

# Housing Affordability Impacts of Airbnb in Portland

Fall 2016



## ▶▶ Disclaimer

For over 40 years, ECONorthwest has helped its clients make sound decisions based on rigorous economic, planning, and financial analysis. For more information about ECONorthwest: [www.econw.com](http://www.econw.com).

ECONorthwest staff members Mike Wilkerson, Lorelei Juntunen, Emily Picha, and Tina Morgan prepared this report for Airbnb in September 2016. ECONorthwest is responsible for the content of this report.

The staff at ECONorthwest prepared this report based on their general knowledge of economics and on information derived from government agencies, private statistical services, the reports of others, interviews of individuals, or other sources believed to be reliable. ECONorthwest has not independently verified the accuracy of all such information, and makes no representation regarding its accuracy or completeness. Any statements nonfactual in nature constitute the authors' current opinions, which may change as more information becomes available. Two of the authors of this report have legal short-term rentals in the City of Portland within their primary residences.

For more information about this report:

Lorelei Juntunen  
[juntunen@econw.com](mailto:juntunen@econw.com)  
KOIN Center  
222 SW Columbia Street Suite 1600  
Portland, OR 97201  
503.222.6060

## ▶▶ Acronyms and Definitions

### Acronyms

**HUD:** United States Department of Housing and Urban Development

**MFI:** Median Family Income

**ADU:** Accessory Dwelling Unit

**STR:** Short-term Rental

**SDC:** Systems Development Charge

### Definitions

**Affordable Housing:** Housing that is affordable to households making less than 80% of a region's Median Family Income.

**Workforce Housing:** Definitions vary, from rents that are affordable to households making 50% to 120% of MFI. In the Portland area, workforce housing is generally affordable to households making 80% to 120% of MFI.

**Full-time Listing:** Other analyses have used thresholds of 180 nights (49% occupancy) and 270 nights (74% occupancy) to define a threshold for when a unit is considered a full-time short-term rental listing.

**Entire Home Listing:** Airbnb hosts can select this option for their listing if the guest will have the entire space to themselves. This usually means that guests have a private entrance and bathroom, at a minimum.

**Portland MSA:** The Metropolitan Statistical Area comprised of Clackamas, Columbia, Multnomah, Washington, and Yamhill Counties in Oregon, and Clark and Skamania Counties in Washington.

## ►► Summary

The interaction between short-term rentals and the availability of affordable housing units has been a focus of housing policy discussions across the United States. The fundamental question asked in these discussions is: “If short-term rental platforms like Airbnb did not exist, would the owners of those units instead rent those units to long-term renters at affordable rates? If so, how many units are actually lost to short-term rentals?” In Portland, several studies have explored this relationship. To add its data to the discussion, Airbnb asked ECONorthwest to analyze the most current Airbnb entire home listings to provide data and interpretation of the interaction between these listings and housing affordability in the City.

Much of the debate in the media (and in Portland) has centered on estimating the number of entire housing units that are currently rented on Airbnb that would otherwise be available as long-term rental units. The loss of these units would reduce the supply of housing in the City. As economists, we recognize that any reduction in the supply of actual housing units must have an impact on housing prices in the market, yet we also recognize that the primary drivers of the housing market and pricing in the Portland region are demand for housing (which is outpacing the growth of the housing supply), zoned capacity for new development, the availability of land, and rising costs of construction. Any lost housing supply must be evaluated in that larger context.

Adding to the complexity of this debate is the fact that no data source, including Airbnb’s own data, allows us to precisely quantify the number of “lost” units. Airbnb data do help us to identify those hosts who rent their units on Airbnb infrequently, and infer that they are therefore not likely to rent their homes as full-time rental units if short-term rental platforms such as Airbnb were not available. This is the central focus of the calculations in this report (and most other similar reports as well).

The results of our analysis on the following pages show that Airbnb’s activities in Portland have minimal, if any, impact on the current affordability crisis. If all of Airbnb’s entire home unit hosts were to suddenly decide to stop renting on Airbnb, it would do very little, if anything, to affect the trends that are driving rising rents. We found that of the nearly 3,000 entire home listings on the Airbnb platform between August 2015 and July 2016, somewhere between **83 and 377 units (or, 0.03% of total housing stock in Portland)** would be considered full-time Airbnb rentals, based on common thresholds of over 270 nights rented and over 180 nights rented, respectively.<sup>1</sup> Airbnb finds that 60% of hosts use the supplemental income they earn from hosting to pay their mortgage or rent. Future analysis could explore the net impacts to the Portland market based on increased income security as a result of income generation from short-term rentals.

Even if all of those units were to be available for long-term rental, many of them would not rent at rates that are affordable to those making 60–80% of the region’s 2016 MFI for a family of two (\$35,220-\$46,950 per year).<sup>2</sup> Further, we find that but for City policy to waive Systems Development Charges and short-term rental income, many ADUS may not have been constructed. It is likely that units created for initial short-term rental use will convert to long-term use in the future, adding to total housing stock.

Airbnb’s previous analyses have pointed out the many ancillary benefits of their units for hosts and neighborhoods. These include creating extra income for hosts, supporting neighborhood vitality, and stimulating housing unit creation (in the form of ADUs). Policymakers should consider trade-offs between these benefits and a relatively small impact on overall affordability.

## ►► Summary of Key Findings

### Based on Airbnb's data, entire home listings within the City of Portland make up a small portion of the City's total supply of housing units.

We estimate that there are 83 to 377 full-time entire home listings in Portland. Many units are not rented full-time, are in an owner-occupied space, are not a traditional housing unit, or all three, suggesting they would not be available on the market as full-time rental units. Airbnb booked "entire home" listings comprise a small fraction (1.1%) of Portland housing stock. Frequently-booked entire home listings represent at most 0.14% of Portland's housing units, meaning that these units have minimal, if any, impact on housing affordability in Portland. In addition, Airbnb finds that short-term rentals can have a stabilizing effect on households. Airbnb's survey data shows that 60% of hosts depend on supplemental income from Airbnb to make ends meet.

- 2,976 entire home listings exist within the City of Portland. If all entire home listings were counted as housing units, they would comprise 1.1% of all housing units in the City.<sup>3</sup>
- Nearly half (42%) of entire home listings were rented fewer than 30 nights in one year.
- 377 units (or 12.7% of entire home listings and 0.14% of Portland's housing stock) were rented for more than 180 nights.
- 83 units (2.8% of entire home listings and 0.03% of Portland's housing stock) were rented for more than 270 nights.

### Market rents near most Airbnb listings indicate that they would not otherwise rent at affordable price points.

If these units were available to long-term renters, they would likely be rented at price points above traditional affordability thresholds. In addition, Airbnb provides an extra stream of income in these neighborhoods that increases housing security for hosts.

- 70% of listings are located in neighborhoods with average one-bedroom rents of \$1,000 or more, which are unaffordable to households making 80% of MFI or less.<sup>4</sup>

### The ability to generate income through short-term rental can incent long-term housing unit creation.

The ability to recoup revenue on Airbnb appears to have incited the construction of ADUs, especially combined with city policies to reduce SDCs. Airbnb's analysis found that 20% of ADUs are rented over 180 nights per year. Many units created for initial short-term rental use will convert to long-term use, adding to total housing stock.

- 257 active Airbnb entire home listings are permitted ADUs.<sup>5</sup>
- 90% of Airbnb entire home units that are permitted ADUs were constructed since 2008, when Airbnb entered the Portland market, and were likely never continuously part of the long-term rental supply.
- 51 of those units (20%) were rented more than 180 nights per year.

### Short-term rental units primarily function as part of the hospitality market, rather than the housing market.

Short-term rental units provide a diverse stock of lodging that meets unmet demand throughout the city, bringing new visitors into communities and supporting neighborhood business districts. The flexibility of this stock means that most hosts rent only sporadically during peak periods to provide "overflow" lodging capacity or alternate between short-term and monthly rentals. There are limits to the growth of the hospitality market.

- 59% of Airbnb listings had no hotels within a half-mile.
- 53% of listings active as of Jan 2015 were deactivated by September 2016, showing very high churn.

## ►► Notes on Data and Previous Studies

Data limitations presented several challenges to quantifying the impacts of short-term rentals on the housing market:

- There is no existing data source available to determine which short-term rental units would be counted as housing units in traditional data sources, or what the owner of the unit would do with the unit without Airbnb or similar short-term rental platforms. Airbnb conducts annual surveys of its hosts that include questions on these topics, but response rates are too low for analysis.
- The data presented in this report are for Airbnb's listings alone. Many Portland hosts may "cross-list," or list their homes across several platforms. Without comprehensive data across the most popular short-term rental platforms (including Homeaway), it is impossible to determine how often individual units are rented. However, according to Airbnb survey data, hosts report that over 90% of short-term rental income comes through the Airbnb platform.
- To protect user privacy, Airbnb could not legally provide geographically specific listing-level data to determine the revenue and hosting behavior in specific neighborhoods. Airbnb therefore ran queries of their dataset to allow ECONorthwest to complete some portions of the analysis, as noted in the text.

### Related Studies

There are several studies that provide additional context on the economic implications of Airbnb in Portland that were not conducted in full by ECONorthwest.

#### The Impacts of Homesharing in Portland

Released in 2016, this report examines the impacts of Airbnb and its host community in Portland.<sup>6</sup> It includes findings related to the economy, tourism, neighborhoods, and residents. ECONorthwest provided economic impact analysis for this report, and found a \$128.5 million total economic impact related to Airbnb that supports 1,900 jobs as a result of Airbnb guest spending.

#### Airbnb Host Survey

Airbnb conducts annual surveys of its Portland hosts to explore behavior patterns and trends. The surveys have found Airbnb to be a powerful tool to boost incomes and provide supplemental income that allows hosts to afford their existing housing. Key findings from the 2016 survey include:

- 64% of hosts said that being able to rent out their home on Airbnb helped them to stay in their unit.
- 47% of hosts earn low to moderate income (having a household income of \$75,000 or less).
- 55% of hosts rely on Airbnb as supplementary income to make ends meet.
- Hosts spend an average of 32% of their income on housing costs, above the HUD guidelines.

## ▶▶ Airbnb's entire home listings within the City of Portland make up a small fraction of overall housing units.

As of August 2016, Airbnb has 2,976 "entire home listings" within the City of Portland. Airbnb defines "entire home listings" as a space where the guests will have the whole space to themselves. In other words, these listings are not all "housing units" that could be rented as long-term rental units. They include, for example, suites with a bathroom but no kitchen and remodeled basements with no separate entrances. Third-party analysis, using data scraped from the Airbnb site, tends to overestimate the number of entire home listings in the Portland market, using assumptions and methodologies that don't account for the nuances of host behavior and the types of listings.

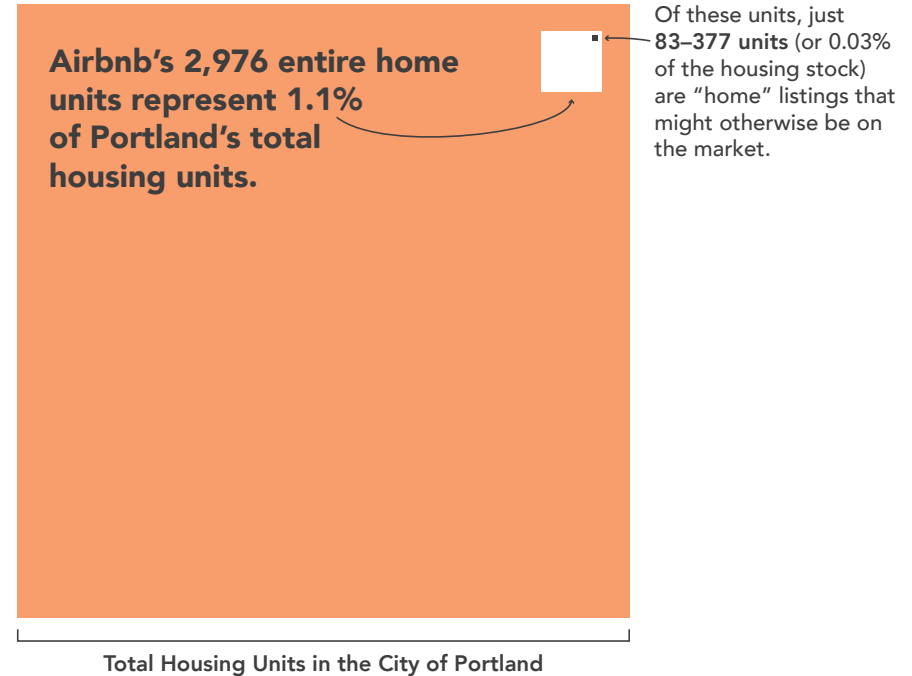
We looked at the units that have been available on Airbnb's platform for at least one year (between August 2015 and July 2016).

**We found a total of 83–377 entire home listings that were rented full-time, including basement suites and ADUs.**

"Full-time" may be defined as:

- 83 listings rented for more than 270 nights from August 2015–July 2016 on Airbnb (2.8% of all listings), 0.03% of Portland's housing; or
- 377 listings rented for more than 180 nights from August 2015–July 2016 on Airbnb (12.7% of all listings), 0.14% of Portland's housing stock.

Many listings are not permanently on the short-term rental market. Of the active listings in January 2015, **only 53% were still active** in September 2016. This high churn rate suggests that Airbnb is a temporary option for many hosts, who later use their space in other ways.



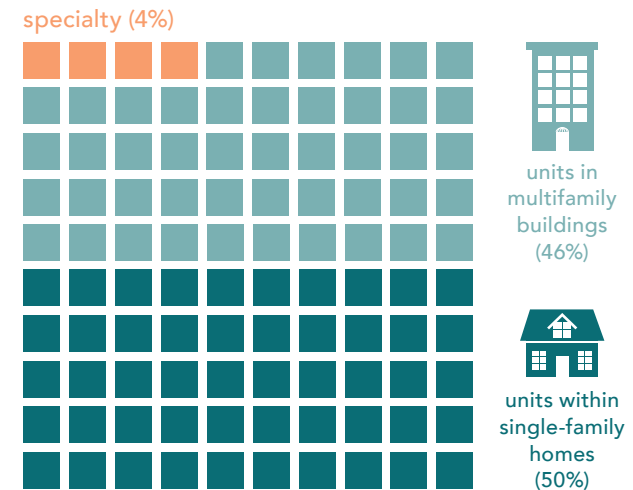
Source: Airbnb data on entire home listings active between August 2015 and July 2016 and rented for at least 180 or at least 270 nights, American Community Survey, 2015 one-year estimate, Table B25001.

## ▶▶ Airbnb’s entire home listings are not necessarily housing units.

Because Airbnb hosts self-categorize their listings, the definition of “entire home” does not always correspond with how traditional data sources categorize housing units. There are instances where units identified as an entire home on Airbnb are not equivalent to a home that could otherwise be available to long-term tenants. This is particularly likely for units rented in single-family homes. These include private suites and converted basements and attics in single-family homes that would not be available on the long-term rental market, with or without Airbnb. Some portion of the 83–377 units fall into this category.

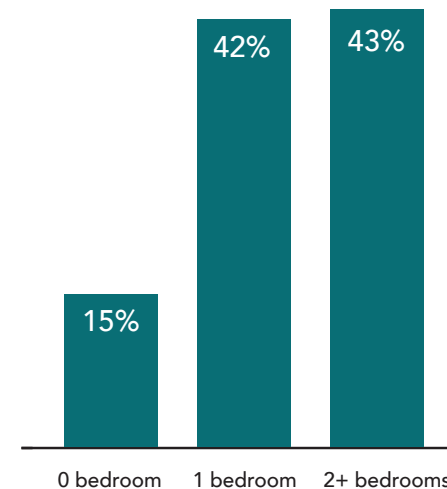
*The charts at right show that about half of entire home units on Airbnb are located within single-family homes, which can include basement units or detached ADUs, and that more than half have one bedroom or fewer. While the data do not allow us to measure all unit characteristics, some of them are almost certainly not traditional housing units.*

Unit Types



Source: Airbnb data on entire home listings active between August 2015 and July 2016.

Percent of Entire Home Listings by Bedroom Count



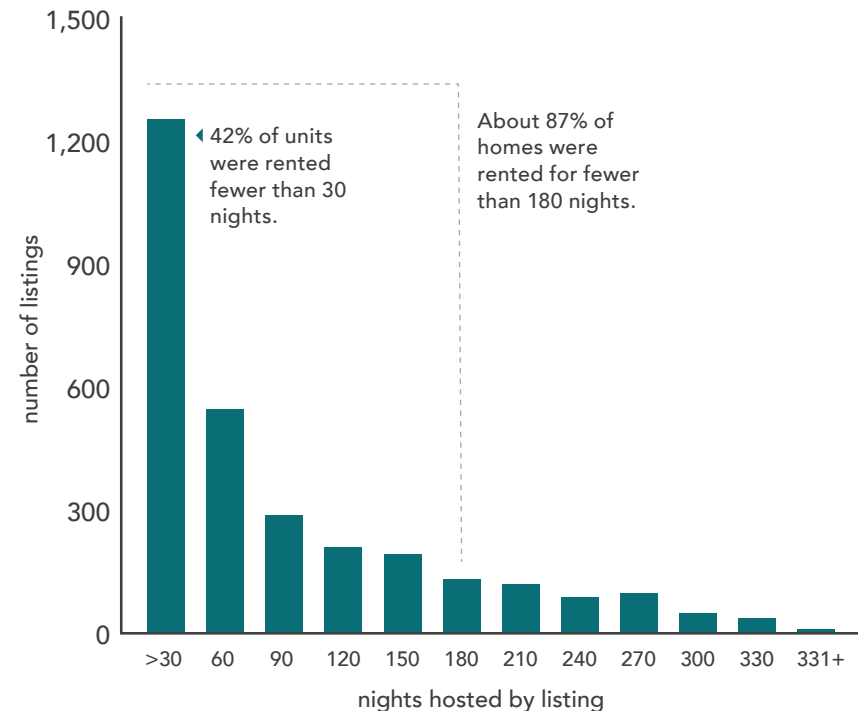
Source: Airbnb data on entire home listings active between August 2015 and July 2016.

## ►► Most hosts rent out units infrequently.

Portland's Airbnb hosts' rental behavior patterns vary widely. Hosts make trade-offs between flexibility to use their space and income generated on the Airbnb platform. There are a number of reasons why these units may not be rented frequently or included as a unit on the long-term rental market:

- **The unit is the host's primary residence that they rent out when they are on vacation, working away from home, or staying with a significant other.** Many of these hosts deactivate their listing except for a few nights of the year. Half of all listings that were active at some point during the last year initiated at least one deactivation. On average, listings are active about 70% of the time, and deactivated for about 30% of the time. Airbnb's survey data shows that 89% of entire home listings are either a host's primary residence or space within a primary residence.\*
- **The host wants the flexibility to be able to use the space for visiting friends and family.**
- **The unit is not permitted for permanent occupancy, such as a basement suite that is permitted as additional living space instead of a separate ADU.** Forty-two percent of units that were on Airbnb from August 2015 to July 2016 were rented fewer than 30 nights. About 87% of homes were listed for fewer than 180 nights.
- **The majority of entire home Airbnb hosts earn less from renting their units as short-term rentals than they would from long-term rentals.** This pattern indicates those entire home listings are likely primary homes being rented while the residents are traveling and/or while hosts are not otherwise using the space.

Nights Hosted: Hosts on Airbnb, August 2015–July 2016



Source: Airbnb data on entire home listings active between August 2015 and July 2016.

\*2016 Airbnb Host Survey Data, N=152.



## ▶▶ Short-term rental units play an important role in the hospitality industry.

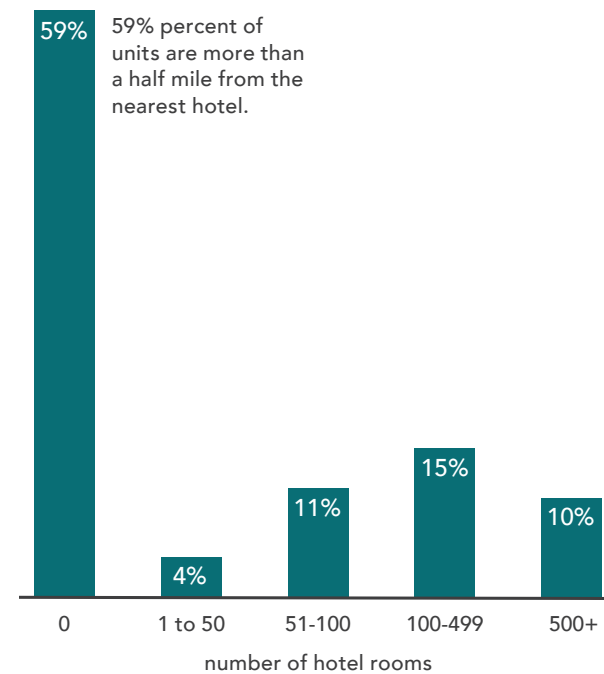
Short-term rentals are a critical component of the local hospitality industry and have existed for longer than Web-based platforms like Airbnb through executive rental services, Craigslist, and other services. Short-term rentals fill a niche for people looking for specialty housing, including business travelers, families, gap housing between long-term rentals, and relatives visiting family members and looking for nearby (neighborhood-based) lodging.

Key market segments include:

- **Peak period visitors:** The shortage of hotel rooms in Portland during peak periods means that short-term rentals help to accommodate visitors and fuel the local economy.
- **Business travelers:** Professionals who need to be close to their place of work.
- **People who need alternative arrangements.** Short-term rentals fill a niche for visitors needing special accommodations, such as hosting a large family, allowing pets, or providing a kitchen space. Airbnb hosts also initiate rentals of at least 30 nights via the site. These month or multimonth rentals are an important part of the housing market (in addition to short-term rentals and lease agreements).

Many visitors to Portland want to stay outside of the Central City, where the market fundamentals are often not strong enough to support the development of a hotel. Short-term rentals offer a geographically dispersed option for visitors. Were these units not available, there would be increased demand for hotel rooms, and fewer travelers staying and shopping in neighborhood centers. There is even some anecdotal evidence that the availability of these units induces travel demand: some guests might not travel to Portland at all without diverse rental opportunities.

Percent of Listings by Number of Hotel Rooms Within a Half Mile



Source: Airbnb data on entire home listings active between August 2015 and July 2016 and Smith Travel Research from August 2016.

*Short-term rentals offer a geographically dispersed option for visitors. Were these units not available, there would be increased demand for hotel rooms, and fewer travelers staying and shopping in neighborhood centers.*

Hotel developments compete for the same scarce urban land as multifamily housing. As such, overregulating short-term rentals would not address unaccommodated travel demand and could adversely impact future housing stock.

## ►► The majority of Airbnb listings would not otherwise be affordable housing units.

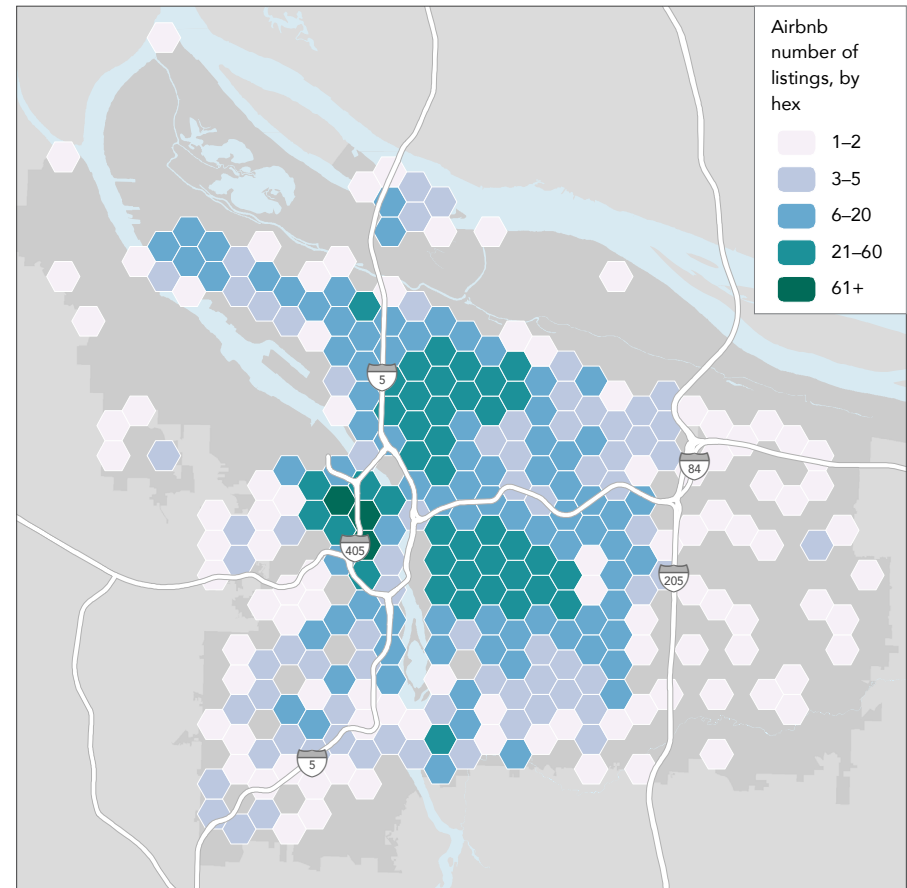
Many Airbnb listings are located where rents are relatively high, including many inner-ring neighborhoods like inner Southeast Portland and inner Northeast Portland. This implies that if some portion of these units were offered as long-term units, they would still be at the higher end of the rent spectrum.

Citywide, 70% of units are located in areas where average rents\* are above \$1,000 per unit.<sup>4</sup> At this rental rate, only families making at least 80% of the MFI would be able to afford a one-bedroom apartment. These units provide workforce housing, rather than affordable housing. In these areas, Airbnb increases density and brings visitors to these high-demand neighborhoods.

Approximately 30% of entire home listings are located in neighborhoods where rents might be affordable to people making less than 80% MFI. It is unclear what portion of these units are actually rentable as long-term units, and are owned by hosts who would instead put them on the long-term market.

*Airbnb listings are generally concentrated within five miles of downtown Portland. The map at right shows the density of Airbnb listings within quarter-mile hexagonal geographies.*

Density of Airbnb Listings in the City of Portland

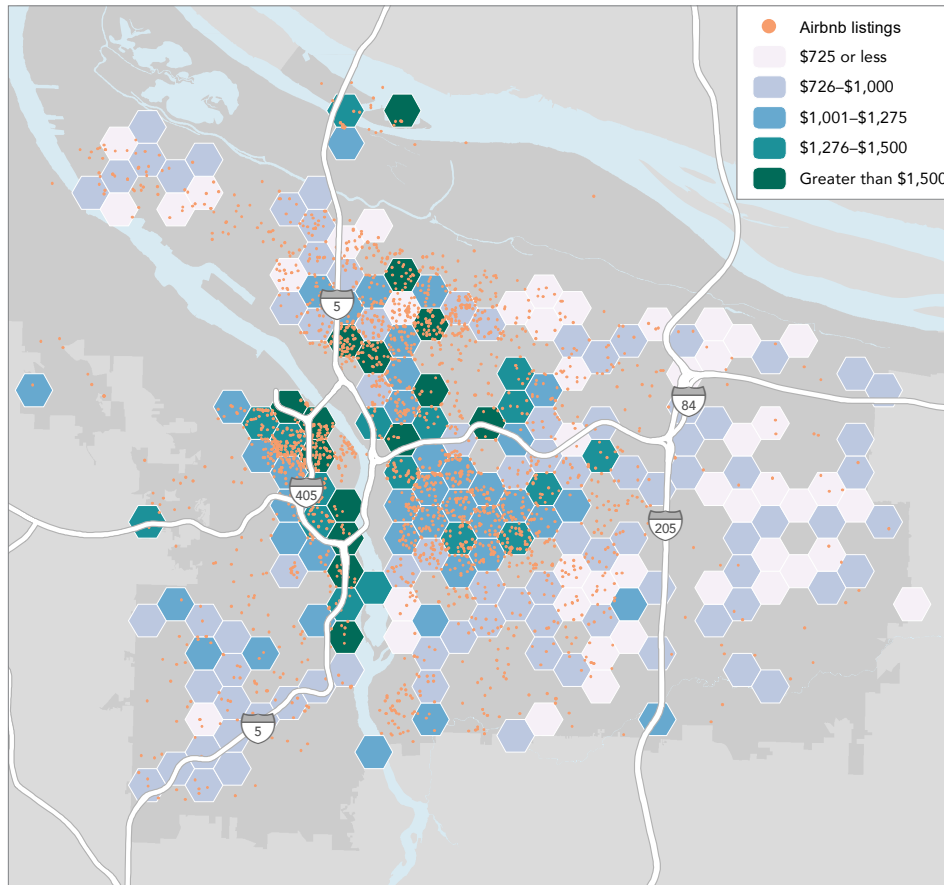


Source: Airbnb data on entire home listings active between August 2015 and July 2016.

\*CoStar data for average 1-Bedroom Asking Rents, August 2016.

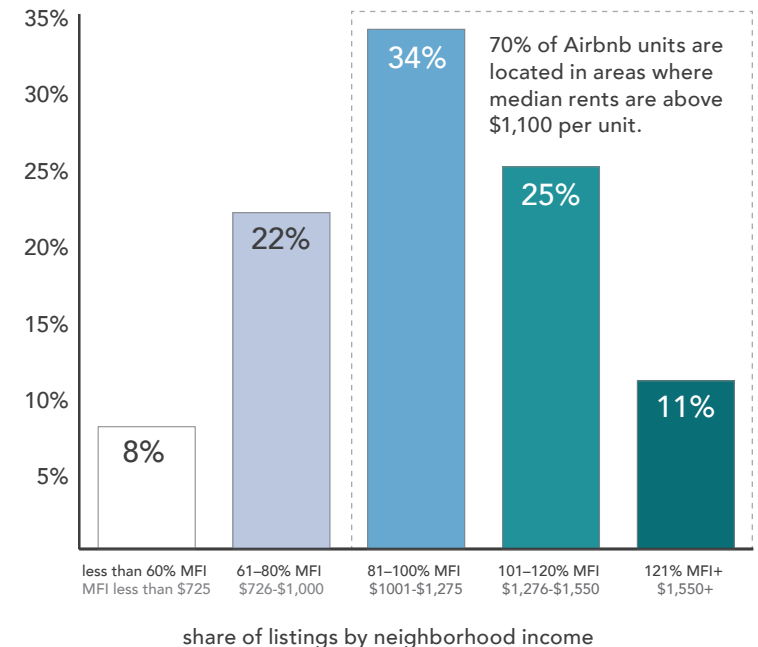
## ▶▶ The majority of Airbnb listings would not otherwise be affordable housing units.

Average Apartment Rents (all units) and Density of Airbnb Listings, All Units



Source: ECONorthwest using Airbnb listing data and CoStar data from August 2016 for all units within aggregated hexagonal geographies across Portland. CoStar was selected as a data source because it provides data regarding the greatest number of buildings to allow for a city-wide analysis. CoStar does not capture rent from units in single-family homes.

Percent of Airbnb Listings by Average Long-Term Rents (One-Bedroom Units) by Neighborhood



Source: ECONorthwest, using Airbnb listing data and CoStar asking rents for one-bedroom apartments in buildings with ten units or more from August 2016 for all units within aggregated hexagonal geographies across Portland. CoStar was selected as a data source because it provides data regarding the greatest number of buildings to allow for a city-wide analysis. CoStar does not capture rent from units in single-family homes.

### How affordable rents are calculated:

$$\begin{array}{r}
 \$73,300: \text{2016 MFI for a family of four} \\
 \times \\
 30\%: \text{Share of income a family at 100\% MFI can pay for rent} \\
 \times \\
 75\%: \text{HUD allowance for a one-bedroom apartment, with utilities} \\
 - \\
 \$100 \text{ utility allowance} \\
 \hline
 12 \text{ months}
 \end{array}$$

Affordable one-bedroom apartment at 100% MFI: \$1,274

Other affordability thresholds for a one-bedroom apartment:

- At 120% MFI: \$1,549
- At 80% MFI: \$1,000
- At 60% MFI: \$825

Source: <https://www.portlandoregon.gov/phb/article/522288>

## ▶▶ Short-term rental income can incent long-term housing creation.

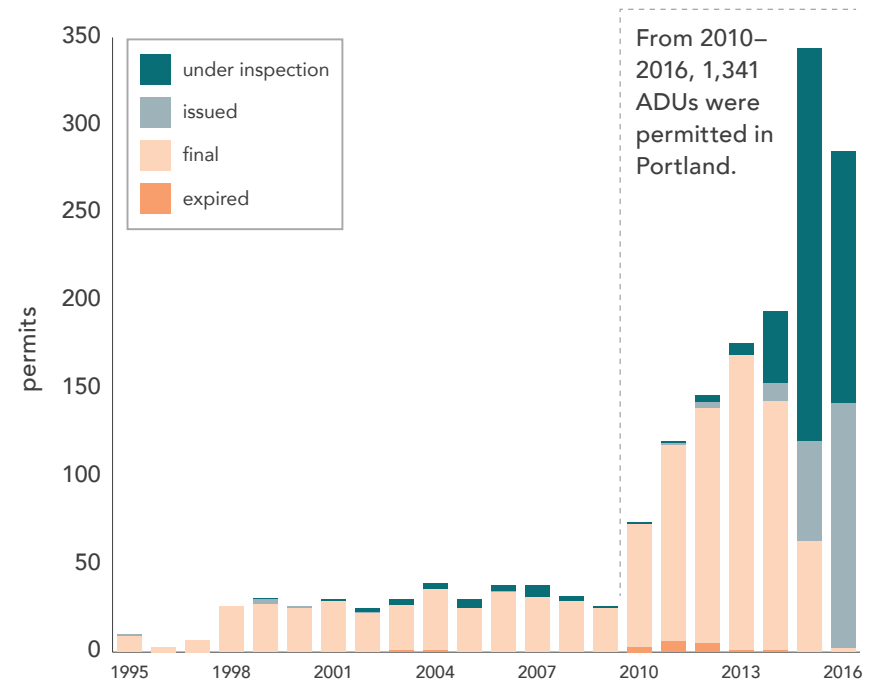
Portland has seen a rapid growth in the construction of ADUs since 2010 when the City of Portland waived SDCs in a policy decision to promote infill development. Some hosts on the Airbnb platform may have created units with the intent to recoup their initial investment in building the unit by renting it on short-term rental platforms like Airbnb. Airbnb completed a comparison of entire home listing addresses with building permit locations for new legally-permitted ADUs in Portland. Airbnb found that there are currently 257 active Airbnb entire home listings that are permitted ADUs. Fifty-one of those units (20%) were rented more than 180 nights per year.<sup>5</sup>

Airbnb found that 90% of entire home units that are permitted ADUs were constructed since 2008. Some of these units were likely never continuously part of the long-term rental supply.

While we do not know for certain what motivated those property owners to invest in creating a new ADU, given the timing of the investment and their choice to rent them on Airbnb, it seems reasonable to assume that some combination of reduced SDC fees and potential income from Airbnb incented their development.

A 2014 Oregon Department of Environmental Quality survey found that 80% of ADUs are used as long-term housing.<sup>7</sup> Given overall trends for Airbnb, it is likely that many units created for the initial use on the site will likely convert to long-term units in the future, and that but for revenue recoupment on Airbnb, many of these units may not have been constructed. This flexibility is one of the most attractive reasons for homeowners to invest in an ADU and to add to the City's eventual long-term housing stock.

ADU Permits by Status, 1995–2016, City of Portland



Source: City of Portland Open GIS. Permits that are issued, under inspection, and finalized are included. Permits that are still under review are not. This explains fewer permits shown for 2015. SDCs have been waived for new ADUs since 2010.

## ▶▶ Drivers of the Regional Housing Market

The primary drivers of the housing market and pricing in the Portland region are demand for housing (which is outpacing the growth of the housing supply), zoned capacity for new development, the availability of land, and rising costs of construction. Given these larger dynamics and the scale of Airbnb’s impact on available supply, we see little evidence that Airbnb is a meaningful driver of Portland’s affordable housing problem. We summarize the factors that drive the housing market below.

Demand	Supply
<ul style="list-style-type: none"> <li>■ <b>The Portland MSA population has grown by 7% since 2010, faster than the U.S. growth rate of 4%.</b> Since 2010, 164,000 people have moved to the Portland MSA. Of those, 30% (48,500) moved to the City of Portland.*</li> <li>■ <b>Many new residents are high-wage earners (mainly in high tech).</b> Of the new jobs created in Portland between 2010 and 2014, 30,000 jobs had a salary of \$100,000 or more.<sup>8</sup> While many new residents rented some of the newer luxury apartments in the Central City, they also displaced long-term residents who were unable to keep up with rents.</li> <li>■ <b>Rents have increased quickly as a result of this population increase.</b> The average monthly rent for a one-bedroom apartment in the City of Portland as of September 2016 was \$1,250 (an increase of 58% since 2010).<sup>9</sup> To afford that, a renter household would need to earn 92% percent of regional MFI.</li> <li>■ <b>Overall household sizes have increased, as a result of increased housing prices and a lack of supply.</b> Since 2010, the Portland MSA’s average household size increased from 2.57 to 2.65.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>The Portland region did not build enough units during the recession to account for population growth.</b> The Oregon Office of Economic Analysis reported in 2015 that the Portland MSA underbuilt by 23,000 units from 2006 to 2015.<sup>10</sup> Undersupply is a major driver of price increases.</li> <li>■ <b>Construction costs and fees have made development more expensive.</b> Construction costs for apartment building types have risen since 2010. This is due to increased labor prices, materials costs, and permit costs.</li> <li>■ <b>Regulations (Permits and Fees) also impact development costs.</b> Increased development standards, systems development charges, and fees all increase the cost of development and can hinder the development of new housing in some cases.</li> </ul>

\*U.S. Census 2010 and American Community Survey 2015 1-year estimates for the Portland MSA and the City of Portland.

## ►► Implications for Affordability

The results of our analysis show that Airbnb's activities in Portland do little to worsen our current affordability crisis. If all of Airbnb's entire home unit hosts were to suddenly decide to stop renting on Airbnb, it would do very little, if anything, to affect the trends that are driving rising rents. This analysis, together with other analyses conducted by Airbnb, does point to ways in which Airbnb relates to long-term affordability goals:

**Lodging tax revenues can help to fund affordable housing.** In November 2015, the City Council approved shifting the short-term rental portion of transient lodging tax resources from the General Fund to the Housing Investment Fund. This transfer will receive an annual cost of living adjustment, and is limited to 0–60% MFI housing purposes. The FY 2016-17 budget reflects the securitization of this revenue stream (approximately \$14 million) for the purpose of acquiring property for use in building affordable housing at 0–60% MFI levels, primarily outside of urban renewal areas.<sup>11</sup>

**Short-term rentals provide income and housing security to many hosts.** In some cases, the ability to rent on Airbnb can provide the economic stability for people to stay in their homes. Based on Airbnb survey data, 55% of Airbnb hosts indicated that they relied on Airbnb income to make ends meet while 7% of hosts earned money through Airbnb as their primary income.<sup>12</sup>

**Portland's neighborhood business districts benefit from the spending from short-term rental guests.** Airbnb's research has found that guests in Portland tend to spend more and stay longer than hotel guests.<sup>13</sup>

### **Housing market dynamics are more complex than Airbnb.**

Airbnb has only minimal impact on the housing market, given its complexity and scale. Policies with the biggest impact will include tenant protections, land banking, the proposed housing bond, and inclusionary zoning.

**Short-term rental units can help to spur the creation of infill development.** Initial Airbnb analysis shows a tangible investment effect due to homeowners' ability to rent ADUs as short-term rentals. This can translate into long-term housing unit creation as homeowners make back their initial investment and transition the unit to other uses.

This analysis was completed at a point in time. If Airbnb's activities were to grow significantly, the supply-side impacts could become more substantial. It is worth watching these trends. However, there are natural limits to the size of the hospitality market that will probably always keep short-term rental units a relatively small portion of the overall housing supply. Policymakers should consider trade-offs between the benefits of short-term rentals and a relatively small impact on overall affordability.

## ▶▶ Endnotes

1. A commonly used threshold assumption for determining whether a unit as a full-time short-term rental unit. This is explored in more detail in the main body of this report.
2. "2016 HUD Median Family Income and Rent," City of Portland, <https://www.portlandoregon.gov/phb/article/572034>.
3. The City of Portland had 274,917 housing units in 2015, according to the Census American Community Survey 2015 one-year estimates, which was the most recent housing unit estimate available as of August 2016.
4. This is based on the maximum rent and utilities amount affordable to a household making 80% of the MFI for a one-bedroom unit, per HUD's 2016 guidelines for the City of Portland.
5. This includes current active entire home listings. For the Accessory Dwelling Unit data, Airbnb used City of Portland Open GIS data for permits that have created one or more new residential units from January 1995 to May 2016. These data are derived from the Bureau of Development Services permitting database (TRACS). Geocoded to taxlot centroids or street address when taxlot information is not accurate or available. The data can be found at <http://gis.pdx.opendata.arcgis.com/>.
6. "Airbnb Community Gives a Boost to the Portland Economy," Airbnb.com, September 6, 2016, <https://www.airbnbaction.com/airbnb-community-gives-a-boost-to-the-portland-economy/>.
7. Palmeri, Jordan, "Accessory Dwelling Units in Portland, Oregon," (2014) Oregon Department of Environmental Quality, <http://www.deq.state.or.us/lq/sw/docs/SpaceEfficient/adusurveyinterpret.pdf>.
8. Baker, Dean, "Economist sees positive Portland job growth, not so much for nearby areas," Portland Tribune, January 19, 2016, <http://portlandtribune.com/pt/9-news/289434-166077-economist-sees-positive-portland-job-growth-not-so-much-for-nearby-areas>.
9. CoStar data for apartments within the City of Portland, December 2010 to December 2015. Buildings with 10 units or more.
10. Lehner, Josh, "Portland housing update – Are things okay?" *Oregon Economic Analysis Blog*, March 23, 2015, <https://oregoneconomicanalysis.com/2015/03/23/portland-housing-update-are-things-ok/>.
11. "City of Portland Adopted FY 2016-2017 Budget," City of Portland, Page 369, <https://www.portlandoregon.gov/cbo/article/583311>
12. Airbnb host survey data of 142 Portland hosts from 2016.
13. "Airbnb Community Gives a Boost to the Portland Economy," Airbnb.com, September 6, 2016, <https://www.airbnbaction.com/airbnb-community-gives-a-boost-to-the-portland-economy/>.