



# **The impact of short-term rentals on housing affordability in British Columbia**

**Market overview, trend modelling, and regulatory recommendations**

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# Executive summary

This report analyzes short-term rentals (STRs) in the province of British Columbia, with a focus on commercial STRs and their impact on the province's housing market. It provides an overview of STRs in the province, including their geographic location and levels of commercial activity. It analyzes the impacts of STRs on housing availability and affordability. It illustrates market trends through five community case studies. Finally, it lays out a set of STR regulatory principles for BC, based on Canadian best practices.

## SHORT-TERM RENTALS IN BRITISH COLUMBIA: MARKET OVERVIEW

- At the end of spring 2022, there was an average of **18,820 short-term rental listings active each day** in the province of British Columbia (an increase of 23.5% from 2021).
- Revenue is distributed unevenly among hosts, with **the top 10% of hosts earning 55.6% of revenue** and the top 1% earning 25.2%.
- From March 2020 through April 2022, **reservations only reached 45.7% of their pre-pandemic trend**. But in smaller communities and resort towns, nightly prices *increased* during the pandemic, implying a redistribution of travel from distant cities to nearby resort towns.

## THE IMPACT OF STRS ON HOUSING AVAILABILITY AND AFFORDABILITY IN BC

- At the end of spring 2022, commercial **STRs were removing 14,560 units from BC's long-term market**, a 38.5% year-over-year increase.

- Using a mixed-effect regression model, we found that **an increase of one dedicated STR per 100 rental units in a neighbourhood predicts a \$49 increase in average monthly rents**.
- During the 2017-2019 pre-pandemic period, **the proliferation of dedicated STRs accounts for 19.8% of the increases in rents** to which BC households were subjected.
- In 2020, we estimate that **the sharp pandemic decline in commercial STRs led rents to increase 29.7% less than they otherwise would have**.
- If the province's STR market returns to its pre-pandemic trajectory by the end of 2023, the loss of housing to STRs will be expected to drive up average monthly rents in medium and large cities in the province by \$63 above their levels at the end of spring 2022.

## COMMUNITY CASE STUDIES

- The city of Vancouver registered among the sharpest declines in STR activity during the pandemic, and we estimate that, as a result,



**in 2020 rents in Vancouver increased 96.8% less than they otherwise would have.**

- Victoria’s STR market has rebounded much faster than those of the other central cities. It now resembles smaller tourism towns, with lower reservation volumes at higher prices.
- In Richmond, during the 2017-2019 pre-pandemic period, **the increase in dedicated STRs accounts for 37.2% of the increases in rents** which Richmond households were subjected to.
- In Nanaimo, Parksville Qualicum Beach, and Kelowna, STR reservations from March 2020 through April 2022 have only been between 42.8% and 53.2% of what would have been expected from their pre-pandemic trends, but these locations have seen elevated nightly prices. This is consistent with the pattern observed provincially, where international travel was cancelled and diverted to regional destinations.
- **All community case study locations are now seeing rapid growth in commercial STRs**, and rising rental cost burdens as a result. If STR activity returns to

pre-pandemic trends in Summerland by the end of 2023, we estimate this will drive up average monthly rents by \$143.

## **STR REGULATORY OPTIONS**

- Vancouver’s STR regulations—featuring mandatory registration of all STRs and a principal-residence restriction—are a Canadian success story, and have returned 800 housing units to the long-term market.
- The City of Toronto’s principal residence restrictions and the Province of Quebec’s province-wide registration system demonstrate the importance of closing loopholes and prioritizing platform accountability.
- STR regulatory responsibilities in BC should be shared between Province and municipalities, with the former operating a mandatory registration system for the entire province, and the latter setting operating rules in line with local priorities. Given the severity of BC’s housing crisis, **municipalities should strongly consider principal-residence requirements** to redirect STR activity from commercial operations to home sharing, and thus relieve pressure on rising rents.

# Table of contents



<i>EXECUTIVE SUMMARY</i> .....	<i>p. 2</i>
<i>1. INTRODUCTION</i> .....	<i>p. 5</i>
<i>2. SHORT-TERM RENTALS IN BRITISH COLUMBIA: MARKET OVERVIEW</i> .....	<i>p. 6</i>
<i>3. THE IMPACT OF STRS ON HOUSING AVAILABILITY AND AFFORDABILITY IN BC</i> .	<i>p. 14</i>
<i>4. COMMUNITY CASE STUDIES</i> .....	<i>p. 23</i>
<i>5. STR REGULATORY OPTIONS</i> .....	<i>p. 45</i>
<i>APPENDIX. DATA AND METHODOLOGY</i> .....	<i>p. 50</i>
<i>REFERENCES</i> .....	<i>p. 52</i>
<i>AUTHORSHIP AND FUNDING</i> .....	<i>p. 53</i>
<i>ABOUT UPGO</i> .....	<i>p. 53</i>

# 1. Introduction

In May 2022, the Urban Politics and Governance research group (UPGo) at McGill University was commissioned by the British Columbia Hotel Association to conduct market research and analysis on short-term rentals (STRs) in the province of British Columbia, the impact of STRs on the province's housing market, and the policy options available for regulating STRs. Specifically, this report will address the following topics:

1. A general market overview of short-term rentals in the province, including the volume, revenue, type, size and distribution of units, the presence of dedicated commercial operations, and the impact of Covid-19 on the STR market.
2. An analysis of the impact of dedicated STRs on housing availability and affordability in

BC, specifically through an examination of the number of housing units converted to dedicated STRs and quantitative modelling to determine the impact of commercial STR prevalence on residential rents.

3. A presentation of community case studies, using nine municipalities representative of the different STR markets in the province.
4. A set of regulatory recommendations, drawing on a set of Canadian examples and best practices.

Data and methodology are discussed in the Appendix, and all the code used to generate the analysis in the report is available online at <https://github.com/UPGo-McGill/bc-report-2022>.



## 2. Short-term rentals in British Columbia: Market overview



**At the end of spring 2022, there was an average of 18,820 short-term rental listings active each day in the province of British Columbia (an increase of 23.5% from 2021, albeit still far below the pre-Covid peak). The province’s STR market is dominated by commercial operators—the top 10% of hosts earned 55.6% of all revenue, while the top 1% of hosts—just 2,040 operators—earned 25.2% of revenue. The Covid pandemic caused a massive decline in STR activity. In total, from March 2020 through April 2022, we estimate that only 47.5% of the reservations expected under the previous growth trend occurred. But this decline has been concentrated in the province’s large urban regions, where reservations and prices have both plummeted. In smaller communities, reservations are down from their pre-pandemic trend, but nightly prices have been substantially higher, which suggests a redistribution of travel destinations from distant cities to nearby resort towns.**

## ACTIVE LISTINGS AND HOST REVENUE

In 2021, there was an average of 17,750 short-term rental listings active each day in the province of British Columbia. (Active listings are those which are not just displayed on a STR platform, but are either reserved or available for reservations, and they are the most straightforward way to assess the size of an STR market.) Setting aside the 1,330 hotels, B&Bs, and other non-housing properties, this leaves 16,340 STRs in housing units, operated by 9,560 hosts who collectively earned \$664.0 million in revenue (an average of \$26,700 per listing, and a median of \$11,300 per listing).

These figures are all dramatically lower than the same ones for 2019—before the onset of the Covid-19 pandemic. In 2019, there were 24,260 daily active listings operated out of houses in BC (32.6% higher than 2021). These listings were operated by 13,990 hosts (31.7% higher), who collectively earned \$845.2 million in revenue (21.4% higher), with an average of \$28,300 (5.6% higher) and a median of \$13,300 (14.7% higher) per listing.

By contrast, at the end of April 2022—the start of the summer travel season—clear signs of recovery were present. In April 2022 there were an average of 18,820 active STR listings in BC each day (a 23.5% year-over-year increase from April 2021). (In what follows, we present figures from 2021—the most recent complete year, but one which is likely to be a historic low point for the STR market due to the Covid-19 pandemic. Where relevant, we also present figures from 2019—a plausible pre-pandemic baseline for the STR market.)

Figure 1 displays active listings per day across the province and in each of the “central city”, “large urban”, “small urban”, “tourist destination” and “non-urban” categories. It demonstrates that, while all types of community saw STR activity plunge at the beginning of the pandemic, large cities and their outskirts have still not seen anything resembling a recovery, while other communities saw STR activity rebound over the course of 2021. These patterns will be explored in more detail below.

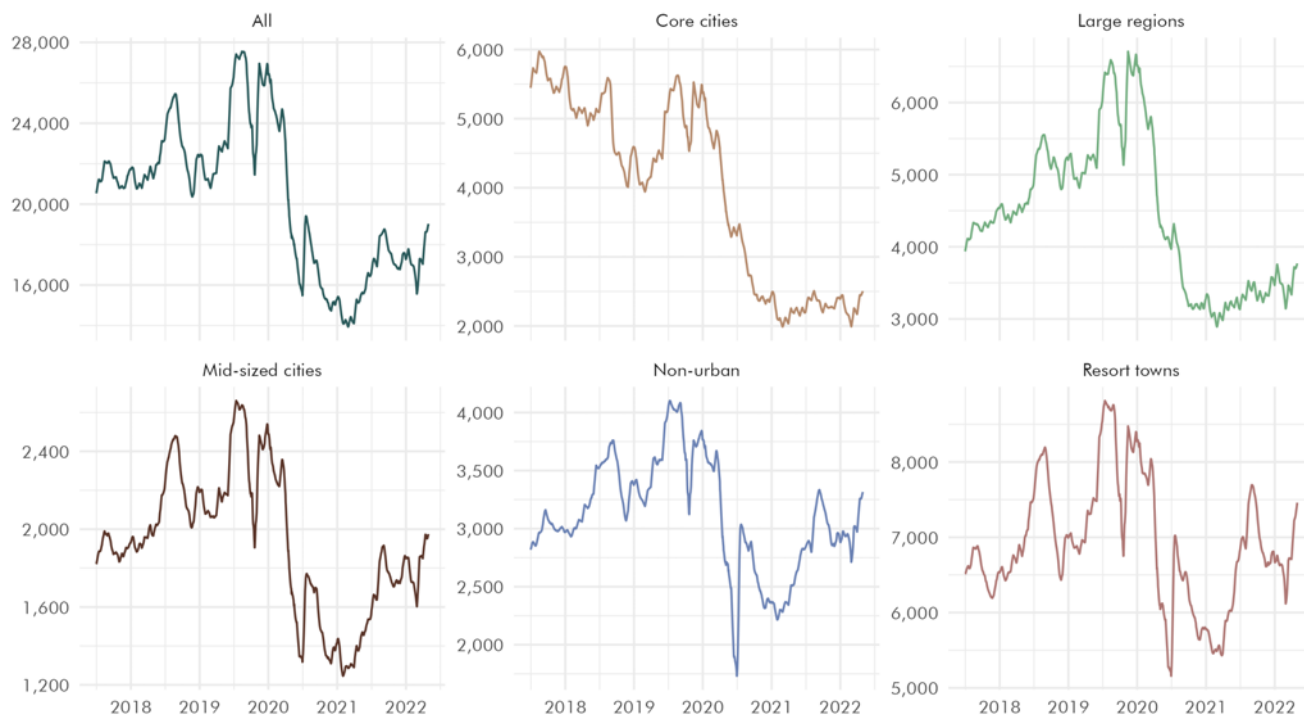


Figure 1. Active daily STRs in British Columbia (7-day average)

<b>Ward</b>	<b>Active listings (2021)</b>	<b>Annual listing growth (2019-2021)</b>	<b>Active listings as % of dwellings (2021)</b>	<b>Average daily revenue (2021)</b>	<b>Daily revenue growth (2019-2021)</b>
<i>British Columbia</i>	16,340	-32.7%	0.8%	\$664.0 million	-21.4%
<i>Whistler</i>	1,980	2.9%	18.8%	\$92.5 million	-31.5%
<i>Vancouver</i>	1,720	-55.6%	0.6%	\$49.3 million	-66.3%
<i>Richmond</i>	590	-33.9%	0.8%	\$9.8 million	-48.9%
<i>Kelowna</i>	530	-32.2%	0.9%	\$28.6 million	-2.6%
<i>Victoria</i>	470	-43.8%	0.9%	\$17.1 million	-39.5%
<i>Surrey</i>	440	-41.0%	0.2%	\$7.4 million	-39.2%
<i>Burnaby</i>	430	-52.4%	0.4%	\$8.6 million	-53.6%
<i>North Vancouver</i>	340	-50.0%	1.1%	\$8.8 million	-58.7%
<i>Kootenay Boundary E / West Boundary</i>	340	-23.8%	10.4%	\$10.9 million	-43.4%
<i>Columbia-Shuswap A</i>	290	-9.8%	14.2%	\$19.2 million	23.1%

Table 1. STA activity by municipality

## HOME SHARERS AND COMMERCIAL OPERATORS

An important distinction in STR markets is between “home sharing” and “commercial operations”. Home sharing occurs when the principal resident of a housing unit rents out part or all of that housing unit on a temporary basis. A family with a spare bedroom that they rent on Airbnb as a private-room listing is an example of home sharing, as is a condo unit whose occupant travels frequently for business, and rents out the entire unit when she is out of town. A commercial operation, by contrast, is an STR listing which is not located in the host’s principal residence, and is operated in a more or less full-time fashion. Unlike home sharing arrangements, commercial STRs remove housing units from the long-term market, since each housing unit which is being operated as a full-time STR could instead be housing a long-term resident.

One way to distinguish between commercial operators and home sharers is to look at what

type of listings are operated on STR platforms. STR listings can be entire-home or private-room, and the former is much more likely to be a home sharing arrangement than the latter. (Listings can also be shared-room, but these are very rare.) The overwhelming majority of the STR listings active in 2021 were entire homes (85.5%), and this proportion increased noticeably during the pandemic (from 78.5% in 2019), presumably in part because non-commercial STR operators have become less willing to share their homes with strangers.

Another way to distinguish between home sharers and commercial operators is to examine the distribution of revenue among hosts. If revenue is evenly distributed among a large number of hosts earning modest amounts of money, that suggests that home sharing is common. If, by contrast, revenue is concentrated among a small number of



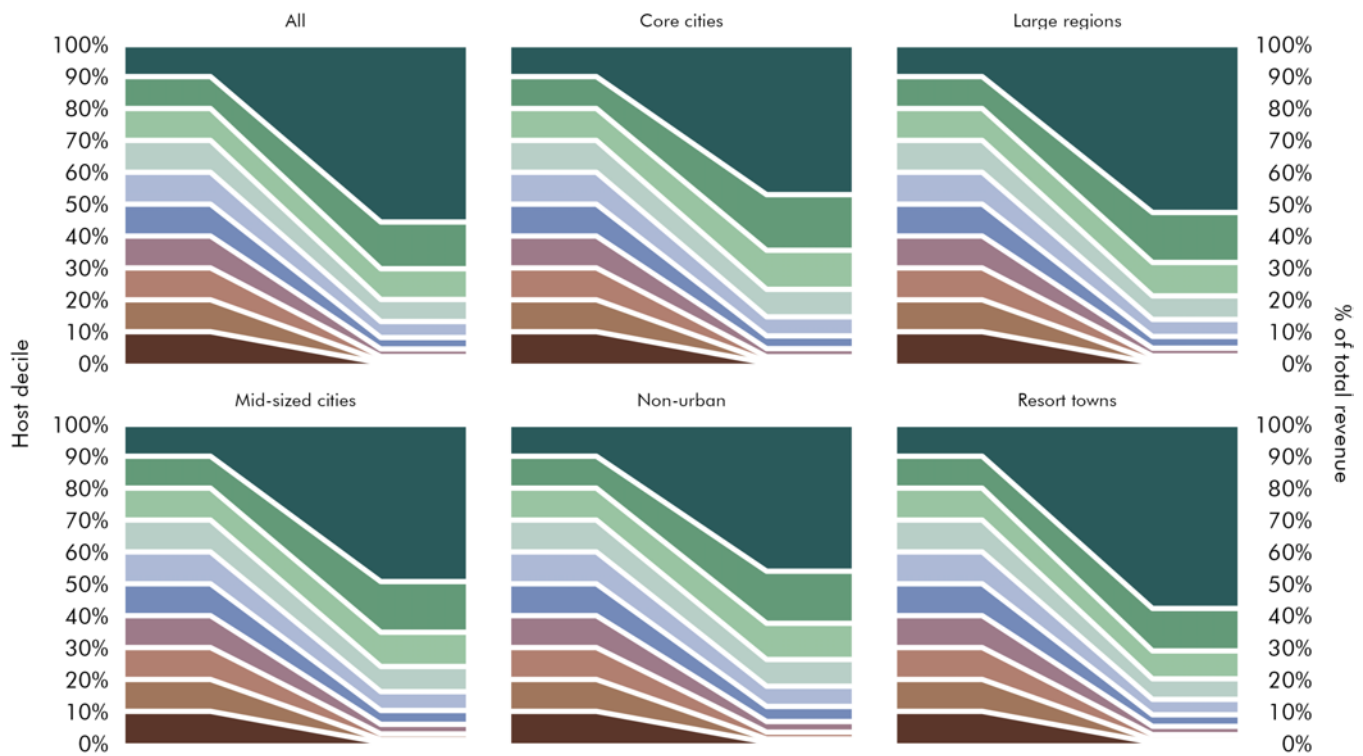


Figure 2. STR host revenue distribution in British Columbia

high earners, that suggests that most STR activity is conducted by commercial operators, regardless of how many hosts are active on the platform. Across British Columbia, host revenue in 2021 was in fact highly concentrated. The top 10% of hosts earned 55.6% of all revenue, while the top 1% of hosts—just 2,040 operators—earned 25.2% of revenue. By contrast, the median host earned \$11,300 in 2021. This pattern suggests that BC has a large number of hosts who are casual home sharers, but that the STR market is dominated by a much smaller number of commercial operators. Figure 2 shows the distribution of host revenue for the province and each of the sub-categories. Revenue is more highly concentrated in smaller resort destinations (implying a high dominance of commercial operations), while in non-urban, non-resort communities revenue is somewhat more equitably distributed (implying more presence of genuine home sharing).

Finally, one simple method of identifying commercial STR operators is to identify listings

operated by hosts who have multiple listings in operation simultaneously. These “multilistings” by definition cannot be home sharing arrangements, since the host cannot have multiple principal residences. We consider entire-homes to be “multilistings” if they are operated by hosts who are simultaneously operating other entire-home listings. We define private-room multilistings as cases where a host has three or more private-room listings operating on the same day. Since nearly all entire-home listings have three or fewer bedrooms, there will be extremely few cases where a host operating three private-room STR listings in a dwelling unit has not converted the entire unit into a dedicated STR.

In 2021, 47.5% of active listings in British Columbia were multilistings, earning 52.7% of total host revenue. Figure 3 shows the share of all active listings which are multilistings over time. Multilistings have been growing steadily since 2017, both in terms of listings and revenue percentage, and they are much more common in

resort communities and large cities than in smaller, non-resort communities.

By any of these metrics, BC's STR market is increasingly dominated by commercial operators

at the expense of home sharers, who have been pushed to the margins of the market. Commercial operators are particularly common in resort communities and large cities, but there is no part of the province where they are not dominant.

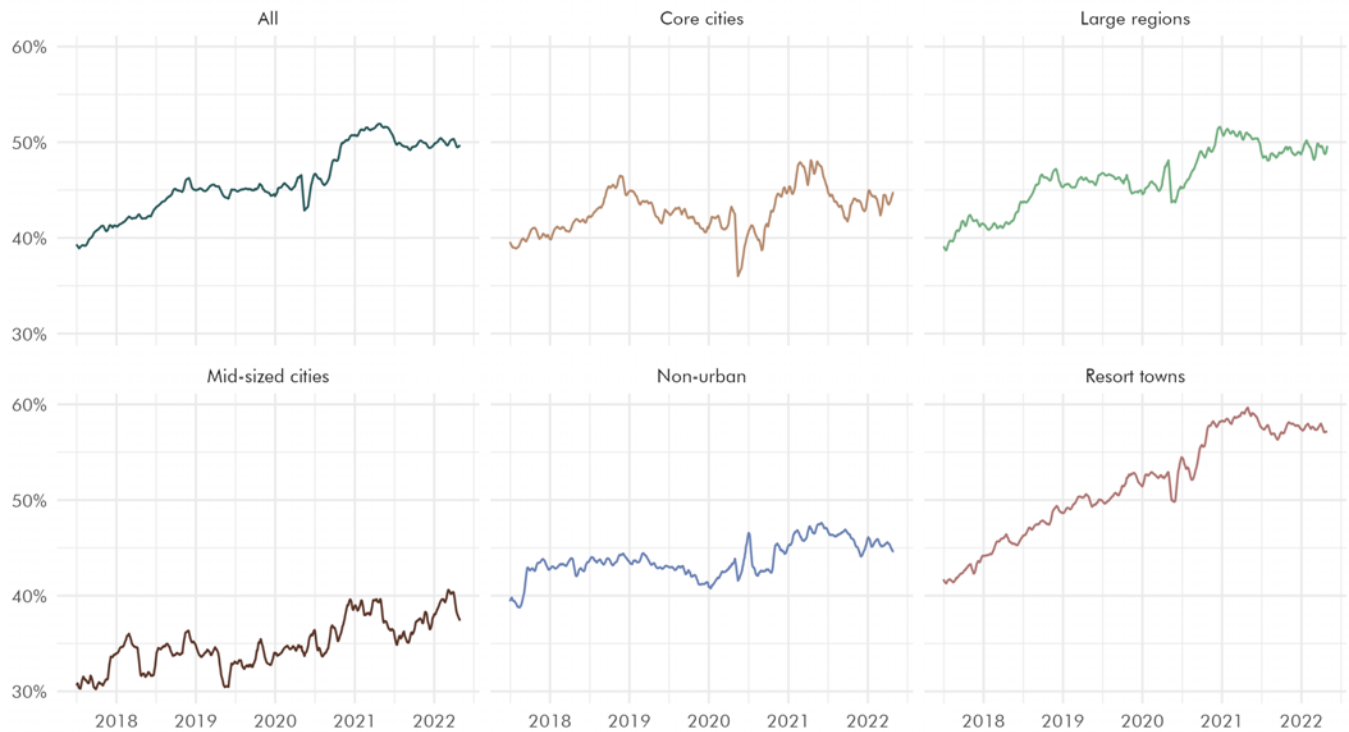


Figure 3. Multilistings as a share of active daily listings (14-day average)

## GROWTH TRENDS: PRE- AND POST-COVID

Until early 2020, the number of active STR listings in British Columbia was steadily increasing (with the exception of Vancouver, where the 2018 introduction of the City's STR regulations caused a large one-time drop in the number of active listings). Figure 4 shows the change in active listings relative to one year earlier, which is a convenient way to remove seasonal variation to identify underlying growth trends. The figure indicates that, from 2018 through the beginning of the pandemic, active listings were growing in all different community types. The pandemic halted BC's STR market growth, with active listings

collapsing in March 2020. But, while listing growth again turned positive in smaller communities as of early 2021, active listings continued to shrink until the end of 2021 in BC's largest cities.

Overall, the year-over-year change in average active listings from 2017 to 2018 was 19.4%, and the year-over-year change from 2018 to 2019 was 8.4%. Because of the Covid-19 pandemic, the year-over-year change in active daily listings was -22.5% in 2020 and -13.1% in 2021.

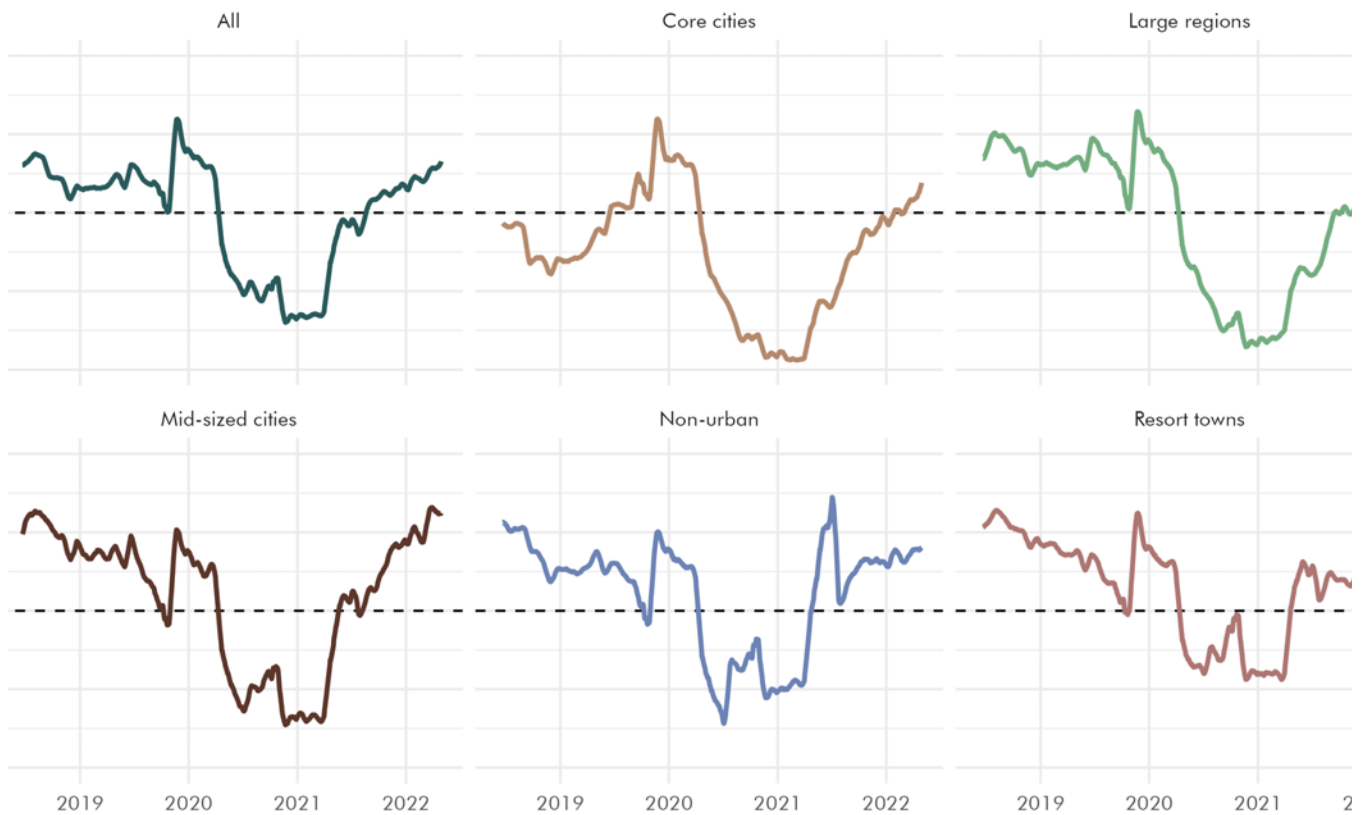


Figure 4. Change in active daily listings compared to one year earlier (14-day average)

### Trend analysis: reservations

The pandemic had a massive impact on STR listings and revenue throughout the province, and trend analysis allows for a more precise estimate of how this impact varied across locations. Figure 5 provides a closer look at daily reservations since 2019, comparing the actual trajectory of reservations during the pandemic with what the trajectory of reservations would have been expected to be, based on previous growth in the overall provincial STR market and in each of the sub-markets, but in the absence of the pandemic. (To do this, we use seasonal decomposition to identify regular seasonal fluctuations in STR activity and separate them from underlying patterns of growth or decline.)

As Figure 5 suggests, the impact of the pandemic on STR reservations has been highly uneven between different types of communities in the

province. In total, from March 2020 through April 2022, we estimate that there have been 6.9 million fewer STR nights reserved than would normally have been expected to occur. The 6.2 million total nights reserved in this time period is only 47.5% of the 13.1 million nights total that would represent the previous growth trend. However, an enormous amount of these “missing” reservations are concentrated in central cities. Here, actual reservations were only 37.8% of what the pre-pandemic trend would have predicted. By contrast, in resort communities, actual reservations were 58.5% of the pre-pandemic trend—only half the decline experienced in central cities.

### Trend analysis: nightly prices

Unlike reservations, which fell consistently—if at slightly different rates—across the province during the pandemic, nightly prices have behaved very

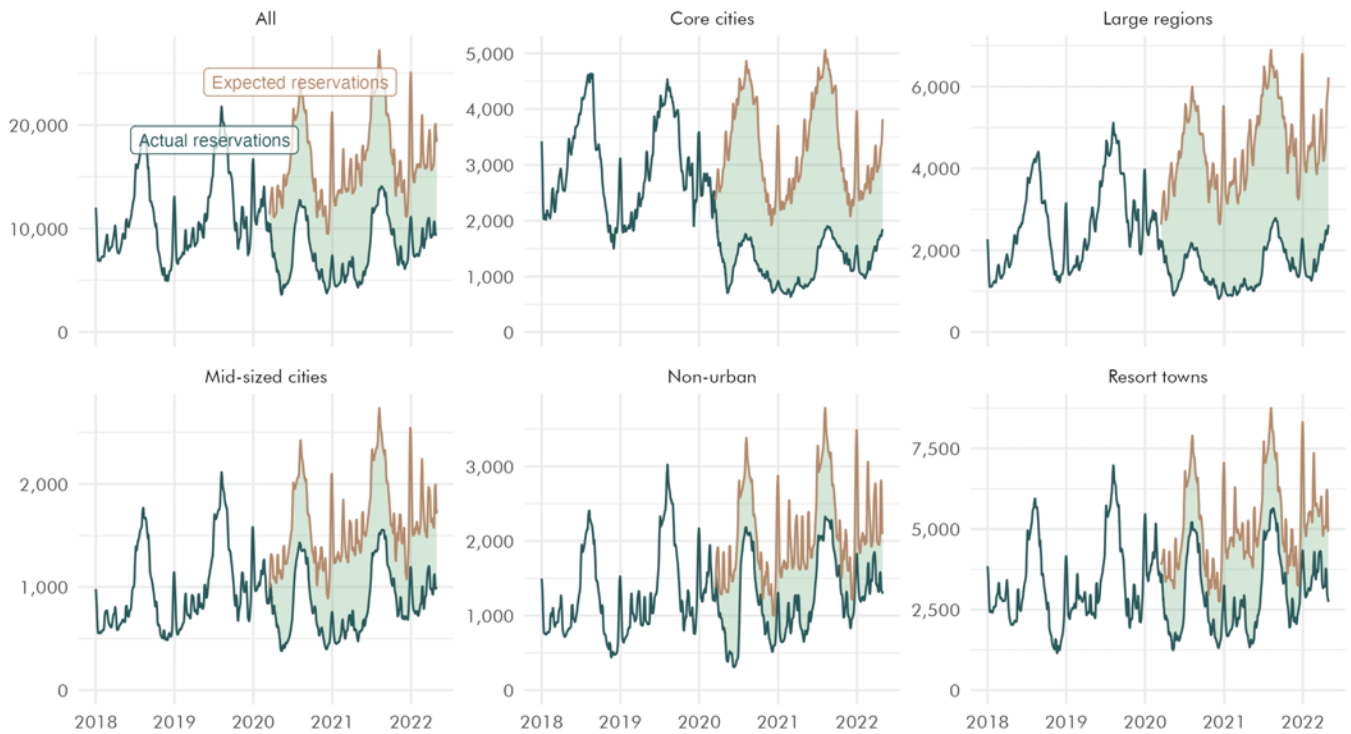


Figure 5. Actual and expected reservations during the Covid-19 pandemic (7-day average)

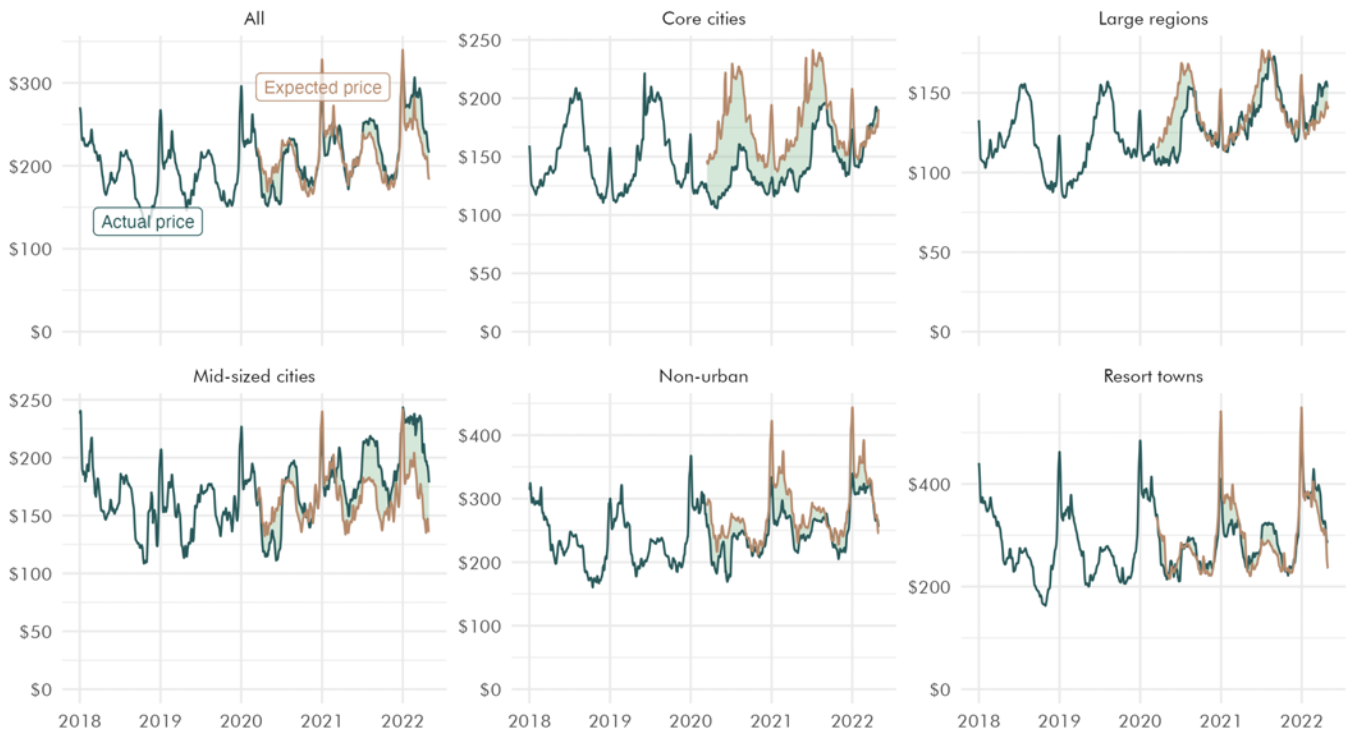


Figure 6. Actual and expected nightly prices during the Covid-19 pandemic (7-day average)

differently in different community types (Figure 6). In central cities and the rest of the large urban regions, prices fell precipitously in 2020. In combination with the steep drop in reservations during this same time period, this unambiguously describes a collapse in STR demand in the big cities, as long-distance travel which normally supplies the temporary accommodation demand dried up. Throughout 2021, prices generally remained below their pre-pandemic trend, albeit at higher levels than 2020.

In smaller communities and resort towns, however, the pattern in 2020 was nearly the opposite.

## CONCLUSIONS

British Columbia's STR market over the last several years can be characterized by the following stylized facts:

1. Commercial operators dominate the STR market province-wide, and in each community type, although they are particularly dominant in large cities and resort towns. In general, the top 10% of STR hosts earn a majority of all the STR revenue in the province.
2. During the pandemic there has been a strong divergence between big cities and smaller communities. The former saw their STR

markets collapse, and they have only barely begun to recover. The latter saw declines in STR bookings, but increases in nightly prices. Compared to the pre-pandemic trend, prices increased substantially. This occurred at the same time as actual reservations declined in these locations. This combination suggests a spike in demand for non-urban STRs in the early pandemic—consistent with the idea that leisure travellers cancelled their long-distance vacations and substituted local vacations instead—but also that the actual supply of STRs in these locations was constrained, resulting in higher prices rather than increased reservations. Prices have remained much higher than the pre-pandemic trend in these non-urban locations throughout 2021.

markets collapse, and they have only barely begun to recover. The latter saw declines in STR bookings, but increases in nightly prices.

3. The patterns are consistent with a redistribution of travel destinations from distant cities to nearby resort towns. In other words, out-of-province travellers who had planned to visit Vancouver cancelled those plans during the pandemic. Meanwhile, residents of BC's large cities who themselves may have been planning out-of-province trips cancelled those plans and instead visited nearby resort towns.



### 3. The impact of STRs on housing availability and affordability in BC



**At the end of spring 2022, short-term rentals were taking 14,560 housing units off of BC's long-term market—a 38.5% year-over-year increase. Commercial operators have weathered the pandemic much better than home sharers. We develop a regression model to measure the impact of commercial STRs on average rents in BC, and find that an increase of one dedicated STR per 100 rental units predicts that average rents in the neighbourhood will be \$49 higher. From 2016-2021, we estimate that, if there had been no commercial STRs, BC renters would have saved \$2.0 billion in rent. In fact, during the 2017-2019 pre-pandemic period, the proliferation of dedicated STRs across BC accounts for fully 19.8% of the increases in rents which BC households were subjected to. The average BC neighbourhood in a medium or large city saw a \$72 increase in monthly rent each of these years, of which \$17 can be attributed to the growth of dedicated STRs. In 2020, when the number of commercial STRs plummeted because of the pandemic, our estimate is that 2020 rents increased 29.7% less than they otherwise would have, because of the decrease in commercial STRs that year. If the province's STR market returns to its pre-pandemic trajectory by the end of 2023, the loss of housing to STRs will be expected to drive up average monthly rents in medium and large cities in the province by \$63 above their levels at the end of spring 2022.**

## INTRODUCTION

BC's housing market has been under considerable stress in the past years, with housing prices and rents rising, and rental vacancy rates falling. These are symptoms of a market where the supply of housing is insufficient to meet demand. One possible explanation for both the insufficient supply and elevated demand for housing in BC is the growth in short-term rentals. Tourists are now able to compete with residents for housing—adding demand to the local housing market—while landlords are now able to shift their properties out of the conventional housing market to become dedicated STRs—reducing the supply of conventional housing. Research has found that renting a housing unit on the STR market frequently offers landlords greater potential revenue than

conventional leases (Wachsmuth & Weisler 2018), especially in transit-accessible neighborhoods (Deboosere et al. 2019). Multiple studies have also found that Airbnb and other STR platforms increase housing costs (Barron, Kung, & Proserpio 2020; Horn & Merante 2017; Garcia-Lopez et al. 2019).

This chapter combines our unique dataset of STR activity in BC with housing data from the 2016 Canadian Census and the Canadian Mortgage and Housing Corporation's Rental Market Survey to determine the impact of commercially-operated short-term rentals on housing availability, measured through housing units removed from the long-term market by STRs, and housing affordability, measured through average market rents.

## STR-INDUCED HOUSING LOSS

One of the major considerations when gauging the impacts of short-term rentals (STRs) on a city is the extent to which STRs are removing long-term housing from the market. This process can occur either directly, where tenants of a unit are evicted or not replaced at the end of a lease and the unit is converted to a STR, or indirectly by absorbing new construction or investment properties which otherwise would have gone onto the long-term market. To obtain the exact number of units that have been occupied as STRs, landlords or units would need to be individually surveyed, which is infeasible because STR hosts are mostly anonymous on major STR platforms such as Airbnb and Vrbo. Instead, we use the daily activity of listings, alongside structural characteristics such as listing type and location, to estimate which listings are operating as dedicated STRs and are therefore not available as conventional long-term housing.

*Frequently Rented Entire-Home (FREH) listings:* The number of frequently-rented units is one way to estimate STR-induced housing loss. If a STR is

available for reservations the majority of the year and receives many bookings, it is reasonable to assume that it is not serving as an individual's principal residence at the same time. Along these lines, we define frequently rented entire-home (FREH) listings as entire-home listings which were available on Airbnb or Vrbo the majority of the year (at least 183 nights) and were booked a minimum of 90 nights. We then apply a statistical model (described in the appendix) to the FREH data in order to generate an estimate of FREH activity based on three months of listing activity. This allows us to detect listings which are operating in a full-time manner but have not yet been listed for an entire year, and allows us to account for relatively short-term changes in market conditions.

*Ghost hostels:* In addition to FREH listings, it is possible that entire housing units have been subdivided into multiple private-room listings, each of which appearing to be a spare bedroom or the like, while actually collectively representing an apartment removed from the long-term housing

market. We call these clusters of private- room listings “ghost hostels”, building on the advocacy group Fairbnb.ca’s term “ghost hotels” — multiple FREH listings located in a single building, collectively serving as de facto hotels instead of long-term housing (Wieditz 2017). We detect ghost hostels by finding clusters of three or more private-room listings operated by a single host, whose reported locations are close enough to each other that they are likely to have originated in the same actual housing unit. (Airbnb and Vrbo obfuscate listing locations by shifting them randomly up to 200 m.)

In April 2022, there were 13,980 FREH listings in British Columbia, and 630 more housing units which were operating as ghost hostels. (We refer to these listings collectively as “dedicated STRs”.) In total, therefore, short-term rentals were taking 14,560 housing units off of BC’s long-term market at the end of the spring (Figure 7). In the absence of commercial STRs, in other words, there would have been 14,560 more homes available for BC residents to live in this spring. The number of housing units

converted to dedicated STRs increased 38.5% year over year from April 2021, when the pandemic was exerting a stronger influence over the STR market. Notably, while the number of active daily listings was 32.7% lower in 2021 than in 2019, the number of housing units which STRs took off of BC’s housing market decreased at only about half the rate. There were 15.5% fewer dedicated STRs in 2021 (13,740) than in 2019 (16,270); province-wide, commercial operators have weathered the pandemic much better than home sharers.

As with other patterns related to STR activity during the pandemic, the large cities saw much more severe drops in dedicated STRs than smaller communities and resort towns did. The latter had nearly recovered to their pre-pandemic levels of dedicated STRs by the beginning of 2022, while the former were only beginning to emerge from the pandemic’s negative demand shock. These facts further confirm the scenario identified above: that long-distance leisure trips were diverted to local destinations during the pandemic.

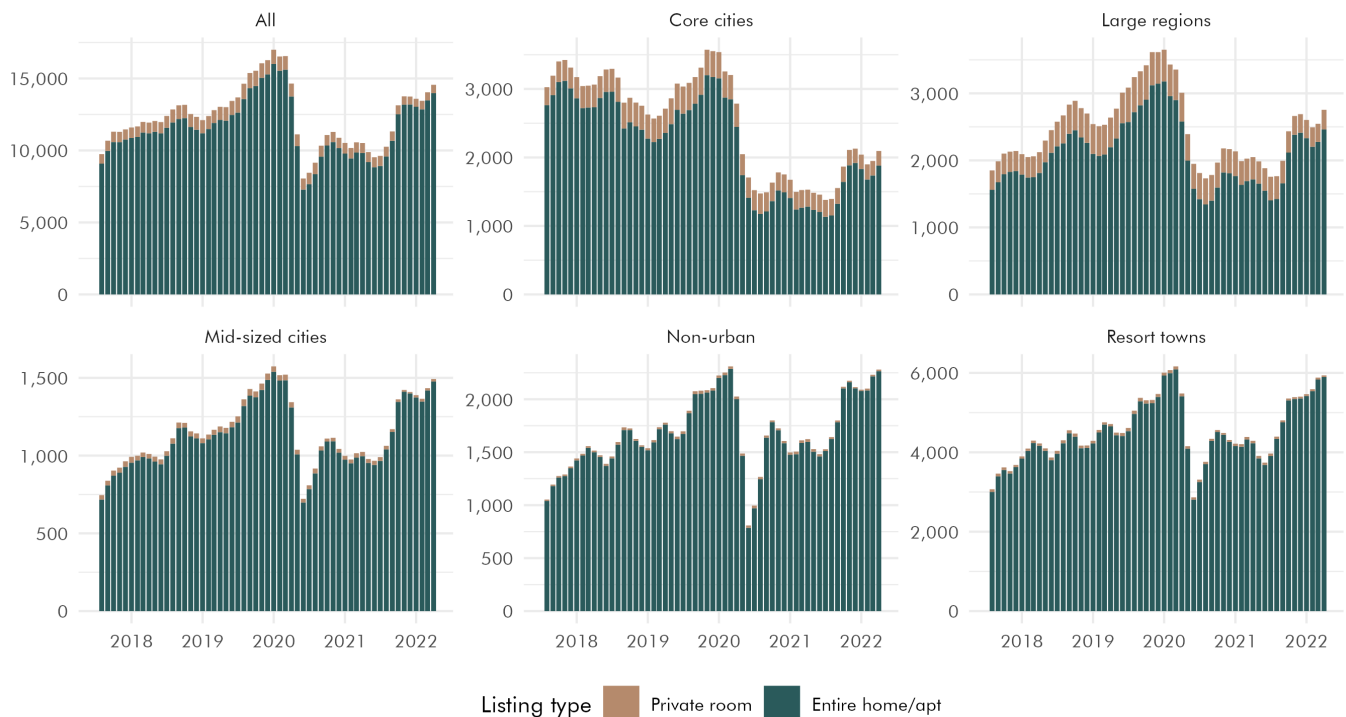


Figure 7. Housing units converted to dedicated STRs in British Columbia (monthly average)



## Trend analysis: housing loss

Using trend analysis, it is possible to estimate how much STR-induced housing loss would have been expected to have occurred in the absence of the pandemic—this counterfactual scenario establishes an important baseline for a post-pandemic housing landscape, in which short-term rentals return to their previous growth trend. Figure 8 displays the shortfall between actual STR-induced housing loss and the housing loss which would have been expected in the absence of the pandemic. In the central cities and other areas of the largest urban

areas of the province, there are several thousand fewer dedicated STRs than what pre-pandemic growth trends would have predicted. In particular, at the end of spring 2022, there were only 2,070 housing units operating as dedicated STRs in Vancouver, Victoria, and Abbotsford, while the previous trend would have predicted 3,720—79.6% more. By contrast, resort towns and non-urban areas had little short fall between expected and actual dedicated STRs by spring 2022. These areas have seen relatively robust and growing tourist accommodation demand from late 2020 onward.

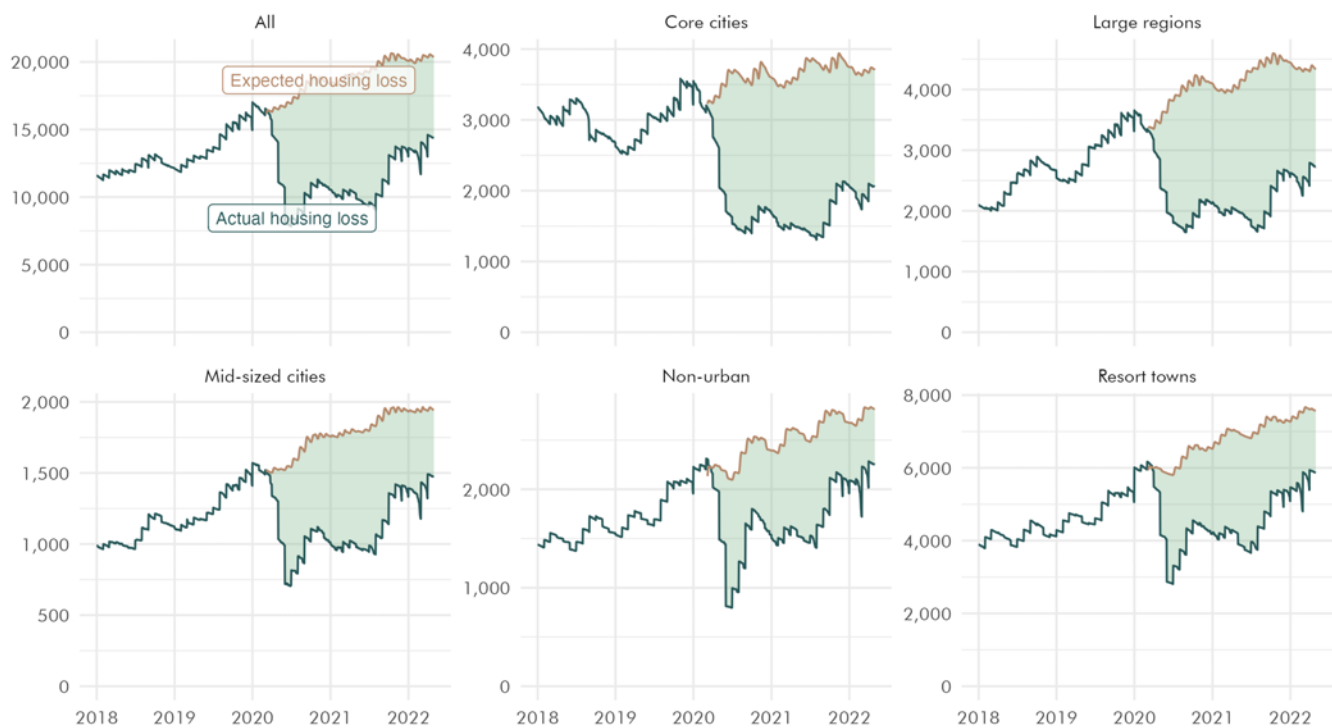


Figure 8. Actual and expected STR-induced housing loss during the Covid-19 pandemic (7-day average)

## THE IMPACT OF DEDICATED STRS ON RESIDENTIAL RENTS IN BC

While no empirical research exists in a Canadian context to evaluate the impact of STRs on housing prices or rents, Barron et al. (2020) answered these questions through an examination of every US Airbnb listing between 2012 and 2016. This study found that a 1% growth in Airbnb listings in

a location predicts a 0.018% increase in monthly rents and a 0.026% increase in house prices. While these numbers might appear small, they occurred in the context of STR growth rates which were quite high; the authors find that the growth of Airbnb was responsible for *one fifth of all rent*

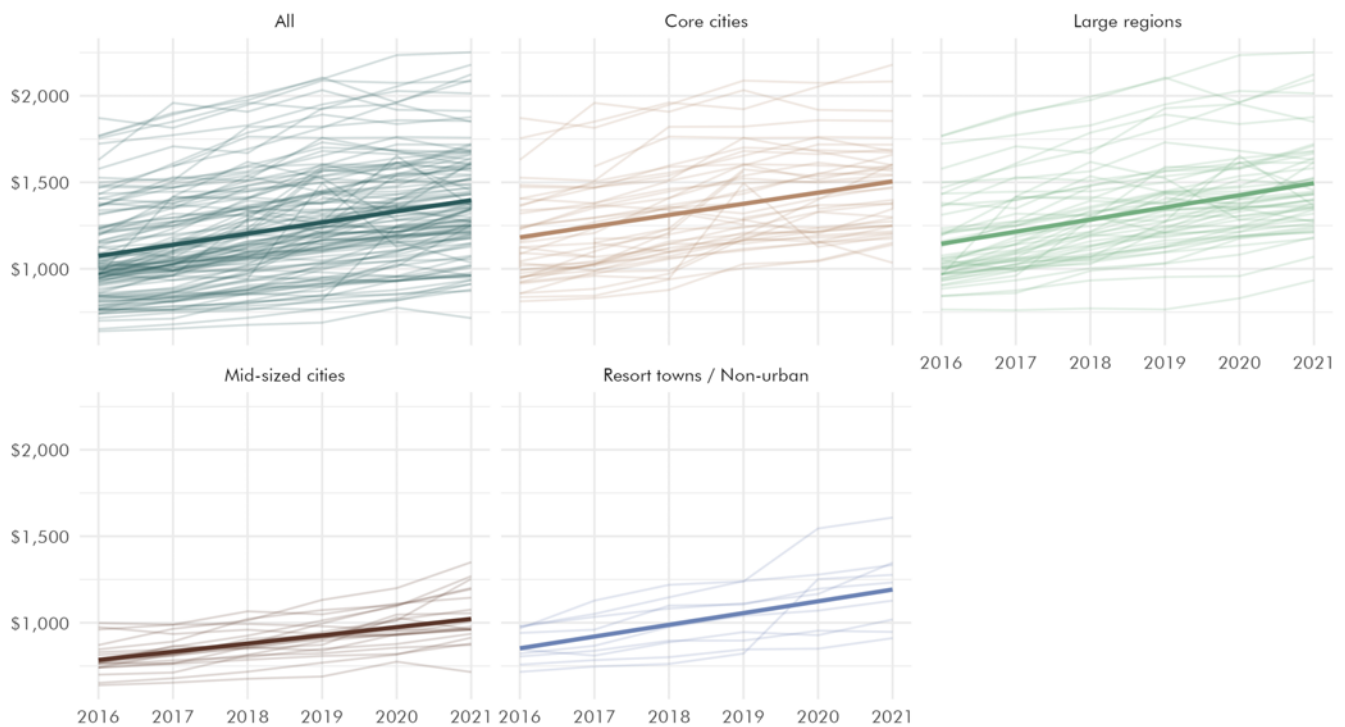


Figure 9. Average rents for CMHC neighbourhoods in BC

growth and one seventh of all housing-price growth in the United States during the study period. This finding, while not directly applicable to British Columbia, establishes an *a priori* rationale for testing the hypothesis that the growth of STRs in BC has had a similar impact on housing affordability.

### **A regression model of dedicated STRs and residential rent**

Rents have been increasing steadily across all community types in British Columbia since 2016, when our data series begins. Figure 9 shows the change in average monthly rents in each neighbourhood in the province from 2016 to 2021. (Darker lines are the overall trend for the category.) Across 2016-2021, average monthly rents were highest in the central cities (\$1,470) and surrounding areas (also \$1,470) of the largest urban regions, followed by resort towns and non-urban areas (\$1,200), and then mid-sized cities (\$1,030). (The Canada Mortgage and Housing Corporation only administers the Rental

Market Survey in mid-sized and large urban regions—“census agglomerations” and “census metropolitan areas” respectively—so we lack data for many smaller communities which are nevertheless important tourist destinations. Most notably, Whistler is excluded from this analysis, as are small communities such as Tofino and Ucluelet. As a result, in this section we merge the “resort towns” and “non-urban” communities into a single category.)

To measure the impact of STRs on housing affordability in British Columbia, we developed a mixed-effect linear regression model predicting average rents as a function of the per-dwelling prevalence of dedicated short-term rentals. The model answers the question: “What is the predicted increase in average monthly rent in a community when the prevalence of dedicated STRs increases by one dedicated STR per 100 rental units?” We answer this question while controlling for time (since rents have been steadily increasing since 2016), community type, and the proportion of a neighbourhood’s dwelling units which are

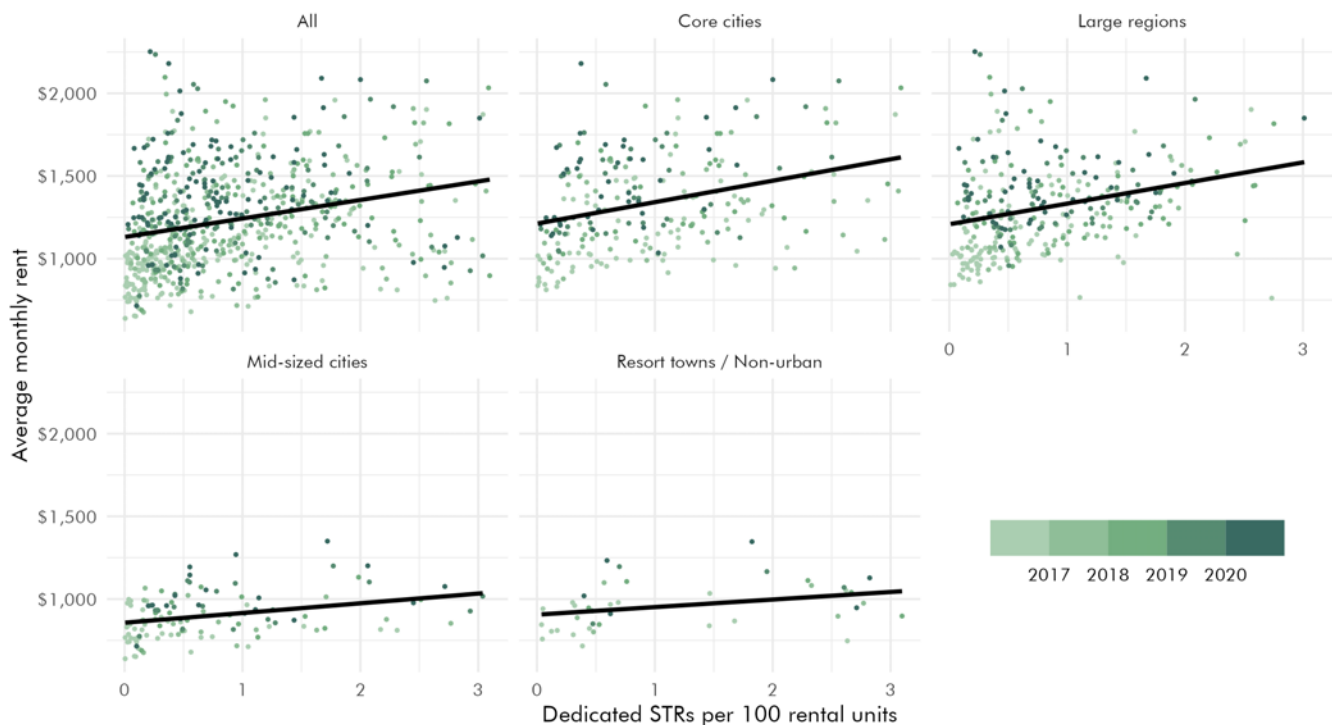


Figure 10. Bivariate relationship between dedicated STRs and average monthly rent

renter-occupied. (Full methodological details are available in the appendix.)

Figure 10 shows the bivariate relationship between dedicated STRs per 100 rental units and average monthly rent for each community type. The patterns are noisy, but in each case the relationship is clear: neighbourhoods with a higher prevalence of commercial STRs have higher rents.

We formalize this finding in Table 2, which presents the mixed-effect regression model predicting monthly rents using the prevalence of dedicated STRs. The model accounts for nearly all of the observed variation in average monthly rents (adjusted  $R^2 = 0.966$ ), and confirms a strong independent effect of dedicated STRs on rents. Controlling for the other factors present in the model, an increase of one dedicated STR per 100 rental units predicts that average rents in the neighbourhood will be \$48.65 higher. (The model also finds that each year since 2016 is associated with a \$59.15 increase in average rent, and that

each additional percentage point of a neighbourhood's housing units which is composed of rental units is associated with a \$1.78 increase in

	Dependent variable: Average monthly rent
Dedicated STRs / 100 rental units	48.650*** (7.898)
Renter (%)	1.782*** (0.680)
Year (0 = 2016)	59.148*** (5.113)
Tier: mid-sized cities	657.772*** (33.006)
Tier: core cities	1,043.309*** (43.469)
Tier: large regions	1,064.316*** (29.958)
Tier: Resort towns / non-urban	724.670*** (42.452)
Observations	737
$R^2$	0.967
Adjusted $R^2$	0.966
Residual Std. Error	233.712 (df = 730)
F Statistic	3,017.122*** (df = 7; 730)
Note	*p<0.1; **p<0.05; ***p<0.01

Table 2. Mixed-effect regression model predicting average monthly rents in BC

average rent. Finally, the model offers different starting rents for each community type, assuming no commercial STRs, no renters, and the year 2016.)

### **The burden of STRs on BC renter households**

From 2016-2021, BC tenants in large and mid-sized cities paid \$49.0 billion in rent. During the same time period, we estimate that 4.1% (\$2.0 billion) of this amount was due to the presence of commercial STRs. Put differently, if there had been no commercial STRs, BC renters would have saved \$2.0 billion in rent. In 2019, when the STR market was at its pre-pandemic peak, we estimate dedicated STRs were responsible for 5.3% of the total rents paid by tenants. This is a province-wide average; in many communities, the amount of rent increases attributable to STRs was substantially higher.

Another way of framing these results is to look at the share of the *change* in rent which is

attributable to the *change* in dedicated STR prevalence. The conclusion is sobering. During the 2017-2019 pre-pandemic period, the proliferation of dedicated STRs across BC accounts for fully 19.8% of the increases in rents which BC households were subjected to. The average BC neighbourhood in a medium or large city saw a \$72 increase in monthly rent each of these years, of which \$17 can be attributed to the growth of dedicated STRs. (As a plausibility check on these results, they are very close to Barron et al. [2020]'s independent finding that approximately 20% of the rent increases in the 100 largest US cities from 2012-2016 were attributable to the growth of Airbnb.)

In 2020, when the number of commercial STRs plummeted because of the pandemic, the opposite effect occurred: the return of these units to the long-term market exerted downward pressure on rising rents. Our estimate is that 2020 rents increased 29.7% less than they otherwise would have, because of the decrease in





Figure 11. Comparison between actual median rent change and estimated median rent change with no change in dedicated STRs

Community type	Median monthly rent chg. (2017-19)	Median impact of STR chg. on rent chg. (2017-19)	Total impact of STR chg. on rent chg. (2017-19)	Median monthly rent chg. (2020)	Median impact of STR chg. on rent chg. (2020)	Total impact of STR chg. on rent chg. (2020)
All	\$60	\$10 (11.5%)	19.8%	\$42	-\$11 (-11.5%)	-29.7%
Mid-sized cities	\$38	\$11 (24.9%)	44.4%	\$47	-\$5 (-15.4%)	-11.5%
Core cities	\$74	\$5 (3.4%)	9.2%	\$16	-\$20 (-14.6%)	-80.6%
Large regions	\$72	\$11 (12.1%)	16.4%	\$43	-\$11 (-7.7%)	-19.3%
Resort towns / Non-urban	\$48	\$38 (79.6%)	69.5%	\$54	-\$3 (-10.0%)	-22.5%

Table 3. Comparison of estimated impact of change in dedicated STRs on monthly rent, 2017-2019 and 2020

commercial STRs that year. The average BC neighbourhood in a medium or large city saw a \$45 increase in monthly rent, which was \$14 less than expected because of the decline in dedicated STRs.

Figure 11 and Table 3 summarize the estimated STR rent burden for each community type in BC. They make clear that an enormous proportion of the pre-pandemic increase in rent in smaller

communities can be ascribed to the explosive growth of dedicated STRs in these areas. (Although the results in the “resort towns and non-urban” category should be taken as very broad estimates, since CMHC rental market data only covers a small portion of these communities province-wide, and therefore the results we have are not certain to generalize to the remaining communities for which data is not available.) And likewise, an enormous cause of the much lower

increase in average rents experienced by large central cities in 2020 can be ascribed to the collapse of those cities' STR markets during the pandemic, and the resulting return of many commercial STRs to the long-term rental market.

### Trend analysis: STR rent burden

The sharp change in the impact of commercial STRs on rents in BC during the pandemic raises the question of what would have happened if commercial STRs had continued to grow on their pre-pandemic trajectory—and, more importantly, what will happen if they return to that trajectory after travel returns to normal. In the absence of significant new regulatory action, this is the most likely future scenario. Accordingly, Figure 12 extends the STR housing loss trend analysis from Figure 8, above, through the end of 2023. To be clear, it is impossible to make any concrete STR

forecasts that far into the future, given the continuing uncertainty associated with the Covid pandemic, and the possibility of provincial or municipal regulatory action, but this analysis offers a plausible estimate of what a return to the pre-pandemic STR status quo would like in BC, and what the implications for renters would be.

If the province's STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there will be 21,400 housing units operating as dedicated STRs—a 43.3% increase over the actual number as of April 2022. This implies that STR activity will drive up average monthly rents in medium and large cities in the province by \$63 above their levels at the end of spring 2022. This is an extra \$755 the average renter household will be paying per year because of the growth of commercial STRs—\$411.8 million in total each year.

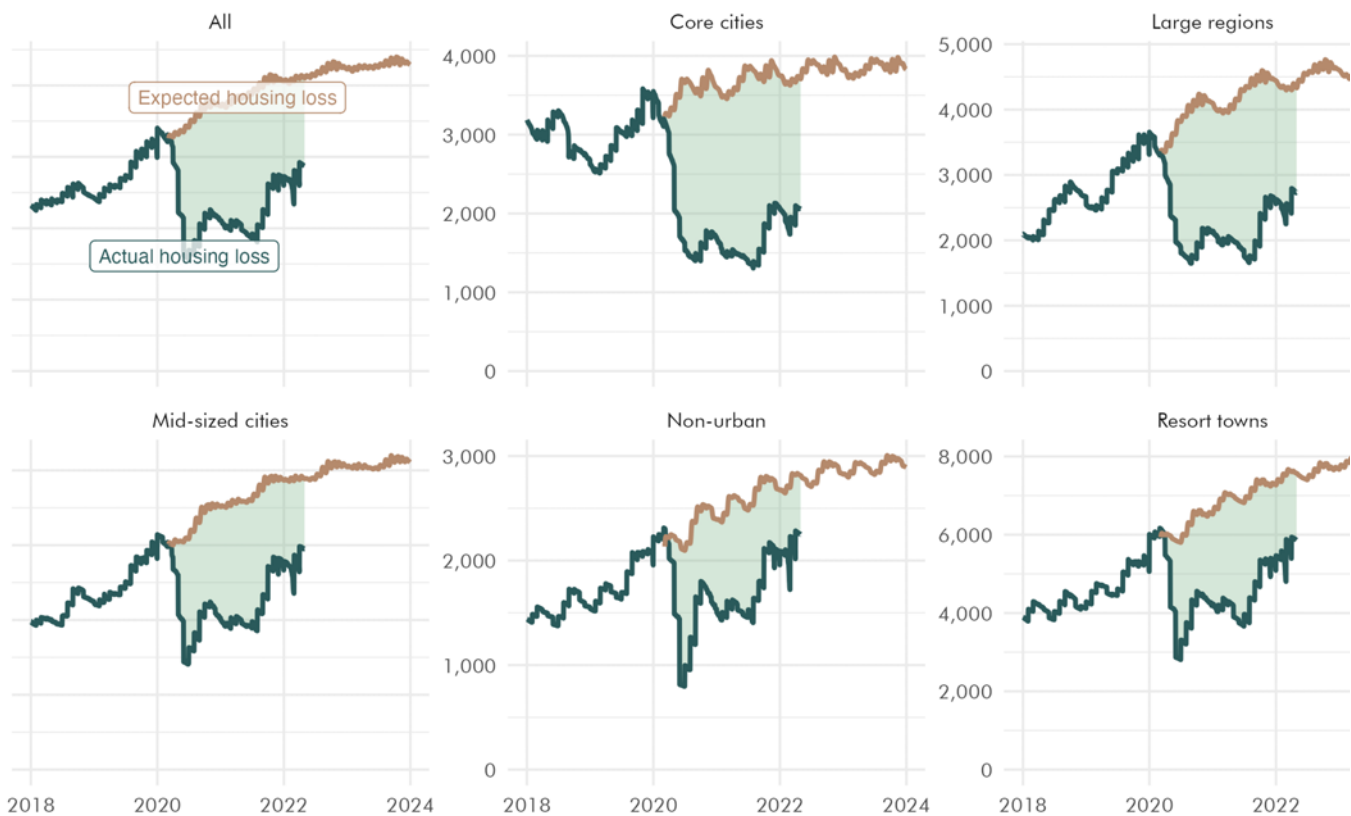
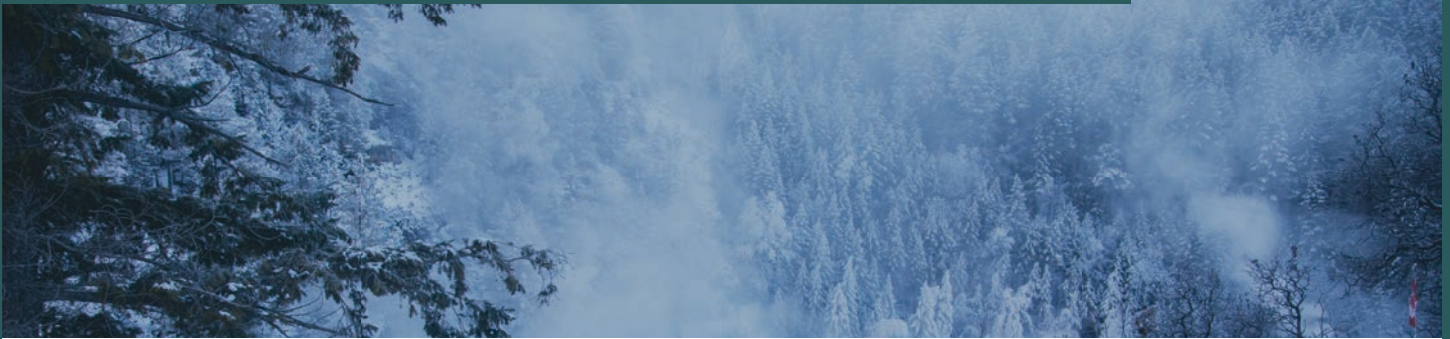


Figure 12. Actual and expected STR-induced housing loss through 2023 (7-day average)

## 4. Community case studies



**Community case studies demonstrate a clear pattern of STR activity in British Columbia during the pandemic. International travel was cancelled and diverted to regional destinations. This caused STR demand in the major cities to fall dramatically (because non-local visitors cancelled their trips). At the same time, STR demand outside the major cities remained reasonably strong (since many BC residents planning long-distance travel cancelled those plans and substituted local travel instead. In these non-central-city locations (particularly resort towns), STR activity still declined, because supply constraints in these markets led that demand to manifest as higher prices rather than more listings. All locations are now seeing rapid growth in commercial STRs, and rising rental cost burdens as a result.**

### CASE STUDIES

The preceding analysis has been carried out for the entire province of British Columbia, subdivided into five community types (central cities, non-central-city large urban regions, mid-sized cities, resort towns, and non-urban areas). In order to provide a more nuanced picture of the impacts of STRs on BC communities, we now present a series of case studies, taken from each of these community types. The case studies are Vancouver, Victoria, Richmond, Nanaimo, Parksville Qualicum Beach, Kelowna, Revelstoke, Fernie, and Summerland. Their locations are identified in Figure 13.

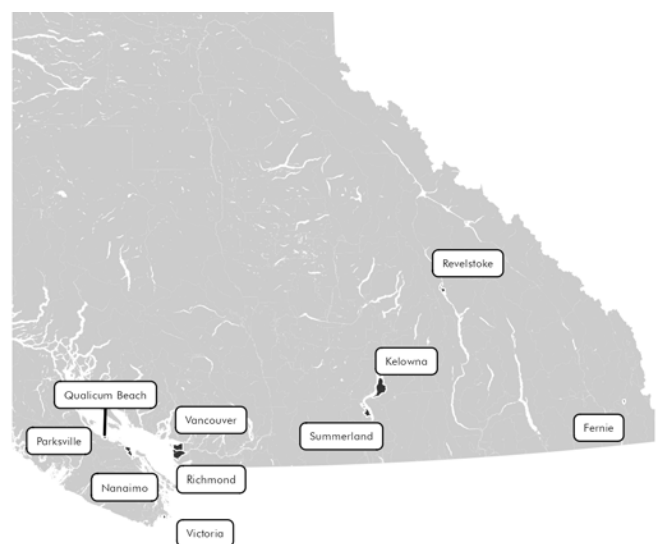


Figure 13. Case study locations

## VANCOUVER

The city of Vancouver (population 662,000) is the largest city in British Columbia and the centre of the 2.6-million person Metro Vancouver region. It is also a pioneer in STR regulations in Canada, having introduced mandatory STR licensing and principal-residence-only restrictions in 2018. We previously conducted an evaluation of these regulations at the City's request (Wachsmuth et al. 2021a), and we draw in part on those findings in what follows.

In April 2022 there were an average of 1,849 active STR listings in Vancouver each day (a 9.7% year-over-year increase from April 2021, although still far lower than the 3,881 active in 2019). Over the course of 2021, Vancouver's STR listings were operated by 1,265 hosts (compared to 2,671 in 2019), who collectively earned \$49.4 million in revenue (just a third the \$146.5 million in 2019), with an average of \$15,500 per listing (compared to \$25,600 in 2019) and a median of \$8,200 (compared to \$15,200 in 2019).

Figure 14 displays the number of active listings per day in Vancouver, expressed as a percentage of all dwelling units. Prior to the implementation of its STR regulations, Vancouver had a much higher prevalence of STRs than Victoria or Abbotsford (the two other central cities shown in the "Central city average" line in the figure). The gap narrowed from mid-2018 through the beginning of the pandemic, and since late 2020 Vancouver's STR market has shrunken to be proportionately the same size as the other two cities'. Figure 15 shows the distribution of Vancouver's STRs in 2021, as actual locations in the left panel and as a share of dwelling units in the right panel.

Since the pandemic, Vancouver's STR market has collapsed—along with neighbouring West Vancouver, Vancouver registered the largest proportionate decline in STR reservations between 2019 and 2021 of any mid-sized or

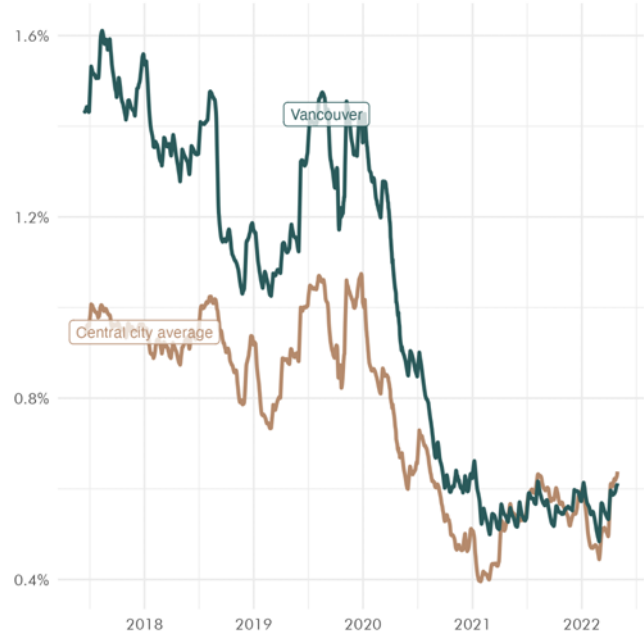


Figure 14. Active listings as % of all dwelling units in Vancouver (7-day average)

large municipality in the province. As the left panel of Figure 16 demonstrates, STR reservations from March 2020 through April 2022 have been only 35.2% of what would have been expected for this time period. At the same time, the centre panel of Figure 16 shows that average nightly prices have been 20.8% lower than the pre-pandemic trend. This combination of fewer reservations at lower prices demonstrates a collapse in STR demand in Vancouver, and is consistent with the pattern we have observed provincially, where international travel was cancelled and diverted to regional destinations, causing STR demand in the major cities to fall dramatically.

Despite Vancouver's STR regulations having somewhat reduced the dominance of commercial operators, the city's STR market remains mostly dedicated STRs. On average from 2018-2022, 62.9% of listings active each day in Vancouver have been frequently rented entire-home listings or ghost hostels, which means they are highly



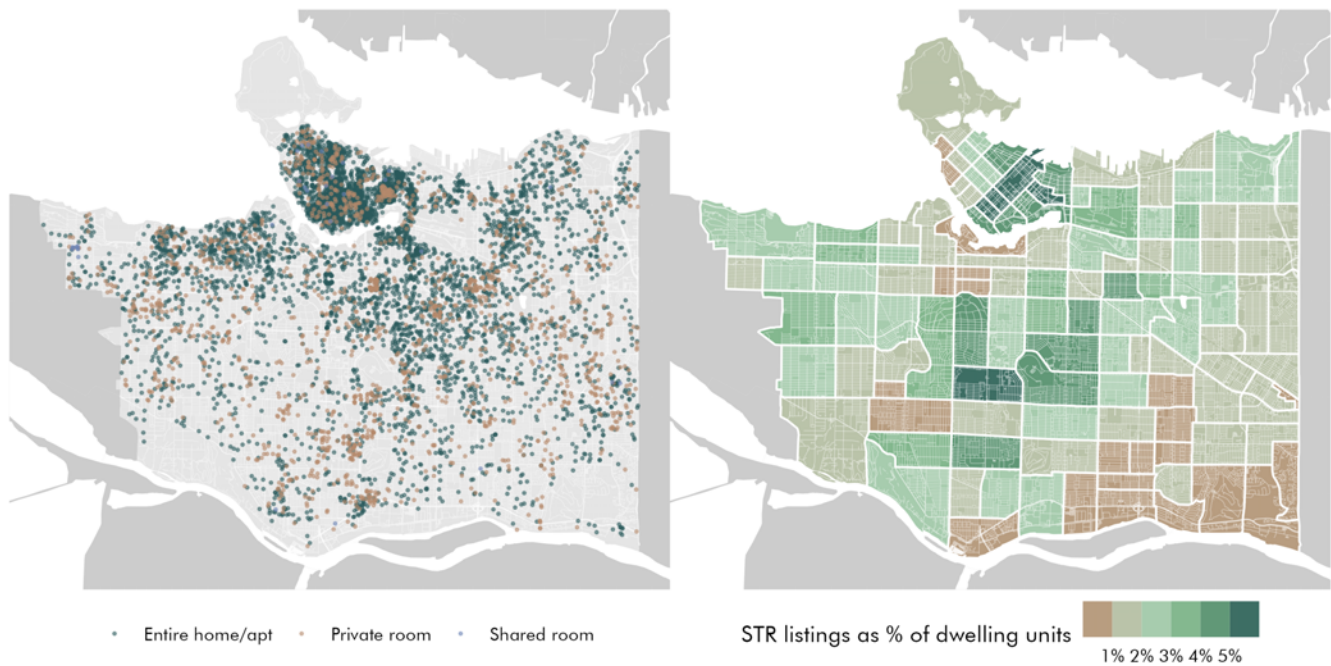


Figure 15. Active STR listings in Vancouver (2021)

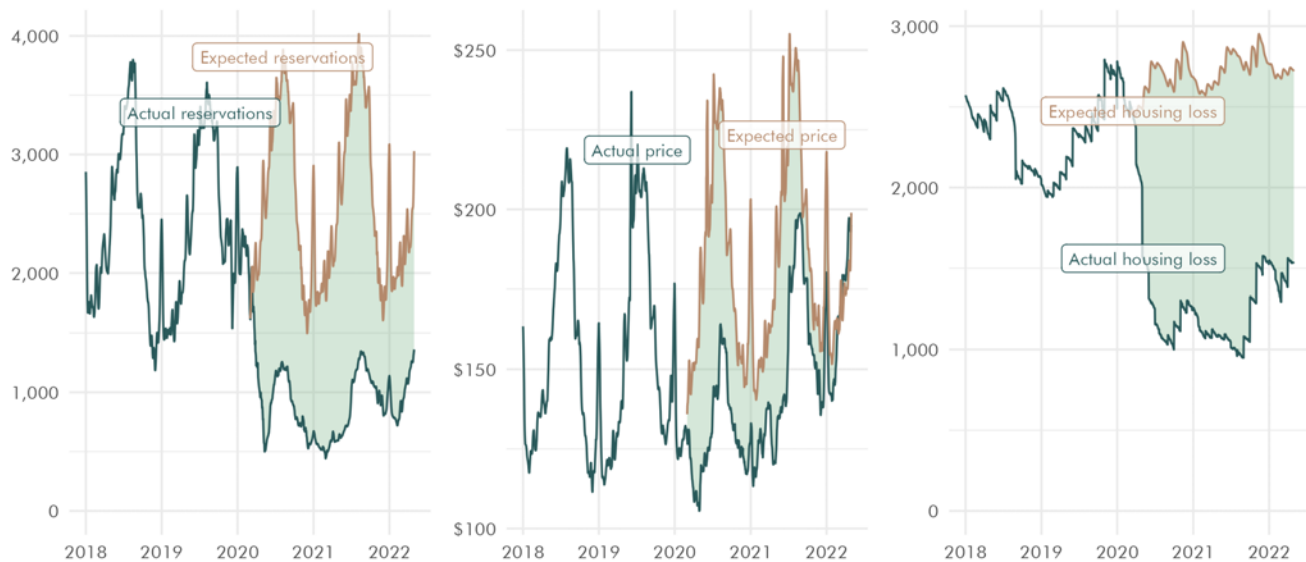


Figure 16. Actual and expected reservations (L), prices (C), and housing loss (R) in Vancouver during the Covid-19 pandemic (7-day average)

unlikely to be the host’s principal residence. The right panel of Figure 16 shows the total amount of STR-induced housing loss in Vancouver, and demonstrates that, in the absence of the pandemic, there could be 2,500 or more housing units operating as full-time STRs in the city.

From 2016-2021, our province-wide model suggests that renters in Vancouver paid \$607.6 million more in rent because of the presence of commercial STRs driving up rents. In 2019, when the STR market was at its pre-pandemic peak, we estimate dedicated STRs were responsible for 4.3%

**A. Airbnb**

"Beautiful modern renovated 2 bedroom"



**B. Craigslist**

"Luxury 2 BR Suite Modern Style and Private Patio - apts/housing for..."



**C. Airbnb**

"Steps from The Drive"



**D. Craigslist**

"Steps from the Drive - fully furnished, modern studio"



Figure 17. Examples of listings matched between STR and LTR platforms. The first pair of images (A & B) is matched despite the images being tinted differently. The second pair of images (C&D) is matched despite the first image being digitally altered.

of the total rents paid by Vancouver tenants. Put differently, during the 2017-2019 pre-pandemic period, the increase of dedicated STRs in Vancouver accounts for 6.3% of the increases in rents which Vancouver households were subjected to. The average Vancouver neighbourhood saw a \$96 increase in monthly rent each of these years, of which \$8 can be attributed to the growth of dedicated STRs. This number is much lower than most other communities in British Columbia, and reflects the effectiveness of the City of Vancouver’s restrictions on commercial STRs. By limiting (with partial success from an enforcement perspective) STRs to a host’s principal residence, the City of Vancouver has kept the number of commercial STRs much lower than it otherwise would have been, and kept rents from rising even higher than they otherwise would have.

In a more dramatic example of the impact of declining STR activity on housing affordability, in

2020, when the number of commercial STRs plummeted because of the pandemic, we estimate that rents in Vancouver increased 96.8% less than they otherwise would have, because of the decrease in commercial STRs that year.

In our previous work, we in fact identified 1,148 Airbnb and Vrbo listings which were relisted on the long-term market via Craigslist or Kijiji between March and September of 2020 (Wachsmuth et al. 2021a). We identified these listings through custom image matching software which we developed and ran on all the images used to advertise either short- or long-term listings; a pair of examples are shown in Figure 17. These listings were disproportionately commercial STRs in downtown Vancouver, and their hosts had been earning more than twice the city-wide average in STR revenue prior to the pandemic.

As of the end of spring 2022 there are signs that Vancouver’s commercial STR operators are retuning to the market. If the province’s STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there could be 2,800 housing units operating as dedicated STRs in Vancouver—a 83.8% increase over the actual number as of the end of April 2022. This implies that STR activity will drive up average monthly rents by \$41.52 above their levels at the end of spring 2022. This is an extra \$498 the average Vancouver renter household will be paying per year because of the growth of commercial STRs. Figure 18 shows the forecasted percentage and absolute rent increases which Vancouver renters will experience in 2023 if the quantity of commercial STRs returns to its pre-pandemic trend.

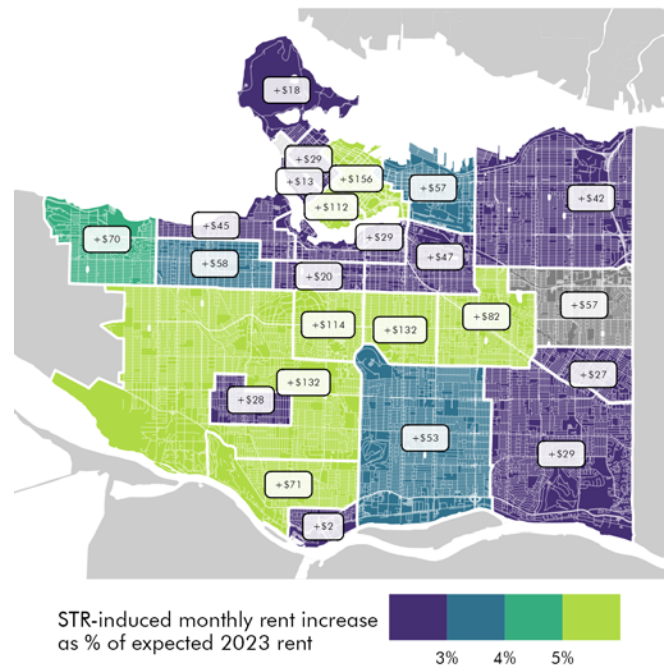


Figure 18. Projected 2023 STR-induced monthly rent increases in Vancouver

## VICTORIA

The city of Victoria, the capital of British Columbia, has a population of 91,900. It is the 14th largest city in the province, although it sits at the centre of the province’s second largest urban region. In April 2022 there were an average of 545 active STR listings in Victoria each day (a 14.8% year-over-year increase from April 2021, although still far lower than the 835 active in 2019). Over the course of 2021, Victoria’s STR listings were operated by 274 hosts (compared to 523 in 2019), who collectively earned \$17.1 million in revenue (just half the \$28.3 million in 2019), with an average of \$24,600 per listing (compared to \$27,200 in 2019) and a median of \$10,100 (compared to \$17,000 in 2019).

Figure 19 displays the number of active listings per day in Victoria, expressed as a percentage of all dwelling units. Compared to the other two central-city municipalities in the largest urban regions in BC (Vancouver and Abbotsford), Victoria has persistently had a higher prevalence of STRs. While the gap

narrowed in the early days of the pandemic, since 2021 Victoria’s STR market has rebounded much

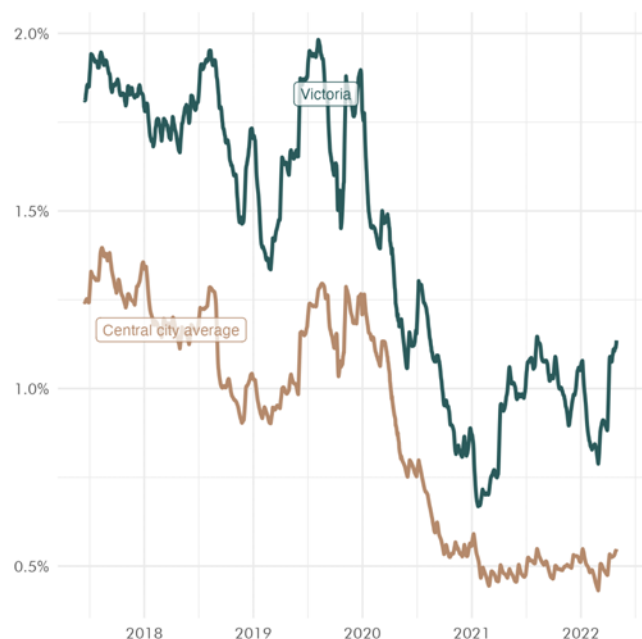


Figure 19. Active listings as % of all dwelling units in Victoria (7-day average)

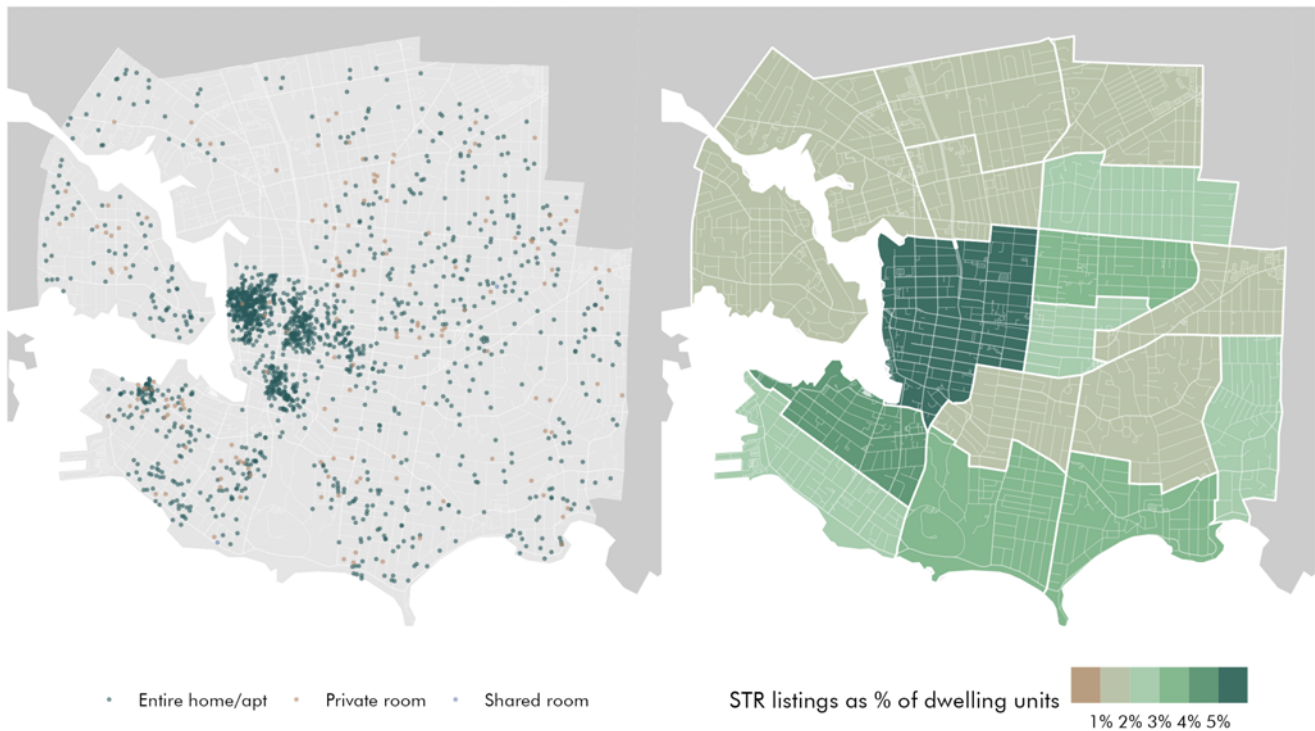


Figure 20. Active STR listings in Victoria (2021)

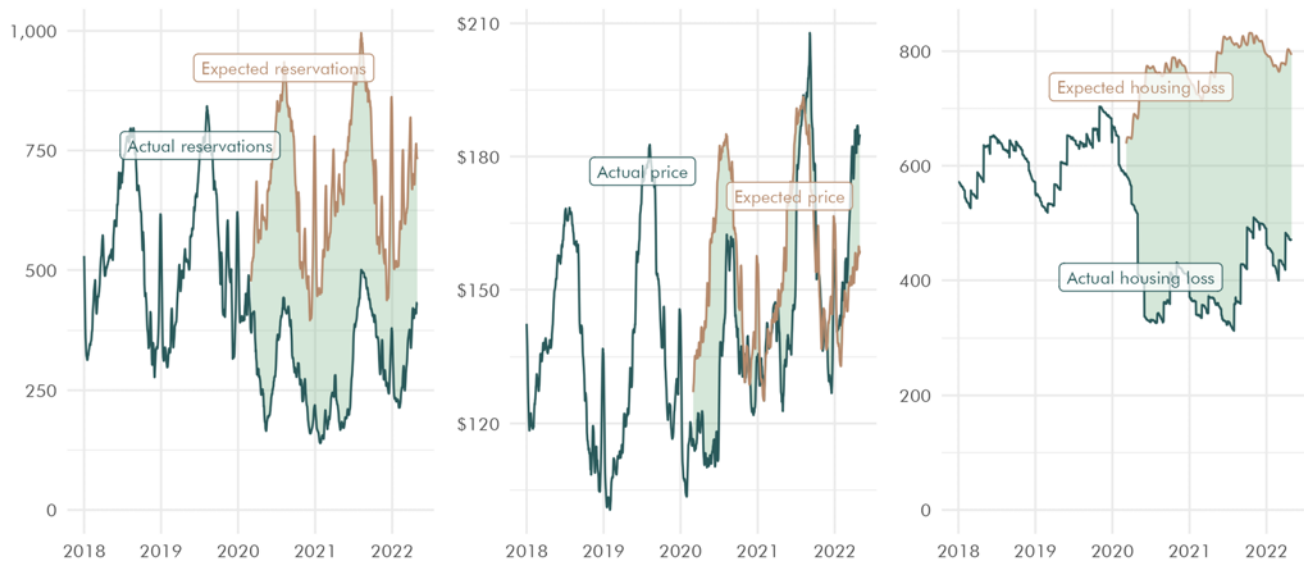


Figure 21. Actual and expected reservations (L), prices (C), and housing loss (R) in Victoria during the Covid-19 pandemic (7-day average)

more quickly than either Vancouver’s or Abbotsford’s has. Figure 20 shows the distribution of Victoria’s STRs in 2021, as actual locations in the left panel and as a share of dwelling units in the right panel.

Since the pandemic, Victoria’s STR market has collapsed—similarly to other municipalities in large urban regions in BC. As the left panel of Figure 21 demonstrates, STR reservations from March 2020

through April 2022 have been only 43.7% of what would have been expected for this time period. At the same time, the middle panel of Figure 21 shows that, from the start of the pandemic through the end of 2021, nightly prices have been on average 9.2% lower than the pre-pandemic trend. However, this situation has reversed itself in 2022, during which time nightly prices have been an average of 9.8% higher than the pre-pandemic trend. As subsequent case studies will make clear, Victoria has thus shifted from a pattern consistent with other large BC cities early in the pandemic—where international travel was cancelled and diverted to regional destinations, causing STR demand in the major cities to fall dramatically—to a pattern consistent with smaller tourism destinations—which saw low reservation volumes at high prices, as increased local tourism demand interacted with reduced STR supply.

Both before and during the pandemic, Victoria’s STR market has been dominated by commercial operators. On average from 2018-2022, 78.4% of listings active each day in Victoria have been frequently rented entire-home listings or ghost hostels, which means they are highly unlikely to be the host’s principal residence. The right panel of Figure 21 shows the total amount of STR-induced housing loss in Victoria, and demonstrates that, in the absence of the pandemic, there would likely be approximately 800 housing units converted to full-time STRs in the city.

From 2016-2021, our province-wide model suggests that renters in Victoria paid \$160.3 million more in rent because of the presence of commercial STRs driving up rents. In 2019, when the STR market was at its pre-pandemic peak, we estimate dedicated STRs were responsible for 4.6% of the total rents paid by Victoria tenants. Put differently, during the 2017-2019 pre-pandemic period, the increase of dedicated STRs in Victoria accounts for an enormous 32.3% of the increases in rents which Victoria households were subjected to. The average Victoria neighbourhood saw a \$53 increase in

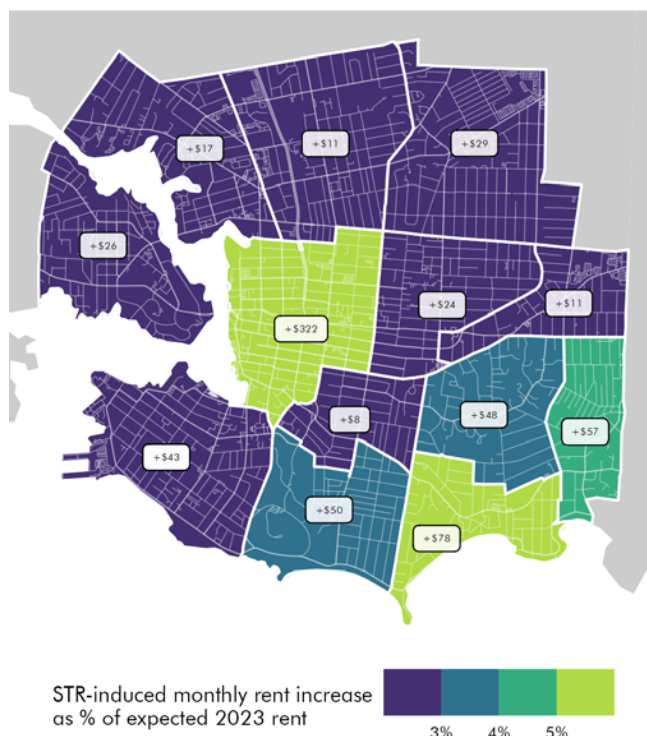


Figure 22. Projected 2023 STR-induced monthly rent increases in Victoria

monthly rent each of these years, of which \$17 can be attributed to the growth of dedicated STRs.

In 2020, when the number of commercial STRs plummeted because of the pandemic, we estimate that rents increased 96.8% less than they otherwise would have, because of the decrease in commercial STRs that year. But if the province’s STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there will be 800 housing units operating as dedicated STRs in Victoria—a 74.5% increase over the actual number as of the end of spring 2022. This implies that STR activity will drive up average monthly rents by \$52.44 above their levels at the end of spring 2022. This is an extra \$629 the average Richmond renter household will be paying per year because of the growth of commercial STRs. Figure 22 shows the forecasted percentage and absolute rent increases which Victoria renters will experience in 2023 if the quantity of commercial STRs returns to its pre-pandemic trend.

## RICHMOND

The city of Richmond, the third largest municipality in the Metro Vancouver region, has a population of 210,000. In April 2022 there were an average of 590 active STR listings in Richmond each day (a 5.7% year-over-year decrease from April 2021, and fewer than two thirds the 891 active in 2019). Over the course of 2021, Richmond's STR listings were operated by 243 hosts (compared to 425 in 2019), who collectively earned \$9.8 million in revenue (just half the \$19.2 million in 2019), with an average of \$20,800 per listing (compared to \$23,100 in 2019) and a median of \$6,000 (compared to \$9,600 in 2019).

Figure 23 displays the number of active listings per day in Richmond, expressed as a percentage of all dwelling units. Compared to other non-core municipalities in the largest urban regions in BC, Richmond had a higher prevalence of STRs in 2019. Richmond's STR market also weathered the first year of the pandemic better than other municipalities in its category, but over the course of 2021 STR activity in Richmond stagnated at the same time as it began to recover in other large-



Figure 23. Active listings as % of all dwelling units in Richmond (7-day average)

region municipalities. Figure 24 shows the distribution of these STRs in 2021, as actual locations in the left panel and as a share of dwelling units in the right panel.

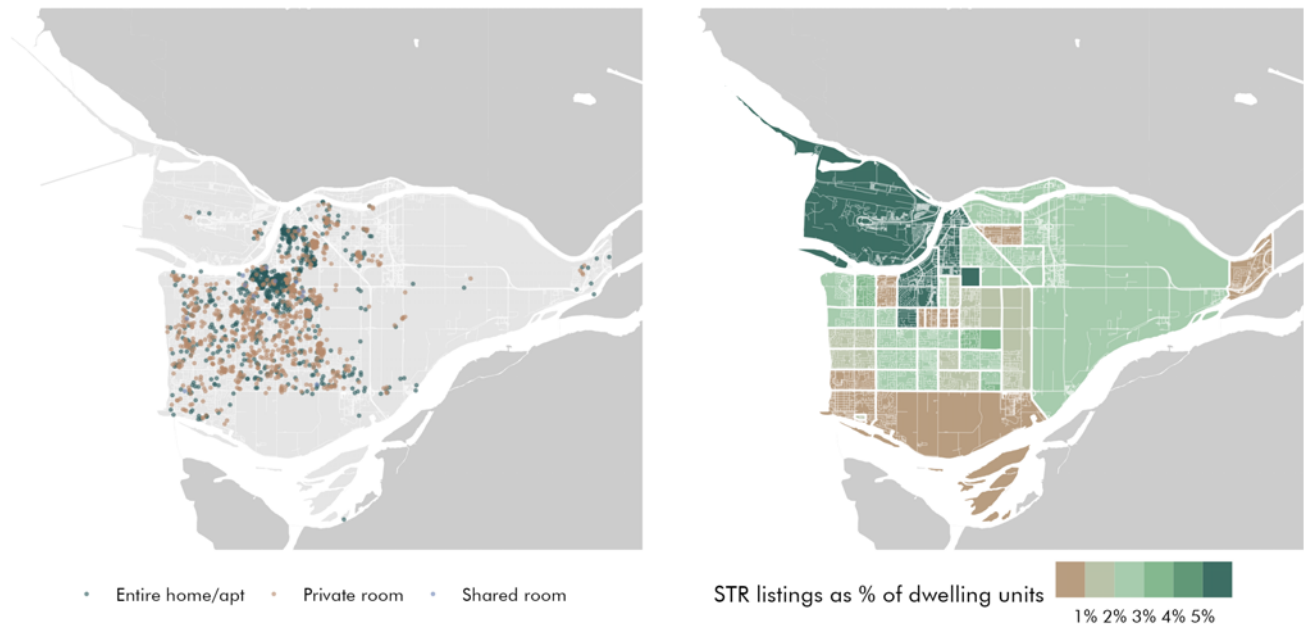


Figure 24. Active STR listings in Richmond (2021)

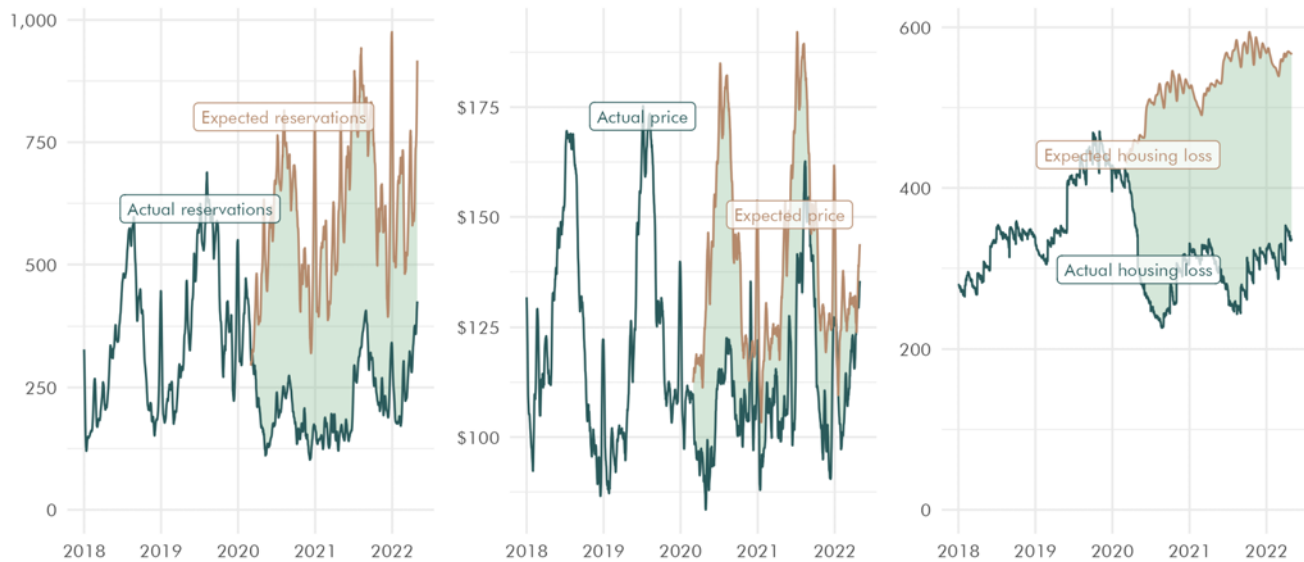


Figure 25. Actual and expected reservations (L), prices (C), and housing loss (R) in Richmond during the Covid-19 pandemic (7-day average)

Since the pandemic, Richmond’s STR market has collapsed—similarly to other municipalities in large urban regions in BC. As the left panel of Figure 25 demonstrates, STR reservations from March 2020 through April 2022 have been only 35.3% of what would have been expected for this time period. At the same time, the centre panel of Figure 25 shows that, after a brief dip at the beginning of the pandemic, average nightly prices have been 20.2% lower than the pre-pandemic trend. This combination of fewer reservations at lower prices demonstrates a collapse in STR demand in Richmond, and is consistent with the pattern we have observed provincially, where international travel was cancelled and diverted to regional destinations, causing STR demand in the major cities to fall dramatically.

Both before and during the pandemic, Richmond’s STR market has been dominated by commercial operators. On average from 2018-2022, 46.8% of listings active each day in Richmond have been frequently rented entire-

home listings or ghost hostels, which means they are highly unlikely to be the host’s principal residence. The right panel of Figure 25 shows the total amount of STR-induced housing loss in Richmond, and demonstrates that, in the absence of the pandemic, there would likely be nearly 600 housing units converted to full-time STRs in the city.

From 2016-2021, our province-wide model suggests that renters in Richmond paid \$94.6 million more in rent because of the presence of commercial STRs driving up rents. In 2019, when the STR market was at its pre-pandemic peak, we estimate dedicated STRs were responsible for 6.4% of the total rents paid by Richmond tenants. Put differently, during the 2017-2019 pre-pandemic period, the increase of dedicated STRs in Richmond accounts for 38.6% of the increases in rents which Richmond households were subjected to. The average Richmond neighbourhood saw a \$44 increase in monthly rent each of these years, of which \$19 can be attributed to the growth of dedicated STRs.

In 2020, when the number of commercial STRs plummeted because of the pandemic, we estimate that rents increased 87.0% less than they otherwise would have, because of the decrease in commercial STRs that year. But if the province’s STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there will be 600 housing units operating as dedicated STRs in Richmond—a 76.7% increase over the actual number as of the end of spring 2022. This implies that STR activity will drive up average monthly rents by \$67 above their levels at the end of 2021. This is an extra \$798 the average Richmond renter household will be paying per year because of the growth of commercial STRs. Figure 26 shows the forecasted percentage and absolute rent increases which Richmond renters will experience in 2023 if the quantity of commercial STRs returns to its pre-pandemic trend.

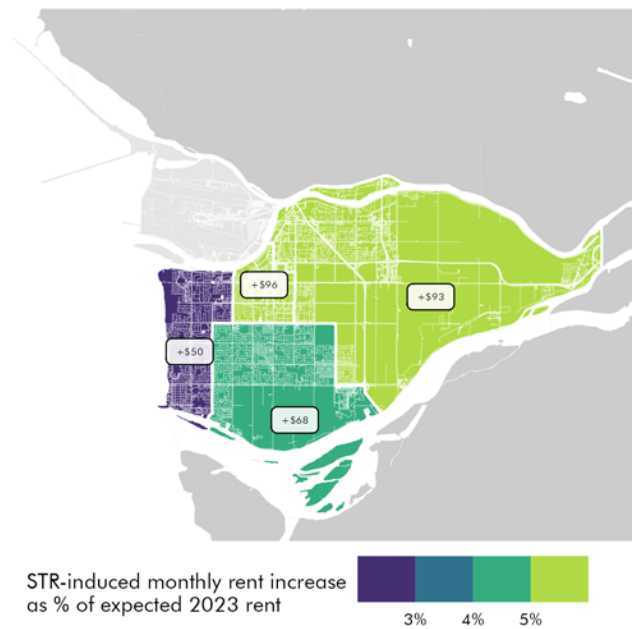


Figure 26. Projected 2023 STR-induced monthly rent increases in Richmond

## NANAIMO

The city of Nanaimo, on the eastern coast of Vancouver Island, has a population of just under 100,000. In April 2022 there were an average of 221 active STR listings in Nanaimo each day (a 48.0% year-over-year increase from April 2021, although still lower than the 293 active in 2019). Over the course of 2021, Nanaimo’s STR listings were operated by 151 hosts (compared to 225 in 2019), who collectively earned \$4.8 million in revenue (somewhat less than the \$5.6 million in 2019), with an average of \$11,100 per listing (compared to \$11,300 in 2019) and a median of \$7,400 (compared to \$7,800 in 2019).

Figure 27 displays the number of active listings per day in Nanaimo, expressed as a percentage of all dwelling units. Compared to other mid-sized cities in BC, Nanaimo has a lower-than-average number of active STRs, and this gap has widened slightly during 2021, as other mid-sized cities have seen their STR markets recover faster than Nanaimo. Figure 28 shows the distribution of these STRs in 2021, in the

left panel as actual listing locations and in the right panel as a proportion of all dwelling units.



Figure 27. Active listings as % of all dwelling units in Nanaimo (7-day average)



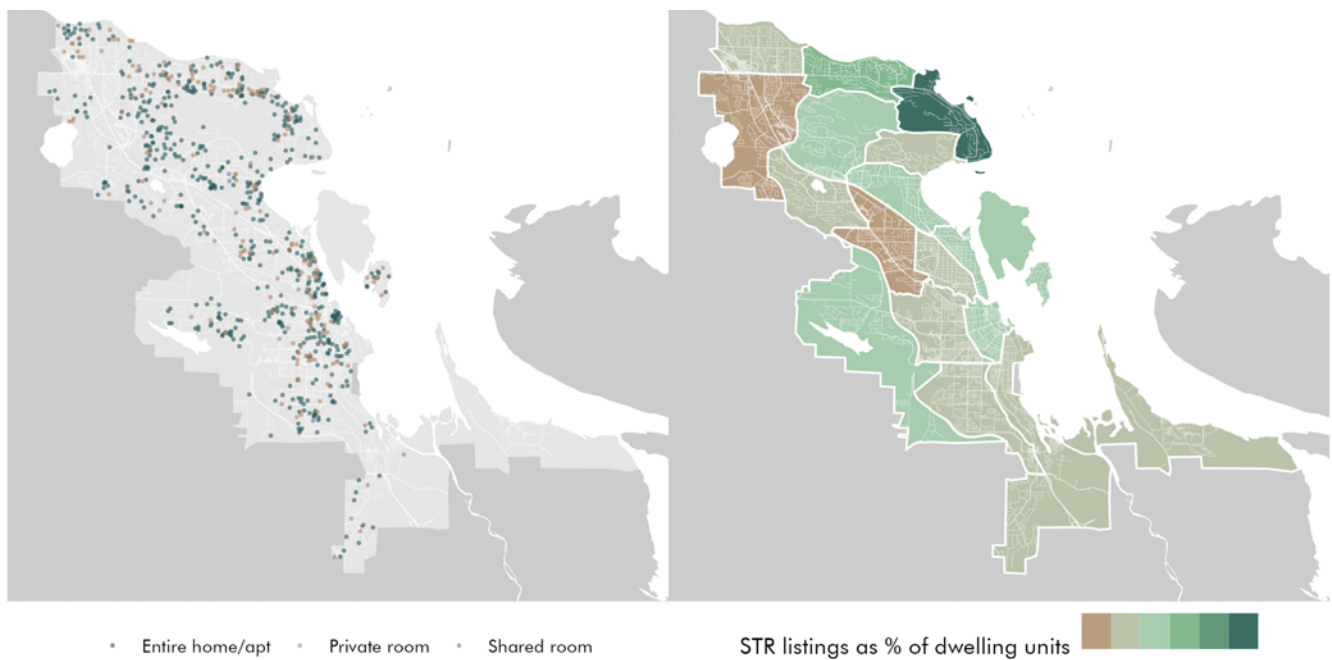


Figure 28. Active STR listings in Nanaimo (2021)

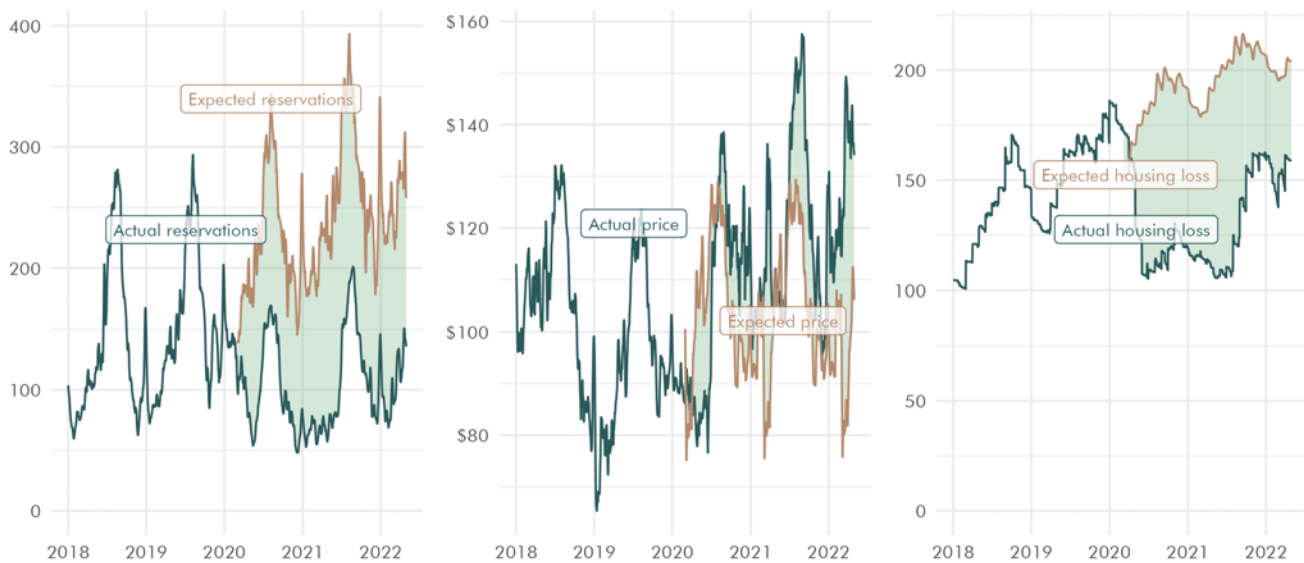


Figure 29. Actual and expected reservations (L), prices (C), and housing loss (R) in Nanaimo during the Covid-19 pandemic (7-day average)

Since the pandemic, Nanaimo’s STR market has followed a similar trajectory to other communities which receive significant tourism flows from within BC. As the left panel of Figure 25 demonstrates, STR reservations from March 2020 through April 2022 have been only 42.8% of what would have been expected for this time period. But, at the

same time, the centre panel of Figure 25 shows that, after a brief dip at the beginning of the pandemic, average nightly prices have been elevated 11.7% over their pre-pandemic trend in Nanaimo. This combination of fewer reservations at higher prices is consistent with the pattern we have observed provincially, where international



travel was cancelled and diverted to regional destinations, causing STR demand outside the major cities to remain reasonably strong, while supply constraints led that demand to manifest as higher prices rather than more listings.

Both before and during the pandemic, Nanaimo's STR market has been dominated by commercial operators. On average from 2018-2022, 60.5% of listings active each day in Nanaimo have been frequently rented entire-home listings or ghost hostels, which means they are highly unlikely to be the host's principal residence. The right panel of Figure 29 shows the total amount of STR-induced housing loss in Nanaimo, and demonstrates that, in the absence of the pandemic, there would likely be more than 200 housing units converted to full-time STRs in the city.

From 2016-2021, our province-wide model suggests that renters in Nanaimo paid \$15.6 million more in rent because of the presence of commercial STRs driving up rents. In 2019, when the STR market was at its pre-pandemic peak, we estimate dedicated STRs were responsible for 4.0%

of the total rents paid by Nanaimo tenants. Put differently, during the 2017-2019 pre-pandemic period, the increase of dedicated STRs in Nanaimo accounts for 19.8% of the increases in rents which Nanaimo households were subjected to. The average Nanaimo neighbourhood saw a \$61 increase in monthly rent each of these years, of which \$11 can be attributed to the growth of dedicated STRs.

In 2020, when the number of commercial STRs plummeted because of the pandemic, we estimate that rents increased 5.3% less than they otherwise would have, because of the decrease in commercial STRs that year. But if the province's STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there will be 200 housing units operating as dedicated STRs in Nanaimo—a 34.9% increase over the actual number as of the end of spring 2022. This implies that STR activity will drive up average monthly rents by \$33 above their levels at the end of 2021. This is an extra \$390 the average Nanaimo renter household will be paying per year because of the growth of commercial STRs.

## PARKSVILLE QUALICUM BEACH

The cities of Parksville and Qualicum Beach are located ten kilometres away from each other on the eastern side of Vancouver Island. Along with the stretch of the Regional District of Nanaimo which lies between them, they have a population of 31,000, and are an important tourism destination in the region. In April 2022 there were an average of 150 active STR listings in Parksville Qualicum Beach each day (a 27.1% year-over-year increase from April 2021, although still significantly lower than the 205 active in 2019). Over the course of 2021, Parksville Qualicum Beach's STR listings were operated by 86 hosts (compared to 119 in 2019), who collectively earned \$5.9 million in revenue (almost exactly the \$5.8 million in 2019), with an average of \$24,800 per listing (compared to \$20,800 in 2019) and a median of \$14,900 (compared to \$14,800 in 2019).

Figure 30 displays the number of active listings per day in Parksville Qualicum Beach, expressed as a percentage of all dwelling units. Compared to other mid-sized cities in BC, Parksville Qualicum Beach has a much higher-than-average number of active STRs. Figure 31 shows the distribution of these STRs in 2021, displayed in their actual locations.

Since the pandemic, Parksville Qualicum Beach's STR market has followed a similar trajectory to other communities which receive significant tourism flows from within BC. As the left panel of Figure 32 demonstrates, STR reservations from March 2020 through April 2022 have been only 42.8% of what would have been expected for this time period. But, at the same time, the centre panel of Figure 32 shows that average nightly prices have been elevated 11.7% over their pre-pandemic trend in Parksville Qualicum Beach. This combination of fewer reservations at higher prices is consistent with the pattern we have observed



Figure 30. Active listings as % of all dwelling units in Parksville Qualicum Beach (7-day average)

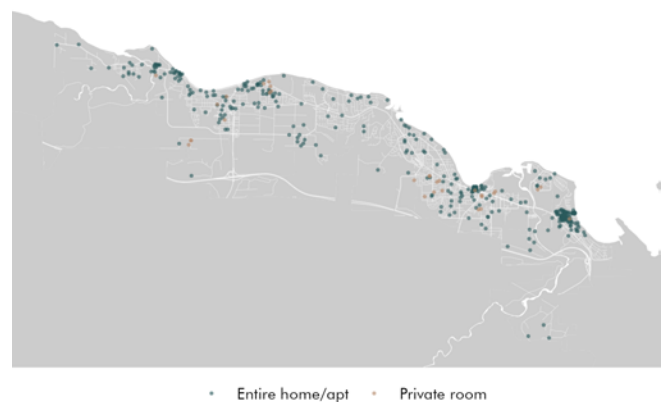


Figure 31. Active STR listings in Parksville Qualicum Beach (2021)

provincially, where international travel was cancelled and diverted to regional destinations, causing STR demand outside the major cities to remain reasonably strong, while supply constraints led that demand to manifest as higher prices rather than more listings.

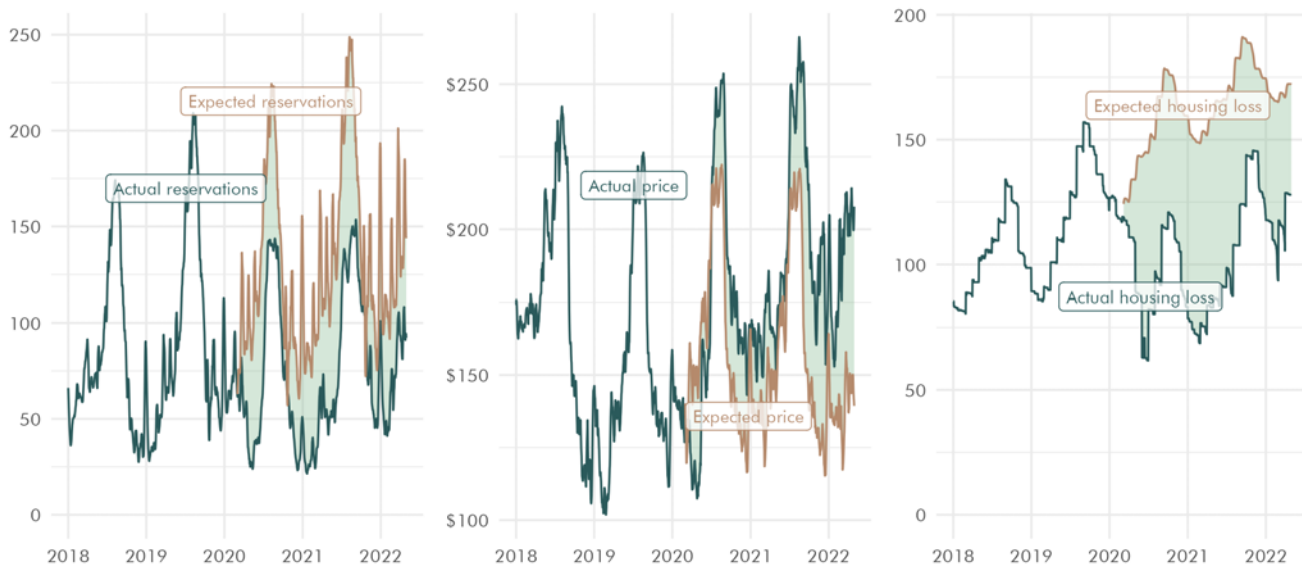


Figure 32. Actual and expected reservations (L), prices (C), and housing loss (R) in Parksville Qualicum Beach during the Covid-19 pandemic (7-day average)

Both before and during the pandemic, Parksville Qualicum Beach’s STR market has been dominated by commercial operators. On average from 2018-2022, 60.5% of listings active each day in Parksville Qualicum Beach have been frequently rented entire-home listings or ghost hostels, which means they are highly unlikely to be the host’s principal residence. The right panel of Figure 32 shows the total amount of STR-induced housing loss in Parksville Qualicum Beach, and demonstrates that, in the absence of the pandemic, there would likely be more than 200 housing units converted to full-time STRs in the city.

From 2016-2021, our province-wide model suggests that renters in Parksville Qualicum Beach paid \$15.6 million more in rent because of the presence of commercial STRs driving up rents. In 2019, when the STR market was at its pre-pandemic peak, we estimate dedicated STRs were responsible for 4.0% of the total rents paid by Nanaimo tenants. Put differently, during the 2017-2019 pre-pandemic period, the increase of dedicated STRs in Parksville Qualicum Beach

accounts for 19.8% of the increases in rents which Parksville Qualicum Beach households were subjected to. The average Parksville Qualicum Beach neighbourhood saw a \$61 increase in monthly rent each of these years, of which \$11 can be attributed to the growth of dedicated STRs.

In 2020, when the number of commercial STRs plummeted because of the pandemic, we estimate that rents increased 5.3% less than they otherwise would have, because of the decrease in commercial STRs that year. But if the province’s STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there will be 200 housing units operating as dedicated STRs in Parksville Qualicum Beach—a 34.9% increase over the actual number as of the end of 2021. This implies that STR activity will drive up average monthly rents by \$32.51 above their levels at the end of 2021. This is an extra \$390 the average Parksville Qualicum Beach renter household will be paying per year because of the growth of commercial STRs.

## KELOWNA

The city of Kelowna, which has a population of 145,000, lies at the heart of the tourist economy of the Okanagan Valley. In April 2022 there were an average of 534 active STR listings in Kelowna each day (a 38.2% year-over-year increase from April 2021, although still significantly lower than the 780 active in 2019). Over the course of 2021, Kelowna's STR listings were operated by listings were operated by 351 hosts (compared to 525 in 2019), who collectively earned \$28.6 million in revenue (almost exactly equal to the \$29.3 million in 2019, despite the much smaller number of active listings), with an average of \$29,900 per listing (compared to \$23,800 in 2019) and a median of \$15,100 (compared to \$12,700 in 2019).

Figure 33 displays the number of active listings per day in Kelowna, expressed as a percentage of all dwelling units. Compared to other resort municipalities, Kelowna has persistently had a lower prevalence of STRs, and this pattern has continued since the pandemic. (At the same time, Kelowna has a far higher prevalence of STRs than

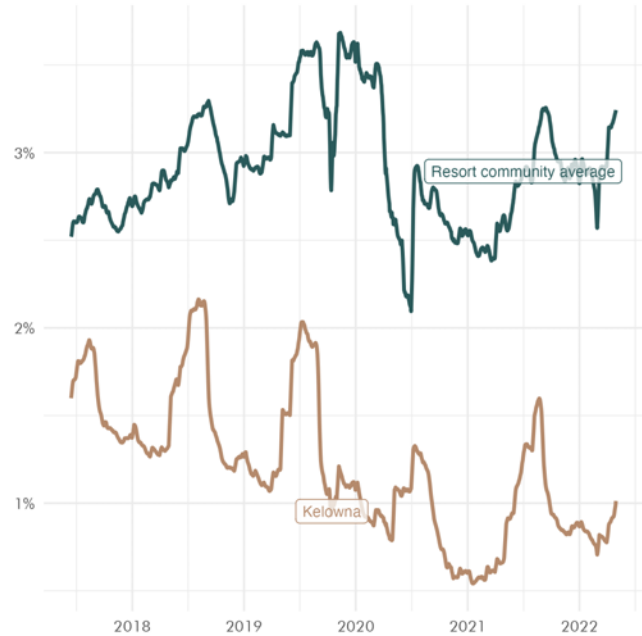


Figure 33. Active listings as % of all dwelling units in Kelowna (7-day average)

nearly any non-resort municipality in the province; it is only in relation to other resort towns that it is below average.) Figure 34 shows the distribution of these STRs in 2021, as actual locations in the

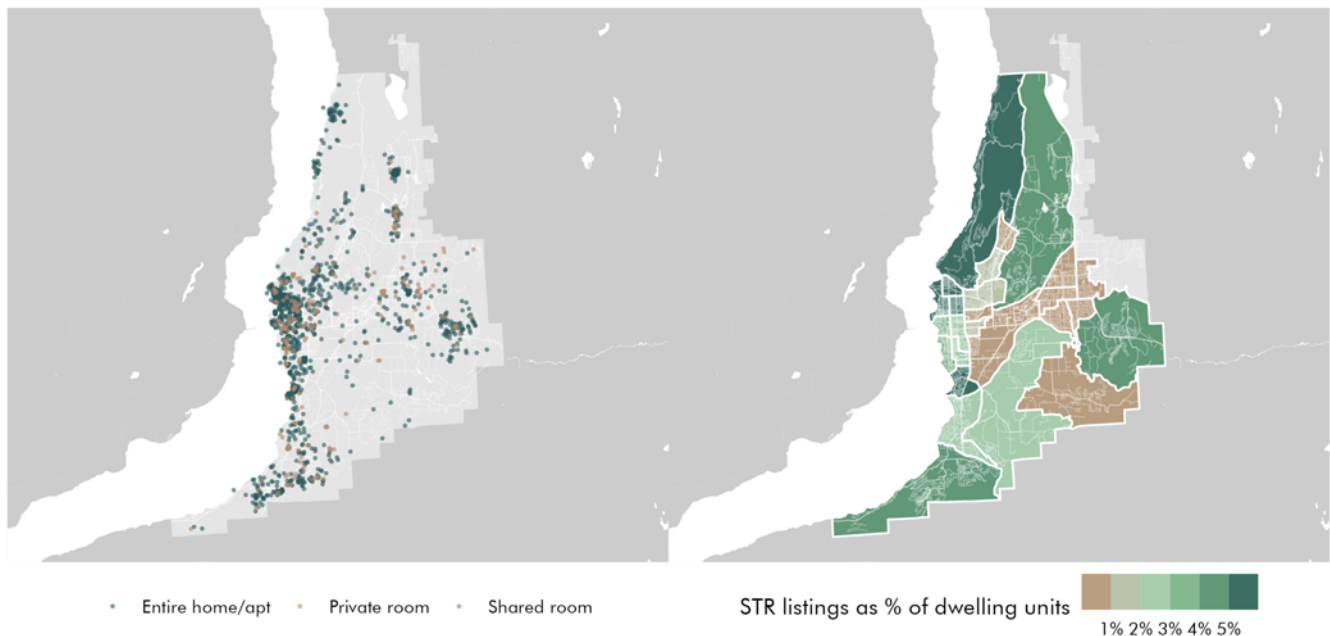


Figure 34. Active STR listings in Kelowna (2021)

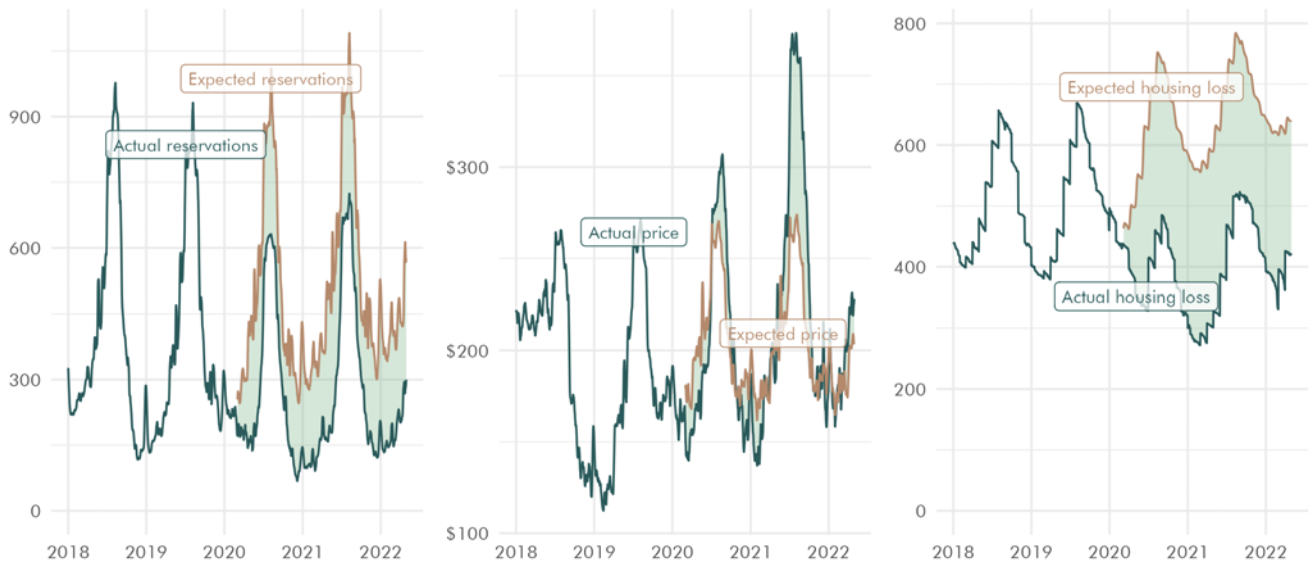


Figure 35. Actual and expected reservations (L), prices (C), and housing loss (R) in Kelowna during the Covid-19 pandemic (7-day average)

left panel and as a share of dwelling units in the right panel.

Since the pandemic, Kelowna’s STR market has seen low reservation counts but high prices, which is a pattern it shares with other tourist communities in the province. As the left panel of Figure 35 demonstrates, STR reservations from March 2020 through April 2022 have been only 53.2% of what would have been expected for this time period. At the same time, the centre panel of Figure 35 shows that, after a brief dip at the beginning of the pandemic, average nightly prices have been 4.9% higher than the pre-pandemic trend, with a particularly noteworthy spike during the summer high season in 2021, when prices were 23.4% higher than the pre-pandemic trend. This combination of fewer reservations at higher prices is consistent with the pattern we have observed provincially, where international travel was cancelled and diverted to regional destinations, causing STR demand outside the major cities to remain reasonably strong, while supply constraints led that demand to manifest as higher prices rather than more listings.

Both before and during the pandemic, Kelowna’s STR market has been dominated by commercial operators. On average from 2018-2022, 71.8% of listings active each day in Kelowna have been frequently rented entire-home listings or ghost hostels, which means they are highly unlikely to be the host’s principal residence. The right panel of Figure 35 shows the total amount of STR-induced housing loss in Kelowna, and demonstrates that, in the absence of the pandemic, there would likely be more than 600 housing units converted to full-time STRs in the city.

From 2016-2021, our province-wide model suggests that renters in Kelowna and its surroundings (specifically, the CMHC-defined “Core Area” zone of the Regional District of Central Okanagan) paid \$176.7 million more in rent because of the presence of commercial STRs driving up rents. This is the second highest of any municipality in the province (behind Vancouver), despite Kelowna’s relatively modest population. In 2019, when the STR market was at its pre-pandemic peak, we estimate dedicated STRs were responsible for 17.1% of the total rents paid by Kelowna

tenants. Put differently, during the 2017-2019 pre-pandemic period, the increase of dedicated STRs in Kelowna accounts for a shocking 68.3% of the increases in rents which Kelowna households were subjected to. The average Kelowna neighbourhood saw a \$87 increase in monthly rent each of these years, of which \$60 can be attributed to the growth of dedicated STRs.

In 2020, when the number of commercial STRs declined because of the pandemic, we estimate that rents increased 88.0% less than they

otherwise would have, because of the decrease in commercial STRs that year. But if the province's STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there will be 700 housing units operating as dedicated STRs in Kelowna—a 60.6% increase over the actual number as of the end of spring 2022. This implies that STR activity will drive up average monthly rents by \$79 above their levels at the end of 2021. This is an extra \$950 the average Kelowna renter household will be paying per year because of the growth of commercial STRs.

## REVELSTOKE

The city of Revelstoke, which has a population of 8,300, is located in southeast British Columbia, and has become a major skiing destination since the opening of the Revelstoke Mountain Resort in 2007.

In April 2022 there were an average of 161 active STR listings in Revelstoke each day (a 12.2% year-over-year increase from April 2021, although still significantly lower than the 159 active in 2019). Over the course of 2021, Revelstoke's STR listings were operated by listings were operated by 76 hosts (compared to 94 in 2019), who collectively earned \$6.7 million in revenue (somewhat less than the \$7.9 million in 2019), with an average of \$36,900 per listing (compared to \$46,000 in 2019) and a median of \$14,700 (compared to \$21,700 in 2019).

Figure 36 displays the number of active listings per day in Revelstoke, expressed as a percentage of all dwelling units. Compared to other resort municipalities, Revelstoke has persistently had a higher prevalence of STRs, and this pattern has continued since the pandemic, despite a disproportionately large fall in STR activity at the beginning of the

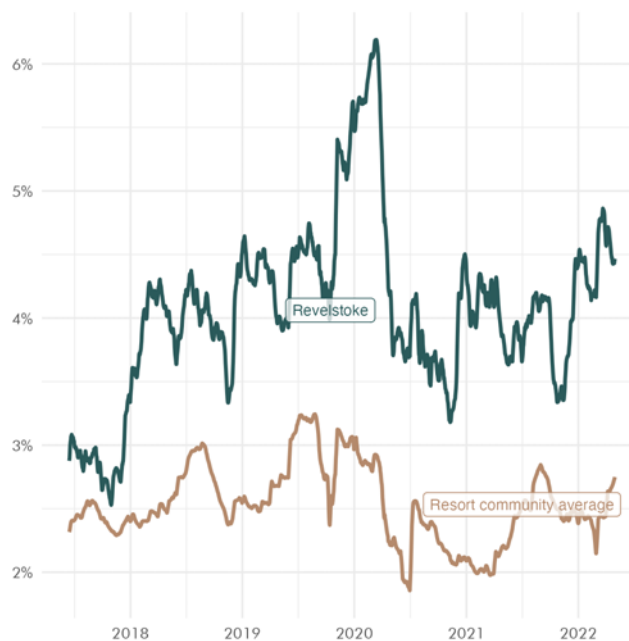


Figure 36. Active listings as % of all dwelling units in Revelstoke (7-day average)

pandemic. Figure 37 shows the distribution of these STRs in 2021, displayed in their actual locations.

Since the pandemic, Revelstoke's STR market has seen low reservation counts but high prices, which is a pattern it shares with other tourist communities in the province. As the left panel of

Figure 38 demonstrates, STR reservations from March 2020 through April 2022 have been only 63.3% of what would have been expected for this time period. At the same time, the centre panel of Figure 38 shows that average nightly prices have been 25.5% higher than the pre-pandemic trend, with a particularly noteworthy spike since the beginning of 2022, when prices have been 58.7% higher than the pre-pandemic trend. This combination of fewer reservations at higher prices is consistent with the pattern we have observed provincially, where international travel was cancelled and diverted to regional destinations, causing STR demand outside the major cities to remain reasonably strong, while supply constraints led that demand to manifest as higher prices rather than more listings.

Both before and during the pandemic, Revelstoke's STR market has been dominated by commercial operators. On average from 2018-2022, 64.4% of listings active each day in Revelstoke have been frequently rented entire-

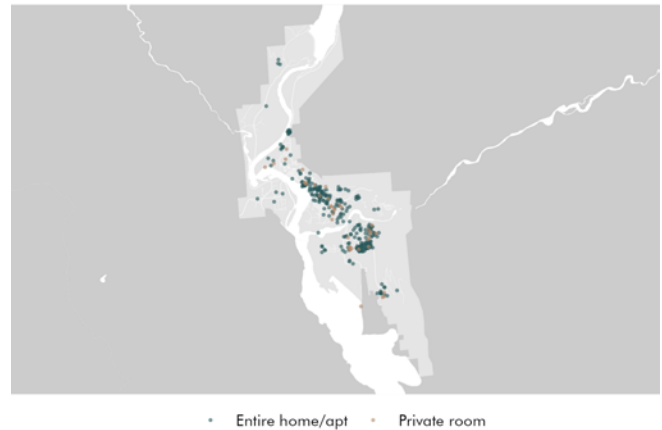


Figure 37. Active STR listings in Revelstoke (2021)

home listings or ghost hostels, which means they are highly unlikely to be the host's principal residence. The right panel of Figure 38 shows the total amount of STR-induced housing loss in Kelowna, and demonstrates that housing loss is rapidly catching up to its pre-pandemic trend. In the absence of the pandemic, there would likely be approximately 175 housing units converted to full-time STRs in the city.

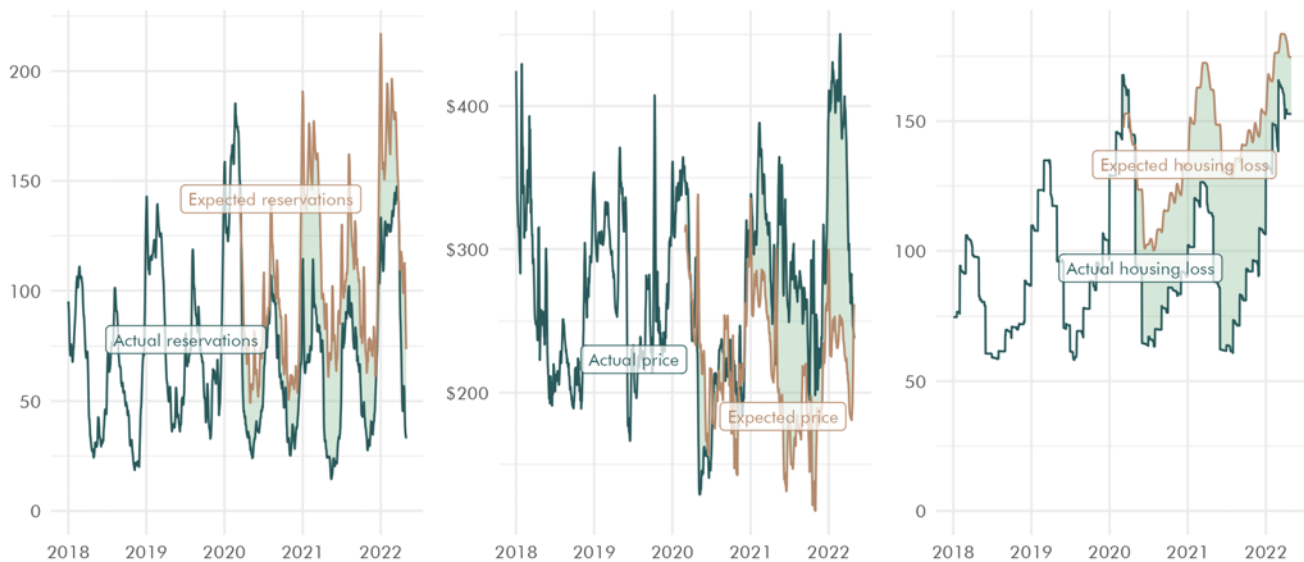


Figure 38. Actual and expected reservations (L), prices (C), and housing loss (R) in Revelstoke during the Covid-19 pandemic (7-day average)



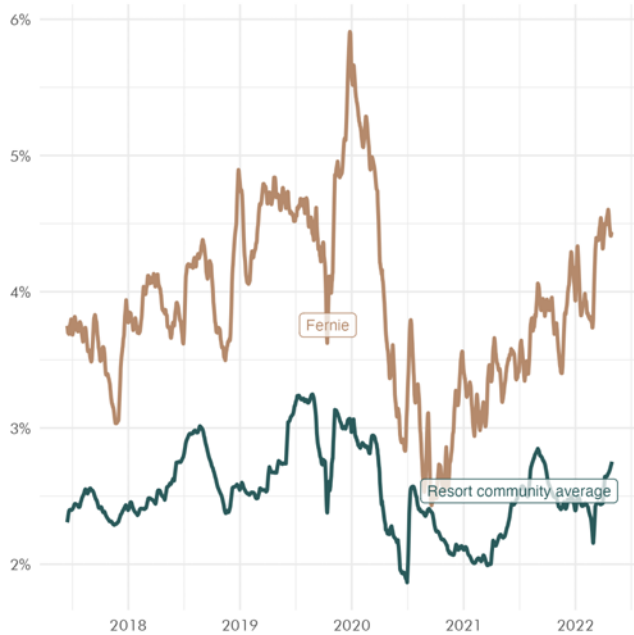


Figure 39. Active listings as % of all dwelling units in Fernie (7-day average)

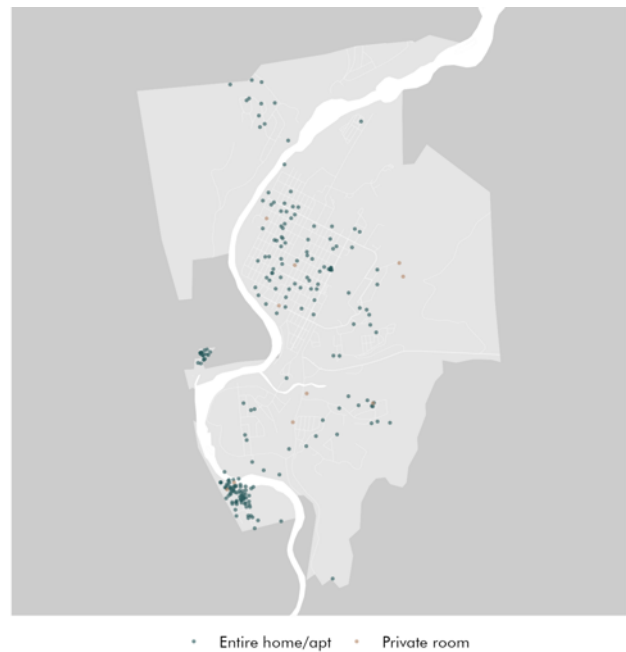


Figure 40. Active STR listings in Fernie (2021)

## FERNIE

The city of Fernie, which has a population of 6,300, is located in southeast British Columbia, and is a popular BC and Alberta winter tourism destination. In April 2022 there were an average of 138 active STR listings in Fernie each day (a 28.6% year-over-year increase from April 2021, although still significantly lower than the 140 active in 2019). Over the course of 2021, Fernie's STR listings were operated by 70 hosts (compared to 87 in 2019), who collectively earned \$4.2 million in revenue (somewhat less than the \$4.9 million in 2019), with an average of \$31,100 per listing (compared to \$29,100 in 2019) and a median of \$14,400 (compared to \$16,600 in 2019).

Figure 39 displays the number of active listings per day in Fernie, expressed as a percentage of all dwelling units. Compared to other resort municipalities, Fernie has persistently had a higher prevalence of STRs, and this pattern has continued since the pandemic, despite a disproportionately

large fall in STR activity at the beginning of the pandemic, when Fernie's STR prevalence nearly reached the resort municipality average. Since late 2020, by contrast, STR activity has grown much faster in Fernie than in other resort towns. Figure 40 shows the spatial distribution of Fernie's STRs in 2021.

Since the pandemic, Fernie's STR market has seen low reservation counts and low prices, which is a pattern that sets it apart from other tourist communities in the province. As the left panel of Figure 41 demonstrates, STR reservations from March 2020 through April 2022 have been only 46.2% of what would have been expected for this time period. At the same time, the centre panel of Figure 41 shows that average nightly prices have been 19.4% lower than the pre-pandemic trend.

This combination of fewer reservations at lower prices indicates a pandemic-induced collapse in

demand for STRs in Fernie, although STR activity has been growing robustly through 2021 and 2022, and prices have more recently begun to recover as well.

Both before and during the pandemic, Fernie’s STR market has been dominated by commercial operators. On average from 2018-2021, 73.3% of listings active each day in Fernie have been frequently rented entire-home listings or ghost

hostels, which means they are highly unlikely to be the host’s principal residence. The right panel of Figure 41 shows the total amount of STR-induced housing loss in Fernie, and demonstrates that housing units are being steadily reconverted to dedicated STRs, albeit not yet at a rate which will imply a catch-up to the pre-pandemic trend. In the absence of the pandemic, there would likely be more than 150 housing units converted to full-time STRs in the city.

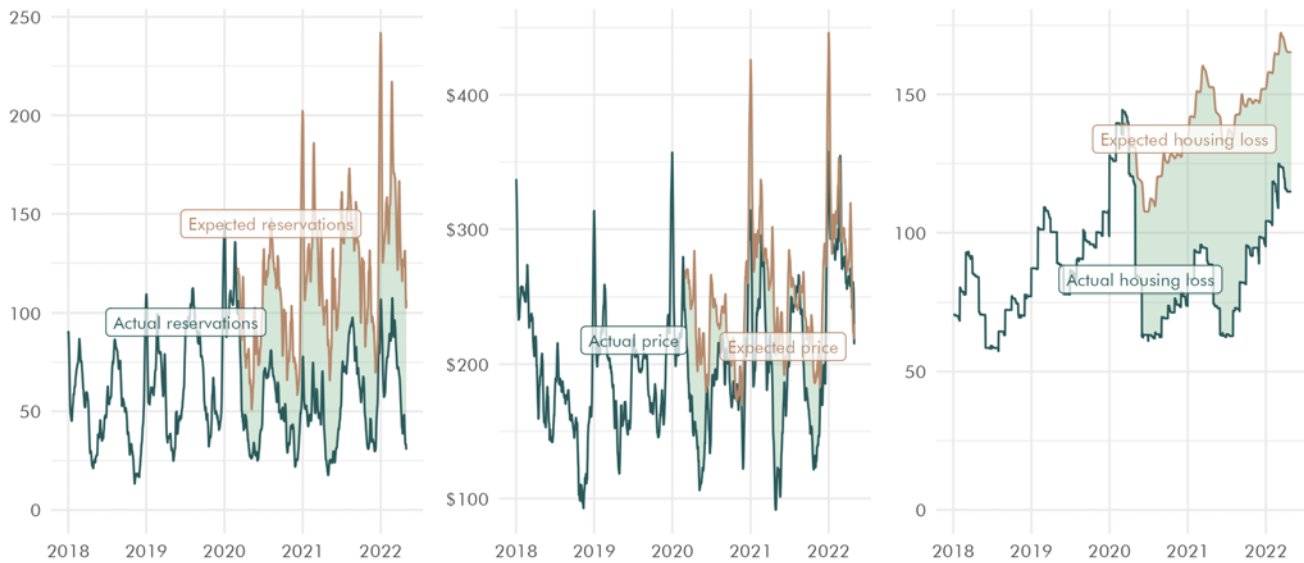


Figure 41. Actual and expected reservations (L), prices (C), and housing loss (R) in Fernie during the Covid-19 pandemic (7-day average)

## SUMMERLAND

Summerland, a town of 12,000 people, is located on the west side of Okanagan Lake, near Kelowna. In April 2022 there were an average of 66 active STR listings in Summerland each day (a 26.6% year-over-year increase from April 2021, although still significantly lower than the 93 active in 2019). Over the course of 2021, Summerland’s STR listings were operated by 54 hosts (compared to 68 in 2019), who collectively earned \$3.0 million in revenue

(substantially higher than the \$2.6 million in 2019, despite the much smaller number of active listings), with an average of \$21,000 per listing (compared to \$17,500 in 2019) and a median of \$15,400 (compared to \$12,300 in 2019).

Figure 42 displays the number of active listings per day in Summerland, expressed as a percentage of all dwelling units. Compared to

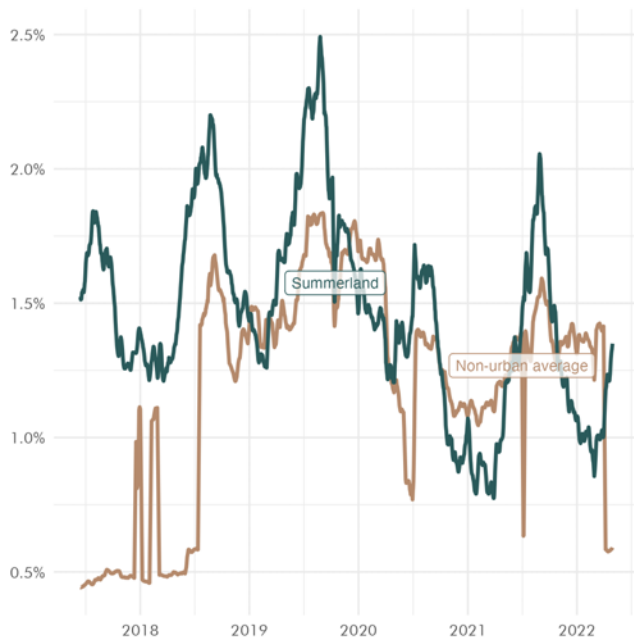


Figure 42. Active listings as % of all dwelling units in Summerland (7-day average)

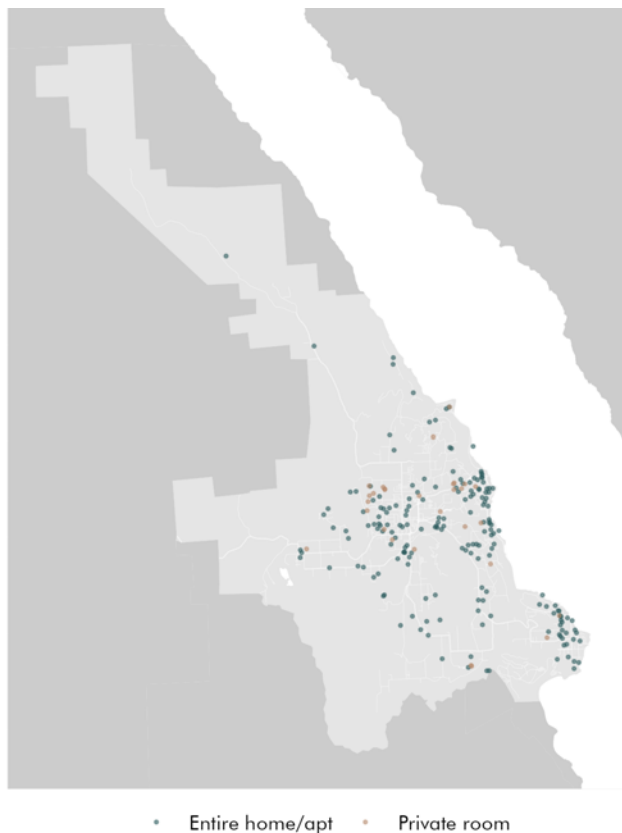


Figure 43. Active STR listings in Summerland (2021)

other non-urban communities in BC, Summerland has generally had a somewhat higher prevalence of STRs, albeit with stronger seasonal spikes—reflecting the town’s status as a popular summer tourist destination. (Although the low listing counts in many non-urban communities makes the comparison a somewhat noisy one.) Figure 43 shows the distribution of these STRs in 2021.

Since the pandemic, Summerland’s STR market has seen low reservation counts but steady prices, in which respect it somewhat resembles dedicated resort towns in the province. As the left panel of Figure 44 demonstrates, STR reservations from March 2020 through April 2022 have been only 55.9% of what would have been expected for this time period. At the same time, the centre panel of Figure 44 shows that average nightly prices have been slightly (4.6%) higher than the pre-pandemic trend, with prices actually 6.9% higher than the pre-pandemic trend during the 2021 summer high season. This combination of fewer reservations at higher prices is consistent with the pattern we have observed provincially, where international travel was cancelled and diverted to regional destinations, causing STR demand outside the major cities to remain reasonably strong, while supply constraints led that demand to manifest as higher prices rather than more listings.

Both before and during the pandemic, Summerland’s STR market has been dominated by commercial operators. On average from 2018-2021, 56.8% of listings active each day in Summerland have been frequently rented entire-home listings or ghost hostels, which means they are highly unlikely to be the host’s principal residence. The right panel of Figure 44 shows the total amount of STR-induced housing loss in Summerland, and demonstrates that, in the absence of the pandemic, there would likely be more than 60 housing units converted to full-time STRs in the city.

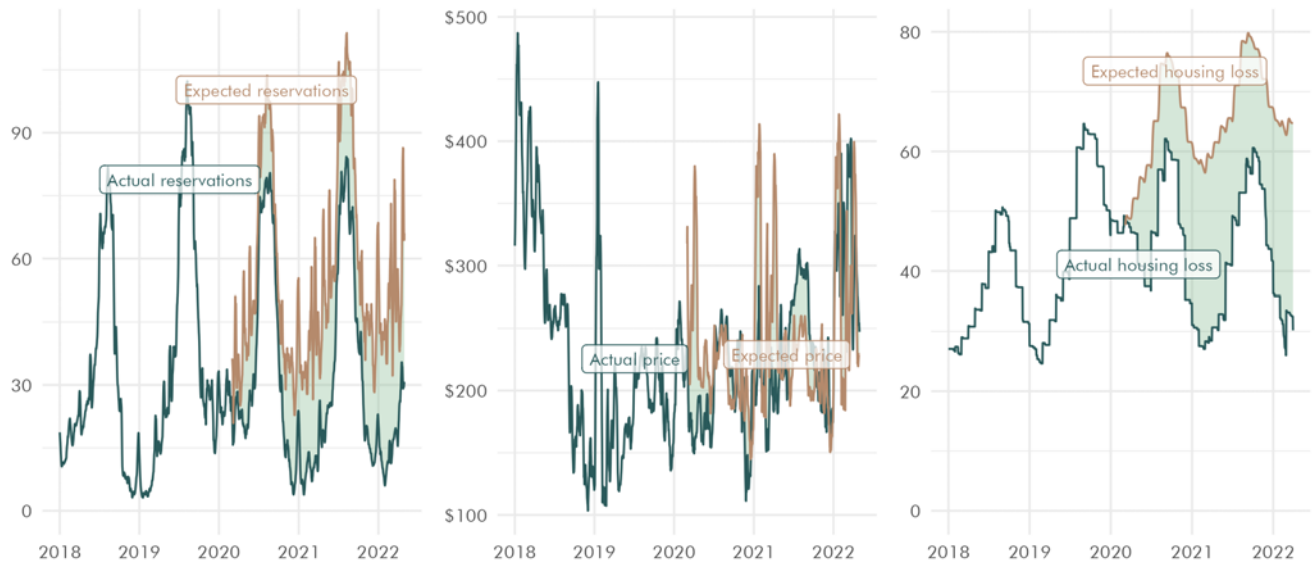


Figure 44. Actual and expected reservations (L), prices (C), and housing loss (R) in Summerland during the Covid-19 pandemic (7-day average)

From 2016-2021, our province-wide model suggests that renters in Summerland paid \$11.0 million more in rent because of the presence of commercial STRs driving up rents. In 2019, when the STR market was at its pre-pandemic peak, the model implies that dedicated STRs were responsible for 27.1% of the total rents paid by Summerland tenants. In fact, based on the observed province-wide relationship between the growth of STRs and changes in average rents, the model suggests that rents in Summerland would have declined between 2017-2019 if it hadn't been for the rapid conversion of housing units to dedicated STRs which occurred during this period. The average Summerland neighbourhood saw a \$35 increase in monthly rent each of these years, and the model estimates that dedicated STRs drove up rents by \$68.

In 2020, when the growth in commercial STRs stalled because of the pandemic, we estimate that rents only increased 4.0% due to STR growth that

year. But if the province's STR market returns to its pre-pandemic trajectory by the end of 2023, this would imply that there will be 100 housing units operating as dedicated STRs in Summerland—an 83.8% increase over the actual number as of the end of 2021. This implies that STR activity will drive up average monthly rents by \$172 above their levels at the end of 2021. This is an extra \$2,060 the average Summerland renter household will be paying per year because of the growth of commercial STRs. To be clear, Summerland is a small enough community that extrapolating from province-wide models is an error prone procedure, and these numbers should be interpreted as extremely rough estimates. But the facts are clear: commercial STRs have had a significant negative impact on housing affordability in Summerland, and, if the commercial STR market is permitted to return to its pre-pandemic trend, this impact will be substantially exacerbated.



## 5. STR regulatory options



**In this final chapter we examine several recent Canadian attempts to regulate STRs, and conclude by offering a set of principles to guide the construction of a provincial STR regulation framework in British Columbia—a task that is now overdue. Evidence from across Canada suggests that the simplest, most effective approach is for the Province to take the lead by establishing a single mandatory STR registration system for all of BC, while municipalities should strongly consider establishing principal-residence requirements to redirect their STR markets towards home sharing and away from commercial operations.**

### **VANCOUVER: THE EARLY SUCCESS STORY**

In April 2018, the City of Vancouver enacted regulations on the operations of short-term rentals in the City, defined as rentals offered for thirty or fewer consecutive days (City of Vancouver, 2020a). Under these regulations, each STR operator is required to obtain a license for their rental unit, the license being valid for one year.

The listing can only be operated out of the host's principal residence, either for the entire dwelling or for individual rooms. The registration is mandatory on any rental platform, although Airbnb is the only platform that agreed to require hosts in Vancouver to fill out a license field in their online listing, to engage in data sharing, and to

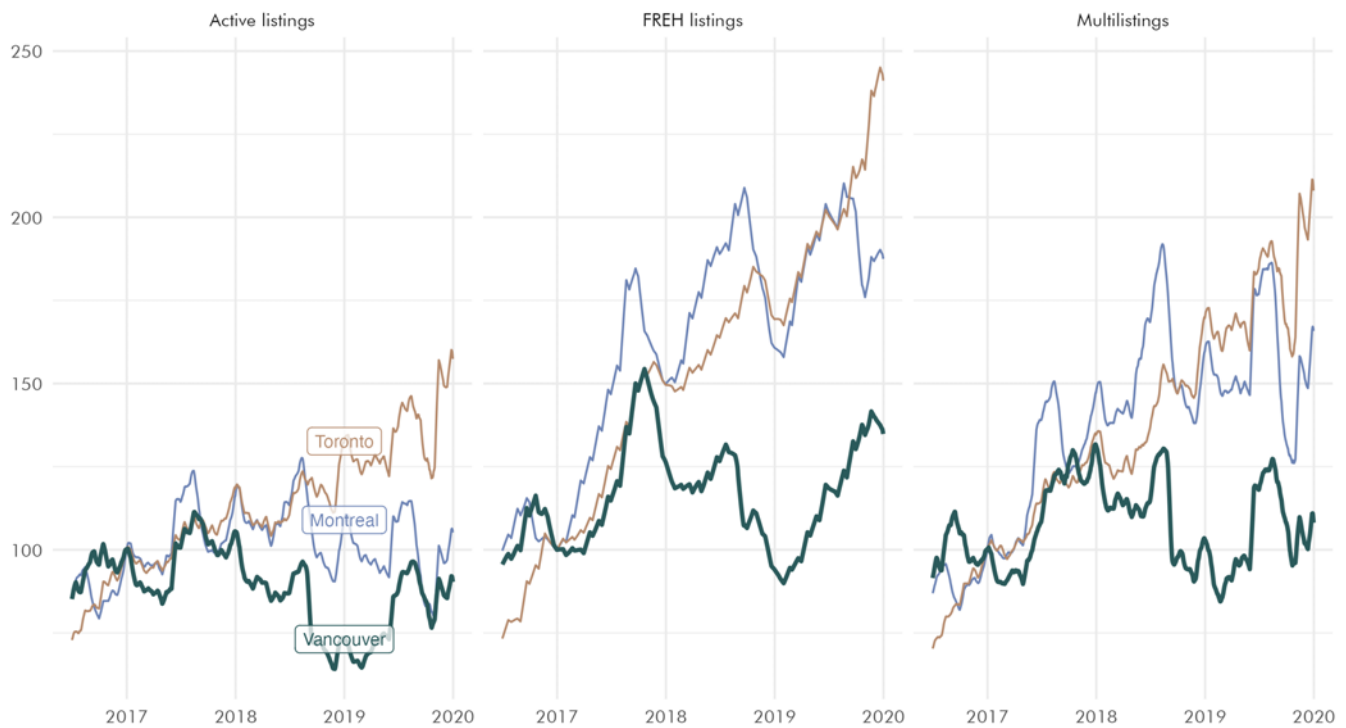


Figure 32. Active listings (L), FREH listings (C), and multilistings (R) in Montreal, Toronto and Vancouver (2017-01-01 = 100)

undertake operator education (City of Vancouver, 2020b). In August 2018, shortly before the City’s announced start date for enforcement of the registration system, Airbnb removed approximately 2,400 listings which had not received licenses, which amounted to 30.8% of all displayed listings. Using trend analysis, we estimated that, by mid-2019, the Vancouver STR regulation reduced active STR listings by more than one third, compared to the counter-factual scenario where the regulations had not been introduced. We also estimated that the City’s regulations reduced commercial STRs by a similar proportion, thus returning more than 800 housing units to the long-term market. The analysis in chapter 3 of this report demonstrates that these regulatory actions have exerted significant downward pressure on the growth of residential rents in Vancouver.

Further evidence supporting the notion that Vancouver’s STR regulations have been effective

at reducing the dedicated STRs which drive up housing costs comes from comparing Vancouver with peer cities nationally and with the rest of the Metro Vancouver region. As Figure 32 demonstrates, Vancouver’s STR growth trajectory lagged significantly behind Montreal and Toronto (which did not have comparable STR restrictions at the time, and thus serve as useful contrasting cases) from 2018 through the end of 2019, and the difference was particularly large with respect to frequently-rented entire home (FREH) listings. Through 2017, FREH listings were growing at nearly identical rates in Toronto and Vancouver, while by 2019 Toronto had nearly twice the total FREH growth which Vancouver had.

Figure 33 demonstrates that the same pattern holds true comparing the city of Vancouver to the rest of the Vancouver region—the growth rate of FREH listings in the rest of the region has vastly exceeded Vancouver’s since 2018.

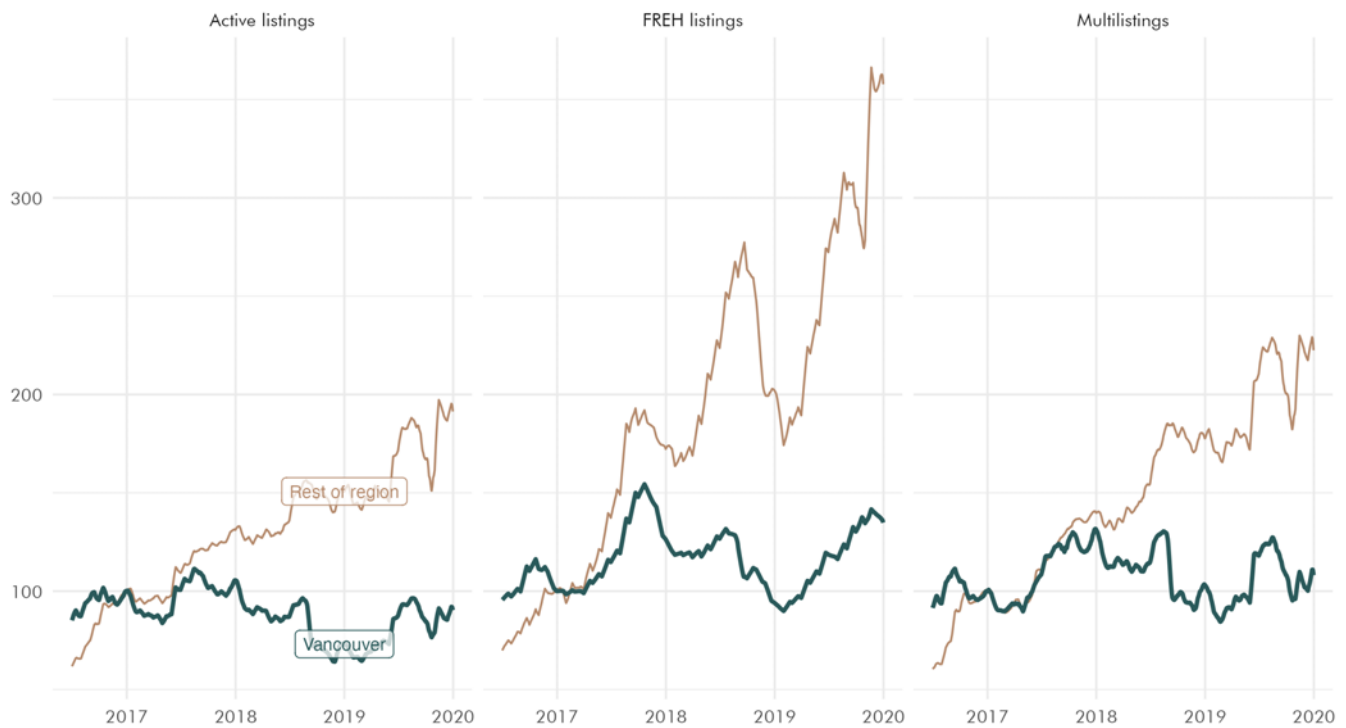


Figure 33. Active listings (L), FREH listings (C), and multilistings (R) in the city of Vancouver and the rest of the Vancouver region (2017-01-01 = 100)

## TORONTO: THE IMPORTANCE OF CLOSING LOOPHOLES

In early 2021, the City of Toronto’s STR regulations came into force, requiring all STR listings to be registered, and limiting STRs to a host’s principal residence. The vast majority of hosts failed to register their listings, however. In theory, this means that they should have been removed from online STR platforms such as Airbnb. And indeed, just prior to the implementation date in early January, Airbnb removed 2,600 Toronto listings from its site. However, this was only a small fraction of the listings which were not registered, and Airbnb forcibly shifted the overwhelming majority of remaining listings to a minimum rental length of 28 days, which exempts them from the registration requirement.

According to an analysis we conducted for the City of Toronto (Wachsmuth et al. 2021b), in

November of 2020, only 6.3% of Toronto listings had a minimum stay of 28 days or more, while at the beginning of February 2021 it was 72.2%. While it was too early to tell at the time of our analysis what the long-term impacts of Toronto’s STR regulations would be, it is clear that the fact that STR with a minimum 28-day reservation period are exempted from the need to register has created a serious loophole in Toronto’s registration scheme. In other words, offering an option for hosts not to register acts as a serious barrier to effective regulation.

Toronto’s registration system was thus successful at shifting market behaviour, but it did so by diverting properties out of the system, instead of capturing them within the system. Effective STR rules, therefore, should recognize the 28-day-minimum loophole and work to close it.

## QUEBEC: A PROVINCIAL REGISTRATION SYSTEM

Since 2020, the Province of Quebec has required all STR operators in the province to register their listings with the provincial government. While a lack of enforcement effort has hampered the effectiveness of this system so far, the basic contours of Quebec's rules suggest a plausible model for a productive provincial role in STR regulations. Quebec's system has three distinguishing features.

First, registration is mandatory for all STRs, with no exceptions. Second, the Province does not put any significant conditions on the operation of a STR—for example, a principal residence requirement or a maximum number of annual reservations. It simply requires hosts to be registered. Third, hosts need to identify whether their STR is located in their principal residence, and, if it is not, they have to obtain a slightly

different permit from the one which principal-residence operators obtain.

The combination of these three features should allow for a lightweight but effective regulatory system which gives municipalities the ability to define STR regulatory priorities but also gives them the information they need to enforce their rules. The key missing feature from Quebec's system is that it does not require online platforms to be accountable for enforcing the rules. Airbnb and the other online STR platforms could easily only permit listings with a registration number to be posted online. (This is how Airbnb currently operates in Vancouver and Toronto, for example.) But they do not currently do this, and the Province has not required them to. If this oversight were corrected, Quebec's provincial STR registration system would likely provide a strong model for the rest of the country to follow.

## REGULATORY PRINCIPLES FOR BC

As British Columbia emerges from the Covid pandemic, it is likely that the STR market will quickly return to its pre-pandemic status quo. This means that the temporary respite from STR-induced housing loss and rising rents will likely reverse itself. Meanwhile, regulation of STRs is piecemeal at best, and many communities likely to bear the brunt of the housing cost impacts do not have adequate frameworks in place to mitigate these impacts.

Now is thus an excellent time for BC's STR regulations to be updated, and the simplest, most effective approach is for the Province should take the lead by establishing a single mandatory STR registration system for all of BC, while municipalities strongly consider establishing principal-residence requirements to redirect their STR markets towards home sharing and away from commercial operations.

It is helpful to distinguish between three tasks that regulators need to accomplish: 1. They must decide on the appropriate regulations for the jurisdiction. 2. they must gather the information necessary to enforce the rules 3. they must enforce the rules.

Municipalities are the best positioned to tackle the first task: deciding on the most appropriate rules. Different communities can and should have different priorities for how they choose to balance STRs and housing issues. Larger cities generally have better substitutes for STRs (hotels) and have more severe housing affordability issues. Rural communities may not have good substitutes for STRs, may be more economically reliant on seasonal tourism, and may have somewhat less severe housing issues. So there will not be a viable "one size fits all" model for the province. However, the severity and ubiquity of housing affordability





issues in British Columbia suggests that many if not all municipalities should strongly consider introducing a principal-residence requirement into their STR rules. Empirical research, in addition to the pioneering experience of the City of Vancouver, strongly suggests that a principal residence requirement is the best means of redirecting STR activity away from commercial operations and toward home sharing, while simultaneously reducing the housing affordability burden of STRs on local residents.

By contrast, with respect to the second task, information gathering, there very much is a viable “one size fits all” model, and it is one in which the Province takes the lead. The provincial government should follow the lead of Quebec and establish a single mandatory registration system for all STRs operating in British Columbia. The information requirements for a registration system do not vary much between localities, so there are massive economies of scale in having a single system. Large municipalities are probably in a position to follow Vancouver’s lead and implement registration systems on their own, but for the vast majority of BC municipalities, this isn’t a viable possibility. The experience of Airbnb shifting listings to a 28-day minimum in Toronto to avoid the need to comply with regulations

further implies that the Province should not make a distinction between “short-term” and “long-term” rentals for the purposes of registration. Instead, the rules could identify a set of online STR platforms, and require the registration of any listing which is advertised on these platforms, regardless of the length of reservation.

Finally, regulatory enforcement should be a responsibility shared between both the Province and the municipalities. The Province can enforce the use and validity of the registration system, while municipalities can use the information in the registration system to enforce local bylaws. They can use their local knowledge, gained from inspections and complaints, to report registration problems to the Province, with the result that the overall STR regulatory system could be self-strengthening.

Establishing such a system will by no means solve all of BC’s housing affordability problems. But, compared with the longer-term solutions which will be needed to ensure that the province’s housing supply is adequate to housing needs, better regulation of short-term rentals is arguably the lowest hanging fruit capable of meaningfully addressing rapidly escalating housing costs.

# Appendix. Data and methodology



The analysis in this report is based on a combination of private and public data sources. The key sources are the following:

- **Listing and activity data about Airbnb and Vrbo short-term rental listings gathered by the consulting firm AirDNA.** This data includes canonical information about every short-term rental (STR) listing on the Airbnb and Vrbo (including HomeAway) platforms which was active in British Columbia between January 1, 2016 and April 30, 2022. The data includes “structural” information such as the listing type (entire home, private room, shared room or hotel room), the number of bedrooms, and the approximate location of the listing. AirDNA collects this information through frequent web scrapes of the public Airbnb and Vrbo websites. The data also includes estimates of listing activity (was the listing reserved, available, or blocked, and what was the nightly price?), which AirDNA produces by applying a machine-learning model to the publicly available calendar information of each listing. We use this data for our core analysis of the STR market, including our counts of active listings, our breakdown of different listing types, our estimates of STR-induced housing loss, and our estimates of listings which are commercial operations.
- **Additional data about Airbnb listings collected by UPGo researchers.** This includes information to verify activity, location and registration numbers, and listing photographs which were obtained through web scrapes.
- **Data about long-term rental listings on Kijiji and Craigslist.** This data includes the geographic location of listings advertised, the asking rent, the number of bedrooms, the number of bathrooms, the title, and the photographs attached to the posting. This data was collected by UPGo through web scrapes conducted each Monday from March 30 to October 12, 2020. We use this data to identify STR listings which have been transferred to the long-term market.
- **Data from Statistics Canada and the Canada Mortgage and Housing Corporation (CMHC).** We use this data to analyze population and dwelling counts.

*Data cleaning:* We process the raw STR data we receive from AirDNA through an extensive data cleaning pipeline, using our **strr** software package (Wachsmuth, 2021b), the code for which is available at <https://github.com/UPGo-McGill/strr>.

*Image matching:* We used our own image recognition algorithm to match listings posted to Airbnb or Vrbo. The algorithm uses “perceptual hashing” converts the sequence of pixels in an image into a string of numbers which serves as a distinctive “signature” of the image, similar to a fingerprint. We compare these signatures to each

other to find pairs of image signatures which are extremely similar. All potential matches are then individually verified by human observation. The software package we developed to conduct this image matching is called **matchr** (Wachsmuth, 2021a) and is available at <https://github.com/UPGo-McGill/matchr>.

*Community category definition:* Throughout the report, we distinguish between five categories of community in British Columbia: “core cities”, “large regions”, “mid-sized cities”, “non-urban” and “resort towns”. “Core cities” are the central cities of the province’s three census metropolitan areas (CMAs): Vancouver in the Vancouver CMA, Victoria in the Victoria CMA, and Abbotsford in the Abbotsford-Mission CMA. “Large regions” are the remaining municipalities in the three CMAs. “Mid-sized cities” are the municipalities in the province’s 23 census agglomerations. The remaining communities are classified as “resort towns” if the share of total employment which is in the arts and accommodation sector exceeds 12%, and “non-urban” otherwise.

*FREH modelling:* We define “frequently rented entire-home listings” as entire-home STR listings which are available for a majority of the year (so 183 days or more in a 365-day period), and which are reserved at least 90 days of that year. This is a consistent and conservative way to estimate listings operated sufficiently often that they are unlikely to be their host’s principal residence. But this indicator is slow to adapt to sudden shocks in STR activity, since it incorporates the past 12 months of a listing’s activity. Given that the COVID-19 pandemic caused STR activity to drop dramatically, we wanted to capture the associated changes at shorter timescales than the one year which our FREH concept allows us to. So we developed a linear regression model which predicts FREH status based on three months of listing activity instead of a full year, and which is calibrated both to routine seasonal variation and to a given market’s specific dynamics. All of the

FREH results reported here are the results of this model rather than the raw FREH calculations themselves.

*Rent regression model:* To answer the question “What is the predicted increase in average monthly rent in a community when the prevalence of dedicated STRs increases by one dedicated STR per 100 rental units?”, we developed a mixed-effects regression model. The model’s observations are each of the 126 CMHC zones in British Columbia, each year from 2016 to 2021 ( $n = 750$  after several observations with missing data were removed). The outcome variable is the average monthly rent in the zone (`total_rent`), and the predictor variable is the average number of daily housing units converted to STRs per 100 dwelling units (`iv`). We include several other variables as controls: the share of the zone’s dwellings which are renter-occupied (`renter_pct`), the year (`year`, expressed as the calendar year minus 2016), and the community type (`tier`). The latter is incorporated as a random-intercept effect, to allow for the possibility that different community types have different underlying housing costs. The full model specification is  $\text{total\_rent} \sim \text{iv} + \text{renter\_pct} + \text{year} + \text{tier} - 1$ . We evaluated several other model specifications, including a model with random intercepts and random slopes for community type, and a multilevel model with zone, municipality and CMA/CA as levels. All models identified the same relationships between variables and had similar explanatory power, so we opted for the mixed-effect model, which allows for a more straightforward interpretation of model coefficients.

In order to facilitate public understanding and scrutiny of our work, complete methodological details, along with all the code used to produce this analysis, are freely available under an MIT license on the UPGo GitHub page at <https://github.com/UPGo-McGill/bc-report-2022>.

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## **ABOUT UPGO**

UPGo, the Urban Politics and Governance research group at McGill University, conducts rigorous, public-interest research into pressing urban governance problems—particularly those that exceed or challenge city boundaries. UPGO has published numerous peer-reviewed journal articles and policy reports on short-term rentals in cities in Canada and around the world, including “Short-term rentals in Canada: Uneven growth, uneven impacts” and “The high cost of short-term rentals in New York City”. UPGO is led by Prof. David Wachsmuth, the Canada Research Chair in Urban Governance at McGill University’s School of Urban Planning, and is online at [upgo.lab.mcgill.ca](http://upgo.lab.mcgill.ca).



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