

# Memorandum



CITY OF DALLAS

DATE November 10, 2022

TO Honorable Mayor and Members of the City Council

SUBJECT **Short Term Rental Impact Analysis Update**

In May 2021, the Office of Data Analytics and Business Intelligence (DBI) published [Short-Term Rental Data Analysis: An Analysis of the Impact of Short-Term Rental Properties in the City of Dallas](#). The City Manager's Office requested DBI to update the first impact analysis which reviews the impact of nuisance calls from 311 and 911. The update (Appendix B) is attached to this memorandum. Findings from the updated analysis are highlighted below.

The results presented and Appendix B assume that every call from an address was in response to a problem at that same address and not misreported. It further assumes that the property in question was being rented out as a Short-Term Rental (STR) at the time of the call. There is no data available to verify either of these assumptions, so we have intentionally assumed maximum impact. **We know we are providing an overestimate and urge caution with any interpretation or conclusion.**

## Key Findings

- The findings from the updated analysis were consistent with the original findings.
- Over 88 percent of STRs generated zero 311 or 911 calls.
- On average, STRs had one more 311 and 911 call associated with their addresses than non-STR properties. In this updated analysis a total of 2,628 properties were considered STRs. Of those, 1,439 are active and registered and 1,189 properties are possible STRs.
- STR properties represent less than one percent (0.89%) of the City's total residential properties.
- There was a total of 57,233 nuisance calls used in the analysis, 836 of which were attributed to STR properties.
- There were 123 (4.6%) STR Properties that had 2 or more 311 or 911 calls.

In addition to the updated analysis, DBI has also created a public-facing application to explore the number and locations of nuisance calls - [STR and Nuisance Calls \(311 and 911\) Zoning Dashboard](#).

311 call types used for this analysis mirror the analysis and include: a) Parking violation reported, b) 24-Hour parking violation, c) Litter removal request, d) Chronic noise

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complaint, e) Sanitation litter cans, and f) STR complaint. 911 call types used for this analysis include a) Loud music disturbances and b) Parking violations.

As a reminder, this analysis assumes that every call from an address was in response to an issue at the same address, and that that property was in use as an STR at the time. We are aware that we are providing an overestimate and urge caution with any interpretation.

Should you have any questions or concerns, please contact me at [Brita.Andercheck@Dallas.gov](mailto:Brita.Andercheck@Dallas.gov).



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Attachments: Appendix A and Appendix B

## Short-Term Rental Data Analysis: An Analysis of the Impact of Short-Term Rental Properties in the City of Dallas

**Short-Term Rental Data Analysis:  
An Analysis of the Impact of Short-Term Rental Properties in the City of Dallas**

*The following document is a data analysis white paper prepared by the Office of Data Analytics and Business Intelligence at the City of Dallas published May 3, 2021.*



**Abstract**

*The purpose of this white paper is to provide a detailed walk-through of the analyses and findings undertaken to explore what, if any, relationship exists between Short-Term Rentals (STRs) and impacts on the community. Using data from the City's 311 and 911 systems, as well as data from Dallas, Collin, and Denton Counties' Central Appraisal Districts, we conducted both spatial analyses and comparisons between the levels of 311 and 911 calls to see if STRs differed from non-STRs. Our findings indicate that Short-Term Rentals have limited measurable impact on the surrounding neighborhoods.*

**Executive Summary**

The analysis below illustrates that Short-Term Rentals have a limited measurable impact on neighboring communities. Short-Term Rentals constitute less than half of one percent (0.42%) of the total housing stock in the City of Dallas, and there is no evidence in the data that STRs have a city-wide impact. This is not to take away from the experience of neighbors who live next to a problematic STR. However, the analysis shows that those experiences are outliers and not generalizable to STRs throughout the city.

- Over 90 percent of STRs have zero 311 or 911 calls associated with their address.
- STRs have more 311 and 911 calls associated with their addresses than non-STRs. However, it is difficult to argue that this difference is meaningful. The observed difference constitutes about one more call per year.<sup>1</sup>
- On average, properties in Dallas are showing strong growth in taxable values. Property values have increased by at least 30 percent between 2016 and 2020. STR's themselves are appreciating in taxable value, with an average increase in property value of 40 percent between 2016 and 2020. This is more than the average for the city of Dallas.
- 50 percent of the ownership of STRs appear to be corporate entities. Only 5.9 percent of owners appear to own more than one STR and 35 percent of STR properties have a homestead exemption claimed on the property.
- Less than one percent (0.42%) of the City's total residences are STRs.

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<sup>1</sup> The above result is predicated on the assumption that every call to that address is in response to a problem at that address. It further assumes that the property in question was being rented out as an STR at the time of the call. The data does not allow us to verify this. Our analysis is conservative, in that we have assumed maximum impact. We know we are providing an overestimate and urge caution with any interpretation.

## Background & Introduction

In October 2020, the Quality of Life Committee formed a Task Force to recommend regulations to mitigate the impact of Short-Term Rentals on the surrounding communities. Community members and neighbors brought their concerns to members of the City Council. Responding to these concerns, the City Manager's Office asked the Office of Data Analytics and Business Intelligence to conduct a data analysis of the potential impact of STRs on their neighborhoods. To address these questions, staff developed several analyses that explored the impact Short-Term Rentals have on the surrounding communities.

We conducted four primary Impact Analyses to help explore this effect:

Impact Analysis 1: The first is an analysis of 311 and 911 Complaints. We tested the assertion that Short-Term Rental Properties create more 311 and 911 Complaints than non-Short-Term Rental Residential Properties.

Impact Analysis 2: The second analysis is a Property Tax Appraisal Values Analysis. We tested the assertion that STRs reduce taxable property values in neighborhoods.

Impact Analysis 3: The third analysis explored the idea that Short-Term Rental properties are primarily owned by investors.

Impact Analysis 4: And the final impact analysis explored whether or not the presence of Short-Term Rentals impacts the affordable housing stock in the City of Dallas.

## Data & Methods

Data for this analysis comes from multiple sources and was compiled and analyzed in both Esri GIS<sup>2</sup> and R<sup>3</sup>. The data from 911 calls came from the Response Master Incident table of the City's Computer Aided Dispatch (CAD) system. The 311 Service Call data came from Customer Relationship Management (CRM) Service Requests data (CASE2 table). The short-term rental data was extracted from MUNIRevs<sup>4</sup> – a vendor that the City employs to identify and register STR properties. The STR data was extracted on March 10, 2021.

The data for this study can be downloaded via the City's Open Data Portal.<sup>5</sup> Data available on the Open Data Portal includes the 911 and 311 data. Dallas, Collin, and Denton County Central Appraisal District data is publicly available both through the respective County's appraisal district websites and through the City of Dallas GIS portal.<sup>6</sup> The Active STR dataset will be made available through the City's Open Record Request Process. The list of "Possible STRs" contains Personal

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<sup>2</sup> Esri, Redlands, CA <https://www.esri.com/en-us/home>

<sup>3</sup> The R Project for Statistical Computing <https://www.r-project.org/about.html>

<sup>4</sup> MUNIRevs <https://munirevs.com>

<sup>5</sup> City of Dallas Open Data Portal <https://www.dallasopendata.com>

<sup>6</sup> City of Dallas GIS Data <https://gis.dallascityhall.com/shapefileDownload.aspx>

Identifying Information of residents who are not registered businesses with the City. Therefore, that data is not publicly available.

We can only analyze the data we have, and we do not have the ideal data to analyze these questions. To account for this, we have been very conservative in our analysis. We have assumed maximum impact of STRs on their surrounding communities by assuming every call is related to an STR and that the call occurred while the address was in use as an STR. This is most certainly not the case, but the data we have does not give us the ability to discern that. Therefore, we have knowingly overestimated the impact of STRs on their neighborhoods. This is the primary data limitation in our analysis, and where there are other limitations, they are discussed within each respective analysis.

## **Variables**

### *311 service calls*

We identified several types of 311 Service Calls as potential “nuisance” calls to explore in this analysis. These nuisance calls were identified because they were potential impacts of an STR in a neighborhood. 311 service requests can either be called into the 311 Service Center or entered online or via the 311 smart phone application. To prepare those calls for analysis, we removed duplicate Service Requests. Duplicate service requests are instances where the same complaint is entered multiple times.

### *Parking violation reported*

This Service Request Type is used “to report parking violations on a public street”.<sup>7</sup> It appeared in the data as Subject “Parking - Report a Violation - TRN” (Version Code “PWTROV”). This request can be called into the 311 Service Center, entered online or on the application. In the CRM Knowledge Article on this Service Request type, it states “Use block numbers when entering vehicle location.”<sup>8</sup> The common procedure is not to use the exact property address at which the vehicle is parked, but rather the “hundred block” of the street in question. E.g., a vehicle parked in front of 1428 MAIN ST would be entered as 1400 MAIN ST.

### *24-hour parking violation*

This service request type is used “to report a vehicle that has been parked on the street over 24 hours without being moved”.<sup>9</sup> It differs from a “parking violation reported” in that it is assigned to Police, rather than Transportation Parking Enforcement. It appears in the data as Subject “24 Hour Parking Violation - DPD” (Version Code “DPD24HR”). This service request type can be called into the 311 Call Center, entered via the public application or proactively entered by City staff members directly into CRM.

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<sup>7</sup> CRM Knowledge Article 000001851

<sup>8</sup> Ibid.

<sup>9</sup> CRM Knowledge Article 000001068; City Code reference: Chapter 28 Motor Vehicles & Traffic, SEC. 28-84

### *Litter removal request*

This Service Request Type is used "to report code concerns and or violations (such as ... bulky trash, litter, illegal dumping, ..., etc)."<sup>10</sup> It appears in the data as Subject "Litter Removal Request - CCS" (Version Code "LITREMOVAL"). It appears primarily as a Proactive (staff initiated) service request that is internally created to have crews clean a confirmed violation, whether initially reported by a resident or code inspector.

### *Chronic noise complaint*

This Service Request Type is used " to report noise complaints of a chronic or recurring nature."<sup>11</sup> It appears in the data as Subject "Chronic Noise Complaint - DPD" (Version Code "DPDNOISE"). This request can be called into the 311 Service Center, entered online, or using the application.

### *Sanitation litter cans*

This Service Request Type pertains to Litter Cans, which are "the metal containers found in parks, on the median at a stoplight, or on the corner in front of a business."<sup>12</sup> It appears in the data as Subject "Sanitation Litter Cans - SAN" (Version Code "LITTERCA"). This request can be called in to the 311 Service Center, entered online or using the application.

### *911 service calls*

Two types of 911 Calls were identified as potential "nuisance" calls to explore in this analysis.

### *Loud music disturbance*

A loud music disturbance call is referred to as Problem "6M - Loud Music Disturbance." It is considered a Priority 4 "Non-Critical" call.

### *Parking violation*

The other 911 nuisance type is the Problem "23 - Parking Violation." It is considered a Priority 4 "Non- Critical" call.

For the purposes of this analysis, we cast a wide net and incorporated calls that could possibly be related to nuisance or negative experiences of neighbors from STRs. At this time, the City does not have a Service Request type that specifically identifies the problem being reported as tied to a Short-Term Rental.

### *Short-Term Rental*

A Short-Term Rental or STR is defined as a residential property that is available to rent out on a short-term basis, similar to a hotel. This data comes from MUNIRevs, the City's Vendor that identifies potential STR properties and provides tracking and fee payment services for registered STR properties. Properties are labeled in two main categories. "Active Registered" means that the property registration with the City is active and they are paying their Hotel Occupancy Taxes. The other category is "Possible Short-Term Rental" these are properties that MUNIRevs has identified

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<sup>10</sup> CRM Knowledge Article 000001805

<sup>11</sup> CRM Knowledge Article 000001847

<sup>12</sup> CRM Knowledge Article 000001742

as possibly being a Short-Term Rental, but they are not registered with the City, not paying Hotel Occupancy Taxes and their status as a Short-Term Rental has not been confirmed.

*Descriptive Statistics*

Table 1 shows the frequencies of 911 and 311 calls for service from March 2019 to March 2021. The most numerous 311 Call Type in this data is Parking violation report with 27,121 reported incidents. Loud music disturbance is the most frequent 911 call type, with 46,530 incidents. These are all the calls in the categories below in the entire city during this time.

Table 1: Frequency of 911 and 311 Calls by Type  
March 2019-March 2021 in the City of Dallas

<i>Variable</i>	<i>Count</i>
311 Service Call Type	54,000
Parking violation reported	27,121
24-hour parking violation	17,620
Litter removal request	5,472
Chronic noise complaint	3,621
Sanitation litter cans	166
Distinct Address Count <sup>a</sup>	34,617
911 Call Type	50,749
Loud music disturbance	46,530
Parking violation	4,219
Distinct Address Count <sup>a</sup>	27,344
<i>n</i> (total calls)	104,749

*Source:* 311 Service call data comes from the CRM Case2 table.

911 Call data comes from the Computer Aided Dispatch (CAD) system Response Master Incident table.

<sup>a</sup> The number of unique addresses for all calls in the data set.

The number of Short-Term Rentals in the city of Dallas can be seen in Table 2. The term “Active and Registered” refers to properties that are registered with the City and are paying Hotel Occupancy Taxes. As of March 10, 2021, there were 756 Active and Registered Short-Term Rentals. “Possible Short-Term Rental” refers to properties that MUNIREvs has identified as possibly being a Short-Term Rental, but they are not registered with the City, not paying Hotel Occupancy Taxes and their status as a Short-Term Rental has not been confirmed. As of March 10, 2021, there were 1,473 “Possible” Short-Term Rentals.



Table 2: Short-Term Rental Properties as of March 2021

<i>Variable</i>	<i>Count</i>
Short-Term Rental Properties	
Active & Registered	756
Possible Short-Term Rental	1,473
<i>n</i> (total number of STRs)	2,229

*Source:* Short-Term Rental comes from MUNIRevs and is maintained by the City Controller.  
*Data was extracted on March 10, 2021.*

### *Analytical Strategy and Results*

To prepare the data for analysis a few key things had to be done. The first challenge was to geolocate each Short-Term Rental. Longitude and Latitude (x,y) coordinates were added to each address so that Short-Term Rentals could be plotted on the map as a spatial feature for further spatial analysis. Using the City’s authoritative composite address locator, the STR dataset was geocoded and placed on a map as short-term rental locations. The locator index used attempts to match the address to a tax account address, so that the resulting location intersects the corresponding tax parcel and can be associated with a tax appraisal account. Where this was not possible, we geocoded the location to the street using an approximate location. There were three addresses that did not match with the City’s address locator and these were excluded from analysis.

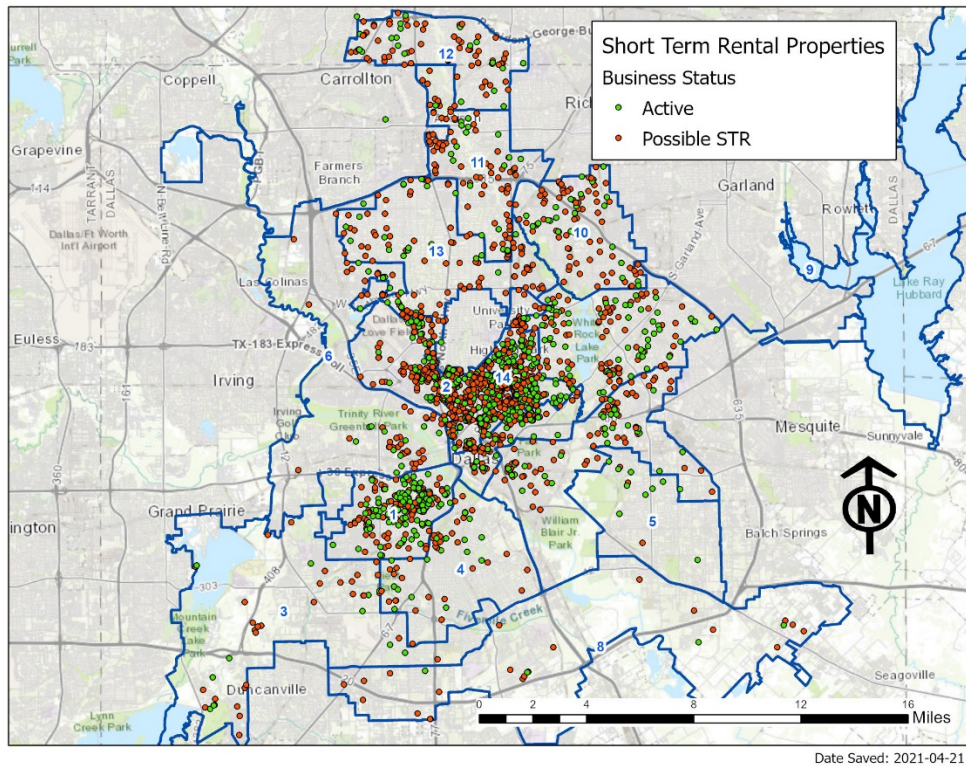


Figure 1: Short Term Rental Locations with Council Districts<sup>13</sup>

### Impact Analysis 1: 311 and 911 Complaints

The first impact analysis question was to determine if Short-Term Rentals (STRs) generate more 311 and/or 911 complaints than non-Short-Term Rental (non-STR) properties. To answer this question, we extracted records of 311 and 911 nuisance calls made to the City of Dallas between March 2019 – March 2021 (See Table 1).

We matched STR property addresses collected from MUNIREvs with addresses reported in the 311 and 911 call tables to identify calls that were associated with STR addresses. All the remaining 311 and 911 addresses were classified as non-STRs. Thereafter, residential addresses were collected for the entire City of Dallas (*source*: Dallas County, Collin County, and Denton County appraisal districts). These residential addresses were further matched with the previously identified STR and non-STR addresses to only focus this analysis on residential addresses and eliminate commercial addresses.

<sup>13</sup> For exact numbers of STRs per Council District, please see Appendix 1. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. (Texas Government Code § 2051.102)

Table 3: Descriptive Statistics for 911 and 311 Calls for STRs and non-STRs

Call Type	Property Type	Average Calls per		Standard Deviation	Min	Max	Total Calls	Total Distinct Properties(N)
		property over one year	property over one year					
311	STR	2.17	2.25	1	16	276	121	
	non-STR	1.53	1.62	1	57	15,540	10,182	
911	STR	3.15	5.06	1	35	413	125	
	non-STR	1.90	2.74	1	55	12,199	6,406	

Source: 311 Service call data comes from the CRM Case2 table. 911 Call data comes from the Computer Aided Dispatch (CAD) system Response Master Incident table.

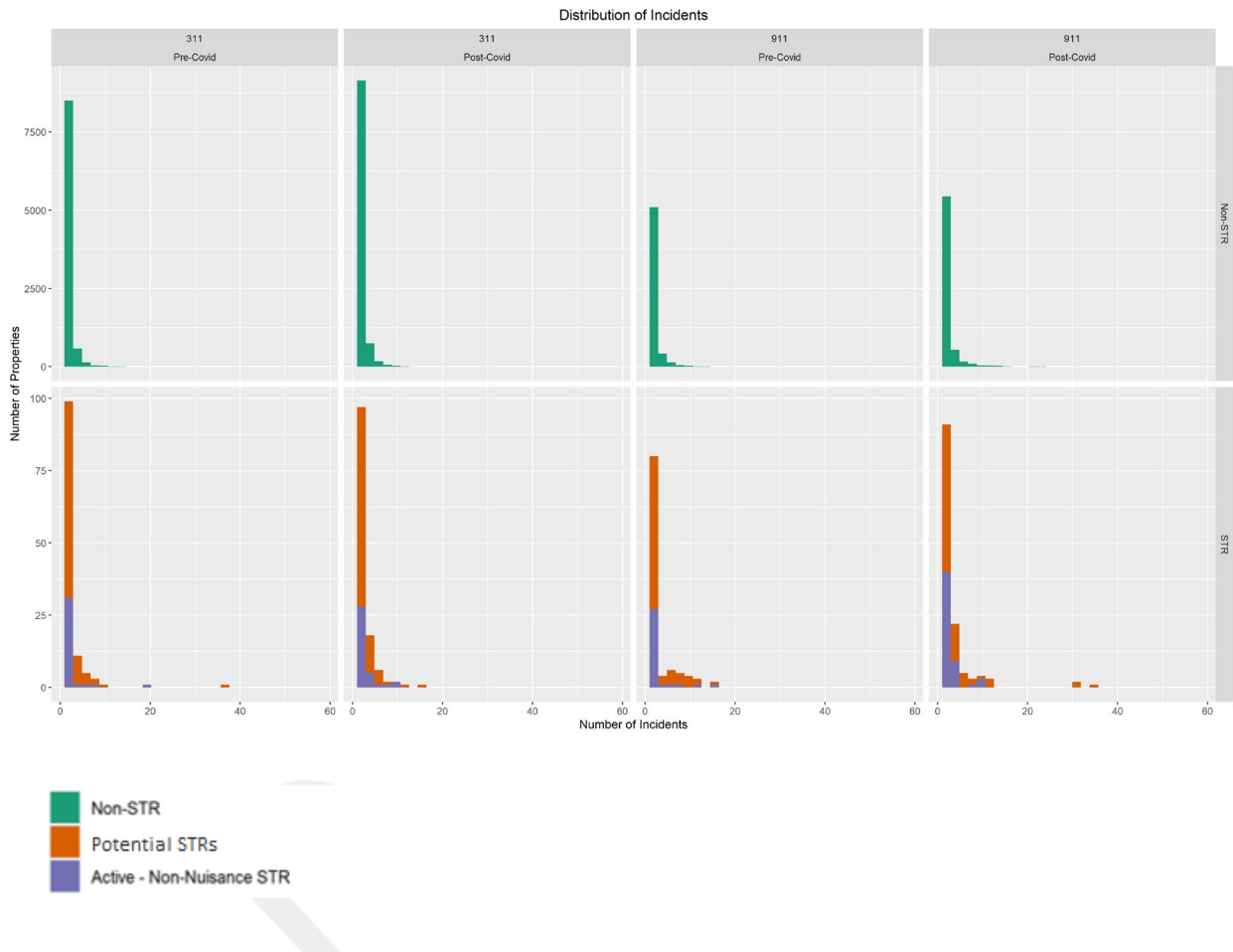
Table 3 gives a statistical summary of all the addresses and calls that we analyzed to test if the number of 311 and 911 calls made from STR properties are higher than calls made from non-STR properties. Table 4 highlights the observed difference between the number of 311 and 911 calls. On average, STR properties generated 0.64 more 311 calls than non-STR properties between March 2020 – March 2021. STR properties generated 1.25 more 911 calls than the non-STR properties between March 2020 – March 2021. Although STR properties made slightly more calls than non-STR properties, it is important to point out that the difference was small.

Table 4: Observed Differences for 911 and 311 Call for STRs and non-STRs

Call Type	STR Average Calls per property over 1 year	non-STR Average Calls per property over 1 year	Observed Difference
311	2.17	1.53	0.65
911	3.15	1.90	1.25

Source: 311 Service call data comes from the CRM Case2 table. 911 Call data comes from the Computer Aided Dispatch (CAD) system Response Master Incident table. Data included is from March 2020 to March 2021.

Figure 2: Distribution of Incident Counts



As illustrated in Figure 2 above, this dataset was highly right-skewed: that is, the majority of residential properties, both STRs and non-STRs, had one or fewer 311 and 911 service call. There were a few properties that were associated with more than one call. In the case of STR properties, a handful of them were associated with several calls and could be considered outlier- or out of the ordinary STR properties- in terms of their call frequency. Overall, looking at the y-axis of the distribution graphs, it is evident that the ratio of calls generated from STR properties to calls generated from non-STR properties was very small (0.018 for 311 calls and 0.034 for 911 calls).

Impact Analysis 1 shows that STRs had approximately one more nuisance call per year than non-STRs. Over 90 percent of STRs generated no calls for service.

## Impact Analysis 2: Property Tax Appraisal Value

The second impact analysis question was to determine if Short-Term Rental properties negatively impact the property tax appraisal of neighboring properties. We collected data on the value change for all "neighborhoods" (real estate zones used by the appraisal districts for comparable value analysis) that contained at least one STR to see how change from 2016 certified tax value compared to 2020 certified tax value for STR and non-STR properties in the same "neighborhood".<sup>14</sup>

Using residential accounts included in both the 2016 and 2020 certified tax rolls for Dallas, limited to only accounts that participate in real estate zones<sup>15</sup> assigned by the appraisal districts, we analyzed changes in taxable value, comparing the percentage change from 2016 to 2020. Results were aggregated by STR Status - Active (Registered with City), non-STR and Possible STR (identified in MUNIRevs as potentially an STR property).

Table 5: Change in Residential Taxable Value from 2016 to 2020 by STR Status

STR Status	Sum of Tax Value		Frequency	Percent Change
	2016	2020		
Active	\$151,504,140	\$225,699,998	562	48.97%
Not STR	\$21,892,102,320	\$29,878,891,400	129,702	36.48%
Possible STR	\$482,038,326	\$654,628,707	873	35.80%
<b>Grand Total</b>	<b>\$22,525,644,786</b>	<b>\$30,759,220,105</b>	<b>131,137</b>	<b>36.55%</b>

Source: MuniRevs; Dallas, Collin, Denton property tax appraisal districts, certified tax rolls for 2016 and 2020

In aggregate, taxable values for Active STR properties seemed to have increased at a higher rate than non-STR or Possible STR and higher than the overall sample. The non-STR properties in the same zones seemed to have experienced a strong overall increase in taxable value from 2016 to 2020, if lagging behind the Active STR properties in this respect. This might be explained by Active STR property owners having made investments in property improvements to make them more attractive options for potential renters.

Table 6: Percent of STR Properties with Homestead Exemption

<i>STR Status</i>	<i>Frequency</i>	<i>Percentage</i>
Active STR with homestead exemption	316	14.18%
Possible STR with homestead exemption	462	20.73%
All STR with homestead exemption	778	34.90%
<i>n (All STR Properties)</i>	2,229	100.00%

Source: MuniRevs, March 2021; Dallas, Denton, and Collin appraisal districts, 2020 certified roll

<sup>14</sup> Using code assigned by appraisal district, which is more related to subdivision and real estate qualities and has nothing to do with the commonly understood meaning of "neighborhood".

Another factor could be the homestead exemptions that lower taxable value (and tax costs) for residential property owners. Table 6 shows 778 out of the 2,229 STR properties had a Homestead Exemption in the 2020 certified tax roll. With almost 35% of STR having a Homestead Exemption in 2020, it could lower the impact of this as a factor of increased taxable value for STR as a whole. On the other hand, Active STR - the category with the highest increase in taxable value - only makes up 14.18% of overall STR, so the impact of Homestead Exemptions as a factor contributing to growth in tax value should at least be considered.<sup>16</sup>

There are many factors involved in a home’s taxable value, but STRs and their surrounding neighborhoods are increasing along with the rest of the city of Dallas.

**Impact Analysis 3: Investor Owned**

The third impact analysis question was to determine if Short-Term Rentals were primarily owned by investors. We cannot determine the financial motivation for individual property owners but having a corporation or partnership might indicate "investment activity".<sup>17</sup> In MUNIRevs, "Business Name" is the field that identifies the owner. We searched this field for the following abbreviations: LLC, FLP, INC, LP, INVEST, CORP, and LTD.

Of the 2,229 STR properties tracked in MUNIRevs, 1,123 included these patterns in the Business Name field. This does not definitively indicate these are "investors" or that the others are not "investors". This is summarized in Table 7, below.

Table 7: Investor Business Name Indicators

<i>Variable</i>	<i>Frequency</i>	<i>Percentage</i>
Owner name indicates business entity	1,123	50.38%
All other Owner names	1,106	49.62%
<i>n</i> (All STR properties)	2,229	100.00%

*Source:* MUNIRevs, March 2021; Business Names containing one of the following string patterns: LLC, FLP, INC, LP, INVEST, CORP, and LTD

Another potential indicator of "investment activity" could be an owner with multiple STR properties. There are 2,008 distinct Business Names (owners) in MUNIRevs, of which 118 (5.88%) own more than one property. This is summarized in Table 8, below.

<sup>16</sup> For example, it is outside the scope of this paper, but potentially, some of the STR might have had a Homestead Exemption in 2016 and lost it before the 2020 certified roll. In those cases, taxable value would increase by the amount of the exemption. It would be a major research project by itself to analyze all the residential STR that potentially could have the exemption and track the individual history of each.

<sup>17</sup> It is beyond the scope of this document to cover the factors involved in the various forms of "investment", such as primary business or former resident who prefers to rent rather than sell the property.

Table 8: Business Names with Multiple Properties

<i>Variable</i>	<i>Frequency</i>	<i>Percentage</i>
Two or more properties	118	5.88%
One property	1,890	94.12%
<i>n</i> (all Distinct Business Names)	2,008	100.00%

Source: MuniRevs, March 2021; counts of distinct Business Names

It should be noted that owners can use multiple Business Names for various reasons (tax filing, etc.), so there could be more owners with multiple holdings. Although it is very difficult to determine if these STRs are owned by “investors,” we do know that about 50 percent of STRs have a “business related abbreviation” such as LLC in the title. However, 35 percent of STRs do have Homestead exemptions and less than 6 percent of STR owners have more than one STR.

#### Impact Analysis 4: Affordable Housing Stock

The final impact analysis question was to determine if Short-Term Rentals reduced the affordable housing stock in Dallas.

It is worth noting that the 2,229 identified Active or Possible STR represent less than one-half of one percent (0.42%) of the total residential units in Dallas, as shown in Table 9, below. Additionally, the Housing Department has estimated 104,153 affordable units across the city that rent for less than \$900/month. This includes government assisted units and naturally occurring affordable units. If the STRs were part of this block they represent 2%. Further, an estimated 325,988 units rent for up to \$1,500/month citywide and the STR block represents 0.7%. Thus, it seems unlikely to have a meaningful impact on the overall availability of housing at any price point.

Table 9: Residential Unit Counts in Dallas by Property Class

<i>Variable</i>	<i>All Residential</i>		<i>Active STR</i>		<i>Possible STR</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Single Family Detached	220,142	41.49%	441	0.08%	545	0.10%
Single Family Attached	48,678	9.17%	121	0.02%	333	0.06%
Multi-Family Residences	261,792	49.34%	75	0.01%	370	0.07%
<i>n</i> (all residential units)	530,612	100.00%	637	0.12%	1248	0.24%
STR properties	2,229	0.42%	756	0.14%	1473	0.28%

Source: MuniRevs, March 2021; Dallas, Denton, and Collin appraisal districts, 2020 certified roll; Community Prosecution/City Attorney’s Office. All percentages are % of all residential units (n).

The availability of housing at any price point requires access to privately owned real estate data, known as the Multiple Listing System (MLS). Until the data that includes sales prices and availability is accessible, the best that can be offered is a breakdown of the approximate number of residential units in the City by property classification.

## Conclusion

Our findings indicate that Short-Term Rental properties, at the aggregate level, do not have a negative impact on the surrounding neighborhoods. The data shows that there are a few problematic properties; these are outliers. STR properties are almost indiscernible in the data from non-STR residential properties.

In Impact Analysis 1, we tested the assertion that Short-Term Rental Properties create more 311 and 911 Complaints than non-Short-Term Rental Residential Properties. While 90% of STRs have zero 311 or 911 nuisance calls, we do see that for STRs that do generate calls, they produce about one more call per year than non-STR properties. The results reveal a discernible difference of 0.65 more 311 calls per year and 1.25 more 911 calls per year. The 911 calls in this analysis are only nuisance calls for loud music and parking violations and do not include emergency calls.

The second analysis explored whether the presence of a neighboring STR reduced taxable property values in a community. In general, properties in Dallas are showing strong growth in taxable values. Property values in areas with STRs have increased by at least 30 percent between 2016 and 2020. STR's themselves are appreciating in taxable value, with an average increase in property value of 40 percent between 2016 and 2020. There are many factors influencing property values, but they are increasing, not decreasing.

Impact Analysis 3 explored the idea that Short-Term Rental properties are primarily owned by investors. Just over 50 percent of the ownership of STR's appears to be some sort of corporate entities. Less than 6 percent of owners appear to own more than one STR. Almost 35 percent of STR properties have a homestead exemption claimed on the property, which may impact the growth of tax values.

The final impact analysis is exploring whether the presence of Short-Term Rentals impacts the affordable housing stock in the City of Dallas. Less than one percent (0.42%) of the City's total stock of residences are STRs; it is very hard to make an argument that such a miniscule portion of the housing stock is influencing the number of affordable housing units in the City of Dallas.

There were considerable data limitations in this study. The data we have does not clearly tell us that the 311 and 911 calls that we addressed-matched to residences, were valid calls, properly associated with that address, and that the property was being used as an STR during that time period. For example, a parking violation may have been attributed to an address, such as 123 Main Street, but the vehicle in violation is actually from 125 Main. Even if the parking violation is attributed to 123 Main Street and the vehicle in violation is from 123 Main Street, we have no way to verify that 123 Main Street was actually in use as an STR at the time. It is certain that we are overestimating the number of nuisance calls associated with STRs. For that reason, we do encourage caution in the interpretation of those results. The impact of STR is most likely much less than described, and it is almost a mathematical impossibility for it to be worse.



In conclusion, the data analysis demonstrates that Short-Term Rental properties do not have a negative impact on the surrounding neighborhoods and communities. The data shows that there are a few problematic properties, and these are outliers. STR properties are almost indiscernible in the data from non-STR residential properties. Over 90% of STRs generate zero calls for service.

## APPENDIX

Appendix Table 1 shows the distribution of STRs by Council Districts. District 14 has the maximum number of Active and Possible STRs followed by District 2. Comparatively, District 1 ranks 3<sup>rd</sup> for the number of Active STRs.

Appendix 1 Table: STR By Council Districts - Registration Status With Percent of Totals

<i>Variable</i>						
Council	Active STR	District % of All Active STR	Possible STR	District % of All Possible STR	STR Count	District % of All STR
1	122	16.14%	126	8.57%	248	11.14%
2	146	19.31%	293	19.93%	439	19.72%
3	13	1.72%	30	2.04%	43	1.93%
4	19	2.51%	36	2.45%	55	2.47%
5	10	1.32%	3	0.20%	13	0.58%
6	20	2.65%	42	2.86%	62	2.79%
7	33	4.37%	62	4.22%	95	4.27%
8	4	0.53%	21	1.43%	25	1.12%
9	65	8.60%	86	5.85%	151	6.78%
10	26	3.44%	74	5.03%	100	4.49%
11	22	2.91%	90	6.12%	112	5.03%
12	22	2.91%	69	4.69%	91	4.09%
13	39	5.16%	115	7.82%	154	6.92%
14	215	28.44%	423	28.78%	638	28.66%
<i>n</i>						
(Citywide Totals)	756	100.00%	1470	100.00%	2226	100.00%

Source: MUNIRevs, March 2021. 2,226 total records: 3 records do not have Council assignments because they are not in Dallas or could not be located (incomplete address information)

Appendix B  
Short-Term Rental Data Analysis Update (March 2021 to March 2022)

## **APPENDIX B**

### **Short-Term Rental Data Analysis Update (March 2021 to March 2022)**

#### **Executive Summary**

In May 2021, the Office of Data Analytics and Business Intelligence presented to the City Council an analysis of Short-Term Rental (STR) properties in the City of Dallas. The first impact analysis was to test the assertion that STR properties resulted in increased 311 and 911 complaints as compared to non-STR properties. The subsequent analysis (Appendix B) provides an update with the following findings.

- Over 88 percent of STRs generated zero 311 or 911 calls associated with their address.
- STRs exhibited on average more 311 and 911 calls associated with their addresses compared to non-STR properties. The observed difference constitutes about one more call per year.
- STR properties represent less than one percent (0.89%) of the City's total residential properties.

#### **Methods:**

##### ***Data Collection***

The data from 911 calls came from the Response Master Incident table of the City's Computer Aided Dispatch (CAD) system. The 311 Service Call data came from Customer Relationship Management (CRM) Service Requests data (CASE2 table).

As we considered which technique to use, it was decided that MUNIREvs, a third-party vendor that the City uses to identify and register STR properties would be used as the authoritative data source. This approach is preferred compared to techniques such as web scraping company platform data because STR platforms do not disclose addresses in their data, making confirmation of property locations unreliable. Additionally, MUNIREvs ensures the City is reporting on STR properties currently operating legally within the City's limits (i.e., registered and paying appropriate City taxes). STR account IDs were extracted from Cities appraisal data and matched based on the properties' parcel numbers. Those properties without an exact parcel match (17%) were matched using reported business addresses, parcel IDs, and/or unit numbers. The remaining addresses (2%) were spatially matched using ESRI ArcGIS spatial joining technique with the "closest" spatial match option as the joining method. The STR data was extracted on October 12, 2022.

##### ***Selection of Nuisance Call types***

Nuisance calls were identified because they represent the potential impacts of an STR in a neighborhood. The selection of nuisance call types was evaluated and selected based on recommendations of the STR Task Force, and to remain consistent with our initial analysis. The following definitions describe the selected 311 service requests identified as potential "nuisance" calls.

- STR Complaint: This service request type was newly generated after March 2021 and is used to "request to track and survey customers about possible issues regarding short-term rental/vacation properties."
- Parking violation reported: This service request type is used "to report parking violations on a public street".
- 24-hour parking violation: This service request type is used "to report a vehicle that has been parked on the street over 24 hours without being moved".

- Litter removal request: This Service Request Type is used "to report code concerns and or violations (such as bulky trash, litter, illegal dumping, etc.)."
- Chronic noise complaint: This Service Request Type is used " to report noise complaints of a chronic or recurring nature."
- Sanitation litter cans: This Service Request Type pertains to Litter Cans, which are "the metal containers found in parks, on the median at a stoplight, or on the corner in front of a business."

Additionally, staff identified two types of 911 calls as nuisance calls to explore in this analysis.

- Loud music disturbance: A loud music disturbance call is referred to as Problem "6M - Loud Music Disturbance." It is considered a Priority 4 "Non-Critical" call.
- Parking violation: The other 911 nuisance type is the Problem "23 - Parking Violation." It is considered a Priority 4 "Non-Critical" call.

### Descriptive Statistics

Table 1 shows the frequencies of 911 and 311 calls for service from March 2021 to March 2022. The most numerous 311 Call Type in this data is the parking violation report with 16,135 reported incidents. Loud music disturbance is the most frequent 911 call type, with 22,986 incidents. These are all the calls in the categories below in the entire city during this time.

Table 1: Frequency of 911 and 311 Calls by Type  
March 2021-March 2022 in the City of Dallas

<i>Variable</i>	<i>Count</i>
311 Service Call Type	31,974
Parking violation reported	16,135
24-hour parking violation	7,673
Litter removal request	5,828
Chronic noise complaint	2,123
Sanitation litter cans	149
STR Complaint	66
Distinct Address Count <sup>a</sup>	31,184
911 Call Type	25,259
Loud music disturbance	22,986
Parking violation	2,273
Distinct Address Count <sup>a</sup>	24,421
<b>Total calls (n)</b>	<b>57,233</b>

*Source: 311 service call data comes from the CRM Case2 table. 911 call data comes from the Computer Aided Dispatch (CAD) system Response Master Incident table.*

<sup>a</sup> *The number of unique addresses for all calls in the data set.*

The number of STRs in the City of Dallas can be seen in Table 2. The term "Active and Registered" refers to properties that are registered with the City and are paying Hotel Occupancy Taxes. As of October 12, 2022, there were 1,439 Active and Registered STRs. "Possible Short-Term Rental" refers to properties that MUNIREvs has identified as possibly being a Short-Term Rental, but they are not registered with the City, not paying Hotel Occupancy Taxes and their status as a STR has not been confirmed. As of October 12, 2022, there were 1,189 "Possible" STRs.

Table 2: Short-Term Rental Properties as of October 2022

Variable	Count
Short-Term Rental Properties	
Active & Registered	1,439
Possible Short-Term Rental	1,189
Total number of STRs (n)	2,628

Source: Short-Term Rental data comes from MUNIREvs and is maintained by the City Controller. Data was extracted on October 12, 2022.

**Analytical Strategy and Results**

To prepare the data for analysis a few key things had to be done. The first challenge was to geolocate each Short-Term Rental. Longitude and Latitude (x,y) coordinates were added to each address so that STRs could be plotted on the map as a spatial feature for further spatial analysis. Using the City’s authoritative composite address locator, the STR dataset was geocoded and placed on a map as STR locations. The locator index used attempts to match the address to a tax account address so that the resulting location intersects the corresponding tax parcel and can be associated with a tax appraisal account. Where this was not possible, staff geocoded the location to the street using an approximate location.

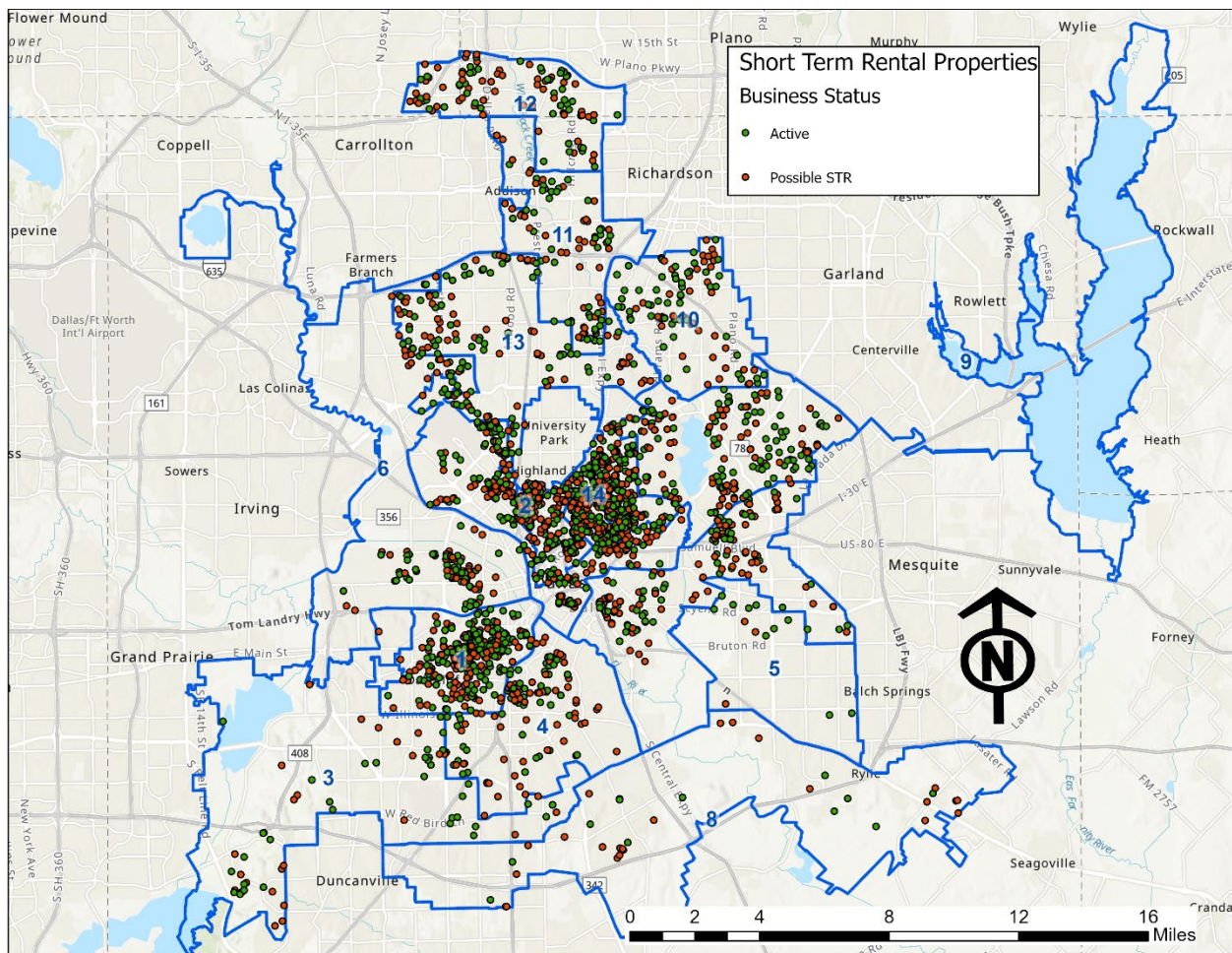


Figure 1: Short-Term Rental Locations with Council Districts

**Impact Analysis 1: 311 and 911 Complaints**

The first impact analysis question was to determine if STRs generate more 311 and/or 911 complaints than non-STR properties. To answer this question, staff extracted records of 311 and 911 nuisance calls made to the City of Dallas between March 2021 – March 2022 (See Table 1).

Staff matched STR property addresses collected from MUNIREvs with addresses reported in the 311 and 911 call tables to identify calls that associated with STR addresses. All the remaining 311 and 911 addresses were classified as non-STRs. Thereafter, staff collected residential addresses for the entire City of Dallas (source: Dallas County, Collin County, and Denton County appraisal districts). These residential addresses were further matched with the previously identified STR and non-STR addresses to only focus this analysis on residential addresses and eliminate commercial addresses.

Table 3: Descriptive Statistics for 911 and 311 Calls for STRs and non-STRs

Call Type	Property Type	Average Calls per Property Over One Year	Standard Deviation	Min	Max	Total Calls	Total Distinct Properties(N)
311	STR	2.07	2.25	1	13	352	170
	Non-STR	1.52	1.64	1	55	16,046	10,546
911	STR	3.12	4.84	1	33	484	155
	Non-STR	1.89	3.10	1	67	10,955	5,798

Source: 311 Service call data comes from the CRM Case2 table. 911 call data comes from the Computer Aided Dispatch (CAD) system Response Master Incident table.

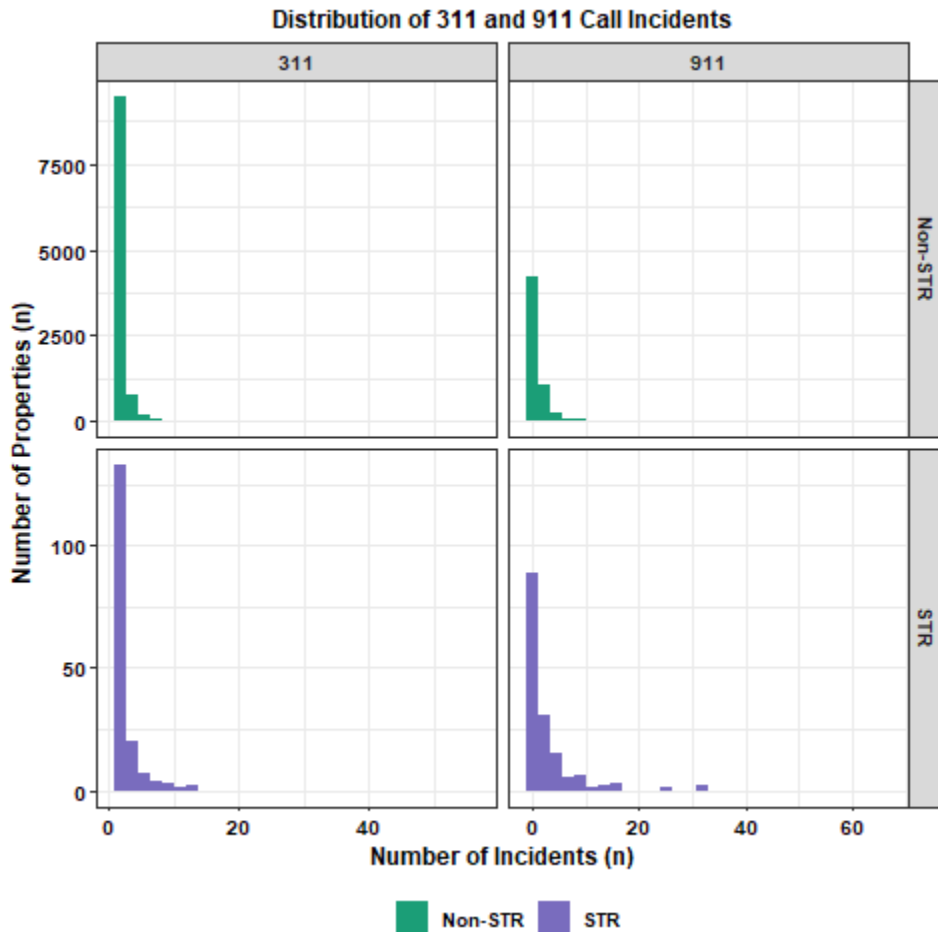
Table 3 gives a statistical summary of all the addresses and calls that staff analyzed to test if the number of 311 and 911 calls made from STR properties are higher than calls made from non-STR properties. Table 4 highlights the observed difference between the number of 311 and 911 calls. On average, STR properties generated approximately 0.55 more 311 calls than non-STR properties between March 2021 – March 2022. This means that, on average, STR properties generated about 1 more service request call to 311 than non-STR properties. STR properties generated 1.23 more 911 calls than non-STR properties between March 2021 – March 2022. This means that, on average, STR properties generated about 1 to 2 more calls to 911 regarding nuisance complaints. Although on average STR properties generated slightly more nuisance calls than non-STR properties, the volume of these calls represented just 3% of the total number of nuisance calls received by the 311 and 911 call centers over the analysis period. In general, the 311 call center receives about 800,000 calls for service per year. Alternatively, 911 receives about 1,200,000 calls per year. Out of the total call volume handled in one calendar year, STR properties represent less than one percent (0.04%) of the total calls.

Table 4: Observed Differences for 911 and 311 Calls for STRs and non-STRs

Call Type	STR Average Calls per Property Over One Year	Non-STR Average calls per Property Over One Year	Observed Difference
311	2.07	1.52	0.55
911	3.12	1.89	1.23

Source: 311 Service call data comes from the CRM Case2 table. 911 call data comes from the Computer Aided Dispatch (CAD) system Response Master Incident table. The data included is from March 2021 to March 2022.

Figure 2: Distribution of Incident Counts



As illustrated in Figure 2 above, this dataset was highly right-skewed: that is, most residential properties, both STRs and non-STRs, had one or fewer 311 and 911 service calls. There were a few properties associated with more than one call. In the case of STR properties, a handful of them were associated with several calls and could be considered outliers or out-of-the-ordinary STR properties- in terms of their call frequency. Overall, looking at the y-axis of the distribution graphs, it is evident that the ratio of calls generated from STR properties to calls generated from non-STR properties was very small (0.022 for 311 calls and 0.044 for 911 calls).



Impact Analysis 1 shows that STRs had approximately one more nuisance call per year than non-STRs. Over 88 percent of STRs generated no calls for service.