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Taming Airbnb: Toward guiding principles for local regulation of urban vacation rentals based on empirical results from five US cities

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A R T I C L E I N F O

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A B S T R A C T

Urban vacation rentals, a phenomenon that has grown explosively very recently, bring benefits to cities but also impose quality of life and housing market impacts on neighborhoods. As a consequence, cities are beginning to grapple with creating regulatory regimes for managing this new land use and its encroachments on residential areas. This article uses webscraped data from Airbnb, the industry leader, to analyze the geographical patterns and concentrations of these impacts in five US cities: Austin, Boston, Chicago, San Francisco, and Washington, DC. It uses the findings to put forth four general principles for cities seeking to manage impacts imposed by Airbnb and its competitors. These are that webscraping is an imperfect but relatively cheap and effective means of gathering locally specific data; that "spiky" usage patterns dictate a microgeographic approach to regulation; that meaningful regulation necessitates dedicated enforcement, likely paid for with permit fees; and that it is desirable to distinguish between "mom-and-pop" hosts and those operating at a commercial scale.

Urban vacation rentals, or the renting out of part or all of a residential dwelling to out-of-town visitors, have risen from obscurity to a global industry in just a few years. This practice is nothing new—for decades people have rented out their homes using technologies ranging from simple notices placed on grocery store bulletin boards to recent ones such as Craigslist, an online bazaar that is popular throughout the United States. However, the much more recent rise of sophisticated, purpose-built online platforms run by profit-motivated entities such as Airbnb and Homeaway has enabled urban vacation rentals to grow explosively. The market leader, Airbnb, was recently reported to have an estimated valuation of $24 billion (US), a figure that exceeds the market capitalization of major global publicly traded hotel chains such as Marriott International (Winkler and MacMillan, 2015). While this upstart industry's rise has been heralded by many, its effects on everyday living environments and housing markets in the United States and around the world are only beginning to come into view.

One of our most detailed glimpses of these effects comes from the New York State's Office of the Attorney General, which subpoenaed internal records from Airbnb for New York City as part of a legal action it pursued against the company (2014). It found that the overwhelming majority, or 72%, of the more than 35,000 unique units used for urban vacation rentals violated New York City law in doing so. It found that a small subset (6%) of people posting listings on the site operated at a commercial scale with three or more listings apiece but garnered a greatly disproportionate share of revenue (37% of the total). Indeed, some of the top commercial operators appeared to be operating multimillion-dollar illegal businesses. Listings were disproportionately concentrated in neighborhoods experiencing the most rapid housing cost growth, raising questions about whether they were displacing what would otherwise be permanent housing units and thus exacerbating existing shortages of housing (ibid).

These sorts of effects have, in turn, put considerable pressure on city governments in New York and elsewhere to develop regulatory frameworks to cope with the emergence of a phenomenon that was barely mentioned in public discourse only a few years ago. In this article, our purpose is to put forth basic principles that could help guide these fledgling efforts to regulate urban vacation rentals, informed by our empirical results drawn from five major U.S. cities.

1. Why regulate urban vacation rentals?

The impacts imposed by the operations of Airbnb and its competitors in New York City summarized briefly above are unfolding, to varying degrees, in other cities. It is useful to think of them as falling into two basic categories. While these two types of impacts are related, we view them as sufficiently distinct so as to discuss separately.

1.1. Housing market impacts

There is ongoing debate as to whether urban vacation rentals remove housing that would otherwise be rented on the open market—essentially converting it from residential to commercial use—thus

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aggravating a pre-existing scarcity of rental housing.[1] To assess whether this process is significant, planners and policymakers need to understand the role played in particular by *whole unit* rentals in urban vacation rental offerings. Whole unit rentals make entire dwellings, rather than mere portions of them (such as spare bedrooms), available to visitors. And whole unit rentals are only likely to have significant housing market effects in cases where they are rented for a significant proportion of the year, as contrasted to those only occasionally rented while their usual occupants temporarily leave. On the other side, proponents of urban vacation rentals argue that Airbnb, Homeaway, and similar platforms make it possible for participating homeowners or renters to earn extra income that helps them to defray the high and increasing costs of housing seen in many city neighborhoods.

1.2. Quality of life impacts

Urban vacation rentals impose a number of quality-of-life impacts on residents of neighborhoods in which they proliferate. When geographically concentrated in excess of a given threshold, urban vacation rentals can introduce increased competition for on-street parking, boorish and noisy behavior at odd hours by out-of-town guests, and other disruptions to a formerly all-residential area. In extreme cases, they could conceivably undermine the entire character of a neighborhood as a residential area mostly inhabited by permanent residents, a process that in another context has been termed *tourism gentrification* (Gotham, 2005).[2]

At the scale of a building in which individual apartments or rooms within such apartments are being rented to guests, neighbors can experience a reduced sense of security as a constantly shifting cast of visitors are granted access to common areas, in addition to noise and other disruptions. Unlike the negative housing market impacts discussed above, these quality of life impacts can be imposed by any type of urban vacation rental, whether whole-unit or otherwise, and whether a given rental is rented occasionally or constantly.

2. Regulating land use and not simply urban form: back to the future

The rise of novel land use regulatory tools such as Form Based Codes in recent years has accompanied a new emphasis on regulating the physical characteristics of urban buildings, all in an effort to create more walkable and human-scaled neighborhoods (Hughen and Read, 2016). Form Based Codes are intended to supplant traditional zoning ordinances that have long made regulating the *uses* within buildings rather than their physical dimensions the highest priority (ibid). The latter—often referred to as "Euclidean zoning" in the United States—arose about a century ago in large part because of concerns about multifamily housing and industrial and commercial uses encroaching into so-called "residential" neighborhoods, or districts exclusively composed of single-family houses (Hirt, 2015).[3] Today, Euclidean zoning is increasingly maligned as outdated (Talen, 2013), not least because its propensity to separate uses into spatially distinct zones runs counter to the current revival of interest in mixing uses within neighborhoods and buildings.

But as cities grapple with the explosive growth of urban vacation rentals, what is old could soon be new again. Regulating urban vacation rentals will necessitate making enforceable distinctions between residential units used as permanent residences for long-term homeowners and renters, and as hotel-like accommodations for transient guests.[4]

Where this becomes tricky is when these two use categories blur together. Under what circumstances is a homeowner—referred to as a *host* in Airbnb argot— who allows a guest to stay in her home engaging in a benign (if profit-motivated) sharing activity that does not fundamentally erode the neighborhood's residential character? Is it when the homeowner is present, or perhaps when she is altogether absent no more than a certain threshold number of days per year, i.e. when the *occupancy* of the unit by guests falls below a certain level? Should urban vacation rentals of an entire dwelling unit be allowed to take place at such a high frequency that a permanent resident cannot realistically reside there, thereby transforming the home's use into that of a de-facto commercial hotel room? Is such activity acceptable in principle but only when a certain maximum percentage of homeowners within a neighborhood engage in it?[5] Resolving these questions will require cities to revive the distinctly old-fashioned practice of regulating uses in order to protect residential neighborhoods from a form of commercial incursion, even if the commercial incursion is brand new and something only made possible by 21st century information technology. In addition, for it to be meaningful, regulation will need to be accompanied by robust enforcement—something that, as we will discuss, can be controversial and logistically intensive.

3. Plan for the article

This article uses an empirical approach to gauge the intensity and spatial pattern of Airbnb usage in five major US cities: Austin, Boston, Chicago, San Francisco, and Washington, DC. To do so, we rely on so-called "webscraped" data taken directly from Airbnb's website, allowing us to identify listings' approximate geographic locations, estimate their usage intensity, and distinguish resident hosts from commercially-oriented ones operating multiple listings. In short, we find a strikingly geographically lopsided pattern to Airbnb usage in the five cities, with intense concentrations of listings in a minority of neighborhoods—particularly those that have plentiful non-driving transportation options and few children— and a dearth in the rest. The rental housing market impacts of Airbnb appear to only be notable at the citywide scale in San Francisco but are likely important within particular neighborhoods in all five cities. We also find that, as in New York City, commercial operators in the five cities appear to account for a disproportionately large share of Airbnb activity. These findings inform four propositions that we suggest for cities contemplating new regulatory and enforcement regimes to manage the effects of urban vacation rentals. These are that they use webscraping as an imperfect but useful and readily available source of data to gain understanding about their own local urban vacation rental market; that their regulations limit the concentration of urban vacation rentals within particular neighborhoods, and that they consider redistributive mechanisms between neighborhoods; that they deploy dedicated staff to enforcement, funded via permit fees; and that their regulations distinguish between commercially-oriented operators and true "mom-and-pop" hosts.

4. Learning from legal scholarship on regulating urban vacation rentals: can emerging regulatory frameworks be informed by sound empirics?

An early article noting and anticipating the rise of the *sharing*

[1] For a recent overview of this debate in the popular press—one that emphasizes the thin state of knowledge thus far—see Yaffe (2016).

[2] This process has occurred all over the world in a wide variety of settings. For an in-depth account of an example unfolding over a quarter century in a rural village in China and its attendant impacts on pre-existing residents, including loss of traditional culture, see Xi et al. (2013).

[3] Euclid is the name of the Cleveland, Ohio suburb whose use-based zoning scheme prompted the lawsuit that led to the landmark U.S. Supreme Court case in 1926, Village of Euclid v. Ambler Realty Co., that permanently established the legal basis for zoning throughout the United States (Hirt, 2015).

[4] The typical cutoff is 30 days—shorter stays are treated as visits, while longer ones are generally regarded as permanent tenancy, accompanied by its various legal protections.

[5] As one example, when Austin first began regulating urban vacation rentals in 2012, it stipulated that urban vacation rentals in which the owner does not reside can account for no more than 3% of the one- and two-family housing stock in a census tract, a geographic unit that typically contains about 1200 to 8000 people.