PEER REVIEWED

FINAL REPORT NO. 450

Demystifying the rental vacancy rate measure: a critical review and policy implications

Authored by

Margaret Reynolds, Swinburne University of Technology
Rupa Ganguli, Western Sydney University
Zoë Goodall, Swinburne University of Technology
Liss Ralston, Swinburne University of Technology
Christian A. Nygaard, Swinburne University of Technology
Terry Burke, Swinburne University of Technology

Publication Date December 2025
DOI 10.18408/ahuri5132801

AHURi

Title

Demystifying the rental vacancy rate measure: a critical review and policy implications

Authors

Margaret Reynolds, Swinburne University of Technology
Rupa Ganguli, Western Sydney University
Zoë Goodall, Swinburne University of Technology
Liss Ralston, Swinburne University of Technology
Christian A. Nygaard, Swinburne University of Technology
Terry Burke, Swinburne University of Technology

ISBN

978-1-923325-20-3

Series

AHURI Final Report

Number

450

ISSN

1834-7223

Publisher

Australian Housing and Urban Research Institute Limited
Melbourne, Australia

DOI

10.18408/ahuri5132801

Format

PDF, online only

URL

https://www.ahuri.edu.au/research/final-reports/450

Recommended citation

Reynolds, M., Ganguli, R., Goodall, Z., Ralston, L., Nygaard, C, and Burke, T. (2025) *Demystifying the rental vacancy rate measure: a critical review and policy implications,* AHURI Final Report No. 450, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/450, doi: 10.18408/ahuri5132801.

AHURI

The Australian Housing and Research Institute (AHURI) is an independent not for profit national research organisation that conducts and disseminates high quality research on housing, homelessness and cities. Our activities inform the policies and practices of governments, industry and the community sector, and stimulate public debate.

AHURI's vision is achieving better outcomes for housing and communities through credible and independent evidence. Our mission is working collaboratively to inform and impact better policy and practice in housing, homelessness and urban issues.

Using high quality, independent evidence and through active, managed engagement, AHURI works to inform the policies and practices of governments and the housing and urban development industries, and stimulate debate in the broader Australian community.

Acknowledgements

This material was produced with funding from the Australian Government and state and territory governments. AHURI gratefully acknowledges the financial and other support it has received from these governments, without which this work would not have been possible.

AHURI also gratefully acknowledges the contributions, both financial and in-kind, of its university research partners who have helped make the completion of this material possible.

The authors would like to sincerely thank Homes Victoria (Department of Families, Fairness and Housing) for giving us permission to use Rental Tenancy Bond Authority data in this research, and the Real Estate Institute of Australia for allowing us to use its *Market facts* data.

Disclaimer

The opinions in this report reflect the views of the authors and do not necessarily reflect those of AHURI Limited, its Board, its funding organisations or Inquiry Panel members. No responsibility is accepted by AHURI Limited, its Board or funders for the accuracy or omission of any statement, opinion, advice or information in this publication.

Liss Ralston has undertaken contract work as a data analyst for the Real Estate Institute of Australia (REIA). However, her involvement in this report is as an independent researcher affiliated with Swinburne University of Technology.

AHURI journal

AHURI Final Report journal series is a refereed series presenting the results of original research to a diverse readership of policy makers, researchers and practitioners.

Peer review statement

An objective assessment of reports published in the AHURI journal series by carefully selected experts in the field ensures that material published is of the highest quality. The AHURI journal series employs a double-blind peer review of the full report, where anonymity is strictly observed between authors and referees.

Contents

List of tables

List of figures

Acronyms and abbreviations used in this report

ABR	Australian Business Register
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AHURI	Australian Housing and Urban Research Institute
APM	Australian Property Monitors
ARDL	autoregressive distributed lag
ASGS	Australian Statistical Geography Standard
ASX	Australian Securities Exchange Ltd
BTR	build-to-rent
CBD	central business district
CHIA	Community Housing Industry Association
CMHC	Canada Mortgage and Housing Corporation
CPI	consumer price index
DPHI	Department of Planning, Housing and Infrastructure (NSW)
FHM	functional housing market
GCCSA	Greater Capital City Statistical Area (ABS defined geographic area)
GFC	global financial crisis
HTAG	Higher than Average Growth
LGA	Local Government Area
NHFIC	National Housing Finance and Investment Corporation (now Housing Australia)
NHSAC	National Housing Supply and Affordability Council
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economic Co-operation and Development
OPD	Occupied private dwellings
PBSA	purpose-built student accommodation
PCA	Property Council of Australia
POA	Postal Area (ABS defined geographic area)
PRS	private rental stock
Qld	Queensland
REI	Real Estate Institute
REIA	Real Estate Institute of Australia
REIACT	Real Estate Institute of the Australian Capital Territory
REINSW	Real Estate Institute of New South Wales
REINT	Real Estate Institute of Northern Territory
REIQ	Real Estate Institute of Queensland
REISA	Real Estate Institute of South Australia
REIV	Real Estate Institute of Victoria
REIWA	Real Estate Institute of Western Australia
RQ	research question
RTBA	Residential Tenancies Bond Authority (Victoria)
RVR	rental vacancy rate
SA	South Australia
SA3/SA4	Statistical Area 3 or 4 (ABS defined geographic areas)
STRA	short-term rental accommodation
Tas	Tasmania
UCL	Urban Centre and Locality (ABS defined geographic area)
UD	unoccupied dwelling
UK	United Kingdom
US	United States of America
Vic	Victoria
WA	Western Australia

Glossary

A list of definitions for terms commonly used by AHURI is available on the AHURI website ahuri.edu.au/glossary.

Executive summary

Key points

- Rental vacancy rates (RVRs) are commonly cited in Australia and internationally as key measures of housing market performance, despite significant knowledge gaps.
- The producers of RVRs in Australia are private, commercial organisations specialising in housing and property data. There is no consistent methodology or single data source to produce the RVR, and varied approaches result in different outcomes.
- Using Victoria as a case study, statistical modelling of RVRs and explanatory variables (2011–24) showed evidence of an equilibrium vacancy rate in Melbourne and regional Victoria—that is, an RVR rate that supply–demand forces readjust to over time.
- Regional Victoria was slower to return to this rate following structural shocks (e.g. COVID-19), suggesting that policy formulation and intervention needs to be spatially nuanced.
- Temporal variation in RVRs in Melbourne and regional Victoria are explained by changes in supply of rental dwellings and real asking rents, connecting with the relationships commonly analysed in academic and grey literature.
- RVRs play an indirect but important role in public policy making in Australia. They are viewed by government and non-government organisations as key housing market indicators and, in conjunction with other measures, provide crucial information for housing policy formulation.

- **However, the commodification of property data, including RVRs, can make them expensive, resulting in unequal access to information for housing market decision-making processes.**
- **Rental bond records offer an alternative, publicly collected data source for rental vacancy rate information.**
- **Australia differs from other countries by focusing on rental vacancy rather than overall dwelling vacancy, and by not having a government-produced vacancy rate.**

Rental vacancy rates are commonly cited in Australia and internationally as key measures of housing market performance. They are reported frequently in news headlines and influence the decisions of developers, investors, real estate agents and policy makers. In particular, the notion that 3 per cent rental vacancy represents 'equilibrium' or a 'balanced rental market' is often repeated.

While RVRs are frequently cited by government, academics, property sector representatives, journalists and advocacy groups, there are significant knowledge gaps about this measure and how it is constructed. There has not yet been a critical analysis of RVRs in Australia that comprehensively reviews the current landscape. In Australia, there are multiple producers of RVRs, all of whom are private companies specialising in housing and property data.

The equation to calculate rental vacancy is, in principle, straightforward: the number of vacant rental dwellings (the numerator) is divided by the total number of rental dwellings, including tenanted and vacant properties (the denominator). Yet the methodology used to ascertain both the numerator and the denominator can vary significantly between sources, leading to different RVRs from different data producers. Methodological documentation from data producers is also often sparse and opaque. The relative strengths and limitations of the different RVR sources are underexplored, as the measure, and its interpretations, are generally taken for granted.

The importance afforded the RVR as a key indicator of housing system conditions is reflected in its many citations by policy makers within government publications and commentary. This underscores the need to know, exactly, how different levels of government use RVRs in their policies and decision-making, along with how non-government sectors, like finance and property, are influenced by RVRs. Knowing this will make it possible to assess whether current RVR measures are fit for purpose and how the measure could be improved to provide value to policy makers.

These elements of RVRs—the various methodologies, strengths and limitations, and how the measure is used and interpreted in Australia—are the subject of this Final Report. International approaches are also examined to determine how Australia can learn from how RVRs are collected, reported on and used in other countries. The overarching aim of this research is to critically assess the RVR in Australia, thereby giving policy makers a comprehensive understanding of this important, but often unquestioned, housing market signal.

Key findings

Methodologies, strengths and limitations of Australian RVRs

In Australia, there are five major producers of RVRs, using two main methodologies:

- a survey-based approach in which property managers are surveyed about the vacant share of total rent roll (used by the Real Estate Institute of Australia)
- a listings-based approach in which vacancy is based on rental properties advertised for lease on online platforms (used by SQM Research, Cotality [formerly CoreLogic], REA Group and Domain Group).

There is no consistent methodology or single data source to produce the RVR, and different approaches result in different outcomes. Strengths of the current approaches include the ability to purchase an 'off-the-shelf' product when users lack the resources to compile the data themselves, and the variety of spatial and temporal scales available, albeit mostly at additional cost to the user. Limitations include a lack of methodological clarity, estimations of the numerator and denominator, and the commodification of property data, which limits who can access it by their level of financial resources.

Rental bond records offer an alternative, publicly collected data source for RVR information. The Victorian Residential Tenancies Bond Authority (RTBA) data analysed here show that RVRs derived from this source track well against the major commercial producers. However, rental bond data are not consistently collected or managed across Australian states and territories.

Australian RVRs and assumed market equilibrium levels

Our two-stage quantitative analysis illustrated the limitations in existing investigations and interpretations of RVR measures and commonly used equilibrium points. Our research shows the presence of equilibrium RVR dynamics in Melbourne and regional Victoria, with RVRs responding to changes in supply and rents. Permanent changes in 'Number of active rental bonds' may also shift the RVR level around which equilibrium dynamics play out.

The RVR equilibrium level is typically used by private rental market actors as a market signal to increase supply and/or rental levels in a 'tight' rental market. A risk of using point-in-time estimates or short-term trends in RVRs to inform decisions is that RVRs and their equilibrium levels change over time and are variable over spatial scales.

There is no consistent RVR methodology or definition of an equilibrium level in Australia.

An equilibrium vacancy rate is considered one in which market forces (supply and demand) are balanced, leaving real rents unchanged. During these periods, there is theoretically no market failure and no need for policy intervention to correct suboptimal outcomes. In Melbourne and regional Victoria, statistical modelling of RVRs and explanatory variables between 2011 and 2024 shows evidence of RVR equilibrium levels to which the market readjusts. This is also the case after substantial structural shocks (e.g. COVID-19 pandemic), but there is also some indication of a more protracted adjustment process in the post-COVID-19 period. A period of disequilibrium, in which supply and demand were not in balance, was slower to correct in regional Victoria compared with Melbourne.

The results align with theoretical temporal variation in RVRs in Melbourne and regional Victoria and are explained by changes in supply of rental dwellings and real asking rents, connecting with the relationships commonly analysed in academic and grey literature. While changes in rents impact RVR variations over the short term in both regions, changes in supply have long-term impacts on RVRs.

The markets in Melbourne and regional Victorian adjusted to periods of 'disequilibrium' through changes in rent levels or supply. However, there have been signs of poor market outcomes for tenants, such as homelessness (Pawson, Martin et al. 2021a, 2021b), overcrowding (Dockery, Moskos et al. 2022) and a supply–demand mismatch at the lower end of the rental market (Reynolds, Parkinson et al. 2024).

A pre-emptive policy measure would be the constant monitoring of RVR deviations from a long-term equilibrium perspective, rather than a short-term focus on an RVR threshold level (2%–3%) that can be used as a market signal to change rental property supply or adjust rents. The monitoring of RVRs as market self-correcting properties must be supplemented with an understanding of broader social phenomenon, such as social and cultural changes in housing consumption.

There is a spatial dependency in rental market dynamics, reflected in RVRs at a postal area (POA) spatial scale. Higher levels of private rental dwelling stock levels in neighbouring POAs, rather than just within POAs, can result in elevated levels of RVRs within POAs; conversely, lower levels of supply can result in lower RVRs.

The analysis of geographic variation in RVRs must look beyond administrative boundaries. The spatial variation in RVRs indicates the need to consider functional housing markets, rather than administrative boundaries, in the planning of housing markets.

The role of rental vacancy rates in policy and decision-making

The role that RVRs play in public policy decisions is indirect but important. Their use by Australian Government departments and agencies appears focused on forecasting and modelling various housing market dynamics. Some state government departments also use RVRs for modelling, along with more specific projects, such as determining the location of social housing.

The role that RVRs play in housing supply decisions is more direct for the private sector. Private property developers and investors use RVRs to drive decisions about housing supply, including build-to-rent. The social housing sector also uses RVRs to advocate for further supply of social and affordable housing.

The RVR does not trigger any specific government policies in Australia. However, this does not mean that the measure is seen as unimportant: the RVR is viewed as a key indicator of housing market conditions, and, in conjunction with other measures, provides crucial information for housing policy formulation.

Overall, the RVR can provide market-based insight for three purposes, serving as:

1. an indicator for monitoring rental market balancing of supply and demand forces
2. an estimator of development or investment profitability of new supply
3. a driver of housing policy and infrastructure development decisions.

Insights from vacancy rates in other countries

Our review of international sources found that a variety of methods are used to measure vacancy in other countries; indeed, sometimes multiple methods are used within the same country. Australia differs from these other countries in two important respects: the type of vacancy examined and the producer of the vacancy rate. Most countries included unoccupied dwellings of all tenures in their vacancy rate—not just rental properties. Further, in most countries, the producer of vacancy rate data is the government (often the national statistics agency)—not private companies.

Policy development options

As with any metric, a thorough understanding of the approach employed to produce the measure, including data sources, strengths, limitations, assumptions and challenges, is prudent. In practice, if informed, robust and evidence-based decisions are to be made, it is crucial. The overarching aim of this research was to critically assess the RVR measure in Australia and to make the findings available to policy makers. It is hoped that the information provided in this report will be considered when RVRs are used to provide market-based insights for policy development.

There are several key policy development options related to the generation and use of the RVR as a key housing market indicator. Framed in the context of questions, these are discussed below.

What would better rental vacancy information look like?

It would be collected, measured and reported at finer spatial scales and always represent a long time series. It would involve segmentation by rent and dwelling type, and, where possible, it would capture trends in the increasingly important build-to-rent (BTR) and purpose-built student accommodation (PBSA) sectors. It would also include metrics at the property level, for example, length of vacant periods, tenancy turnover and property survival periods. Importantly, RVR data would be generated from a consistent, reliable and transparent data source, with the output available to all, not just those with the financial resources to pay for it.

How should interpretations and acceptance of assumptions around RVRs and equilibrium levels change?

When interpretations of RVRs are based at a geographically aggregated scale, there is an absence of spatial nuance, including in relation to local rental market dynamics. When interpretations of RVRs are drawn from point-in-time estimates, important long-term trends in RVRs and deviations from equilibrium levels are not apparent. Without such spatial and temporal insights, targeted and effective policy responses will be impeded.

When examining the long-run equilibrium rate, policy makers should be mindful that either the RVR level itself or the dynamics that enable 'self-correction' may be the result of socially undesirable circumstances. The monitoring of RVRs as market self-correcting properties must be supplemented with an understanding of broader social phenomenon, such as social and cultural changes in housing consumption.

Policy makers should be more critical of the 'norms' upheld and promoted by property industry organisations that provide RVRs and commentary around market conditions reflecting 'tight', 'weak' or 'healthy' markets. Such norms are unlikely to be based on robust, empirical, long-run analysis of detailed market factors.

What could happen if policy makers had access to better RVR data or had a better understanding of such? Why is demystifying the RVR important?

Good quality detailed and segmented data, along with a thorough understanding of data sources and methodologies, and a more critical attitude towards industry specified norms, will lead to more informed decision-making processes. At the very least, an understanding of current approaches is important. Access to improved data, and a shift away from an unquestioned adoption of long-held assumptions, will enable policy makers and other RVR users to have a more nuanced and rigorous understanding of rental market dynamics.

There is also a role for government to provide more detailed housing data. The first step would be a government-produced RVR. Australia appears to be unusual in relying on private data companies to produce vacancy rate data. Such an initiative would put Australia on par with other countries in terms of vacancy rate data accessibility and transparency. Further, a government-generated dataset encompassing the usual occupancy of dwellings would provide a dynamic view of current dwelling stock, align Australia with other countries in monitoring unoccupied dwellings across all tenures, respond to government and non-government organisations' interest in understanding usual dwelling occupancy across tenures and market segments, and respond to the National Housing Supply and Affordability Council's call for improved data availability (NHSAC 2024).

The study

The overarching aim of this research was to critically assess the RVR in Australia, thereby giving policy makers a comprehensive understanding of this important, but often unquestioned, housing market signal. To our knowledge, this is the only comprehensive, critical analysis of the RVR, as well as the numerous RVR producers, in Australia.

The research used a mixed methods approach, integrating a qualitative literature review, quantitative analysis of various datasets, and interviews with multiple key producers and users of RVR data. The study was built around four research questions (RQs).

RQ1: What are the methodologies, strengths and limitations of RVR indicators in Australia's private housing market?

This question was addressed through a desktop review of RVR datasets, focusing on structure, availability and methodology.

Five private organisations were identified as the main producers of RVR data in Australia. Their websites were examined for documentation pertaining to the methodology used for generating RVR data series. To illustrate how the outputs of different RVR methodologies compare, time series data from two long-term producers were charted for each Australian capital city.

Information gained via interviews with several RVR data producers, informal conversations and email communication supplemented this review.

Finally, unit record–level data from the Victorian RTBA were analysed, providing an alternative data source and methodology for deriving the RVR measure. The aim of this exercise was to derive this key housing market indicator from a government collected, and thus publicly owned and managed, data source.

RQ2: How do Australian RVRs conform temporally and spatially to assumed market equilibrium levels?

A two-stage quantitative analysis was used to address this question. The first step was to examine the existence of an RVR equilibrium level, potential determinants of changes in the equilibrium rate (i.e. supply, demand, rental levels), and the short- and long-run responsiveness of RVRs to these market factors. To test these outcomes, we employed an autoregressive distributed lag (ARDL) method to model the RVR in metropolitan Melbourne and the rest of Victoria over a 13-year period, between January 2011 and August 2024 (monthly interval data).

Movements in RVRs can be spatially dependent on explanatory factors within a geographic area and/or neighbouring areas at a particular point in time, such as supply, demand or rental levels. Therefore, as a second step, spatially variegated RVR dynamics were unpacked through spatial autoregressive (SAR) modelling of cross-sectional data for geographic areas of interest, in this case, small area rental markets at a postcode/POA level in the Australian state of Victoria in the month of August 2021. This was amid the state's numerous lockdowns in 2020 and 2021, following the onset of the COVID-19 pandemic in Australia.

RQ3: What role do RVRs, and their methodological assumptions, play in public policy and housing supply decisions in different market segments and locations?

This question was addressed primarily through interviews with 17 individuals from 14 organisations, supplemented by a desktop review of how RVR data was publicly cited in Australia. Four organisations were producers of RVR data in Australia and 10 organisations were users of RVR data.

RQ4: What insights can be learned from RVR methodologies used in other countries?

This research question was addressed through a desktop review of international RVR measures and literature, including potential applications of methodologies to the Australian context.

1. Introduction

- The rental vacancy rate (RVR) measure is considered a key indicator of housing system conditions and is cited frequently.
- Changes in vacancy rates provide an additional measure of analysing private rental market dynamics to inform housing policy.
- An equilibrium vacancy rate is considered one in which market forces (supply and demand) are balanced, leaving real rents unchanged.
- Market-based indicators can only be effective guides to supply volumes and locations if they accurately capture current and future market conditions.
- There is significant national and international research on the concept of 'equilibrium' and RVR interpretation; however, there has been minimal research in the Australian context that critically analyses the RVR measure.
- This report aims to demystify the RVR so that policy makers have a more thorough understanding of this important and frequently cited, but often unquestioned, housing market signal.
- The research used a mixed methods approach, integrating a qualitative literature review, quantitative analysis of various datasets and interviews with multiple key producers and users of RVR data.

The introduction to the Australian Government's *National Housing Accord* (Australian Treasury 2022) contains few statistics. However, a 'record low' national RVR of 0.9 per cent appears prominently. In the 2024–25 federal Budget documentation, in the context of recent falls in rental supply, the national dwelling vacancy rate is graphed in Chart 4.5 with the statement:

> *The rental vacancy rate is well below the rate considered to reflect a balanced rental market of around 3 per cent … In some parts of the country, including some capital cities, it is as low as 0.5 per cent. (Australian Treasury 2024: 129)*

Further, in its *State of the nation's housing report 2022–23,* the National Housing Finance and Investment Corporation (NHFIC) (now Housing Australia) stated conclusively that 'low vacancy rates mean existing tenants will face rising rents as their rental agreements come up for renewal' (NHFIC 2023: 22). These are just a few examples that reflect the importance afforded to the RVR as a key indicator of housing system conditions by the Australian Government.

The RVR identifies the proportion of rental stock that is vacant and available for rent (Belsky 1992). It is derived via a simple equation: at a chosen point in time and location, the number of vacant rental dwellings (the numerator) is divided by the total number of rental dwellings, including both tenanted and vacant properties (the denominator). This research focuses on private rental vacancies; therefore, social rental properties are excluded. Conceptually, the RVR is an uncomplicated housing market indicator, derived via a straightforward equation. In practice, however, the operationalisation of this measure is approached in a range of ways, by a range of producers, generating different outcomes.

1.1 Policy context

The concept of an RVR and its relationship to rent levels and growth originated from commercial property markets (office, retail, industrial). It has gradually been applied to private housing markets alongside the growth of private investor landlord ownership in global urban contexts. RVRs are commonly cited in Australia and internationally as key measures of housing market performance (e.g. NHSAC 2024). They are reported frequently in news headlines and influence the decisions of developers, investors, real estate agents and policy makers. This has been in parallel to the rise of 'proptech' (property technology) companies and their increasing infiltration of public media property market domains. Often, RVRs are reported with multiple other housing market indicators, such as rent levels, house sale prices and associated commentary.

In real estate economics, there is a well-established inverse relationship between rental growth rates and RVRs across property sub-sectors, including residential, office, industrial and retail property asset classes (Brown 2015; Wheaton 1999). Rents and RVR variations impact the expected profitability of new construction, future supply of rental housing and affiliated services. However, real estate development and construction is also characterised by long lags, resulting in cyclicality in the relationship between RVRs and market conditions, and, consequently, in the supply of new real estate. This raises important questions around how RVRs and indicators are, and can be, measured and constructed; and, additionally, how public and private housing market actors use RVRs in decision-making on housing investment, supply, rent-setting and regulation.

Current housing shortages reflect longer-term and complex housing supply–demand imbalances and are reflected in rising real house prices. Over the past 30 years, housing supply has been broadly unresponsive to house price increases. This is the case at both aggregate (Ball, Meen et al. 2010; Burke, Nygaard et al. 2020) and local levels (Nygaard, van den Nouwelant et al. 2022). The causes of the aggregate housing supply–demand imbalance are complex. This includes supply impacts of the Australian planning system (Daley, Coates et al. 2018; Kendall and Tulip 2018); demand impacts of rapid household growth (Kohler and van der Merwe 2015); income and productivity growth; a low-interest rate environment (Abelson, Joyeux et al. 2005; Nygaard 2024; Otto 2007); the financialisation of rental and owner-occupied housing (Hulse, Reynolds et al. 2019); the role of endogenous 'financial accelerators' (Iacoviello 2005; Meen 2013); and housing policies, including the tax system and fiscal policy measures through first-time buyer assistance (Daley, Coates et al. 2018; Kupke and Rossini 2014).

In rental markets, changes in real rents similarly measure supply–demand imbalances. However, the supply of rental properties is complex. Though not prominent in Australia outside the non-market sector, properties are being built for rent; however, much rental stock in Australia is the result of households' investment and savings behaviour, conversion from/to owner occupation and/or intergenerational accumulation of properties. Changes in vacancy rates, therefore, provide an additional measure of analysing private rental market dynamics and can provide additional insight to inform housing policy.

From a theory perspective, real rents are expected to decline when the vacancy rate rises above an equilibrium level (Belsky and Goodman 1996). An equilibrium vacancy rate is considered one in which market forces (supply and demand) are balanced, leaving real rents unchanged. The equilibrium vacancy rate incorporates a degree of slack (i.e. vacancy), which is necessary for demand and supply to balance out. For instance, vacancy is required to enable search, relocation and contracting to take place. In theory, a vacancy rate therefore provides an additional market-based indicator for the monitoring of private rental market dynamics. Empirically, however, the relationship between real rents and the vacancy rate is not straightforward (see Section 1.2).

Market-based indicators can only be effective guides to supply volumes and locations if they accurately capture current and future market conditions. If they can, the potential of RVRs to assist in evaluation and monitoring of policy impacts—such as residential tenancy reform, changes to taxes and levies, or planning reforms (e.g. build-to-rent)—could be considerable. Given the close relationship between vacancy rates and rent changes, accurate RVRs can assist in identifying hot spots where rent increases might be problematic or where new rental supply would be desirable. The RVR was, for example, among the potential supply measures that Gurran, Phibbs et al. (2015) recommended to measure housing market efficiency and responsiveness. However, the dynamics of vacancy rates, such as the degree to which an equilibrium rate can be said to exist and spatial dynamics of vacancy rates, also provide insights on non-price adjustments in rental markets (when new supply is not forthcoming) or geographies of intervention (functional housing markets).

This report aims to demystify the RVR so that policy makers have a more thorough awareness of its strengths and limitations. Despite being a key housing market measure, there has been little critical analysis of the RVR in Australia in terms of its multiple methodologies, strengths, limitations and alternative measurement options. Using almost two decades of data from multiple sources, the report demonstrates the spatial and temporal variability of the RVR and its relationship with rental levels and supply. It also showcases the risks of relying on point-in-time and geographically aggregated data.

There has not yet been an examination of how the RVR is used in Australia across government, private sector and not-for-profit organisations. This report aims to fill these gaps, thereby helping to make the RVR a more effective tool for policy makers.

1.2 Existing research

1.2.1 Interpreting rental vacancy rates

Rental vacancy rates vary temporally and the assumed relationships between rents and supply can be affected by structural market shocks. According to economic theory and empirical research, there is a negative relationship between RVRs and changes in real rents in housing markets. However, Belsky and Goodman (1996) show that periods of high vacancy rates can coincide with high real rental growth as a result of structural housing market change, as well as changes in landlord price setting behaviours. The absence of the expected relationship was uncovered in the US context during the 1980s, using national-level data on RVRs and rents.

Vacancy rates may also differ spatially and across income/price segments. For instance, Wood, Yates et al. (2006) found that vacancy rates in low-rent housing stock tend to be higher than vacancy rates in high-rent housing stock. This is also observed internationally (Jencks 1994). In the Australian context, empirical research suggests that the landlord/real estate agency decision-making frame is longer for low-rent dwellings, as the search for quality tenants may take longer (Wood, Yates et al. 2006). Additionally, there is some evidence of increased polarisation regarding the location of low- and high-rent housing stock within the Sydney region. This may generate spatial variation in vacancy rates related to low- and high-demand contexts. For the geographically smaller Adelaide, this explanation was not found.

The Australian literature suggests that vacancy rates may vary spatially as a result of variations in the socio-economic characteristics of neighbourhoods, and due to distance or urban size–related factors. From a temporal perspective, these factors suggest that vacancy rates will vary at least in the short-term. Vacancy rates, and particularly an equilibrium vacancy rate, may also vary over time if the composition of renters' characteristics vary over time. For instance, Reynolds, Parkinson et al. (2024) show that, over the period 1996 to 2021, the distribution of rental stock, by price, has shifted from a bias towards low-rent stock towards a concentration of rents at mid-to-high levels, and increasingly housing individuals with moderate to high incomes. Consequently, as higher income groups compete or become a greater proportion of the overall rental demographic, the aggregate equilibrium rate may also begin to change. Technological innovation in the property advertisement and market matching process may also have lowered costs and improved turnover times in leasing or selling properties (Boeing 2020).

1.2.2 Critically analysing rental vacancy rates

Critical analysis of Australian RVR data, and the approaches and assumptions used to produce this measure, is sparse in published work. In nearly all literature reviewed for this project, the RVR was quoted in the context of overall market conditions, rent changes and rental supply issues, but rarely in a manner that critically examined the measure itself.

One exception is work undertaken by the Tenants' Union of New South Wales in 2023. In its *Submission on the national housing and homelessness plan*, the Tenants' Union argued that if a market-led supply strategy is pursued to address housing affordability issues, then:

> *further work is needed to understand the impacts of vacancy rates in indicating the required availability, the potential impacts and the costs of using market-led supply to meet the needs of the community. (Tenants' Union of NSW 2023: 22)*

The group raised several other issues associated with the RVR measure, including how the quoted 'natural' vacancy rate varies over time, how vacancy can be measured at the market or property level, how there are numerous RVR producers who calculate the measure differently and how there 'is no authoritative source for the vacancy rate nor an agreed upon method of calculation' (Tenants' Union of NSW 2023: 23). The Tenants' Union cautioned against using the RVR to indicate the volume of available dwellings, as the figure is influenced not only by the number of available dwellings (the numerator) but also by the total number of rental properties in the market (the denominator). Although the Tenants' Union did not have the space to examine these issues in detail in its submission, it is notable that this advocacy group is one of few organisations to critically examine the RVR measure in Australia.

Another recent exception is a report by Murray (2022) that explains the RVR concept and offers guidance on how to interpret the measure but falls short of offering a critical assessment. Murray briefly compares two RVR data providers and notes that:

> *rental advertising metrics are useful in terms of understanding the conditions in the active rental market and the pace of the turnover in that market. However, in terms of the broader long-term economic relevance concerning the stock of physical dwellings and household formation, they provide limited information. (Murray 2022: 5)*

More pointedly, the NHFIC (2023), having examined at least two different sources of RVR information, noted that they produced different results:

> *The vacancy rates published by CoreLogic use a different methodology to those published by the Real Estate Institute of Australia (REIA). The CoreLogic vacancy rate is more a measure of the time properties are vacant whereas the REIA data reports the proportion of rental property that is vacant … Most available datasets show a decline in vacancy rates, with CoreLogic showing they are falling further than what other datasets suggest. (NHFIC 2023: 20)*

The NHFIC did not undertake a detailed examination of RVR approaches. Nevertheless, among the literature reviewed, its acknowledgement of the limitations of RVR data stands out.

Further research is reviewed in the relevant chapters in this report. Research on the concept of 'equilibrium' (or a 'natural vacancy rate') in RVRs is examined in Chapter 5, including the temporal and spatial variability of natural vacancy rates, the existence of a market equilibrium level and assumptions in modelling approaches. The extensive international literature on vacancy rates is explored in Chapter 7.

1.3 Research questions and methods

The overarching aim of this research is to critically assess the RVR measure in Australia, thereby giving policy makers a comprehensive understanding of this important, but often unquestioned, housing market signal. The research used a mixed methods approach, integrating a qualitative literature review, quantitative analysis of various datasets, and interviews with multiple key producers and users of RVR data. It was guided by four research questions:

1. What are the methodologies, strengths and limitations of RVR indicators in Australia's private housing market?
2. How do Australian RVRs conform temporally and spatially to assumed market equilibrium levels?
3. What role do RVRs, and their methodological assumptions, play in public policy and housing supply decisions in different market segments and locations?
4. What insights can be learned from RVR methodologies used in other countries?

RQ1 was addressed through a desktop review of the structure, availability and associated methodological literature of Australian RVR datasets. Five main private organisations were identified as producers of RVR data in Australia and their websites were examined for information on the methodology used to generate RVR data series. Further, to illustrate how the output of different RVR methodologies compared, time series data from two long-term producers were charted for each Australian capital city.

Information gained via interviews with several RVR data producers, as well as informal conversations and email communication, supplemented this review. Insights from RVR users about the strengths and limitations of data sources were also included, along with some suggested improvements. More information about the interview process is presented below at RQ4.

Finally, unit record–level rental bond data for Victoria were analysed, providing an alternative data source and methodology for deriving the RVR measure. The aim of this exercise was to derive this key housing market indicator from a government collected, and, thus, publicly owned and managed, data source.

RQ2 was addressed through a two-stage quantitative analysis. The first step was to examine the existence of an RVR equilibrium level, potential determinants of changes in the equilibrium rate (i.e. supply, demand, rent levels), and the short- and long-run responsiveness of RVRs to these market factors. To test these outcomes, we employed an autoregressive distributed lag (ARDL) method to model the RVR in Melbourne and the rest of Victoria over a 13-year period, between January 2011 and August 2024 (monthly interval data).

Movements in RVRs can be spatially dependent on explanatory factors, such as supply, demand or rent levels, within a geographic area and/or neighbouring areas at a particular point in time. Therefore, the second step was to unpack spatially variegated RVR dynamics through spatial autoregressive (SAR) modelling of cross-sectional data for geographic areas of interest—in this case, small area rental markets at a postcode/POA level in the Australian state of Victoria in the month of August 2021. Victoria experienced numerous lockdowns in 2020 and 2021 due to the COVID-19 pandemic.

RQ3 was addressed primarily through interviews with 17 individuals from 14 organisations, supplemented by a desktop review of how RVR data are publicly cited in Australia. These interviews also informed RQ1 to a lesser extent (see above).

Interview participants were recruited through direct email contact. The five major RVR producers in Australia were approached, with four agreeing to be interviewed. Following the desktop review, we attempted to recruit RVR users across a range of sectors, including the Australian Government, state governments, and real estate, finance and renter advocacy groups.

Due to the small number of RVR producers, a decision was made to anonymise all their quotations. They are cited in this report as 'RVR producer'.

The users of RVRs interviewed for this project are listed below. Identification in this list and for quotations in the body of the report are based on participants' preferences:

- Australian Bureau of Statistics
- three Australian Government bodies/departments
- NSW Department of Planning
- NSW rental commissioner
- Homes Tasmania
- Tenants' Union of NSW
- a real estate services firm
- a major bank.

RQ4 was addressed through a desktop review of international RVR measures and literature, including assessment of the potential application of such methodologies to the Australian context. Sources were found by targeted internet searches using key words such as 'residential' and 'vacancy rate', 'rental vacancy rate' and 'equilibrium rental vacancy rate'. It was not feasible to collect and discuss the vacancy rate data of every country. Further, we were limited by what information was available freely and in English. Some sources in French and German could be used due to team members' ability to translate them. For most non-Anglophone countries, however, it was necessary to rely on English-language academic literature and a limited number of webpages.

1.4 Structure of this report

The remainder of this report is structured as follows:

- Chapter 2 relates to the first part of RQ1 and focuses on the companies and methodologies that produce RVRs in Australia. To illustrate how RVRs utilising different methodological approaches vary, a series of capital city charts are included, drawn from RVR time series data.
- Chapter 3 also addresses RQ1 and presents an overview of the strengths, limitations and challenges of current RVR data in Australia (both the specific methodologies and the elements of the overall RVR landscape in Australia). Suggested improvements to RVR data are also discussed. Data in this chapter are drawn from the desktop review and interviews with producers and users.
- Chapter 4 builds on the information gained from addressing RQ1 and offers an alternative data source and methodology for deriving the RVR measure. Rental vacancy rates, derived from Victorian Residential Tenancies Bond Authority (RTBA) data, are presented and the advantages or otherwise of this approach are discussed.
- Chapter 5 comprises findings of the two-stage quantitative analysis that examines the existence of an RVR equilibrium level, potential determinants of changes in the equilibrium rate, and the short- and long-run responsiveness of RVRs to these market factors. The chapter also examines how RVR movements can be spatially dependent on explanatory factors, such as supply, demand or rent levels, within a geographic area and/or neighbouring areas at a particular point in time.
- Chapter 6 connects with RQ3 and draws on interviews with RVR producers and users to explore how government and non-government organisations use RVRs in policy and decision-making.
- Chapter 7 relates to RQ4 and presents a review of select vacancy rates internationally, including what type of vacancy is measured, who produces the measure, the methodology employed and the uses of vacancy rate data.
- Chapter 8 summarises the key research findings and presents future directions and recommendations.

2. Australian rental vacancy rate data: methodologies

- **There are five main rental vacancy rate (RVR) data producers in Australia and all are private, commercial organisations. No public agency produces rental vacancy information and there is no consistent method or data source for producing the measure.**
- **Vacant rental properties are identified from data collected either by a survey of real estate agents or from digital listings of available rental properties (RVR numerator).**
- **Total private rental stock is estimated based on total real estate agent rent rolls (via survey) or methods that benchmark against and interpolate Census data (RVR denominator).**
- **A comparison of survey-based and listings-based methodologies reveal significant inconsistencies in RVR trends for smaller capital cities; however, these align more closely in the larger cities of Sydney, Melbourne and Brisbane.**
- **A 3 per cent benchmark for a 'balanced' market in 'equilibrium' does not hold across capital cities.**
- **On average, long-run survey based RVRs were higher than those produced by the listings method.**

Rental vacancy rate data producers and the methodologies used to generate the RVR metric are examined in this chapter, thereby addressing the first part of RQ1. The chapter provides an overview of these private companies and the two main methods used to calculate RVRs: a survey-based approach and a listings-based approach. To illustrate the variations in RVR outputs arising from these different approaches, capital city charts comparing RVR data over almost two decades are included. The second part of RQ1, an examination of the strengths and limitations of existing RVR methodologies, is presented in Chapter 3.

2.1 Producers of RVR data

There are five main private organisations in Australia that calculate and report RVRs. Each of these are briefly discussed below. No federal, state or territory government department or public agency produces the RVR metric, and there is no single, consistent method or data source for producing RVRs. The information presented below is informed by desktop research and interviews with four of the five data producers.

Real Estate Institute of Australia

The Real Estate Institute of Australia (REIA) was formed in 1924 and is a federation of state and territory Real Estate Institutes (REIs) (REIA 2024a: 26). It is a professional association/advocacy group representing members in the real estate agency industry. The REIA has the longest time series data on RVRs at a capital city level, with data and commentary included in its *Market Facts* publication available for fee-paying members. It also sells data on an ad hoc basis. The REIA collates RVR data from state-based REIs, who either administer their own monthly member surveys of RVRs (e.g. Real Estate Institute of New South Wales [REINSW]) or obtain data from other sources (REINSW 2024; Real Estate Institute of Northern Territory [REINT] 2023; Real Estate Institute of Queensland [REIQ] 2021; Real Estate Institute of Tasmania [REIT] 2024; Real Estate Institute of Victoria [REIV] 2024). In New South Wales, the survey is administered by third party market research organisations such as Insightrix (2010–13) and Survey Matters (2014–).

SQM Research Pty Ltd

SQM Research Pty Ltd is a privately owned Australian organisation. It was the first to produce a rental listing–based RVR measure and is the only firm to provide free RVR data, accessible on its website through an interactive graphing feature. It also provides a detailed downloadable description of its methodology (SQM Research 2024a). However, the company charges a fee for downloadable time series data (e.g. listings count) and customised data requests.

Cotality (formerly CoreLogic)

RP Data Pty Ltd, formerly trading as CoreLogic Asia Pacific, was rebranded as Cotality in March 2025 (RP Data Pty Ltd 2025b). Cotality is a real estate information and analytics company, with an international presence across multiple countries, including Australia, Aotearoa New Zealand, Canada, the United States (US), the United Kingdom (UK) and Germany. In 2011, CoreLogic acquired 100 per cent of the shares in RP Data Ltd, a publicly traded property data and analytics company based in Australia and Aotearoa New Zealand that was registered as an Australian business in 1999 (Australian Business Register [ABR] 2025; National Real Estate Investor Staff 2011). Cotality's Australian subscription-based research service, 'Market Trends', includes numerous variables on rental and sales activity, measures of rental-sales listing volumes and other indicators at various geographic scales. The company reports a monthly RVR and an average RVR for the previous 12 months. Its clients encompass consumers, property investors and various industries spanning real estate, property insurance, banking, finance, telecommunications and higher education, as well as public sector and government organisations.

REA Group

REA Group Ltd is a foreign-owned public company and part of the 'media and entertainment' industry group listed on the Australian Securities Exchange (ASX 2025), with a market capitalisation of over A$31 billion. It became an incorporated business in 1995. By 2024, it had 3,406 employees (including within subsidiaries under the company's control), generating A$1.7 billion in total sales and other revenue (ABR 2025; IBISWorld 2024a: 2). REA Group Ltd has gradually acquired residential sales and rental property listings platforms internationally. Its main Australian listings platform from which private rental property market metrics can be derived is realestate.com.au. In 2018, the firm acquired the residential property data company Hometrack Australia Pty Ltd (later rebranded as PropTrack), a business that has been registered in Australia since 2007 (ABR 2025). This division of REA Group Ltd produces fee-based data and research services and disseminates some free information through its website and media channels.

Domain Holdings Australia Ltd

Domain Holdings Australia Ltd (Domain Group), also part of the 'media and entertainment' industry group listed on ASX (2025), is a public company with a market capitalisation of over A$1.7 billion. In 2024, it had over 1,000 employees (including within subsidiaries under the company's control) and generated A$392.7 million in sales and other revenue (IBISWorld 2024b: 2). The company has been a registered business since 2001 (ABR 2025) and operates a digital property advertising platform (www.domain.com.au). It is the latest company to add an 'average vacancy rate' measure to its rental data metrics, which includes median rents and rental yields.

In February 2025, CoStar Group Inc., headquartered in the US and a Nasdaq listed company, acquired around 17 per cent of the ordinary shares of Domain Group (valued at A$452 million). Later, in May, it purchased the remaining 83 per cent of ordinary shares for A$2.3 billion (CoStar Group 2025a; Domain Holdings Australia Ltd 2025). CoStar Group operates online real estate listing platforms for commercial and residential properties, and is a data-information-analytics and 3D digital twin technology services provider. Its coverage of the multi-family residential sector includes the tracking of 37.5 million units (apartments, build-to-rent) and 1.8 million student accommodation units across global capital city markets tracked (CoStar Group 2024).

In the US, the company leverages off residential real estate listing platforms, such as apartments.com (apartment rentals only) to report on rental market dynamics, with variables collected including supply, demand/absorption rates, rental levels–growth (quarter-annual) and vacancy rates (CoStar Group 2025b). Among many client typologies, fee-paying customers in the property industry include developers, investors and asset managers.

These RVR data producers are the largest and most well-known commercial companies to produce private rental vacancy information in Australia. We found multiple examples of public, private, advocacy and academic individuals and organisations using the RVR measures produced by these organisations (see Chapter 6). Two smaller-scale producers are described in Appendix 1.

2.2 Rental vacancy rate methodologies

There are two types of methodologies deployed to calculate RVRs and each is reviewed below, with further details shown in Tables 1 and 2.

2.2.1 Survey based

This was the first method used to calculate and report RVRs in Australia. It is based on a monthly survey of real estate agencies who are members of state-based REIs to estimate the vacant share of the total rent roll (i.e. private rental properties managed on behalf of investor landlords). The results, collated by the REIA since the 1980s, are published in *Market Facts* (a fee-based report for members only and available for free through state libraries).

The reported detail on RVRs in *Market Facts* has changed over time. For example, while early versions were reported monthly and segmented by dwelling type, from 1999, they were reported quarterly and dwelling type was no longer provided (REIA 1998). From the June quarter of 2001, both an average quarterly and moving annual (trend) RVR were included, the latter smoothing out temporal fluctuations and providing a more accurate indicator of longer-term RVR movements. Explaining the 'rationale for this important change', the REIA (2001: 9) noted that:

> *the trend values are better indicators of the direction of movement and level of the vacancy rates over time than the quarterly spot estimates that have been reported in the past. The quarterly spot estimates may fluctuate substantially from quarter to quarter. Such fluctuations result mainly from the variable size of the sample of co-operating Real Estate Agents, their geographical distribution and the timing of their responses containing their estimated vacancy rates.*

Currently, the REIA collates RVRs from state-based REIs. Some REIs continue to use a survey-based approach to report either a monthly (i.e. REINSW, REIV, REIWA, REIACT) or a quarterly RVR (REINT, REIT). Others, such as REIQ, REISA and REIACT, have transitioned from conducting member surveys to sourcing data from external producers (e.g. SQM Research Pty Ltd) (see Section 2.3, Figures 3–4 and 7). These methodological changes could impact the quality and interpretation of time series data by users, who include public and private housing sectors, financial institutions, the media and the general public, including small-scale investor landlords.

2.2.2 Listings based

The second approach involves leveraging rental property listings data on one or multiple digital advertising platforms to estimate the RVR numerator—that is, the number of rental properties available for lease. This approach is adopted by SQM Research Pty Ltd, Cotality (formerly CoreLogic), REA Group Ltd–PropTrack and Domain Group; the last two organisations operate the main Australian property advertising companies with associated listing platforms (IBISWorld 2024c).

Cotality and REA Group Ltd–PropTrack also use rental listings data and match these with property-specific sales records to estimate the RVR denominator (total rental stock), which is then benchmarked against five-yearly, Census-based data on rental dwelling stock.

Listings-based RVR data are available for monthly observations, and the length of time series data varies from two years to almost two decades depending on the geographic scale covered by the data producers. Shorter RVR time series datasets would be less useful in modelling long-term impacts of demand and supply shocks on RVRs, including the 2007–09 global financial crisis (GFC) and the recent COVID-19 pandemic periods.

A summary of the RVR methodologies adopted by the various data producers is shown in Table 1 and Table 2. The level of detail against each descriptor reflects the amount of information that was able to be collected, either via website searches or interviews. It is worth noting that much of this information was only obtainable via interview, reflecting a lack of public transparency on the part of RVR producers.

The tables highlight the range of information available across the data sources (most of which attracted a fee). For example, RVRs are produced for a broad range of spatial units but not dwelling types. Of particular importance is the key concept of 'vacancy'. Table 2 shows that the concept is operationalised differently among the main RVR producers. The state-based members of the REIA that collect vacancies via survey define vacant as unlet rental dwellings on the rent roll; however, without access to the survey form, we cannot determine whether this count is taken at one point in time or whether the properties are unlet at any time across a month. Of the other producers, who use a listings-based approach, SQM Research and Domain define properties as vacant only if the property is advertised for three weeks or more; Cotality defines properties as vacant if they are advertised for at least two weeks (and include a month-end measure); and REA Group counts properties listed and available for rent on the last day of each month as vacant. Such variations in operationalising 'vacancy' are further discussed Section 3.2.3.

Table 1: Rental vacancy rate data sources by characteristics

Data source	Length of RVR time series	Reporting frequency	RVR spatial units	RVR dwelling type segmentation	Cost/availability
State-based Real Estate Institutes conducting own survey of RVR (e.g. REINSW, REIV, REIWA, REIACT and REINT) **Collated by REIA**	1980+ (capital cities, except Darwin and Hobart) 2001+ (NSW) 2022+ (REIV), variable for other geographies	Monthly survey (REINSW, REIV, REIWA, REIACT) Quarterly survey (REINT)	Capital city, regions in capital city (inner, middle and outer ring) and select regional areas in each state/territory defined by specific REIs	REINT only: units/townhouses and houses REIA reported for flats/units/townhouses versus houses 1999–2001	Fee
SQM Research Pty Ltd	2005+	Monthly	Postcode, capital city, aggregated postcodes into SQM defined regions	No	Fee (was available for free when accessed 6 May 2024)
RP Data Pty Ltd, trading as Cotality Asia Pacific (formerly CoreLogic Asia Pacific)	2010+	Monthly	Suburb, Local Government Area (LGA), capital city, rest of state, combined capital cities, combined regional areas ABS ASGS regions: GCCSA city, SA4, SA3	Yes: houses and units	Fee
REA Group Ltd (PropTrack Division)	2013+	Monthly	Capital city, rest of state, capital city regions, combined capital city and combined regional areas ABS ASGS regions: GCCSA, SA4, SA3 Suburb and SA2 pending	No	Fee
Domain Holdings Australia Ltd (Domain Group)	2017+ (city) 2020+ (suburb) 2022+ (regional, SA4 and SA3)	Monthly	Suburb ABS ASGS regions: GCCSA, SA4, SA3	No	Fee

Source: Domain Group (2024); REA Group Ltd (2024); REIA (1990–2015); RP Data Pty Ltd (2025a); SQM Research Pty Ltd (2024a). In addition, interviews, website searches, phone and email correspondence with respective data producers.

Table 2: Rental vacancy rate data methodologies, assumptions and challenges by producer

RVR methodology (inc. changes over time)	Numerator and data source	Denominator and data source	Key assumptions	Key challenges
State-based Real Estate Institutes conducting own survey of RVR (REINSW, REIV, REIQ, REIWA, REIACT and REINT)				
Proportion of unlet rental dwellings to the total rental roll managed by member real estate agencies who responded to monthly survey	Unlet rental dwellings in an aggregate rent roll of properties (survey based)	Aggregate rent roll of properties managed by real estate agencies who are members of REIA state institutes and filled out a survey	Rent roll managed by member real estate agencies are a sizeable share of the total rental stock	Possible poor response rates from member surveys, impacting quality of RVR in specific times and geographies No reporting of survey sample size and representativeness by each REI conducting own survey, or outsourcing survey administration to third party
SQM Research Pty Ltd				
Number of rental property listings advertised online divided by number of established rental properties, as defined by the ABS Census with some adjustments Excludes listings for short-term rental properties (e.g. Airbnb), properties without individual unit numbers or addresses (e.g. off-the-plan or build-to-rent [BTR] projects with all units advertised for lease but without unit ID, and purpose-built student accommodation [PBSA])	Rental property listings are taken from online monitoring of major rental property listings websites (non-disclosure of names) Only properties advertised for three weeks or more used Properties with unique addresses or listing IDs are included Listings without addresses and duplicate addresses are excluded	Private rental stock estimate derived from ABS Census of Population and Housing 2001, 2006 and 2011: intercensal periods, number of established dwellings multiplied by share of renters Post-2016 and 2021 Censuses: number of renters as counted plus a proportion of renters multiplied by occupant not stated/not applicable categories Data interpolation for months/years in intercensal periods	Advertised listings of rental properties for three weeks or more reflect true vacancy Website monitoring captures over 97% of all real estate listings	Major listings platforms blocking external parties from monitoring sites because they have internal research teams who sell data Census is the best available source of nationally consistent data to estimate private rental stock, with assumption made on proportion of properties available for rent versus owner-occupation and errors in these assumptions can have implications for the accuracy of RVRs at postcode level
RPData Pty Ltd trading as Cotality Asia Pacific (formerly CoreLogic Asia Pacific)				
'Average vacancy rate past 12 months' defined as percentage of days the average listed property is vacant over previous year Month-end measure released on first working day of following month	Number of rental properties advertised for at least a two-week period Based on listings of unique rental property addresses sourced from several undisclosed platforms/ data suppliers	Matching of sales and rental listings records for unique property addresses to derive a rolling eight-year estimate of rental property stock Benchmarked against ABS Census data	Two-week period of vacancy to derive numerator A property is part of the rental stock for eight years to estimate the RVR denominator Listings sourced from platforms represent large market share	Two-week advertised period is shorter than tenant notice periods to vacate a property in some Australian states No listings and turnover history for estimated rental stock prior to mid-2010s (select rental series start from 2005)

Table 2 (continued): Rental vacancy rate data methodologies, assumptions and challenges by producer

RVR methodology (inc. changes over time)	Numerator and data source	Denominator and data source	Key assumptions	Key challenges
REA Group Ltd – PropTrack				
Number of properties listed and available for rent on www.realestate.com.au at each month's end divided by estimated rental property stock (occupied or vacant), based on the matching of sales and rental profile of properties listed on REA sites (point in time estimate) Excludes short-term rental lettings, renting in share housing, BTR and PBSA (listings on www.flatmates.com.au excluded)	Total count of properties listed and available for rent on the last day of each month Properties are advertised on realestate.com.au	Matching of individual property sales and rental records to estimate private rental stock If a property is bought (with/without tenant), it is taken out of rental stock estimate as not known if it will continue to be tenanted If the same property is re-advertised for lease, it is added back to the rental stock estimate and figure is revised	Majority of Australian real estate agencies advertise available rental properties on this listing platform A renter searching for a property at a given time only considers availability of rental properties today and not over the previous month Property sold that is no longer leased is withdrawn as assumed owner-occupied, but owner could be leasing out a room/s	Numerator does not capture all rental property listings Matching of property specific sales and rental records not always perfect No universal individual property identifier of property records, creating mismatch between address entered on listings platforms and Geoscape-GPID Denominator scaled against Census measure of private rental stock; however, mismatch between company's definition of dwelling types on listings platform and ABS Census definitions Requires ongoing matching of listings to GPID and Census dwelling typologies
Domain Group				
Average vacancy rate reported as a proportion of estimated rental stock that is vacant over a month	Number of estimated vacant rental properties, defined as properties that have been advertised for rent/ been on the market for over three weeks	Private rental stock estimate derived from ABS Census of Population and Housing, with a forecast calculated to bring volume to current levels, to provide an estimate of current rental stock Rental dwelling stock is retrospectively adjusted based on the latest Census records	Unknown	Census is the best available source of nationally consistent data to estimate private rental stock, with assumption made on proportion of properties available for rent versus owner-occupation and errors in these assumptions can have implications for the accuracy of RVRs at postcode level

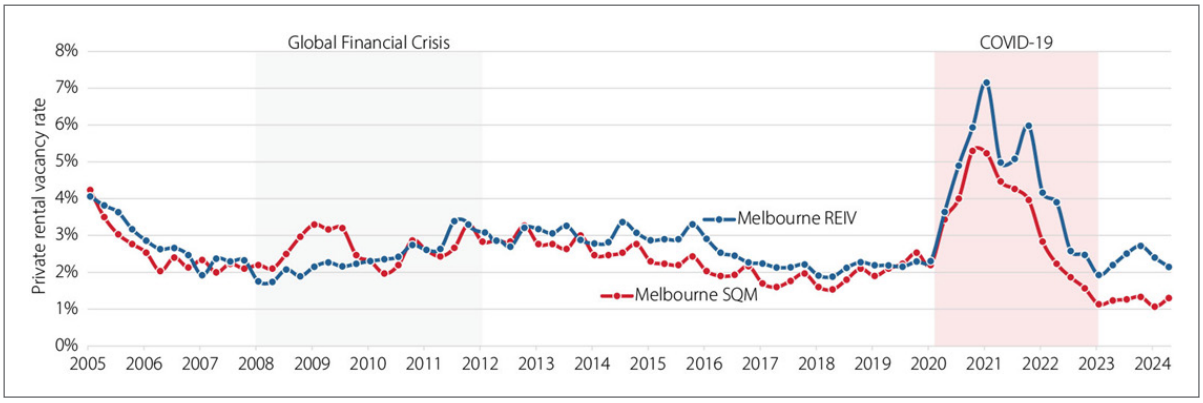
Source: Domain Group (2024); REA Group Ltd (2024); REIA (1990–2015); RP Data Pty Ltd (2025a); SQM Research Pty Ltd (2024a, n.d.). In addition, interviews, website searches, phone and email correspondence with respective data producers.

2.3 Temporal and spatial variability in rental vacancy rate trends: case study of two different methodological approaches

Differences in RVR methodologies and data patterns are evident when comparing the time series data for Australian capital cities of two long-term producers: REIA-REIs and SQM Research Pty Ltd (Figures 1–8). Longer-term trends in RVRs are clearly not consistent across all capital city private rental markets, affecting interpretation of supply–demand dynamics and the signal to change rents. As noted earlier, the narrowing of RVR differentials in some cities from 2021 onwards is related to REIs transitioning from survey-based approaches to sourcing RVR data from SQM Research Pty Ltd (e.g. REIQ, REISA and REIACT).

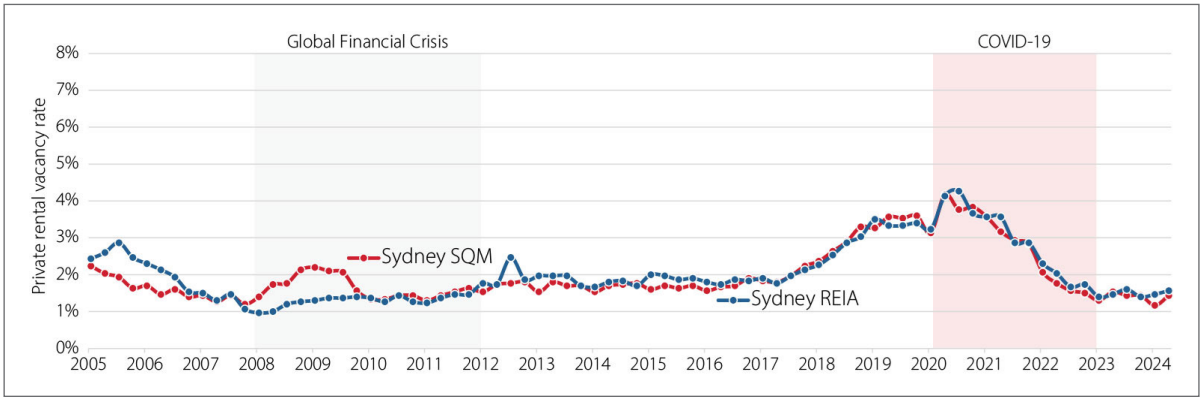
The different datasets reveal a broadly similar picture for larger private rental markets in the cities of Sydney, Melbourne and Brisbane, aside from divergences during the 2008–12 GFC period (see Figures 1–3 and Table 4). In other cities (Adelaide, Perth, Hobart, Canberra and Darwin), the comparison of the two RVR data sources reveals considerable variation in levels, although the peaks and troughs in trends are generally aligned (see Figures 4–8). The vastly different pictures of RVR levels in cities like Hobart could be a function of the sizeable short-term rental accommodation stock impacting private rental market dynamics (Buckle, Gurran et al. 2020), while market cyclicality relating to economic and mining boom-bust cycles have been observed in Perth's private rental markets.

Figure 1: RVR data source comparison, Melbourne 2005–24



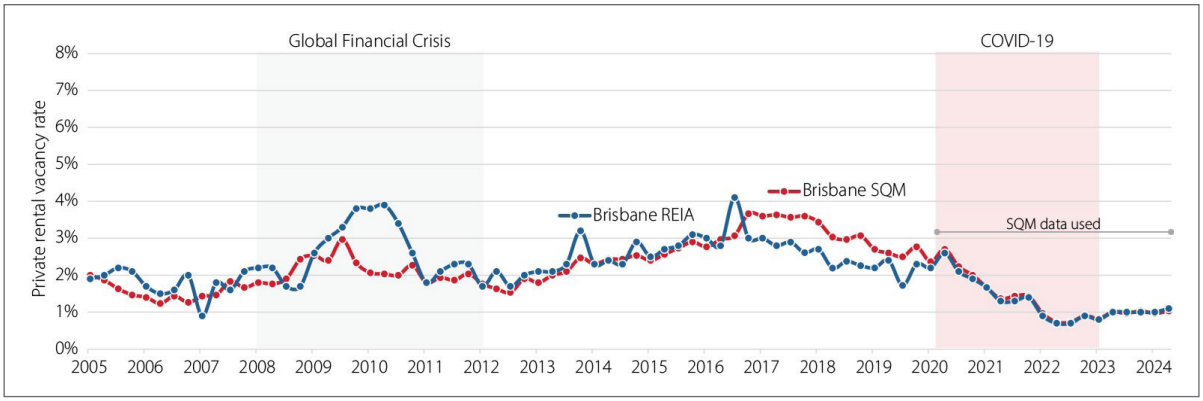
Source: REIA (2024a); REIV (2024); SQM Research (2024a) (quarterly data publicly available May 2024).

Figure 2: RVR data source comparison, Sydney 2005–24



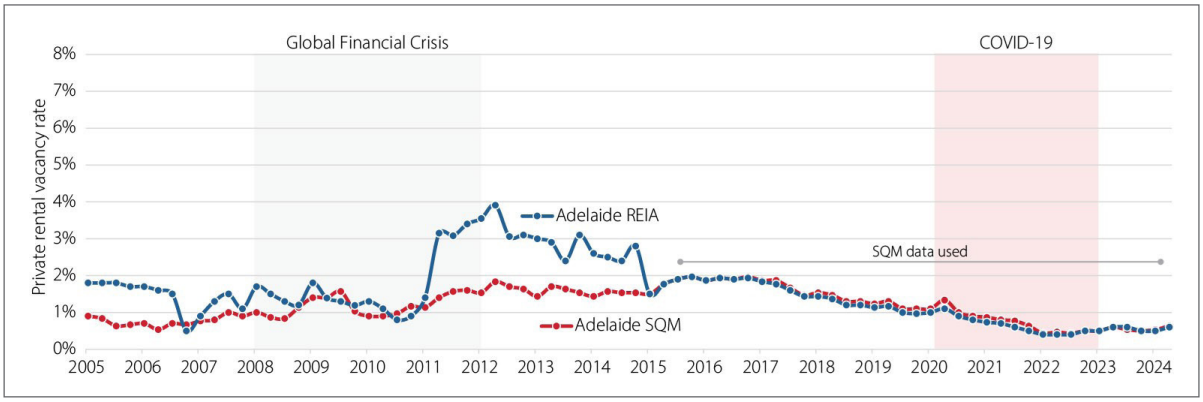
Source: REIA (2024a); SQM Research (2024a) (quarterly data publicly available May 2024).

Figure 3: RVR data source comparison, Brisbane 2005–24



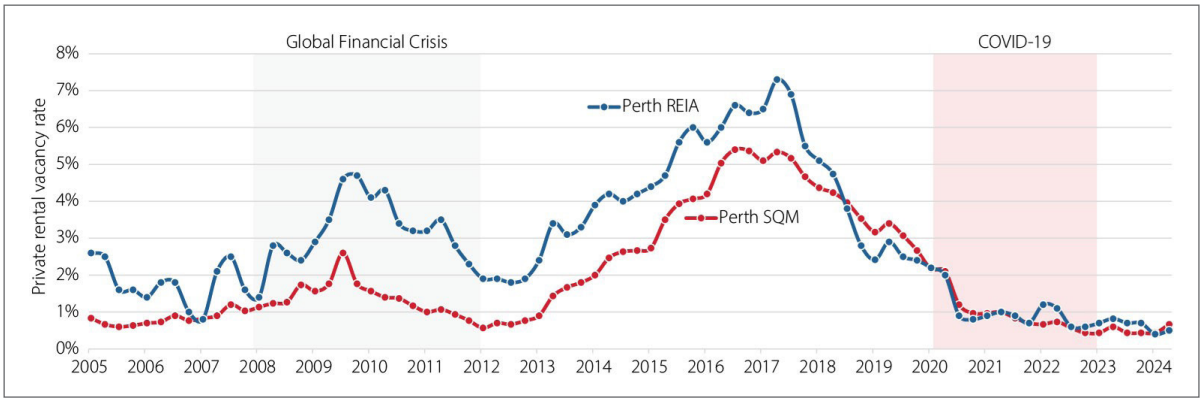
Source: REIA (2024a); SQM Research (2024a) (quarterly data publicly available May 2024).

Figure 4: RVR data source comparison, Adelaide 2005–24



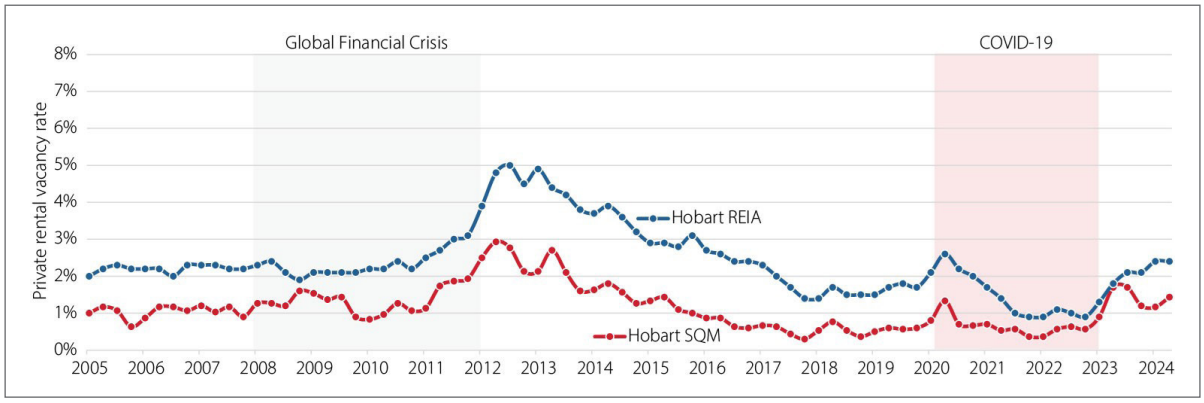
Source: REIA (2024a); SQM Research (2024a) (quarterly data publicly available May 2024).

Figure 5: RVR data source comparison, Perth 2005–24



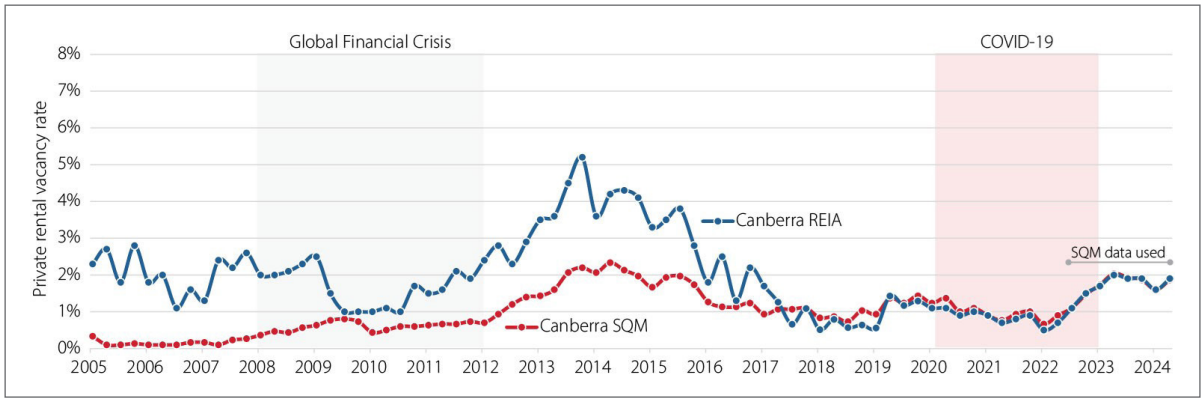
Source: REIA (2024a); SQM Research (2024a) (quarterly data publicly available May 2024).

Figure 6: RVR data source comparison, Hobart 2005–24



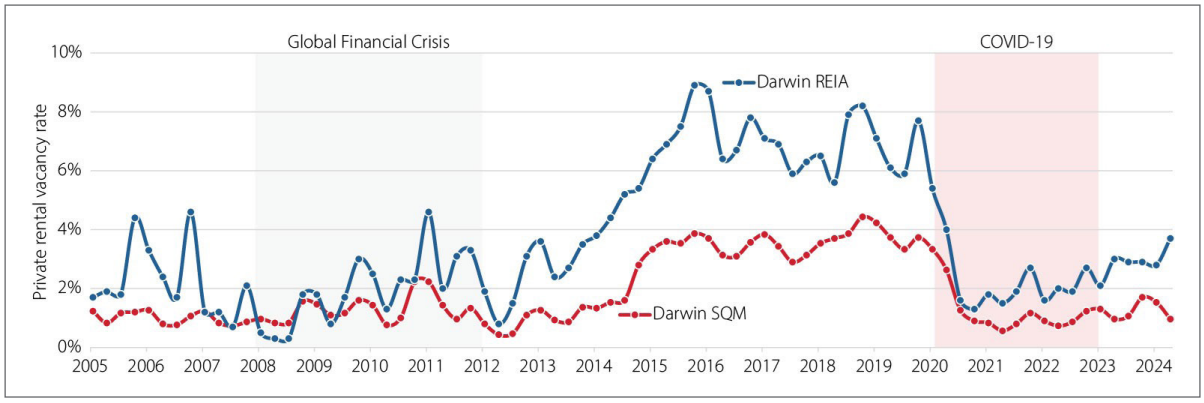
Source: REIA (2024a); SQM Research (2024a) (quarterly data publicly available May 2024).

Figure 7: RVR data source comparison, Canberra 2005–24



Source: REIA (2024a); SQM Research (2024a) (quarterly data publicly available May 2024).

Figure 8: RVR data source comparison, Darwin 2005–24



Source: REIA (2024a); SQM Research (2024a) (quarterly data publicly available May 2024).

Long-average RVRs for all Australian capital cities across almost two decades is shown in Table 3. Data from two different producers with contrasting approaches are compared. These show a broadly similar long-run RVR range in cities like Sydney, Melbourne and Brisbane of between 2 and 3 per cent, considered to reflect a 'balanced' market in equilibrium. However, Darwin, Hobart and Perth—cities with relatively smaller rental markets and more volatility in supply–demand drivers and rental growth—have quite different reported long-run RVR averages across these two sources. This temporal and spatial variability in the equilibrium RVR is discussed in Chapter 5 (Section 5.1).

Table 3: Long-run average of quarterly RVRs, March quarter 2005 – March quarter 2024: variations across two data producers

Capital city	RVR SQM Research Pty Ltd	RVR REIA-REIs	Differential REI to SQM*
Adelaide*	1.2%	1.6%	0.4%
Brisbane*	2.1%	2.2%	0.0%
Canberra*	1.0%	1.9%	0.9%
Darwin	1.8%	3.6%	1.8%
Hobart	1.1%	2.4%	1.2%
Melbourne	2.5%	2.9%	0.3%
Perth	1.9%	2.9%	1.0%
Sydney	2.0%	2.0%	0.0%

Source: REIA (2024a); SQM Research Pty Ltd (2024a).

** REIQ, REISA and REIACT sourced data from SQM Research Pty Ltd from the dates shown in Figures 3, 4 and 7.*

Table 4: Capital city average quarterly rental vacancy rates during periods of economic shock (GFC and COVID-19): variations across two data producers

	GFC period (2008–12)			COVID-19 period (2020–22)		
Capital city	SQM RVR	REIA-REIs RVR	Differential: REI to SQM*	SQM RVR	REIA-REIs RVR	Differential: REI to SQM*
Adelaide*	1.3%	2.0%	0.7%	0.8%	0.7%	–0.1%
Brisbane*	2.0%	2.5%	0.5%	1.5%	1.5%	0.0%
Canberra*	0.7%	1.8%	1.1%	1.0%	0.9%	–0.1%
Darwin	1.2%	1.9%	0.8%	1.3%	2.4%	1.1%
Hobart	1.6%	2.8%	1.2%	0.7%	1.5%	0.8%
Melbourne	2.7%	2.4%	–0.3%	3.4%	4.4%	1.0%
Perth	1.3%	3.0%	1.7%	1.0%	1.1%	0.0%
Sydney	1.7%	1.4%	–0.2%	2.9%	3.0%	0.1%

Source: REIA (2024a); SQM Research (2024a). **REIQ, REISA and REIACT sourced data from SQM Research Pty Ltd from the dates shown in Figures 3, 4 and 7.*

The survey-based approach produced higher long-run RVR averages compared with the listings-based approach, especially in Darwin, Hobart, Perth and Canberra. A similar pattern emerged when looking at average RVR differentials from the two data sources during the GFC and COVID-19 pandemic periods, when economic shocks impacted rental property market dynamics (Table 4).

There are several possible explanations for variations in RVR levels between the two different data producers. Reported RVRs based on the survey-based approach by select REIs could rely on small sample sizes (number of rental properties vacant and managed by REI members). There is no transparency regarding sample size across the REIs using this approach to collecting RVRs, making it difficult to gauge the quality of data over the monitored geographies and length of time series.

The listings-based approach adopted by SQM Research Pty Ltd could draw on monthly or quarterly fluctuations in the RVR numerator (number of rental listings or assumed vacant rental properties). At certain times, the volume of advertised rental properties on listings platforms could be impacted by listings costs. For instance, the decline in revenue generated by rental listing platforms during the COVID-19 pandemic could have been a function of landlord price sensitivity over the costs associated with leasing properties, including sales agent commissions and listing fees charged by digital advertising platforms (IBISWorld 2024c).

This highlights the need for greater transparency regarding the methodologies and potential flaws in the rental market data metrics reported by the main producers, especially the RVR. The various users of RVR data may be unaware of any limitations when using the metric to inform decision-making, such as setting or adjusting rental levels or commencing construction projects to fill perceived supply gaps in the rental market. The profile of RVR users and how the measure informs decision-making is discussed in Chapter 6.

2.4 Policy implications

This chapter, the first of three to address RQ1, has provided a detailed examination of the main RVR producers and their methodological approaches to generating the measure. It also provided insights into temporal and spatial variability in RVR long-run trends by comparing the RVRs of two producers who employ different RVR methodologies. The chapter highlights several issues important to policy makers:

- No private rental vacancy rate data are produced by non-commercial organisations.
- There is no single, consistent methodology or data source for RVR data.
- Different methodological approaches result in different outcomes, but this plays out differently between, for example, capital cities. Whether knowledge of such differences could prompt a shift in policy response or other decisions based on the RVR is unknown.
- The 3 per cent vacancy benchmark commonly accepted as representing a balance between supply and demand (discussed further in Chapter 5) does not appear to fit the empirical data presented here. Average long-run vacancy rates vary greatly from city to city suggesting a need for a jurisdictionally based benchmark. Only in Melbourne and Perth (depending on the source) does this benchmark appear to be a useful guide of market imbalances.
- Greater data and information transparency is needed to allow comparison of longer time series RVR data from multiple sources. This is not possible at present due its prohibitive cost for users (including researchers). More detailed methodology of these sources and critical reflection of data and trends is also required to make informed decisions.

3. Australian rental vacancy rate data: strengths, limitations and challenges

- **Current rental vacancy rate (RVR) data in Australia have strengths and limitations.**
- **The strengths include the ability to choose providers and purchase an 'off-the-shelf' product, the ability to access both short- and longer-term data, and the variety in both temporal and spatial scale.**
- **The limitations and challenges include the commodification of property market data, methodological opacity, and producers' assumptions around the numerator and denominator.**
- **Some RVR data users interviewed for this project suggested including more granular detail.**
- **To counter some of these limitations, the production of an independent RVR with a transparent methodology should be considered by policy makers. Several users were in favour of such a development.**

This chapter, the second to address RQ1, focuses on the strengths and limitations of Australian RVRs. It draws on the research team's own observations as well as interviews with producers and users of RVR data. After reviewing the strengths of the current approaches to producing RVR data, it examines the limitations and challenges. We refer to the strengths, limitations and challenges of specific methodologies as well as elements of the overall RVR landscape in Australia, such as data accessibility and the number of producers.

3.1 Strengths of current approaches

Through a desktop review of RVR producer websites, email correspondence, informal phone conversations and formal interviews with RVR producers, we identified the following strengths of the RVR landscape in Australia, currently available RVR indicators, and the methodological approaches used to derive the measure.

3.1.1 Multiple data providers

The presence of multiple RVR data producers in Australia is a strength, since, in theory, this gives data users choice in where they access their RVR information. However, the extent to which prospective users *choose* their data source based on methodological (or producer) considerations versus data cost (i.e. buying the data they can afford) is not known. Nonetheless, competition among producers could help to both increase the quality of RVR metrics and restrain the purchase price. Broadly, the data users interviewed were aware of the range of rental market data sources, with usage depending on accessibility (free or fee), methodological transparency and reason for needing RVR data. Some preferred to use only one data provider while others drew upon several:

> *The CPI section sources rental vacancy rates data from a range of publicly available sources, such as SQM, Domain, Real Estate Institute of New South Wales, and they do not rely on one single source. The rental vacancy rate data that they use depends on the timeliness, accessibility, and robustness of the method used. (ABS participant)*

The existence of multiple RVR data sources and accompanying methodologies was also considered a limitation because different RVR results were produced by the different data providers (see e.g. the graphs included in Section 2.3).

3.1.2 Off-the-shelf product

The RVR metric is multilayered, requiring the input of multiple data sources to calculate. Organisations without access to such baseline data and/or lacking the skills and time required to manipulate and analyse such data, welcome the availability of a ready-made RVR product (when budgets allow). Private data producers are clearly filling a gap in delivery of data and associated research-consulting services, given the absence of an independent RVR data producer, such as the government. This was highlighted directly by the NSW rental commissioner:

> *When you think about the providers that do give us this information … [you realise] how great it is that we have such professional data providers in this space and available to people. Because … it's not always within reach of government departments or particular agencies to take on that analysis at the extent and level that they do and being able to buy it ready made off the shelf is a gamechanger in efficiency for us.*

3.1.3 Short- and longer-term data series

The benefit of various RVR measures is the availability of both short-term and longer-term series (as shown in Table 1). Numerous participants spoke about the REIA-REI as a useful source for econometric modelling of relationships between data variables, despite its numerous methodological challenges (Table 2).

3.1.4 Monthly, quarterly or annual data points

Users discussed the benefits of having access to annual, quarterly and monthly RVR data points, with the selection of time periods depending on correspondence with other data variables and the purpose of analysis. For instance, the ABS participant stated that the CPI section would 'typically be looking at the most recent quarter, or year, the appropriate sort of reference period that corresponds with the data that they're seeking to publish'. Similarly, an Australian Government body/department participant said: 'On a quarterly basis can be useful because our organisation receives many other economic indicators at that frequency.'

Monthly data were clearly favoured due to their timeliness and usefulness for presentations, briefings and/or specific research projects. More frequent updates also helped inform assessments of 'how tight' a rental market was compared with a historical period of 5 to 10 years (Australian Government body/department participant):

> *Monthly data would be really useful, particularly because [quarterly intervals and data releases] can be quite lagged. For example … you might only get vacancy rate data for the June quarter sometime in the September month for capitals outside of Sydney and Melbourne. That can hinder our organisation's ability to assess conditions and understand recent momentum in the rental market. (Australian Government body/department participant)*

The challenges of using monthly data are discussed in Section 3.2.2.

3.1.5 Spatial scale variation

All data producers report on spatially variegated RVR data measures, with the Australian capital city coverage being consistent across all major sources (Table 1). Several interviewees mentioned the usefulness of national, combined capital cities, individual capital city and rest-of-state–level geographic disaggregation. One interviewee spoke of the usefulness of both spatially aggregated and time series data for econometric modelling of the relationship between RVRs and rental levels/growth, or regular monitoring of residential rental property markets:

> *The capital city level of aggregation is probably the most useful for our organisation. Our organisation typically thinks about 'how is this going to flow to rents' on aggregate but the variation between capital cities and regional areas is important as well. (Australian Government body/department participant)*

While fine, spatially disaggregated data are useful, not all users had the time or resources to analyse spatially varied patterns of RVRs and how they change over time. The usability of such data depended on cost, methodological transparency, geographically consistent definitions and time series data adjusted for changes in spatial boundaries.

This section has summarised the strengths of currently available RVR indicators and the methodological approaches used to derive these. Some of these strengths pair with limitations, particularly relating to cost, as detailed, segmented and time series data typically involve a fee that may be prohibitive to some users. Further limitations are discussed below.

3.2 Limitations and challenges of current approaches

The various RVR data sources present a range of limitations and challenges. While some of these, such as methodological opacity, have profound implications, others take the form of 'suggested improvements' from users.

3.2.1 Property market data are a financial commodity

All the RVR producers are private organisations, either representing the interests of the property industry or with financial revenue and profit targets. As mentioned, no independent government institution produces a nationally consistent RVR measure in Australia. Commercially produced RVR data can be relatively expensive compared to other property market indicators and the cost may be prohibitive for some potential users. The high cost is likely due, at least in part, to the amount of technical work required by private research and data teams in organisations, collating multiple data sources and cleaning listings data, in addition to the cost of purchasing data from government to compile national datasets.

In a user-pays model, with data as a financial commodity, only one of the five providers (SQM Research) makes some RVR data freely available on their website. The other producers make limited point-in-time data and research available at no cost through their respective websites but require users to share their personal information when downloading reports, which then becomes part of company databases. Tenants and smaller investor landlords likely have limited capacity to pay for data. Access to time series data involves a considerable cost. Organisations with smaller budgets, such as not-for-profits, are most disadvantaged by the high cost of RVR data:

> *We could make choices to afford to pay CoreLogic, I don't even know, 10 grand a year whatever they might be charging. We probably could make that choice at the end of the day, but it would mean reductions in some other part and they're pretty hefty, and given that there are free options … the value proposition is not strong. (Tenants' Union of NSW participant)*

3.2.2 Overall methodological opacity

It was not easy to gain a detailed understanding of the methods used by the private producers of RVR data. Collating the information in Tables 1 and 2, derived from a desktop review of company websites, informal discussions, formal interviews and numerous email exchanges, was no small undertaking. We expected that producers' websites would include detailed descriptions of their RVR metrics or that they would supply this information upon request, but this was not always the case.

This research project lacked the financial capacity to subscribe to any of the data services provided by the producers of RVR data.[1] Not being 'paying customers', coupled with our disclosure that the information was required for a research project based around a critical review of the RVR metric, may have influenced the level of detail supplied about RVR methodologies. Regardless, the lack of easily accessible information makes it difficult for any non-subscriber to compare producer methodologies.

It was challenging navigating through complex organisational structures to obtain clarity, not least because our initial enquiries were fielded by marketing and sales teams rather than research and/or data science teams. Marketing and/or sales representatives were the main point of contact for RVR data related enquiries, and the emphasis was on securing a paid subscription.

Only one of the five RVR producers, SQM Research, provided a detailed explanation of their RVR methodology and made it freely available to the public. This transparency, along with access to freely available data metrics on their website, explained the frequency of usage of this data source among our research participants. Other producers provided a brief description of the RVR methodology on the company website but did not specify the source/s of advertised rental listings used as the numerator and how the data were cleaned (e.g. Domain Group 2024).

Many users stated in their interviews that they were happy with the level of responsiveness from RVR data providers (e.g. SQM Research and Cotality) when they had methodological queries about the data they had purchased. This is, of course, after they had purchased data. The methodological opacity of RVR data can be further broken down into three challenges outlined below.

1 The project only had a small budget for a once-off data purchase used for the ARDL and spatial econometric modelling in Chapter 5.

Opacity of the survey-based approach

The survey approach to calculating RVRs employed by some of the state-based Real Estate Institutes (REIs) of the Real Estate Institute of Australia (REIA) has a unique set of limitations. Because each state/territory-based institute is independent of each other and the overall REIA, each institute can, and does, employ its own approach. As noted above, some REIs use a survey-based approach to report RVRs; however, others source data from external producers. It is difficult to determine whether REIs using a survey-based approach adopt different RVR definitions, as the survey questions are not publicly available and only some REIs report their survey sample size.

For example, the REI of Western Australia (REIWA 2024) defines the RVR as 'a ratio of vacant rental properties divided by total rental properties (occupied and vacant)'. Qualifying this, it explains that 'accuracy is contingent on the sample of responses' and that there is a two-to-three–week delay in reporting the final RVR following months end 'to give enough time for all survey responses to be calculated'. Meanwhile, the REI of New South Wales (REINSW 2024) defines the RVR as 'the proportion of unlet dwellings to the total rent roll', without indicating whether this includes occupied and vacant stock. It discloses the monthly sample size used to derive the RVR (number of residential rental properties managed by member-based survey responses), but this is not related to the total rental stock by various geographic scales at the time of the survey.

Between 1990 and 1997, the REIA's monthly publication *Market Facts* reported the number of properties on the rental roll and number of real estate agencies that responded to surveys. Deficiencies in state-based survey procedures that reduced the quality of RVRs were also reported (REIA 2004: 8), as was, in the absence of data estimates, anecdotal evidence.

Such shortcomings are not acknowledged in contemporary issues of *Market facts* (REIA 2024a). Survey methodology details are brief, with no mention of sample size, whether the sample includes vacant and occupied dwellings, or the method used to calculate the denominator in the RVR measure (dwelling-rental sub-sectors included in private rental stock estimate). While this information may, of course, be available to *subscribers* of REIA's data series publications, multiple users interviewed for this project expressed doubts about the reliability and accuracy of the survey-based approach used by REIA.

Methodological changes over time

Rental vacancy rate data are often published for a lengthy time series—more than two decades in the case of REIA. While some datasets are retrospectively created using a (potentially) consistent methodology, others have been generated in real-time throughout the entire period. Where accurate time series analysis is important, confidence in this series for analysis and interpretation is vital. RVR data users should independently enquire about methodological changes over a given time period, as these are rarely apparent in the methodology documentation. Such changes include how the source data for the numerator might have changed (e.g. change in volume of properties included on listings sites, whether short-term holiday lets have been removed, treatment of purpose-built student accommodation), whether the source data for the denominator might have changed (e.g. post-Census revisions), and any change in survey sample sizes or spatial boundaries.

Data volatility in monthly reporting

Aside from occasional references by the REIA, the authors could not locate any acknowledgement or analysis of volatility in monthly data series, especially at small geographic scales. Such volatility is not always considered in decision-making on rental level changes by private landlords and appointed real estate agencies. It could be a function of changing RVR methodology, which was mentioned several times by producers, including one who referred to revisions to the RVR denominator post-Census release and how reliance on monthly measures to make decisions on rental growth are risky if the variable is prone to revisions.

In sum, the level of overall transparency in RVR methodological approaches is poor, at least for non-subscribers (apart from one producer), and documentation of such approaches, including methodological changes over time and acknowledgement of monthly data volatility, should be a priority and demanded by public and private sector users.

3.2.3 Numerator: assumptions around rental vacancy differ

As shown in Table 2 (see Chapter 2), the definition of 'vacant' differs between data producers. In the calculation of the RVR numerator, SQM Research, for example, assumes a three-week rule. This approach is likely aiming to account for the typical four-week notice period that tenants provide to landlords/property managers if they intend to end their lease. The RVR providers attempt to exclude rental properties that may briefly come into the rental market and then leave, with the net result being that the property stays continually occupied (i.e. not vacant but turns over quickly). However, as noted by the Tenants' Union of NSW (2023: 3):

> *In tight rental markets where we expect more rental properties to be filled in under 3 weeks and therefore aren't counted toward the number of vacant properties this has the potential result of over emphasising low vacancy.*

Other RVR producers interpret and operationalise the key concept of 'vacant' differently, as summarised in Table 2. As 'vacant' is the numerator in simple RVR equations, differences in its definition must flow through to the end RVR result. A longer minimum advertising period means that fewer 'vacancies' will be detected, if they can be considered as such. The charts comparing state and territory REI rental vacancy rates with SQM Research results (Figures 1–8) show that without a consistent method and data source across producers, including defining and measuring 'vacant', RVR results will always differ. The same is true when estimating the size of the RVR denominator (i.e. total private rental stock).

3.2.4 Numerator and denominator: estimate of market coverage

The current methodologies are based on a sample of total private rental stock and vacant private rental dwellings. However, the size of the sample held by each provider is generally unknown. We believe that RVR producers aim to have their data represent the largest portion possible of both vacant properties and total rental stock; however, it is difficult (if not impossible) to identify the exact proportion captured. Both the survey- and the listings-based approach face this challenge.

Survey-based approach

In the survey-based approach, the RVR numerator is based on a sample of private rental properties on a rent roll managed by real estate agents who respond to a monthly survey. However, there is no indication of what proportion of all real estate agencies managing private rental properties are members of state-based REIs and who, exactly, responds to the monthly surveys. Further, not all private rental properties are managed by real estate agents. At fine geographic scales, the RVR sample size could be small and reflect volatility in time series data, reducing the accuracy of reported vacancies. As discussed in Section 3.2.2, several users reported concerns with using survey-based RVR data on the grounds of reliability and accuracy.

Listings-based approach

In the combined listings-Census–based approach, the share of all vacant rental properties listed on individual platforms is unknown (i.e. it is not known how many are *not* there). There is also limited transparency around where private rental property listings are sourced from.

In interviews, several data producers were open about their capacity to gather data that accurately captured both the total number of vacant dwellings and privately rented dwellings. While maintaining that they had coverage of most of the market, they acknowledged that they were using an estimate and that some properties, vacant or tenanted, were not observable in their methodologies. Some users were critical of the methodology data producers used to determine the denominator, while others criticised the assumption that listings platforms represented the full scope of rental properties. It was unknown what proportion of rental properties were advertised through other platforms, such as local communities, social media or word of mouth.

3.2.5 Suggested improvements

The users of RVR data were broadly satisfied with the data they received; however, they had some suggested improvements—or 'wish list' requests. These mainly reflected a desire for more granular detail about rental dwellings, as summarised below.

Affordability and price

Several organisations expressed a wish for RVR data to have more detail about the rent level of the dwellings. Government, advocacy and banking sector participants all wanted more information on the price range of dwellings captured in RVR data:

> *I'm thinking probably the key one is affordability … the rental affordability index does a bit of that, but I'm not sure how much detail there is behind what are the vacancies and how affordable they are. So, that's probably captured in those reports, but I don't think it's—it wouldn't be at like an LGA level … That is definitely something we'd want more information on. (Homes Tasmania participant)*

Inclusion of build-to-rent and student accommodation

Several participants from diverse sectors found current data on build-to-rent (BTR) and purpose-built student accommodation (PBSA) to be insufficient and wished for more reporting on these segments:

> *There's an opportunity to improve our data and provide a single source of truth to support industry, investors, and renters with better market information in the build to rent space. (NSW rental commissioner)*

> *Build-to-rent is a key area the government's looking to support. The government sees it as a welcomed additional tenure option for renters, so it is important that that gets captured, I think and other dwelling types like it, so it should be in the numerator and denominator. (Australian Government body/department participant)*

The banking sector participant was less interested in BTR data and more interested in collecting data related to PBSA:

> *[BTR is] not moving the needle enough on any of the macroeconomic variables that we value. It is something that we know is emerging, though, and that we're keeping an eye on. I think student accommodation would actually be really interesting as a vacancy rate, because it is a bit of a proxy of student demand and it could potentially be a forward indicator just depending on the relevant [lags] in the data. (Major bank participant)*

Dwelling typology

Both Homes Tasmania and the Tenants' Union of NSW suggested that more detail about the dwelling, such as density, type of dwelling and number of bedrooms, would be useful for their needs:

> *So, maybe the density or type of dwelling, so we can match it … with what the household demand needs are because we're looking at data on our dwelling and population needs by type of households in the future as well. (Homes Tasmania participant)*

> *The other segmentation that I'd really like to do is by … bedroom number and type. I think that might even be more than price because, one, those things indicate the level to a degree, but also because the price is a result of the vacancy rate where those typologies come before the vacancy rate. (Tenants' Union of NSW participant)*

Spatial scale/location

More detail at a finer spatial level was viewed as important by some users, but not others. Government users, in particular, wanted to know more about where vacancies were located:

> *On the supply side, you've touched on the spatial element of the rental stock. The big goal of the government is that new supply is well located, so fit for purpose on a whole range of dimensions: accessibility, environmental sustainability, et cetera. But well located is key. (Australian Government body/department participant)*

3.3 Policy development implications

The reliance on RVR data from just one source and short-term trends (monthly/quarterly) can create an incomplete picture of rental market conditions. Such reliance could potentially result in incorrect decisions around upward or downward rent adjustments, and an under/overestimate of how much new rental housing supply is needed across the private rental sector, PBSA, BTR and public housing.

The major limitations of current RVR data sources in Australia are:

- lack of methodological clarity and documentation
- estimations of the numerator and denominator
- commodification of property data, which limits, based on budget, who can access them.

One way to counter these limitations would be through the creation of an independent vacancy rate, most likely through a government agency.

Several interviewees expressed interest in being able to use an independent source of RVR data:

> *If there was one source that was consistent, and that people could have nationally to compare things that would absolutely be desirable to have consistent standardised datasets that are comparable and the same thing that people are using the same data. (Homes Tasmania participant)*

The Australian Bureau of Statistics (ABS) was mentioned in some discussions as being an ideal producer of a national, independent RVR. As discussed further in Chapter 7, the national statistics agencies in other countries are the producers of vacancy rate information. The reliability of the ABS was highlighted as a reason for trusting it to produce an accurate RVR.

In the following chapter, an alternative data source and methodology for deriving the RVR measure is presented. This RVR is created using rental bond data—a government data source, albeit for one jurisdiction only. The strengths and challenges of producing an RVR through such a method are also discussed.

4. Rental bond data and rental vacancy rates

- **Rental bond records offer an alternative, publicly collected data source for rental vacancy rate information.**
- **In Victoria, rental bonds are lodged with the Residential Tenancies Bond Authority (RTBA), providing a single, consistent and reliable source of data that are updated regularly.**
- **Access to lease commencement and associated bond refund dates per property is essential to calculate the rental vacancy rate (RVR).**
- **RTBA data are a subset of an administrative dataset that is not designed to measure RVRs; therefore, some assumptions are required to produce a robust RVR product.**
- **For Melbourne, RVRs derived from RTBA data track well against the survey approach of the Real Estate Institute of Victoria (REIV) and listings approach of SQM Research.**
- **RVRs derived from RTBA data can be segmented by rent, dwelling type/bedrooms, a range of spatial scales and possibly BTR or PBSA submarkets.**
- **For national monitoring of RVRs using rental bond records, data collection and recording methods across national jurisdictions must be comparable and consistent.**

This chapter expands RQ1 by presenting an alternative data source and methodology for deriving the RVR measure. Our goal was to derive this key housing market indicator from a government collected, and thus publicly owned and managed, data source.

Only Victorian rental vacancy rates are examined. There are two reasons for this: first, the research team had permission to use the unit record data; second, a team member had extensive experience in handling and analysing the vast data files holding the Victorian rental bond information.[2] The extent to which a comparable approach could be employed for other states/territories was not tested. The range of rental bond regulations, data coverage and quality, and administrative arrangements that exist in other jurisdictions would need to be assessed before undertaking a similar exercise elsewhere.

Our approach, including its strengths, challenges and limitations, is documented in detail below, making it open for critical consideration by all RVR data users and producers.

4.1 Previous research using rental bonds to calculate RVRs

Previous research based on the analysis of vacancy rates derived from rental bond data is limited, mainly because rental bond information is not a common RVR data source. Just two papers are outlined here.

The analysis presented in Wood, Yates et al. (2006) was drawn from a panel database of rental bond records created in the late 1990s and made available to those researchers by Dr Lisel O'Dwyer. The creation of the panel database by Dr. O'Dwyer represented a significant undertaking: a large amount of time and effort went into producing it from rental bond information for Adelaide and Sydney covering the period from around 1991 to 2002. The database enabled the subsequent rental vacancy work of Wood, Yates et al. (2006), among others, to be undertaken.

Wood, Yates et al. (2006) examined the surprising market conditions of a shortage of low-rent private rental stock but relatively high vacancy rates in the same rent segments. In their paper, measures of vacancy, tenancy turnover and property survival periods were examined by rent value segments. An indicator of distance from each capital city's central business district was also included. Using rental bond data, both market and dwelling RVRs were created. The market vacancy rate examined changing housing market pressures and was defined as the proportion of rental stock vacant at quarter end between 1991 and 2001. The individual property vacancy rate was based on vacant periods throughout a property's life in the rental market (see Wood, Yates et al. 2006 for more detail).

In Aotearoa New Zealand, Eaqub and Loke (2012) also produced an RVR from rental bond data. The aim of their paper was to fill a gap in the data collected by the Department of Building and Housing, which, although it included information on rental prices, did not provide data on RVRs. The authors describe Aotearoa New Zealand as unique, in the sense that it has a centralised database of tenancy bonds that provide 'a single source of information that is updated regularly and in regional detail'. They argue that using rental bonds to estimate vacancy provides:

> *a consistent measure of pressures in the rental market. It is based on administrative data that can be updated monthly and can be used to provide a disaggregated regional picture. It will provide timely information for landlords, tenants and policy makers about the state of the rental market. (Eaqub and Loke 2012: 2)*

The approach presented in this chapter was developed independently of this previous work.

2 Thanks to Homes Victoria (Department of Families, Fairness and Housing) for granting us permission to use the RTBA data (Homes Victoria 2024a) for this research.

4.2 Victorian rental bond data

In Victoria, as in all Australian states and territories, a bond equivalent to one months' rent can be collected from tenants and lodged with the relevant bond authority at the commencement of a private rental tenancy.[3] Although collecting a bond is not a legal requirement for a rental lease, most tenancies will have an associated bond because it is in the landlords' best financial interests. When a bond *is* collected in Victoria, it must be lodged with the RTBA, which is operated by Consumer Affairs Victoria, which in turn is part of the Department of Justice and Community Safety Victoria.[4] It is from this authority that the rental bond records used in this research were sourced.

4.3 Creating a rental vacancy rate using rental bond data: methodology

The RTBA data are held in an administrative database. The information we used to create the RVR comprised output from that system—a system designed solely to record bonds lodged and refunded for leased dwellings in Victoria. To be clear: the RTBA database was not designed for subsequent uses, such as deriving RVRs. These parameters influenced how the bond records needed to be manipulated and interpreted to produce coherent and informative output about rental vacancies.

Access to lease commencement and associated bond refund dates *per property* was essential to calculate the RVR. Without such unit record–level information, the RVR could not be calculated. Given the time and resource constraints of this project, this work was only possible because one research team member had access to property level information and, importantly, had prior experience working with the RTBA data.

4.3.1 RTBA data file

The RTBA data file analysed here was extracted from the broader database that holds all the rental bond information for Victoria. The purpose of the full RTBA database is to manage rental bonds held in trust by the Victorian RTBA. If multiple bonds are lodged on a single property—a situation common in share houses—each one needs to be recorded so that individual bond refunds can be made. Rather than follow individual bonds, we sought to monitor the status of individual properties in the rental market—that is, to determine whether a property was tenanted, vacant or had been withdrawn from the market (either temporarily or 'permanently').

Our data file was built from information included in bond lodgement and refund forms (or, progressively, online electronic transactions). This information is quite limited. For bond lodgements, it includes the property address, type of premises (e.g. house or flat etc.), number of bedrooms, bond paid by tenants, date the bond was received by the property manager, date the tenancy started, type of tenancy (e.g. fixed term), period of tenancy (in months) and weekly rental amount.

3 In Victoria, a rental provider can only ask for a bond amount more than one month's rent if the weekly rent for the property is higher than A$900 or the Victorian Civil and Administrative Tribunal has set a higher amount (usually due to the character and quality of the property). Rooming house residents, caravan park residents and site tenants have specific rules around bond arrangements (Consumer Affairs Victoria 2023).

4 The equivalent state/territory government departments outside of Victoria are: NSW Fair Trading; Residential Tenancies Authority (Qld); Consumer and Business Services (SA); Bonds Administration, Consumer Protection (WA); Rental Deposit Authority, Consumer, Building and Occupational Services (Tas); tenancy trust accounts are used in the Northern Territory; and Rental Bonds Office, ACT Revenue Office (ACT).

The bond refund date in the RTBA database reflects the date the bond is refunded to the tenant(s)—*not* the end-of-lease date. Broadly, the process leading to the refund date involves the tenant moving out, completion of the final property inspection, agreement between the tenant and the rental provider as to the proportion of bond to be refunded, electronic (or otherwise) submission to the RTBA for this agreed amount and acceptance of this by the tenant and the rental provider. Once this process is complete, the bond is refunded to the tenant. This final date is that which is included in the RTBA database and in the data file analysed here. No other information is collected to mark the end of a lease; hence, the bond refund date is used as a proxy for end-of-lease date. Further examination of this assumption, including the length of the refund process and how this impacts the calculation of vacancy rates, is provided below.

The RTBA data file used in this research covers the period 2004–24 but includes tenancies that commenced prior to 2004. It comprises approximately 5.4 million records, with each record (or row) representing separate rental agreements that have been, or still are, active on a property. Many properties had multiple tenancies over this 20-year period. These are recorded separately as individual rows, with the property address repeated. Where a property had multiple bonds lodged (such as in a share house arrangement), only one lease (bond) was included in the data file to classify the property as 'actively tenanted' and the others were removed to prevent double counting of properties. The last bond refunded on a property marked it as vacant or as having exited the market. As noted above, the purpose of the RTBA data file analysed here was not to count all bonds (lease agreements) on a property, but to identify whether there was *any* active lease on the property to establish the nature of tenancy in that property.

4.3.2 Key data items

Property address

The full address of the rental property for which a bond is lodged is the key piece of information required to match individual, property-level lease transactions over time. A significant challenge relating to this variable was the textual formatting of the address. The address format of, in particular, higher density dwellings, such as units and apartments, can be recorded in many ways, and it is extremely time consuming to match these when they are inconsistent. Changing from paper forms to an online system might progressively reduce address formatting issues in the future. With enough resources, geocoding (spatially referencing for mapping purposes) each rental property is also possible, enabling easier spatial aggregation of records to any required spatial unit. However, this was not done for this project.[5]

Lease commencement date

Lease commencement dates are included on the bond form lodged with the RTBA. In our RTBA data file, the lease commencement date was used to identify and derive the number of 'active' rental properties at a point in time (i.e. properties with a lease and no bond refund date). More broadly, the total number of active bonds held by the RTBA at a point in time provides an indicator of the total stock of registered private rental housing (Homes Victoria 2024b). Other researchers have used the total number of active bonds held by state/territory bond authorities as a proxy for total private rental dwellings (e.g. Pawson, Martin et al. 2021b). In our RTBA data file, the count relates to properties rather than bonds. It should be noted that some rental properties do not have a registered bond and therefore do not appear in the RTBA database.

5 The panel dataset created by Dr Lisel O'Dwyer and provided to Wood, Yates et al. (2006) was geocoded.

Bond refund date

The date that the bond (or portion thereof) is returned to renters after they move out of the property is referred to as the bond refund date. This date is not the same as the lease completion date, which is not currently recorded by the RTBA. The time between these two dates is unknown and very difficult to estimate due to the range of possible bond refund scenarios. These include the timeliness (or otherwise) of final property inspection by the rental provider and the promptness (or otherwise) of the bond refund request by the rental provider. If a tenant makes a claim for a bond refund themselves, it takes longer than if the rental provider makes the request. The form of refund submission also makes a difference: using the RTBA online system is much quicker than the paper version of the refund form. Bond disputes—for example, if the rental provider makes a claim for compensation at the end of the tenancy and the tenant objects—can delay the bond refund date by many weeks, months and even years. Figure 9 summarises the range of potential bond refund scenarios.

A new tenancy *can* commence without a bond refund from the previous tenancy. This relatively common scenario, wherein the bond refund date (proxy for end of lease) occurs *after* the start of a subsequent lease, must be addressed when calculating the RVR from the RTBA data file and such approaches are discussed below.

Rent paid

The weekly rent amount is recorded on the bond form. Only the rent paid at the beginning of the tenancy is recorded for a dwelling in the RTBA data. If the rent data are to be examined *on a property basis* over time, some form of rental inflation adjustment needs to be made (see e.g. Wood, Yates et al. 2006). The weekly rent paid is not required for an RVR calculation but is of interest for trend analyses relating to rent segments and, although not undertaken for this project, could be used in vacancy rate analyses by rent segment (Wood, Yates et al. 2006).

Dwelling type

The dwelling type options given on the bond form are as follows: separate house, flat/unit, semidetached/terrace, rooming house and 'other'. The full property address was used to determine dwelling type if this field was empty or ambiguous. For example, an address with no flat or unit identifiers was likely to be a separate house. Efforts were made to complete this descriptor when it was left blank or contradicted the address format. Again, this variable is not required for overall rental vacancy analysis but could be used to segment vacancy rates by dwelling type.

Number of bedrooms

The number of bedrooms in the rental property is manually written on, or typed into, the bond form. This introduces data quality issues when recorded incorrectly: for example, '2–3' bedrooms might be entered as '23'; and individuals moving into share houses might be recorded as 'one' (meaning one room) rather than the total number of bedrooms in the dwelling. Efforts were made to correct such errors. This variable could be combined with dwelling type to segment RVRs by dwelling type and size.

Key exclusions in the RTBA data file

Registered rooming houses and PBSA units were excluded from the data file because of their unique rental arrangements (such as inclusive utility costs) and different bond regulations. Car parks and storage facilities were also cleaned from the data, as were tenancies of fewer than 14 days.

4.3.3 Key assumptions

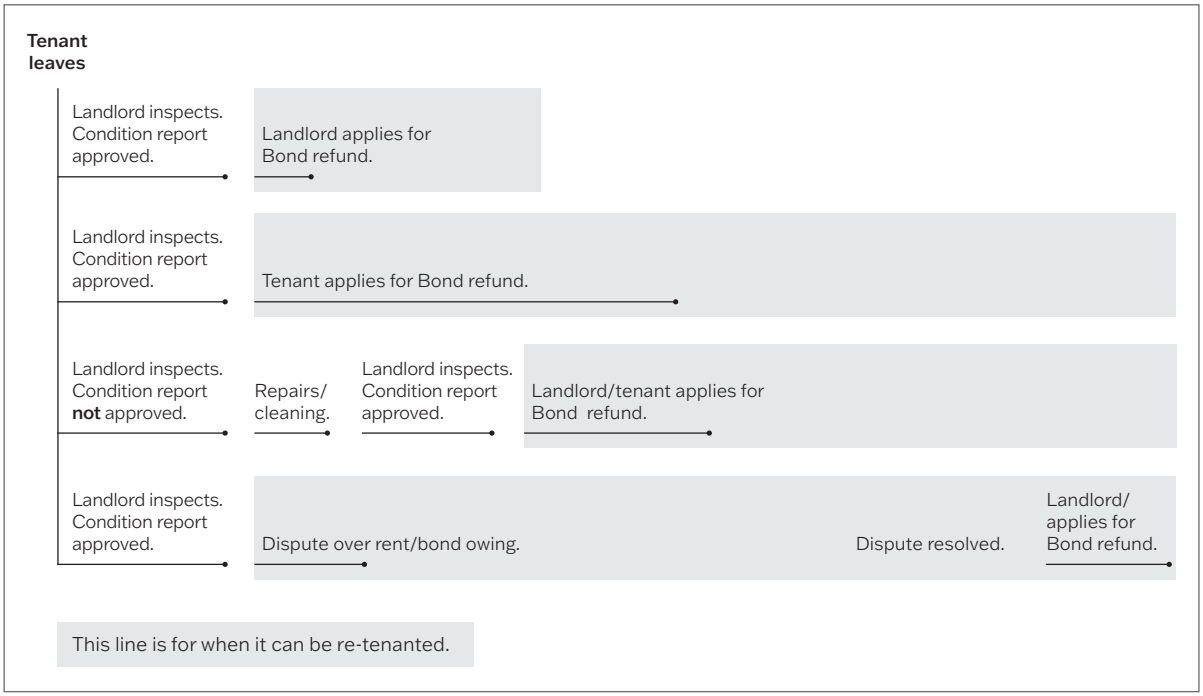
To identify a vacant rental property using the RTBA data file, the length of time between one tenancy ending and another beginning needed to be established. As noted above, the RTBA database was not designed to measure rental vacancy directly. As such—and as is the case with all RVR methodologies due to the lack of data to directly measure rental vacancy—there were limitations with our methodological approach and some assumptions had to be made to produce a robust RVR product.

Assumption 1: Bond refund date is a good proxy for end of lease date

While the bond refund date can work as a proxy for the end of a tenancy, its use as a measure of vacant property requires some further assumptions. As it is rare for a bond to be refunded on the day that a lease ends and the tenant departs (due to the necessary regulatory steps), there will be an unknown time lag between the actual lease end date and the bond refund date. A number of end-of-lease scenarios can be used. These are summarised in Figure 9, the black line illustrating potential delays in bond refund and the blue shading representing the period when a subsequent tenancy can begin. The key point is that bond refund dates can vary greatly depending on circumstances. For example:

- lease ends and tenant departs → followed by a positive property inspection from the landlord/agent perspective → followed by a timely bond refund (in all, a relatively quick process, potentially around one week)
- lease ends and tenant departs → tenant applies for a bond refund → the refund can be quick or slow depending on the timeliness of the landlord/agent, noting that longer wait times are common when tenants (as opposed to rental providers) apply for bond refunds
- lease ends and tenant departs → followed by a poor condition report → dwelling requires repairs/cleaning → subsequent tenancy is delayed due to dwelling condition, which could result in delays for many months, even up to a year
- lease ends and tenant departs → disagreement over rent owed → lengthy bond dispute results → once resolved, the landlord applies for a bond refund, however, subsequent tenancies can commence prior to this refund.

Figure 9: End-of-lease scenarios: variable lengths of time between end of lease and bond refund



Source: authors.

Importantly, delays in bond refunds do not mean that a property cannot be re-tenanted (unless damaged) so what further assumptions can be made to use RTBA data as a vacancy measure?

Assumption 2: Length of time between bond refund and new tenancy determines vacancy and thus RVR numerator

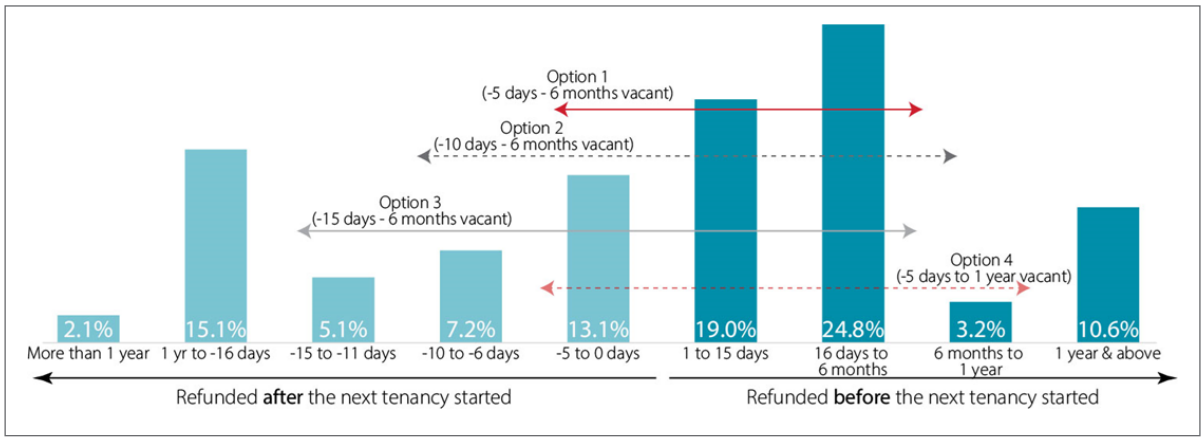
The RTBA data do not record if a property is advertised as available and ready to rent on any listings platform. Only a subsequent bond lodgement will identify if a given property is active in the market again; what happened prior to this remains unknown.

The difference (in days) between a bond refund date and the subsequent tenancy start date, as recorded in the bond data, represents the length of vacancy between two tenancies. Properties vacant at any time within a calendar month (identified by a gap between a bond refund date and a subsequent tenancy start date) comprise the RVR numerator derived from RTBA data.

In the RTBA data file, this was calculated using a simple 'tenancy start date' minus 'refund date' equation. Using the RTBA data, this length can vary from zero days to many years. When the refund date falls *after* the subsequent tenancy start date, this calculation returns a negative value. Decisions must be made that define temporal boundaries around the wide distribution of results (days) in the vacancy calculations. A strength of the RTBA data is that different options can be tested, as Figure 10 shows.

Figure 10 presents the length of time between bond refund dates and subsequent lease start dates categorised into segments (by days). These data are for all tenancies in the RTBA data file that had a subsequent lease in Melbourne between 2000 and 2024. The figure shows that, in 42.6 per cent of such tenancies (sum of lighter blue bars on left), the bond was refunded *after* the subsequent tenancy began. When this happens, there is no gap (in number of days) between consecutive tenancies and the vacancy calculation returns a negative value. The lines relate to data options available for creating an RVR. Option 4 refers to all properties ranging from minus five days to up to a year; the shorter dataset (Option 1) is minus five days to up to six months. These options are discussed below (and see Table 5 and Figure 11).

Figure 10: Length of time (in days) between bond refund date and subsequent new tenancy on a property, all Melbourne tenancies*, 2000–24



*Note: *All tenancies where a bond was refunded and there was a subsequent tenancy; this chart represents a very long time span and the rate at which bonds are refunded might have changed over time.*

Source: Homes Victoria (2024a); authors' calculations.

Identifying vacant properties for the RVR numerator

Properties vacant at any time within a calendar month (identified by a gap between a bond refund date and a subsequent tenancy start date) comprise the RVR numerator derived from the RTBA data. The exact number of days vacant is not needed to calculate the RVR numerator, but the span is used to identify whether a property is vacant in any specific month and as a basis to determine an exit from the market (see Assumption 3 below). Two slightly different approaches were used to identify vacant properties based on whether the bond was refunded *before* or *after* a subsequent tenancy began.

- **Bond refunded *before* subsequent tenancy begins:** this returns a positive result in terms of number of days vacant. All such properties (with up to a maximum of 180 days between tenancies, see Assumption 3 below) are identified as 'vacant' in any month spanned by this vacant period.

Importantly, the tenancy start minus the refund date returns the *minimum* period of vacancy, as the proxy for lease end is the bond refund date, which, as described above and shown in Figure 9, could be days, weeks or months after the tenancy actually ended.

- **Bond refunded *after* subsequent tenancy begins:** this returns a negative result in terms of number days vacant between tenancies. Two options exist for classifying vacancy in such properties: a) assume a zero vacant period and exclude them from the RVR numerator; or b) retain a portion of these properties—those with a relatively short overlap of refund and tenancy start dates—by assuming that the bond refund took a number of weeks to be finalised and, thus, that there *was* a period of vacancy between tenancies.

Taking the second option, we included in the RVR numerator those properties in which there was an overlap of up to five days in refund and tenancy start dates (13.1% of tenancies, see Figure 10). This short span of days, subtracted from an assumption that the bond took three weeks (21 days) to be refunded, created an *assumed period of vacancy* in such properties. The five-day span subtracted from the 21 days for bond refund is a somewhat arbitrary but conservative choice. We believe that overlaps beyond five days would be more difficult to include in this assumption. However, as noted above, different approaches and assumptions can be tested in the RTBA data file. These are presented in Table 5 and Figure 11 below.

Assumption 3: Proxy for total private rental market

The third main assumption is that the total number of properties with an active tenancy plus the vacant properties identified for the numerator is a robust representation of the total private rental market (RVR denominator). We believe that this is a solid assumption. Appendix 3 (Tables A9 and A10) presents a comparison of 2016 and 2021 Census counts of private rental dwellings and September quarter[6] RTBA active rental property figures for each of those years. A directly comparable figure between these two disparate data sources was not expected, as, on average, there are more active tenancies recorded in RTBA data than private rental dwellings as enumerated in the Census. The RTBA figure is a quarterly sum, in which multiple tenancies could be active for one property in a quarter, whereas the Census relates to one night only.

Assumption 4: Vacant periods longer than six months are temporary exits

This assumption is, to some extent, arbitrary; however, a six-month limit was also employed by Wood, Yates et al. (2006) to classify long periods of time between tenancies in a property. Eaqub and Loke (2012) also focused their analysis on properties that were vacant for up to six months. These 'vacant' periods can extend for years in some cases; however, rather than true vacancies, such properties are more likely to have temporarily exited the rental market. These are classed as *temporary* exits because a subsequent bond is recorded on the property and therefore, we know it returns to (or becomes active in) the market again.

6 The Australian Census is undertaken in August and thus falls within the September quarter.

Properties with periods of 'vacancy' longer than six months were not included in the RVR measure, in either the numerator or the denominator, because they were not considered part of the rental market during that time. Again, the flexibility of the RTBA data means that this assumption can be removed or adjusted as required.

4.3.4 Calculating vacancy

Prior to calculating the length of time between one tenancy ending and a subsequent tenancy beginning in a given property (i.e. rental vacancy), the significant task of cleaning and matching property addresses in the data, along with ongoing integration of new data, was undertaken. Cleaning the data included accounting for changes in spatial area name changes over time; splits in suburbs (particularly in growth areas); and checking address formats, names of roads and suburbs. This complex task comprised a significant proportion of the overall task of generating the RVR from RTBA data.

Once completed, the specific variables required to calculate the vacancy rate were:

- full street address, including flat/unit identifier and suburb (needed for lease to property matching and spatial aggregation)
- lease commencement date
- bond refund date

The RTBA data file was arranged and sorted by property address and then by lease commencement date and included the bond refund date, where applicable. Arranging the file in this order meant that individual tenancies could be identified and the gap between the refund and lease commencement dates could be measured.

The private rental vacancy rate is defined here as:

$$Rental\ vacancy\ rate = \frac{vacant\ rental\ properties}{active\ rental\ properties + vacant\ rental\ properties}$$

The numerator (vacant rental properties) equals properties that are vacant at any time within a calendar month and are identified by a period of vacancy (or an assumed gap) between a bond refund date and a subsequent tenancy start date. (See Section 4.3.3 for a discussion of the data assumptions and rationales.)

The denominator (total private rental stock) comprises active rental properties identified in the RTBA data file as those with a lease with no associated bond refund plus the vacant rental properties identified in the numerator.

After establishing the difference between the bond refund date and subsequent tenancy start date, the periods of vacancy can be categorised into, for example, the four options shown in Table 5 that define vacancy in the RTBA data. The lines in Figure 10 correspond to these data options for creating an RVR from the RTBA data.

Table 5: Select approaches for identifying vacancy in the RTBA data

Label	Definition of vacant
Option 1	A property is considered vacant if the bond refund date occurs 180 days (6 months) before or 5 days after a subsequent tenancy commences.
Option 2	A property is considered vacant if the bond refund date occurs 180 days (6 months) before or 10 days after a subsequent tenancy commences.
Option 3	A property is considered vacant if the bond refund date occurs 180 days (6 months) before or 15 days after a subsequent tenancy commences.
Option 4	A property is considered vacant if the bond refund date occurs up to 365 days (12 months) before or 5 days after a subsequent tenancy commences (captures COVID-19 period).

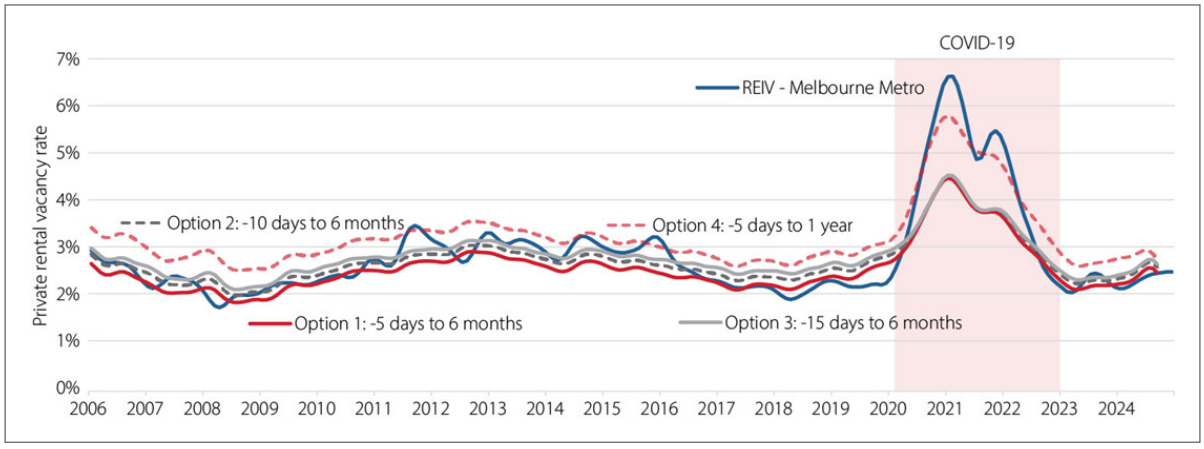
Notes: lines in table correspond to Figure 11 RVRs and the lines included in Figure 10.

Source: Homes Victoria (2024a); authors' calculations.

The RVRs derived from these options were graphed for Melbourne between 2006 and 2024 and compared to REIV data for the same period (Figure 11). Figure 11 shows that all the RTBA options closely parallel the REIV data, although Options 1–3 do not capture the scale of vacancy of the REIV data during the COVID-19 period. This is because the longer vacancy periods in properties during this (unusual) time are not captured in the six-month cut-off included in Options 1–3; however, they are captured in Option 4, which includes properties that were vacant for up to one year. The RTBA RVR also fluctuates less from month to month. This is because the data were deliberately smoothed using a Henderson 8.0 scale. This statistical smoothing technique accounts for random data variations and seasonal factors.

To operationalise the RTBA RVR, a single option was required. For this purpose, Option 1 (–5 days to 6 months) was chosen, largely because it has few temporal outliers and assumption-related challenges (see Section 4.3.3). The following section illustrates the market and submarket outcomes of the RTBA Option 1 RVR.

Figure 11: Private rental vacancy rates, Melbourne 2006–24: comparing four approaches to identifying 'vacant' properties using RTBA data against REIV data



Source: authors' calculations; Homes Victoria (2024a); REIV (2024).

4.4 Victorian private rental vacancy rates derived from RTBA data

A method for creating an RTBA-generated RVR is outlined in Section 4.3. Table 6 provides a summary of this approach, which is further discussed below with respect to Victorian rental markets and sub-markets (markets, for which some of the mainstream and private RVR data sources cannot do). For Melbourne as a whole, the RTBA RVR is compared to REIV and SQM Research data; for sub-markets, only REIV data can be used.

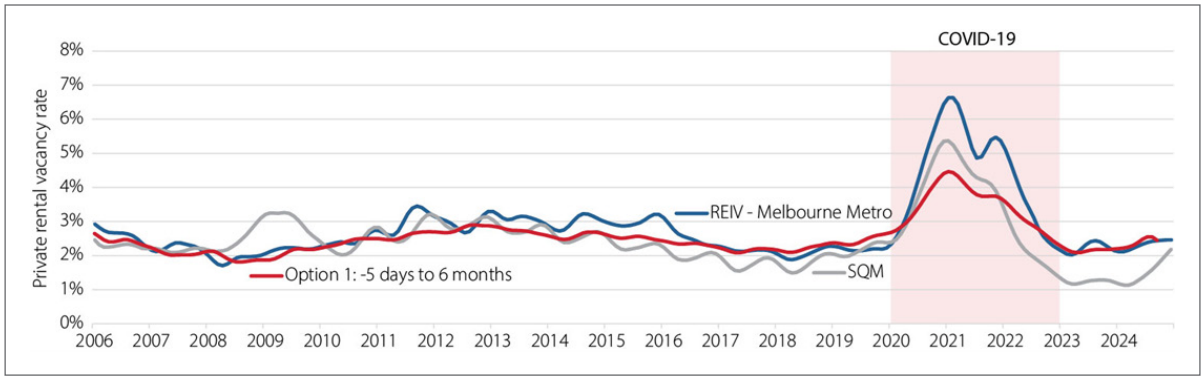
Table 6: Summary of Victorian Residential Tenancies Bond Authority data and RVR methodology

Methodology	Data analysed is a subset of the full RTBA database that is designed to manage all bonds The difference between a rental bond refund date and subsequent lease commencement date on a property is used to identify vacancy
Numerator	Properties vacant at any time within a calendar month, identified by a gap between a bond refund date and a subsequent tenancy start date
Denominator	Properties with active bonds (i.e. not refunded) plus vacant dwellings (from numerator)
Key assumptions	Bond refund date is a sound proxy for lease completion date Length of time (in days) between refund and new tenancy to class as vacant Total number of properties with active bonds is a good proxy for total private rental market Vacant periods longer than six months are temporary exits
Key challenges	A property new to the market can only be identified once a bond is lodged: any prior vacant period is not visible in the data An existing rental property can only be identified as vacant when a subsequent bond is lodged on that property Bond refund date does not equal tenancy end date and the difference between them is unknown Extensive preparation work needed to format the administrative dataset for RVR analyses Privacy issues with analysis of unit record data (i.e. property address level) A consistent, national approach to management/recording of rental bonds does not exist
Length of possible time series	Victorian RTBA data have been collected in a consistent format since 1998
Reporting frequency	As required
Unit of analysis	Property or lease (activity for these units can be analysed)
Spatial unit	Analysis at property level allows for spatial aggregation to any spatial unit (e.g. ABS or government/administrative defined regions but also unique, user-defined areas)
Dwelling type segmentation	Separate house, flat/unit, semidetached/terrace, rooming house and 'other' Number of bedrooms
Cost/availability	Cost undetermined Unit record analysis required; likely needs to be performed by government 'in-house'

Source: authors.

The RVRs that are derived from REIV, SQM Research and RTBA data sources for Melbourne from 2006 to 2024 are charted in Figure 12. The graph highlights that the RTBA data (red line) broadly follow the mainstream RVR data until the COVID-19 period, when it shows a less sharp impact, and post-COVID-19, when it directly parallels the REIV data but departs somewhat from SQM Research. Overall, this would suggest that the RTBA RVR is a useful measure of vacancy rates but with the added advantage of availability and, as illustrated by Figure 13, relevance at the submarket level.

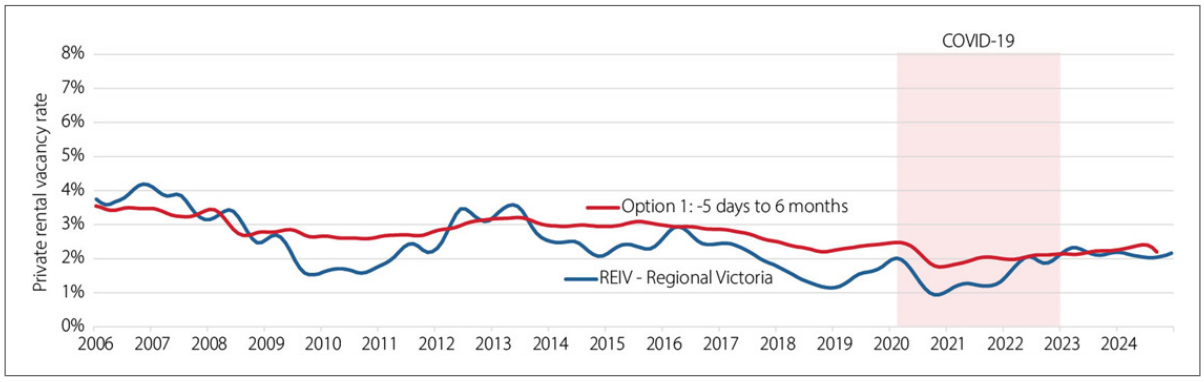
Figure 12: Melbourne monthly rental vacancy rates 2006–24: RTBA, SQM and REIV comparison



Source: authors' calculations; Homes Victoria (2024a); REIA (2024a); REIV (2024); SQM Research (2024a).

Figure 13 shows the RTBA RVR compared to the REIV rate for regional Victoria (SQM Research data are not available), demonstrating a similar general path with few fluctuations. This is partly because of the smoothing process (described above) and is also likely to be a function of the much larger RTBA dataset. The REIV data mainly capture large regional centres whereas the RTBA data include all vacant properties in Victoria.

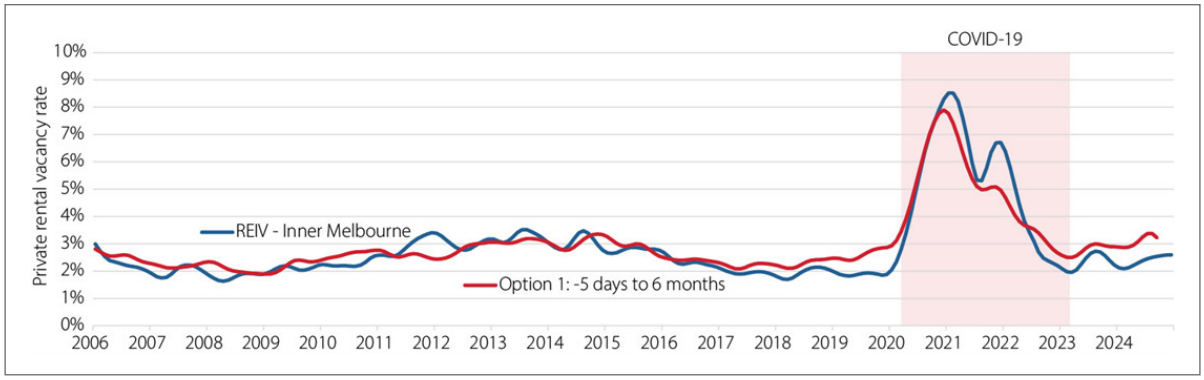
Figure 13: Regional Victoria monthly rental vacancy rate 2006–24: RTBA and REIV comparison



Source: authors' calculations; Homes Victoria (2024a); REIA (2024a); REIV (2024).

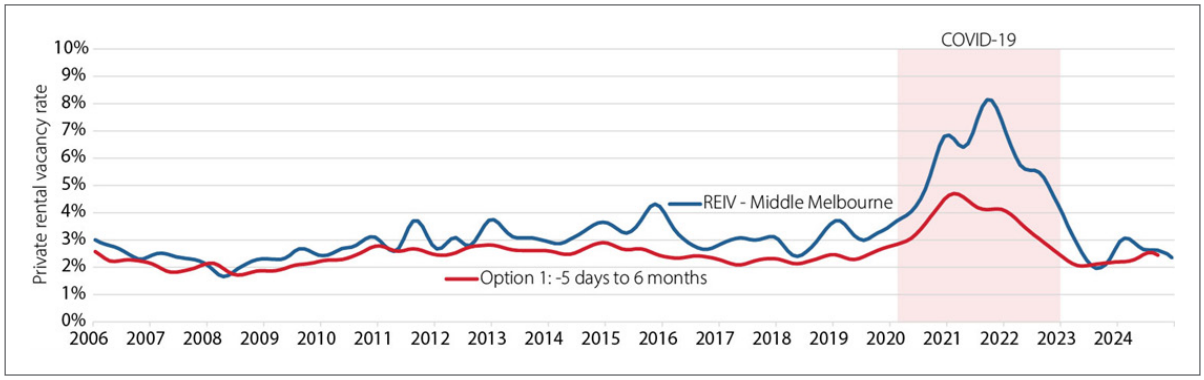
The same comparative data for inner Melbourne (within 10 kilometres of the CBD) is presented in Figure 14 and again shows that the RTBA and REIV data track very closely. Figures 15 and 16 show middle Melbourne (10–20 kilometres) and outer Melbourne (20 kilometres and beyond), respectively. In all cases, the tracking with the REIV data is very good, with the qualification that the COVID-19 effect was not as sharp for middle Melbourne.

Figure 14: Inner Melbourne monthly rental vacancy rate 2006–24: RTBA and REIV comparison



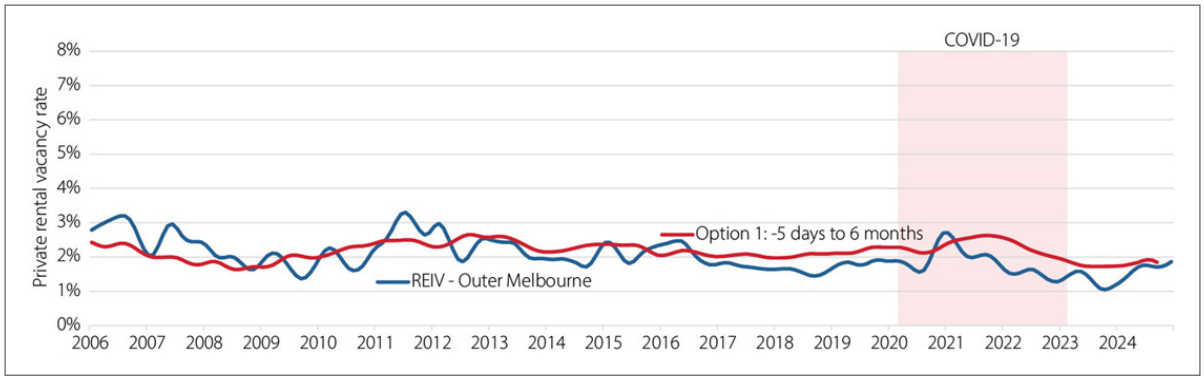
Source: authors' calculations; Homes Victoria (2024a); REIA (2024a); REIV (2024).

Figure 15: Middle Melbourne monthly rental vacancy rate 2006–24: RTBA and REIV comparison



Source: authors' calculations; Homes Victoria (2024a); REIA (2024a); REIV (2024).

Figure 16: Outer Melbourne monthly rental vacancy rate 2006–24: RTBA and REIV comparison



Source: authors' calculations; Homes Victoria (2024a); REIA (2024a); REIV (2024).

A comparison of SQM Research, REIV and RTBA long-run quarterly RVR averages for Melbourne is presented in Table 7.[7] The SQM Research and REIV figures, presented earlier in Tables 3 and 4, can be directly compared with RVR averages derived from the RTBA—a publicly collected data source. The table shows that RVR information derived from rental bond data is comparable to that from commercially available data sources.

Table 7: Long-run average of quarterly RVRs for Melbourne: RTBA results compared with SQM Research and REIV

Melbourne	SQM Research	REIV	Victorian RTBA (Option 1)
Long-run March Q 2005 – March Q 2024	2.5%	2.9%	2.6%
Global financial crisis March Q 2008 – Dec Q 2012	2.7%	2.4%	2.4%
COVID-19 March Q 2020 – Dec Q 2022	3.4%	4.4%	3.5%*

Note: average of quarterly, unsmoothed data; RTBA Option 1 = Properties considered vacant if the bond refund date is between 5 days after the subsequent tenancy start and no more than 180 days (6 months) before the next tenancy starts.

* Using RTBA Option 4, the average RVR for the COVID-19 period in Melbourne matches REIV at 4.4%.

Source: Homes Victoria (2024a); REIA (2024a); REIV (2024); SQM Research (2024a).

The conclusion is that the RTBA RVR is a good alternative to the mainstream providers. Importantly, the much larger data base (not illustrated here) enables spatial granularity in RVR calculation by Local Government Areas, suburbs or even user-defined areas. Rates can also be calculated for rental segments and by dwelling types/number of bedrooms (where data quality allows).

4.4.1 Comparing RTBA data and existing RVR data sources

This chapter has presented an alternative data source and methodology to calculate private RVRs. Summarised below are the advantages or otherwise of this data source and approach when compared with existing RVR methodologies.[8]

Advantages of RTBA data and method:

- The data custodian is the government: the data are owned, managed and controlled by an independent and non-commercial entity.
- RTBA data are a single, consistent and reliable source of information that is updated regularly.
- RTBA data have good coverage of the total private rental stock and compare well with Census counts.
- RTBA data have very good regional and small spatial unit coverage.
- RTBA data are a very good source of rental information as they include the actual rent paid rather than the advertised rent, which might be different. Vacancy rates can also be segmented by rent level.
- Lease commencement dates are recorded.
- Property-level measures of vacancy, tenancy turnover and property survival periods can be calculated and examined by rent segments.
- Data can be spatially referenced (geocoded) allowing for results at a range of spatial scales relating to established administrative boundaries (such as ABS or government jurisdictions) and, if geocoded, user-defined regions.

7 Comparable average RVR figures for REIV and all four options for defining vacancy in the RTBA are presented for different Victorian spatial submarkets in Appendix 3 (Table A11).

8 Many of these pros and cons of rental bond data have changed little since documented by Beer and O'Dwyer (2000).

- Data include information on dwelling type and number of bedrooms, allowing for segmented RVRs.
- If bonds for BTR properties are lodged with a state authority such as the RTBA, then vacancies can be easily measured in this market segment, as it is known that the property is a dedicated rental property and will not be returning to owner-occupation or left empty for whatever reason. If no subsequent bond is lodged after a bond is refunded, then the BTR property is vacant.

Disadvantages and challenges of the RTBA approach:

- It is necessary to rely on the assumption that bond refund date is a good proxy for end-of-lease date and other related assumptions.
- RTBA data cannot detect new properties in the market until a bond is lodged. Listings and survey data identify new properties that have not been leased and thus do not appear in the RTBA dataset because a bond has not yet been lodged. Such properties will get detected in the RTBA data at later time points, but vacancy prior to the first lease cannot be recognised or measured.[9]
- Listings and survey approaches recognise existing properties in the market that are currently vacant (i.e. properties between tenancies). There is no need to wait for a subsequent tenancy to start (identified in the RTBA data via a bond lodgement).
- For most recent time period (i.e. 'today'), vacancy cannot be observed for properties with a recent bond refund, and a lag of six months (or other user-determined period) is required to identify all vacant properties to exclude those that might have exited the market. However, not all properties will take that long to re-lease, and rolling data updates will identify and restore to the dataset properties that take less than six months to re-lease, progressively reducing the number of properties missing from the data.
- Administrative data require extensive handling to format into usable datasets (but possibly no more than for listings-based approaches). Data quality diminishes when the person entering it does a poor job (likely a problem across all RVR data sources).
- Access to unit record–level data will introduce privacy issues with the likely result that a government body will have to produce the RVR 'in-house'.
- How bond data are recorded in new 'portable fund' initiatives (e.g. in NSW) would have to be considered.
- To produce comparable RVRs across all Australian jurisdictions, a consistent method for collecting and managing bond information needs to be developed, including translating data from the lease/bond level to property level for analysis.

4.5 Policy development implications

The results presented in this chapter show that it is possible to produce an RVR from a publicly collected data source that is comparable to commercially available options. The advantages and limitations of the approach have been clearly presented.

The most significant methodological limitation of this approach is its reliance on the bond refund date as a proxy for end of lease. A better option would see the RTBA record the tenancy end date with the bond refund request.

Nationally, the approach is limited due to inconsistent methods regarding management of rental bonds and associated databases. For national monitoring of private rental sector activity using rental bond data, data collection and recording methods across national jurisdictions must be comparable.

9 Eaqub and Loke (2012) assume that new properties will follow the same pattern as existing stock: for example, 70 per cent will be vacant for one month, 20 per cent for two months. An alternative estimation technique, they suggest, could use listings data to track the vacancy patterns of new rentals in the market. Presumably, such techniques could only be applied retrospectively.

The suggested improvements flagged by our interview participants who use RVR information (Section 3.2.5) could be realised using RTBA data for production of the RVR. RTBA derived RVRs can include:

- measures of rent (by segments relating to affordability, etc.)
- an examination of vacancy in BTR properties or PBSA (where bonds are collected)
- segmentation by dwelling types and size (by number of bedrooms).

Further, as the RTBA data are collected by property address, the RVR could be analysed at a broad range of spatial scales, including user defined.

Chapters 2–4 have comprehensively addressed the first research question of this project, examining the methodologies, strengths and limitations of Australian private RVR indicators. This chapter has presented RVRs derived from an alternative, publicly collected dataset, along with a detailed description of the methodological approach used to generate the RVR. In terms of policy development, it is hoped that such information will be considered when RVRs are used and referred to as an indicator of rental market conditions.

5. Australian RVRs and market equilibrium levels

- Theoretically, an equilibrium vacancy rate is where market forces (supply and demand) are balanced, leaving real rents unchanged. During these periods, there is no market failure and no need for policy intervention to correct suboptimal outcomes. During periods of deviation, rents and supply adjust to correct the vacancy rate back to its equilibrium level, or longer-run level.
- Rental vacancy rate (RVR) producers and users are not consistent in their definition of an equilibrium level.
- Statistical modelling of RVRs and explanatory variables between 2011 and 2024 shows evidence of an RVR equilibrium level in Melbourne and, to a lesser extent, regional Victoria.
- In the analysis, correction also occurs following a market shock like the COVID-19 pandemic, but additional data points (post-pandemic) would be required to fully test this.
- The period of correction is longer in regional Victoria than in Melbourne, where there is some evidence that the RVR to which the market corrects might (marginally) be declining. This suggests a need for spatially nuanced government intervention and policy responses.
- Temporal variation in Melbourne and regional Victoria RVRs is explained by changes in rental dwelling supply and real asking rents. While changes in rents impacts RVR variations over the short-term in both regions, changes in supply have long-term impacts on RVRs.

- **There is a spatial dependency in rental market dynamics at a postal area (POA) spatial scale. Higher levels of private rental dwelling supply in neighbouring POAs can result in elevated levels of RVRs within POAs. Conversely, lower levels of supply can result in lower RVRs.**

- **The RVR equilibrium level is used by private rental market actors as a market signal to increase supply and/or rental levels in a 'tight' rental market. However, point-in-time estimates do not reflect long-term trends in RVR equilibrium levels and their spatial variability.**

This first part of this chapter reviews the concept of 'equilibrium' RVRs, which has evolved from the economics discipline. This rental market metric was originally applied in analyses of commercial office, industrial and retail property markets, but has gradually been adopted for private and institutionally owned residential rental properties. It is used to assess the balance between rental market supply and demand and rental level growth implications. A summary of academic and grey literature is presented below.

From an economic theoretical perspective, real rents are expected to decline when the vacancy rate rises above an equilibrium level (Belsky and Goodman 1996). An equilibrium vacancy rate is where market forces (supply and demand) are balanced, leaving real rents unchanged. An equilibrium vacancy rate incorporates a degree of slack (i.e. vacancy) that is necessary for demand and supply to balance out. For instance, vacancy is required to enable search, relocation and contracting to take place. In theory, a vacancy rate therefore provides an additional market-based indicator for the monitoring of private rental market dynamics. In private rental markets, the RVR equilibrium level is typically used by market actors as a market signal to increase supply and/or rental levels in a 'tight' rental market.

However, there is no consistency around the RVR equilibrium level between producers and users. Reporting of RVRs can be based on point-in-time estimates without acknowledging temporal and spatial variability. Additionally, analysis and commentary of rental market equilibrium levels are based on geographically aggregated time series data that are neither publicly accessible nor free, but involve a cost or relationship to be established with a data producer/supplier.

This literature review informs the second part of the chapter, which presents the results of a two-stage quantitative analysis of temporal and spatial variability in rental market efficiency, or equilibrium RVRs, filling a gap in the existing research. Statistical-regression and spatial equilibrium analytical techniques were used (Belsky and Goodman 1996; Jones 2002; Meen 2001; Rosen and Smith 1983); the case study location was Victoria; and the input variables on demand, supply, rents and RVRs included time series and cross-sectional data purchased from SQM Research Pty Ltd.

The results illustrate the limitations in existing RVR measures, analysis and interpretation, especially commonly used equilibrium points. The presence of equilibrium RVR dynamics in metropolitan Melbourne and regional Victoria was confirmed with RVRs responding to supply, and rent changes in the short run. Persistent changes to the number of active rental bonds may also change the RVR level around which equilibrium dynamics playout. This effect differs in Melbourne and regional Victoria. A rental market shock, or structural break, in time series data resulting from the COVID-19 pandemic also affected RVR equilibrium levels in these geographies differently. Finally, equilibrium/disequilibrium in small area rental markets (i.e. Victorian postcode level) has a spatial spillover effect on neighbouring areas, demonstrating that analysis and reporting of RVRs at variable spatial scales is required.

5.1 The rental market 'equilibrium' concept

The theoretical concept of a 'market equilibrium' and its empirical testing has been nested within the economics discipline and applied to property sub-markets over time, from commercial office to housing market dynamics. The concept of a 'market equilibrium' or 'natural vacancy rate' is based on the theory of perfectly competitive housing markets (Muth 1969), with later adaptations based on search theory, imperfect information and game theory (Arnott 1989).

The application of vacancy rates to housing markets, specifically the monitoring of vacancy in residential rental markets, is important in countries like Australia. The share of households living in private rental housing has risen from 18 per cent in 1994–95 to 26.2 per cent in 2019–20 (Australian Institute of Health and Welfare 2024). Australia's private rental rate is also well above the 2022 OECD (Organisation for Economic Co-operation and Development) rate of 16.2 per cent (OECD 2024). RVRs are one of many rental market metrics used for the monitoring of pricing and returns from residential investment property ownership, along with the balance of supply and demand.

This section reviews RVR definitions in international literature, connecting with earlier discussion of Australian data sources. In addition, it reviews discussion of the temporal and spatial variability of 'natural vacancy rates' and 'market equilibrium levels', along with assumptions in their modelling across academic and grey literature.

According to Belsky (1992: 793), the RVR is the proportion of total rental stock that is vacant for rent (stock excludes second homes). The numerator is the number of vacant units for rent and the denominator is the sum of units vacant and available for rent, units occupied by renters and units rented but not yet occupied. Units excluded from RVR calculations are those held for seasonal/occasional use or where the usual resident is elsewhere. Later, Belsky and Goodman (1996: 322) added a temporal limit to the calculation of RVRs. The numerator includes units vacant for a year while total rental stock includes vacant year-round units for rent, renter-occupied units and vacant year-round units rented but awaiting occupancy. They confirmed that RVRs are a multiple of the average duration of vacancies and frequency with which vacancies occur. Hence, a lower rental stock turnover rate and a short average duration of vacancy should contribute to a lower vacancy rate. Conversely, if the turnover rate and duration of vacancy rate increases, so will the RVR.

The theory of perfectly competitive markets assumes a complete set of sub-markets, information symmetry and no search costs. Such neoclassical economic assumptions have been critiqued by those who point out that housing markets are imperfect (Arnott 1989; Belsky 1992; Belsky and Goodman 1996). They highlight heterogeneity and commodity complexity; the need to acknowledge the cost of searching and moving between homes; and information opacity in housing markets, which means that household choices are restricted. Landlords are not fully aware of household tastes and tenants do not have full awareness of landlord covenants; their track record of leasing property; all rental market options; or the suboptimal characteristics of vacant units, which may mean that they reside in housing with undesirable characteristics. Arnott (1989) highlighted that enforceable contracts exist between landlords and tenants, meaning that rents cannot be increased during the lease term. He also highlighted that vacancies are 'normal', as they expand a household's 'choice set' and are 'important in the process of housing market adjustment' (Arnott 1989: 24-25).

As mentioned, an equilibrium vacancy rate includes a degree of slack (i.e. vacancy) that is required for adjustments, search and transacting to take place without exerting upwards or downwards pressure on rent levels. In theory, it is deviation from the vacancy rate that generates pressure on rental prices and serves as a market signal. However, as noted in Section 1.2, some reported vacancy rates for a metropolitan area, state/territory or country as a whole are aggregations of sub-markets with their own dynamics. Changes in vacancy rates, including what is considered an equilibrium rate, may therefore reflect composition change, such as a change in the rental stock profile (low- and high-rent stock). The RVR is also a key metric summarising the supply–demand balance in the broader housing market, as a gauge of household movement between private rental housing tenure to home ownership.

The importance of recognising the temporal and spatial variability of the RVR in its interpretation and usage has been highlighted in other research. Vacancy rates in the overall housing market, specifically in the rental market, can be misleading without proper consideration of their changing definition and measurement (Belsky and Goodman 1996). In the US context, Gabriel and Nothaft (1988, 2001) provide evidence of substantial variation in 'natural vacancy rates' (not specifically RVRs) across major metropolitan areas. They find variability in the duration and incidence of vacancies, and the natural vacancy rate, to be affected by factors including housing costs, housing stock heterogeneity, tenant mobility and population growth. In their analysis of a rental market equilibrium in commercial office markets, Parli and Miller (2014) emphasise the importance of analysing longer-term time series data over at least a decade to capture market cyclicality.

Prior research has examined the temporal and spatial variability in rental market efficiency, or equilibrium RVRs, using statistical regression and spatial equilibrium analytical techniques (Belsky and Goodman 1996; Jones 2002; Meen 2001; Rosen and Smith 1983). Table 8 shows the common supply and demand related variables used to model market equilibrium levels of RVRs in Australia and overseas. This was corroborated by interviewees who spoke about the demographic drivers of broader housing demand, and specifically rental property demand, such as projected growth in population and households in cities. Similarly, supply side indicators included building approvals, active rental bonds and interest rates affecting the cost of purchasing a home for investor landlords.

Table 8: Supply and demand variables used to test for RVR equilibrium levels

Rental supply variables	Rental demand and pricing variables
Construction activity: Change in rental stock, newly converted and built rental units, fewer demolitions of rental units (Hagen and Hansen 2010; Parli and Miller 2014; REIA (1990–2015; 2024a); Rosen and Smith 1983; Smith 1974) **Construction costs** (Meen 2001) **Dwelling supply of rental units** (Gabriel and Nothaft 1988) **Rental market turnover** (Rosen and Smith 1983) **Supply of rental housing with desirable characteristics for households** seeking rental property: good structural quality, ventilation and quality of accessories/ appliances, number of bedrooms, short distance to work (Arnott 1989) **Change in renter occupied units** (Gabriel and Nothaft 1988): supply and demand	**Demographic drivers:** population–household growth; migration into and out of areas, migrant population shares; population self-containment (i.e. population living and working in the same area); number and share of households by type; age composition of population–household heads (Arnott 1989; Gabriel and Nothaft 1988, 2001; Hagen and Hansen 2010; Jones 2002; Meen 2001; REIA (1990–2015; 2024a); Saunders and Tulip 2019; Smith 1974) **Purchasing power:** permanent real disposable income (Smith 1974); socio-economic status (Jones 2002) **Housing prices/price to rent ratios:** house prices, nominal and real terms (Hagen and Hansen 2010; Jones 2002; Meen 2001; Saunders and Tulip 2019; Smith 1974); real price—real rent ratios and real rent—real rent ratios (Gabriel and Painter 2020) **Rental levels:** quarterly rent levels, nominal and real terms; real rent strips out operating costs (Arnott 1989; Belsky and Goodman 1996; Hagen and Hansen 2010; Jones 2002; Meen 2001; Parli and Miller 2014; Rosen and Smith 1983; Saunders and Tulip 2019; Smith 1974); gross rent (Gabriel and Nothaft 1988) **Cost of home ownership/renting:** mortgage rates (Hagen and Hansen 2010; REIA (1990–2015; 2024a); Saunders and Tulip 2019; Smith 1974;); rate of change of property taxes; operating expenses for property (Hagen and Hansen 2010; Smith 1974); total operating expenses (Rosen and Smith 1983); housing moving search costs (Arnott 1989) **Rental vacancy rates (RVRs):** quarterly RVRs, average/median (Arnott 1989; Meen 2001; Parli and Miller 2014; Rosen and Smith 1983; Saunders and Tulip 2019)

Source: authors.

5.1.1 Why is an equilibrium RVR level important?

The equilibrium RVR level has been a topic of discourse and debate among data producers from the earliest group using a survey-based approach (REIA) to more contemporary organisations using rental listings–based approaches to deriving the measure (i.e. SQM Research Pty Ltd, Cotality [formerly CoreLogic], REA Group Ltd and Domain Group). The production and dissemination of RVR data through media outlets has led to the normalised assumption that RVRs below an equilibrium level of 2–3 per cent trigger rental growth and, conversely, that RVRs above this level dampen rental growth. Similarly, low RVRs are associated with rental market undersupply or vice versa. These discourses are summarised below.

In an early annual review of Australian residential property markets, the Research Institute of Australia (REIA 1991: 18) provided an RVR definition, including temporal and spatial variability. It indicated that a 3 per cent level reflected a balanced market but did not supply any supporting data:

> *The vacancy rate figure measures the degree of availability of private rental accommodation and is an indicator of the level of supply and demand. A vacancy rate of around three per cent (depending upon the city) is recognised as providing a reasonable balance between supply and demand. The vacancy rate tends to tighten with the commencement of the academic year in the early months of the year and eases toward the latter part of the year. (REIA 1991: 18)*

Various producers of RVR data have described a 2–3 per cent RVR range as reflecting a 'healthy' or 'good rental market'—that is, a market in which supply and demand are supposedly in 'balance' (REIA 1990–2015). An RVR of around 3 per cent is generally considered an industry 'rule of thumb' (REIA 1998: 13) or 'vacancy rate benchmark' (REIA 2006: 9). A consistent message in REIA's publications between 2001 and 2024 was the inverse relationship between movements in median rental values and RVRs.

The REIA (2006) argues that RVRs above a notional equilibrium represent an oversupplied rental market compared with rental demand, which has the effect of moderating rental growth. It states that 'rates higher than 3.0% are generally considered to reflect an oversupply of rental accommodation' (REIA 2006: 9). When this occurs, tenants have more choice of properties, landlords are willing to negotiate rental levels and there is no or limited upward pressure on rents, resulting in possible rent reductions. Factors that dampen demand include weak economic and labour market conditions resulting in rising unemployment or declining population growth. According to HTAG (2024), high levels of rental vacancy can be a sign of oversupply or limited demand in an area, which may put downward pressure on property prices and negatively affect capital growth and investment.

Conversely, an RVR of less than 3 per cent is regarded as a 'very broad indicator of reasonably strong demand for rental properties' (REIA 1998: 13). A connection is frequently made between 'tight' market conditions, falling RVRs and rental increases. This is related to a shortage of rental properties, reflecting low levels of new housing construction, population growth, internal and/or international immigration, and increasing preferences to lease rather than own (O'Dowd 2023). According to HTAG (2024), 'a decreasing [RVR] rate could [also] indicate rising demand or possibly lessening supply, which may affect rental yields and property values in the future'. It suggests that the opportunity to capitalise on rising rents and a low-interest rate environment could result in increased rental market investment, driving up supply.

This reporting of 'tight' rental market conditions is further normalised when digital media companies use and quote RVR data from the dominant producers. For example, PropTrack's senior economist referred to RVR levels below 2 per cent as an indicator of an 'extremely tight' rental market when 'it's really difficult to find a rental, and rental prices are going up incredibly quickly' (Ainsworth 2023). Likewise, Domain Group's chief of research and economics stated:

> *"we've seen vacancy rates tighten over the recent months, and they're dropping further because we're not seeing new supply come into the rental market" … "so unfortunately, rents are likely to keep on rising, albeit at a slower pace in the medium term." (Sweeney 2023b)*

The founder of SQM Research Pty Ltd attributed the 'rental crisis' in Australia's biggest capital cities, Sydney and Melbourne, to low RVRs and predicted that 'tenants would continue to see higher rents in the foreseeable future' (Malo 2024; Sweeney 2023a). It is not clear if these rental growth projections connect with any econometric modelling using long time series data. In fact, one data producer interviewed confirmed that their organisation's reporting of a 2–3 per cent equilibrium RVR representing a 'balanced market' was not based on statistical modelling, but the experience of analysing long-term relationships between rents and RVRs.

The volume of commentary around 'tight' rental markets shows how important it is to understand the concept of RVR equilibrium. An equilibrium point is a crucial input to interpreting market signals. When there is an equilibrium point—a point that self-correcting forces in markets return to—investors will be able to comment on expected returns/yields (in the long run) and planners and policy makers will be able to reference likely market responses (e.g. rents will go up/down, supply will go up/down, homelessness might increase when people fall out of the market and so equilibrium is restored, and/or overcrowded and shared properties might increase). The absence of an equilibrium point makes it more difficult to assess what the impacts of investment and policy decisions might be.

5.1.2 Temporal and spatial variability of RVRs

The variability of RVRs over time, space, dwelling typology and rental sub-sectors is apparent in the literature. Nonetheless, aggregated RVRs are used for modelling of equilibrium levels and point-in-time estimates are reported by producers. This is a cautionary note for users interpreting these data and basing decisions on them, such as government policy makers/regulators, the real estate agency industry, investor-landlord owners, media and digital news agencies. This section reviews the discourse around the RVR being too broad, and the need for lengthy time series and segmented data to provide a more nuanced understanding of rental market dynamics.

The REIA was the earliest reporter of an RVR measure and, in these early reports, acknowledged its seasonality. For instance, the REIA (1993:19) noted that RVRs declined in the early months of the year with the commencement of the academic year and rose towards the latter part of the year. This related to rental demand from tertiary students, households comprising a parent/s with school-aged children, commencement of employment contracts, and/or job transfers prompting internal or overseas migration.

There are geographic variations in what represents a 'balanced' market according to property industry representatives. For instance, the Real Estate Institute of Queensland (REIQ, see O'Dowd 2023) describes three types of rental property market conditions, reflecting rental movements and associated RVR ranges: a 'tight' market (RVR = 0–2.5%), a 'healthy' market (RVR = 2.6–3.5%) and a 'weak' market (RVR = 3.6% and above). Similarly, the Real Estate Institute of Western Australia (REIWA 2024) reports that an RVR of between 2.5 and 3.5 per cent represents a balanced market. In contrast, Yardney (2024), referring to managing properties in Sydney for investor landlords, asserts that an RVR of 2–2.5 per cent represents a balanced market. This lower level suits his 'clients [who] have chosen investment-grade properties' and 'proactive property management policies' to ensure that the vacancy rate across their rent roll is 'less than half the industry rate'.

Interestingly, support for the lower RVR benchmark of 2–2.5 per cent in urban contexts is prevalent among financial planning and investment advisory firms whose clientele are primarily existing or potential new investor landlords in the private rental sector. For example, Petty (2022) relates the view of a representative of an investor buyer's agency about low RVRs and associated market conditions: "a balanced rental market is 2.5 per cent vacancy. Sub 2 per cent is generally when upward pressure on rent prices occurs. Anything under 1.5 per cent vacancy is ridiculously tight". Like REIQ (O'Dowd 2023), HTAG (2025) also classifies rental market conditions using RVRs but from an investor-landlord perspective: 'low demand (RVR > 3.5%)', 'balanced' (RVR = 1–3.5%) and high demand (RVR = <%). Its advice to property investors is to 'target high demand rental markets to ensure continuous cashflow uninterrupted by tenant churn' (HTAG 2024).

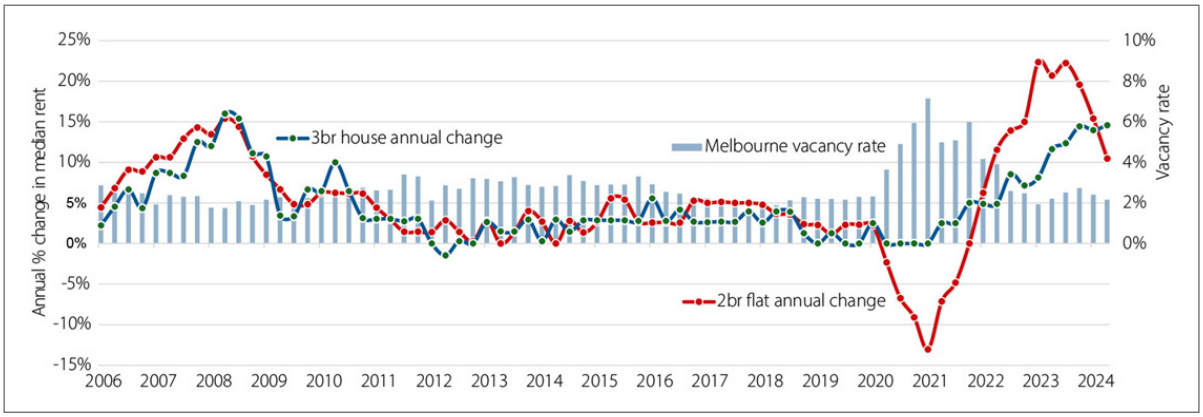
Technological innovation in the property advertisement and market-matching process has lowered costs and improved efficiency over time by reducing the time taken to lease or sell properties (Boeing 2020). Depending on the market context, a lower number of vacancies (RVR numerator) will translate to lower RVRs, resulting in long-run average RVRs, or equilibrium levels, trending down when listings-based approaches are adopted by data producers. Matusik Property Insights (2022) asserts that, since 'the rental market acts much more quickly when rental vacancies appear', a lower 2 per cent RVR is a more appropriate measure of a 'balanced' rental market now; previously, in the era of paper-based advertising, a higher 3 per cent level was relevant. This aligns with the long-run RVRs of 2–2.5 per cent between 2005 and 2024 in Australian capital cities such as Sydney, Melbourne, Brisbane and Perth (Table 4, Section 2.3).

Some interviewees also discussed the spatial and temporal variability of RVRs in Australia, which deviated from the abovementioned 2–3 per cent equilibrium level due to movements in rents and supply conditions. One interviewee referred to RVR fluctuations in regional locations, relating these to rental dwelling stock levels and significant changes in demand. For example, in a mining town like Karratha in Western Australia, rental market conditions could change dramatically over a period of 8–9 months, moving from a high RVR of 8–9 per cent (representing rental housing oversupply and declining rents) to a lower RVR range of 4–5 per cent (signally severe undersupply and rising rents). This volatility highlights the risk of interpreting short-term RVR trends at monthly intervals and spatially aggregated equilibrium levels, which differ from urban to regional areas.

The charting of RVRs over two decades across Australian capital cities shows that not all cities consistently experience an equilibrium RVR at the 2–3 per cent level and reveals a negative relationship between RVRs and rental growth change (Figures 17–22). In each city there are periods of high RVRs accompanied by moderating rental growth for two-bedroom flats and, to a lesser extent, three-bedroom houses (this is more pronounced in Sydney and Melbourne due to the greater number of apartments). Conversely, lower RVR levels coincided with rental growth prior to the global financial crisis (GFC) and following the COVID-19 pandemic (for discussion of the latter, see NHFIC 2022; Pawson, Martin et al. 2021a, 2021b). In the past two decades, RVRs have not always been in the 2–3 per cent equilibrium level in all capital city rental markets; instead, as discussed in Section 2.3, there has been considerable variability in peaks and troughs.

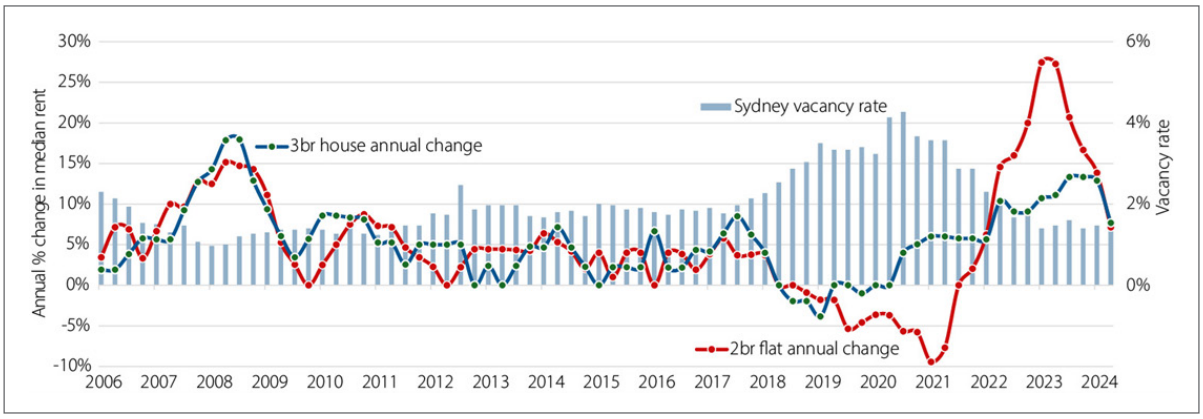
In Melbourne, RVRs have generally been around this equilibrium level (Figure 17), whereas in Sydney, RVRs have consistently been at the lower end of the range over the two decades (Figure 18). Both cities witnessed rising RVRs following the post-GFC apartment building boom (Department of Planning, Housing and Infrastructure 2024; SQM Research 2024a), and Melbourne experienced a pronounced rise in RVRs between 2020 and 2022 during its protracted COVID-19 pandemic–related lockdowns. This translated to an increase in new rental supply in relation to rental demand, which diminished as international students returned to their countries of origin and immigrant intakes fell following border closures. Confidence in Sydney's apartment market subsided following the emergence of building defects in 2019, and this is likely to have also impacted tenant demand (Department of Customer Service and McCrindle 2022).

Figure 17: Comparison of annual percentage change in rents to RVR, Melbourne



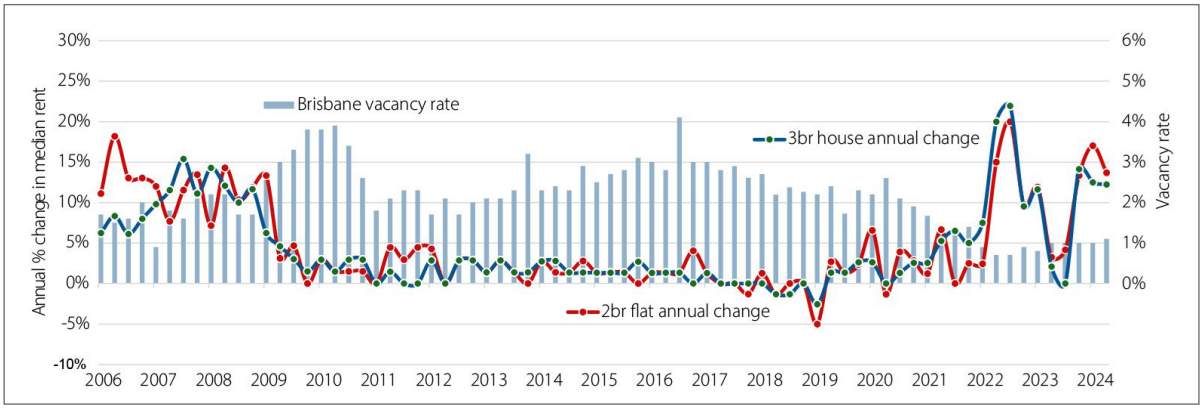
Source: RVR from REIV (2024); rents from Homes Victoria (2024b).

Figure 18: Comparison of annual percentage change in rents to RVR, Sydney



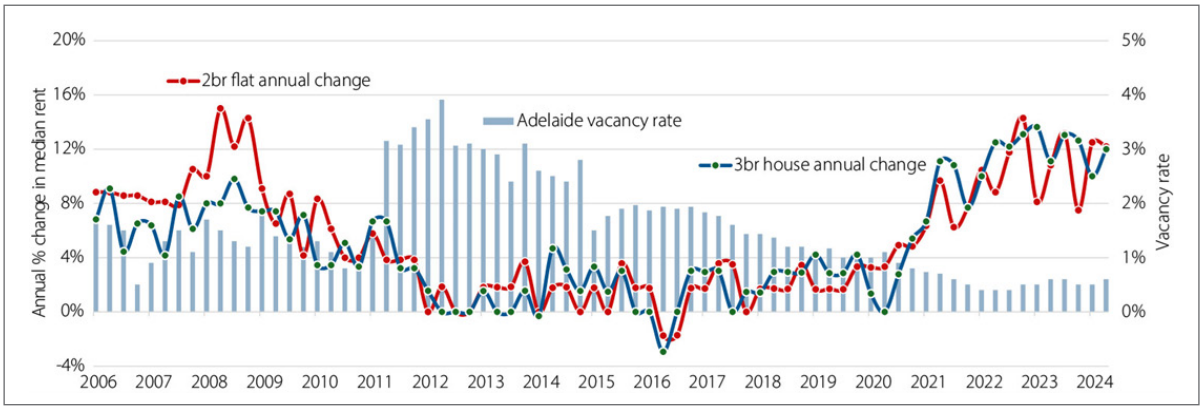
Source: REIA (2024a).

Figure 19: Comparison of annual percentage change in rents to RVR, Brisbane



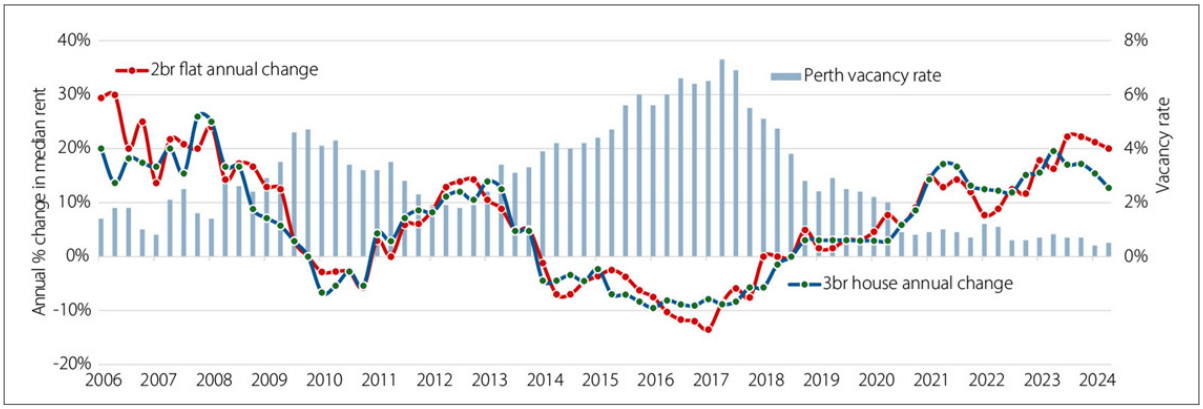
Source: REIA (2024a).

Figure 20: Comparison of annual percentage change in rents to RVR, Adelaide



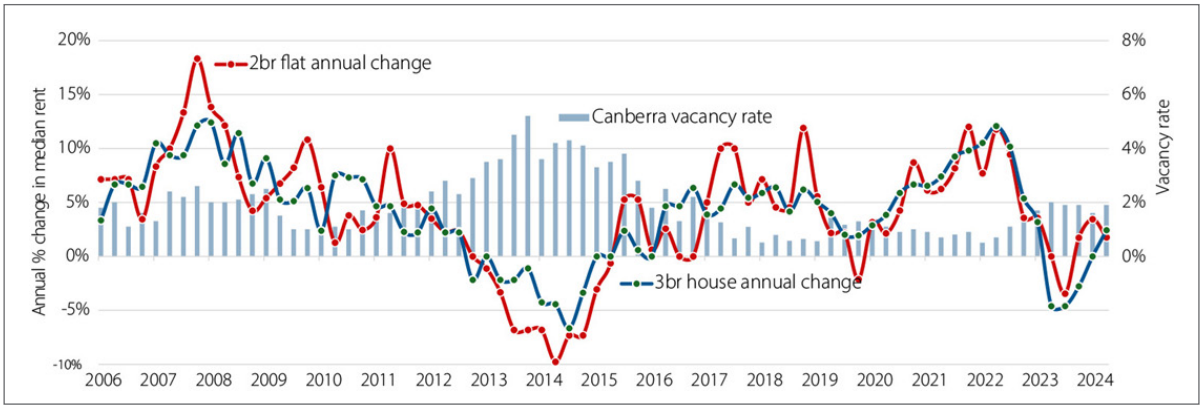
Source: REIA (2024a).

Figure 21: Comparison of annual percentage change in rents to RVR, Perth



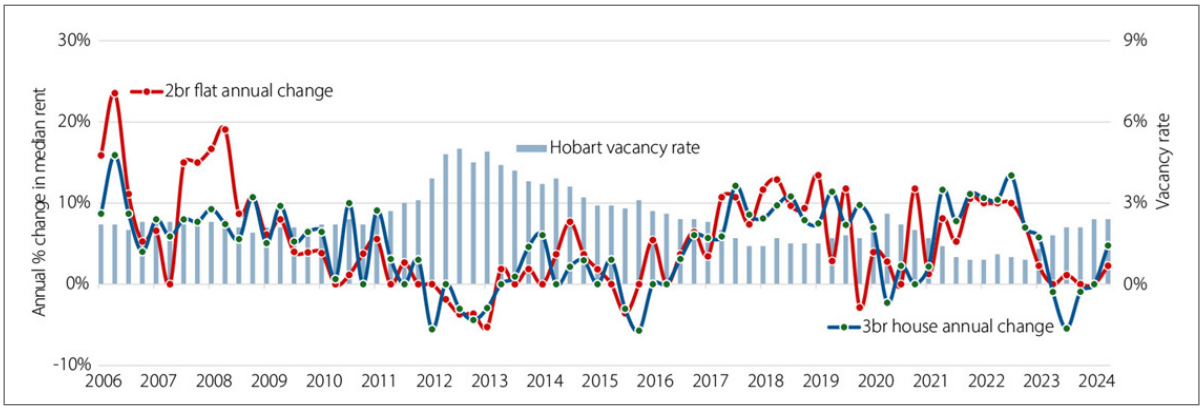
Source: REIA (2024a).

Figure 22: Comparison of annual percentage change in rents to RVR, Canberra



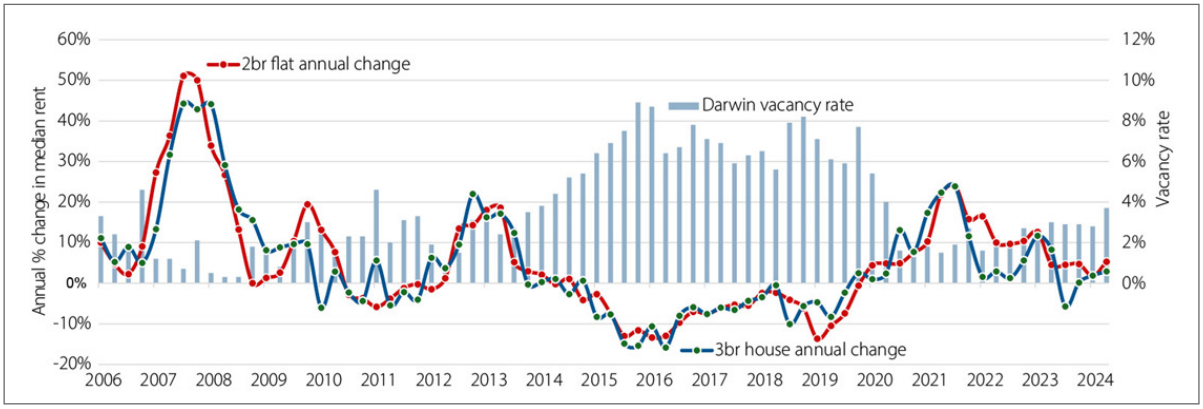
Source: REIA (2024a).

Figure 23: Comparison of annual percentage change in rents to RVR, Hobart



Source: REIA (2024a).

Figure 24: Comparison of annual percentage change in rents to RVR, Darwin



Source: REIA (2024a).

An RVR data producer interviewed for this project noted that the negative correlation between RVRs and asking rents did not always hold true in cities like Sydney. Similarly, in 2004, the REIA acknowledged that the RVR was a 'broad' measure that ignored variability across dwelling typologies, and highlighted that the 'expected inverse relationship' between RVRs and rental growth did not always hold true over time:

> *Vacancy rates are only broad indicators of the 'true' vacancy rate at any particular point in time; the vacancy rates are aggregate values across all rented properties (no distinction is made between specific vacancy rates for houses and vacancy rates for flats/units/townhouses) and these very broad indicators are compared with median rents derived from large numbers of rented properties. Vacancy rates are useful indicators of the current availability of rental accommodation, but the expected inverse relationship between vacancy rates and median rents are not always apparent from the data. (REIA 2004: 8)*

Such cautionary notes have disappeared from more contemporary reporting of RVRs.

The quantitative modelling presented in the next two sub-sections of this chapter showcase the temporal variability of RVRs around an equilibrium level in Melbourne and regional Victoria. The findings demonstrate how explanatory factors like supply, demand and rents that drive RVR movements can differ in the short and long term over a 13-year period and illustrate how these dynamics differ between urban and regional contexts. Analysis of spatially disaggregated RVR equilibrium/disequilibrium levels at a point in time (Victorian postcodes) highlights that the reporting and interpretation of RVRs at a geographically aggregated level is problematic.

5.2 Modelling temporal variability in RVR equilibrium

An equilibrium vacancy rate represents a market condition in which available supply (plus slack or vacancy) matches demand forces. Over time, the existence of an equilibrium rate implies a vacancy rate that the market returns to because of supply, price or non-price adjustments (homelessness, more/less intensive utilisation of rental dwellings etc.). In the short run, vacancy rates are expected to respond to changes in market factors (see Tables 9 and 10). However, as noted in Section 1.2, a vacancy rate may also change in response to compositional changes in tenant or stock profile, and technological change in the intermediation of rental properties.

In this section, we test whether two vacancy rates in Victoria—for metropolitan Melbourne and the rest of Victoria—exhibit signs of self-correction and responsiveness to short- and long-run market changes. Evidence of self-correction would be consistent with the presence of an equilibrium rate. Importantly, the vacancy rate is a measure of the balance of supply and demand forces. Evidence of self-correction can lead to identification of which balancing factor (supply, demand or non-price adjustment) is operating to re-establish equilibrium.

Conversely, long-run responsiveness to market factors would provide insight into the potential determinants of change in the equilibrium rate. To test these outcomes, we employed an autoregressive distributed lag (ARDL) method to model the vacancy rate in metropolitan Melbourne and the rest of Victoria.

The key questions that the modelling aimed to address were:

- Is there an equilibrium level of RVR and how long does it take for RVRs to return to the equilibrium level?
- How does the RVR respond to a shock to the rental property market, such as the COVID-19 pandemic between 2020 and 2021?
- What short- and long-term determinants impact RVR equilibrium/disequilibrium dynamics?

The results relating to each of these questions are discussed below, with the model outputs for metropolitan Melbourne and regional Victoria shown in Tables 9–11.

5.2.1 The existence of an equilibrium RVR and adjustment tendency

To identify dynamic factors affecting the RVR, ARDL models (error correction form) were run. Structural break tests were used to identify additional periods of change. These periods were controlled for with the inclusion of a dummy variable (see Section 5.2.2). Additionally, ARDLs were run with and without the inclusion of a trend variable. The dependent variable in these models is metropolitan Melbourne and regional Victoria RVRs, respectively.

The regression results are shown in Tables 9 and 10. With respect to identifying evidence of an equilibrium RVR, the key variable of interest is the adjustment effect associated with the lagged dependent variable. The self-correcting property of the model in its reversion back to a long-run average is identified by the magnitude, direction and statistical significance of the adjustment coefficient. A negative and statistically significant coefficient identifies the speed of adjustment in RVRs towards an 'equilibrium level'—or the time taken for the model to re-establish itself in a state of equilibrium.

The metropolitan Melbourne adjustment −0.12 equates to 12 per cent in a month—that is, in one month, the model re-establishes its equilibrium by 12 per cent. In other words, in response to a deviation from equilibrium, the Melbourne RVR over a period of four and eight months will have recovered its equilibrium by 28 per cent and 96 per cent, respectively (RVR as a fraction and monthly intervals in model). The adjustment coefficients remain largely unchanged with and without the inclusion of a time trend (Tables A4–A5, Appendix 2). The results in Table 9 suggest the presence of self-correcting forces in metropolitan Melbourne, consistent with equilibrium dynamics.

The evidence for self-correction is weaker in regional Victoria. The adjustment coefficient is not significant at the conventional 5 per cent level, only the weaker 10 per cent level ($p = 0.06$). Correspondingly, any self-correcting properties are slower in regional Victoria compared to metropolitan Melbourne. This means that rental market disequilibrium, in which supply and demand are not in balance, is slower to correct in regional Victoria.

In Melbourne, the COVID-19 dummy and time trend coefficients are both statistically significant. The time trend coefficient suggests that while there is evidence of correction dynamics in the Melbourne RVR, the RVR level itself exhibits a declining trend over the modelling period. The RVR moved towards a long-run average (or equilibrium levels) with a declining trend between January 2011 and August 2024. The mean RVR was the modelling starting point: 2.42 per cent in Melbourne (Table A2, Appendix 2). Additional post-COVID-19 data points would be required to more fully test explanations for the (marginally) declining RVR trend. A lower RVR might be consistent with the impact of technology (such as online platforms), but may also pick up more protracted correction processes post-COVID-19 (e.g. volatility).

In regional Victoria, the dummy and time trend functions were statistically insignificant, connecting with a weakly significant adjustment coefficient.

As noted earlier, the tendency for RVRs to revert to a long-run equilibrium point can be a function of supply, demand and price adjustments, but also more intensive use of rental housing (overcrowding or shared housing) or exits from the rental (housing) sectors (e.g. homelessness). Thus, while an equilibrium rate may suggest that markets self-correct, it does not follow that either the RVR level itself or the dynamics that enable its self-correction are socially desirable outcomes.

Table 9: Metropolitan Melbourne: ARDL model with exogenous shock and trend function

Variable*	Coefficient	t-statistic	*p > t*
Adjustment effect, dependent variable RVR as fraction	**–0.120**	**–4.00**	**0.000**
Long-run effects of independent variables:			
Number of active rental bonds (logged, lag 1)	**0.210**	**2.33**	**0.021**
Real asking rents: houses and units (logged, lag 1)	-0.031	-0.55	0.585
Short-run effects of independent variables:			
Number of active rental bonds (logged, lag 1)	**–0.539**	**–5.27**	**0.000**
Real asking rents: houses and units (logged, lag 1)	**–0.121**	**–4.11**	**0.000**
Dummy variable, exogenous shock of a structural break March 2020 onwards (Covid-19 pandemic)	**0.003**	**2.51**	**0.013**
Trend, time variable, monthly intervals January 2011 to August 2024	**-0.0001**	**–3.20**	**0.002**
Constant	**–0.293**	**–2.07**	**0.040**
Overall error correction (ec1) model result: R-squared = 0.3957; adjusted R-squared = 0.3679. ARDL (1,1,1) regression. Number of observations = 160			

**Note: Bold figures are significant at 5 per cent level. See Table A4 in Appendix 2 for more details without long-term 'trend' command added to ec1 model.*

Source: authors.

Table 10: Regional Victoria: ARDL model with exogenous shock and trend function

Variable*	Coefficient	t-statistic	*p* > *t*
Adjusted effect, dependent variable RVR as fraction	−0.080	−1.87	0.064
Long-run effects of independent variables:			
Number of active rental bonds (logged, lag 1)	**−0.144**	**−1.41**	**0.162**
Real asking rents: houses and units (logged, lag 1)	0.005	0.08	0.934
Short-run effects of independent variables:			
RVR as fraction	**−0.228**	**−2.97**	**0.003**
Number of active rental bonds (logged, lag 1)	**−0.293**	**−4.23**	**0.000**
Real asking rents: houses and units (logged, lag 1 of 2)	**0.034**	**2.19**	**0.030**
Lag 2	**0.031**	**2.24**	**0.027**
Dummy variable, exogenous shock of a structural break July 2017 onwards (changed Melbourne –Regional Vic intrastate migration pattern)	−0.001	−1.72	0.087
Trend, time variable, monthly intervals Jan 2011 to August 2024	0.000	0.42	0.676
Constant	0.133	1.18	0.241
Overall error correction (ec1) model result: R-squared = 0.2752; adjusted R-squared = 0.2317. ARDL (2,1,2) regression. Number of observations = 160			

Note: Bold figures are significant at 5 per cent level. See Table A5 in Appendix 2 for further details.

Source: authors.

5.2.2 The RVR response to market shocks

There were structural breaks apparent in both Melbourne and regional Victoria.

In Melbourne, a structural break in the series appeared from March 2020 onwards and a dummy variable was created and added in the ARDL model. This represented an exogenous shock following the onset of the COVID-19 pandemic. Tables 3 and 4 in Section 2.3 showed the relatively high average RVRs in Melbourne compared with other capital cities between 2020 and 2022 (COVID-19 pandemic period). Higher than the average RVRs that occurred during a previous market shock (the GFC), these were also above the long-run average RVR in Melbourne (2.42%) across the analysis period (monthly intervals between January 2011 to August 2024; see Table A2, Appendix 2).

In regional Victoria, a structural break was apparent from July 2017 and a dummy variable was added to the model accordingly. Several factors contributed to a sudden increase in rental property demand in regional Victoria during 2017. Many households moved from Melbourne to regional Victoria between 2014 and 2018: the net intrastate migration loss from Melbourne to regional Victoria increased by 58 per cent between 2016 and 2017, from −8,000 to −12,600 (ABS 2021d). Additionally, Melbourne's real residential property price index rose over four consecutive quarters between June 2016 and June 2017, which was likely a push factor for households moving out of the city into regional Victoria (ABS 2022c, 2025a).

In the metropolitan Melbourne ARDL model output, the coefficient for the dummy variable representing the COVID-19 pandemic–related market shock was statistically significant (Table 9). However, the model output for regional Victoria did not show a statistically significant coefficient against the dummy variable (Table 10). Temporal variations in RVRs were more responsive to rental market shocks in Melbourne compared with regional areas.

5.2.3 Long- and short-term determinants of RVR variations

Two independent variables explain the temporal variation in RVRs in Melbourne and regional Victoria: the supply of rental dwellings (count of active rental bonds) and real asking rents for all properties. The statistically significant relationship between these explanatory factors and RVRs is evident over the entire analysis period and during exogenous shocks to the rental market.

With the inclusion of a time trend, asking rents primarily explain the temporal variations in RVRs over the short term. The difference in the long-run significance of asking rents with and without the inclusion of time trend suggests that real rental increases may be associated with the structural decline in the Melbourne equilibrium RVR rate, without fully explaining this. Since Melbourne's real rent increases exhibit modest growth pre-COVID-19 (ABS 2023a), the trend and price effect may also capture the compositional change of the rental stock that might be caused by an increasing proportion of mid- and high-rent rental dwellings in the market.

Conversely, the supply of rental dwellings impacts RVRs over the short and long run across Melbourne and regional Victoria (Tables 9–11).

The interaction between rental dwelling supply and RVRs is varied between Melbourne and regional Victoria. The supply stock measure—quantum of active rental bonds in a month—should be interpreted against a short-run, inelastic, fixed quantum of rental dwelling supply. In other words, a rise in active rental bonds results in fewer properties available for rent, consistent with lower RVRs. Therefore, a short-run negative relationship is expected between this supply indicator and RVRs.

The results show that:

- In Melbourne, a 1 per cent increase in supply (active rental bound count) contributes to a 0.5 percentage point reduction in RVRs in the short term, which suggests that new supply responds to an increase in rental demand reflected in a lowering of RVRs. In the long run, a 1 per cent increase in supply leads to a 0.2 percentage point rise in RVRs, reflecting a rental market oversupply compared with demand. All else being equal, a permanent increase in rental stock/supply results in a permanent increase in the RVR.
- In regional Victoria, a 1 per cent increase in supply leads to a 0.3 percentage point drop in RVRs over the short term and a 0.1 percentage point decline in the longer term. There is a permanent effect on RVRs resulting from rental dwelling supply changes.
- In Melbourne, a 1 per cent increase in real asking rents is associated with a 0.1 percentage point reduction in RVRs, both in the entire time series period and specifically when there is an exogenous market shock like the COVID-19 pandemic (Table 9; see also Table A4, Appendix 2).
- In regional Victoria, a 1 per cent increase in real asking rents also raises RVRs by 0.03 percentage points in the overall analysis period and 0.05 percentage points during a structural break in the time series, which began in July 2017 (Table 10; see also Table A5, Appendix 2). The findings suggest that elevated rental costs in regional areas are more likely to reduce rental property demand in relation to supply, whereas a similar market reaction to rising rents is not visible in metropolitan Melbourne.

Table 11: Summary of short- and long-run effects of independent variables on RVRs

Independent variable, statistically significant effect on dependent variable, RVR	Short-run effect		Long-run effect	
	Melbourne	Regional Vic	Melbourne	Regional Vic
Real asking rent, all houses and units*	**Yes**	**Yes**	**Potentially**	No
Supply stock measure, number of active rental bonds*	**Yes**	**Yes**	**Yes**	**Yes**
Supply flow measure, number of residential building approvals	No	No	No	No
Demand, household count	No	No	No	No
Real disposable income per household	No	No	No	No
Cost of debt, target cash rate	No	No	No	No

*Note: * Indicates statistically significant effect.*

Source: authors.

The alternative supply flow measure of building approvals (ABS 2025b), rental property demand indicators (household count [ABS 2022a, 2024b], socio-economic status of households), real disposable income per household (National Institute of Economic and Industry Research 2024) and the borrowing costs for investor landlords (target cash rate [Reserve Bank of Australia 2025]) were insignificant contributors to RVR variations in both geographies over the analysis time period.

5.3 Modelling spatial variability in RVR equilibrium

Movements in RVRs can be spatially dependent on explanatory factors within a geographic area and/or neighbouring areas at a particular point in time. The spatially variegated RVR dynamics can be unpacked through regression analysis of cross-sectional data for geographic areas of interest, in this case, small area rental markets at a postcode/POA level in the Australian state of Victoria in the month of August 2021. This was amid the numerous lockdowns that occurred in 2020 and 2021, following the onset of the COVID-19 pandemic in Australia.

Spatial autoregressive (SAR) modelling is a spatial econometric technique used to identify a linear relationship between a dependent variable—in this case, RVR—and explanatory variables (e.g. asking rents, supply, demand) to unpack the spatial effects of independent variables on the dependent variable (Anselin 2022). SAR modelling was deployed to address RQ2, specifically:

- How do vacancy rates vary spatially across Melbourne and is there evidence of spatial dependence (connection) in vacancy rates (Victorian POAs)?
- How do RVRs at a POA level change in response to a rental market shock such as the COVID-19 pandemic?

The statistical analysis software STATA was used to run the SAR analysis. The variable definitions and modelling steps are detailed in Appendix 2.

The first step was to explore the spatial variability in the following dependent and independent variables selected for the SAR modelling, based on variables selected in previous research shown earlier in Table 8. These included the following dependent and explanatory variables (see Table A6, Appendix 2, for further details).

The dependent variable was the RVR, purchased from SQM Research (2024b). The independent variables included:

- asking rent for houses and units, purchased from SQM Research (2024b)
- count of private rental stock (PRS), a measure of a point-in-time estimate of supply stock, sourced from the 2021 Census (ABS 2022a)
- number of households in occupied private dwellings as a demand proxy, sourced from the 2021 Census (ABS 2022a)
- number of lower-income households in occupied private dwellings (ABS 2022a); these were households earning between A$1 and A$1,999 per week (A$1–$103,999 per year), therefore mostly below the Melbourne median (2021 = A$1,906 per week or A$99,102 per year)
- number of higher-income households in occupied private dwellings (ABS 2022a); these were households earning A$2,000 per week or more (A$104,000 per year or more), therefore above the Melbourne median (A$1,906 per week or A$99,102 per year)

The selected period was August 2021. It was chosen due to the availability of data variables at a POA spatial scale from two main sources: ABS (2021b, 2022a) and SQM Research (2024b). Further details on these variables are provided in Table A6, Appendix 2. The state of Victoria was unique in having prolonged lockdowns, especially in its capital city of Melbourne, which endured 262 days of lockdown between March 2020 and August 2021 (Macreadie 2022). The 2021 Census was administered in August during these lockdowns. It is acknowledged that this unique temporal setting will have implications for the private rental market dynamics analysed here.

The above variables were compiled for 381 POAs in Victoria, of which 93 per cent had a private rental dwelling stock count of 50 or more on Census night in 2021. Almost 60 per cent of these POAs were in Melbourne, with the balance in regional Victoria (Figure A1, Appendix 2). These data were used to test the relationship between RVRs and factors such as rental market supply, demand and asking rents. The spatial distribution of RVRs and most of the independent variables are shown in Appendix 2 (Figures A2–A11).

5.3.1 Spatial distribution of modelling input variables

There is spatial variability in rental market dynamics within metropolitan Melbourne and further differences between Melbourne and regional Victoria (NHFIC 2022; Pawson, Martin et al. 2021a, 2021b). Melbourne was negatively affected by international border closures during the COVID-19 pandemic, which restricted the entry of international students and other visa holders into the city. This resulted in relatively high average RVRs in the city compared with other capital cities in Australia between 2020 and 2022: 3.3 per cent according to SQM Research (2024a) and 4.4 per cent according to REIA (2024a), as shown in Table 4 of Section 2.3. Postal areas with high RVRs were clustered in Melbourne's inner-city areas around the central business district (CBD) and major universities—examples included Carlton in the inner north, Hawthorn and surrounds in the inner east, and Clayton and Notting Hill in the south-east (shown in Figure A2, Appendix 2). These were areas that also witnessed declining asking rents. Conversely, RVRs fell and remained at low levels in most outer suburban areas of Melbourne and pockets of regional Victoria—areas that also witnessed elevated and rising asking rents (shown in Figures A2 and A7, Appendix 2). A description of the spatial distribution of the dependent variable (RVR) and most of the independent variables is included in Appendix 2, following the maps of Melbourne (Figures A2–A6) and regional Victoria (Figures A7–A11).

5.3.2 Spatial dynamics of RVRs

A generalised spatial two-stage least squares (gs2sls) method was used to fit the SAR model containing the abovementioned variables. This method was adopted in case there were violations to distribution normality, and because it addressed potential endogeneity—that is, when one or multiple independent variables are correlated with the model error term (omitted variable bias) or when the dependent and independent variables jointly determine each other (simultaneity bias) (StataCorp 2023b). The spatial relationship of selected administrative units (POAs) was defined using the contiguity method, whereby the POAs sharing a border are treated as neighbours with similar characteristics (StataCorp 2023b).

The SAR gs2sls model was run in two steps to examine different ways a spatial association may arise between RVRs and independent variables: step 1—the RVR as dependent variable and all other variables discussed above as independent variables, with a spatial lag of RVR specified by the spatial weighting matrix generated (results in Table 12); step 2—the model with an additional spatially lagged error term applied to spatial weight matrix of the dependent variable (RVR) (see Table 13). In both cases, the SAR model estimates showed a statistically significant relationship between RVRs and two out of five included independent variables in August 2021 across the 381 POAs in Victoria (i.e. Wald chi-square and Wald test of spatial term $p = 0.000$).

RVRs were lower in areas with high household counts (demand) and, contrary to expectations from the literature, were higher in areas with larger numbers of high-income households. This reflected the superior financial position of such households to absorb high rental levels during the COVID-19 pandemic period, move out of the metropolitan rental market and/or transition into home ownership with the HomeBuilder grant that spurred demand at the fringes of metropolitan areas (Nygaard and Parkinson 2021). There was a positive statistical spatial association between RVRs and these two variables, which helped to explain the spatial variation in RVRs at a postal area spatial scale.

Broadly speaking, there was little distinction between the two versions of the spatial models (with or without the error lag). The spatial error coefficient was statistically significant, suggesting that additional factors (omitted variables) were relevant in explaining interactions between POAs. However, the substantive (interpretative) impact of this was negligible. The key variable of interest—the lagged dependent variable—was more or less unchanged in the two versions.

The key message in Tables 12 and 13 is that POA-level RVRs are spatially dependent on RVRs in neighbouring POAs. From a housing policy, planning or investment perspective, the implication is that responses to rental market imbalances can also be spatial in nature. This is expressed in the notion of the 'functional housing market' (FHM) as the unit of housing market analysis, rather than administrative designated boundaries. The models also show that the quantum of households and high-income households in neighbouring POAs were important in explaining RVRs in a POA, again raising the role of a FHM, beyond the individual POA boundary, in planning housing supply and markets.

The evidence of spatial dependence indicates that if neighbouring POAs have low RVRs, households will choose to locate to those POAs instead. Alternatively, an increase in rental demand contributes to a low RVR in a POA and in neighbouring POAs. Of course, the modelling results cannot explain how spatial RVR dynamics are impacted by household behaviour in choosing between two different locations.

This outcome is in line with existing literature that reports a rise in demand for rental properties with high asking rents, or 'luxury' properties, during this period, especially in outer suburban and select regional areas (NHFIC 2022; Pawson, Martin et al. 2021a, 2021b). A structural shock, such as the COVID-19 pandemic, would exacerbate the already existing shortage of affordably priced private rental properties due to the influx of higher-income households into these rental markets.

A longer-term trend in Melbourne has been the consistent and growing shortage of affordable private rental property to accommodate demand from households in the bottom two income quintiles between the 2006 and 2021 Census periods (Reynolds, Parkinson et al. 2024). The same trend is evident in regional cities (e.g. Geelong, Bendigo, Ballarat) and the supply–demand gap is worse for households in the lowest-income quintile compared with the second-lowest quintile (Q2). In regional locations, the supply shortages are smaller in magnitude compared with Melbourne and fewer households pay unaffordable rents, especially among Q2 households.

Table 12: SAR model output with gs2sls estimation method: dependent variable applied to spatial weight matrix

Dependent variable, RVR as a fraction	dy/dx	Z	p > z
Independent variables			
Asking rent: houses and units (nominal)	−0.14	−1.77	0.077
Private rental dwelling stock count	0.004	0.83	0.406
Households in occupied private dwelling count	**−0.085**	**−2.28**	**0.022**
Lower-income households	0.363	1.514	0.131
Higher-income households	**0.035**	**2.26**	**0.024**
Constant	**0.231**	**4.02**	**0.000**
Dependent variable (lag applied to spatial weight matrix)			
RVR as a fraction	**0.139**	**6.03**	**0.000**
Spatial autoregressive model with GS2SLS estimates			
Wald chi-square (6) = 113.83; prob > chi-square = **0.000**			
Wald test of spatial terms: chi-square (1) = 36.34; prob > chi-square = **0.0000**			
Number of observations = 381 Victorian POAs, data as at August 2021			

Note: Bold figures are significant at 5 per cent level.

Source: authors.

Table 13: SAR model output with gs2sls estimation method: dependent variable plus error lags applied to spatial weight matrix

Dependent variable, RVR as a fraction	dy/dx	Z	p > z
Independent variables			
Asking rent: houses and units (nominal)	−0.012	−1.77	0.076
Private rental dwelling stock count	0.007	1.48	0.138
Households in occupied private dwelling count	**−0.077**	**−2.33**	**0.020**
Lower-income households	0.030	1.38	0.167
Higher-income households	**0.032**	**2.27**	**0.023**
Constant	**0.216**	**4.20**	**0.000**
Spatial weight matrix applied to dependent variable (RVR)			
RVR	**0.135**	**7.34**	**0.000**
RVR with error lag	**−0.115**	**−2.74**	**0.006**
Spatial autoregressive model with GS2SLS estimates			
Wald chi-square (6) = 277.33; prob > chi-square = **0.000**			
Wald test of spatial terms: chi-square (1) = 53.86; prob > chi-square = **0.0000**			
Number of observations = 381 Victoria POAs, data as at August 2021			

Note: Bold figures are significant at 5 per cent level.

Source: authors.

5.3.3 RVR responses to within and neighbouring area changes

We examined whether the RVR in a particular POA was affected by explanatory factors within that specific area (direct effect) and whether it was impacted by select independent variables in neighbouring areas (indirect effect), with a culmination of both effects contributing to a total spillover effect. The total effects are shown in Table 14 and the more detailed direct and indirect effects are provided in Tables A7 and A8 in Appendix 2 (with dependent variable lag and error lag results, respectively).

Table 14: Total effects from dependent and independent variable spatial interactions

Dependent variable, RVR as a fraction	dy/dx	Z	p > z
Average total effect (within and neighbouring POAs) > model with gs2sls estimation method + dependent variable lag applied to spatial weight matrix			
Asking rent: houses and units (nominal)	−0.055	−1.09	0.274
Private rental dwelling stock count	0.017	1.11	0.268
Households in occupied private dwelling count	−0.343	-1.04	0.298
Lower-income households	0.147	0.84	0.403
Higher-income households	0.141	1.07	0.284
Average total effect (within and neighbouring POAs) > model with gs2sls estimation method + dependent variable lag + error lag applied to spatial weight matrix			
Asking rent: houses and units (nominal)	−0.043	−1.37	0.171
Private rental dwelling stock count	**0.024**	**2.40**	**0.016**
Households in occupied private dwelling count	−0.283	−1.30	0.193
Lower-income households	0.109	0.93	0.354
Higher-income households	0.116	1.32	0.187

Note: Bold figures are significant at 5 per cent level (n = 381 Victoria POAs, data as at August 2021).
Source: authors.

The total spillover effects (direct + indirect effect) show that the amount of private rental dwelling stock within POAs and in neighbouring POAs affected spatial variation in RVRs in August 2024. A 1 per cent increase in private rental stock resulted in RVRs being elevated by 0.024 per cent. This aligns with the expectation that areas with high levels of supply in relation to demand will have larger RVRs. None of the other independent variables had a statistically significant impact on spatial variation in RVRs.

The indirect effect of rental dwelling stock on RVRs was significant in the model fitted using the gs2sls estimation method and with the dependent variables and error lags. This meant that it was rental supply levels in neighbouring POAs that impacted RVR levels in POAs, rather than just supply within that POA. This spatial dependency is indicative of functional rental (housing) markets and the importance of considering functional housing markets in planning housing supply and markets (Table A8, Appendix 2). This indirect effect confirmed the presence of a spillover effect—that is, elevated levels of supply from neighbouring areas contributing to higher RVRs in POAs.

The direct effect of household counts (demand) and number of higher-income households was significant on RVRs within POAs. A 1 per cent increase in the household count resulted in RVRs being lower by 0.09–0.10 per cent within POAs, and a 1 per cent rise in higher-income households meant that RVRs were elevated by 0.4 per cent within POAs. The indirect effect of these variables was insignificant, meaning that rental demand and the presence of higher-income households in neighbouring POAs was not important in explaining the spatial variation in RVRs within POAs (Tables A7 and A8, Appendix 2). The direct effects of change within POAs ignored spillover effects from neighbouring POAs.

5.4 Policy development implications

In the economics discipline, the concept of rental market 'equilibrium' and RVRs as a gauge of signalling a 'balanced' market, has long existed in commercial property markets. These ideas have now been adopted in private residential markets, both in Australia and internationally.

The equilibrium point represents rental property supply broadly meeting rental property demand, with no (or minimal) price responses or rental movements—above general inflation. Theoretically, during these periods there is no market failure and no need for policy intervention to correct suboptimal outcomes.

In this research, Victoria was used as a case study location to test whether the private rental market shows self-correcting attributes over a long period (January 2011 – August 2024). Supply or demand adjusted to imbalances and RVRs tended to revert to its long-term level. Based on the available data, this was also the case following exogenous shocks such as the COVID-19 pandemic and changes to intrastate migration trends. However, additional data points post-COVID-19 would be required to confirm or reject structural shifts after the pandemic.

The tendency to revert was stronger in Melbourne than in regional Victoria, and a marginal decline in the level to which the RVR reverts might also be evident in Melbourne. The latter could reflect technological changes that reduce the required slack but also pick up a more protracted correction period post-COVID-19 (e.g. greater volatility in the correction process). Again, additional post-COVID-19 data points would be necessary to confirm/test this.

While the Melbourne and regional Victorian markets adjusted to periods of 'disequilibrium'—that is, deviation from its longer-term level—there were (and are) signs of poor market outcomes for tenants, such as homelessness (Pawson, Martin et al. 2021a, 2021b), overcrowding (Dockery, Moskos et al. 2022) and a supply–demand mismatch at the lower end of the rental market (Reynolds, Parkinson et al. 2024).

A pre-emptive policy measure would involve the constant monitoring of RVR deviations from a long-term equilibrium perspective, rather than a short-term focus on RVR threshold levels (2%–3%), which can be used as a market signal to change rental property supply or adjust rents. The monitoring of RVRs as market self-correcting properties must be supplemented with an understanding of broader social phenomenon, such as social and cultural changes in housing consumption.

There is a spatial dependency in rental market dynamics, reflected in RVRs at a postal area scale being impacted by rental dwelling stock levels in neighbouring POAs in Victoria. Higher levels of supply in neighbouring POAs can result in elevated levels of RVRs within POAs, and lower levels of supply can result in lower RVRs.

This explains why rental market actors, such as real estate agents, relay market signals when setting or adjusting rental levels on behalf of investor landlords, referring to neighbouring areas as 'popular among tenants' (high demand) or to a 'shortage of properties close by' (low supply). This is how wider rental market area dynamics affect supply, demand, rental levels and RVRs in local areas.

Rental market equilibrium or disequilibrium in neighbouring areas affects nearby POAs and vice versa. The interpretation of RVRs at a geographically aggregated scale does not allow for this nuanced understanding of spatial relativities in rental market dynamics at a local and regional scale.

Broader functional housing markets should form the basis of rental market analysis and policy intervention, rather than commonly used administrative units (e.g. postal areas, SA2s, SA3s, SA4s—i.e. ABS, ASGS and non-ASGS boundaries). This connects with earlier research that also calls for increased responsiveness to market signals (Nygaard, van den Nouwelant et al. 2022).

6. The role of Australian RVRs in policy and decision-making

- **In Australia, rental vacancy rate (RVR) information is used by government, financial institutions, advocacy and lobby groups, consultants, real estate agents, academics and the media.**
- **The Australian Government and state governments mainly use the RVR as an indicator of housing market conditions or for forecasting purposes.**
- **The RVR is not a trigger for any specific government policy; however, it is viewed by government and non-government organisations as a key housing market indicator and, in conjunction with other measures, provides crucial information for housing policy formulation.**
- **Some state governments use, or plan to use, the RVR in more specific ways, such as in relation to monitoring short-term rental accommodation.**
- **Property developers and investors use the RVR in their decisions about where to develop and invest in housing.**
- **Given its many uses and significance, the RVR must be accurate and consistent, with transparent methodology.**

This chapter addresses the third research question: *What role do RVRs, and their methodological assumptions, play in public policy and housing supply decisions in different market segments and locations?* The chapter reviews how Australian RVRs are used in policy and decision-making by both government and non-government organisations. The discussion includes areas in which RVRs are actively being used to influence policy and decision-making, as well as areas in which there is a plan or expressed desire to use RVRs in some way. Information in this chapter is drawn from a combination of desktop review and interview data. See Section 1.3 for information about the interviews and the participants.

First, based on a desktop review, we present an overview of RVR users and which data producers they use. Second, drawing from interviews with RVR users, we explore users' knowledge of the RVR measure. Third, drawing from interviews with users *and* producers, we provide more detail on how select government and non-government organisations use, or plan to use, the RVR in their policy and decision-making.

6.1 Overview of RVR users

Examples of the types of organisations that reference RVR data in their reports, publications, speeches, policy documents and government submissions are shown in Table 15. The RVR measure was commonly mentioned in relation to the supply–demand dynamics of rental markets and rental movements (e.g. Agarwal, Gao et al. 2023; Saunders and Tulip 2019); in monetary-fiscal, planning and housing policy settings (e.g. Australian Treasury 2024; Department of Planning, Housing and Infrastructure [DPHI] 2024); and in relation to rental market governance and regulation (e.g. Deloitte Access Economics 2021). It was used by the property industry to lobby for policy levers to increase private rental property supply, such as build-to-rent (BTR) and purpose-built student accommodation (PBSA) (e.g. Charter Keck Cramer 2024; Property Council of Australia [PCA] 2022), and by the social housing sector to advocate for further supply of social and affordable housing (e.g. CHIA NSW 2024; PowerHousing Australia 2023). Media organisations and journalists frequently draw upon it in their commentary on rental market conditions (e.g. Lenaghan 2023; Malo 2024).

Table 15: RVR data producers and users

RVR data producer	RVR user type	Examples of recent use of RVR data
Real Estate Institute of Australia (REIA) and state-based institutes	Academic researchers	Gurran and Phibbs (2017); Thackway, Randolph et al. (2024)
	Consultants and research organisations	Deloitte Access Economics (2021) for Qld Government
	Financial institutions	Commonwealth Bank of Australia (2024)
	Government and Reserve Bank of Australia	Agarwal, Gao et al. (2023); Homes Victoria (2024b); Hunter (2024); NHSAC (2024); Saunders and Tulip (2019)
	Industry lobby groups	REIA (2024b)
	Real estate agencies	CBRE (2024); Knight Frank (2023)
	Tenants unions	Tenants' Union Tasmania (2024)
SQM Research Pty Ltd	Academic researchers	Buckle, Gurran et al. (2020); Pawson, Clarke et al. (2024)
	Consultants, research organisations and investment advisors	AHURI (2022); Charter Keck Cramer (2024); Longview – PEXA (2023); Matusik Property Insights (2022); Prosper (2024); Urbis (2015); Yardney (2024)
	Financial institutions	Hassan (2024) for Westpac
	Government	DPHI (2024); Homes Tasmania (2024)
	Industry lobby groups	Housing Industry Association (2023); PCA (2022)
	Media/journalists	Malo (2024); Petty (2022); Sweeney (2023a)
	Not-for-profit organisations	Anglicare (2024); Azize (2023); Shelter (2016)
	Real estate agencies	CBRE (2024); JLL (2024a, 2024b); Knight Frank (2023)
RP Data Pty Ltd, trading as CoreLogic Asia Pacific (now Cotality)	Financial institutions	ANZ and CoreLogic (2023)
	Government	Australian Treasury (2024); Interim National Housing Supply and Affordability Council (2023); NHFIC (2023)
	Lobby groups and professional associations representing public and private property industry	PowerHousing Australia (2023); REIQ (2023); Urban Development Institute of Australia (2024)
	Media-journalists	Lenaghan (2023)
	Real estate agencies	CBRE (2024)
REA Group Ltd – PropTrack	Academic researchers	Reynolds, Parkinson et al. (2024)
	Lobby groups and professional associations representing public housing sector	CHIA NSW (2024)
	Media/journalists	Ainsworth (2023)
Domain Group	Not-for-profit organisations	Anglicare (2023)
	Media/journalists	Kehoe, Sweeney et al. (2023); Sweeney (2023b)

Source: authors.

6.2 Knowledge of RVRs among users

The research participants were all users of RVR data. The interviews revealed that most had a good working knowledge of RVR methodologies, assumptions and available data. They were often aware of the limitations of particular methodologies, and some were knowledgeable about RVR measures internationally. In this section, all quotations are anonymous. The aim is to illustrate the broad level of understanding held by professionals using the RVR—not to compare organisations' knowledge or knowledge gaps. It should be acknowledged that one person's understanding may not be representative of their entire organisation.

Some of the details of RVR methodology were not always made clear to users:

> *Participant: One of the issues with [producer] is it's not entirely clear … how [producer] deals with terraces and townhouses. I think [producer] might put them in houses rather than units, but I'm not totally sure on that.*
>
> *Interviewer: Are you aware of the methodology used by both these organisations to collect the data?*
>
> *Participant: At a pretty high level, yes, but I think we've taken it as given as not being the experts in this data … So yes, I think we're across the high level of how it works. How exactly they do it and if they're weighting and things like that, is not something we've looked into recently.*

While users were generally knowledgeable about the methodologies of the RVR producer or provider they used, they were not always sure which provider was 'best':

> *Interviewer: Do you think [producer] have given you enough information about their methodology? Do you understand enough about its limitations?*
>
> *Participant: Yes, because I had to ask some—yeah, to make sure that it actually met our needs and was appropriate mapping. So, I'm confident that the methodology is probably the best available, but I'm sure there could be better options. But yeah, it's what they're giving us is usable and useful now.*

While uncertain which producer had the 'best' data, some users were knowledgeable about the general limitations of the RVR:

> *Participant: we understand there's geographical constraint. We know that it's seasonal variants. We know when we look at it that it can be—on its own, it isn't the whole measure of the market … We know different providers use different methodologies. We look at the methodologies. I wouldn't say one provider is better than the other because I haven't done the diligence to analyse them and then do the research myself to figure that out.*

Another RVR user was knowledgeable about the limitations of capturing BTR stock:

> *Participant: With build-to-rent starting to take off, I think it's going to be harder and harder to capture a true—I think the way [producer] is capturing it and the way we've traditionally caught it is indicative of the structure of the market, and it was a fair estimation. It may not have been exactly right, and it may have underestimated the vacancy, but it showed the trends, and it showed what is happening in the market.*

Other users also discussed the limitations of different temporal scales in RVR data:

> *Participant: Smaller the better just for everything. Love monthly over quarterly. There's no point, I guess, going any more granular than monthly because week-on-week is going to be too noisy.*

> *Participant: It's always the longer time series the better. Fifteen years is almost like the bare minimum for a lot of data sets. If something is five years you still use it because it's better than nothing but it's really not that useful. Particularly because 2020, 2021 and 2022 are all crazy … you have to push aside.*

Some users commented that their organisation did not really examine vacancy rates in other countries. However, a couple of users demonstrated their knowledge of international vacancy rates and how they compared to Australia:

> *Participant: We do try to compare Australia's housing market to others. I think there's differences in the dynamic of Australian rentals versus others that make it difficult to compare though. For example, in the US build-to-rent is every rental … an apartment building's either all rentals or it's all owners. It's not so fragmented like we have here so it does make it quite difficult to get the differences in how those dynamics flow through. Then we know that the landlord–tenant legal balances of power are also quite different in other countries.*

6.3 RVR usage in policy and decision-making

This section reports on *how* various sectors and organisations use the RVR. Our insights are shaped by the number of organisations we were able to obtain interviews with, and were funded for, during the project. The response from one organisation may not necessarily reflect how other organisations in that sector use or understand the RVR. Producers of the RVR also provided summaries of the different sectors that purchase or draw upon their data.

6.3.1 Government

Multiple RVR producers stated that Australian Government departments used their data. One producer specified that state and local government had shown interest in their data.

Australian Government staff members commented on the importance of the RVR: 'Yes, the price of shelter, which is rents, and the vacancy rate, I would always look at those two together as top-tier economic or housing system indicators' (Australian Government body/department participant). Staff from this department indicated that the RVR is used in macroeconomic modelling related to housing supply and affordability. The RVR is also used to 'understand and measure the tightness of the rental market and understand the trends and the outlook for the rental market'. However, they stated that the RVR was *not* a trigger for any policies: 'From a Commonwealth perspective there is no mechanical or direct link between any policy settings or levers and the vacancy rate' (Australian Government body/department participant).

Another participant from an Australian Government body/department provided a similar answer, describing the RVR as a 'good holistic measure' that was 'really useful to assess for tightness in the rental market'. Multiple parts of this organisation used the RVR, and they preferred the longer time series for modelling purposes:

> *The longer time series is really useful from the modelling perspective. It allows our models to go back further and to develop richer relationships between economic variables … the more timely, more recent data [are] really useful for looking at how tight the rental market is now and comparing that to recent history. (Australian Government body/department participant)*

A representative from the Australian Bureau of Statistics (ABS), another government institution, stated that the RVR was used on a limited basis and mainly for data validation. The ABS has a unique position within this project, as it is both a government institution and an independent statutory authority. Its purpose is 'to inform Australia's important decisions by delivering relevant, trusted and objective data, statistics and insights'. As 'Australia's national statistical agency', the ABS provides 'trusted official statistics on a wide range of economic, social, population and environmental matters of importance to Australia' (ABS 2024a).

As outlined in Chapter 7 (Section 7.2), in numerous other countries it is the role of the national statistics agency to collect and report on vacancy rate data. The ABS does not perform this role. An ABS participant stated that their section of the organisation used RVRs, but only in a limited way. This participant indicated that, to the best of their knowledge, the consumer price index (CPI) section of the ABS was the only other area of the organisation that used RVR data, however, it was only used internally and was not included in publications:

> *The CPI includes a series on housing, which includes rents. Rental vacancy rates data are used for data validation purposes only and are not included in monthly or quarterly CPI publications. (ABS participant)*

The Australian Government appears to use the RVR as an indicator or barometer of broad rental market or housing system conditions. This usage is similar to the United States, where the RVR is 'used by the Federal Government and economic forecasters to gauge the current economic climate' (US Census Bureau 2024b). The RVR is also used for modelling housing market dynamics; however, on its own, it does not trigger any *specific* national-level policy decisions.

State government participants indicated that the RVR could contribute to more specific actions. The NSW rental commissioner described the RVR 'as one of five key metrics to assess the [state's] rental market health', alongside bond holdings, median weekly rents, investor lending and rental demand. Although the RVR was just one component, together these metrics were key in formulating policy recommendations:

> *What's the health of the rental market? Where's the areas of rental stress that help us to guide policy recommendations, that help us to target interventions and help us to advise government. (NSW rental commissioner)*

The NSW Department of Planning also uses the RVR as an indicator of market conditions in its advice to policy makers: 'Our Economics Team produce a quarterly report that goes out to our policy makers and ministers, about market conditions. This includes vacancy analysis at state and regional levels' (NSW Department of Planning participant). This participant stated that stakeholders from other departments, such as 'Transport, Sydney Water, Education, Health', had an interest in the publications that the Department of Planning created using RVR data. They spoke of the need for a 'more consolidated vacancy rate' to do more specific work with the RVR, such as calculating the long-term rental stock being moved into the short-term rental accommodation (STRA) sector in Byron Bay.

A participant from Homes Tasmania indicated that the RVR has multiple uses in their operations. Similar to the usage at the state level in New South Wales, Homes Tasmania uses the RVR as part of a 'suite of information' about the state of the rental market, along with a more specialised usage relating to STRA:

> *So, that's a keen interest of ours, matching that [short stay accommodation data] with vacancy rate data to see about what's the trends happening in Tasmania about particular residences, the moving between short stay and longer-term private rental. (Homes Tasmania participant)*

This participant also indicated that RVR data would be used in Homes Tasmania's plans for creating housing supply in particular areas:

> *[The RVR] would give us the demand data that we need on what improvements we can make, and what new supply we're building and where we need to build it and where the demand is. (Homes Tasmania participant)*

At the state government level, we did not find any examples of specific policies being triggered by the RVR. However, we learned of a proposal from the NSW Greens to use the RVR as a trigger for regulating STRA. Tamara Smith, the member for Ballina, mentioned on her website that the Greens wanted to stop 'non-hosted short-term letting of houses built after 1 January 2018 in an LGA until the vacancy rate hits 3%' (Smith 2025). Whether in planning or in practice, it appears that RVR data play a key role for state governments who are concerned about STRA and the consequent loss of long-term rental stock.

6.3.2 The private sector

Within the private sector, at least two RVR producers indicated that banks and other financial institutions were interested in their data: 'the economics teams of the banks, for example, would be much more interested in the trends and the time series and how market conditions are affecting supply' (RVR producer).

A participant from a major bank indicated that they examined RVR data for several reasons:

> *For CPI we find that rental vacancy rates and the rental inflation component within the consumer price index do correlate quite nicely. We use that as an input into our forecast … the more we can understand about price changes, the more we're able to make accurate calls on that basis. (Major bank participant)*

This participant also considered rental vacancy in relation to future rental growth, 'household financial stability' and future investor lending prospects:

> *We also look at it in terms of the, maybe, potential appetite for investors to come into the housing lending market as well. So, the lower you've got a vacancy rate in a certain city, the more likely you are to see investment lending in that city. (Major bank participant)*

Another private sector industry with interest in RVR data is large-scale property development and investment. Multiple RVR producers mentioned that property developers used their data to ascertain development opportunities, particularly in relation to the BTR sector:

> *Build-to-rent are interested because they see it as an emerging market in Australia, probably because of the emerging political conversation around different rental providers or the need to introduce different rental providers … At the end of the day, they're interested in appetite for their product. If they're very tight rental vacancies, a high renting population, rising rents, then they're going to be interested in—versus the establishment cost of their product, they're just interested in assessing what kind of return they can get. (RVR producer)*

According to the participant from a real estate services firm, BTR developers and institutional investors regularly sought information about the RVR:

> *Definitely the large institutional investors; a lot of the major listed property companies; some of the foreign entities that have entered build-to-rent, both the operators and the investors. A lot of the investors, particularly offshore investors, have been hammering us for information on stuff. (Real estate services firm participant)*

The real estate services firm published RVR data, but it did not produce them. This participant highlighted the need for 'more accurate numbers' for the investors and said that RVR data had influenced the decisions of investors:

> *I think, definitely, it's driven decisions, and it's just that the data on vacancy and rents are a big part of what's driving investment into build-to-rent residential, and the underlying shortage of rental stock. (Real estate services firm participant)*

Real estate agents were another group that used RVR data (see Table 15). Two RVR producers indicated that real estate agents were among their clients:

> *We have a broad range of people who rely on just understanding the weekly number of listings in their local market. That would probably be clients that are more like real estate agents. (RVR producer)*

The extent to which small-scale private landlords use—or have access to—comprehensive RVR data was not established in this research. Real estate agencies may have funds for data subscriptions that individual private landlords do not.

6.3.3 Advocacy groups

Like many housing advocacy groups, the Tenants' Union of NSW uses the RVR in its efforts to progress housing reform. The Tenants' Union of NSW participant contended that the RVR is a 'handy shorthand' for communicating rental market conditions:

> *Most people feel like they have a sense of what it means to indicate a better or worse functioning rental system and that the lower the vacancy rate, the tighter the market, the harder it is for people to find a home is a well understood route. (Tenants' Union of NSW participant)*

The Tenants' Union of NSW uses the RVR to convey 'why rental regulation is important'. However, the organisation has also done its own calculations to create a model of a natural vacancy rate, which it included in its Submission on the national housing and homelessness plan issues paper (Tenants' Union of NSW 2023):

> *It started out as trying to add a bit more nuance to this idea of 3 per cent being this natural equilibrium. It was testing that hypothesis but also trying to add a geographic element to it. So, understanding that 3 per cent isn't a nationwide figure and we expect that … there to be faster turnaround in some areas for whatever economic reasons. So, trying to drill down and identify what the quote-unquote 'natural vacancy rates' were at some geographic level. (Tenants' Union of NSW participant)*

The model uses asking rent, vacancy rates and income levels across Australian postcodes over 10 years. Another component of the model is calculating housing shortfall, or 'the estimated additional housing required to stop real rent increases' (Tenants' Union of NSW 2023: 24). The Tenants' Union's model differs from many others in that it is designed with tenants in mind, rather than property investors and the real estate industry.

6.4 Policy development implications

A broad range of organisations use the RVR across multiple sectors in Australia. The participants we interviewed had a solid knowledge of RVR data approaches and underlying assumptions, but there were some gaps relating to the methodological opacity of RVR measures, as discussed in Chapter 3.

In terms of how the RVR was, is and could be used, differences were observed between sectors and between the levels of government. Australian Government departments and bodies tend to use the RVR for forecasting and modelling housing market dynamics. State government departments also use the RVR for modelling, and for projects examining the prevalence of STRA and supply of social housing in specific locations. The private sector, such as property developers and investors, use the RVR to drive decisions about where to develop and invest, including the BTR market segment.

Our interviews reveal that the private sector uses RVR data to shape financial investment decisions, and that it plays both a direct and indirect role in government decision-making. Our interviews confirmed that the RVR does not trigger any specific policy settings or levers at the national level, but that government representatives regard it as an important measure. Australian Government participants called it a 'top-tier' indicator alongside rents, and the NSW rental commissioner named it as 'one of five key metrics to assess rental market health'.

The importance that government places on the RVR means that it is vital for the measure to be accurate and consistent, with transparent methodology. If the RVR is to be effective as an indicator, policy attention should be paid to the numerous limitations and challenges of the current RVRs outlined in Chapter 3.

7. Insights from international approaches to housing vacancy

- **Insights into the methodology, analysis and use of RVR data can be gained by examining international comparator countries, such as Ireland, Canada, the United States, Switzerland and Japan.**
- **Unlike Australia, countries such as England, France and Germany use unoccupied dwellings rather than rental vacancy as the basis of their 'vacancy rate'.**
- **Vacancy rate data are collected and/or published by government departments in the United States, Canada, Singapore and many other countries, unlike in Australia.**
- **Internationally, a variety of methodologies are used to gather vacancy rate data; however, none are without flaws. Such data are used to inform policy, most commonly to reduce the number of unoccupied dwellings.**
- **Australia could consider adapting and adopting various approaches to vacancy rate collection used internationally.**

This chapter responds to the fourth research question: *What insights can be learned from RVR methodologies used in other countries?* A range of countries were examined for insights on the collection, analysis and use of RVR data, and possible application of these approaches in Australia. Academic literature, grey literature and (where possible) government websites were examined, but the review process was neither systematic nor comprehensive. Consequently, this chapter highlights notable findings from a selection of countries, focusing on key differences and elements that could be considered for adaptation in Australia.

7.1 What is vacant: different measures

It was surprising to discover that other countries are more concerned with the overall number of unoccupied dwellings than with the rental vacancy rate. That is, rather than enumerate the number of vacant dwellings currently available to rent, other countries count the number of dwellings that are unoccupied (and may or may not be available to rent or buy). Other countries often refer to the latter as the 'vacancy rate', which caused some confusion for the research team in reviewing the literature. For clarity, in this report, we refer to this measure as 'unoccupied dwellings' (UDs).

Further, some countries count the number of vacant dwellings currently available to buy—that is, they focus on 'frictional' (short-term) vacancy rather than 'structural' (long-term) vacancy that is not limited to the rental sector. In some cases, this may be because the rental sector is a less significant form of tenure than ownership. Table 16 illustrates the measures found in relation to different countries.

Table 16: Different measures of housing vacancy

Measure	Definition	Type of vacancy	Examples of countries
Rental vacancy rate (RVR)	The number of vacant dwellings currently available to rent, compared to total rental stock	Short-term or frictional vacancy	Aotearoa New Zealand; Ireland; Canada; United States; Switzerland; Japan
Ownership vacancy rate	The number of vacant dwellings currently available to buy, compared to total housing stock	Short-term or frictional vacancy	Switzerland; Italy; US; Japan
Unoccupied dwellings	The number of dwellings that are unoccupied (may or may not be available to rent or sell), compared to total housing stock	Long-term or structural vacancy	England; France; Germany; Finland; Denmark; Italy; United States; Ireland; Japan; Singapore

Source: Canada Mortgage and Housing Corporation (2024); Department of Housing, Local Government and Heritage (2023); Department for Levelling Up, Housing and Communities (2023); Destatis (2021); Gentili and Hoekstra (2019); Hurard and Huault (2024); Huuhka (2016); Jensen (2017); Jones (2023); McCartney (2017); Ministry of Housing, Communities and Local Government (2024); Singapore Government Urban Redevelopment Authority (2024a, 2024b); Statistics Bureau of Japan (2025); US Census Bureau (2024a, 2024b).

In Australia, as well as the RVR, there is a measure of UDs taken every five years as part of the Census of Population and Housing. This records how many dwellings were unoccupied on Census night, a point-in-time count that may encompass holiday houses or houses normally occupied but vacant on Census night (see ABS 2021a). The reporting of this figure as simply 'empty houses' can underplay the nuance of the data (see Baker, Beer et al. 2022). The varying methodologies for calculating rental vacancy, ownership vacancy and UDs are discussed in Section 7.3.

7.2 Who measures vacancy: producers

In most of the countries examined, vacancy rate data (including the three different measures listed in Table 16) are produced by government departments, statistics agencies or government-associated bodies. For example:

- in the US, vacancy rates for owned and rented dwellings are reported by the US Census Bureau
- in Canada the RVR is reported by the Canada Mortgage and Housing Corporation (CMHC) (a Crown corporation)
- in Germany, UD data are collected by Statistisches Bundesamt (Federal Statistical Office)
- in Singapore, UD data are collected by the government's Urban Redevelopment Authority
- in Japan, results from the five-yearly Housing and Land Survey capturing dwelling occupancy status are reported by the Statistics Bureau of Japan.

In most cases, the production of vacancy rate data by government means that such data are publicly available and released on a regular basis. Australia appears to be different, with a variety of private sector data producers (see Chapter 2) and no public sector data producers, except for the ABS, which produces the UD count on Census night (this does not include dwelling tenure).

Aotearoa New Zealand—similar to Australia in many respects—also lacks a regular and thorough reporting of the RVR. The New Zealand Institute of Economic Research produced a publicly available report that estimates the RVR for the Canterbury region using rental bond board data (Eaqub and Loke 2012). Jones (2023) produces a blog that reports on RVR trends, drawing upon listings from Aotearoa New Zealand's main real estate advertising/listings website, Trade Me, and rental bond board data. CoreLogic has an Aotearoa New Zealand branch, but it does not appear to make RVR data available to the public.

7.3 Where, when and how vacancy is measured

7.3.1 Methods

The methods used to measure the vacancy rate (whether RVR, ownership vacancy or UDs) vary in different countries. As discussed in Chapter 2, several RVR data producers in Australia use a listings method, in which the number of properties advertised on one or more rental listings platforms is compared against government (i.e. census) data on total rental stock. This method is also used to calculate the RVR in Ireland (McCartney 2017) and Aotearoa New Zealand (Jones 2023).

A different method is used in Canada. The CHMC conducts annual surveys, but data are only collected from private rental buildings containing at least three rental units (CMHC 2024). This method omits rented detached houses, which may reflect the predominance of rental apartment buildings in Canada.

Switzerland and the United States measure rental and ownership vacancy. In Switzerland, the annual 'empty dwellings census' counts dwellings that are empty and intended to be sold or rented on 1 June (Federal Statistical Office 2024a). The vacancy rate is constructed by comparing this figure against total registered housing stock (Federal Statistical Office 2024b).

In the US, rental and ownership vacancy is measured through the Current Population Survey and Housing Vacancy Survey, which are conducted by the Census Bureau using a probability selected sample of about 72,000 housing units, both occupied and vacant (US Census Bureau 2024a). Households are surveyed every month for four months, are then not surveyed for eight months, then are surveyed for another four months before exiting the sample. Survey interviews are conducted by Census Bureau officials (US Census Bureau 2024a).

England has a similar annual survey, the English Housing Survey, which uses a random sample of addresses to interview approximately 13,000 households and physically survey a selection of households as well as vacant properties (Department for Levelling Up, Housing and Communities 2024). However, a tenure or time distinction is not made for vacancies, as properties 'in between lets and those that are vacant for a longer period are both classified as vacant' (Department for Levelling Up, Housing and Communities 2023: 13).

A variety of methods are also used to measure UDs. In Finland, data are collected at a local level when local register offices are notified of people's change of address, and when municipal building inspection authorities report information on new or changed buildings (Huuhka 2016). Both France and Denmark draw on national datasets about land and property ownership to infer inoccupancy (Boutchenik and Mathieu 2023: 10; Jensen 2017). Ireland uses three data sources, all with different methodologies and definitions of vacancy: the census, an electronic register of addresses and local property tax returns (Department of Housing, Local Government and Heritage 2023: 26). In Singapore, the vacancy rate is calculated using 'utility consumption levels of all completed private residential units' (Singapore Government Urban Redevelopment Authority 2024b).[10]

7.3.2 Data issues and considerations

There are inevitably gaps or uncertainties in data collection across different country contexts. This is true even within countries: for example, Ireland has three methods to measure vacancy, all of which produce different results (Department of Housing, Local Government and Heritage 2023: 26).

There are three main issues to consider in comparing vacancy rates: a) definitional, b) temporal and c) spatial.

Definitional considerations

What counts as vacant or unoccupied? In Europe, dwellings that are used but not regularly inhabited, such as holiday houses and second homes, may be mistakenly counted as 'vacant' (Gentili and Hoekstra 2019; Hurard and Huault 2024; Huuhka 2016; Jensen 2017). In a summary of European vacancy rates, Gentili and Hoekstra (2019: 432) state that it is difficult to make comparisons between countries because of the issue of second homes:

> *Greece, Italy, Spain, Ireland and Malta include temporarily occupied dwellings, such as holiday homes, in the number of vacant dwellings. However, France, Germany, Sweden, Finland, Denmark, the Netherlands, the United Kingdom and Portugal do not include second or holiday homes in their official definitions.*

Temporal considerations

The comparability of data sources may also be impacted by differing decisions on how long a dwelling should be empty before being considered vacant. In English housing data collected from council tax statistics (separate from the English Housing Survey discussed above), a distinction is made between all vacant properties and 'long-term vacants', which have been vacant for more than six months (Ministry of Housing, Communities and Local Government 2024). In Switzerland, dwellings are declared vacant if they have been available to rent or purchase for three months or more before the survey date (Thalmann 2012). In Germany, there are two government data sources with different criteria: the microcensus records vacancy if the property is assessed by survey takers as unoccupied at the time of survey, while the census records a dwelling as vacant based on the owner's statement (Destatis 2021). French data aim to differentiate between frictional (short-term) and structural (long-term) vacancy because it is the latter that is regarded as potentially problematic (Hurard and Huault 2024: 1).

10 This information is available from this source when the data tables are downloaded in CSV, then see 'Glossary of Terms' sheet.

Spatial considerations

Geographic scale is important. A national vacancy rate may not be the most informative, due to the extent of variation between locations. For example, Kholodilin (2017: 323) highlights that, in the German housing market, 'areas with excess supply (typically, countryside and small towns) may coexist with … areas with extreme excess demand (large cities)'. Analysis in France found that dwelling location, size and age correlates with vacancy (Boutchenik and Mathieu 2023). Different countries segment their vacancy by geographic scale depending on size and population distribution. For example, Singapore segments its vacancy rate into three regions: Core Central, Rest of Central and Outside Central (Singapore Government Urban Redevelopment Authority 2024a). The level of geographic segmentation may also relate to each country's particular uses of vacancy rates (see next section).

While a variety of methodologies are used for calculating vacancy rates, none are without flaws in terms of accuracy and nuance, whether one is interested in RVRs, ownership vacancy or UDs.

7.4 Why measure vacancy: uses and responses

7.4.1 Reducing unoccupied dwellings

A major use of vacancy rate data appears to be assisting governments to reduce the number of UDs. The aim of reducing UDs usually stems from two concerns: the character of neighbourhoods and towns being negatively affected by numerous empty houses, and the wasted potential of dwellings in contexts where people need to be housed.

According to the OECD (2022: 134, note 30), taxes on vacant dwellings have been implemented in Oakland (United States), Vancouver (Canada), Victoria (Australia) and multiple areas of France. Besides taxing vacancy, many countries have developed other policies or programs to reduce the rate of UDs. For example, Denmark established a national policy in 2010 that enables municipalities to demolish, acquire or renovate empty houses (Jensen 2017). France introduced a national plan for vacant housing in 2021, which includes incentivising property owners to lease out their vacant dwellings to renters (Boutchenik and Mathieu 2023: 10). Ireland has a Vacant Homes Action Plan for 2023–26, which includes measures such as retrofitting vacant homes to be more energy efficient and enabling vacant properties to be compulsorily purchased by local authorities (Department of Housing, Local Government and Heritage 2023). Japan has a Vacant Houses Special Measures Act, enacted in 2015, that 'deal[s] with vacant houses that have a negative impact on local safety, sanitation, the living environment, or the scenery' (Chie 2022).

7.4.2 Other uses and potential uses

Besides reducing the number of UDs, the vacancy rate—both UDs and short-term vacancy—may be monitored for other reasons. The US Census Bureau (2024b) states that its vacancy rate data (rental and ownership) 'are used extensively by public and private sector organizations to evaluate the need for new housing programs and initiatives', and that the RVR is 'used by the Federal Government and economic forecasters to gauge the current economic climate'. Here, the vacancy rate is used as an indicator rather than directly influencing policy, although the suggestion is that it may influence supply decisions for the public and private sector.

In Germany, the vacancy rate has a direct impact on rental policy, as a low vacancy rate in a municipality is one of four criteria signalling a 'tight market', prompting the introduction of rent control in that area (Breidenbach, Eilers et al. 2022: 2). Usually, this vacancy rate refers to UDs (Heumann 2019).

In Japan, a potential use (rather than a current use) for vacancy rate data has been highlighted by Chie (2022), who notes the detrimental impact of UDs during natural disasters. Empty dwellings may damage other buildings when they collapse or create confusion when authorities try to find all residents in the disaster zone. Therefore, Chie (2022) argues that vacant houses need to be identified easily and incorporated into local disaster management and prevention plans.

7.5 Policy development implications

This overview of international vacancy rates has some implications for Australia's collection of vacancy rate data.

The government as vacancy rate producer

Australia appears to be unusual in relying on private data companies to produce vacancy rate data. Having access to government-produced vacancy rate data would put Australia on par with other countries in terms of accessibility and transparency.

Further attention to unoccupied dwellings

In Australia, there has been minimal government attention paid to measuring and responding to UDs (beyond the point-in-time Census count). The ABS has released some experimental statistics in their *Administrative data snapshot of population and housing* (ABS 2023b), which might lead to future collation of more detailed information about, and enumeration of, UDs. The not-for-profit organisation Prosper has used water usage data to determine the extent of UDs in Melbourne since 2007 (Prosper 2024). More recently, there has been some media attention from *ABC News* regarding the number of uninhabited and derelict properties in urban areas (Janda 2024).

The significant amount of policy attention paid to UDs by other countries suggests that this is an area that Australia could look to for future policy development, especially in the context of national housing shortages. There is also a possibility that Australia could face similar issues to Japan in relation to empty homes and natural disasters. Certainly, in recent years, bushfires and floods have occurred in areas where holiday houses and short-term rentals are prevalent (see e.g. Kelly 2022; Premier of Victoria 2016).

In the interviews, one RVR producer contended that it would be difficult for their organisation to track UDs through their current methodology:

> *No … we haven't really even looked at vacant properties. I don't even know how we would because I think by nature, part of the data we collect is observed through a sale listing. There are properties that are just held vacant for decades. We might not even have visibility of it. (RVR producer)*

In line with the work done by Prosper in Melbourne, there have been efforts in other areas of Australia to track UDs through water or other utilities consumption. For example, the NSW Department of Planning attempted to use water connection data to infer overall vacancy. This approach presented data privacy issues; however, producing a measure of overall vacancy remains 'part of a longer-term agenda' (NSW Department of Planning participant).

The ABS has done similar work with utilities consumption, but not systematically. The resulting data were 'administrative experimental estimates' forged through 'one-off funding', the ABS interviewee stated:

> *There are no current plans, or funding, for the product to continue on an ongoing basis. However, the ABS is considering how it might release similar data in the future.*

Other organisations certainly indicated interest in understanding the rate of UDs. The Tenants' Union of NSW noted that having such knowledge would benefit their advocacy efforts:

> *Having that extra nuance of the different levels would be useful at a policy level for things like, can we better utilise what are currently holiday lets, currently empty—which ones are actually likely to come back? … there'll be different results from different policy interventions, but at the moment, we've certainly got a big lack of clarity around why things are empty or why things are underutilised. (Tenants' Union of NSW participant)*

The interviewees from the major bank also stated that understanding UDs would be of interest:

> *Yes, that would definitely be of interest. Because that goes to the housing supply issues and how housing supply is being affected by differences in demographics, so that's something that would be really interesting. Because part of the reason housing prices are going up in certain places is because there's not enough homes for the amount of people who want to buy them or rent them, but is that because there's not enough homes or is that because a bunch of people have holiday houses or is it because a bunch of people have empty rentals? (Major bank participant)*

There is growing interest in obtaining a clearer picture of UDs across Australia. Using utilities consumption data to infer inoccupancy is an option. Internationally, this is the vacancy rate methodology used in Singapore. Use of these data, however, could raise privacy issues. A coordinated effort to collect utilities consumption data for each state and territory across Australia would need to be attentive to state and territory privacy regulations and consider how the results are reported.

8. Policy development options

As with any metric, a comprehensive understanding of the methodological approach used to produce a private rental vacancy rate (RVR) measure is necessary to inform robust and evidence-based decisions. This includes data sources, strengths, limitations and challenges. The overarching aim of this research was to critically assess the Australian RVR measure, thereby giving policy makers a better grasp of this important, frequently cited, but often unquestioned, housing market signal.

The report has, for the first time, documented and compared the methodologies and data sources that produce the measure and how these differ between the commercial data producers that provide RVR information for a broad range of organisations, including policy makers.

The report has also provided an alternative approach, using publicly collected rental bond data, for creating the RVR measure. This approach tracks well compared with other sources, albeit with challenges for a national approach.

The quantitative modelling showed the temporal variability of RVRs around an equilibrium level in Melbourne and regional Victoria, where explanatory factors like supply, demand and rents driving RVR movements differed in the short and long term, and that these dynamics differed between urban and regional contexts. Analysis at the postcode level at a point in time highlighted that reporting and interpretation of RVRs at geographically aggregated levels is problematic.

The final chapters of the report documented how the measure is used by government, private sector and advocacy groups, and provided insights into how vacancy rates are examined internationally.

Policy development options relate to improvements to, and use of, the RVR as a key housing market indicator. They can be framed in the context of the following questions.

What would better rental vacancy data and information look like?

It would be collected, measured and reported at finer spatial scales and always represent a long time series. It would involve segmentation by rent, dwelling type and, where possible, it would capture trends in the increasingly important build-to-rent (BTR) and purpose-built student accommodation (PBSA) sectors.

It would also include metrics at the property level, for example, length of vacant periods, tenancy turnover and property survival periods.

Importantly, RVR data would be generated from a consistent, reliable and transparent data source, with the output available to all, not just those with the financial resources to pay for it.

How should interpretations and acceptance of assumptions around RVRs and equilibrium levels change?

When interpretations of RVRs are based at a geographically aggregated scale, spatial nuance is missing and, therefore, understanding of local rental market dynamics. When interpretations of RVRs are drawn from point-in-time estimates, important long-term trends in RVRs and deviations from equilibrium levels are not apparent. Without such spatial and temporal insights, targeted and effective policy responses will be impeded.

Further, while the tendency for RVRs to revert to a long-run equilibrium point can be a function of supply, demand and price adjustments, it can also reflect more intensive use of rental housing (crowding or sharing) or exits from the rental sectors (homelessness).

As such, when examining the long-run equilibrium rate, rather than concluding only that 'markets self-correct', policy makers should be mindful that either the RVR level itself, or the dynamics that enable 'self-correction', may be the result of socially undesirable circumstances. Monitoring of RVRs as market self-correcting properties must be supplemented with an understanding of broader social phenomenon, such as social and cultural changes in housing consumption.

Policy makers should be more critical of the 'norms' upheld and promoted by property industry organisations that provide RVRs and commentary around market conditions reflecting 'tight', 'weak' or 'healthy' markets. Such norms are unlikely to be based on robust, empirical, long-run analysis of detailed market factors.

The often-quoted level of 3 (or even 2) per cent vacancy reflecting a 'healthy' rental market is not seen in long-run empirical data presented here; rather, long-run average vacancy rates vary geographically.

Rather than a short-term focus on an RVR threshold level, a pre-emptive policy measure would be the constant monitoring of RVR deviations from a long-term equilibrium perspective.

What could happen if policy makers had access to better RVR data and a more comprehensive understanding of such? Why is demystifying the RVR important?

Good quality, detailed and segmented data, along with a thorough understanding of data sources and methodologies, and a more critical attitude towards industry specified norms, will lead to more informed decision-making processes. At the very least, an understanding of current approaches is important. With access to improved data (as described above), and a shift away from an unquestioned adoption of long-held assumptions, policy makers, and all RVR users, will have a more nuanced and rigorous understanding of rental market dynamics.

8.1 Key questions answered by this research

This research aimed to demystify the RVR measure in Australia through four key questions. Through a combination of desktop review, quantitative analysis and interviews with RVR producers and users, this project has answered the questions as follows.

RQ1: What are the methodologies, strengths and limitations of RVR indicators in Australia's private housing market?

- There are five major producers of the RVR in Australia. They are all commercial producers—no public agency produces an RVR. Two main methodologies are employed:
    - a survey-based approach in which property managers are surveyed about the vacant share of total rent roll (used by the REIA)
    - a listings-based approach in which vacancy is based on rental properties advertised for lease on online platforms (used by SQM Research, Cotality [formerly CoreLogic], REA Group and Domain Group).

- There is no consistent methodology or single data source to produce the RVR and different approaches result in different outcomes.
- Strengths of the current approaches include the ability to purchase an 'off-the-shelf' product for organisations that lack the capacity to source and compile the data themselves (a complex task), and the variety of spatial and temporal scales available.
- Limitations include a lack of methodological clarity; the estimations of the numerator and denominator; and the commodification of property data, which limits, by financial resources, who can access it. Lengthy time series data are only available at a cost, or through pre-existing relationships between organisations in the private and public sectors.
- Rental bond records offer an alternative, publicly collected data source for RVR information. Across Australian jurisdictions, however, this data source is not consistently collected or managed. There are advantages and challenges to weigh up if rental bond data are to be the source for creating an RVR.

RQ2: How do Australian RVRs conform temporally and spatially to assumed market equilibrium levels?

- An equilibrium vacancy rate is considered one in which market forces (supply and demand) are balanced, leaving real rents unchanged. During these periods, there is no market failure and no need for policy intervention to correct suboptimal outcomes. However, producers and users of RVRs are inconsistent in their definition of the RVR equilibrium level.
- Using Victoria as a case study, it was demonstrated that private rental markets in Melbourne and regional Victoria have self-correcting attributes (equilibrium dynamics) over a long period (January 2011 – August 2024). Supply or demand adjusted to imbalances and RVRs veered to a long-term equilibrium (possibly with a declining trend in the level equilibrium level itself), even following exogenous shocks such as the COVID-19 pandemic and changes to intrastate migration trends. In response to a deviation from equilibrium, it takes about eight months to return to a market equilibrium in Melbourne. The evidence of this market self-correction is weaker in regional Victoria, meaning there is spatial variability in how periods of market disequilibrium correct over time.
- Additionally, temporal variations in RVRs in Melbourne were more responsive to rental market shocks, such as the COVID-19 pandemic, compared with regional areas.
- Two independent variables explained the temporal variation in RVRs in Melbourne and regional Victoria: rental dwelling supply and real asking rents for all properties. A statistically significant relationship between these explanatory factors and RVRs was evident over the entire analysis period and during exogenous shocks to the rental market. Asking rents primarily explained the temporal variations in RVRs over the short term, while rental dwelling supply had an impact on RVRs both over the short and long run across Melbourne and regional Victoria.
- Postal area–level RVRs are spatially dependent on RVRs in neighbouring postal areas. From a housing policy, planning or investment perspective, the implication is that responses to rental market imbalances can be spatial in nature, and that broader 'functional housing markets' should form the basis of rental market analysis, rather than commonly used administrative designated boundaries (such as ABS spatial units).

RQ3: What role do RVRs, and their methodological assumptions, play in public policy and housing supply decisions in different market segments and locations?

- The role that RVRs play in public policy decisions is indirect but important. Use by Australian Government departments and agencies appears to be focused on forecasting and modelling housing market dynamics. State government departments used the RVR for modelling, but also for more specific projects, such as where to supply social housing.
- The role that RVRs play in housing supply decisions is more direct for the private sector. Our interviews found that property developers and investors use the RVR to drive decisions about housing supply, including BTR.
- No government policies in Australia are triggered by a specific RVR level. This does not mean, however, that the measure is seen as unimportant. The RVR is viewed as a key indicator of housing market conditions, and, in conjunction with other measures, provides crucial information for housing policy formulation.
- Overall, RVRs can provide market-based insight for three purposes: as an indicator for monitoring rental market balancing of supply and demand forces, for estimation of development or investment profitability of new supply, and shaping housing policy and infrastructure development decisions.

RQ4: What insights can be learned from RVR methodologies used in other countries?

- A variety of methods are used internationally to measure vacancy, including sometimes within the same country.
- Australia differs from the other countries examined in two respects:
  - Type of 'vacancy': most countries examined paid strong attention to UDs (of all tenures) as their vacancy rate, rather than only vacant rental properties.
  - Vacancy rate producer: in most countries examined, the producer of vacancy rate data was the government (often the national statistics agency), rather than a private, commercial company.
- Following international practice, future directions could include the expansion of data collection, in a nationally consistent manner, on UDs (currently done in an experimental or piecemeal fashion by different public and private organisations, or via the five-yearly Census).[11] Internationally, monitoring UDs is seen as useful for reducing empty houses and improving natural disaster responses, both of which are relevant to Australia.

8.2 Future directions

There is a role for government to collect more and better housing data. Future directions in this area could include the following.

8.2.1 Assessing the feasibility of a government-produced RVR

This research has established that the RVR is a key indicator of housing market conditions. It is notable that in Australia, governments have not invested in producing the measure themselves.

Were the Australian Government and/or state/territory governments to produce RVR data 'in-house' as an alternative and likely cheaper source of this 'top tier' housing indicator, this would align Australia with international practice in the production of important housing data.

Further, if government was to produce an RVR with a more transparent methodology than is currently provided, this may prompt the private data producers to improve their transparency. A government-produced RVR may incentivise private companies to address their limitations to remain competitive.

11 For more information on recent ABS developments in this area, see Smedes, Dzhumasheva et al. 2025 and ABS 2023b.

Census data and other key statistics are made freely available through the ABS, and it is likely that the public would consider it unacceptable if these data were behind a paywall. When key housing indicators are only available for a fee, only those with sufficient funds can access that information to inform their decision-making.

In the context of property and housing data, it is professional and high-income property managers and investors who can access these data, while lower-income tenants, advocacy groups and residents are locked out. This results in unequal access to information for housing decision-making processes.

In many interviews with RVR users, the ABS was discussed as a potential creator of an independent RVR. In the foreword to the ABS Corporate Plan of 2024–25, it is stated that the ABS uses 'administrative and alternate data sources to generate new insights through data integration initiatives' (ABS 2024a). Although not specially referring to rental bond data or the like, it is clear that the ABS is open to using, and is actively assessing and experimenting with, such data sources and generating new indicators.[12] However, the ABS participant interviewed for this research stated that 'the ABS has no plans to introduce a rental vacancy rate measure'.

This leaves open the question of which government department or agency (if not the ABS) would produce an RVR. Our own analysis of rental bond data for RVR production in Chapter 4 showed that there are challenges to creating a nationally consistent RVR through this method. Nonetheless, it is a data source worthy of further consideration.

8.2.2 Developing a usual occupancy of dwellings dataset

Data that detail the regular occupancy of dwellings would be valuable and could improve estimates of both the RVR numerator and denominator. This was raised by Wilson, Zou et al. (2022) in their research on the purported 'one million unoccupied dwellings' revealed by the 2021 Census. In appraising the limitations of the Census dwelling data, the authors argue that:

> *there is a case for further detail in dwelling and household data. It would be very beneficial to have regular, timely, accurate, and freely available statistics on Australia's dwelling stock and its occupancy. (Wilson, Zou et al. 2022: 24)*

Within the limits of current Census reporting, this could include 'a census dataset of dwellings on a usual residence basis' (Wilson, Zou et al. 2022: 24).

In interviews with RVR users, interest was expressed in gaining a better understanding of how dwellings are (usually) occupied across tenures and market segments. Such information could help address issues such as occupancy of BTR properties and better utilising the stock that exists (e.g. empty holiday lets or other stock that could be returned to the market).

Participants from the Australian Government suggested that the lack of information on the current dwelling stock was a data gap:

> *On supply of housing, just the stock of dwellings at any point in time. We actually are just guessing, just based on completions but we don't know how many houses are actually being knocked down in between Census periods, so we don't have a live read on the stock of dwellings. (Australian Government body/department participant)*

12 In a recent conference paper, the ABS describes the 'evolution' of their 'Address Register' and how it has shifted from being 'solely used to support ABS operations to providing direct value to organisations external to the ABS, particularly in the emergency management field' (Smedes, Dzhumasheva et al. 2025: 3). Although rental vacancy is not referred to in the paper, it is stated that: 'As new data is integrated with the register it has the potential to inform, at very disaggregated levels of geographies, on changes in the stock and usage of individual dwellings' (Smedes, Dzhumasheva et al. 2025: 3). See also ABS 2023b.

These participants further described 'that sort of nationally consistent lot-level dataset with characteristics' as 'the holy grail' for facilitating analysis and holding state and local governments to account for meeting housing targets.

Regarding how such comprehensive data could be produced, they felt that the ABS would be capable of undertaking this task, although they acknowledged that it would be costly. The ABS had restricted funding to calculate 'estimated dwelling stock' between 2016 and 2022 (see ABS 2022b); however, this did not include occupancy and the funding was not renewed.

Further 'experimental' work was released by the ABS in 2023, namely an *Administrative data snapshot of population and housing* (ABS 2023b) and this could form the basis for a more in depth assessment of Australia's housing stock. Having a more dynamic view of current dwelling stock and usual occupancy would bring Australia in line with other countries that are tracking their unoccupied dwellings across all tenures.

As discussed in Chapter 7, there are a variety of methodologies used internationally to collect data on unoccupied dwellings, including a register of national housing stock, which can then potentially shape policy around taxation, neighbourhood revitalisation and even natural disasters.

Improving government data collection would also align with the National Housing Supply and Affordability Council's report on the *State of the housing system* (NHSAC 2024). NHSAC identified 10 areas of focus for improving housing system outcomes, including 'Improving data availability':

> *High quality and widely available data supports good housing outcomes, including by facilitating industry and policy planning, and improving market efficiency, productivity and accountability. Better data outcomes require improvements to the definition, identification, collection, pooling and management of strategic data assets. Under the National Housing Accord, all parties have agreed to increase collaboration on data management. (NHSAC 2024: 153)*

In summary, there is capacity and demand for the Australian Government to further develop its collection and reporting of housing data, including the RVR and/or overall dwelling stock and usual occupancy.

8.3 Final remarks

This project aimed to demystify the rental vacancy rate in Australia. For some time, this measure has been employed and referenced without regard for methodological challenges or the variability that exists in RVR relationships with rents and supply over time and space.

Australia has multiple providers of RVR data, all of which use different methodologies and produce different results; therefore, ascertaining the 'real' or even the most accurate RVR is difficult.

With the rise of proptech, there is more detailed housing market data available than ever before. But the commercialisation of housing data means that it is often locked away behind paywalls and its methodology may be opaque—a commercial secret rather than a public interest.

If the RVR is to continue playing an important role in government policy discussions, forecasting and modelling, it is vital that the measure is accurate and the methodology transparent. Government can play a larger role with regards to RVRs, both in scrutinising current approaches and, potentially, in creating an independent, nationally consistent and methodologically transparent dataset.

References

Abelson, P., Joyeux, R., Milunovich, G. and Chung, D. (2005) 'Explaining house prices in Australia: 1970–2003', *The Economic Record,* vol. 81, no. 225: 96–103.

ABR—see Australian Business Register

ABS—see Australian Bureau of Statistics

Agarwal, N., Gao, R. and Garner, M. (2023) 'Renters, rent inflation and renter stress', *Reserve Bank of Australia,* RBA Bulletin March 2023, https://www.rba.gov.au/publications/bulletin/2023/mar/renters-rent-inflation-and-renter-stress.html.

AHURI—see Australian Housing Urban Research Institute

Ainsworth, K. (2023) 'Australia's rental vacancy rate at lowest levels since before COVID-19 pandemic', *ABC News*, 11 March, https://www.abc.net.au/news/2023-03-11/australian-rental-vacancy-rates-lowest-since-before-pandemic/102079318.

Anglicare (2023) *Rental affordability snapshot national report 2023,* 14th edition, Anglicare, accessed 2 September 2024, https://www.anglicare.asn.au/wp-content/uploads/2023/04/Rental-Affordability-Snapshot-National-Report.pdf.

Anglicare (2024) *Rental affordability snapshot 2024 report: Greater Sydney and the Illawarra,* Anglicare, accessed 2 September 2024, https://www.anglicare.org.au/research-and-advocacy/rental-affordability-snapshot-2024/.

Anselin, L. (2022) 'Spatial econometrics', in S.J. Rey and R.S. Franklin (eds), *Handbook of Spatial Analysis in the Social Sciences,* Edward Elgar Publishing, https://doi.org/10.4337/9781789903942.

ANZ and CoreLogic (2023) *ANZ CoreLogic housing affordability report 2023,* ANZ, https://news.anz.com/posts/2023/05/anz-news-corelogic-housing-affordability-report-2023.

Arnott, R. (1989) 'Housing vacancies, thin markets, and idiosyncratic tastes', *Journal of Real Estate Finance and Economics,* vol. 2, no. 1: 5–30, DOI:10.1007/BF00161714.

ASX—see Australian Securities Exchange

Australian Bureau of Statistics (2016) *2016 Census of population and housing data,* accessed via ABS Census TableBuilder, https://www.abs.gov.au/statistics/microdata-tablebuilder/tablebuilder.

Australian Bureau of Statistics (2021a) Dwelling type (DWTD): *Census of population and housing: Census dictionary,* ABS, accessed 12 November 2024, https://www.abs.gov.au/census/guide-census-data/census-dictionary/2021/variables-topic/housing/dwelling-type-dwtd.

Australian Bureau of Statistics (2021b) *Postal areas—Australian Statistical Geography Standard (ASGS) edition 3,* reference period July 2021 – June 2026, released 6 October, https://www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/non-abs-structures/postal-areas.

Australian Bureau of Statistics (2021c) *Correspondences—Australian Statistical Geography Standard (ASGS) edition 3,* reference period July 2021 – June 2026, released 20 July, https://www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/access-and-downloads/correspondences.

Australian Bureau of Statistics (2021d) *Regional internal migration estimates, provisional*, reference period March 2021, released 3 August, https://www.abs.gov.au/statistics/people/population/regional-internal-migration-estimates-provisional/latest-release.

Australian Bureau of Statistics (2022a) 2021 *Census of population and housing data,* accessed via ABS Census TableBuilder, https://www.abs.gov.au/statistics/microdata-tablebuilder/tablebuilder.

Australian Bureau of Statistics (2022b) *Estimated dwelling stock,* ABS, accessed 12 July 2025, https://www.abs.gov.au/statistics/industry/building-and-construction/estimated-dwelling-stock/latest-release.

Australian Bureau of Statistics (2022c) *Residential property price indexes: eight capital cities*, reference period December 2021, released 15 March, https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/residential-property-price-indexes-eight-capital-cities.

Australian Bureau of Statistics (2023a) *New insights into the rental market*, ABS, accessed 12 July 2025, https://www.abs.gov.au/statistics/detailed-methodology-information/information-papers/new-insights-rental-market.

Australian Bureau of Statistics (2023b) *Administrative data snapshot of housing*, reference period 30 June 2021, released 29 August, https://www.abs.gov.au/statistics/people/housing/administrative-data-snapshot-population-and-housing-experimental-housing-data/30-june-2021#key-statistics.

Australian Bureau of Statistics (2024a), *About the ABS*, ABS corporate plan 2024–25, ABS, accessed 13 March 2025, https://www.abs.gov.au/about/our-organisation/corporate-reporting/abs-corporate-plan/2024-25/about-abs#cite-window1.

Australian Bureau of Statistics (2024b) *Household and family projections, Australia, (2021–2046),* ABS, accessed 12 July 2025, https://www.abs.gov.au/statistics/people/population/household-and-family-projections-australia/latest-release#cite-window2.

Australian Bureau of Statistics (2025a) *Consumer price index, Australia,* ABS, accessed 12 July 2025, https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/.

Australian Bureau of Statistics (2025b) *Building approvals, Australia,* cat. no. 8731.0, Tables 10 and 13, ABS, https://www.abs.gov.au/statistics/industry/building-and-construction/building-approvals-australia.

Australian Business Register (2025) *Australian Business Number (ABN) look up,* accessed 17 January, https://abr.business.gov.au/, and associated ASIC Connect Register, https://connectonline.asic.gov.au/RegistrySearch/.

Australian Housing Urban Research Institute (2022) 'Why does Australia have a rental crisis, and what can be done about it?', *AHURI Research Brief,* 16 November, https://www.ahuri.edu.au/research/brief/why-does-australia-have-rental-crisis-and-what-can-be-done-about-it.

Australian Institute of Health and Welfare (2024) *Home ownership and housing tenure*, AIHW, accessed 12 July 2025, https://www.aihw.gov.au/reports/australias-welfare/home-ownership-and-housing-tenure.

Australian Securities Exchange (2025) *Company directory,* accessed 9 January 2025, https://www.asx.com.au/markets/trade-our-cash-market/directory.

Australian Treasury (2022) *National Housing Accord 2022*, accessed 12 July 2025, https://ministers.treasury.gov.au/sites/ministers.treasury.gov.au/files/2022-10/national-housing-accord-2022.pdf.

Australian Treasury (2024) Budget 2024–25, *Budget paper No. 1: Budget strategy and outlook, statement 4: meeting Australia's housing challenge,* accessed 2 September 2024, https://budget.gov.au/content/bp1/index.htm.

Azize, M. (2023) *Priced out: an index of affordable rentals for Australia's essential workers*, Everybody's Home and Anglicare Australia, https://everybodyshome.com.au/resources/priced-out-an-index-of-affordable-rentals-for-australias-essential-workers/.

Baker, E., Beer, A. and Blake, M. (2022) 'Look where Australia's "1 million empty homes" are and why they're vacant—they're not a simple solution to housing need', *The Conversation,* 1 September, https://theconversation.com/look-where-australias-1-million-empty-homes-are-and-why-theyre-vacant-theyre-not-a-simple-solution-to-housing-need-189067.

Ball, M., Meen, G. and Nygaard, C. (2010) 'Housing supply price elasticities revisited: evidence from international, national, local and company data', *Journal of Housing Economics*, vol. 19, no. 4: 255–268.

Beer, A and O'Dwyer, L. (2000) 'The use of data from South Australia's rental tenancy tribunal for research and policy analysis: issues of validity and efficacy', *Urban Policy and Research*, vol. 18, no. 1, 29–43, DOI:10.1080/08111140008727822.

Belsky, E.S. (1992) 'Rental vacancy rates: a policy primer', *Housing Policy Debate*, vol. 3, no. 3: 793–813, DOI:10.1080/10511482.1992.9521110.

Belsky, E.S. and Goodman, J. (1996) 'Explaining the vacancy rate-rent paradox of the 1980s', *Journal of Real Estate Research,* vol. 11, no. 3: 309–323, DOI:10.1080/10835547.1996.12090828.

Boeing, G. (2020) 'Online rental housing market representation and the digital reproduction of urban inequality', *Environment and Planning A: Economy and Space,* vol. 52, no. 2: 449–468, DOI:10.1177/0308518X19869678.

Boutchenik, B. and Mathieu, B. (2023) *Les déterminants de la vacance longue durée des logements détenus par les personnes physiques,* Données et Études Statistiques, https://www.statistiques.developpement-durable.gouv.fr/les-determinants-de-la-vacance-longue-duree-des-logements-detenus-par-les-personnes-physiques.

Breidenbach, P., Eilers, L. and Fries, J. (2022) 'Temporal dynamics of rent regulations—the case of the German rent control', *Regional Science and Urban Economics*, vol. 92, no. 1, article no. 103737, doi:10.1016/j.regsciurbeco.2021.103737.

Brown, P. (2015) *How Real Estate Developers Think: Design, Profits, and Community,* University of Pennsylvania Press.

Burke, T., Nygaard, C. and Ralston, L. (2020) *Australian home ownership: past reflections, future directions*, AHURI Final Report No. 328, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/328, doi:10.18408/ahuri-5119801.

Buckle, C., Gurran, N., Phibbs, P., Harris, P., Lea, T. and Shrivastava, R. (2020) *Marginal housing during COVID-19*, AHURI Final Report No. 348, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/348, doi:10.18408/ahuri7325501.

Canada Mortgage and Housing Corporation (2024) *Rental market report: January 2024*, accessed 12 July 2025, https://assets.cmhc-schl.gc.ca/sites/cmhc/professional/housing-markets-data-and-research/market-reports/rental-market-report/rental-market-report-2023-en.pdf.

CBRE (2024) *Apartment vacancy and rent outlook*, March 2024 edition, CBRE Research, https://www.cbre.com.au/insights/reports/apartment-vacancy-and-rent-outlook-1h-2024-edition.

Charter Keck Cramer (2024) *State of the market H2 2024,* accessed 12 July 2025, https://charterkc.com.au/state-of-the-market-report-h2-2024/.

CHIA—see Community Housing Industry Association

Chie, N. (2022) 'Land and homes and the Japanese: the issue of vacant houses and land with unknown owners today—what progress with preparations for closing houses?' *Discuss Japan—Japan Foreign Policy Forum, Society,* no. 69, https://www.japanpolicyforum.jp/society/pt20220126165808118 41.html.

CMHC—see Canada Mortgage and Housing Corporation

Commonwealth Bank of Australia (2024) *Residential rental markets tighten*, accessed 6 August 2025, https://www.commbank.com.au/articles/business/residential-rental-markets-tighten.html.

Community Housing Industry Association NSW (2024) Media release—*CHIA NSW sounds the alarm as new data shows sharp fall in Sydney's vacancy rates for rentals,* CHIA NSW, https://communityhousing.org.au/media-releases/chia-nsw-sounds-the-alarm-as-new-data-shows-sharp-fall-in-sydneys-vacancy-rates-for-rentals/.

Consumer Affairs Victoria (2023) *Bond*, accessed 6 March 2025, https://www.consumer.vic.gov.au/housing/renting/rent-bond-bills-and-condition-reports/bond.

CoStar Group (2024) *The power of knowing: CoStar for multifamily owners and investors,* accessed 7 July 2025, https://www.costar.com/sites/costar.com.na/files/costar-brochure---multi_family-owners.pdf.

CoStar Group (2025a) *CoStar Group enters binding agreement to acquire leading Australian property marketplace Domain holdings,* accessed 7 July 2025, https://investors.costargroup.com/news-releases/news-release-details/costar-group-enters-binding-agreement-acquire-leading-australian.

CoStar Group (2025b) *Apartments.com releases multifamily rent report for the first quarter of 2025*, accessed 7 July 2025 https://investors.costargroup.com/news-releases/news-release-details/apartmentscom-releases-multifamily-rent-report-first-quarter.

Daley, J., Coates, B. and Wiltshire, T. (2018) *Housing affordability: re-imagining the Australian dream*, Grattan Institute, https://grattan.edu.au/report/housing-affordability-re-imagining-the-australian-dream/.

Deloitte Access Economics (2021) *Updated economic analysis of Queensland residential renting reforms*, prepared for Qld Department of Communities, Housing and Digital Economy, https://www.chde.qld.gov.au/__data/assets/pdf_file/0025/18484/update-economic-analysis-queensland-residential-renting-reforms.pdf.

Department of Customer Service and McCrindle (2022) *Construct NSW: the state of consumer confidence—benchmarking consumer confidence towards purchasing class 2 residential properties in NSW,* NSW State Government, May 2022, https://www.nsw.gov.au/departments-and-agencies/building-commission/building-and-construction-resources/research-on-consumer-confidence.

Department of Housing, Local Government and Heritage (2023) *Vacant homes action plan 2023–2026*, Government of Ireland, https://www.gov.ie/en/publication/df86c-vacant-homes-action-plan-2023-2026/.

Department for Levelling Up, Housing and Communities (2023) English housing survey: headline report, 2022–23, UK Government, https://assets.publishing.service.gov.uk/media/657c3ff691864e001308bdba/2022-23_EHS_Headline_Report.pdf.

Department for Levelling Up, Housing and Communities (2024) *English Housing Survey: guidance and methodology*, UK Government, accessed 18 November 2024, https://www.gov.uk/guidance/english-housing-survey-guidance-and-methodology.

Department of Planning Housing and Infrastructure (2024) *Urban development program—UDP dashboards*, NSW State Government, https://www.planningportal.nsw.gov.au/online-dashboards.

Department of Transport and Planning (2023), *Victoria in future (VIF) population and household projections (Release 2) for FY2021 and FY2026 five-yearly projection period,* 14 December, Victoria Government, https://www.planning.vic.gov.au/guides-and-resources/Data-spatial-and-insights/discover-and-access-planning-open-data/victoria-in-future.

Destatis (2021) *Proportion of unoccupied dwellings, by land,* Destatis (Statistisches Bundesamt), https://www.destatis.de/EN/Themes/Society-Environment/Housing/Tables/vacancy-rate.html.

Dockery, A.M., Moskos, M., Isherwood, L. and Harris, M. (2022) *How many in a crowd? Assessing overcrowding measures in Australian housing,* AHURI Final Report No. 382, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/382, doi:10.18408/ahuri8123401.

Domain Group (2024) *Vacancy rates: February 2024*, Domain Research, accessed 22 August 2024, https://www.domain.com.au/research/vacancy-rates-february-2024-1266500/.

Domain Holdings Australia Limited (2025) *Domain enters into scheme implementation deed with CoStar*, accessed 7 July 2025, https://shareholders.domain.com.au/DownloadFile.axd?file=/Report/ComNews/20250509/02945138.pdf.

DPHI—see Department of Planning Housing and Infrastructure

Duca, J., Muellbauer, J. and Murphy, A. (2011) 'Houses prices and credit constraints: making sense of the US experience', *The Economic Journal,* vol. 121, no. 552: 533–551, http://www.jstor.org/stable/41236990.

Eaqub, S. and Loke, J. (2012) *Estimating the private sector rental vacancy rate for Canterbury: gaining insights from administrative data*, NZIER and the Department of Building and Housing, paper presented at the New Zealand Association of Economists annual conference, https://www.nzae.org.nz/wp-content/uploads/2012/08/Estimating-Rental-Vacancy-NZAE-conference.pdf.

Federal Statistical Office (2024a) *Fact sheet: empty dwellings census,* Switzerland, accessed 6 November 2024, https://www.bfs.admin.ch/bfs/en/home/statistics/construction-housing/surveys/lwz.assetdetail.415595.html.

Federal Statistical Office (2024b) *Communiqué de presse: le taux de logements vacants continue de baisser en 2024, Switzerland, accessed 6 November 2024*, https://www.bfs.admin.ch/bfs/en/home/news/whats-new.assetdetail.32386423.html.

Gabriel, S. and Nothaft, F. (1988) 'Rental housing markets and the natural vacancy rate', *Journal of the American Real Estate and Urban Economics Association,* vol. 16, no. 4: 419–29.

Gabriel, S.A. and Nothaft, F.E. (2001) 'Rental housing markets, the incidence and duration of vacancy, and the natural vacancy rate', *Journal of Urban Economics*, vol. 49: 121–149.

Gabriel, S. and Painter, G. (2020) 'Why affordability matters', *Regional Science and Urban Economics*, vol. 80: 103378, doi:10.1016/j.regsciurbeco.2018.07.001.

Gentili, M. and Hoekstra, J. (2019) 'Houses without people and people without houses: a cultural and institutional exploration of an Italian paradox', *Housing Studies*, vol. 34, no. 3: 425–447, https://doi.org/10.1080/02673037.2018.1447093.

Gurran, N. and Phibbs, P. (2017) 'When tourists move in: how should urban planners respond to Airbnb?' *Journal of the American Planning Association*, vol. 83, no. 1: 80–92, DOI: 10.1080/01944363.2016.1249011.

Gurran, N., Phibbs, P., Yates, J., Gilbert, C., Whitehead, C., Norris, M., McClure, K., Berry, M., Maginn, P., Goodman, R. and Rowley, S. (2015) *Housing markets, economic productivity, and risk: international evidence and policy implications for Australia—Volume 2: Supplementary papers*, AHURI Final Report No.255, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/sites/default/files/migration/documents/AHURI_Final_Report_No255_Housing_markets_economic_productivity_and_risk_international_evidence_and_policy_implications_for_Australia-Volume_2.pdf.

Hagen, D. and Hansen, J. (2010), 'Rental housing and the natural vacancy rate', *Journal of Real Estate Research*, vol. 32, no. 4: 413–433, DOI: 10.1080/10835547.2010.12091288.

Halleux, J.-M. (2009) 'The spatial structuring of interurban housing markets: application to building sites prepared for self-provided housing', *Environment and Planning A,* vol. 41, no. 9: 2143–2161, https://doi.org/10.1068/a4110.

Hassan, M. (2024) *Westpac housing pulse May 2024,* Westpac Institutional Bank – Westpac Economics, https://www.westpaciq.com.au/economics/2024/06/westpac-housing-pulse-supplement-may-2024.

Heumann, F. (2019) 'Angespannte Wohnungsmärkte', *Standort*, vol. 43, no. 4: 278–287, https://doi.org/10.1007/s00548-019-00618-w.

Higher than Average Growth Analytics Pty Ltd (2024) *Vacancy rates explained*, accessed 17 January 2025, https://www.htag.com.au/vacancy-rates/.

Higher than Average Growth Analytics Pty Ltd (2025) *Frequently asked questions*, accessed 17 January 2025, https://www.htag.com.au/faq/.

Homes Tasmania (2024) *Housing dashboard March 2024*, https://www.homestasmania.com.au/__data/assets/pdf_file/0033/279906/Housing-Dashboard-March-2024.pdf.

Homes Victoria (2024a) *Residential Tenancies Bond Authority (RTBA) data file,* extract from full RTBA database, used with permission, Victorian Department of Families, Fairness and Housing.

Homes Victoria (2024b) *Rental report, September quarter,* Department of Families, Fairness and Housing, https://www.dffh.vic.gov.au/publications/past-rental-reports.

Housing Industry Association (2023) *Submission 49 to the Australian Parliamentary Inquiry 'The worsening rental crisis in Australia,* HIA, https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Community_Affairs/Worseningrentalcrisis/Submissions.

HTAG—see Higher than Average Growth Analytics Pty Ltd

Hulse, K., Reynolds, M., Nygaard, C., Parkinson, S., and Yates, J. (2019) *The supply of affordable private rental housing in Australian cities: short-term and longer-term changes*, AHURI Final Report No. 323, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/323, doi:10.18408/ahuri-5120101.

Hunter, S. (2024) 'Housing market cycles and fundamentals', speech at the REIA Centennial Congress delivered by RBA Assistant Governor (Economic), Hobart, 16 May, https://www.rba.gov.au/speeches/2024/sp-ag-2024-05-16.html.

Hurard, C. and Huault, L. (2024) '1,2 million de logements vacants supplémentaires en France depuis 1990, surtout dans les zones en déprise démographique', *Insee Première*, no. 1979, https://www.insee.fr/fr/statistiques/7727384.

Huuhka, S. (2016) 'Vacant residential buildings as potential reserves: a geographical and statistical study', *Building Research and Information,* vol. 44, no. 8: 816–839, DOI: 10.1080/09613218.2016.1107316.

Iacoviello, M. (2005) 'House prices, borrowing constraints and monetary policy in the business cycle', *American Economic Review,* vol. 95, no. 3: 739–764.

IBISWorld (2024a) *Company profile: REA Group Limited,* 30 June 2024.

IBISWorld (2024b) *Premium company profile: Domain Holdings Australia Limited,* 30 June 2024.

IBISWorld (2024c) *Residential real estate advertising in Australia,* 31 August 2024.

Interim National Housing Supply and Affordability Council (2023) *Barriers to institutional investment, finance and innovation in Housing,* NHSAC, https://nhsac.gov.au/reports-and-submissions/barriers-institutional-investment-finance-and-innovation-housing-report.

Janda, M. (2024) 'Are derelict homes part of the answer to Australia's housing crisis?' *ABC News,* 4 July, https://www.abc.net.au/news/2024-07-04/derelict-homes-part-of-the-answer-to-housing-shortage/104051820.

Jencks, C. (1994) *The Homeless,* Harvard University Press, Cambridge, MA.

Jensen, J.O. (2017) 'Vacant houses in Denmark: problems, localization and initiatives', paper presented at ENHR Conference 2017 Tirana, Albania.

JLL (2024a) *Australian apartment market overview Q1 2024,* JLL, https://www.jll.com.au/content/dam/jll-com/documents/pdf/research/apac/australia/jll-australian-apartment-market-overview-a1-2024.pdf.

JLL (2024b) *Student accommodation's role in a living sector strategy*, JLL, https://www.jll.com.au/en/trends-and-insights/research/student-accommodations-role-in-a-living-sector-strategy.

Jones, C. (2002) 'The definition of housing market areas and strategic planning', *Urban Studies,* vol. 39, no. 3: 549–564.

Jones, M. (2023) *Eco pulse: upswing in rents has further to run*, Bank of New Zealand, https://blog.bnz.co.nz/2023/07/eco-pulse-upswing-in-rents-has-further-to-run.

Kehoe, J., Sweeney, N. and Read, M. (2023) 'Dire building figures fuel homes crisis', *The Australian Financial Review*, 11 May.

Kelly, C. (2022) 'Pressure grows on Airbnb to permit long-term rentals as NSW floods worsen housing crisis', *The Guardian*, 10 March, https://www.theguardian.com/australia-news/2022/mar/10/pressure-grows-on-airbnb-to-permit-long-term-rentals-as-nsw-floods-worsen-housing-crisis.

Kendall, R. and Tulip, P. (2018) *The effect of zoning on housing prices*, Reserve Bank of Australia Research Discussion Papers (March), https://www.rba.gov.au/publications/rdp/2018/pdf/rdp2018-03.pdf.

Kholodilin, K.A. (2017) 'Quantifying a century of state intervention in rental housing in Germany', *Urban Research and Practice,* vol. 10, no. 3: 267–328, DOI: 10.1080/17535069.2016.1212251.

Knight Frank (2023) *Breaking the shackles: the rise of BTR: exploring the rise of build-to-rent in Australia,* https://www.knightfrank.com.au/blog/2023/09/15/btr-sector-in-australia-forecast-to-see-55000-dedicated-units-by-2030.

Kohler, M. and van der Merwe, M. (2015) 'Long-run trends in housing price growth', *RBA Bulletin*, September Quarter.

Kupke, V. and Rossini, P. (2014) 'The first home owner decade—distribution and impact of the first home owner grant 2000 to 2013', *Pacific Rim Property Research Journal,* vol. 20, no. 1: 75–87.

Kripfangz, S. and Schneider, D.C. (2016) 'ARDL: Stata module to estimate autoregressive distributed lag models', Stata conference, Chicago, 29 July, https://www.stata.com/meeting/chicago16/slides/chicago16_kripfganz.pdf.

Kripfangz, S. and Schneider, D.C. (2023) 'ARDL: estimating autoregressive distributed lag and equilibrium correction models', *The Stata Journal,* vol. 23, no. 4: 983–1019, DOI: 10.1177/1536867X231212434.

Lardner, K. (2024) *Rental pain index,* June 2024, Suburb trends.

Leishman, C. and Bramley, G. (2005) 'A local housing market model with spatial interaction and land-use planning controls', *Environment and Planning A,* vol. 37, no. 9: 1637–1649, https://doi.org/10.1068/a37141.

Lenaghan, N. (2023) 'Capital city rents jump record 11.7pc', *The Australian Financial Review*, 3 May, https://www.afr.com/property/commercial/capital-city-rents-jump-a-record-11-7pc-in-12-months-corelogic-20230502-p5d4wh.

Longview – PEXA (2023) *Private renting in Australia—a broken system,* Whitepaper 2, March, https://longview.com.au/hubfs/Private-renting-in-Australia-a-broken-system-LongView-PEXA-Whitepaper.pdf.

Malo, J. (2024) 'The magic number that tips the rental market in tenants' favour', *Domain.com.au,* 14 June, https://www.domain.com.au/news/the-magic-number-that-tips-the-rental-market-in-tenants-favour-2-1293713/.

Macreadie, I. (2022) 'Reflections from Melbourne, the world's most locked-down city, through the COVID-19 pandemic and beyond', *Microbiology Australia*, vol. 43, no. 1: 3–4, https://doi.org/10.1071/MA22002, https://www.publish.csiro.au/ma/pdf/MA22002.

Matusik Property Insights (2022) *Supply v demand #—Rental market,* 29 March.

McCartney, J. (2017) *Shifting ownership in Ireland's private rented sector*, Savills Ireland, https://pdf.euro.savills.co.uk/ireland-research/privaterentedsectorreport2017.pdf.

Meen, G. (2001) *Modelling Spatial Housing Markets: Theory, Analysis, and Policy,* vol. 2, Springer Science and Business Media.

Meen, G. (2013) 'Homeownership for future generations in the UK', *Urban Studies*, vol. 50, no. 4: 637–656.

Ministry of Housing, Communities and Local Government (2024) *Dwelling stock, table 615: vacant dwellings by local authority district: England, from 2004,* UK Government, accessed 18 November 2024, https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants (download available at link).

Moallemi, M., Melser, D., de Silva, A. and Chen, X. (2022), 'Examining the spatial and non-spatial linkages between suburban housing markets', *International Journal of Housing Markets and Analysis,* vol. 15, no. 5: 1170–1194, https://doi.org/10.1108/IJHMA-07-2021-0082.

Murray, C. (2022) *Explainer: rental price and vacancy metrics,* Henry Halloran Research Trust, University of Sydney, accessed July 2025, https://www.sydney.edu.au/halloran-urban-initiative/about/publications.html.

Muth, R. (1969) *Cities and Housing,* University of Chicago Press, Chicago.

National Housing Finance and Investment Corporation (2022) *Analysis on Australia's rental markets,* 9 December, https://www.housingaustralia.gov.au/research-data-analytics/analysis-australias-rental-markets.

National Housing Finance and Investment Corporation (2023) *State of the nation's housing report 2022–23*, https://www.housingaustralia.gov.au/research-data-analytics/state-nations-housing-report-2022-23.

National Housing Supply and Affordability Council (2024) *State of the housing system 2024,* https://nhsac.gov.au/reports-and-submissions/state-housing-system-2024.

National Institute of Economic and Industry Research (2024) *Modelled household income series,* by financial year 2010–23 for Greater Melbourne and regional Victoria, compiled and presented by .id (informed decisions), Economic profile—sources of income page, https://economy.id.com.au/.

National Real Estate Investor Staff (2011) *CoreLogic completes acquisition of Australian-based RP Data,* 16 May, accessed through Factiva, 10 January 2025.

NHSAC—see National Housing Supply and Affordability Council

NHFIC—see National Housing Finance and Investment Corporation

Nygaard, C. (2024) 'Earnings productivity and housing expenditure: who retains the wage-related agglomeration effect?' *Australian Economic Papers*, https://doi.org/10.1111/1467-8454.12380.

Nygaard, C. and Parkinson, S. (2021) 'Analysing the impact of COVID-19 on urban transitions and urban-regional dynamics in Australia', *Australian Journal of Agricultural and Resource Economics,* vol. 59: 1–22, doi: 10.1111/1467-8489.12449.

Nygaard, C., Parkinson, S. and Reynolds, M. (2021) *Agglomeration effects and housing market dynamics*, AHURI Final Report No. 366, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/366, doi: 10.18408/ahuri5122401.

Nygaard, C., Pinnegar, S., Taylor, L., Levin, I. and Maguire, R. (2021) *Evaluation and learning in public housing urban renewal*, AHURI Final Report No. 358, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/358, doi: 10.18408/ahuri51226.

Nygaard, C., van den Nouwelant, R., Glackin, S., Martin, C. and Sisson, A. (2022) *Filtering as a source of low-income housing in Australia: conceptualisation and testing,* AHURI Final Report No. 387, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/387, doi: 10.18408/ahuri5124401.

OECD—see Organisation for Economic Co-operation and Development

Organisation for Economic Co-operation and Development (2022) *Housing taxation in OECD countries,* OECD Tax Policy Studies, No. 29, OECD Publishing, Paris, https://doi.org/10.1787/03dfe007-en.

Organisation for Economic Co-operation and Development (2024) *OECD affordable housing database—indicator HM1.3 Housing tenures,* https://oe.cd/ahd.

O'Dowd, S. (2023) *Understanding the rental market vacancy rates,* 13 June, Real Estate Institute of Queensland, https://www.reiq.com/articles/property-management/understanding-rental-market-vacancy-rates.

Otto, G. (2007) 'The growth of house prices in Australian capital cities: What do economic fundamentals explain?' *Australian Economic Review*, vol. 40, no. 3: 225–238.

Parli, R. and Miller, N. (2014) 'Revisiting the derivation of an equilibrium vacancy rate', *Journal of Real Estate Literature*, vol. 20, no. 3: 195–208. https://www.jstor.org/stable/24878087.

Pawson, H., Clarke, A., van den Nouwelant, R., Petersen, H., Moore, J. and Sigler, T. (2024) *Breaking ground—progress update and assessment of Queensland's housing crisis,* UNSW City Futures Research Centre and University of Queensland, https://www.qcoss.org.au/wp-content/uploads/2024/06/Report_Breaking-Ground_Progress-update-of-Queensland-Housing-Crisis_web.pdf.

Pawson, H., Martin, C., Sisson, A., Thompson, S., Fitzpatrick, S. and Marsh, A. (2021a) *COVID-19: Rental housing and homelessness impacts—an initial analysis,* ACOSS/UNSW Poverty and Inequality Partnership Report No. 7, Sydney, https://povertyandinequality.acoss.org.au/wp-content/uploads/2021/02/COVID19_Rental-housing-and-homelessness-impacts_report-1.pdf.

Pawson, H., Martin, C., Thompson, S., Aminpour, F. (2021b) *COVID-19: rental housing and homelessness policy impacts,* ACOSS/UNSW Poverty and Inequality Partnership Report No. 12, Sydney, https://cityfutures.ada.unsw.edu.au/documents/673/COVID-19_rental_housing_and_homelessness_impacts_-_FINAL.pdf.

PCA—see Property Council of Australia

Petty, M. (2022) 'Residential vacancy rates hit 16 year low', *The Australian,* 15 June, https://www.theaustralian.com.au/nation/residential-vacancy-rates-drop-to-a-16-year-low-as-property-market-cools-as-rba-lifts-rates/news-story/5ee05b7bcdd091cc1da555f60a68bb41.

PowerHousing Australia (2023) *Submission 65 to Australian Parliamentary Inquiry 'The worsening rental crisis in Australia',* https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Community_Affairs/Worseningrentalcrisis/Submissions.

Premier of Victoria (2016) *Airbnb deal to provide housing during times of disaster,* accessed 12 November 2024, https://www.premier.vic.gov.au/site-4/airbnb-deal-provide-housing-during-times-disaster.

Property Council of Australia (2022) *The unsung hero underpinning Australia's largest service export—purpose-built student accommodation,* Submission 49, Attachment 1 to Australian Parliamentary Inquiry into Australia's tourism and international education sectors, https://www.propertycouncil.com.au/submissions/the-unsung-hero-underpinning-australias-largest-service-export.

Prosper (2024) *Speculative vacancy reports,* https://www.prosper.org.au/speculative-vacancy-reports/.

Qld Residential Tenancies Authority (2024) *Median rents quarterly data,* https://www.rta.qld.gov.au/forms-resources/median-rents-quick-finder/median-rents-quarterly-data.

REA Group Ltd (2024) *PropTrack insights—PropTrack rental report,* June, https://www.rea-group.com/about-us/news-and-insights/proptrack-insights/.

Real Estate Institute of Australia (1990–2015) *Market facts,* accessed through State Library of NSW records.

Real Estate Institute of Australia (1991) *Annual review of major residential property markets in Australia 1990–91*, accessed through State Library of NSW records.

Real Estate Institute of Australia (1993) *Annual review of major residential property markets in Australia (1992-93),* accessed through State Library of NSW records.

Real Estate Institute of Australia (1998) *Market facts,* September 1998 quarter, issued December 1998, accessed through State Library of NSW records.

Real Estate Institute of Australia (2001) *Market facts,* March 2001 quarter, issued June 2001, accessed through State Library of NSW records.

Real Estate Institute of Australia (2004) *Market facts,* December 2004 quarter, accessed through State Library of NSW records.

Real Estate Institute of Australia (2006) *Market facts,* March 2006 quarter, accessed through State Library of NSW records.

Real Estate Institute of Australia (2024a) *Real estate market facts (REMF),* March quarter and REIA data subscription—REMF11 quarterly vacancy rates for capital cities from March 1980, Capital city RVR and relevant rental data collated and used with permission in this report, https://reia.com.au/product/reia-data-subscription-remf-11/.

Real Estate Institute of Australia (2024b) *Build to rent: a market analysis,* April (re-released version), https://reia.com.au/wp-content/uploads/2024/08/BTR-Report_ReleaseVersion.pdf.

Real Estate Institute of New South Wales (2024) *Vacancy rate survey results*, December 2024, https://www.reinsw.com.au/Web/Web/Members/Property_data/Vacancy_Rates_Survey.aspx.

Real Estate Institute of Northern Territory (2023) *RELM: the Northern Territory real estate local market report*, December quarter 2023, https://reint.com.au/wp-content/uploads/2024/02/RELM-Q4-2023_FINAL-Compressed.pdf.

Real Estate Institute of Queensland (2021) *Queensland Market Monitor, Issue 49,* https://www.reiq.com/resources/media-releases/razor-thin-vacancy-rates-keep-queenslanders-living-on-the-edge.

Real Estate Institute of Queensland (2023) *Submission 38 to the Australian Parliamentary Inquiry 'The worsening rental crisis in Australia',* 4 August, https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Community_Affairs/Worseningrentalcrisis/Submissions.

Real Estate Institute of Tasmania (2024) *Market facts—media releases—regional media releases—June Quarter 2024,* https://reit.com.au/Market-Facts/Media-Releases/Regional-Media-Releases.

Real Estate Institute of Victoria (2024) *Rental market by REIV research: vacancy rates, Victoria,* Victorian RVR data collated by REIA (2024a) and supplemented with updated data from REIV, used with permission in this report. https://public.tableau.com/app/profile/reivresearch/viz/RentalMarket/Story1. Accessed 22 Aug 24.

Real Estate Institute of Western Australia (2024) *reiwa.com rental vacancy rates,* https://reiwa.com.au/the-wa-market/rental-vacancy-rates/.

REIA—see Real Estate Institute of Australia

REINSW—see Real Estate Institute of New South Wales

REINT—see Real Estate Institute of Northern Territory

REIQ—see Real Estate Institute of Queensland

REISA—see Real Estate Institute of South Australia

REIT—see Real Estate Institute of Tasmania

REIV—see Real Estate Institute of Victoria

REIWA—see Real Estate Institute of Western Australia

Reserve Bank of Australia (2025) *Interest rates and yields—money market—daily—F1, cash rate on target date,* 21 March 2025, https://www.rba.gov.au/statistics/tables/#interest-rates.

Reynolds, M., Parkinson, S., De Vries, J. and Hulse, K. (2024) *Affordable private rental supply and demand: short-term disruption (2016–2021) and longer-term structural change (1996–2021),* AHURI Final Report No. 416, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/416, doi: 10.18408/ahuri5128501.

Rosen, K.T. and Smith, L.B. (1983) 'The price-adjustment process for rental housing and the natural vacancy rate', *The American Economic Review,* vol. 73, no. 4: 779–786.

RP Data Pty Ltd, trading as Cotality Asia Pacific (previously CoreLogic Asia Pacific) (2025a) *Quarterly rental review report*, January, https://www.cotality.com/au/resources/downloads/quarterly-rental-review-report.

RP Data Pty Ltd, trading as Cotality Asia Pacific (previously CoreLogic Asia Pacific) (2025b) *Meet Cotality: CoreLogic embraces a new name and bold vision for the future of the property industry,* 25 March, https://www.corelogic.com.au/news-research/news/2025/meet-cotality-corelogic-embraces-a-new-name-and-bold-vision-for-the-future-of-the-property-industry.

SA Housing Authority (2024) *Quarterly rental report*, data sourced from Rental Bond Data Set of the Tenancies Branch and SA Office of Consumer and Business Services, https://data.sa.gov.au/data/dataset/private-rent-report.

Saunders, T. and Tulip, P. (2019) *A model of the Australian housing market,* Research Discussion Paper RDP 2019-01, Reserve Bank of Australia, https://www.rba.gov.au/publications/rdp/2019/pdf/rdp2019-01.pdf.

Shelter NSW (2016) *NSW housing: a factsheet,* November, https://shelternsw.org.au/wp-content/uploads/2021/09/fly1610factsheet-nsw_shelternsw5.pdf.

Singapore Government Urban Redevelopment Authority (2024a) *Private residential market sees further moderation of price and rental momentum in 2Q2024,* 26 July, https://www.ura.gov.sg/Corporate/Media-Room/Media-Releases/pr24-38.

Singapore Government Urban Redevelopment Authority (2024b) *Detailed statistical time series,* 'available and vacant private residential properties (end of period), quarterly' and 'available and vacant executive condominiums and supply of executive condominiums in the pipeline by development status (end of period), quarterly', https://www.singstat.gov.sg/find-data/search-by-theme/industry/building-real-estate-construction-and-housing/latest-data.

Smedes, M., Dzhumasheva, S., Malekin, M. and Kipp, M. (2025) *From address to dwellings: building a register of dwellings for Australia,* Australian Bureau of Statistics, paper presented at 'Opening doors: data and analytics shedding light on housing challenges conference' conference (23–24 June 2025), Sydney, Australia, https://www.rba.gov.au/publications/other-confs/abs-and-rba-joint-conferences/2025/pdf/abs-rba-conference-2025-smedes-dzhumasheva-malekin-kipp.pdf.

Smith, L.B. (1974) 'A note on the price adjustment mechanism for rental housing', *American Economic Review*, vol. 63, no. 3, 478–481.

Smith, Tamara (2025) *Regulate short term holiday lets,* Tamara Smith MP: Member for Ballina, accessed 15 January 2025, https://www.tamarasmith.com.au/regulate_short_term_holiday_letting.

SQM Research Pty Ltd (2024a) *Property data and research—free property data—residential vacancy rates,* accessed 6 May 2024, https://sqmresearch.com.au/graph_vacancy.php, https://sqmresearch.com.au/graph_vacancy.php#terms.

SQM Research Pty Ltd (2024b) *Customised data purchase,* residential rental asking rents, rental listings volume and vacancy rates, by specified geography (i.e. postal area, metropolitan and non-metropolitan Victoria) and time period (monthly intervals between January 2005 and August 2024).

SQM Research Pty Ltd (n.d.) *SQM Research Weekly Rents Index Methodology,* accessed 22 July, https://sqmresearch.com.au/asking-property-prices.php?region=nsw-Sydney&type=c&t=1 (methodology link).

StataCorp (2023a) *Stata 18 User's Guide*, Stata Press, College Station, https://www.stata.com/manuals/r.pdf.

StataCorp (2023b) *Stata 18 Spatial Autoregressive Models Reference Manual*, Stata Press, College Station, https://www.stata.com/bookstore/spatial-autoregressive-models-reference-manual/.

Statistics Bureau of Japan (2025) *Housing and land survey, survey results statistical tables*, https://www.stat.go.jp/english/data/jyutaku/index.html.

Sweeney, N. (2023a) 'Vacancy rates rise as first timers opt to buy (or share)', *The Australian Financial Review,* 15 March, https://www.afr.com/property/residential/vacancy-rates-rise-as-first-timers-opt-to-buy-or-share-20230514-p5d89t.

Sweeney, N. (2023b) 'Rents soar to new highs as vacancy rate slumps to record', *The Australian Financial Review,* 5 October, https://www.afr.com/property/residential/rents-soar-to-new-highs-as-vacancy-rate-slumps-to-record-20231004-p5e9ko.

Tasmanian Government, Department of Justice (2024) *Rental bond and rental data,* Australian Government, https://data.gov.au/data/dataset/rental-bond-and-rental-data-july-2023-to-june-2024.

Thalmann, P. (2012) 'Housing market equilibrium (almost) without vacancies', *Urban Studies,* vol 49, no. 8: 1643–1658.

Tenants' Union of NSW (2023) *Submission on the national housing and homelessness plan issues paper*, accessed 27 January 2025, https://files.tenants.org.au/policy/2310-TUNSW-Sub-Housing-Homelessness-Plan.

Tenants' Union Tasmania (2024) *Rental vacancy rates in Tasmania*, accessed 29 August 2024, https://tutas.org.au/publications/rental-vacancy-rates-in-tasmania/.

Thackway, W., Randolph, B., Peterson, H. and Pettit, C. (2024) 'Bondi to Byron: divergent pathways in NSW's Metropolitan and regional rental markets during the COVID-19 pandemic', *Australian Geographer,* vol. 55, no. 1: 69–94, DOI: 10.1080/00049182.2023.2256589.

United States Census Bureau (2024a) *Housing vacancies and homeownership (CPS/HVS) methodology*, accessed 12 November 2024, https://www.census.gov/housing/hvs/methodology/index.html.

United States Census Bureau (2024b) *Housing vacancies and homeownership,* accessed 12 November 2024, https://www.census.gov/housing/hvs/index.html.

Urban Development Institute of Australia (2024) *UDIA state of the land 2024, national residential greenfield and apartment market study,* https://udia.com.au/wp-content/uploads/2024/03/UDIA-State-of-the-Land-Report-2024_.pdf.

Urbis Pty Ltd (2015) *Australian student accommodation indicators*.

Wheaton, W.C. (1999) 'Real estate "cycles": some fundamentals', *Real Estate Economics*, vol. 27: 209–230, https://doi.org/10.1111/1540-6229.00772.

Wilson, T., Zou, F. and Sigler, T. (2022) 'Were there really 1 million unoccupied dwellings in Australia on Census night 2021?' *Australian Population Studies,* vol. 6, no 2: 14–26, https://doi.org/10.37970/aps.v6i2.106.

Wood, G., Yates, J. and Reynolds, M. (2006) 'Vacancy rates and low rent housing: a panel data analysis', *Journal of Housing and the Built Environment,* vol. 21, no. 4, pp. 441–458.

Worthington, A. and Higgs, H. (2013), 'Macro drivers of Australian housing affordability, 1985-2010: an autoregressive distributed lag approach', *Studies in Economics and Finance,* vol. 30, no. 4: 347–369, https://doi.org/10.1108/SEF-07-2012-0078.

Yardney, M. (2024) 'Sydney property market forecast for 2024', *Michael Yardney's property update by Metropole*, 1 September, https://propertyupdate.com.au/property-investment-sydney/.

Appendix 1: Other RVR data producers

These are two other producers of the RVR in Australia; however, throughout this research, we did not find evidence of either one being cited as an RVR source, and we are uncertain of the size of their customer base.

Lardner

Lardner (2024) has formulated a different RVR measure that is part of a 'rental pain index' (scale of 1–100) to provide a broader measure of challenges experienced by renters. The lower end of the index indicates more favourable conditions while the upper limit suggests unfavourable conditions for renters. Five input variables are each given a score (1–100): rent change, advertised rentals, RVRs, RVR change (three months) and rent affordability. A score of 75 or above suggests a difficult rental market for renters. RVRs are derived from the count of listings advertised for over three weeks as a proportion of the number of properties managed by real estate agents within each Statistical Area 2 geographic level (ABS ASGS region). No information is provided on weights applied to each variable to derive the composite index.

RVRs under 1 per cent are given a score of 100 (unfavourable market) while RVRs above 3.5 per cent are given a score of 1 (balanced/renter friendly market). An RVR decrease of 0.5 per cent or more is allocated a score of 100 (tightening market), whereas an increase of 0.5 per cent or more is scored 1 (softening market). Using the RVR for analysing the rental market from a tenant's perspective is a unique methodology; however, little detail is provided on how the RVR numerator and denominator are derived and underlying data sources.

HTAG (Higher than Average Growth)

HTAG (Higher than Average Growth) Analytics Pty Ltd is a proptech company that has been registered as an Australian business since 2017 (ABR 2025). Its clients include real estate professionals (including buyers' agents), property investors, a law firm and an insurer. It describes its mission as helping 'investors navigate the market with confidence and [avoiding] the herd mentality' through a fee-based service providing 'data-driven analytics, free from bias, hype, or personal influence' (HTAG 2025).

Between 2018 and 2020, HTAG collected over 80 sales and rental market related data variables, including RVRs and time series from 2007 onwards for some indicators. The company views the 'vacancy rate [as] a key indicator of the real estate rental market'; however, it cautions investors to consider the RVR in conjunction with local economic conditions, affordability and other supply–demand indicators. HTAG publishes Australian suburb and Local Government Area market insight reports for a fee and 'curates' its 'own dataset of online and offline property listings' aggregated from multiple undisclosed data sources. These include Geocoded National Address File (G-NAF) and Snowflake listings from various providers. These listings data are supplemented with other public and private sector data (e.g. select ABS Census variables, school rankings, flood and bushfire risk ratings). HTAG takes a more holistic approach to reporting rental property and residential sales market conditions than other producers, but it has a relatively short time series. It includes a reasonably detailed description of its RVR on its website.[13]

13 See: https://www.htag.com.au/vacancy-rates/#HTAG_Vacancy_Rate_Methodology.

Appendix 2: Quantitative analysis

Testing for temporal variability in RVR equilibrium levels: autoregressive distributed lag modelling

The literature on vacancy rates shows that aggregate measures of vacancy vary in response to short-run market fluctuations, but can also change structurally in response to compositional changes in tenant and/or rental stock profile, as well as technological change.

An autoregressive distributed lag modelling (ARDL) econometric method was adopted to model the relationship between the RVR as a dependent variable and various supply, demand and rental pricing–related independent variables to test for a long-run relationship between them. To separately analyse short- and long-run dynamics, the model is run in an error correction (EC) form. This is a common method to examine how time series variables may move separately but are also affected by equilibrium forces (Kripfangz and Schneider 2016, 2023). ARDLs have been used extensively in housing and urban research (Duca, Muellbauer et al. 2011; Nygaard and Parkinson 2021; Nygaard, Parkinson et al. 2021; Worthington and Higgs 2013). STATA (StataCorp 2023a) software was used to run the modelling.

The key questions that the modelling looked to address were:

- Is there an RVR equilibrium level and how long does it take for RVRs to return to the equilibrium level?
- How does the RVR respond to a shock to the rental property market, such as the COVID-19 pandemic between 2020 and 2021?
- What short-term and long-term determinants impact on RVR equilibrium/disequilibrium dynamics?

The models were run separately for metropolitan Melbourne (MM) and regional Victoria (NM/RV) with details on each variable (logged) shown below and also in Table A1. The following equation illustrates the relationship that was tested, with the RVR being a dependent variable and independent variables including real asking rents (houses and units), one rental supply stock/flow measure, a rental demand measure and a temporal lag of the dependent variable (RVR):

$$y_{MMRVR} = \beta 0 + \beta 1_{MMCOMBAR} + \beta 2x_{MMABOND\ /\ MMBLDAPP} / + \beta 3\ x_{MMHHLDC/NMHHLDC} + \beta 4x_{MMDISPINC\ /\ NMDISPINC} + x_{RBACASHR} + \epsilon i$$

t = observation, time period (i.e. month), –1 / –2 referring to temporal lag

$y_{MMRVR\ /\ NMRVR}$ = rental vacancy rate as a fraction. Dependent (outcome) variable.

Independent variables:

$x_{MMCOMBAR\ /\ NMCOMBAR}$ = real asking rent ($) for all houses and units

$x_{MMABOND\ /\ NMRVABOND}$ = active rental bonds held by the Victorian Residential Tenancies Bond Authority (RTBA) and reported by Homes Victoria (supply stock measure)

$x_{MMBLDAPP\ /\ RVBLDAPP}$ = residential building approvals sourced by ABS (supply flow measure)

$x_{MMDISPINC}$ /$_{NMDISPINC}$ = real disposable income per household, an indicator of a household's ability to absorb rental increases (not specifically renter households)

$x_{RBACASHR}$ = cost of purchasing / maintaining a rental property, Reserve Bank of Australia's target cash rate which forms the basis of lending rates

ϵi = residual error in time period i / month, with temporal lags added.

Aside from RVR and the RBA cash rate, the log of all input variables were imported into STATA for ARDL modelling. Details on each variable are provided in Table A1 below.

Two additional independent variables were added to different model iterations but were removed due to multi-collinearity:

- $x_{MMPRSC\ /\ NMPRSC}$ = private rental stock (PRS) as at 10 August 2021 (2021 Census night) as alternative supply stock measure
- $x_{MMHHLDC\ /\ NMHHLDC}$ = household count, proxy for rental property demand.

Table A1: Data variables used for ARDL regression modelling *

Variable*	Source	Detail
Rental vacancy rate (dependent, fraction)	SQM Research (2024b)	Monthly intervals, January 2011 – August 2024, to two decimal places purchased from SQM Research Pty Ltd
Real asking rent: all houses and units (independent variable, natural log)	ABS (2025a); SQM Research (2024b)	Weekly asking rental amounts in Australian dollars represents the median for each area (postcode / metropolitan Melbourne / regional Victoria) Nominal rental values are extracted from actual rental property advertisements on the listing sites SQM Research Pty Ltd use multiple levels of smoothing the raw data received from the listing sites: first detecting outliers and replacing them with the local average; second, exponential smoothing The weekly average each month was calculated, and nominal rents were deflated using All Groups Consumer Price Index (ABS 2025a)
Cost of debt for investor landlords: target cash rate	Reserve Bank of Australia (2025)	RBA cash rate, daily average over month
Alternative supply measures: natural log of independent variables		
Number of active rental bonds	Homes Victoria (2024a)	Total number of bonds held by the Residential Tenancies Bond Authority (RTBA) at a given point in time is a proxy for total rental housing stock Data on active bonds and new bonds based on data available at the end of quarter; excludes student accommodation Quarterly data are subject to upward revision over time due to two factors: some bonds are lodged late with the RTBA, and the Residential Tenancies Act 1997 (Vic) allows for the preparation of residential rental agreements with a commencement date that predates the written agreement (Homes Victoria 2024b: 40) Metropolitan Melbourne and regional Victoria geographies based on 2021 ABS ASGS boundaries Monthly data points are based on linear interpolation of quarterly data points
Private rental dwelling stock	ABS (2022a); Department of Transport and Planning (Vic) (2023)	Private rental stock (PRS) as at 10 August 2021 (2021 Census night) as alternative measure of supply PRS defined as occupied private dwellings that are privately rented Census landlord types include 'real estate agent' and 'person not in the household' PRS excludes 'non-classifiable' dwellings comprising only visitors and other non-classifiable dwellings Linear interpolation of five-yearly intercensal data points Monthly observations between 2021 and 2024 interpolated using the Department of Transport and Planning's 2021-26 household projections
Residential building approvals	ABS (2025b)	Total number of dwelling units approved (public and private sector dwellings), metropolitan Melbourne and regional Victoria
Alternative demand measures: natural log of independent variables		
Real disposable income per household	National Institute of Economic and Industry Research (2024)	Data based on a 2020–21 price base for all years NIEIR-ID data are inflation adjusted each year to allow direct comparison, and annual data releases adjust previous years' figures to a new base year Linear interpolation of annual data points (compiled and presented by .id [informed decisions])
Number of households in occupied private dwellings	ABS (2022a, 2024b)	Household count, as at 2021 Census (10 August 2021) linear interpolation of 2006, 2011, 2016 and 2021 five-yearly intercensal data into monthly observations between January 2011 and August 2024 Data for the period between 2021 and 2024 was extrapolated using the 2023 Victoria Department of Transport and household projections (Release 2) for FY2021 and FY2026 five-yearly projection period, with linear interpolation used to derive monthly intervals between 2021 and 2024.

*January 2011 – August 2024.
Source: authors.

Data assembly and modelling steps

Time series data were constructed in two ways. First, where monthly data did not exist, linear interpolation between quarterly, annual and five-yearly intercensal points was used (see Table A1).

Second, data variables for the selected geographies (metropolitan Melbourne and regional Victoria) were matched. It is acknowledged that there are likely to be differences in how these aggregated regions are defined by each data provider, potentially compromising consistency. Further, it is possible that not all variables were adjusted for changes in boundaries over time.

The rental housing supply stock measure (private rental stock) and demand measure (count of households in occupied private dwellings) for metropolitan Melbourne and regional Victoria were sourced from 2011, 2016 and 2021 Census data. To match the data supplied by SQM Research (2024b, described below), the Census data were aggregated to 2021 ABS postal area (POA) boundaries (Australian Statistical Geography Standard [ASGS] (ABS 2021b). To account for POA boundary changes across these Census periods, 2011 Statistical Area Level 1 (SA1—the smallest spatial unit for which detailed Census information is available) spatial units were aggregated as closely as possible to 2021 POA boundaries using a GIS 'within' query. The 2016 data were concorded to 2021 POA boundaries using an ABS supplied spatial concordance file (ABS 2021c). The final number of POAs was 260 in metropolitan Melbourne and 434 in regional Victoria (total POA count of 694 in Victoria).

Data variables on rental market metrics (i.e. rental vacancy rate, rental vacancies [RVR numerator] and asking rents) were purchased from SQM Research (2024b) for POAs and aggregated regions, metropolitan Melbourne and regional Victoria. The POA level time series data had been adjusted to the latest ABS ASGS (ABS 2021b). However, not all POAs within metropolitan Melbourne and regional Victoria were captured by these three data variables across the entire time period of interest (164 monthly intervals, January 2011 – August 2024). This meant that there were spatial gaps in the three measures of rental market performance related to a sample of rental properties advertised on rental listing platforms, potentially contributing to a zero or low sample count in some POAs in specific weekly/monthly time periods. This is also attributable to the variable maturity of residential property markets across spatial scales, reflected in the quantum of existing and newly built properties that impact the relevance of market indicators.

The following is the sample size of POA level data for each variable over the entire 164-month period between January 2011 and August 2024:

- RVR: data for 252 POAs out of 260 POAs in metropolitan Melbourne (97%) and 377 POAs out of 431 POAs in regional Victoria (87%)
- rental vacancy (RVR numerator): 252 POAs out of 260 total POAs in metropolitan Melbourne (97%) and 377 POAs out of 431 POAs in regional Victoria (87%)
- asking rents: 187 POAs out of 258 total POAs in metropolitan Melbourne (72%) and 60 POAs out of 404 POAs in regional Victoria (15%); there were 112 POAs in regional Victoria that had missing asking rental data for more than a decade.

At a postal area level, this meant data 'islands' in assembling cross-sectional data for SAR modelling (see next section, Map A1).

The ARDL regression modelling steps included:

- assemble data variables in monthly intervals between January 2011 and August 2024 (shown in Table A1)
- generate descriptive statistics and line graphs to understand the underlying trends in dependent and independent variables
- generate natural logs of independent variables and convert the RVR to a fraction out of 100 for easier interpretation of model outputs

- establish time series properties of dependent and independent variables using augmented Dickey-Fuller test
- identify structural breaks and create dummy variables with no end dates[14]
- apply automatically generated optimal lags by the '.ardl' function within the STATA statistical analysis software (for dependent and independent variables)
- run ARDL error correction (ec1) models with the RVR as a dependent variable and independent variables comprising real asking rents: one measure of supply, one measure of demand, the RBA cash rate, the structural break/dummy variable and a trend command applied to the entire time series (164 monthly intervals, January 2011 – August 2024).[15]

The most optimal outcome for each supply variable option is shown in Chapter 5, where the R-squared was highest and the t-statistic was significant against an independent variable, either in the short run or long run over the time-period analysed. Variables were either excluded due to multi-collinearity (e.g. Census-based private rental stock and count of households in occupied private dwellings) or insignificant contributions to RVR movements over time (e.g. RBA cash rate).

Table A2: Descriptive statistics, metropolitan Melbourne

Variable*	Median	Mean	Std dev.
Rental vacancy rate	2.28	2.42	.90
Real asking rent: houses and units	A$377	A$382	A$20
Supply measures (stock)			
Private rental dwelling stock	417,785	416,183	59,567
Number of active rental bonds	477,369	462,278	68,087
Supply measures (flow)			
Number of rental vacancies: houses and units	4,830	12,543	29,023
Number of dwelling approvals	4,057	4,078	980
Demand measures			
Number of households in occupied private dwellings	1,622,161	1,636,774	144,248
Real disposable income per household	A$136,968	A$137,247	A$2,892
Cost of debt for investor landlords: target cash rate	2.00%	2.20%	1.42%

**Monthly intervals, January 2011 – August 2024; #nominal rents deflated using All Groups Consumer Price Index (ABS 2025a).*

Source: authors.

14 In the metropolitan Melbourne model, a structural break was apparent from March 2020, which marked the onset of the COVID-19 pandemic in Australia and multiple lockdown periods in Victoria over 2021. In regional Victoria, an earlier structural break in the dataset was apparent in July 2017 and from September 2020 (COVID-19 period). Two separate dummy variables were applied to the ARDL models to test for the impact of structural breaks on RVR trends.

15 Various model iterations were run with independent variables relating to supply alternating between active rental bonds and Census-based private rental stock measures. Similarly, two alternative measures of rental demand were added: a Census-based count of households in occupied private dwellings and real disposable income per household. The RBA target cash rate, an indicator of cost of purchasing and maintaining rental properties by investor landlords, was added/dropped in models depending on significance of results.

Table A3: Descriptive statistics, regional Victoria

Variable*	Median	Mean	Std dev.
Rental vacancy rate	1.67%	1.80%	0.62
Real asking rent: houses and units	A$283	A$292	A$24
Supply measures (stock)			
Private rental dwelling stock	120,260	119,910	11,163
Number of active rental bonds	116,145	112,986	10,244
Supply measures (flow)			
Number of rental vacancies	2,805	3,104	1,067
Number of dwelling approvals	948	995	242
Demand measures			
Number of households in occupied private dwellings	554,512	563,9912	40,446
Real disposable income per household	A$119,752	A$120,649	A$2,500
Cost of debt for investor landlords: target cash rate	2.00%	2.20%	1.42%

**Monthly intervals, January 2011 – August 2024; # nominal rents deflated using All Groups Consumer Price Index (ABS 2025a).*

Source: authors.

ARDL model outputs

Various ARDL model iterations were run with the RVR as a dependent variable, along with independent variables including active rental bonds (supply stock measure)/Census-based measure; real asking rents (houses and units); Census-based count of households in occupied private dwellings; real disposable income per household (demand proxies); and the RBA target cash rate, which dictates investor lending rates. The most optimal outcome for each supply variable option is shown below, where the R-squared was highest and the t-statistic was significant against an independent variable, either in the short or long run over the time period analysed. Variables that were insignificant or excluded due to multi-collinearity are not shown in Tables A4 and A5 (Melbourne and regional Victoria output, respectively). Tables A4 and A5 are presented with dummy variables relating to identified structural breaks and inclusion of a trend variable. For Melbourne, this is the COVID-19 period; for regional Victoria, there is evidence of a significant change of intrastate migration flows commencing in 2017 (ABS 2021d) so that the dummy variable captures the migration shift and COVID-19 period.

Table A4: ARDL model output, Melbourne

	With exogenous shock (March 2020, COVID-19 pandemic)			With exogenous shock and long-term trend function (January 2011 – August 2024)		
Variable*	Coefficient	t-statistic	*p* > *t*	Coefficient	t-statistic	*p* > *t*
Adjusted effect, dependent variable RVR as fraction	**–0.113**	**–3.65**	**0.000**	**–0.120**	**–4.00**	**0.000**
Long-run effects of independent variables						
Number of active rental bonds (logged, lag 1)	–0.031	–1.77	0.079	**0.210**	**2.33**	**0.021**
Real asking rents: houses and units (logged, lag 1)	**–0.138**	**–3.13**	**0.002**	–0.031	–0.55	0.585
Short-run effects of independent variables						
Number of active rental bonds (logged, lag 1)	**–5.612**	**–5.35**	**0.000**	**–0.539**	**–5.27**	**0.000**
Real asking rents: houses and units (logged, lag 1)	**–0.142**	**–4.83**	**0.000**	**–0.121**	**–4.11**	**0.000**
Dummy variable, exogenous shock of a structural break March 2020 onwards (COVID-19 pandemic)	–0.003	–0.54	0.591	**0.003**	**2.51**	**0.013**
Trend, time variable, month intervals January 2011 – August 2024	n/a	n/a	n/a	**–0.000**	**–3.20**	**0.002**
Constant	**0.142**	**3.39**	**0.001**	**–0.293**	**–2.07**	**0.040**
Error correction (ec1) model result	R-squared = 0.3549; adjusted R-squared = 0.3296 ARDL (1,1,1) regression Number of observations = 160			R-squared = 0.3957; adjusted R-squared = 0.3679 ARDL (1,1,1) regression Number of observations = 160		

Note: Bold figures are significant at 5 per cent level.

Source: authors.

Table A5: ARDL model output, regional Victoria

	With exogenous shock (July 2017, changed migration pattern)			With exogenous shock and trend function (January 2011 – August 2024)		
Variable*	Coefficient	t-statistic	*p* > *t*	Coefficient	t-statistic	*p* > *t*
Adjusted effect, dependent variable RVR as fraction	–0.067	–1.68	0.096	–0.080	–1.87	0.064
Long-run effects of independent variables						
Number of active rental bonds (logged, lag 1)	–0.112	–1.40	0.163	–0.144	–1.41	0.162
Real asking rents: houses and units (logged, lag 1)	0.038	0.84	0.402	0.005	0.08	0.934
Short-run effects						
RVR as fraction	**–0.204**	**–2.68**	**0.008**	**–0.228**	**–2.97**	**0.003**
Number of active rental bonds (logged, lag 1)	**–0.284**	**–4.12**	**0.000**	**–0.293**	**–4.23**	**0.000**
Real asking rents: houses and units (logged, lag 1)	**0.050**	**3.68**	**0.000**	**0.034**	**2.19**	**0.030**
Lag 2	n/a	n/a	n/a	**0.031**	**2.24**	**0.027**
Dummy variable, exogenous shock of a structural break July 2017 onwards (changed Melbourne – regional Vic intrastate migration pattern)	–0.001	–1.64	0.103	–0.001	–1.72	0.087
Trend, time variable, month intervals January 2011 – August-2024	n/a	n/a	n/a	0.000	0.42	0.676
Constant	0.075	2.91	0.004	0.133	1.18	0.241
Error correction (ec1) model result	R-squared = 0.2508; adjusted R-squared = 0.2163 ARDL (2,1,1) regression Number of observations = 160			R-squared = 0.2752; adjusted R-squared = 0.2317 ARDL (2,1,2) regression Observations = 160		

Note: Bold figures are significant at 5 per cent level.

Source: authors.

Testing for spatial variability in RVR equilibrium levels: spatial autoregressive modelling

The literature suggests that vacancy rates at finer spatial scales may vary due to differences in socio-economic characteristics and urban economic geography factors. As noted in the introduction, RVRs can inform housing policy, planning and investment/development decisions. The use of RVRs in guiding these decisions is, at the finer spatial scale of administrative or business decision-making, contingent on the socio-economic and economic geography factors of each location, but also the extent to which vacancy rates in one area are affected by vacancy rates in other areas. Spatial autoregressive (SAR) modelling is a common method for establishing spatial interdependence in housing market and urban analysis (Halleux 2009; Leishman and Bramley 2005; Moallemi, Melser et al. 2022; Nygaard, Pinnegar et al. 2021). The SAR modelling method was used to address the following questions:

- How do vacancy rates vary spatially across Melbourne, and is there evidence of spatial dependence (connection) in vacancy rates (Vic POAs)?
- How does the RVR change when there is a shock to the system in neighbouring POAs (i.e. supply, demand, rental change)?

The SAR modelling was undertaken using STATA software (StataCorp 2023b). The following equation illustrates the relationship that was examined, with the RVR a dependent variable, and independent variables including real asking rents (houses and units), a rental supply stock or flow measure, a rental demand measure and a temporal lag of the dependent variable (RVR).

In SAR, the temporal lag becomes a spatial lag operator. In STATA, the '. Spregress' spatial autoregressive command is used to fit cross-sectional SAR models with spatial lags or autocorrelated errors. Spress fits models in which observations are not independent, as defined by the spatial weight matrix (Wc/Wi), which estimates a coefficient measure of how much the outcome in a specific POA is affected by nearby outcomes. The equation below reflects the relationships examined:

$$y_{RVR} = \beta_0 + \beta_1 x_{HOUNIR} + \beta_2 x_{PRS21} + \beta_3 x_{HHLD21} + \beta_4 x_{BEL1999/2000UP} + \beta_6 W_{RVR} + \epsilon_i$$

y_{RVR1} = dependent (outcome) variable, rental vacancy rate (%), as at month of August 2021

x_{HOUNIR} = independent variable, nominal asking rent ($, August 2021), all houses and units, weekly average over month

x_{PRS21} = private rental stock, as at 2021 Census (10 August 2021) as alternative measure of supply, sourced from ABS.

Alternative demand variables:

- x_{HHLD21} = household count, as at 2021 Census (10 August 2021), as proxy of rental property demand, sourced from ABS
- $x_{BEL1999}$ = household count by household income group—count of Occupied Private Dwellings (OPDs) where household earned between A$1 and A$1,999 per week (A$1–A$103,999 per year), below Melbourne median (2021 = A$1,906 per week or A$99,102/year) – based on Urban Centre and Localities (UCL) boundary, another proxy of rental property demand, sourced from ABS[16]

16 Note: Not the income specifically of renting households.

- x_{2000UP} = household count by household income group—count of OPDs where households earned $2,000 per week or above (A$104,000 per year or more), above Melbourne UCL median (A$1,906 per week or A$99,102 per year).[17]

W_{RVR} = Spatial weight matrix – W (continuity method, no normalisation)

ϵi = residual error in postal area (POA)

Details of each variable are shown in Table A6.

Data assembly and SAR modelling steps

Cross-sectional data were utilised as at the month of August 2021, in line with the availability of rental supply and demand variables from the 2021 Census (10 August 2021). The case study location was the state of Victoria, and the spatial unit of analysis was postal areas (POAs), based on the 2021 ABS non-ASGS postal area boundaries. A cautionary note is that the postal area–level rental market dynamics reflected in the RVR would have been impacted by the multiple lockdowns enforced during the COVID-19 pandemic in the state of Victoria (National Housing Finance and Investment Corporation [NHFIC] 2022; Pawson, Martin et al. 2021b, 2021b). The ARDL modelling showed a structural break in the modelling of RVR and independent variables in 2020 across both Melbourne and regional Victoria (Chapter 5, Section 5.2).

Spatial models can in principle be estimated at different spatial resolutions. The rationale for using data at postal area geographic scale was partly a function of data availability from SQM Research (2024b). However, previous research also highlights that at sufficiently high levels of spatial aggregation, spatial contingency disappears. For example, Nygaard, Parkinson et al. (2021) examined labour productivity-related wage-agglomeration effects using measures of employment density of where an individual works, controlling for employment in nearby locations (market potential). There was some evidence that proximity to nearby employment concentration had a positive impact on the wages of higher-income earners at the SA2 level administrative spatial unit, but this effect disappeared at larger SA4 geographic units in Australia. POAs broadly conform to SA2. From a housing policy, planning and development use-of-RVR-perspective, the issue the report attempts to identify is whether RVRs (at levels used by market analysts) exhibit spatial dependence.

The compilation of all data variables at a postcode level has already been detailed in the prior section. This POA level dataset was imported into ArcGISPro to create a spatial join with 2021 ABS non-ASGS spatial boundaries. This was to create latitude and longitude points for POA level data in .shp and .dbf files exported for use in STATA. A sample of POAs had to be removed from the data input file for STATA due to gaps in metrics at a POA level purchased from SQM Research Pty Ltd, a function of low rental listings counts in areas with low private rental stock. These would have impacted the accuracy of metrics like rental vacancies and RVR and asking rents, derived from rental listings data. Ultimately, 381 out of 691 POAs with corresponded geographies across intercensal periods in Victoria, and with available data across all variables needed, were included in the data input file (222 in metropolitan Melbourne and 159 in regional Victoria). Of the 381 POAs included, 93 per cent had at a private rental dwelling stock of 50 or more as at the 2021 Census.

As mentioned in the previous section, there were data 'islands' present in the cross-sectional data for regional Victoria, shown in Figure A1. The spatial distribution of the dependent variable (RVR) and most of the independent variables in metropolitan Melbourne are shown in Figures A2–A6 and for regional Victoria in Figures A7–A11.

17 Note: Not the income specifically of renting households.

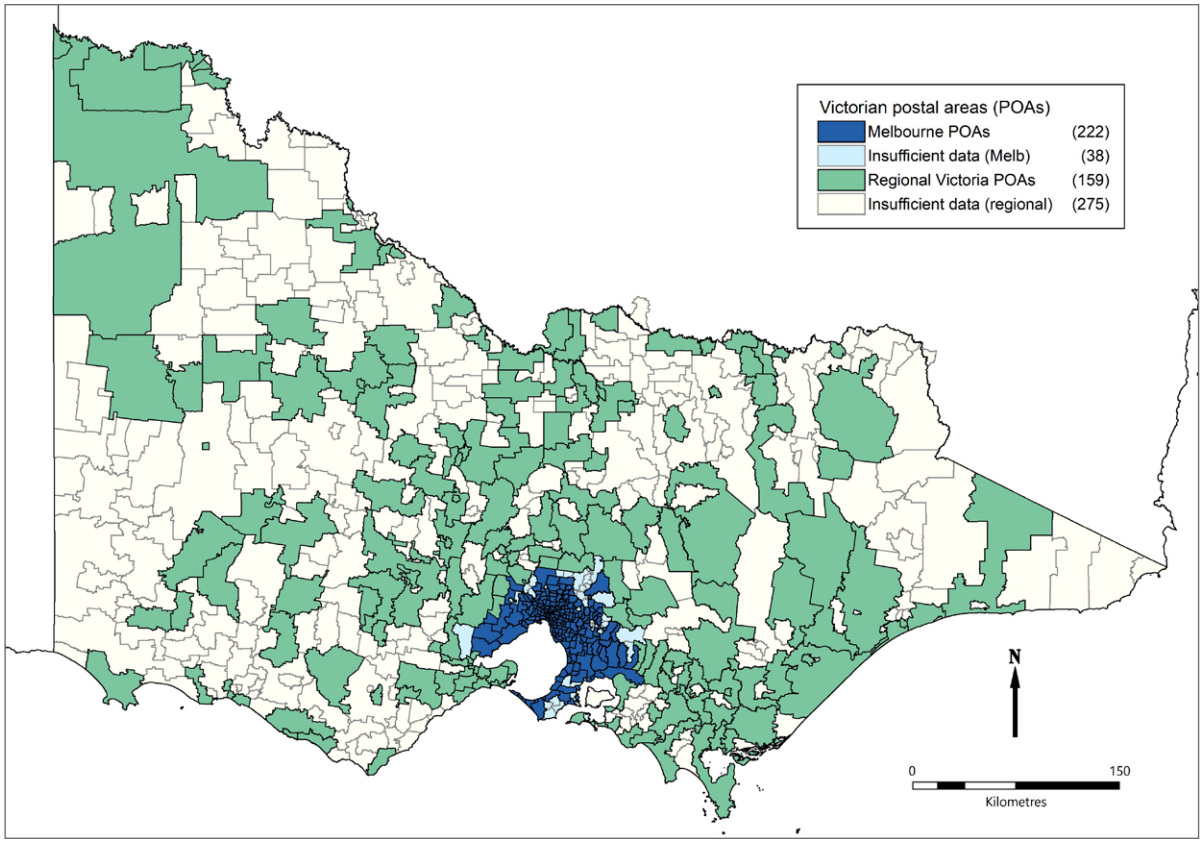
Table A6: Data variables used for SAR analysis*

Variable*	Source	Detail
Rental vacancy rate as a fraction (dependent)	ABS (2021b); SQM Research (2024b)	Data to two decimal places as at August 2021 and by Victoria postcode to coincide with 2021 Census-based input variables Postcode boundaries according to ABS 2021 non-ASGS boundaries
Nominal asking rent: all houses and units (independent variable, natural log)	ABS (2021b); SQM Research (2024b)	Monthly average in August 2021 of median weekly asking rental amounts for each postcode, in Australian dollars Nominal rental values extracted from actual rental property advertisements on the listing sites Purchased from SQM Research Pty Ltd, who use multiple levels of smoothing the raw data received from the listing sites—detecting outliers and replacing them with the local average, before exponential smoothing Postcode boundaries according to ABS 2021 non-ASGS boundaries
Private rental dwelling stock: supply measure (independent variable, natural log)	ABS (2022b); Department of Transport and Planning (Vic) (2023)	Private rental stock (PRS) as at 10 Aug 2021 (2021 Census night) PRS defined as occupied private dwellings that are privately rented, with Census landlord types including 'real estate agent' and 'person not in the household' PRS excludes 'non-classifiable' dwellings comprising only visitors and other non-classifiable dwellings
Demand measures: natural log of independent variables		
Number of households in occupied private dwellings	ABS (2022a, 2024b)	Household count, as at 2021 Census (10 August 2021) Linear interpolation of 2006, 2011, 2016 and 2021 five-yearly intercensal data into monthly observations between January 2011 and August 2024 Monthly observations between 2021 and 2024 extrapolated using the 2023 Victoria Department of Transport and household projections (Release 2) for FY2021 and FY2026 five-yearly projection period
Number of lower-income households in occupied private dwellings	ABS (2021b, 2022a)	Count of households earning between A$1 and A$1,999 per week (A$1–A$103,999 per year), below Melbourne UCL median (2021 = A$1,906 per week or A$99,102 per year) as at the 2021 Census Not specifically renting households and income in nominal terms
Number of higher-income households in occupied private dwellings	ABS (2021b, 2022a)	Count of OPDs where households earned A$2,000 per week or above (A$104,000 per year or more), above Melbourne UCL median (A$1,906 per week or A$99,102 per year) as at the 2021 Census Not specifically renting households and income in nominal terms

**All postcode level (POA) data as at August 2021.*

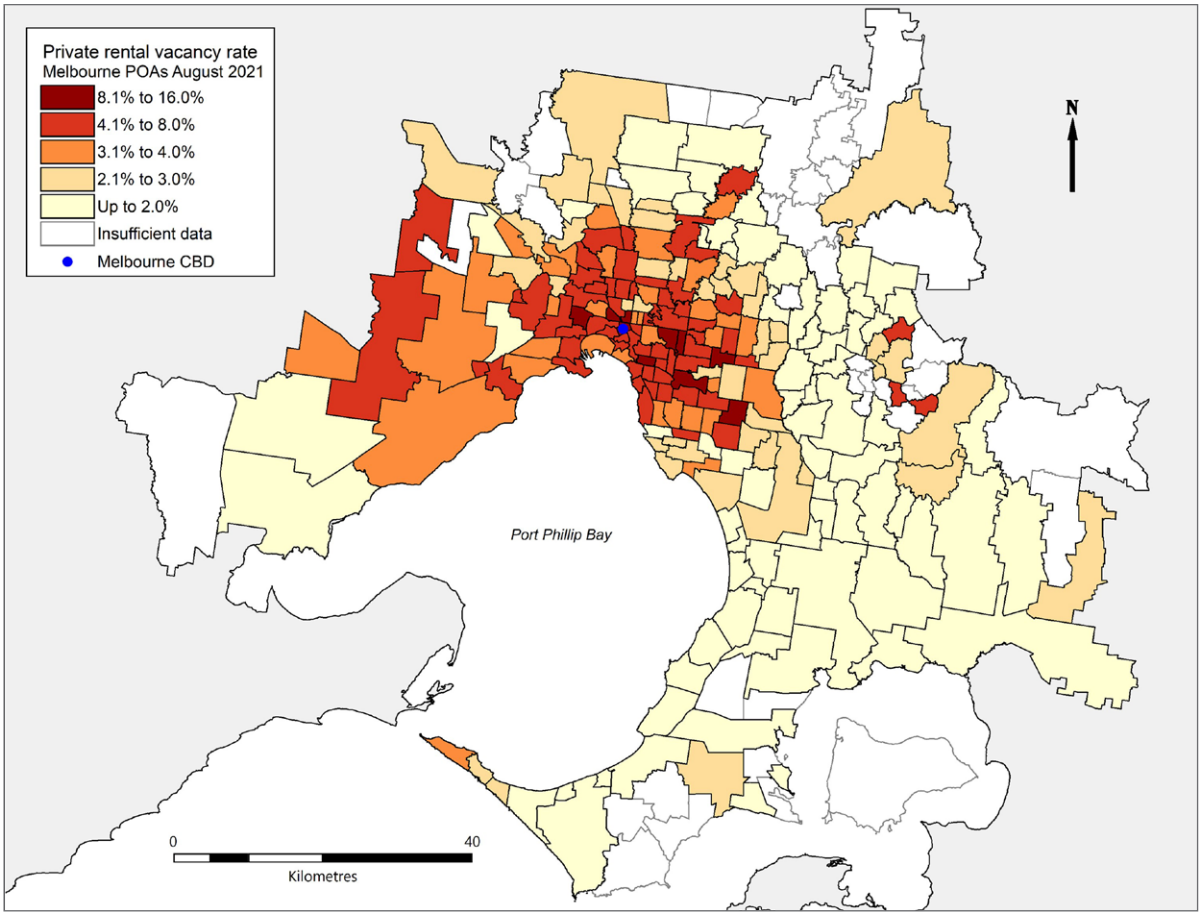
Source: authors.

Figure A1: Victorian postal areas (POAs) included in SAR analysis



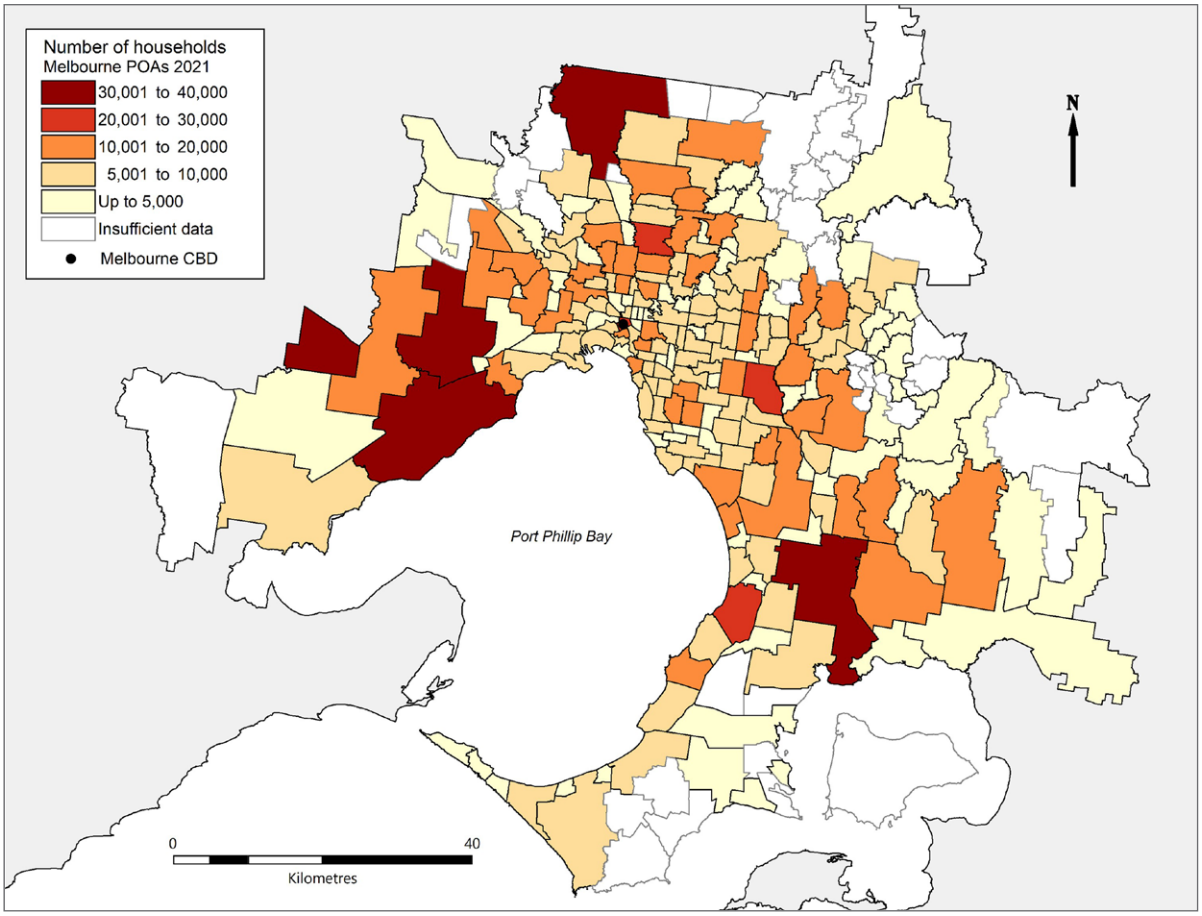
Source: ABS digital 2021 postal area (POA) boundaries (SQM Melbourne/regional Victoria classification).

Figure A2: Rental vacancy rates by Melbourne postal area (POA), August 2021



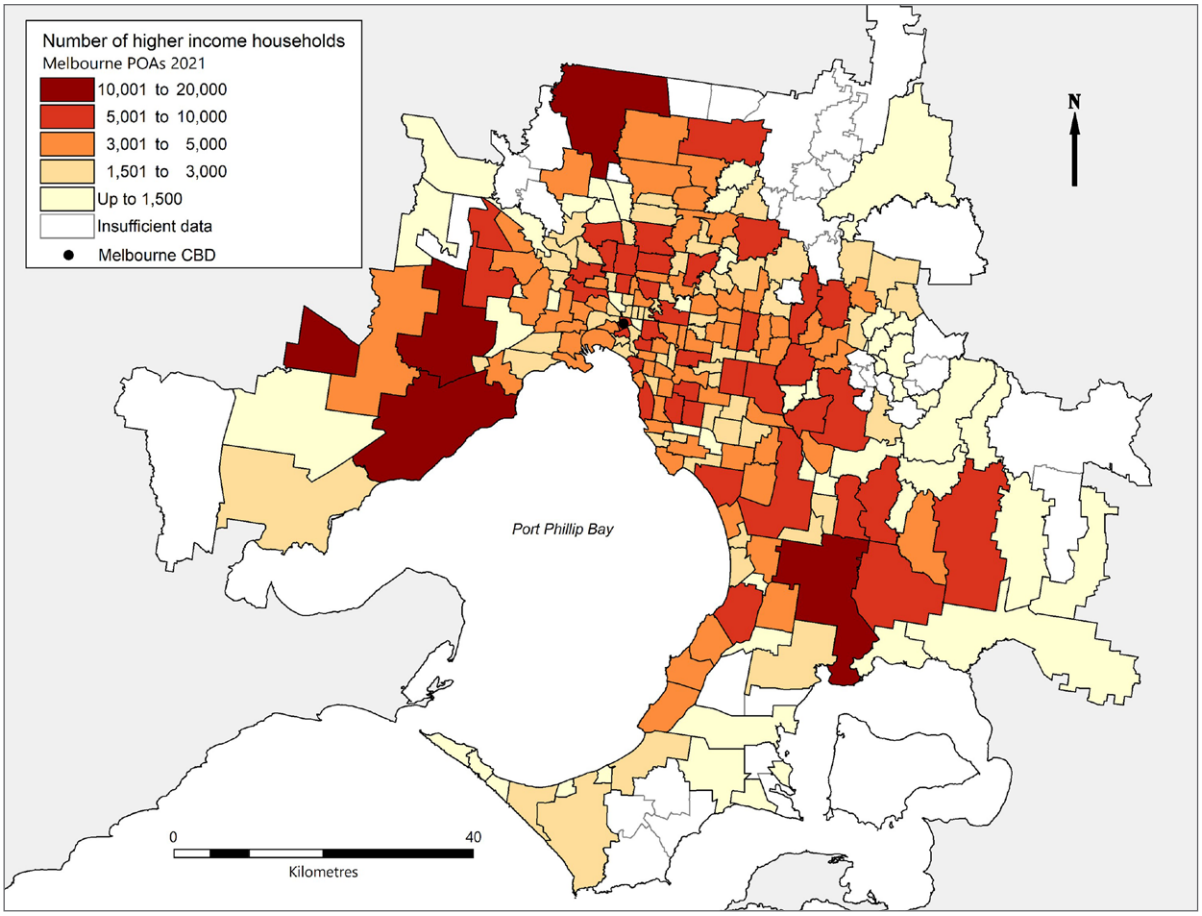
Source: SQM Research (2024b); ABS digital 2021 postal area (POA) boundaries.

Figure A3: Count of households in occupied private dwellings by Melbourne postal areas (POAs), August 2021



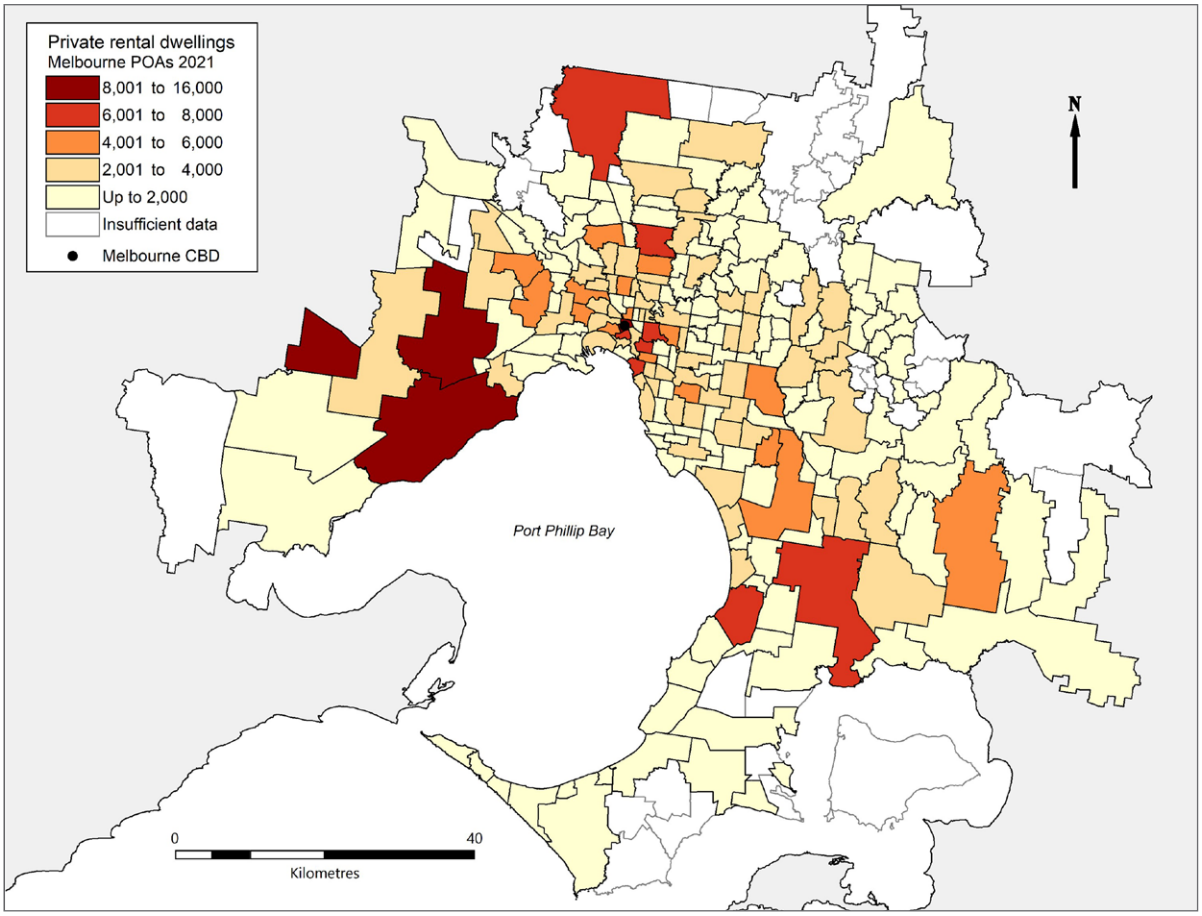
Source: ABS 2021 Census of Population and Housing, Census TableBuilder ABS (2022a); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A4: Count of higher-income households by Melbourne postal areas (POAs), August 2021



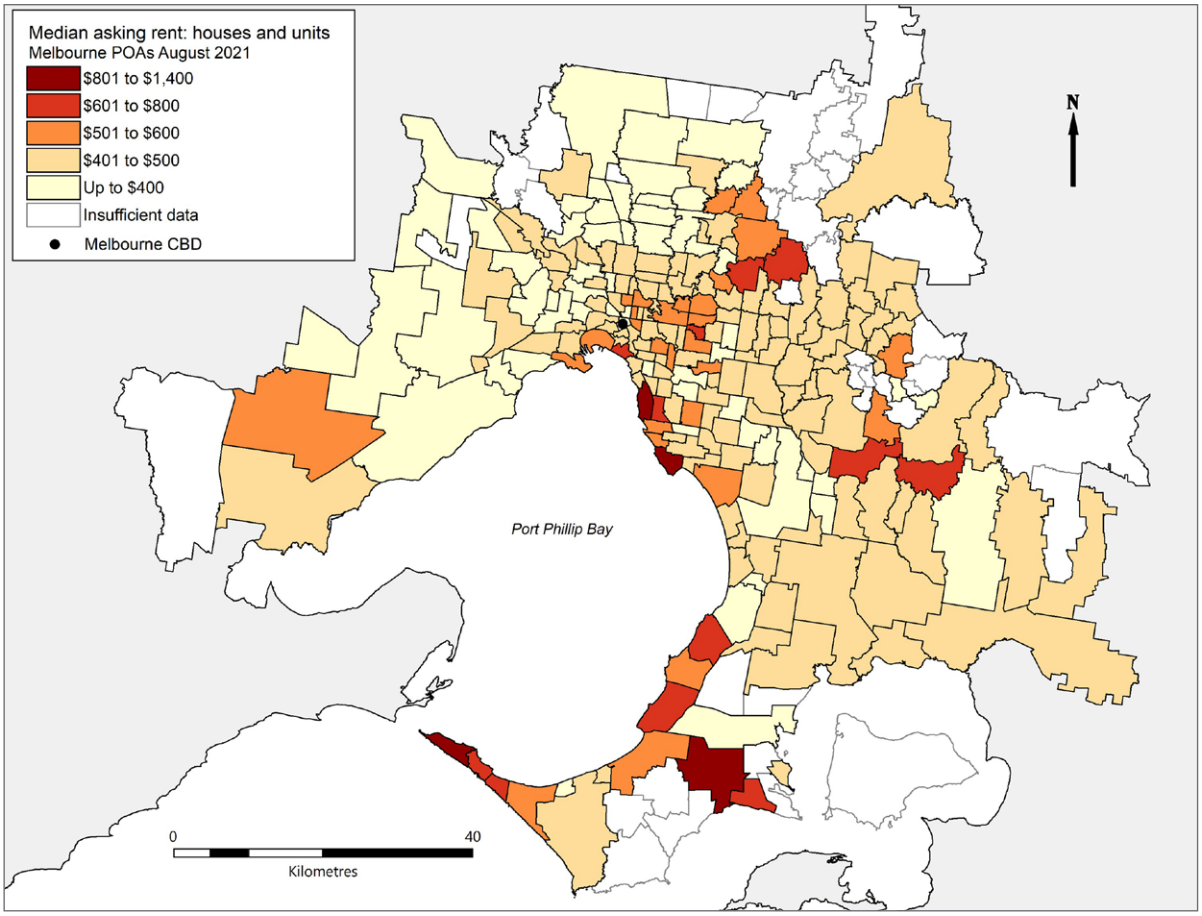
Source: ABS 2021 Census of Population and Housing, Census TableBuilder ABS (2022a); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A5: Count of private rental stock by Melbourne postal areas (POAs), August 2021



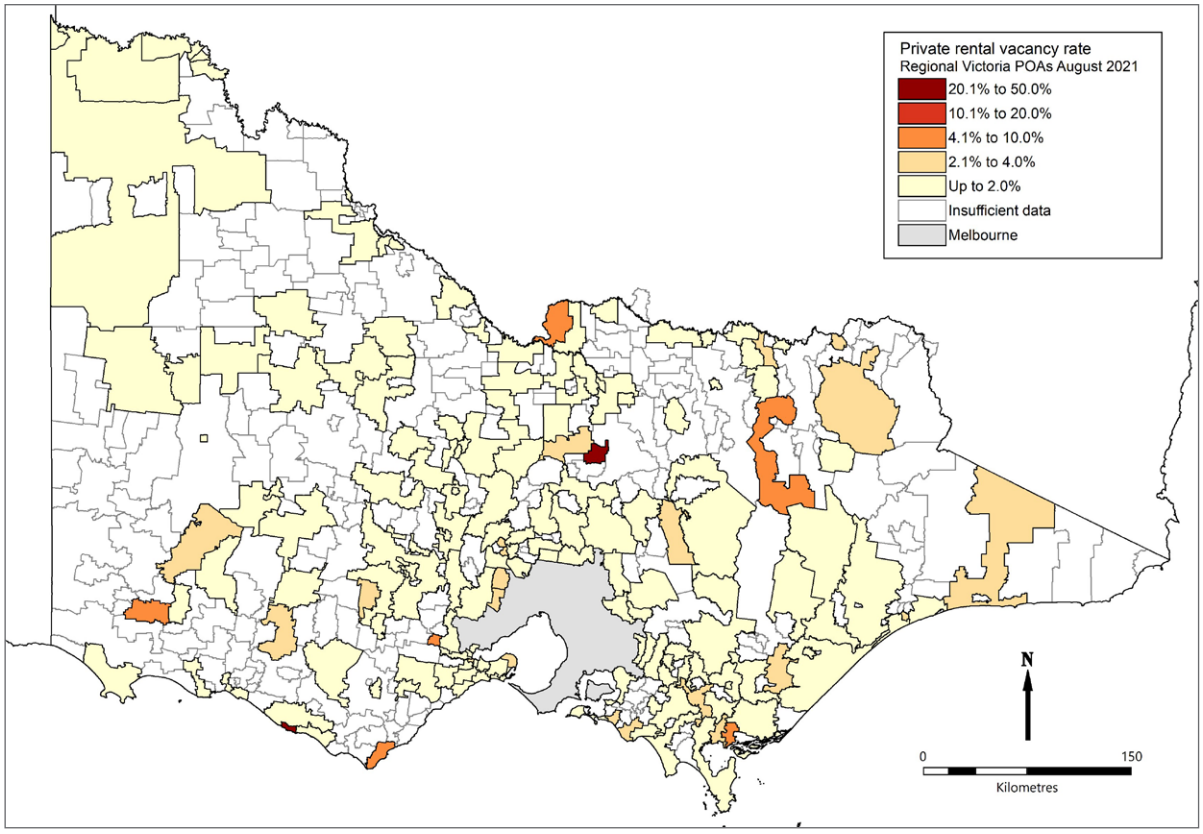
Source: ABS 2021 Census of Population and Housing, Census TableBuilder ABS (2022a); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A6: Asking rents – all houses and units by Melbourne postal areas (POAs), August 2021



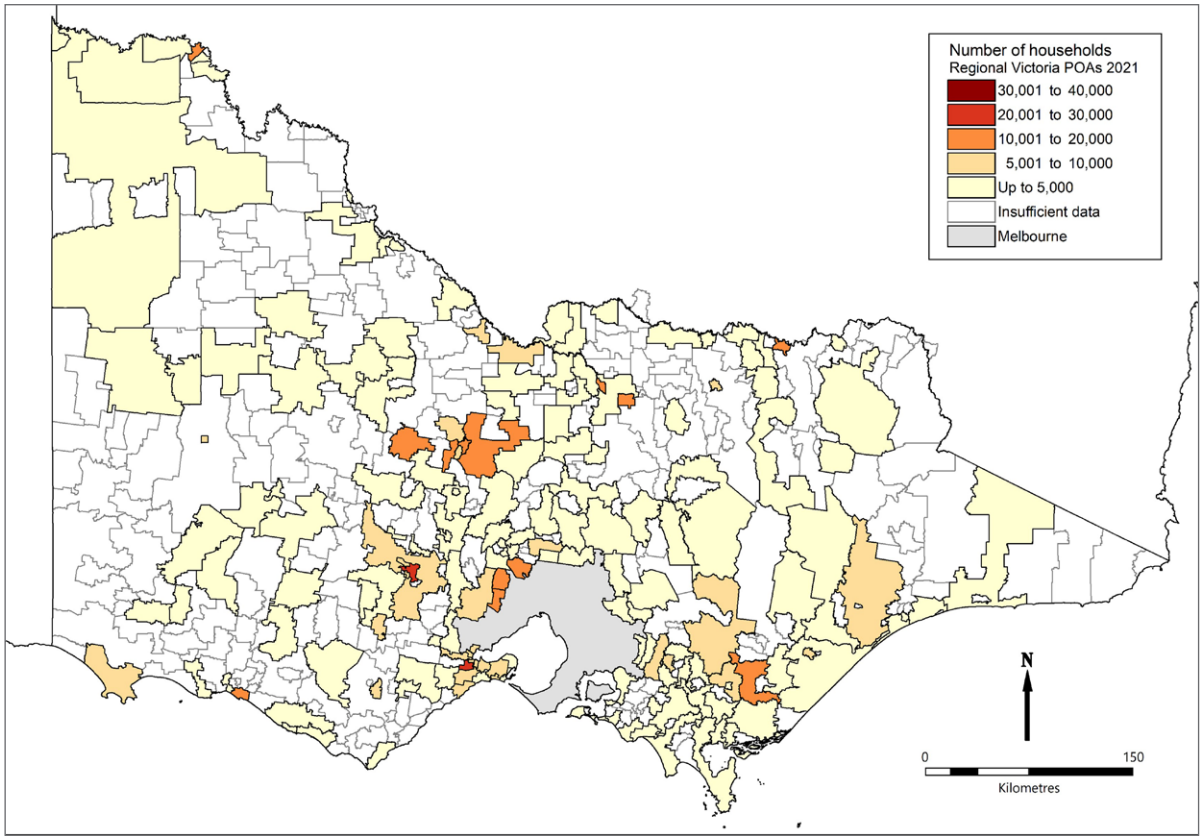
Source: SQM Research (2024b); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A7: Rental vacancy rate by regional Victoria postal areas (POAs), August 2021



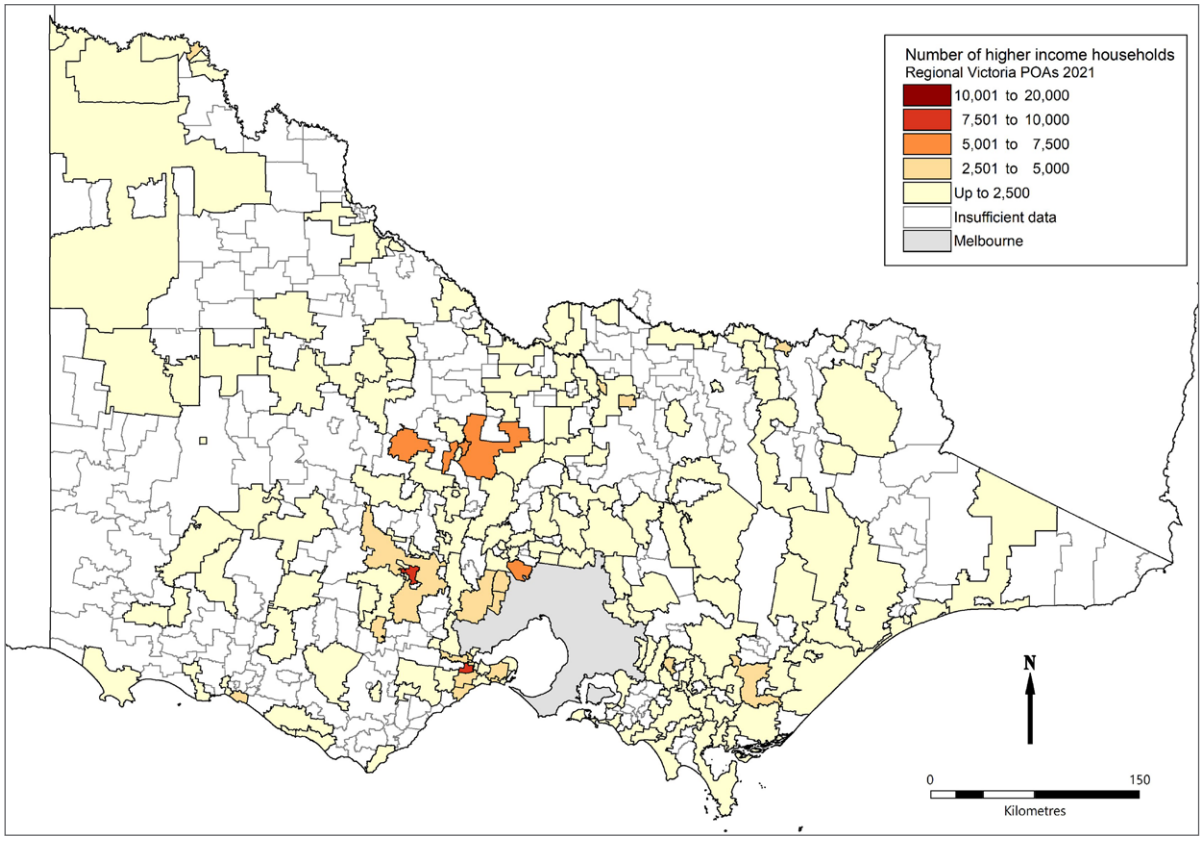
Source: SQM Research (2024b); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A8: Count of households in occupied private dwellings by regional Victoria postal areas (POAs), August 2021



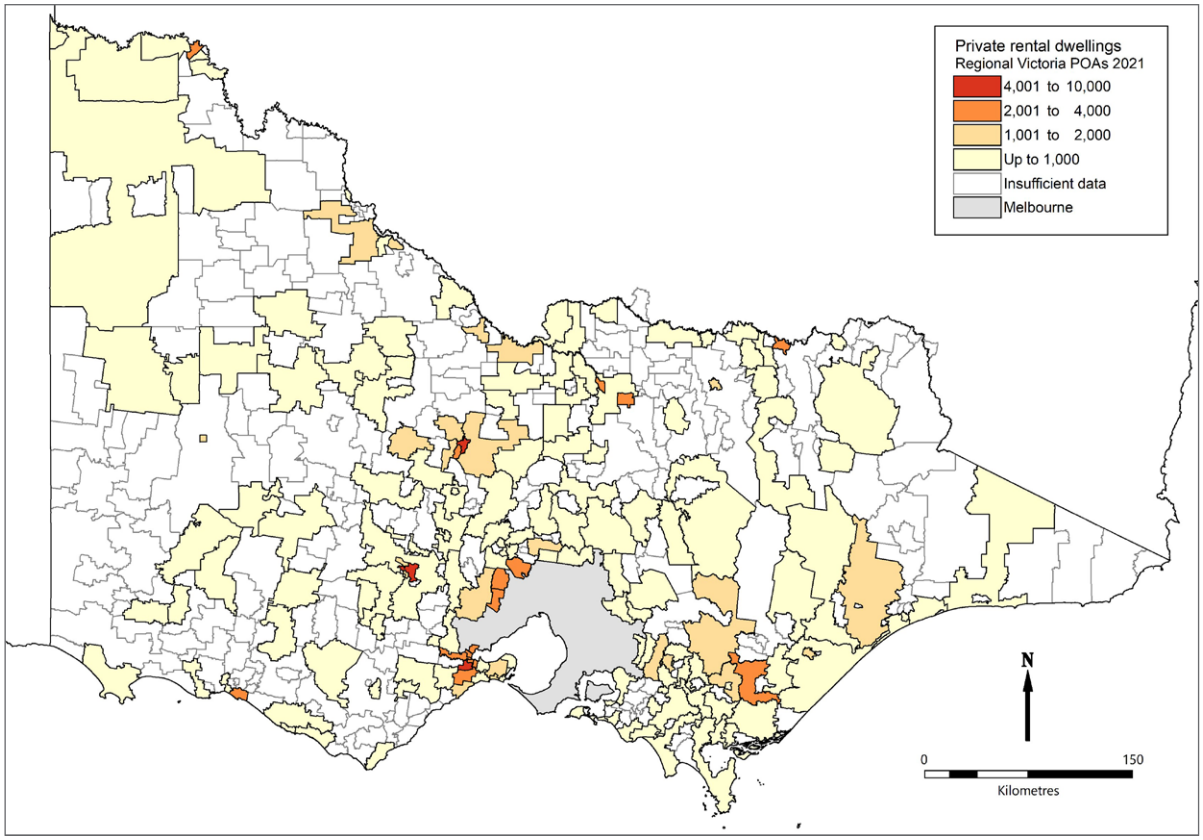
Source: ABS 2021 Census of Population and Housing, Census TableBuilder (ABS 2022a); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A9: Count of higher-income households by regional Victoria postal areas (POAs), August 2021



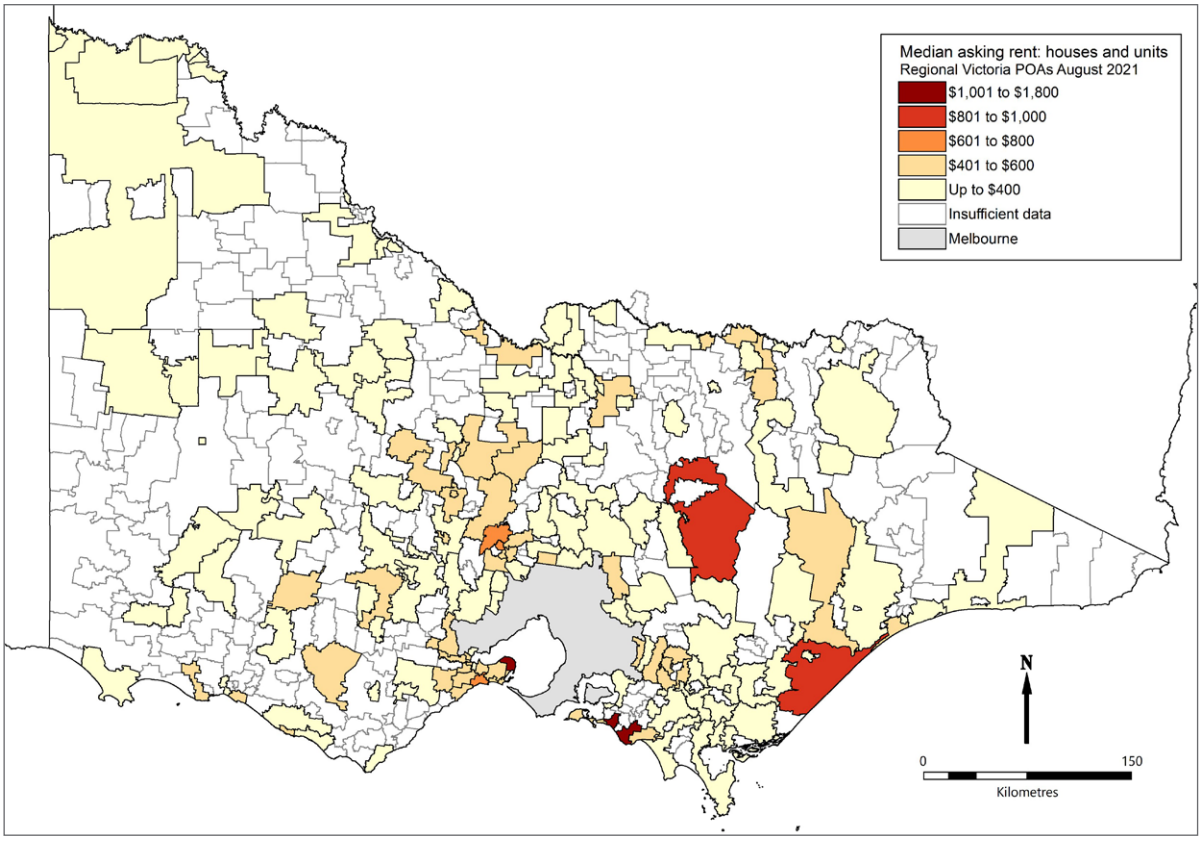
Source: ABS 2021 Census of Population and Housing, Census TableBuilder (ABS 2022a); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A10: Private rental dwelling stock by regional Victoria postal areas (POAs), August 2021



Source: ABS 2021 Census of Population and Housing, Census TableBuilder (ABS 2022a); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Figure A11: Asking rent of all houses and units (nominal) by regional Victoria postal areas (POAs), August 2021



Source: SQM Research (2024b); ABS digital 2021 postal area (POA) boundaries (ABS 2021b).

Map descriptions

A clustering of rental properties with comparatively high asking rents and lower RVRs was evident in some Melbourne and regional areas surrounding the city. In Melbourne, these were suburbs in the Bayside, Mornington Peninsula, Casey and Cardinia LGAs in the south-east (Figure A6, weekly asking rents A$650–A$1,700). Similarly, relatively higher asking rents in regional Victoria were evident in POAs within the LGAs of Mansfield Shire in the north-east, Bass Coast and Wellington in the south-east, Macedon Ranges in the north-west and Greater Geelong in the south-west (Figure A11, weekly asking rents A$800–A$1,800).

In Melbourne, the count of households (demand) and private rental dwelling stock (supply) was concentrated in certain inner and outer areas. In the inner areas, these were POAs traversing the City of Melbourne, Darebin, Moreland, Glen Eira and Boroondara LGAs. The 3000 Melbourne postcode had the highest PRS stock count of 15,900 in August 2021. Outer suburban areas that had high counts of households and private rental stock included postcode 3029 (Hoppers Crossing, Tarneit, Truganina) and 3030 (e.g. Point Cook, Werribee, Werribee South, Derrimut), both in Wyndham LGA towards the outer western part of the city. These POAs had second- and third-highest PRS stock count, respectively (10,000–12,000 dwellings) as at August 2021.

In regional Victoria, higher numbers of households and private rental dwellings were evident in Ballarat west of Melbourne; Bendigo in the north-west; and Geelong and surrounding suburbs like Marshall, Belmont, Grovedale and Waurn Ponds in the south-west. All these areas had relatively high PRS counts as at August 2021 - over 5,000 dwellings in postcode 3550 (includes Bendigo), 3216 (includes Belmont, Grovedale, Highton and Waurn Ponds) and over 7,500 dwellings in 3350 (includes Ballarat).

There were areas with high household counts but low numbers of private rental dwellings, with housing largely comprising single detached dwellings. In outer northern Melbourne, this included POAs in Hume LGA (e.g. Craigieburn, Mickleham, Roxburgh Park), Casey LGA (e.g. Cranbourne, Clyde, Narre Warren) and Cardinia LGA (e.g. Pakenham) in outer south-eastern Melbourne. In regional Victoria, higher household counts were evident in the Yarra Ranges to the east, La Trobe Shire, Shire of Baw Baw and East Gippsland Shire LGAs in the south-east.

The geographic distribution of households in the higher-income group was concentrated in POAs with relatively high counts of PRS (supply), households (demand) and asking rents in August 2021. Within metropolitan Melbourne, this included POAs in inner city areas (e.g. Melbourne, Darebin, Moreland, Glen Eira and Boroondara LGAs). In the outer areas, this included POAs in Wyndham LGA in the outer west, Hume LGA in the outer north, and Casey and Cardinia LGAs in the outer south-east.

Data assembly and SAR modelling steps (continued)

The '.shp' and '.dbf' files were converted into '.dta' files in STATA and the following steps were followed:

- A spatial weight matrix containing coordinates for the POAs (in kilometres) and spatial relationships between them, using the 'spmatrix' command, was defined. The contiguity method was used to define the matrix containing POAs sharing a border or being 'nearby' (StataCorp 2023b: 47).
- The '.spregress' command was run using the RVR as a dependent variable and all independent variables. A dependent variable lag was added to test for spillover effects in the outcome ('gs2sls' estimator used). A spatial lag model was used to test if an outcome in one POA interacted with outcomes in another POA. The null hypothesis was that RVRs were uncorrelated with RVRs in nearby SA2s, as defined by the spatial weight matrix. The lagged dependent variable captured direct spillover effects—that is, whether the RVR in one POA was influenced by the RVR in another POA.
- This model was re-run to test for spillover effects with independent variables related to rental market supply and demand. The outputs were assessed based on the significance of the Wald chi-square result and its significance. This was to check for effects from changes in independent variables within POAs on RVRs on other POAs. The cumulation of both direct and indirect effects were the 'total effects', reported in Chapter 5, Section 5.3.2. The direct and indirect effects are shown in Tables A6 and A7.
- A post estimation Moran's test for spatial dependence was run to check if model residuals were correlated with nearby residuals ('estat moran' command).
- The final step was to add an error spatial lag using the generated spatial weight matrix to test for spatial correlation in the errors. This spatial error term captures unobserved spatial dependencies—that is, whether features of neighbouring POAs affect the RVR in POA *i*. These models were re-run using alternative demand independent variables listed in Table A6.

Table A7: Moran's test of spatial dependence of SAR model (gs2sls, dependent variable lag applied to spatial matrix)

Dependent variable, RVR as a fraction	dy/dx	z	p > z
Average direct impact (within POAs)			
Asking rent: houses and units (nominal)	−0.016	−1.76	0.078
Private rental dwelling stock count	0.005	0.88	0.380
Households in occupied private dwelling count	**−0.099**	**−2.12**	**0.034**
Lower-income households	0.042	1.41	0.159
Higher-income households	**0.041**	**2.14**	**0.033**
Average indirect impact (neighbouring POAs)			
Asking rent: houses and units (nominal)	−0.039	−0.88	0.378
Private rental dwelling stock count	0.012	1.07	0.283
Households in occupied private dwelling count	−0.244	−0.83	0.406
Lower-income households	0.105	0.70	0.485
Higher-income households	0.100	0.85	0.395

Note: Bold figures are significant at 5 per cent level (n = 381 Victoria POAs, data as at August 2021).

Source: Authors.

Table A8: Moran's test of spatial dependence of SAR model (gs2sls, dependent variable lag and error lag applied to spatial matrix)

Dependent variable, RVR as a fraction	dy/dx	z	p > z
Average direct impact (within POAs)			
Asking rent: houses and units (nominal)	−0.014	−1.78	0.075
Private rental dwelling stock count	0.008	1.61	0.107
Households in occupied private dwelling count	**−0.089**	**−2.20**	**0.028**
Lower-income households	0.034	1.32	0.188
Higher-income households	**0.036**	**2.17**	**0.030**
Average indirect impact (neighbouring POAs)			
Asking rent: houses and units (nominal)	−0.032	−1.14	0.255
Private rental dwelling stock count	**0.017**	**2.15**	**0.032**
Households in occupied private dwelling count	−0.194	−1.05	0.293
Lower-income households	0.075	0.80	0.425
Higher-income households	0.080	1.07	0.286

Note: Bold figures are significant at 5 per cent level (n = 381 Victoria POAs, data as at August 2021).

Source: Authors

Appendix 3: Supporting analysis for Chapter 4

Table A9: Comparison of counts between RTBA active rental properties and Census, Melbourne Local Government Areas, 2016 and 2021

Local Government Area	Active bonds RTBA Sept qrt. 2021	Census 2021*	N diff	% diff'ce RTBA to Census 2021	Active bonds RTBA Sept qrt. 2016	Census 2016*	N diff	% diff'ce RTBA to Census 2016
Banyule	12,674	10,598	–2,076	119.6	11,176	8,980	–2,196	124.5
Bayside	8,078	7,946	–132	101.7	7,952	7,024	–928	113.2
Boroondara	18,899	18,026	–873	104.8	19,381	17,221	–2,160	112.5
Brimbank	16,172	15,094	–1,078	107.1	15,123	13,584	–1,539	111.3
Cardinia	8,979	8,785	-194	102.2	6,779	6,513	–266	104.1
Casey	24,037	24,356	319	98.7	17,621	17,331	–290	101.7
Darebin	19,605	20,353	748	96.3	18,519	18,127	–392	102.2
Frankston	14,265	13,217	–1,048	107.9	13,599	12,390	–1,209	109.8
Glen Eira	22,152	19,248	–2,904	115.1	20,623	16,733	–3,890	123.2
Greater Dandenong	16,567	15,519	–1,048	106.8	15,451	14,240	–1,211	108.5
Hobsons Bay	8,578	9,262	684	92.6	8,143	8,347	204	97.6
Hume	17,308	16,638	–670	104.0	12,741	12,285	–456	103.7
Kingston	14,862	14,223	–639	104.5	13,684	12,719	–965	107.6
Knox	11,306	11,193	–113	101.0	9,600	9,210	–390	104.2
Manningham	8,988	9,158	170	98.1	7,269	7,015	–254	103.6
Maribyrnong	13,702	12,703	–999	107.9	12,567	11,531	–1,036	109.0
Maroondah	9,499	9,520	21	99.8	8,746	8,338	–408	104.9
Melbourne	56,344	46,263	–10,081	121.8	41,214	34,788	–6,426	118.5
Melton	16,647	11,785	–4,862	141.3	10,702	8,159	–2,543	131.2
Merri-bek	25,963	24,621	–1,342	105.5	23,077	21,095	–1,982	109.4
Monash	18,554	19,129	575	97.0	16,207	16,555	348	97.9
Moonee Valley	13,583	13,761	178	98.7	12,237	11,829	–408	103.4
Mornington Peninsula	11,031	11,238	207	98.2	11,201	10,392	–809	107.8
Nillumbik	3,475	1,842	–1,633	188.7	3,145	1,690	–1,455	186.1
Port Phillip	20,703	23,159	2,456	89.4	22,104	22,125	21	99.9
Stonnington	21,797	20,438	–1,359	106.6	21,932	19,144	–2,788	114.6
Whitehorse	17,685	17,078	–607	103.6	14,752	14,257	–495	103.5
Whittlesea	15,135	17,927	2,792	84.4	12,086	14,124	2,038	85.6
Wyndham	27,497	26,638	–859	103.2	18,651	17,942	–709	104.0
Yarra	18,568	18,594	26	99.9	17,469	15,919	–1,550	109.7
Yarra Ranges	6,897	7,283	386	94.7	6,695	6,589	–106	101.6
Total Melbourne	**519,550**	**495,595**	**–23,955**	**104.8**	**450,446**	**416,196**	**–34,250**	**108.2**

*Notes: *Private rental dwellings are those with a landlord type of real estate agent, person not in the same household-parent/other relative, and person not in the same household-other person.*

Source: Homes Victoria (2024b); ABS Census TableBuilder, ABS (2016, 2022a).

Table A10: Comparison of counts between RTBA active rental properties and Census, regional Victorian Local Government Areas, 2016 and 2021

Local Government Area	Active bonds RTBA Sept qrt 2021	Census 2021*	N diff	% diff'ce 2021	Active bonds, RTBA Sept qrt 2016	Census 2016*	N diff	% diff'ce 2016
Alpine	873	1,006	133	86.8	838	1,004	166	83.5
Ararat	781	873	92	89.5	753	777	24	96.9
Ballarat	12,917	12,437	−480	103.9	11,158	9,971	−1,187	111.9
Bass Coast	2,989	3,287	298	90.9	3,001	2,859	−142	105.0
Baw Baw	3,449	3,721	272	92.7	2,989	3,117	128	95.9
Benalla	1,134	1,092	−42	103.8	1,101	1,034	−67	106.5
Buloke	209	332	123	63.0	178	288	110	61.8
Campaspe	2,292	2,698	406	85.0	2,240	2,410	170	92.9
Central Goldfields	855	991	136	86.3	822	898	76	91.5
Colac Otway	1,412	1,612	200	87.6	1,329	1,379	50	96.4
Corangamite	711	1,022	311	69.6	707	943	236	75.0
East Gippsland	3,089	3,234	145	95.5	3,014	3,008	−6	100.2
Gannawarra	496	708	212	70.1	537	664	127	80.9
Glenelg	1,090	1,317	227	82.8	1,263	1,358	95	93.0
Golden Plains	502	601	99	83.5	414	531	117	78.0
Greater Bendigo	10,709	10,810	101	99.1	10,282	9,485	−797	108.4
Greater Geelong	25,475	25,628	153	99.4	21,445	19,983	−1,462	107.3
Greater Shepparton	5,611	5,591	−20	100.4	5,329	4,930	−399	108.1
Hepburn	780	936	156	83.3	806	860	54	93.7
Hindmarsh	294	379	85	77.6	269	297	28	90.6
Horsham	1,779	1,769	−10	100.6	1,612	1,538	−74	104.8
Indigo	775	936	161	82.8	762	876	114	87.0
Latrobe	6,523	6,320	−203	103.2	6,271	5,804	−467	108.0
Loddon	197	347	150	56.8	192	321	129	59.8
Macedon Ranges	2,019	2,286	267	88.3	1,949	1,971	22	98.9
Mansfield	470	588	118	79.9	398	484	86	82.2
Mildura	5,138	5,273	135	97.4	4,898	4,688	−210	104.5
Mitchell	3,006	3,004	−2	100.1	2,481	2,376	−105	104.4
Moira	1,943	2,151	208	90.3	1,923	1,964	41	97.9
Moorabool	1,875	2,037	162	92.0	1,606	1,641	35	97.9
Mount Alexander	919	1,118	199	82.2	983	1,069	86	92.0
Moyne	647	967	320	66.9	682	877	195	77.8
Murrindindi	683	758	75	90.1	663	665	2	99.7
Northern Grampians	726	802	76	90.5	688	762	74	90.3
Pyrenees	244	351	107	69.5	216	312	96	69.2
Queenscliff	108	227	119	47.6	118	193	75	61.1
South Gippsland	1,334	1,630	296	81.8	1,415	1,575	160	89.8
Southern Grampians	864	1,139	275	75.9	981	996	15	98.5
Strathbogie	627	708	81	88.6	531	621	90	85.5
Surf Coast	2,996	2,496	−500	120.0	2,157	1,953	−204	110.4
Swan Hill	1,334	1,617	283	82.5	1,366	1,440	74	94.9
Towong	262	355	93	73.8	278	349	71	79.7
Wangaratta	2,124	2,215	91	95.9	2,003	1,940	−63	103.2
Warrnambool	3,166	3,209	43	98.7	3,409	3,077	−332	110.8
Wellington	2,876	3,106	230	92.6	2,823	2,841	18	99.4
West Wimmera	98	221	123	44.3	83	169	86	49.1
Wodonga	4,329	4,232	−97	102.3	4,077	3,806	−271	107.1
Yarriambiack	257	391	134	65.7	242	337	95	71.8
Total regional Victorian LGAs	**122,987**	**128,528**	**5,541**	**95.7**	**113,282**	**110,441**	**−2,841**	**102.6**

*Notes: *Private rental dwellings are those with a landlord type of real estate agent, person not in the same household-parent/other relative, and person not in the same household-other person.*

Source: Homes Victoria (2024b); ABS Census TableBuilder, ABS (2016, 2022a).

Table A11: Long-run average of quarterly RVRs: REIV and four options defining vacancy in the RTBA data for different Victorian spatial sub-markets.

		RTBA			
	REIV	Option 1 (–5 days to 6 months)	Option 2 (–10 days to 6 months)	Option 3 (–15 days to 6 months)	Option 4 (–5 days to 1 year)
Melbourne					
Long run March Q 2005 – March Q 2024	2.9%	2.6%	2.7%	2.8%	3.2%
Global financial crisis March Q 2008 – Dec Q 2012	2.5%	2.4%	2.5%	2.6%	3.0%
COVID-19 March Q 2020 – Dec Q 2022	4.4%	3.5%	3.5%	3.6%	4.4%
Regional Victoria					
Long run March Q 2005 – March Q 2024	2.4%	2.7%	2.9%	3.0%	3.6%
Global financial crisis March Q 2008 – Dec Q 2012	2.4%	2.8%	3.0%	3.1%	3.7%
COVID-19 March Q 2020 – Dec Q 2022	1.5%	2.1%	2.2%	2.2%	2.6%
Inner Melbourne					
Long run March Q 2005 – March Q 2024	2.9%	3.0%	3.2%	3.3%	3.8%
Global financial crisis March Q 2008 – Dec Q 2012	2.4%	2.5%	2.7%	2.8%	3.2%
COVID-19 March Q 2020 – Dec Q 2022	5.2%	4.9%	5.0%	5.0%	6.6%
Middle Melbourne					
Long run March Q 2005 – March Q 2024	3.4%	2.6%	2.7%	2.8%	3.3%
Global financial crisis March Q 2008 – Dec Q 2012	2.7%	2.3%	2.5%	2.6%	3.0%
COVID-19 March Q 2020 – Dec Q 2022	5.9%	3.7%	3.8%	3.8%	4.7%
Outer Melbourne					
Long run March Q 2005 – March Q 2024	2.1%	2.2%	2.3%	2.4%	2.8%
Global financial crisis March Q 2008 – Dec Q 2012	2.2%	2.2%	2.3%	2.4%	2.8%
COVID-19 March Q 2020 – Dec Q 2022	1.8%	2.3%	2.4%	2.5%	2.9%

Note: average of quarterly, unsmoothed data; RTBA options are described in Chapter 4.

Source: Homes Victoria (2024a); REIA (2024a); REIV (2024).

Australian Housing and Urban Research Institute
Level 12, 460 Bourke Street
Melbourne VIC 3000
Australia
+61 3 9660 2300
information@ahuri.edu.au
ahuri.edu.au
Australian Housing and Urban Research Institute
facebook.com/AHURI.AUS
instagram.com/ahuri_research/