

# Short-term rentals in Boston, USA: regulation, compliance and impact

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## *Extended Abstract*

Short-term rentals (STRs) expanded rapidly in Boston during the 2010s, amid rising tourism, intensifying housing affordability pressures, and growing concerns over gentrification and displacement. In response, the City of Boston adopted a comprehensive STR ordinance in June 2018, with enforcement beginning in September 2019. The regulation sought to protect the long-term housing stock, preserve neighborhood livability, and limit the professionalization of short-term rental activity by restricting most operators to their primary residence and requiring registration at the City. While an expanding body of research suggests that STR regulations can reduce listing activity and moderate housing pressures in certain contexts, important gaps remain. Much of the existing literature presents aggregate or cross-city findings, often masking city-specific institutional dynamics and obscuring intra-urban heterogeneity. Detailed, city-level evaluations of the overall impact of regulation are still relatively scarce, limiting our understanding of how regulatory design interacts with local housing markets, political conditions, and enforcement capacity. Moreover, although many regulatory regimes explicitly differentiate between professional operators and occasional “home-sharing” hosts, empirical evidence on heterogeneous treatment effects across listing types remains limited. Theoretically, regulatory clarification and formalization could even stimulate growth among genuine home-sharing hosts by reducing uncertainty and crowding out commercial actors. However, existing findings on such compositional shifts are mixed. Finally, enforcement and non-compliance remain under-examined, with research gaps on the strategies used by hosts to circumvent regulations, or the institutional constraints faced by municipal enforcement teams. Few studies adopt a genuinely mixed-methods design capable of linking market-level trends to host decision-making and regulatory practice.

This study addresses these gaps through a mixed-methods evaluation of Boston’s 2018–2019 STR regulations. We combine quasi-experimental quantitative analysis, forensic investigation of high-volume operators, and qualitative interviews with hosts and city officials. This approach enables us to assess not only whether regulation reduced STR supply, but also how effects varied across listing types, and why non-compliance persists.

We estimate zip-code-level difference-in-differences (DiD) models using AirDNA data on STR listings and US Census socio-economic indicators. Boston is benchmarked against a comparison group of major US cities with substantial STR and hospitality sectors that implemented STR regulations after Boston: Atlanta, Dallas, Houston, Philadelphia, Phoenix, Pittsburgh, San Diego, and Washington, DC. To capture nuanced regulatory effects, we differentiate between multiple

measures of STR supply. These include total active listings, business and sharing economy listings (based on listing type, host type and annual availability of the listing), entire-home listings managed by profiles with only one entire home (a proxy for occasional hosts), and entire-home listings managed by profiles with multiple entire homes (a proxy for professional operators).

We first estimate a two-way fixed effects panel regression model. To strengthen causal inference and address concerns regarding staggered treatment timing and heterogeneous treatment effects, we also employ the difference-in-differences estimator proposed by Callaway and Sant'Anna (2021). By constructing group-specific average treatment effects, we obtain more robust estimates of the regulatory impact on Boston's STR market. Estimation is conducted using the doubly robust procedure, which combines an outcome regression for changes in STR market outcomes with a propensity score model for treated-cohort membership. The propensity score is used to reweight untreated zip codes so that the comparison group resembles Boston in terms of observed covariates. The resulting estimator is doubly robust in the sense that it is consistent if either the outcome regression model or the propensity score model is correctly specified.

The event study results indicate a substantial and statistically significant reduction in STR supply following enforcement of Boston's regulation (Figure 1). Across specifications, the treatment effect amounts to approximately 55% for total STR listings. When disaggregated by listing type, the decline is estimated at 48% for entire homes managed by profiles with a single entire home and 58% for entire homes managed by profiles with multiple entire homes. These findings suggest that the regulation reduced supply across both occasional and professional segments. However, results indicate an attenuation of the treatment effect for multi-listing entire-home profiles toward the end of the sample period, with point estimates moving closer to zero. This attenuation suggests non-compliance among professional operators, consistent with strategic responses or enforcement challenges.

To move beyond aggregate supply effects, we examine compliance and rule evasion patterns. Using the license registry and the final AirDNA sample, we cross-reference STR listings with registered licenses. Forensic analysis of the largest providers reveals high levels of non-compliance among top STR operators. Patterns include duplicated license numbers used across multiple listings, invalid registrations, and strategic use of regulatory exemptions - particularly those that are difficult to verify administratively. These listings are often embedded within complex ownership and management structures, including networks of financial entities, co-hosting arrangements, and multiple host profiles. Such arrangements complicate enforcement and diffuse accountability. These findings suggest that while overall supply declined, significant non-compliance persists among high-volume operators.

To contextualize these findings, we conducted semi-structured interviews with licensed STR operators and city officials. Interviews with compliant hosts indicate that, for those operating within permitted categories, the administrative burden of regulation is relatively low. Many hosts described renewal and tax processes as straightforward and reported minimal direct interaction with enforcement authorities. At the same time, interviews reveal widespread perceptions of uneven treatment and weak enforcement. Compliant hosts frequently expressed the belief that

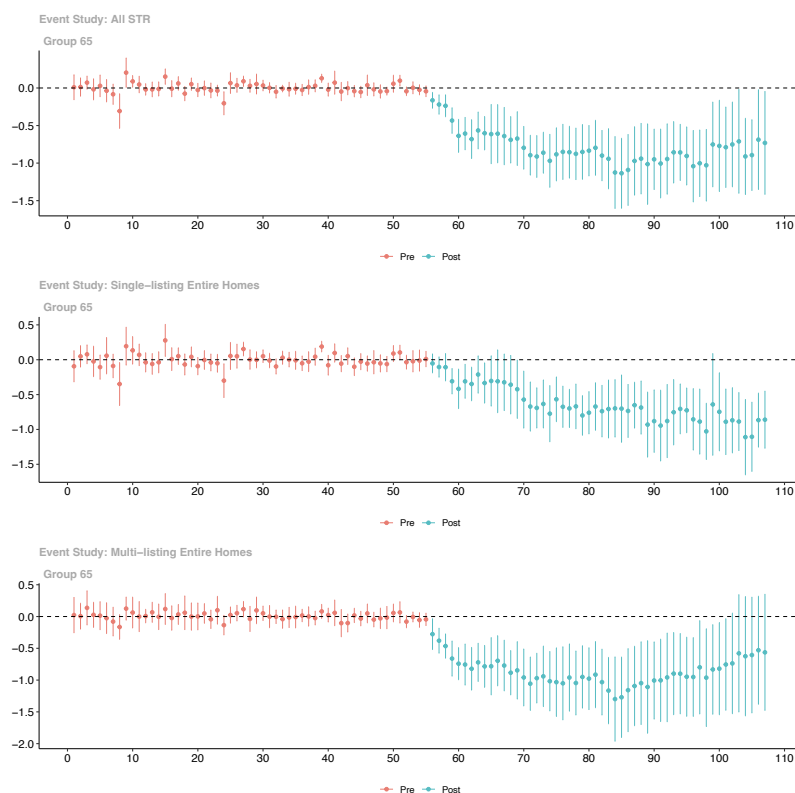
larger operators continue to violate the rules with limited consequences. This perception aligns with our forensic findings and with reported enforcement constraints.

Interviews with city officials highlight several structural challenges. Enforcement relies on a combination of platform data portals, third-party monitoring software, and complaint-driven investigations. However, staffing shortages, limited inspection capacity, and low fine levels constrain deterrence. In particular, fines are often modest relative to STR profitability, reducing their effectiveness as a sanction. Officials also described difficulties verifying certain exemptions and proving non-residency, especially when hosts provide formal documentation.

By combining quasi-experimental estimation, administrative cross-referencing, forensic analysis, and qualitative interviews, this study demonstrates the value of a mixed-methods approach to STR regulation. Aggregate listing reductions alone provide an incomplete picture; understanding enforcement dynamics and host behavior is essential for evaluating policy effectiveness.

The study concludes with policy recommendations aimed at strengthening license verification systems, increasing fine levels relative to profitability, expanding enforcement capacity, and reducing ambiguities in exemption categories. More broadly, our results underscore that the success of STR regulation depends not only on formal rule design but also on enforceability, administrative resources, and the strategic behavior of market participants.

Figure 1. Event Study for various STR supply metrics in Boston



## References

Callaway, B., & Sant'Anna, P. H. (2021). Difference-in-differences with multiple time periods. *Journal of econometrics*, 225(2), 200-230.