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Outdoor Dining and the Transformation of Public Space in New York City

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Abstract

New York City's streetscapes have undergone a dramatic transformation as a result of the city's Open Restaurants program. Established in June of 2020 to uplift the restaurant industry out of economic turmoil brought on by the COVID-19 pandemic, the program led to outdoor dining structures sprouting across the urban landscape. Due to its overall success, the city is currently preparing to launch a permanent program, which has led to conflicts between some of the city's stakeholders as the space used for outdoor dining overlaps with public spaces such as sidewalks and streets. Drawing from urban planning and environmental psychology students' research projects, this paper explores the ways in which outdoor dining has transformed public space in New York City using Lefebvre's spatial theory as a guide. Over the course of a semester, students

analyzed city blocks in the Bronx and Manhattan using multiple methods including historical analysis of block changes and field observations. Analysis of 45 open restaurants across 15 city blocks suggests the following: the increase in outdoor dining structures is widespread; there is high variability in outdoor dining structural design and aesthetics regardless of neighborhood median income; and impacts on mobility and accessibility warrant further research. In discussing these findings we consider the ways in which outdoor dining space is socially produced through conceived, perceived, and lived space to better understand the current state of affairs and reveal the dialectic of urban life. Lefebvre's spatial triad is a useful tool for socio-spatial analysis on this scale; its relational structure affords the opportunity to consider conflicts as generative moments that can lead to a reimagining of public space that is more equitable, accessible, and participatory.

Key words: Lefebvre, spatial theory, urban planning, environmental psychology, open restaurants.

Introduction

New York City's Open Restaurants program, established as a temporary program in June 2020 to uplift the restaurant industry out of economic turmoil brought on by the COVID-19 pandemic, has led to outdoor dining structures sprouting across the urban landscape. The space being used for outdoor dining overlaps with public spaces such as sidewalks and streets, which has sparked conflicts between the city's multiple stakeholders. At the time of this writing, there are many news reports about outdoor dining and the conflicts surrounding them (Gregg et al., 2022); however, scientific research on the ways in which the program has transformed public space in New York City is still emerging (e.g., Yang, 2020). Additional research is necessary, as due to its overall success, the city is currently working toward establishing a permanent Open Restaurants program by the end of this year.

Drawing from urban planning and environmental psychology students' research projects, this paper explores the ways in which outdoor dining has transformed public space in New York City (NYC), using Lefebvre's spatial theory as a guide. After providing an overview of outdoor dining spaces and the ways in which public space has been (re)negotiated, we argue that an application of Henri Lefebvre's theory on the *Production of Space* (1991/1974) is a useful tool for socio-spatial analysis on this scale; its relational structure affords the opportunity to consider how outdoor dining spaces are socially produced, and to reframe conflicts as part of the process of reimagining public spaces to meet the needs of a post-pandemic future. To conclude, we offer recommendations to ensure the future of outdoor dining is equitable, accessible, and participatory. In addition to contributing to the ongoing conversations surrounding how the COVID-19 pandemic has transformed people's engagement with public space (Honey-Roses et al., 2021; Jasiński, 2022; Noland et al., 2022), we hope this exploratory work will inspire urban researchers to engage with Lefebvre's spatial theory not only as a way to assess urban transformation, but also to generate a broader discourse on urban futures.

New York City's Open Restaurants: An Overview

With the implementation of the Open Restaurants program, outdoor dining spaces have transformed New York City's streetscape. Currently, of NYC's roughly 27,000 restaurants, 12,556 participate in the program—and counting (NYC Department of Health, 2022; NYC Open Restaurants Map and Dashboard, 2022). On June 22, 2020, the Open Restaurants program granted operators in the restaurant industry permission to expand their establishments onto sidewalks and/or streets so that patrons could dine socially-distanced outside, where COVID-19 is less transmissible (World Health Organization, 2021). Up until this point, all non-essential businesses and large social gatherings had been under "PAUSE" (Policies that Assure Uniform Safety for Everyone), a temporary executive order signed by the New York State Governor, to mitigate the spread of the coronavirus (New York State Governor, 2020a). Indoor dining was shut down on March 16, 2020 but restaurants were allowed to remain open for takeout and delivery. Though the city slowly opened up in a series of phases, which increased the number of people allowed to gather in a space to 10, and then later to 25, the city's economy suffered tremendously. To mediate economic turmoil, new policies and legislation were passed in June 2020 that allowed restaurants to serve customers outdoors if they meet outdoor dining area siting requirements (see Figure 1) and follow all rules, regulations, and COVID-19 safety protocols as outlined by the city.

Rules and Regulations

The New York City Department of Transportation (DOT) offers an intensive guide of rules and regulations for outdoor dining in regards to structures, including heaters, restrictions on amplified sound, sidewalk seating, road seating, tents and enclosures, and what to do in the event of forecasted inclement weather (NYC Department of Transportation, 2022). These guidelines provide restaurant owners with precautions to help protect against the spread of COVID-19 as outdoor dining reopens (New York State Governor, 2020b) and preserve public safety. Partnered with the Department of City Planning (DCP), roundtables with New Yorkers were conducted throughout the five boroughs in 2021-2022 to gather information on the future design of open restaurants. In order to garner more feedback for the impending permanent program, the DOT website continues to offer a NYC Open Restaurants Survey for anyone to take that asks for participant's zip code, relationship to Open Restaurants

(e.g., owner; diner; resident of a street with outdoor dining; general feedback), perceived benefits (e.g., more vibrant streetscape; way to support local restaurants; new way to enjoy dining) and concerns about a permanent program (e.g., safety; sidewalk congestion; accessibility; sanitation; noise; design; privatization of public space) and an open ended question for how the program can be improved followed by general demographic questions (e.g., race/ethnicity; gender; age). Some have also called for the approval process to allow Community Boards to review and comment on applications, as this was standard procedure for the Sidewalk Cafés program, which was suspended and replaced by the Open Restaurants program (O'Brien, 2021).

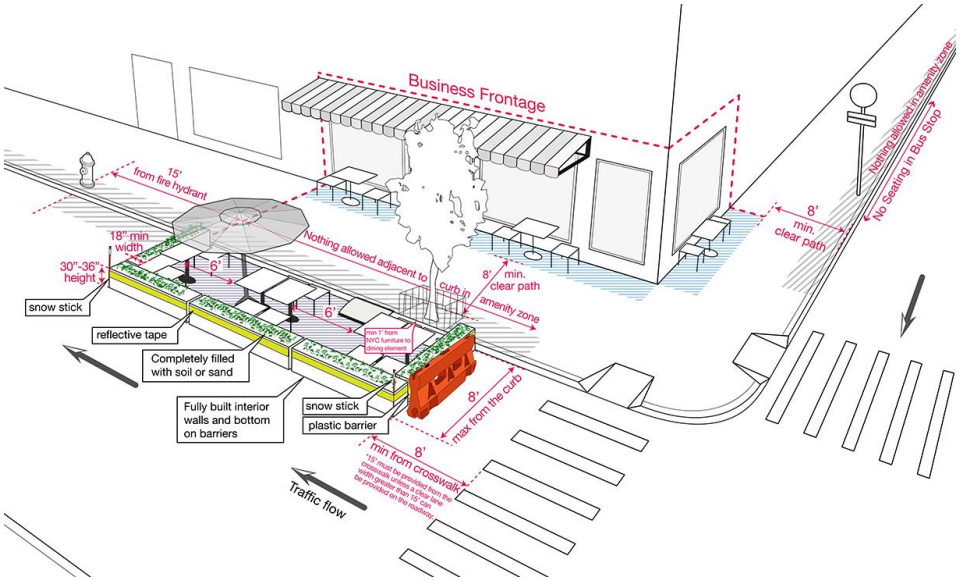

Figure 1: Drawing of outdoor dining area siting requirements from the DOT website.

Compliance with rules and regulations of these outdoor structures are overseen by the NYC DOT in conjunction with the Americans with Disabilities Act (ADA). However, the rules differ depending on the location of the structures themselves, as in if they are on the street, sidewalk, or both. Figure 1 provides a visualization of outdoor siting requirements provided by the DOT. While it is outside the scope of this paper to review each rule in detail (for full review, click here), we provide a simple and concise list of rules that are relevant to the present inquiry: (1) the structure, no matter if it is on the sidewalk or street, must not be bolted down and must remain temporary and movable; (2) there must be an eight-foot gap between the structure and the street to allow for easy for pedestrian traffic; (3) all roadway structures must have barriers on

each side that meet certain specifications and include reflective tape; and (4) the structure must not block or remove city property. These rules are in place until the city passes new regulations that make the program permanent, which is projected for late 2022-early 2023. However, some groups who oppose outdoor dining have challenged this with protests and lawsuits, which speaks to varying public opinion on the matter.

Public Opinion

To the best of our knowledge, as of this writing, there have only been a handful of robust empirical surveys of public opinion regarding the reallocation of street space for outdoor dining. As part of a Citywide Mobility survey (NYC Department of Transportation, 2020) conducted from May-November of 2020, the NYC DOT collected data from roughly 900 New Yorkers across the five boroughs. After data was weighted to be representative of the population of NYC, findings indicated that across all five boroughs, 64% of respondents supported reallocation, 19% were neutral, and 15% were in opposition. Notably, 84% of Manhattan residents supported outdoor dining, which was the highest of any borough. Mirroring these results, a city-wide poll conducted in December of 2020 by Transportation Alternatives (2021) found that 64% of respondents were in support of open restaurants. It is important to note that both of these surveys were conducted in the early days of the pandemic, when the program was still a direct response to economic hardship experienced by restaurants and at a time when roughly half of New Yorkers had not dined outside yet (NYC Department of Transportation, 2020). An updated publication from the DOT, for example, preliminary results of the ongoing aforementioned Open Restaurants Survey, would be incredibly helpful to track if and how public opinion has changed from then to now.

In fall of 2021, a local news outlet conducted a survey of its readers to gauge support of outdoor dining in the Hell's Kitchen neighborhood of Manhattan (O'Brien, 2021). Out of 273 respondents, 74% were in favor, 12.8% undecided, and 13.2% opposed the Open Restaurants program and thought it should be stopped. Although this data is more recent, it is a small, geographically restricted sample. Outside of New York City, a recent study published in the *Journal of the American Planning Association* (Noland et al., 2022) found that there is substantial support (40-45%) for outdoor dining in New Jersey. Overall, polls suggest that the public largely support outdoor dining, however it is not without critique.

In general, supporters of outdoor dining in NYC herald the program for uplifting the economy, livening up neighborhoods, and contributing to a re-imagining of public spaces that does not prioritize cars. For example, the NYC Department of Transportation (DOT) Commissioner, Polly Trottenberg, stated that, "Open Restaurants has helped re-imagine our public spaces — bringing New Yorkers together to safely enjoy outdoor dining and helping to rescue a critical industry at the same time" (City of New York, 2020). While it is true that the Open Restaurants program has redefined public space NYC, DOT protocols have been applied unevenly across various geographic locations, and thus, the program's results have been problematic, leading to conflicts and complaints in some areas. While some people may view outdoor dining spaces as giving a Parisian flair to the city, others have described the effect as turning NYC's streets into a shanty town of decaying, unregulated structures (O'Brien, 2021; Cuozzo, 2021). Detractors point to the lack of maintenance, piles of garbage, and graffiti tags to make the argument that the dining structures have become an eyesore. Further, in some areas residents have complained of increased noise pollution and unsanitary conditions. Although more research is needed to determine if there is any relationship between neighborhood median income and positions on outdoor dining, some of the most vocal opponents of a permanent program are those in affluent neighborhoods with a high proportion of restaurants, like the West Village (Hong, 2021). For example, residents who feel they have been negatively impacted have filed legal suits against the city, with the most recent having been filed on July 31, 2022. All the issues surrounding outdoor dining–both positive and negative–signify a broader conflict about what puts the "public" in public space, and who can define it.

Ongoing Negotiations Surrounding Public Space

The coronavirus pandemic has ushered in new conversations surrounding the principles governing public space, particularly in urban settings (Combs & Pardo, 2021; Jasiński, 2022). New York City is not alone in its endeavor to reallocate streets, sidewalks, and public spaces—these changes are happening in more than 500 cities across the globe (Combs & Pardo, 2021). At the core of these challenges to longstanding "dogmas of modern urbanism" (Jasiński, 2022, p. 1) is an ongoing definitional argument surrounding public space. While it is beyond the scope of this paper to provide a complete review of how different scholars understand

public space, in the following section we provide a brief overview alongside some examples of zoning changes from New York City.

Defining Public Space

The question of what constitutes a public space is significant due to the numerous contrasting beliefs of what is considered public, who is in control, how (in)accessible the space is, and what makes a public space "just" (Iveson, 1998; Low & Iveson, 2016). The most basic definition of public space is an area open for public use (Hou, 2010). Public spaces may include parks, gardens, plazas, and spaces of everyday use (Kishore Rupa, 2015) such as streets, sidewalks, and subway platforms. When discussing the "successful" city neighborhood, Jane Jacobs describes sidewalks and streets as public spaces for "adults [use] to socialize and walk from their homes to workplaces and stores," and for children "to get to school and for incidental play" (Alexander, 2019, p. 86). The socio-demographic of public space includes characteristics such as socio-economic status, age, number of children, ethnicity, educational attainment, and marital status (Mak & Jim, 2019). As public spaces bring people together in relaxed settings, different groups become comfortable with each other. Thus, public spaces can strengthen community ties and are considered by some as "a functional requirement of a democratic society" (Havlova, 2017, p. 15).

The nexus of public use and democracy shifted with the 1961 Zoning Resolution, which launched the Privately-owned Public Spaces (PoPS) Program in NYC. PoPS is a distinct program, but we found it relevant to issues surrounding outdoor dining space because of overlapping principles regarding public-private ownership. The program "encouraged private developers to provide publicly accessible spaces, specifically plazas and arcades, on private property in exchange for bonus floor area in certain high-density districts" (NYC Department of City Planning, 2022). In other words, these public spaces were owned and maintained by private individuals or companies, and this remains true today. As of 2019, over 590 privately-owned public spaces have been built across 398 buildings in the city (NYC Department of Planning, 2022). Considering issues of socio-spatial inequality regarding race and income in contemporary urban environments like NYC, this raises questions about how social exclusion has been and may continue to be enacted through housing policies, land use, and other private and public actions that may keep these spaces under the control of specific groups of people with means. In other words, private ownership given for public activity (including space) raises concerns about conflicts between private and

public goals. This includes both quality and potential exclusionary conditions that can result from the blurring of private-public lines.

Many urban scholars and laypeople share the view that access to public spaces should not be limited to any individuals or groups in any way, but instead, that the public should be able to exercise their free will in a public area with no restriction, which brings us back to the question of what is "public" about public space (Iveson, 1998). This broad definition implies that public space is also a shared space for all forms of ideas and values. Although POPS are intended to be well-maintained, open, inviting, accessible, safe for all, this does not always play out as seamlessly in day-to-day life; some POPS are very successful, such as Seagram's Plaza, while others are less so. For example, in an audit completed by the NYC Comptroller in 2017 found that 182 out of 333 POPS sites were non-compliant with existing laws, such as offering required amenities, complying with hours of operation, and keeping up with maintenance and repairs (Office of the NYC Comptroller, 2017). This suggests that POPS require more oversight by the city, which parallels what some New Yorkers are calling for now as sidewalks and streets are appropriated by private entities in the Open Restaurants program.

If we align with the idea that public space should promote "democratic values" such as social inclusion, safety for all, and equal treatment and accessibility (SaferSpaces, 2022), more research should be done to ensure that a permanent Open Restaurants program would not infringe on these rights. In the present inquiry, we turn to Lefebvre's spatial theory to better understand the ways in which outdoor dining space is produced in NYC. Although our present inquiry focuses on the physical environmental transformation, we call for future research on public opinion in general, but also within and across neighborhoods.

Lefebvre's Theory on the Production of Space

Henri Lefebvre (1900-1991) was a French sociologist and philosopher who studied urban and rural life, among other topics. With a focus on the everyday practice of urban living, Lefebvre's (1991) *Production of Space*, originally published in 1974, revolutionized the way in which urban planners, designers, and citizens think of space and how they use and perceive shared spaces. The text's overarching argument is that social space is produced through a spatial triad: how space is perceived, conceived, and lived. Perceived space (spatial practice; *l'espace perçu*) may be situated within the realm of the material and includes the built environment and everyday perceptions of the world. Conceived space

(representations of space; *l'espace conçu*) can be positioned in the realm of the abstract and is in part a result of hierarchical power relations that shape the representations of places, peoples, and cultures. Lived space (spaces of representation; *l'espace vécu*) refers to the (re)production of spaces through bodily enactment. The "aliveness" of lived space, powered by people's active engagement with their surrounding environments, has the potential for multiple spatial stories to emerge in the (re)production of space, such as the renegotiation of what is thought about or seen. Thus, an application of Lefebvre's spatial theory may be a useful tool for socio-spatial analysis of outdoor dining as both a method of assessment and an interpretative framework. Its relational structure affords the opportunity to consider how outdoor dining spaces are socially produced; and, it provides multiple entry points to engage relevant stakeholders in the planning process.

Applying Lefebvre's spatial triad within the context of outdoor dining, conceived space can be understood to include the representations, or preconceived notions, that individuals, society, and governing bodies have about what public space is, how it should be used, and how it should be allocated. These preconceived notions or representations of public space inform people's opinions as well as the rules, regulations, and decisions made by people in power. The material environment, or perceived space, is also at play here as many of the rules and regulations for outdoor dining shape the structures, locations, and aesthetics. With major changes to the material environment, like the inclusion of outdoor dining structures, how people move and engage with streets can be transformed as well. All three parts of the spatial triad are interconnected, and together, they produce social space. When one or more of these spaces are in conflict with one another, it acts as a generative moment to make way for new ideas and spaces, which brings us to the difference between the product of space and the production of space.

Lefebvre outlines the difference between the product of space and the process of production of space. The two ideas are inextricably linked, but the importance behind them is that we must study how previous codes of space were constructed and destroyed so that we can form new codes from what we learn. This moves us from product to production: how to make new space instead of merely existing within previously created spaces. The notion that the production of space and space as a product are inextricably linked leads Lefebvre to the idea that "a social space is a social product," meaning that space is defined and is a product of social

history itself. The first implication is that natural space is disappearing, which leads to a lack of space that is available to be produced (Schmitz, n.d.). Applying Lefebvre's spatial theory to the study of outdoor dining spaces will not only provide insight into how public spaces are being reimagined currently, but also help us consider recommendations for the future.

The Present Inquiry

Using Lefebvre's spatial theory as a guide, this exploratory paper outlines the ways in which outdoor dining has transformed public space in New York City. Drawing from urban planning and environmental psychology undergraduate students' research projects, we focus on 45 restaurants across 15 blocks in the Bronx and Manhattan. Using multiple methods, including historical analysis of city blocks and field observations, we analyze outdoor dining structural design, quality, aesthetics, and comment on compliance with rules and regulations to understand how the Open Restaurants program has transformed the NYC streetscape and people's opportunities for engagement with it. In analyzing the built environment, the purpose of this paper is not to make a claim about whether or not the Open Restaurants program should become permanent, but rather, to contribute to ongoing conversations surrounding the reimagining of public space in contemporary urban environments as a result of the pandemic.

Method

Project Context

Our work draws from an interdepartmental, collaborative research project completed with students in 300-level courses entitled "Urban Planning" (SOC347; taught by first author in the Department of Sociology) and "Environmental Psychology" (PSYC390; taught by second author in the Department of Psychology) during the spring 2022 semester at a small, liberal arts college in the Bronx. Both courses focus on the intersection of the city as a concept and as a lived experience, and students' block research projects represented the culmination of student learning in each course. Due to the class size, environmental psychology students completed the research project in groups.

Over the course of the semester, students applied environmental and sociological theories to analyze outdoor dining in NYC from multiple perspectives and using multiple methods, including: class activities, the review of literature (and news articles, since outdoor dining is an emergent research area), historical analysis of Google Maps, field work, and class presentations. The project was scaffolded into several small assignments, including low-stakes in-class presentations which served as "research updates" after phases of data collection. Following final presentations in-class, exemplary student projects from each course were invited to present their work at an "Urban Studies Research Symposium." Finally, the professors invited students to join their summer research lab to analyze a subset of the data collected and prepare a manuscript; three students accepted and shared authorship with the first and second author on this paper.

Site Selection

To begin, students were instructed to select a block with at least three outdoor dining spaces in the Bronx or Manhattan. All blocks required approval by the instructor to ensure that two groups did not select the same block. Coincidentally, two groups selected a "themed" block, which worked out nicely for comparative analysis. For this paper, we focus on a subsample of 15 blocks, seven in Manhattan and eight in the Bronx, and a total of 45 open restaurants (roughly three per block). In Table 1 we provide block locations alongside zip code and median income.

Table 1:
Open Restaurant Block Locations alongside Zip Code and Median Income

Borough	Block	Zip Code	Median Income
Bronx	Arthur Ave. between East 187th and Crescent	10458	$37,886
	Bronxdale and Morris Park Ave.	10461	$60,802
	Van Cortlandt, E 235th St.-E239th St.	10470	$64,643
	Riverdale Ave. between 236th and 238th	10463	$60,397
	Riverdale Ave. between 258th and 259th	10471	$93,657
	Johnson Ave between 235th and 236th	10463	$60,397
	Travesias on East Tremont Ave.	10465	$74,889

Manhattan	Grand St., between Mulberry St. and Mott St.	10013	$130,675
	505 Columbus Ave.	10024	$137,126
	W 32nd St., between 33rd St. and Broadway	10001	$96,787
	Broadway and 178th St.	10033	$66,902
	Dyckman St., between Payson and Seaman Ave.	10034	$63,556
	116th between 2nd and 3rd Ave.	10029	$33,801
	54th St. and Madison Ave.	10022	$138,661
	Broadway from 213th to 215th	10032	$53,690

Note: Zip Code Median Income obtained from the American Community Survey, 5-year estimates (U.S. Census Bureau, 2020)

Data Collection

During the semester, data were collected using two primary methods: historical analysis of block changes, followed by fieldwork.

Historical Analysis of Block Changes

To familiarize themselves with how their block has changed from 2008 to today, with a particular focus on changes after the pandemic, students used Google Maps Street View. This feature provides a glimpse back in time for all years that Google Maps has data—by using the "street view" features, students could make their way up and down their blocks and track changes. Students were instructed to take screenshots of their block from each year that had data available, then label and upload the images to Google Drive.

Fieldwork

Students were required to complete a field observation sheet and take at least two photographs per outdoor dining structure on their block. All photographs were labeled clearly and uploaded to Google Drive along with their field observation sheets. Students conducted the following direct observations: number of tables/seats per structure;

crowding/popularity (i.e., the proportion of people sitting outside compared to the number of seats); relative diversity of guests; aesthetics and overall quality; physical features of the structure that hinder interaction (e.g., mobility issues); and conflicts of layout (e.g., hygiene, noise level, measurements). As part of their fieldwork, students were also instructed to provide socio-demographic data for their block, including racial diversity and median household income.

Approach to Analysis

Data collected from both courses were combined for overarching analysis, which took place from May-July 2022. The research team conducted several lines of targeted analysis of the subsample of 15 blocks (see Table 1). To analyze Google Map historical images, tables were created to chart how blocks had changed before 2019, during 2020, and currently, with a focus on the absence, presence and/or change of outdoor dining structures. To analyze field observations, the research team focused on the physical structural design, aesthetic design, and hygiene (e.g., cleanliness, presence of litter). Cleanliness was measured by observing garbage/litter around the immediate environment of the outdoor dining structures and seating, not the entire block. To supplement data collected during the semester, all blocks and restaurants were input into a table, which allowed the team to sort restaurants using the following characteristics: neighborhood median income as determined by zip code (U.S. Census Bureau, 2020), location of outdoor seating (NYC Open Restaurants Map and Dashboard, 2022), and overall quality of the outdoor dining space. To further compare the blocks, we created four income brackets based on the median annual income of each block. Brackets were organized by "natural" gaps in the income; for example, there was a continuum of income from $33,801 to $37,886 and then the next highest was $53,690. Overall quality was determined using field notes and the research team coming to a general consensus of the following metrics: low quality (e.g., incomplete or poor structure, minimal to no décor, not well-maintained, abandoned); medium quality (e.g., somewhat unfinished and/or questionable structure, some attempt to decorate, generally maintained); high quality (e.g., sound structure, nice décor, well-maintained).

To go a little deeper with the aesthetic analysis, the research team focused on lighting and color. Lighting and color are two of five aesthetic elements that restaurant owners typically consider, alongside scent, acoustics, music, and layout (Kamal, 2021). Lighting often takes the form

of ambient, task, or accent lighting. These elements are thought to come together to ensure that the customers are feeling both welcomed and comfortable by setting the "mood," which may increase the likelihood of guests returning. Colors like red and yellow are generally understood as colors that the brain associates with feelings of hunger and appetite, thus, it is thought that many restaurants use both or either of these colors. To investigate whether or not open restaurants were following the same trends, each restaurant was analyzed for the presence of outdoor lighting and the use of the colors red and/or yellow in the overall aesthetic, including but not limited to the structure, décor, and flowers.

Findings and Interpretation

Drawing from urban planning and environmental psychology students' research projects, this paper explores the ways in which outdoor dining has transformed public space in New York City. Analysis of 45 open restaurants across 15 blocks across the Bronx and Manhattan suggests three major findings. First, the addition of outdoor dining structures is widespread in both boroughs, with the majority of restaurants offering seating on both the roadway and sidewalk. Second, there is variability in outdoor dining structural design and quality regardless of neighborhood median income. In addition to different types of structural set-ups for outdoor dining, including permanent, semi-permanent, and removeable structures, there are also noticeably different aesthetic approaches to décor. Third, impacts on mobility and accessibility warrant further research and policy-change to account for loss of parking spots and accommodate increased cyclists. In the following subsections, we present and discuss these overarching findings using Lefebvre's spatial triad (1991) as a theoretical foothold. To further assist the reader in understanding how our findings relate each to Lefebvre's spatial theory, we identify which part of the spatial triad each finding/interpretation aligns within parentheses. Although identified and described separately, it is important to note that conceived, perceived, and lived space are interconnected and *together* they contribute to the production of outdoor dining space.

Increase in Outdoor Dining Structures is Widespread

Historical analysis of Google Map images suggests that there is a widespread increase in outdoor dining structures across our 15 city blocks. Prior to 2020, only 17 of our 45 open restaurants (37%) had an outdoor dining structure. Now, all 45 restaurants participate in the Open

Restaurants program (this was a requirement for inclusion in our study), and all but two have an outdoor dining structure (95%). This finding is not surprising considering that roughly half of all NYC restaurants participate in the Open Restaurants program (NYC Open Restaurants Map and Dashboard, 2022). However, where outdoor seating is located is more variable (e.g., sidewalk, roadway, or both), as this depends on the amount of open space available for each restaurant (see Figure 2).

Figure 2. Outdoor seating on the sidewalk only (top), roadway only (middle), both (bottom).

Photo credits: Top right: Urban Planning student // Patrick Illardi. Top left: Environmental Psychology students // Riverdale Ave. group (Michael Garcia, Laisha Inoa, Danasia Richardson, & Christina Sam). Bottom: Environmental Psychology students // Arthur Ave. between E 186th and Crescent Ave. group (Andres Benitez, Alyssa Figueroa, Rossalba Francisco, Chenxuan Li, & Gabriella LoBue)

Analysis of seating locations on the 15 city blocks in our study reveals that a total of 22 out of 45 restaurants (48%) have outdoor seating on both the sidewalk and street, with 13 on the roadway only (28%), and 10 on the sidewalk only (22%). As per the Open Restaurant rules and regulations, all establishments with roadway seating must have barriers on each side to protect patrons from collisions with motor vehicles. Yet, our findings indicate that 29 restaurants had some form of material enclosure such as barriers or fences to delineate their boundaries (perceived space), which means that at least six out of 35 restaurants with roadway seating are non-compliant with regulations set by the city (conceived space). Beyond not meeting regulations, this may have implications for public safety (we expand on this later) as multiple users (e.g., cyclist, motorists, pedestrians) negotiate the use of these areas (lived space). Although beyond the scope of the present study, it is worth mentioning that the team noted the removal of several street trees on the block of 116th street between 2nd and 3rd Avenues. Considering the ecosystem services provided by urban vegetation for physical, mental, and public health (Grima et al., 2020; Nyelele & Kroll, 2020), we suggest that future research on outdoor dining include an environmental impact assessment of street trees, flower beds, and other small green spaces on NYC city blocks.

Overall, the increase in outdoor dining structures have vastly transformed the 15 blocks included in our research study. Widespread changes to the physical, material environment (perceived space) of these city blocks transforms people's movement through or around them (lived space). These physical changes also intersect with people's ideas about public space, how it should be shared, and opportunities for engagement (conceived space). For example, as people walk down a city block with open restaurants, they encounter material boundaries of each establishment (perceived space), which inform who is allowed within and even around each boundary (conceived space), as well the space afforded to walk on that block's sidewalk and drive or bike down that block's street (lived space). Collisions between perceived and conceived space (i.e., when what a person encounters materially does not match their preconceived notions) can lead to generative moments, where people may actually renegotiate their previous conceptions about a place. As mentioned previously, early polling completed by the DOT and other external sources suggest that public opinion on outdoor dining is overall positive (Transportation Alternatives, 2021), which raises questions about public perceptions regarding the privatization of public space. Thus, within the context of the Open Restaurants program, it is possible that

these material changes have led to a shift in thinking regarding how public space should be used. That being said, the program is not without critique, as complaints surrounding the quality, aesthetic, and maintenance of outdoor dining structures have been called into question. This may be explained, at least in part, by the variability in structural quality and aesthetics uncovered by our findings.

Variability in Structure, Aesthetic, and Quality

Our findings indicate high variability in structural design, aesthetics, and quality of the outdoor dining structures that have transformed NYC streetscapes. We describe each of these variables below.

Structural Design

Types of structures include mobile, semi-permanent, and permanent structures made from a plethora of different materials, including wood, metal, plastic, or tarps. Despite the rules and regulations requiring that outdoor dining structures be removable, 25 out of 45 open restaurants (55%) use a shed-like structure made of wood, metal, or plastic materials that could not be easily removed (see Figure 3). Structures that cannot be easily removed typically have a roof and at least three sides to the structure. Structures made with tarp roofs are more easily removable, which complies with rules and regulations set by the city; however, they are more rare.

Figure 3. Example of easily removable structure (left) and more permanent structure (right).

Photo credits: Left: Environmental Psychology students // Arthur Ave. between E 186th and Crescent Ave. group (Andres Benitez, Alyssa Figueroa, Rossalba Francisco, Chenxuan Li, &

Gabriella LoBue). Right: Environmental Psychology students // 116th between 2nd and 3rd Ave. group (Lorena Hernandez, Ericamarie Liz, Nia Whitaker)

One explanation for this is that they do not provide as much protection from the elements, especially during rainy or colder months, and may not be as aesthetically pleasing. This may be an example of the city's rules and regulations for safety compliance (conceived space) being in tension with the types of structures that restaurant owners think will attract guests (perceived space), which may also be in tension with what diners or the surrounding community might prefer. Although the majority of the city supports a permanent outdoor dining program, people may have different visions of what that might look like: some supporters may like the structures, while others may prefer that the large enclosed structures bifurcating airspace be replaced with simple tables, chairs, and umbrellas that will make the streets look more open, particularly in the summer when people spend more time outside. To this end, we recommend that the city continue to collect feedback from multiple stakeholders—restaurant owners, diners, and community members alike to inform structural guidelines for a permanent program.

Aesthetic Approach

Considering that the aesthetic décor of restaurants is one of the key factors of attracting patrons, it makes sense that restaurant owners may be concerned with the overall aesthetic and quality of their business, which includes the use of color, light, and even themes to promote comfort and set the mood. This has become especially salient during COVID, as more and more restaurant seating is outdoor and on public display for passersby. In our analysis of the use of the color yellow and red, which are colors generally understood as associated with hunger and appetite, we found that 31 out of 45 (69%) use the color red and/or yellow. However, where and how the colors are used varies as some restaurants used these as accent colors (e.g., flowers, décor), while others used the colors for chairs, tables, or the overall structure. In our analysis of lighting, we found that 32 out of 45 open restaurants used some form of accent string lighting, ranging from barn style to fairy-like lighting, which further contributes to the overall aesthetic, particularly in the evening to attract guests. Interestingly, we also found that the use of themes as an overall aesthetic may enhance each of these aesthetic factors while also attracting more crowds.

For example, out of our 15 blocks, two of the blocks may be considered "themed" blocks, and these blocks are notoriously busy during the

evenings and on weekends: Arthur Avenue in the Bronx which embraces an Italian theme ("Little Italy") and Broadway Ave between 213th and 215th Street which embraces a tropical theme ("Little Dominican Republic") (see Figure 4).

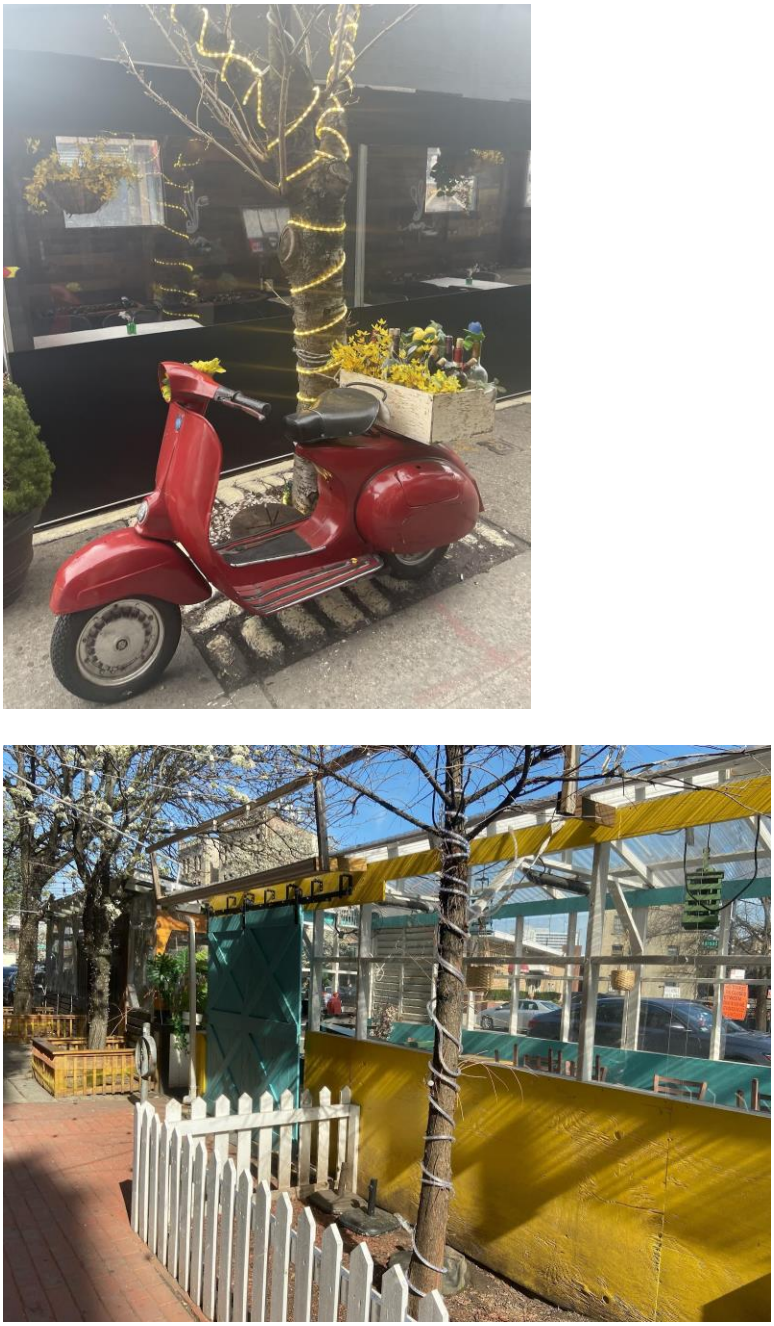

Figure 4: Example of Open Restaurant with an Italian theme (top) and tropical theme (bottom).

Photo credits: Top: Environmental Psychology students // Arthur Ave. between E 186th and Crescent Ave. group (Andres Benitez, Alyssa Figueroa, Rossalba Francisco, Chenxuan Li, &

Gabriella LoBue). Bottom: Environmental Psychology students // Broadway Ave. between 213th and 215th St. group (Krystal Beltrez, Milijana Milovukovic, Angelique Vieira)

Using Lefebvre's spatial triad to better understand the production of outdoor dining space on these themed blocks, we can see that the overall physical appearance of a structure (perceived space) can have an impact on the mood or ambience of a restaurant, which is informed by notions of what type of décor may promote a feeling of being in another place like Italy or a tropical environment (conceived space). In cases that this is done successfully, and that the restaurant owners' ideas of what is "Italian" aligns with others' it may attract more customers to dine there (lived space). Expanding this interpretation to all open restaurants, even those without themes, the same is true regarding how the overall quality of an outdoor dining space may influence its popularity.

Overall Quality of Structures

Considering critiques that outdoor dining spaces may be inequitable across the city, in that outdoor structures are of a higher quality, aesthetic, and better maintained in high-income areas compared to lower-income areas, we were curious if this pattern would show up in our data. During field observations, garbage and litter was only observed at eight out of 45 sites, with no clear pattern based on the income of the area. The research team found this somewhat surprising considering that garbage and litter is one of the most often voiced complaints in news reports, we expected to find similar issues even within our small dataset.
To further analyze overall quality of outdoor dining structures, the research team coded each outdoor structure as either low quality (e.g., incomplete or poor structure, minimal to no décor, not well-maintained, abandoned); medium quality (e.g., somewhat unfinished and/or questionable structure, some attempt to decorate, generally maintained); high quality (e.g., sound structure, nice décor, well-maintained) (see Figure 5).

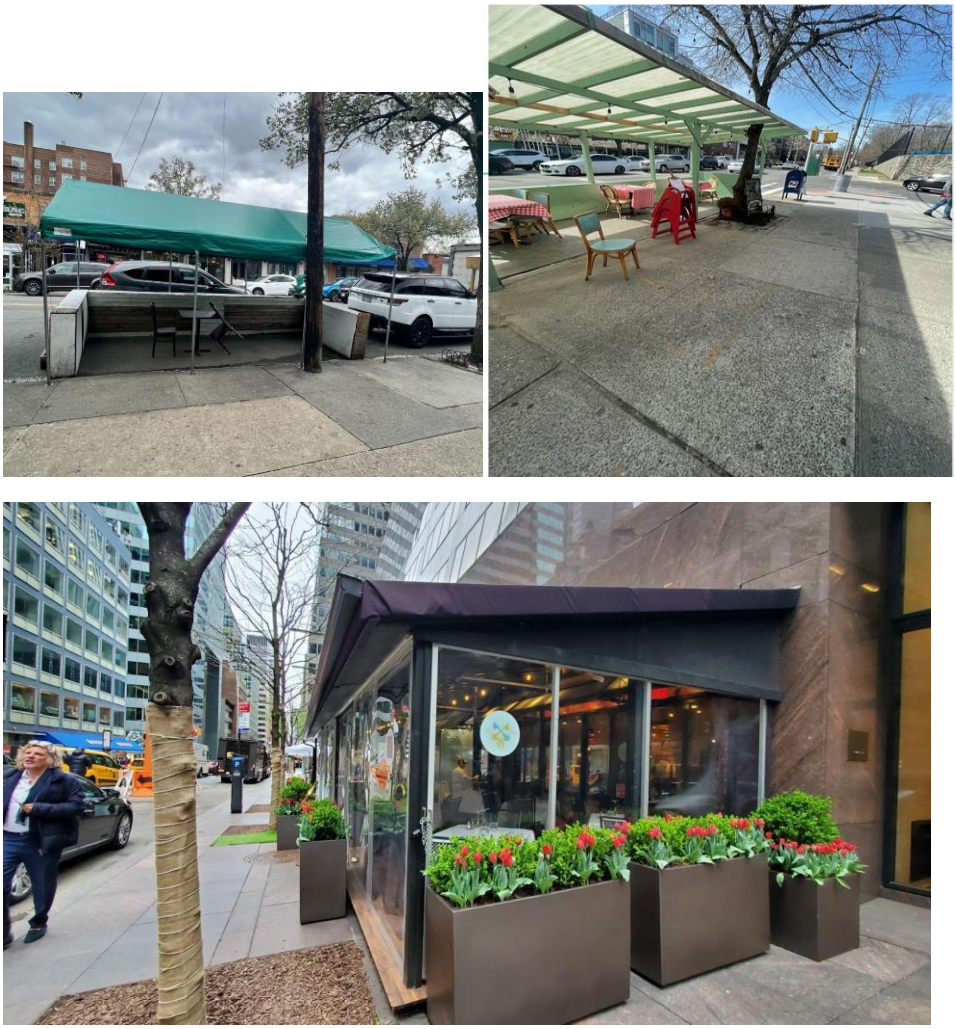

Figure 5: Example of low (left), medium (right), and high (bottom) quality outdoor structures. Photo credits: Left: Environmental Psychology students // Johnson Ave. between 235th and 236th St. group (Nicole Flores, Emily Martinez, Katelyn Rincon, Lily Velazquez). Right: Environmental Psychology students // Riverdale Ave. group (Michael Garcia, Laisha Inoa, Danasia Richardson, & Christina Sam). Bottom: Urban Planning student // Emily Perez-Garcia.

Our analysis of outdoor dining structure quality by neighborhood income is depicted in Table 2. The data suggest that while the quality of outdoor dining structures is variable within neighborhoods of our dataset, it is not necessarily variable across neighborhoods when median household income is taken into consideration. Regardless of neighborhood median income, each neighborhood had a mixture of low, medium, and high-quality structures. Further, high-quality structures were the most predominant type of structure in all neighborhoods with the exception of the uppermost income bracket, where medium-quality structures were

more common. Although the highest percentage of low-quality structures were present in the lowest median income neighborhoods (33.33%), there were still more high-quality outdoor structures than low-quality structures in those areas. Considering our relatively small dataset of 45 restaurants across 15 blocks in Manhattan and the Bronx alongside previous research that suggests that the lowest income areas of NYC may be the ones that experience the most inequity during times of crisis (Pipitone & Jovic, 2021), we recommend city-wide analysis of outdoor structure quality by variables including neighborhood median income with a more robust and representative data set.

Table 2:
Analysis of Outdoor Dining Structure Quality, by Neighborhood Median Income

	Neighborhood Median Income				
Structure Quality	Lower <$38,000 n=9 (%)	Lower-Middle $53-67,000 n=17 (%)	Upper-Middle $74-97,000 n=7 (%)	Upper >$130,000 n=9 (%)	Total N=43
Low	3 (33.33)	2 (11.76)	1 (14.29)	2 (22.22)	9 (20.93)
Medium	2 (22.22)	7 (41.18)	2 (28.57)	4 (44.44)	15 (34.88)
High	4 (44.44)	8 (47.06)	4 (57.14)	3 (33.33)	19 (44.19)

Note: The parentheses in each column refer to the number of restaurants in each income bracket whose structure was coded as low, medium or high quality, out of the total number of restaurants in that income bracket (e.g., out of 9 total restaurants in the lower income bracket, 33%, or 3 outdoor dining structures were coded as low quality). Since two of the 45 open restaurants did not have an actual structure, we removed them from this portion of analysis, making the total 43.

Mobility and Accessibility: More Research is Needed

The reallocation of sidewalks and streets for outdoor dining has also impacted New Yorker's movement in the city. Outdoor dining structures on the sidewalk result in a reduction of sidewalk width for passersby, and roadway structures typically replace parking spaces, and many are located at the edge of bike lanes. Although this was not the main focus of the present inquiry, how people move through these transformed

physical environments (perceived space) contributes to the individual and collective rhythms of the city (lived space). Several of our findings suggest more research is needed to understand how mobility, accessibility, and overall quality of life (lived space) has been impacted by outdoor dining and a reimagining of public spaces (conceived space). This is particularly important considering that many North American cities, including NYC, are reimagining streets for people, not cars as a result of the pandemic (Combs & Pardo; 2021; Noland et al., 2022; Gregg et al., 2022). Notably, in the short-term, this has been well-received even by car owners (Transportation Alternatives, 2021), but permanent changes will also necessitate changes in policy, for example incentivizing people to use public transportation or other modes of transportation instead of cars.

Mobility

For example, according to our analysis, approximately two parking spaces are used by each outdoor dining structure. This means that blocks with three outdoor dining structures on the street can take up at least six parking spots. With the city being as congested as it is, there has long been an extremely high demand for parking, especially near restaurants and other businesses. Out of the more than 3.1 million households in NYC, almost half own a car. That amounts to nearly 1.5 million cars on the road before taking into consideration commuters (e.g., residents of New Jersey, Long Island, and Westchester), Ubers and Lyfts, taxis, buses, delivery trucks, and other vehicles on the roads (NYCEDC, 2018). The growth of outdoor dining and other outdoor attractions will increase the need for parking. In five years, the 8,500 parking spots replaced by outdoor dining structures could become 15,000 (Meyer & Sheehan, 2021). It is important to conduct more research on what groups may be affected, as although some people think that only wealthy individuals use cars, there have been reports of this disproportionately impacting blue-collar workers who use vehicles for work (Hong, 2021).

During the pandemic, NYC also saw an increase in the use of bicycles as a mode of transportation (Yang, 2021) and polls suggest that the majority of New Yorkers are in favor of adding more bike lanes in the city (Transportation Alternatives, 2021), which further evidences calls for prioritizing people over cars in post-pandemic urban planning. Several of the blocks analyzed in our research included bike lanes, some of which are narrowly sandwiched between a sidewalk and roadway structures (see Figure 6).

Figure 6: Example of bike lane (green) running through outdoor dining structures.

Photo credit: Urban Planning student // Ethan Estevez

There have been reports–and the second author can attest from personal experience–that this can make biking in the city increasingly stressful and more difficult (Lyttle, 2022). As restaurant employees and diners move across the bike lane, sometimes with little awareness, it can cause congestion and the need for braking unnecessarily. More than just an inconvenience, this is also a danger to public safety as it may result in more biking accidents. Thus, we suggest investigations into biking accidents in the city, as well as the consideration of creative solutions to make NYC increasingly bike friendly–particularly on blocks with a high proportion of open restaurants.

Accessibility

Regarding accessibility on the individual scale, our findings suggest that although traditional or sidewalk ramps are supposed to be added to

outdoor dining structures, this was not the case for any of the outdoor structures we examined. Although our sample was small and not necessarily representative of the entire city, more research is needed to determine how we can ensure that outdoor structures are accessible to all New Yorkers, as well as ensure that maneuvering through and around these structures does not disproportionately have a negative impact people on who have difficulties walking or moving through public spaces.

Supporters of the Open Restaurants program note that it has helped increase equitable access to outdoor dining experiences across boroughs. For example, prior to the program, the majority of sidewalk cafes were in Manhattan; the Bronx only had 50 sidewalk cafes (Hong, 2021), and now the borough has nearly 680 to date (NYC Open Restaurants Map and Dashboard, 2022). We encourage any future permanent outdoor dining program to consider equitable distribution and fair access during the Open Restaurant application process.

Conclusion

Overall, our exploration into the ways in which outdoor dining has transformed 15 New York City blocks has revealed that the increase in outdoor dining structures is widespread, as all but two of our 45 open restaurants now have outdoor dining structures. These major shifts to the material environment (perceived space) have also changed people's opportunity for engagement and movement through them in terms of mobility, accessibility, and overall quality of life (lived space). Further, it appears that we are witnessing a reimagining of public spaces at multiple scales (conceived space), with some people in support of the changes, and others feeling resistant. A general understanding of people's position on outdoor dining is likely linked to multiple factors such as proximity of their residence to outdoor dining, concentration of outdoor dining per block, perceived quality, and other sociodemographic variables like age and income. For example, older people and people with physical disabilities have complained of difficulty maneuvering on streets and sidewalks, and loss of parking spots has impacted some blue-collar workers that need to drive to work (Hong, 2021).

An additional contribution of our work is the application of Lefebvre's spatial theory (1991/1974) as not only a theoretical foothold, but also as a method of assessment. We demonstrated the ways in which it allows for a reframing of conflicts between perceived (material), conceived

(abstract), and lived (embodied engagement) space as generative moments that can lead to the (re)production of urban public spaces that are more equitable, accessible and participatory. We explored perceived space through students' empirical fieldwork and related them to a close reading of Open Restaurant policy, which represents conceived space; we also reviewed survey data to reflect on lived space. In our analysis of how each of these sources of data related, there were times when spatial observations aligned; however, it was the conflicts that allowed for more interesting insights to emerge as these point to the dialectic of urban life.

Specifically, rather than focusing on the conflicts surrounding outdoor dining as reasons for why the city should do away with outdoor dining, we instead lean into these conflicts as an opportunity to engage in conversations surrounding what we want our public spaces to look like in the future. The widespread reallocation of streets and sidewalks for outdoor dining in New York and beyond has renewed questions about the privatization of public space, and why one industry should be granted access to reap economic benefits from public spaces while others are not. Perhaps then, the city can consider ways to open more streets to other vendors, like retail vendors and other pop-up shops, or even open sitting spaces for leisure and relaxation. This critical juncture many cities find themselves in may be an opportunity to reimagine public spaces like streets and sidewalks to build a sense of community. Questions surrounding the privatization of public space, public opinion, and equity are all incredibly important to consider in the reimagining of public space.

To this end, throughout this paper, we have applied Lefebvre's spatial theory to engage in a broader discourse surrounding urban futures and shared recommendations for future research on topics related to outdoor dining such as mobility (e.g., impacts on parking, bike lanes, sidewalks; accessibility), public opinion (e.g., diners, restaurant owners, citizens), and environmental impacts (e.g., street trees; public safety; sanitation). Further, we have put forth some ideas for policy change, such as meaningfully engaging communities in the planning process (e.g., community board review of applications; ongoing feedback) and challenging the "streets are for cars" status quo (e.g., incentivizing alternative modes of transportation).

Considering the exploratory nature of this project, our work is not without limitation. Although we found that the overall quality of outdoor dining structures is highly variable regardless of median neighborhood income, the relatively small 15 block sample in the Bronx and Manhattan

needs to be acknowledged. A targeted analysis would be strengthened by identifying larger groups of blocks by similar income to compare across the city. Further, the construct used to evaluate overall quality was created by the research team; future research may consider surveying the public as quality can be in the eye of the beholder, which can change over time. Despite its limitations, we hope have two hopes for our work: first, that it might inspire future research on outdoor dining in New York City and beyond; and second, that it will inspire more urban researchers to engage with Lefebvre's theory as a methodological tool, as we find ourselves in a moment that is ripe for meaningful change.

Postscript: Updates to the Open Restaurants Program (Fall 2022)

Considering that the Open Restaurants program is a work-in-progress, it is not surprising that some changes happened between the time this manuscript was completed and this special issue going to press. In this section, we highlight some of the major changes and updates, which were outlined in a New York Times article entitled, "The Final Days of New York's 'Wild West' Outdoor Dining Scene" (Stewart, 2022). The most notable change includes increased regulation of outdoor dining structures. New York officials have not made any finite regulations as of yet, but they have already begun removing abandoned and unregulated outdoor dining structures. This includes structures that take up too much public space (sidewalks and roads). However, the City is not planning to remove outdoor dining structures and or cease the Open Restaurants Program completely; rather there is an ongoing revisioning. For example, if restaurants want to keep their outdoor dining structures or outdoor seating areas in public space, they will need to complete an official application to gain a license, which includes paying a fee (akin to the previous Sidewalk Cafés model). Because of this new rule, there may be a decrease in the restaurants that want to continue using outdoor dining. According to an impending NYC DOT's publication, restaurants will receive a revised detailed manual that includes guidelines on how to design their outdoor dining space to protect public space in the city. Even though there is hope for better regulations in the future, the residents of Washington Heights have sued the City stating that the Open Restaurants Program has affected their quality of life. These individuals believe that there should be no more outdoor dining structure at all. All things considered, there is a need for more research in this area, particularly to track the progress of the impending permanent program.

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