could create greater visual and text consistency between signs within the POPS boundaries, such as bathroom signs and rules signs. Collaborative creation and review of a complete sign package could allow for enhanced partnership between building owners and NYC, making the nature of POPS less ambiguous and potentially more inviting for all people.

2. If the spirit of the arrangement between developers and NYC is to allow bonus revenue-generating space in exchange for public space, NYC should provide oversight of messaging about activities, attributes, and items prohibited within the space through a sign system approval process. The city should develop inclusive standards for owners to follow. The city should carefully review all text to ensure the owner establishes reasonable rules fitting the spirit of public space.

3. To provide more inclusive and accessible messaging, the NYC Department of Planning and allied agencies should develop a “language access plan” for all POPS. The 2015 plan enacted by NYC Parks could be a helpful starting point. Signs should communicate in multiple languages that reflect the community. Signs should be made more accessible through the use of braille. The DCP and allied agencies should dedicate resources to record-keeping and evaluation and create feedback channels for the DCP and building owners. One addition could be implementing QR codes on city and owner signs to provide additional information and space to provide feedback.

Policy Implications

Signs have power, especially in public spaces. Planners have a special responsibility to ensure that sound policies can guide thoughtful, more inclusive solutions regarding signs in the public realm. While specific prohibitions or word choices can seem benign to some, to many, such

as unhoused populations, youth, people of color, people with visual impairment, or people who are not familiar with the language on the sign, words have the potential to signal that they are not welcome in a space. A participatory design process encompassing the diversity of potential users of IPOPS could give the public input into the development of inclusive signage standards for both public and owner signage.

Research Recommendations

We recommend further research to (a) discover further linkages between the wording of signage texts and particular socioeconomic groups by performing textual analysis on other sources, such as newspaper articles; (b) study who uses IPOPS and who feels welcome there; (c) observe what behaviors and activities users are engaged in; (d) understand the rationale, objectives, and ethical justifications of building owners in the messaging they put forth in their signage; (e) observe mechanisms for enforcement of owner prohibitions; and (f) discover whether there are spaces where conflicts or friction arise from the discrepancies between public and private governance in IPOPS.

Methodology Recommendations

Examining the text of signs is beneficial. Still, many of the existing general-purpose tools only sometimes yield clear results because public signs use words in domain-specific ways. Urban planning is not yet represented in the disciplines that have developed domain-specific tools. This is a promising avenue for future inquiry and development of tools to be used by advocacy groups, urban planners, and graphic designers interested in signage and how it functions in the governance of public spaces.

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