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Accommodation and the sharing economy in New Zealand

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Contact: Mr Gary Dunnet (gary.dunnet@stats.govt.nz).

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Accommodation and the sharing economy in New Zealand

Hamish Grant
Senior analyst, National Accounts, Stats NZ

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Purpose

This paper outlines the existing data sources and the methods used to measure accommodation and the accommodation-sharing economy in New Zealand from 2013 to 2018. It presents an approach for estimating the growth in the sharing economy, and for calculating a national experimental estimate of this activity in New Zealand.

For this paper, accommodation-sharing means short-term accommodation associated with a room in a house, or an entire house, which are made available via an app or website to people looking for somewhere to stay.

Background to this work

This work is possible for the first time because there is now enough information available on accommodation-sharing to compile experimental estimates. The assumptions required for this work mean all estimates in this paper are experimental and should be used with caution. The uncertainty around the estimates means they cannot be incorporated in existing published official statistics.

Digitisation of the economy poses many challenges for national statistics offices (NSOs) and the statistics they produce. The pace of technological change means NSOs need to exert additional effort to ensure the relevance of the statistics is maintained. Traditional approaches to collecting information, such as from surveys or from administrative tax data, have become more challenging as people and small operators now increasingly provide services that are harder to capture. At the same time, digitisation presents many opportunities to collect data in a more efficient way.

Accommodation and the sharing economy

The accommodation industry in New Zealand has been affected by digitisation and what is known as the 'sharing' economy. The term sharing economy does not have an agreed definition, but for this work we use Barefoot et al's definition (2018): "The 'sharing' economy, also known as platform-enabled ecommerce, involves the exchange of goods and services between consumers facilitated through a digital application".

For this paper, accommodation-sharing means short-term accommodation associated with a room in a house, or an entire house, which are made available via an app or website to people looking for somewhere to stay. Originally this type of activity wasn't associated with a traditional accommodation business. However, more traditional businesses are now using these channels.

Accommodation provision is a vital part of the New Zealand economy. It enables tourism, which is a significant income generator for the country. There are a range of existing indicators for accommodation provision in New Zealand, and increasingly, there is interest in understanding the impact of accommodation-sharing. The importance of accommodation and tourism to New Zealand is reflected in the information below for the year ended March 2018.

- International tourism expenditure was NZ$16.2 billion, contributing 20.6 percent to New Zealand's total exports of goods and services (Stats NZ, 2018).

- The number of international visitors holidaying or visiting friends/family reached 3.1 million (Stats NZ, nd-c) while the population of New Zealand was 4.8 million (Stats NZ, nd-a).

- Tourism (international and domestic) generated a direct contribution to gross domestic product (GDP) of NZ$15.9 billion, or 6.1 percent of GDP (Stats NZ, 2018).

- 39.9 million guest nights were spent in hotels, motels, backpackers, and holiday parks (Stats NZ, 2019).

Defining accommodation

New Zealand uses the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC06) as its industrial classification (Stats NZ, nd-b). This is consistent with the International Standard Industrial Classification revision 4. The relevant classes for a broad definition of accommodation are:

- accommodation (4400) – consists of units mainly engaged in providing accommodation for visitors, such as hotels, motels, and similar units

- residential property operators (6711 part) – consists of units mainly engaged in renting or leasing residential properties, (other than holiday houses or holiday flats) including space in such properties

- owner-occupied dwellings (6711 part) – imputed service from the dwelling for people who are owner-occupiers is treated as a business activity in the System of National Accounts. In practice, holiday houses or holiday flats are mostly classified under this group.

Existing data

There are many data sources and published indicators related to accommodation in New Zealand. This section outlines the key series relevant to this paper, along with the challenges of covering accommodation-sharing activity.

Accommodation occupancy survey

Data from the accommodation survey provides monthly information on supply and demand for short-term commercial accommodation.

Some information available from this survey are:
- guest nights split into domestic and international
- guest arrivals
- establishments
- capacity
- occupancy rate
- regional/sub regional dimension for all information.

The coverage of the accommodation survey starts with ANZSIC06 class 'accommodation' and includes businesses that have an annual turn-over of more than NZ$30,000. (This value is based on goods and services tax, which is a value added tax. While this is the main criterion for inclusion on the Stats NZ Business Register as an economically significant unit, there are other criteria described on Datainfo+.) These firms are then classified to the New Zealand Accommodation Classification, and then grouped into five: hotels, motels, hosted, backpackers, and holiday parks.

The survey excludes hosted businesses, which are where most holiday homes, bed and breakfasts, and flat operations could be classified.

The NZ$30,000+ turnover means most activity in accommodation-sharing is likely excluded where a private room in a house or a whole private house is rented out. There is some holiday house activity included in the accommodation survey where businesses operate more like a commercial provider.

Revenue information isn't collected as part of the accommodation survey and it isn't directly used in the national accounts, except for confrontation and analysis.

Quarterly retail trade survey including accommodation

The quarterly retail trade survey collects information on revenue and stocks held by retail trade businesses.

The coverage aligns with ANZSIC06 divisions G 'retail trade' and H 'accommodation and food services'. Information on accommodation as per ANZSIC06 is available and covers activity of all businesses with an annual turn-over of more than NZ$30,000. (This value is based on goods and services tax, which is a value added tax. While this is the main criterion for inclusion on the Stats NZ Business Register as an economically significant unit, there are other criteria described on Datainfo+.) This turnover criterion is based on tax data and in practice means that holiday homes and flat operations are excluded in the surveyed population. Like the accommodation survey, this data likely excludes activity in accommodation-sharing where a private room in a house or a whole private house is bring rented out.

National accounts and use of the population census

The national accounts need to cover the whole economy. The accommodation survey and retail trade survey include some commercial providers who use sharing-economy platforms, but they generally exclude private holiday homes and flat operations. There are some values included for these in the national accounts.

Accommodation-sharing activity isn't identifiable in tax data. Because of this, the value of residential property and the equivalent value of owner-occupied dwelling services are estimated using the following data from the New Zealand Census of Population and Dwellings: number of dwellings in New Zealand and average rental paid.

The estimates are for all dwellings in New Zealand and so any holiday houses or flats are included in the residential property operators or owner-occupied dwellings industries rather than in accommodation. These dwellings are also used for accommodation-sharing. As such an estimate is already included in the national accounts for this.

While estimates are included within the national accounts, it isn't possible to identify them. In addition, the method for estimating owner-occupied dwellings relies on the average rental of the properties that are rented out. Hiemstra (2017) shows that if these properties or rooms are rented out for short-term visitors, such as accommodation-sharing, then the estimated value of output and contribution to GDP tends to be understated. Data specifically related to accommodation-sharing is required to work this out.

Methodology to estimate experimental size of accommodation-sharing economy

To measure the size of the accommodation-sharing economy in New Zealand, the key series to use is revenue or gross output for those renting out a house or a room. Number of guest nights is also important as this enables comparisons with the demand for accommodation available via the accommodation survey.

This section outlines the data and methods used to derive these primary experimental estimates.

Data

The data used to derive the size of accommodation-sharing are varied because the existing sources and surveys either exclude the level of detail needed to capture accommodation-sharing, or do not capture the activity at all.

Here are the data used to derive the size of accommodation-sharing:

- revenue, net of fees/commission, directly sourced
- guest nights directly sourced
- number of property listings
- fee/commission income earned by online platform
- fee/commission percentage of gross revenue
- average net income to 'host' or property owners
- occupancy rate
- average cost per night for property/room
- percentage of duplicate listings
- number of guests per night stayed
- percentage of overlap with commercial providers.

Approach to getting data

There are a few different approaches to getting data to derive accommodation-sharing information. This section discusses the three most-relevant approaches.

Directly source information from sharing-platform providers

The preferred approach is to directly source information from sharing-platform providers. This would give the most reliable estimate of the size of the sharing economy as it would require less assumptions. It is also more practical and cost-effective compared with running a large survey of businesses or of households that rented property out. While some information is available and has fed into this work, this approach is still being explored and developed. It is hoped that this paper will highlight the value of further exploration and development.

Use information from the internet, mostly news articles and survey data

Where directly sourced information isn't available, an alternative approach is needed. A review of publicly available information showed enough information was available (mostly through news articles) to supplement existing survey data and directly sourced information. The downside to this information is that the data wasn't often what was needed and so some assumptions had to be made. These assumptions and the sensitivity of the estimates due to the assumptions are outlined in [Sensitivity analysis of the experimental estimates](#).

Web-scrape information directly from sharing-platform websites

Using web-scraped information is a good approach, but this work didn't use it for two reasons.

First, enough data (along with survey data) could be found via news articles, so the extra effort needed to undertake web scraping wasn't worthwhile.

Second, web scraping has limitations in terms of estimating the actual value of rental income generated. While information on the number of properties and rent prices can normally be collected, as is done for parts of the consumers price index, it is more difficult to understand which properties are rented and for how long. On some platforms, properties show as no longer available to be booked. However, this does not necessarily indicate that the property is booked. It may be that this property has been removed from being able to be rented as it is being used by the owners.

Methodology

Based on the data available, four approaches were used to estimate the experimental value of the accommodation-sharing economy in New Zealand.

Method 1 – direct sourcing of data

Method 1 is the simplest and the most reliable method. Data on revenue earned by the property owners and guest nights is directly available. The only assumption needed was the commission/fee taken by the platform to convert the net revenue into a gross revenue, which includes the commission/fee. Generally, there is a known range for the fee/commission for each platform. Sometimes this isn't necessarily associated with the value of the rental income, such as when a flat fee is charged, making converting net to gross estimates more problematic. The impact of this assumption is outlined in [Sensitivity analysis of the experimental estimates](#).

Method 2 – commission/fee value and commission/fee rate

Method 2 uses information the platform reports for revenue and commission/fee rate per year to work back to a gross rental income estimate. Guest nights were estimated by dividing the revenue by an estimated rate per night and an assumed average of two guests per night.

Method 3 – properties and average property income

Method 3 uses the number of properties, average earnings net of commission/fees, and a fee/commission rate to estimate the gross rental income. Guest nights were derived in the same way outlined in method 2.

Method 4 – properties, occupancy, and average rate per night

Method 4 takes the number of properties, estimated annual occupancy, and rate per night to estimate the gross rental income. Guest nights were derived in the same way outlined in method 2.

The four methods were used for a range of platforms to get an experimental accommodation-sharing 'industry' estimate based on available data. Once these methods were applied, a rate-up factor was used to account for the estimated remaining 20 percent of the industry. This proportion was estimated because it is not currently covered by the data sources available.

The specific method used was determined by the most reliable available data based on how the platforms operate. All data required assumptions except where it was directly sourced. The assumptions are outlined below. This is followed by an outline of the sensitivity of the estimates based on these assumptions.

Assumptions

This section presents the five sets of information that have the data required for estimating accommodation-sharing, but have a degree of uncertainty. Assumptions were required to determine their relevant value.

Property overlap between platform providers

Property overlap between platform providers needed to be accounted for, so there isn't any double count in the estimates. For example, one property might be listed on three different platforms. If the number of properties is used to estimate the value of the rental and guest nights, this would result in overestimating the activity. A base rate of 25 percent overlap was applied based on some partial information available. This affects methods 3 and 4 (see previous section, Methodology).

Occupancy rate

An occupancy rate was used where there was limited information about revenue. This rate was assumed to be 16 percent based on some partial information. This is relevant only for method 4.

Fees/commissions

Fees/commissions vary and are charged in various ways. For all methods other than method 2, the revenue figures had to be adjusted to include the fees/commissions to represent the full value of

accommodation provided. There is a reasonable amount of information available on what these fees are and how they are charged. However, where there was a mix of subscription and percentage of income taken, the overall charge was less clear. A base rate of 15 percent was assumed.

Rate per night

The rate per night was important in two cases. First, for method 4 where there was limited information about revenue. Second, for all methods where it was used to estimate guest nights by taking the revenue and dividing this by the rate per night. This was then multiplied by an assumed two guests per night to get guest nights.

Overlap with commercial providers

A further point to note is that the overlap with existing data sources can't be fully identified at this stage. For example, if a commercial accommodation provider uses a platform to get more customers, this would overlap with existing accommodation data sources. Without further information a rate of 10 percent in 2018 was assumed, scaled back to 0 percent in 2013. Sensitivity analysis of the experimental estimates has more on the impacts of varying this assumption.

Experimental size of accommodation-sharing in New Zealand

Using the data, methodology, and assumptions discussed in the previous sections, we are able to estimate the experimental size of the accommodation-sharing economy in New Zealand: NZ$550 million in gross revenue with 8.8 million guest nights for the year ended March 2018 (figure 1).

There is some uncertainty with these experimental estimates due to the assumptions made. It is likely that the gross revenue is in the NZ$400–700 million range, and the number of guest nights is likely in the 6.5–10 million range for the year ended March 2018.

Figure 1

Accommodation-sharing gross revenue (NZ$) and guest nights, year ended March 2013–18


Stats NZ
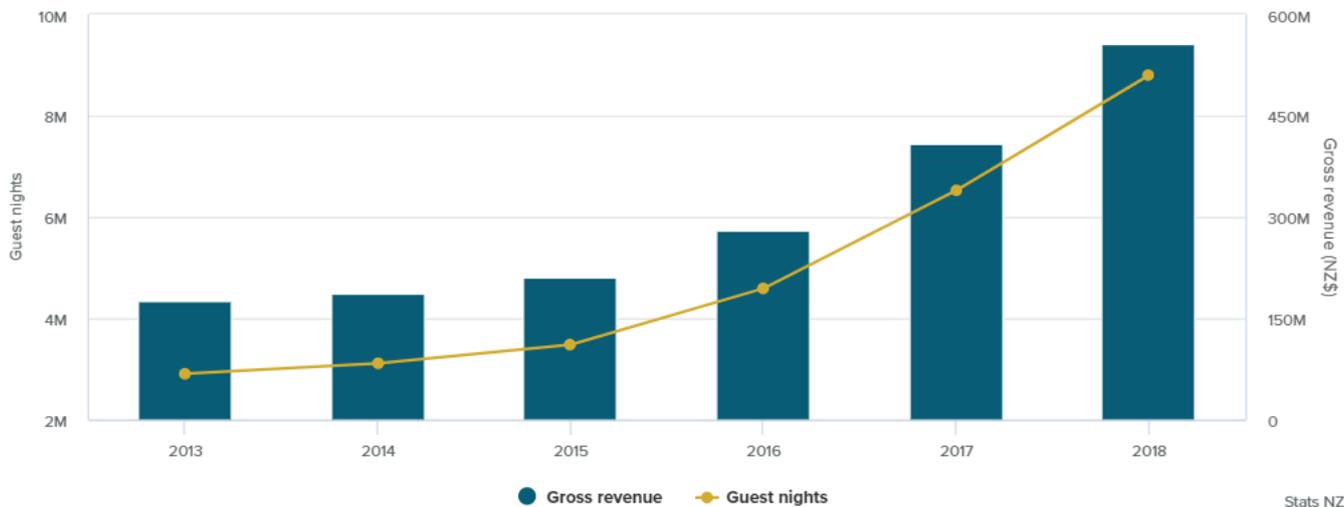
The estimated increase in the accommodation-sharing activity has been strong in recent years – revenue roughly doubled from 2016 and tripled from 2013. A similar story can be seen for guest nights. It is worth noting that these estimates and the scale of the increases are affected by the assumptions used (see Sensitivity analysis of the experimental estimates).

When we compare the share of accommodation-sharing with that for the total accommodation industry including accommodation-sharing, the relative contribution of accommodation-sharing changes (figure 2).

Figure 2

Size of accommodation-sharing relative to total accommodation industry including accommodation-sharing, year ended March 2013–18


Stats NZ
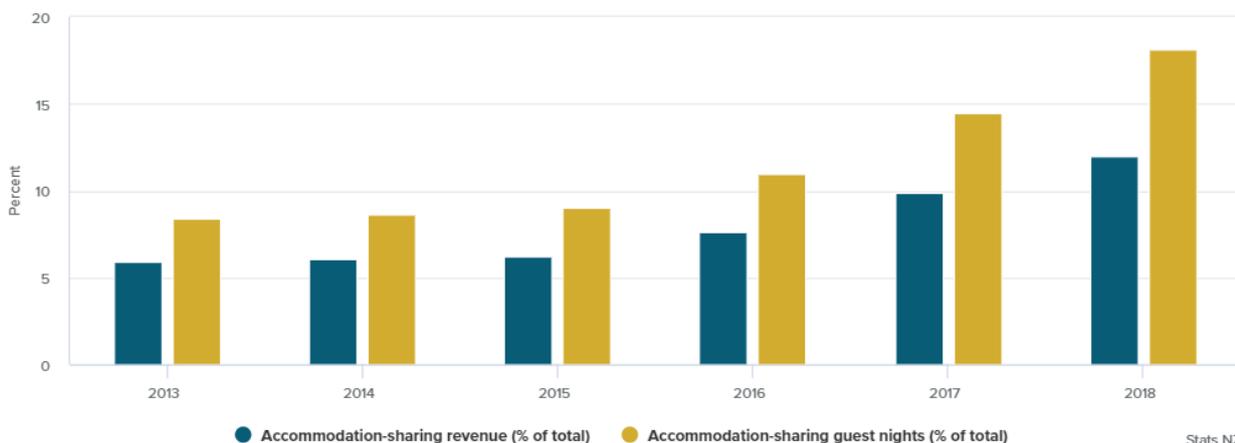
Accommodation-sharing was about 6 percent of total revenue and 8 percent of guest nights in 2013. This compared with 12 percent and nearly 18 percent, respectively, in 2018 (figure 3). These experimental estimates are affected by the assumptions, which when varied gave estimates that

ranged between 14 percent and 20 percent for accommodation-sharing guest nights to the total guest nights for the March 2018 year. The impact of the assumptions is further outlined in Sensitivity analysis of the experimental estimates.

Figure 3

Accommodation survey and accommodation-sharing guest nights, year ended March 2013–18
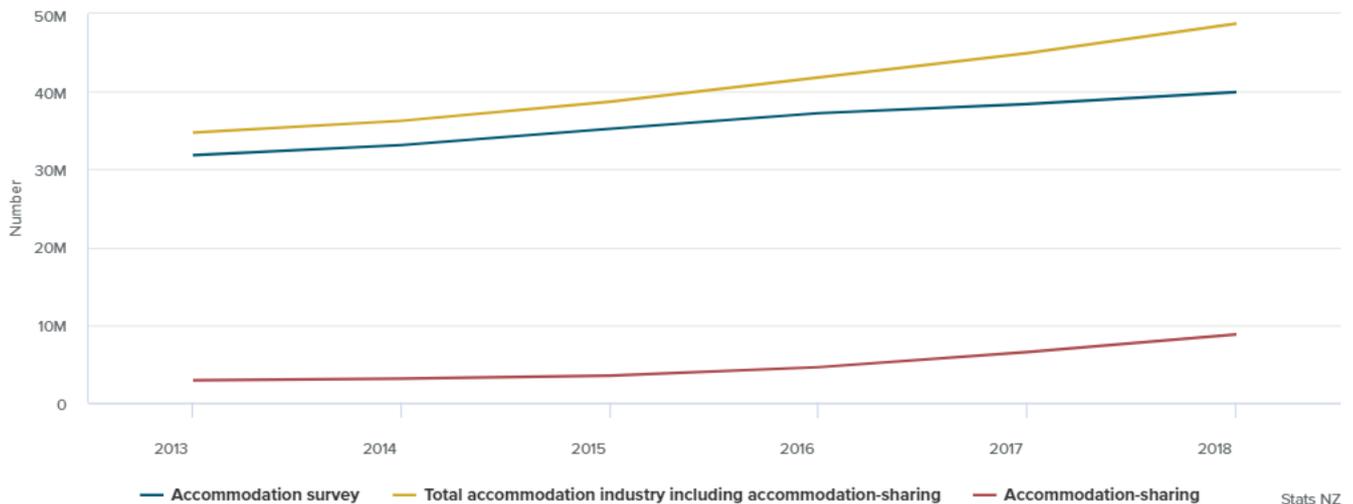
For total accommodation guest nights including accommodation-sharing, the increase of the experimental estimates from 2013 to 2018 is stronger than just the accommodation survey guest nights. This is also affected by the assumptions, which are discussed in Sensitivity analysis of the experimental estimates.

## Impact on contribution to GDP and the national accounts

To consider the impact on national accounts, in particular, value added or contribution to GDP, a similar approach to Hiemstra's (2017) was taken.

We assume that all accommodation activity is associated to those who own their own home or holiday home and are renting out a whole house or a room. It is expected this is where most of the activity would be classified. Under this assumption the activity is captured in the owner-occupied dwellings estimates in the national accounts as outlined in Existing data.

To estimate the impact accommodation-sharing would have on the national accounts, the existing value estimates for the properties involved needed to be removed. Once this was done the adjustment starts at around NZ$100 million to gross output in 2013 and increased to around NZ$300 million in 2018 (figure 4).

Figure 4

Total adjustment to gross output to account for accommodation-sharing, year ended March 2013–18
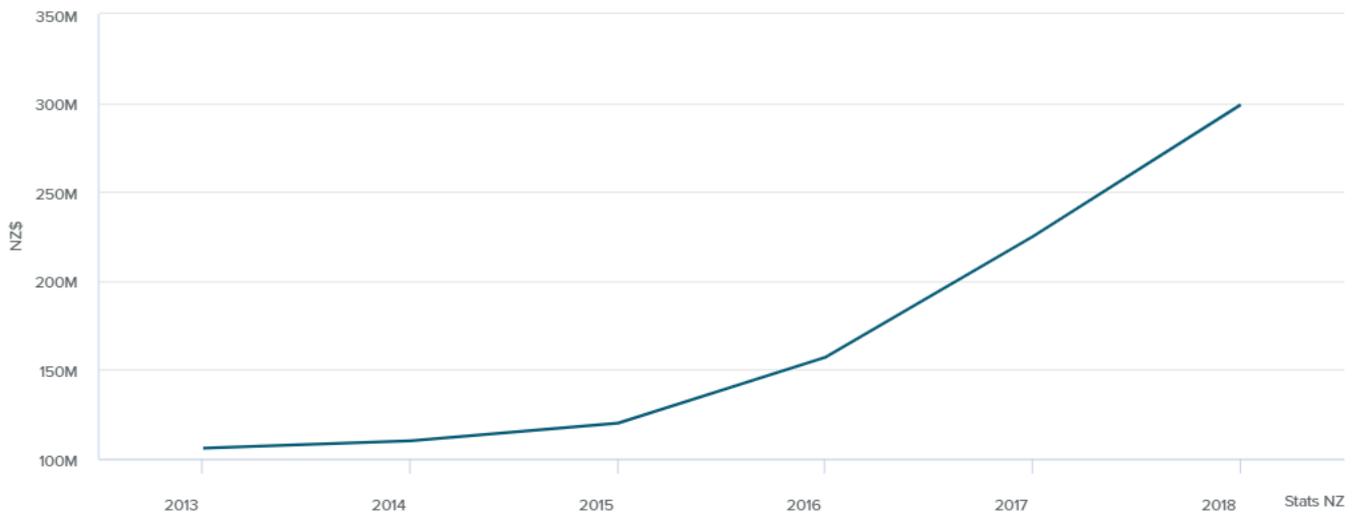
The estimated adjustment, however, is only a small proportion of total gross output for the owner-occupied dwelling industry, with the adjustment ranging from 0.5 percent to 1.2 percent of the total (figure 5).

Figure 5

Percent of total owner-occupied dwelling gross output to be adjusted, year ended March 2013–18
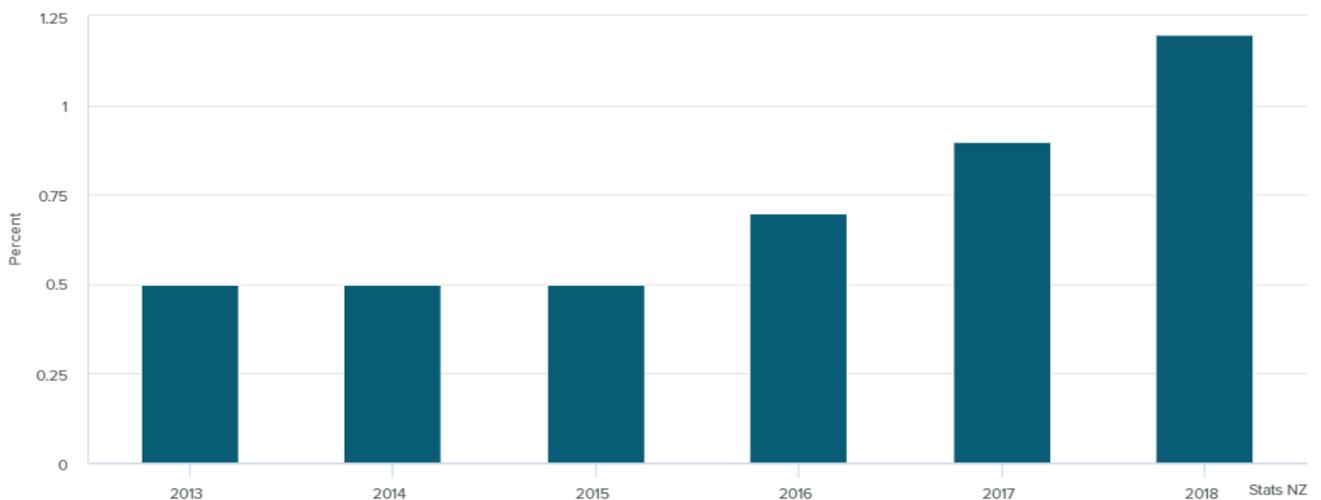
When we convert these into an estimated impact on value added, or contribution to GDP, the adjustment is in the NZ$80–250 million range. This is a very small adjustment – between 0.0 percent and 0.1 percent of total GDP over the 2013–18 period.

All the above impacts depend on the quality of the experimental estimates. To help understand the quality, sensitivity analysis was undertaken.

Sensitivity analysis of the experimental estimates

Varying the assumptions within likely bounds can have limited impacts on the estimates. In some cases, when there was more certainty around the assumption values, they have not been varied as part of the sensitivity analysis.

The impact on gross revenue and guest nights of varying the assumptions is shown in figures 6–9.

Figure 6

Impact of assumptions on 2018 estimated gross rental facilitated
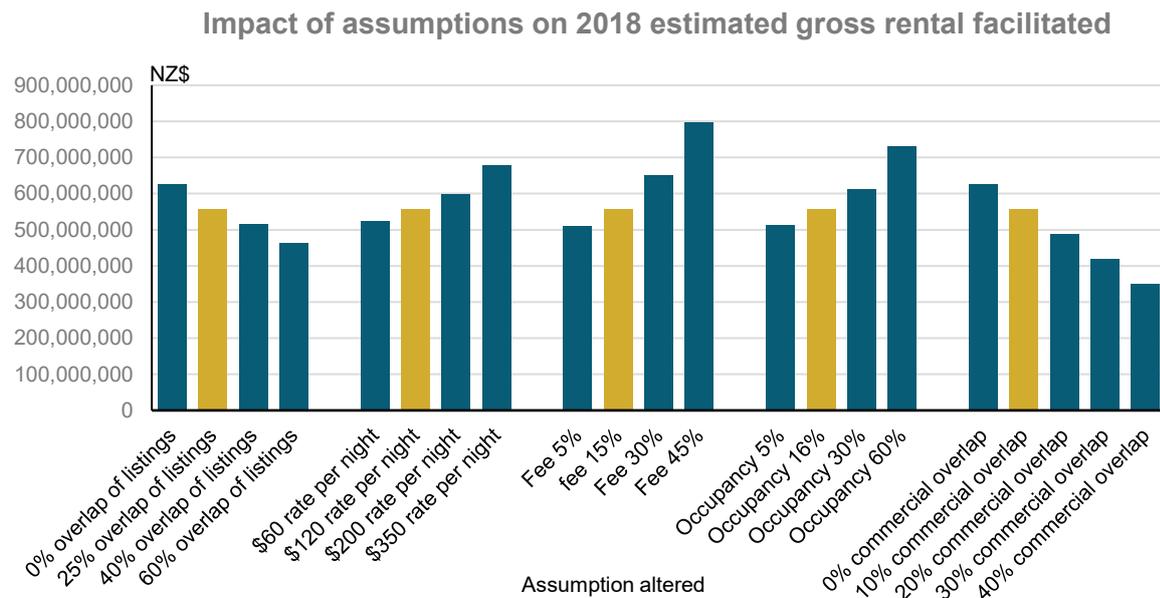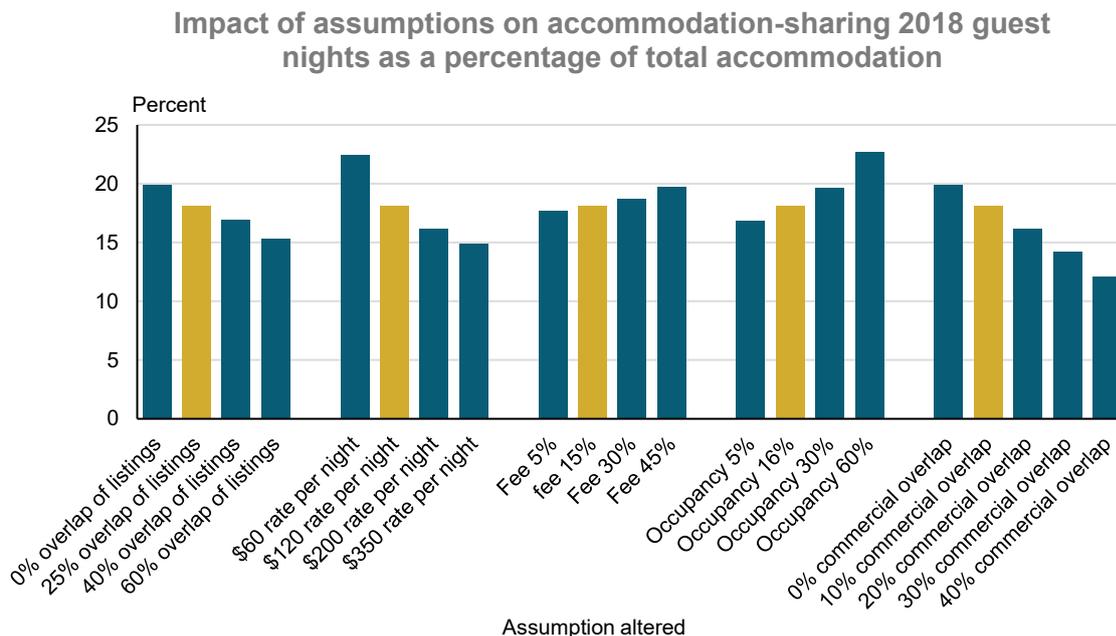

Source: Stats NZ

The columns in yellow indicate what we think are the most likely assumption or the base assumption used. The other columns indicate the gross revenue that would be derived if a different assumption was used while using the base assumptions for all other assumptions not being varied.

The first and last column in each group are normally extreme values. There is a range of around NZ$350–800 million for 2018, however, the high and low values are based on highly unlikely assumed values and so the likely range based on this work looks to be in the NZ$400–700 million range.

The results for other years show a similar pattern. However, the ranges do tend to increase in earlier years due to the changing share of directly sourced data.

Looking at the impact on the share of guest nights to total accommodation including sharing accommodation, the range for 2018 is around 12–23 percent, although when extreme assumptions are removed it is more likely in the 14–20 percent range (figure 7).

Figure 7

Impact of assumptions on accommodation-sharing 2018 guest nights as a percentage of total accommodation

Source: Stats NZ

The overlap with existing data sources such as the accommodation survey or retail trade survey is a particularly problematic area. The assumption of 'commercial overlap' is designed to show the impact of starting with an assumed overlap of 0 percent in 2013 steadily rising to some amount in 2018. A base rate of 10 percent in 2018 is assumed. The impact on varying this assumption does have a reasonable impact on the increase in accommodation sharing activity over 2013–18 as seen in figure 8.

Figure 8

Impact on accommodation-sharing guest nights from varying commercial overlap percentage, year ended March 2013–18

— Commercial overlap (2013 0%, 2018 0%) — Commercial overlap (2013 0%, 2018 10%, base) — Commercial overlap (2013 0%, 2018 30%) Stats NZ
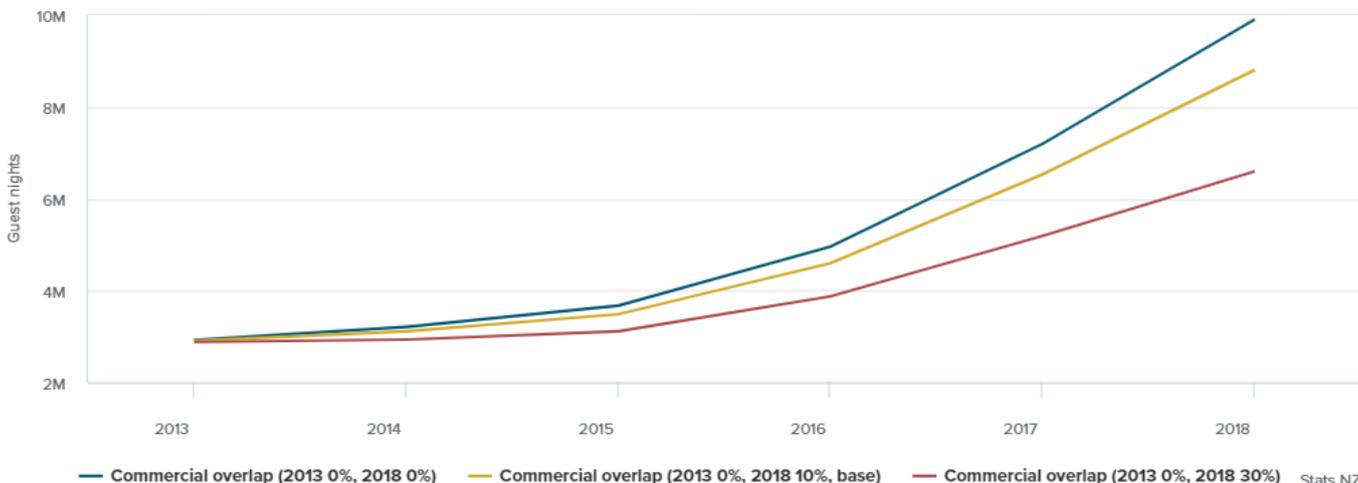
Figure 8 shows that if a 30 percent commercial overlap is assumed in 2018 instead of a 10 percent overlap, with this scaled back to 0 percent in 2013, the number of guest nights from 2013 doubles rather than triples. A very similar outcome occurs for gross revenue.

Figure 9 shows that this also alters the increasing proportion of accommodation-sharing guest nights from around 8 percent in 2013 to between 14 percent and 20 percent in 2018.

Figure 9

Size of accommodation-sharing relative to total accommodation industry from varying commercial overlap percentage, year ended March 2013–18
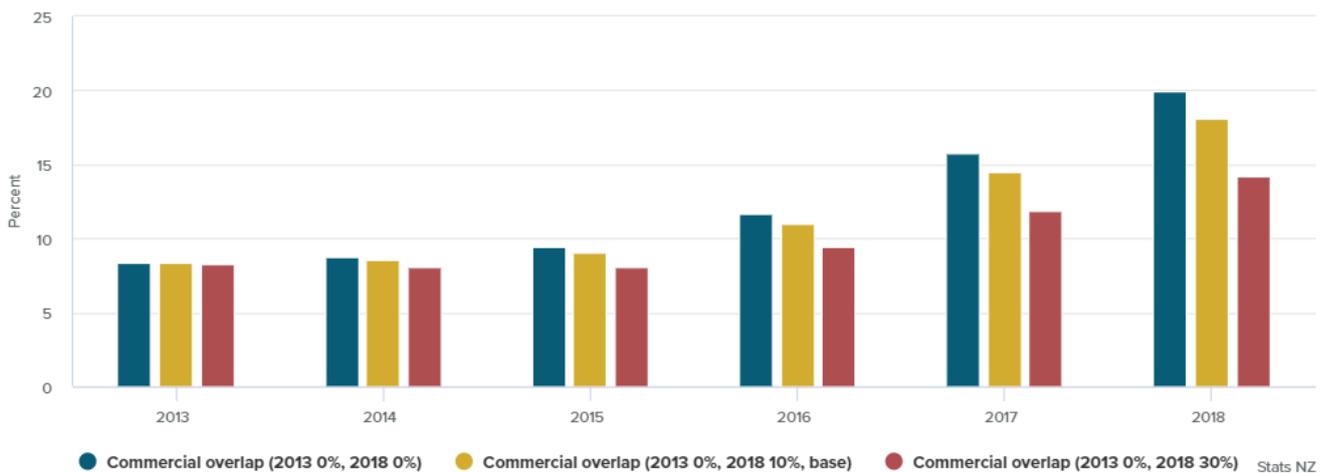
While 10 percent was selected as the mostly likely overlap it is possible it is higher. This illustrates that more information is required to get greater certainty over these estimates.

There is a range of uncertainty around the experimental estimates, however, they still give an indication on the likely range for the size of the accommodation sharing economy in New Zealand. Further information is needed to reduce the uncertainty around the estimates before these could be considered part of any official estimates.

How accommodation-sharing information can be used

Information on the size of the accommodation-sharing economy is useful for a number of purposes.

From a national statistics office's point of view, it will help to build a picture of the size of this activity so the impact on the relevance of existing estimates can be understood.

The growth in accommodation-sharing does look to be affecting the types of analysis that would be undertaken using a range of accommodation-related information. These analyses could be changes in guest nights, or spending on accommodation as part of household consumption expenditure or tourist expenditure.

For owner-occupied dwellings, the impacts on value added or contribution to GDP look to be much smaller as there are already some estimates included in the national accounts, although they look to

be an understatement. There are also international platform companies involved in this activity and capturing some of the imports of services associated with this is an area of challenge that this work could assist with.

Accommodation-sharing information could also be used as part of weighting within various price indexes. The consumers price index collects prices associated with accommodation-sharing. However, assigning weights for this is problematic as you need to understand the relative size of accommodation-sharing, which has been very difficult.

The OECD task force on measuring GDP in a digitalised economy proposed a satellite account (Mitchell, 2018) as a way of making this type of activity visible to customers, but also enable analysis and assessment of impacts on the relevance of existing information. This work on accommodation-sharing aligns with this proposal by providing some information to help enable that visibility, and could be used as part of any digital economy satellite account.

Future work

Expanding the direct collection of data from platform providers is a key area to progress this work. While estimates have been produced, the number of assumptions means there is still a level of uncertainty in the estimates.

Ongoing work with the platform providers is critical to eliminating this uncertainty. The alternatives, such as surveying those who operate the properties associated or looking at highly sophisticated web-scraping, would be very expensive, a burden to undertake, and likely less reliable.

If the direct collection of data can be progressed then these estimates could be used to better inform on the total scope of the accommodation industry. There would also be efforts to include them in the national accounts estimates for owner-occupied dwellings and/or residential property operators, household consumption expenditure and tourist expenditure, and the balance of payments. Further work would be required to identify and remove any overlap with existing accommodation and/or residential property operators industry estimates to avoid any double counting.

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