Short-Term Rentals
2022 Report to the Boston City Council

Mayor's Office of Housing
Mayor Michelle Wu

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Introduction
This report is being submitted to meet the requirements of Section 2 of the *Ordinance Allowing Short-term Residential Rentals in the City of Boston* (the "Ordinance"), passed by the Boston City Council on July 13, 2018. The implementation of the Ordinance took place in stages, with complete implementation in December 2019. Therefore, this report is responsive to the research questions in the Ordinance.

Definitions
The following definitions are being used in the implementation of the Ordinance.

Short-term Rental: A short-term rental is the use of a residential unit for residential occupancy — for a period of fewer than 28 consecutive calendar days — for a fee.

Short-Term Rentals types:

Limited Share Units: Limited Share Units have a private bedroom or shared space in an owner-operator's primary residence. The owner would be present during the rental. The fee for this type of unit is **$25 per year**. Occupancy is limited to three guest bedrooms or six guests, whichever is fewer.

Home Share Units: Home Share Units have a whole unit available for a short-term rental at the primary residence of an owner-operator. The fee is **$200 per year**. Occupancy is limited to five bedrooms or ten guests, whichever is fewer.

Owner-Adjacent Units: Owner-Adjacent Units are within owner-occupied two- or three-family buildings. In this situation, the owner lists a single secondary unit as a short-term rental. The fee is **$200 per year**.

Estimate of the Impact of the Rental of Owner-Adjacent Units on the Number of Units Removed from the Long-Term Housing Stock

As of June 1, 2022, the Inspectional Services Department ("“ISD") had 677 active short-term rental registrations ("STRs"). Of these, only 126, or 18.6 percent of the total, were Owner-Adjacent Units. Owner-Adjacent Units declined by 25 (-30 percent) from the year prior. The total number of licensed STRs fell by 130 (16.1%).

Table 1: Short Term Rental Registrations, by Type

	2020		2021		2022		2 - Year Change		1- Year Change	
Registration Type	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Home-Share Unit	251	31.1%	266	32.4%	207	30.6%	-44	-17.5%	-59	-17.5%
Limited Share Unit	269	33.3%	199	23.5%	146	21.6%	-123	-45.7%	-53	-45.7%
Owner-Adjacent Unit	180	22.3%	151	18.0%	126	18.6%	-54	-30.0%	-25	-30.0%
Hospital Stays	17	2.1%	126	14.2%	111	16.4%	94	552.9%	-15	552.9%
Lodging House	74	9.2%	72	8.5%	68	10.0%	-6	-8.1%	-4	-8.1%
Executive Suite	12	1.5%	20	2.5%	16	2.4%	4	33.3%	-4	33.3%
Licensed Bed & Breakfast	4	0.5%	7	0.8%	3	0.4%	-1	-25.0%	-4	-25.0%
Total STR Registrations	807	100.0%	841	100.0%	677	100.0%	-130	-16.1%	-164	-16.1%

There are additional statistics on STRs that provide insight into this property use. The 677 STRs are located on approximately 482 parcels. Most STRs (72.8 percent) are in parcels with one to three units or condos, categorized as "residential" parcels (see Table 2).

Table 2: Distribution of STRs by General Parcel Type[1]

Category	Total Registrations	Percent
Apartments	67	9.9%
Commercial	2	0.3%
Mixed-Use	110	16.2%
Residential	493	72.8%
Unmapped	5	0.7%
Grand Total	677	100.0%

STRs in residential parcels are generally evenly distributed, as seen in Table 3. Only three-family properties have a percentage share under 20 percent.

Table 3: Distribution of STRs by Residential Parcels and STR-Type

Property Type	Home Share	Limited Share	Owner Adjacent	Other	Total	Percent
Single Family	54	68		1	123	24.9%
Two-Families	32	23	72		127	25.8%
Three-Families	16	16	37	16	85	17.2%
Condos	100	36	8	12	156	31.6%
Other	1	1			2	0.4%
Total	203	144	117	29	493	100.0%

In addition to the fact that STRs are concentrated in smaller properties (four units on average), The owners of registered STRs tend to be small-scale operators, as 71 percent of owners own one to two properties.

The top three neighborhoods for STRs are Dorchester (12.4 percent), Downtown (12 percent), and Jamaica Plain (10.3 percent). Prior to the Ordinance, Central Boston units in large multi-family buildings could easily be marketed as STRs. With the new Ordinance, most of these units are no longer eligible, so STR registrations tend to be more evenly distributed.

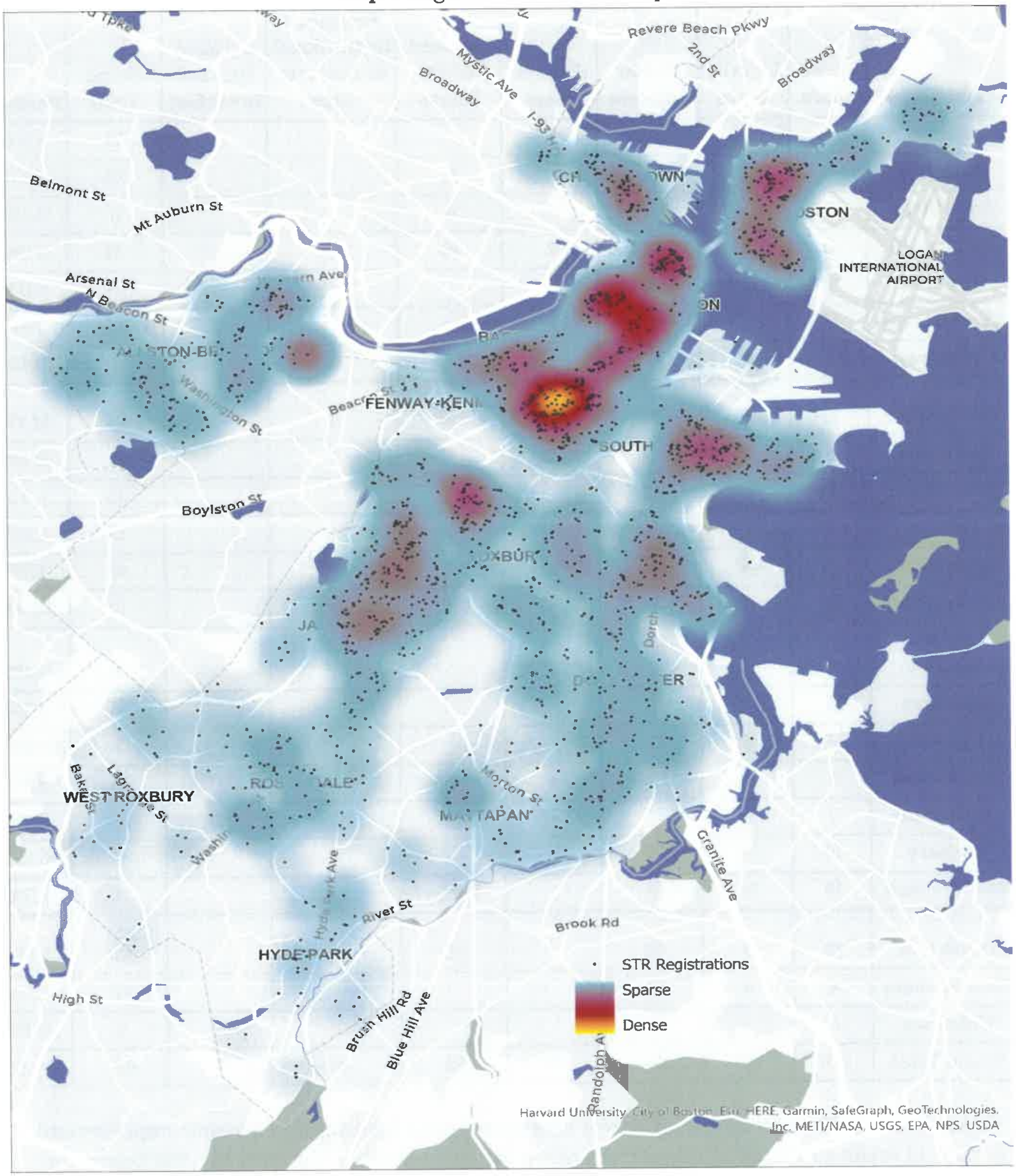
[1] Other parcels include rooming houses, fraternity houses, commercial parcels, and tax-exempt.

Table 4: Distribution of STR Units by Type and by BPDA Neighborhood

Neighborhood	Home Share	Limited Share	Owner Adjacent	Hospital Stays	Licensed Lodging House	Furnished Institutional or Business Stay	Existing Bed and Breakfast	Grand Total	Percent
Allston	4	4	1	4				13	1.9%
Back Bay	8	1	1	9	18	1		38	5.6%
Bay Village	3		4		4			11	1.6%
Beacon Hill	11	1	4	2	16			34	5.0%
Brighton	10	11	5	1				27	4.0%
Charlestown	13	2	8				1	24	3.5%
Chinatown	1	1	1					3	0.4%
Dorchester	21	31	27	1		4		84	12.4%
Downtown	6	1		72	1	1		81	12.0%
East Boston	20	13	12					45	6.6%
Fenway	4		3	7	1			15	2.2%
Hyde Park	3	4	5					12	1.8%
Jamaica Plain	27	19	19			5		70	10.3%
Leather District	1							1	0.1%
Mattapan	5	5	5					15	2.2%
Mission Hill	3	3	1					7	1.0%
North End	5	1	2	4		3		15	2.2%
Roslindale	7	11	5				2	25	3.7%
Roxbury	13	9	9	11		2		44	6.5%
South Boston	18	14	2		2			36	5.3%
South End	16	8	10		26			60	8.9%
West Roxbury	4	6	2					12	1.8%
Unknown	4	1						5	0.7%
Grand Total	207	146	126	111	68	16	3	677	100.0%

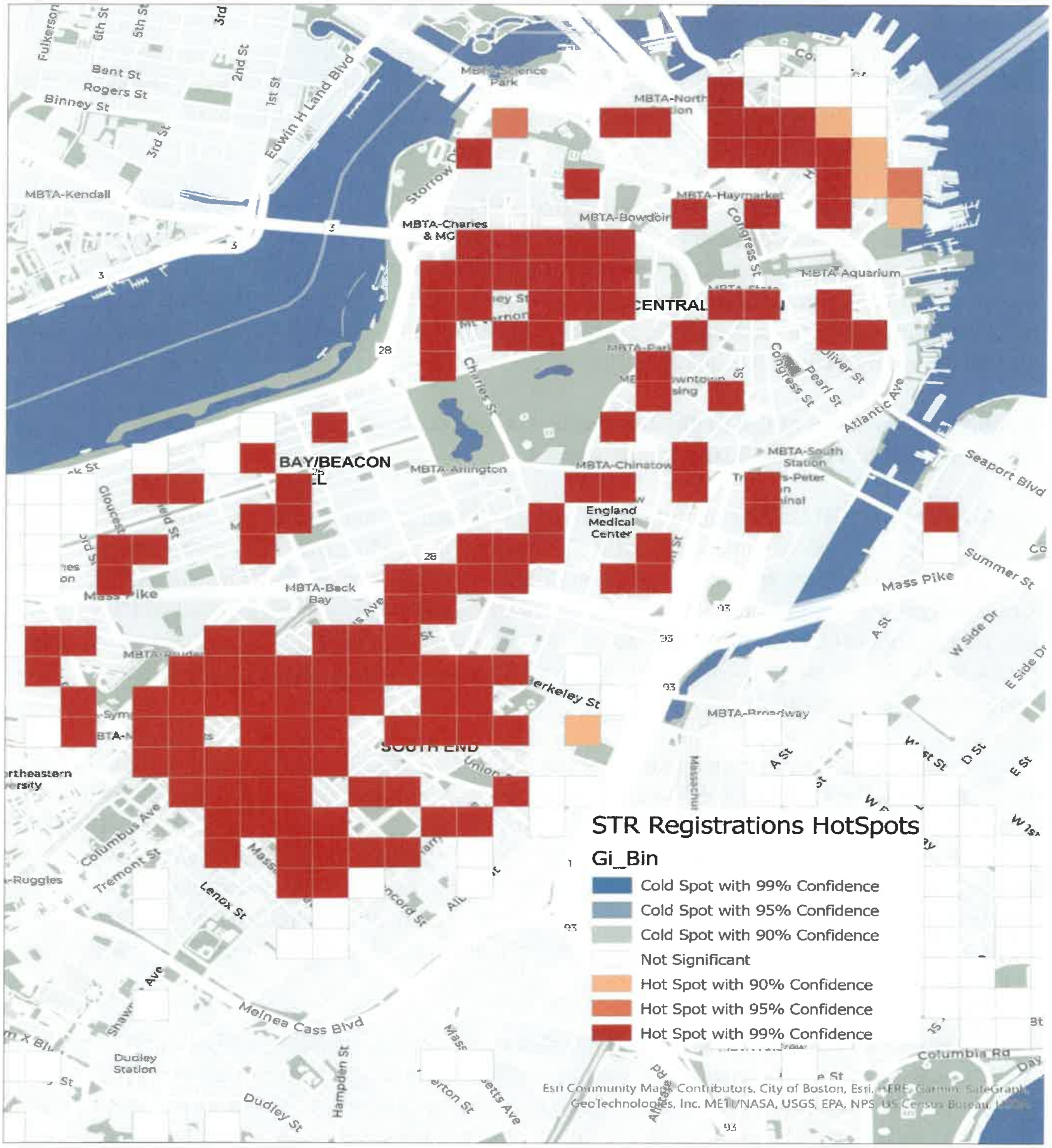
Map 1 shows an STR unit heat map. A heat map draws point features as a dynamic, representative surface of relative density. STR registrations are the most dense in the Back Bay, the South End, Downtown, and the North End. Allston, Dorchester, East Boston, Jamaica Plain, Roxbury, and South Boston have some notable lower-density hotspots.

Map 1: Registered STR Heat Map



Map 2 drills down in more detail to identify areas with a high density of STRs. The main hot spots are in the South End and central Boston neighborhoods, such as Beacon Hill, Chinatown, and the North End.[2]

Map 2: Optimized Hot Spot Analysis



2Map 2 uses spatial statistics to identify statistically significant hot and cold spots. In this map the locations of STR licenses are converted into weighted features. The output cells show the percentage of statistical confidence for significant clusters of STR parcels.

Estimate of the Number of Evictions Caused by Conversions from Long-Term Housing to Short-Term Rentals

In October 2020, the City of Boston passed the Housing Stability Notification Act. This ordinance requires any landlord planning to end a tenancy agreement to provide the tenant with a Notice of Tenants' Rights and Resources. In addition, The Housing Stability Notification Act also requires landlords and foreclosing owners to provide the City of Boston's Office of Housing Stability with a copy of the Notice to Quit or Notice of Non-renewal of Lease, and a Certificate of Compliance/Service.

Thus far, the City has received over 6,000 notices, 86 percent for nonpayment of rent. In 2022, just seven properties had both a notice-to-quit and an STR license associated with the same address. No evidence was found that a notice-to-quit was issued to establish an STR. Likewise, 32 properties had an eviction filing and an STR license, but no evidence was found that the eviction filing was undertaken to start an STR. The primary driver of evictions continues to be nonpayment of rent, followed by cause (i.e., lease violations).

Estimate of the Effect of the Ordinance on the Change in Home and Rental Prices in Owner-Occupied Two and Three Family Homes

The Mayor's Office of Housing maintains databases of both property sales and advertised rental listings.[3] This data will be used to estimate the impacts of the Ordinance on neighborhood rents and sales prices. A multiple linear regression (MLR) is a simple and common way to explore whether a set of variables predict the outcome of a dependent variable (price) and which variables are most significant in that prediction to answer this question. Do note that regressions are used primarily for prediction purposes and not to prove causation, as regression studies the relationship between variables.

Previous sales MLRs conducted by MOH reflect that prices after Dec 2019 rose by $59,000, suggesting that the Ordinance did not immediately result in lower two- and three-family house prices. The onset of the COVID-19 shutdown (after March 15th, 2020) showed a price decline of $62,000. Previous models show that the number of more bathrooms (+$89,000) were more significantly associated with prices than the COVID-19 pandemic or the new ordinance. Purchasing in the spring or summer is associated with a jump of close to $20,000. Purchasing a home in IDP Zone A (i.e. Back Bay, Beacon Hill, Downtown and the Seaport) would add a million dollars to the price.

The current rent MLR is based on over 203,000 rental listings from 2014 to 2021. The rent MLR model suggests the STR ordinance increased monthly rent listing prices by $45, while the COVID-19 shutdown in March 2020 contributed to a more significant $189 drop-in monthly rents. Of course, factors like the number of bedrooms, neighborhood, and when the property is built have a much more substantial impact on rent prices. For additional details on the Rent MLR, please see the appendix.

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[3] Sales data is obtained from the Warren Group, and the rental data is provided from Rental Beast and MLS.

The Differential Between Short-term Rental Revenue and Long-term Rental Revenue in an Owner-Adjacent Unit

The average monthly revenue from short-term rentals of entire homes in Boston is an estimated $1,745, according to the most recent data available (Jan-March 2022) (Table 6). However, based on advertised rents from the same period, the average monthly revenue from a long-term rental is $2,796. Thus, according to these estimates, an owner could potentially make an average of $1,052 more monthly rent a unit as a long-term rather than a short-term rental.

An owner would likely lose money renting a unit as a short-term rental in nearly every neighborhood. Beacon Hill, the North End, and Roslindale are the only neighborhoods where prices indicate that an owner may make more on a short-term than a long-term rental unit. The average short-term rental revenue in these three neighborhoods increased drastically between 2021 and 2022. Note, however, that even in neighborhoods where the differential is highest, there may still be specific properties that could earn more as an STR than a long-term rental.

The estimated monthly short-term rental revenue in the first quarter of 2022 ($1,745) exceeds the 2019 pre-covid-19 pandemic estimate of $1,364, indicating that the short-term rental market is rebounding. Still, market prices for long-term rentals have also rebounded strongly, making them more profitable in most cases: The average long-term rental revenue averaged $2,796 in the first quarter of 2022, yielding a $1,052 differential in favor of long-term rentals.

Table 5. Differential Between Monthly Airbnb & Long Term Rental Income, 2021 vs. 2022[4]

BPDA Neighborhood*	2021			2022		
	Average Monthly Airbnb Income**	Average Monthly Long-Term Rental Income***	Differential between Airbnb & LTR Income	Average Monthly Airbnb Income**	Average Monthly Long-Term Rental Income***	Differential between Airbnb & LTR Income
CITYWIDE	**$1,387**	**$2,417**	**-$1,030**	**$1,745**	**$2,796**	**($1,052)**
Allston	$1,730	$2,075	-$346	$1,492	$2,363	($872)
Back Bay	$1,872	$3,074	-$1,203	$2,184	$3,424	($1,240)
Bay Village	$1,268	$2,609	-$1,340	$1,575	$2,697	($1,122)
Beacon Hill	$1,767	$2,426	-$658	$3,082	$3,041	$41
Brighton	$1,392	$2,146	-$754	$1,493	$2,387	($894)
Charlestown	$1,288	$2,667	-$1,378	$1,386	$3,273	($1,887)
Chinatown	$3,750	$2,733	$1,017	$1,600	$2,882	($1,282)
Dorchester	$955	$2,299	-$1,344	$1,131	$2,537	($1,406)
Downtown	$962	$3,450	-$2,488	$2,216	$3,992	($1,775)
East Boston	$996	$2,165	-$1,169	$884	$2,599	($1,715)
Fenway	$979	$2,330	-$1,351	$2,213	$2,777	($564)
Hyde Park	$739	$1,923	-$1,184	$742	$2,189	($1,447)
Jamaica Plain	$2,011	$2,439	-$428	$1,751	$2,635	($884)
Mattapan	$773	$2,119	-$1,346	$1,389	$2,323	($933)
Mission Hill	$1,576	$2,392	-$816	$1,428	$2,901	($1,473)
North End	$2,623	$2,276	$347	$3,583	$3,059	$524
Roslindale	$741	$2,143	-$1,401	$2,302	$2,272	$30
Roxbury	$2,307	$2,369	-$63	$1,465	$2,736	($1,271)
South Boston	$1,772	$2,743	-$971	$2,315	$3,391	($1,076)

[4] Source: Inside Airbnb (March 2022 scrape; entire apartments & minimum stays <28 days only); Rent data from Rental Beast and MLS (Jan 2022-March 2022 listings). **The Leather District is included in Downtown, and Longwood Medical Center is included in Fenway due to small sample sizes across datasets. **Marqusee, Alex, (2015). *Airbnb and San Francisco: Descriptive Statistics and Academic Research.* San Francisco Planning Department Administrative Code Text Change, April 16, 2015, page 42, https://commissions.sfplanning.org/cpcpackets/2014-001033PCA.pdf.
***MOH-calculated weighted averages for 0-3 bedroom units.
Highlighted cells indicate fewer than 10 Airbnb listings, which may not be enough on which to draw conclusions.

Data on short-term rental hosts' revenue are not available. We used a San Francisco Planning Department methodology (Marqusee 2015) to align with existing scholarship on this subject. This method multiplies the listed price, the minimum nights listed (a proxy for the number of nights per stay), and the number of reviews per month (a proxy for the number of stays) inflated by 28 percent (this assumes that 72 percent of stays leave a review, as reported by Airbnb in 2012). This method yields a somewhat conservative estimate of short-term rental revenue instead of actual data from short-term rental platforms. Revenues could be higher if renters in short-term rentals stay longer than the minimum number of nights (not accounted for in this methodology), or the review rate is significantly lower than estimated here (72 percent).

S Bos Waterfront	$802	$3,835	-$3,033	$2,384	$4,206	($1,822)
South End	$690	$2,801	-$2,111	$909	$3,567	($2,658)
West End	$483	$2,967	-$2,484	$533	$3,902	($3,369)
West Roxbury	$1,128	$2,116	-$988	$1,008	$2,359	($1,351)

The $1,052 citywide average differential suggests that short-term rentals are much less lucrative than long-term rentals. The revenue of a short-term rental depends highly on seasonal tourism, the average length of stay for the typical renter, and the overall supply of short-term rentals, which can impact relative listing prices. Additionally, long-term rentals are guaranteed revenue set during lease-up, and revenue is not subject to the same regulatory risk as short-term rentals.

Future Projections of the Number of Owner-Adjacent Units and Their Impact on the Housing Market

The analysis above indicates that, before and during the COVID-19 induced recession, long-term rentals had an advantage over short-term rentals allowed under the ordinance. It does appear, however, that the benefit of long-term rentals has narrowed since 2021. In addition, the ordinance has minimized interest in STRs and has shifted some interest in long-term rentals on the Airbnb site or the general rental market. As a result, we do not expect STRs to rise significantly above the numbers seen in previous years. Nevertheless, MOH will continue to monitor the change in the number of short-term rentals and the small but notable rise in listings of units for more than 28 days on the Airbnb site. The latter appears to be a rise in hosts attempting to avoid being regulated by the STR ordinance.

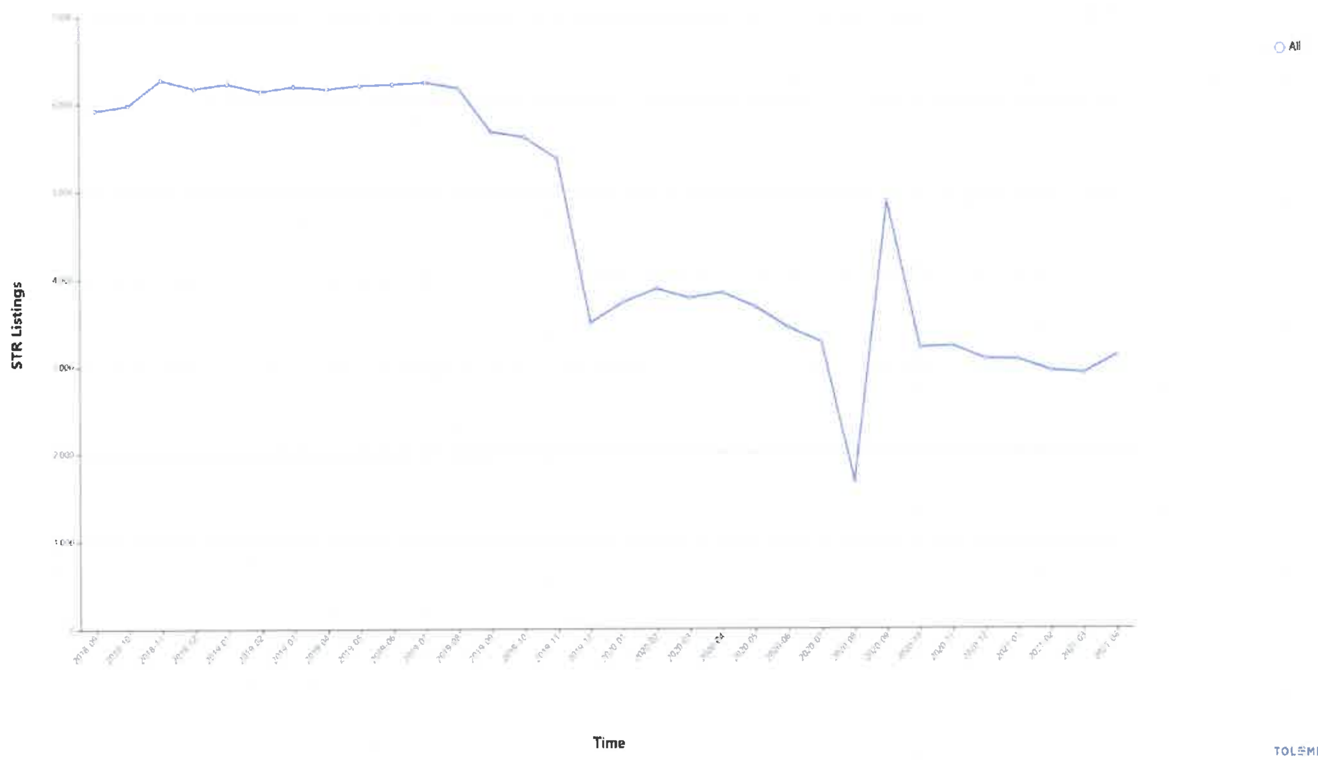
Inside Airbnb Listing Data Analysis

Inside Airbnb scrapes data from the Airbnb website on a monthly basis and makes it available to the public. They do not scrape other platforms, such as VRBO. This section relies on this data to provide another look at short term rentals, including those that are not covered by the City's STR ordinance.

This data shows the dramatic effect the implementation of the Ordinance has had on the number of listings on Airbnb. For example, listings of entire homes or apartments that were rented for less than 28 days fell from 3,775 in November 2018 to 2,593 in November 2019. With the complete implementation of the Ordinance on December 1, 2019, these listings decreased to 1,122 on December 4, 2019, a 70 percent decline from November 2018. As of March 2022, 1,125 listings of entire apartments/homes were listed.

The following chart (Chart 1) shows total listings over time, regardless of the minimum days a listing can be rented. In September 2018, there were close to 6,000 total listings. Total listings dropped to just over 3,500 in December 2019 when the STR ordinance came into full effect and then to an all-time low of 1,683 in August 2020. In March 2022, the last month of available listings data, total listings reached 3,462. Listings have ranged from 2,900 to 3,462 for the previous 12 months of available data.

Chart 1: Total Airbnb Listings September 2019 to March 2022[5]



The following chart (Chart 2) shows STRs (<28 days, blue line) and LTRs (>28 days, red line). As shown in the previous chart, STRs significantly dominated the listings on the Airbnb platform until the full ordinance was implemented in Dec 2019. About a year later, LTRs became the more dominant type of listing, outnumbering STRs by close to 900 listings at one point. Please note that the rapid drops and increases shown in the last year of the data reflect a change in reporting from monthly to quarterly.

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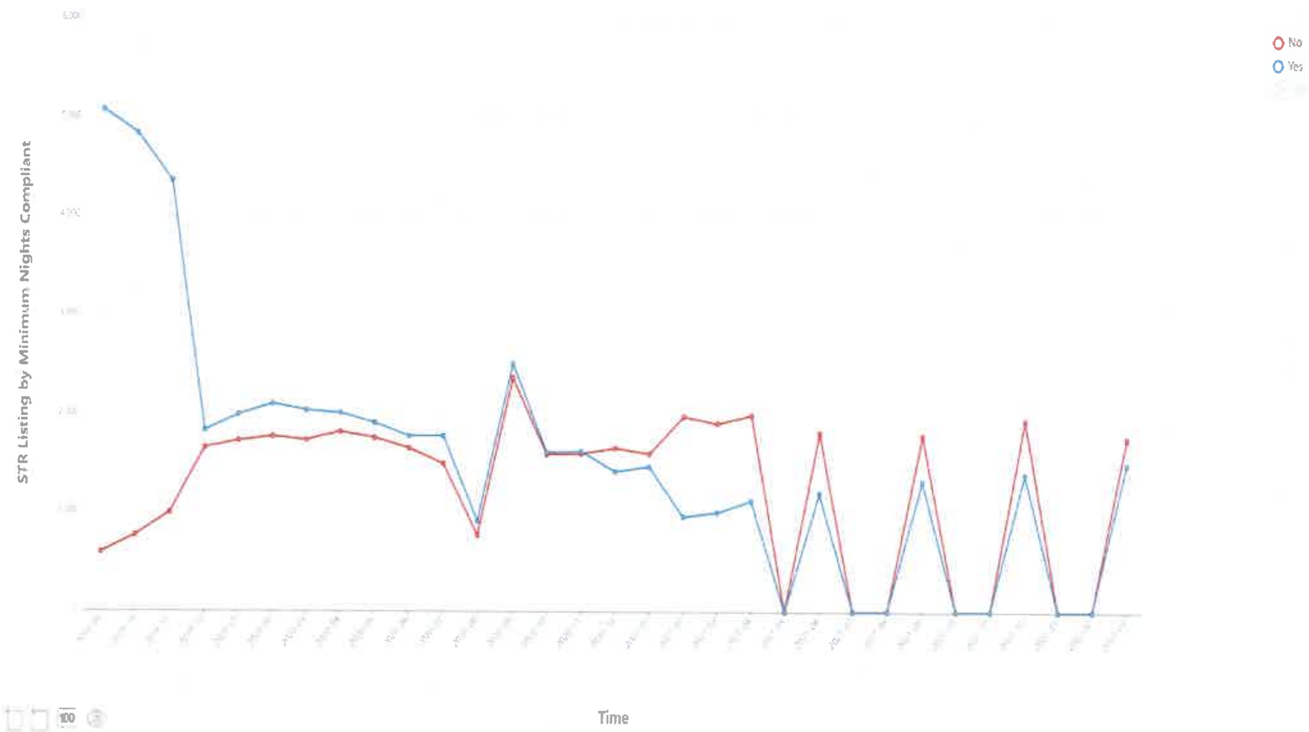
[5] Ibid.

Chart 2: STR vs LTR Airbnb Listings[6]



The average host has been on the Airbnb platform for 5.7 years. Approximately 74 percent of hosts have multiple listings. The top ten hosts are responsible for twenty-two percent of all listings.

Based on the March 2022 listing data, fifty-four percent of all listings had hosts located in Boston. Another 14 percent were in Massachusetts outside of Boston. Thirty percent of listings have hosts located out of state, and one percent of listings have hosts situated internationally.

Table 6: Host Location[7]

Location	Count	Percentage
Boston	1,857	54%
Massachusetts (Outside of Boston)	477	14%
hited States (Outside of Massachusett	1,093	32%
International	33	1%
Total	3,460	100%

Not all of the listings on the Airbnb site are current or licensed. Of the 3,462 listings in March 2022, 1,113 (32.1 percent) were recent and frequently booked. Approximately 1,526 of the total listings in March (44 percent) were unlicensed, but 92 percent of these were long-term rentals

[6] Inside Airbnb switched from a monthly to quarterly reporting creating false drops reflected in the chart since May 2021.

[7] Two hosts did not have location information and are not reflected in this table.

and, therefore, exempt from the ordinance. Approximately 47 percent of listings, or 1,623, are for short-term rentals. Out of the 677 current STR registrations, MOH matched 68 percent of the licenses to the Inside Airbnb data.

Of these 464 STRs, 40 percent had a host with an address outside of the City, which would violate the ordinance's residence requirement. These could be a carryover from when the ordinance initially started while the residence review process was being set up. Nonetheless, these properties will be shared with ISD for further review. ISD closely monitors compliance with STRs and works with Airbnb to remove non-compliant listings and issue fines if needed to non-compliant hosts.

Appendix
Rent Regression

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	60.50%					
R Square	36.60%					
Adjusted R Square	36.60%					
Standard Error	1079.308					
Observations	203090					
ANOVA						
	df	SS	MS	F	*Significance F*	
Regression	8	1.36E+11	1.71E+10	14641.95167	0	
Residual	203081	2.37E+11	1164905			
Total	203089	3.73E+11				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-$381,747	19310.83	-19.7685	0	-419595.9173	-343898.3909
Year	$190	9.590023	19.80516	0	171.1357454	208.7281676
S&P/Case-Schiller Index	-$9	0.782369	-11.7524	0	-10.72813455	-7.661287725
Quarter	$74	5.070668	14.62866	0	64.23870775	84.11548015
Covid	-$189	11.45808	-16.522	0	-211.7683939	-166.8532898
Bedroom	$595	2.283028	260.5199	0	590.2995813	599.2489393
New Construction	$1,017	10.43386	97.45734	0	996.4060974	1037.306318
Ordinance	$45	12.11191	3.74959	0	21.67563949	69.15372885
Neighborhood	$1,162	5.042502	230.5393	0	1152.611776	1172.378137

Interpretation: The rent MLR is based on over 203,000 rental listings from 2014 to 2021. This model explains 37 percent (R-square) of the variance in price, the dependent variable. In other words, if you plug the results (coefficients) into the MLR equation, it will predict the sale price 37 percent of the time. Price is the dependent variable. The numerical variables include year and bedrooms. The dummy variables include ordinance (1 = Dec 2019 and After), COVID (1 = 03/16/2020 and after), Quarter (1= Spring and Summer), New Construction (1 = built after 2011), neighborhood (1 = above the citywide rent price median) and a monthly period related to the S&P Case Shiller Index for Home Values.

The rent MLR model suggests the STR ordinance increased rental list prices by $45. At the same time, The COVID-19 pandemic caused a more significant impact by decreasing rent list prices by $189. Again this is partly offset by the $190 increase in the yearly coefficient (each additional year). The more significant variables impacting rent prices include the number of bedrooms (each bedroom adds about $600), and the neighborhood or location (add $1,162 for the City's most desired areas). New Constructed rental listings also demand a premium, adding over $1,000 in price in the MLR model. The time period associated with the monthly frequency of the Case-Shiller Home Price Index showed a decrease of $9 in rental list price per month. Since the home price index has increased over the last decade, this finding is counterintuitive and requires further research.

Table A2: Active STR Registrations by Ward

Ward	Count	Percentage
1	45	6.6%
2	24	3.5%
3	118	17.4%
4	55	8.1%
5	77	11.4%
6	18	2.7%
7	21	3.1%
8	7	1.0%
9	14	2.1%
10	11	1.6%
11	46	6.8%
12	9	1.3%
13	35	5.2%
14	8	1.2%
15	12	1.8%
16	11	1.6%
17	24	3.5%
18	33	4.9%
19	43	6.4%
20	20	3.0%
21	12	1.8%
22	29	4.3%
Unmapped	5	0.7%
Total	677	