October 2024

CODE ENCOUNTERS REPORT 2:

Digital tenant referencing in England's private rented sector

by Alison Wallace, David Beer, Roger Burrows, Alexandra Ciocănel and James Cussens

Acknowledgements

The research team would like to thank the Nuffield Foundation for funding the study. Warm thanks also go to the private landlords, letting agents, technology firms, stakeholders and private tenants for their participation and support of this project, their help is much appreciated. We would like to thank Dan Wilson-Craw at Generation Rent,Vanessa Warwick at Property Tribes and Chris Norris at the National Residential Landlords Association for help with the recruitment of private sector tenants and landlords. Catherine Dennison from the Nuffield Foundation provided valuable support and advice to see the project through. Lastly, the members of the Project Advisory Group were also helpful in recruiting for this study, providing additional support and insight along the way and valuable feedback on this report. Any errors are of course our own.

Nuffield Foundation

The Nuffield Foundation is an independent charitable trust with a mission to advance social well-being. It funds research that informs social policy, primarily in Education, Welfare and Justice. The Nuffield Foundation is the founder and co-funder of the Nuffield Council on Bioethics, the Ada Lovelace Institute and the Nuffield Family Justice Observatory. The Foundation has funded this project, but the views expressed are those of the authors and not necessarily the Foundation. Visit www.nuffieldfoundation.org

Nuffield Foundation

Contents

Executive Summary

The Code Encounters Nuffield Foundation funded project was undertaken by the University of York and the University of Bristol to examine the digital risk profiling tools that shape access to housing. These tools are increasingly adopting new sources of data and algorithmic processing and include tenant referencing tools in the private rented sector (PRS), affordability assessments in social housing and credit risk decisions in mortgage lending. The project ran from 2022 to 2024 and the findings are based on 122 in-depth interviews with people who produce, operate and are impacted by these various digital processes. This is the first UK study to gather multiple perspectives on the construction, operation and impact of digital risk profiling tools. This briefing highlights key findings from 50 interviews with technology firms, landlords, agents and tenants and a survey of 113 landlords drawn from the PRS in England.

Summary

- Tenant referencing comprises part of landlords' tenant selection processes, used to mitigate business risks arising from welfare reform, increased regulation and labour market changes. Growing digital data reserves are applied to tenant risk profiling and tenant selection aided by increased automation of administrative processes.

- These data sources help verify tenants' identity and income, and in the case of Open Banking are framed as helping people overcome thin credit files and to provide fairer assessments of affordability. There are, however, significant data gaps relating to former landlord references and employment contracts that limit full automation.

- Landlords and agents often still place great value in tenants' 'soft attributes' to augment formal tenant referencing and letting decisions, screening many tenants out on affordability but also, in some circumstances, other qualitative data prior to formal referencing.

- The PRS is home to a diverse range of tenants but the tools struggle with complex tenant circumstances, leading to exclusion for some or significant human involvement in interpreting data and handling exceptions. Squeezing people through fixed models prompts greater use of conditional lets, such as guarantors and rent in advance, that not all tenants are able to meet.

- These tools highlight the increased need for tenants to be aware of and manage their digital profiles to present themselves well to landlords and agents.

What is the background to this research?

Existing literature highlights the risks of bias and opacity in digital decision-making systems. Media and regulators in the USA, Australia and the UK have raised concerns about digital tenant risk profiling regarding its transparency, the volume of data collection, its accuracy and potential tenant exclusion.

Digital tenant referencing is a routine but obscure and little discussed hurdle to accessing the PRS. The PRS has expanded significantly, accommodating a diverse range of tenants, including more households with children, than social housing. Examining the extent of digital risk profiling and decision making in the PRS matters as tenants who fail may end up in less well managed parts of the sector where poor affordability, insecurity and property conditions are concentrated.

A previous study indicated that increased policy scrutiny of the sector has spurred landlords to adopt more stringent risk management and tenant selection processes to mitigate business risks that include these digital referencing tools.

This report provides an in-depth qualitative analysis of digital risk-profiling tools that govern access to the housing market. It is the first UK study to appraise these systems from multiple perspectives.

How are people in the PRS using these new data technologies?

Our study shows that digital tenant risk profiling tools are drawing credit reference agency (CRA) and other data into landlords' affordability assessments and tenant selection decisions. Adoption depends on target market segments, but interviews suggest that landlord and agents' use of these tools has grown, reflecting a shift from analogue to algorithmically driven methods for evaluating tenants with implications for housing accessibility and exclusion.

The integration of 'proptech' and 'fintech' digital technologies is transforming all parts of the housing market, increasing data recording and algorithmic processing. Digital tenant referencing tools, which rank and classify tenants, augment landlord letting decisions but raise concerns about exclusion, particularly against people that deviate from the 'ideal tenant'. These tools, often relying on credit market data and other digital data reserves, can speed referencing and bring a greater range of assurance to landlords and agents but can also exacerbate existing inequalities.

There are significant data gaps that are hard to overcome, notably regarding former landlord references or employment contract and income security. This leads many referencing firms to adopt hybrid models mixing analogue and digital practices. Links to electronic wage slips, Companies House and Open Banking data are emerging and can confirm incomes and rent payments but cannot identify risk relating to anti-social behaviour, property damage, the proportion of income that is guaranteed, nor that the employment contract length exceeds the tenancy length. Some firms interrogate rental-insurance claims histories but these resources are incomplete.

Data gaps and fitting complex human lives into fixed models that neither reflect the complexity of many people's circumstances, nor the various risk appetites of landlords or geography of property demand and supply. These issues may undermine fully automated risk profiling models emerging in the UK, as seen in other countries. Despite growing use of digital data and automation, and integration into end-to-end platforms to support property management, in some circumstances, there remains a significant role for human intervention from pre-screening tenants' situations and demeanour prior to formal referencing and in overriding referencing firms' recommendations.

Who are the new winners and losers?

Welfare reforms and rising rents have worsened housing affordability, with some evidence of discriminatory practices persisting despite stronger equality legislation, disproportionately affecting minorities and vulnerable groups. Digital tools, while designed to mitigate landlord risk, may exacerbate market power imbalances, particularly in more competitive rental markets.

Affordability issues and adverse credit frequently cause reference failures, disproportionately affecting younger people, migrants, the precariously employed and benefit recipients. Failed references can lead to homelessness or force tenants into lower-quality housing. Landlords can override referencing recommendations, leading to conditional lets and the greater use of guarantors or advance rent. Digital referencing could be more exclusionary were it not for human intervention.

Open Banking, the insights gleaned from banking transaction data, is emerging as a significant data source and may offer accurate and fair income, expenditure and affordability assessments that help tenants with thin credit files, such as young people or migrants. This may produce new winners and losers as this may undermine more affluent tenants who manage their finances less assiduously or reinforce existing biases relating to those on low-incomes.

There are incomplete reference datasets to test models indicating uncertain model accuracy. There is no reciprocal data sharing agreement in the PRS as in financial services and landlords rarely register rent arrears debts with credit referencing agencies. Few firms measured whether any disparate impacts existed across tenant groups, despite protected groups being overrepresented in those that research participants said regularly failed referencing.

What might tenant referencing look like in the future?

The interviews suggested that two trends posed significant transformative potential, although participants noted barriers to greater uptake.

First, Open Banking has the potential to reduce exclusion but the technology is immature, tenants often consider it intrusive as much can be gleaned about a person's life from their transaction data, and it represents a new way that people must represent their personal data to external agencies, an issue that lacks public awareness.

Second, firms were producing tenant passports that recasts tenants, rather than landlords or agents, as responsible for referencing, gathering a digital passbook of evidence to demonstrate their credibility as a tenant. It is unclear whether this will smooth the screening process or replace formal referencing but has potential to favour more affluent tenants.

Conclusion

It is apparent that digital tenant risk profiling is growing as increased automation and new digital data resources are brought to various property management tasks. Bringing efficiencies and greater reassurance to landlords and agents facing increased risks, the tools bring a greater range of evidence to tenant selection decisions than ever before. These new technologies are reshaping access to private rented homes, exacerbating existing inequalities and contributing to new forms of exclusion or conditionality in the housing market, forcing tenants to reframe how they present their digital selves for third party scrutiny.

Recommendations

Across the Code Encounters project, we identified universal themes that need to be addressed as well as sector specific that require attention, including the following that are relevant to Government, those responsible for financial education, risk profiling technology firms, trade bodies, lenders, landlords and agents.

1. **To make visible how data and algorithms have been used in each decision** Provide greater transparency in the way data is gathered from and about tenants and clarity about how these data will be used.

2. **To establish agreed guidelines on the appropriate use of algorithms for stakeholders within the sector and tenures** Provide guidance to landlords on what referencing tools can do and how algorithms and new data resources are deployed.

3. **To produce guidance on the use of data and algorithms for tenants** Increase public awareness of how they must manage their digital profiles, including banking transaction data, much in the same way as the importance of managing credit scores has permeated financial education and public consciousness.

4. **To retain human oversight in decision making** Not all people fit algorithmic models so human oversight should be maintained to ensure fairness.

5. **To ensure the explainability of decision making** Organisations must be able to fully articulate how a decision was reached, including the data used, where algorithms were involved and the human oversight of the outcome.

6. **To ensure the retention of flexibility and individually tailored decision-making** We would suggest having a system in place in which the inputs into algorithmic processing can also be adapted to enable flexibility and to ensure that both input and outcomes remain flexible and adaptable to the individual being assessed.

These recommendations are discussed in more detail in this report and our *Overarching summary report 1.* Below are additional observations for private renting.

7. **To ensure defensible and fair decisions surrounding affordability for tenants in**

receipt of benefits Tenant referencing firms should consider incorporating benefit maximisation tools into their platforms to support the accurate affordability assessments of low-income tenants.

8. **To ensure referencing models are free from unintended indirect discrimination** All firms and users of risk profiling tools should consider equality impact assessments to ensure that some groups are not disadvantaged in comparison to others in profiling recommendations and in the final letting outcomes.

9. **To ensure the predictive capacity of the models is secure** Model accuracy in private and social renting was uncertain and firms and users should undertake work to test the predictive capacity of the tools against suitable datasets.

Findings from this study have already been published in peer-review journals and all reports, papers and briefings are available to download from the project webpages https://www.york.ac.uk/chp/housing-markets/code-encounters/.

Preamble

This is the second report in a four-part series that explores the development, operation, and impact of digital risk profiling tools in England's mortgage and rental markets. This report - *Code Encounters Report 2: Digital tenant risk profiling in England's private rented sector* - specifically focuses on the private rented sector (PRS) in England, offering insights into the unique challenges and implications of risk profiling within this tenure. The details of all four reports are as follows:

- *Code Encounters Report 1: Housing and algorithmic risk profiling in England - Overarching summary report* (2024) by David Beer, Alison Wallace, Roger Burrows, Alexandra Ciocănel and James Cussens. Centre for Housing Policy: University of York.

- *Code Encounters Report 2: Digital tenant risk profiling in England's private rented sector* (2024) By Alison Wallace, David Beer, Roger Burrows, Alexandra Ciocănel and James Cussens. Centre for Housing Policy: University of York.

- *Code Encounters Report 3: Data and automation in pre-tenancy affordability checks in social housing* by By Alison Wallace, David Beer, Roger Burrows, Alexandra Ciocănel and James Cussens. Centre for Housing Policy: University of York.

- *Code Encounters Report 4: Credit risk decisions, mortgage lending and technological possibilities* (2024) By Alison Wallace, Alexandra Ciocănel, David Beer, Roger Burrows and James Cussens. Centre for Housing Policy: University of York.

The reports are based on a study aimed at:

- Understanding tool production: The study examines how credit rating agencies (CRAs), lenders and data analytics firms build credit scoring and tenant screening tools. It investigates the data used, how representative it is, the criteria for creating risk profiles, and how this information is communicated to key stakeholders.

- Exploring deployment motivations: The report assesses why housing professionals adopt these tools, focusing on policy, market, and regulatory influences and the risks they aim to manage across different sectors.

- Examining practical deployment: The study looks at how these tools are integrated into everyday housing practices, how they affect professional judgement, and how compliance with regulations like data protection and consumer standards is maintained.

- Investigating perceptions and awareness: It explores how well professionals and consumers understand these tools, their awareness of the data involved, and the impact on housing access.

- Assessing market impact: The study considers how professionals and consumers respond to the use of these tools, including potential exclusion or gaming of the system, and the balance between privacy and efficiency.

- Considering policy implications: It reflects on the regulatory and ethical issues raised by these tools and their broader role in shaping housing markets.

All four reports along with a literature review, briefings and a series of articles published in peer-review journals are available to download from the project webpages https://www.york.ac.uk/chp/housing-markets/code-encounters/.

Chapter 1: Introduction

On February 18, 1869, the *Dealer's Mutual Protective Society* of Brooklyn, New York, advertised in the *Brooklyn Eagle*, underscoring the crucial role of credit in everyday transactions. Their *Preventative Department* offered support to traders and landlords by assessing the character, capital, and capacity of individuals wishing to borrow or engage in business. The society maintained detailed handwritten ledgers containing coded information about debtors and local knowledge, gathered from newspapers and field agents. This system aimed to reassure landlords and traders about the trustworthiness of potential tenants or business partners. As the population grew and trade expanded, the role of credit bureaus became increasingly important. Early brokers adopted the new technologies of the period such as typewriters, telegrams, and telephones to communicate credit information. Over time, assessments evolved from subjective qualitative judgments to more quantitative and predictive methods, reflecting the growing sophistication of credit evaluation and the broader scope of national trade networks (Lauer, 2017).

We are currently at a new technological juncture where digital platforms increasingly mediate the housing market, changing how landlords use credit and other data resources to profile prospective tenants. This report focuses on the adoption of digital tenant risk profiling tools in the private rented sector (PRS). These tools typically use credit histories, electoral rolls, income and employment data (and in some countries, rental histories), to assess risks like non-payment of rent (and, in the future perhaps, property damage, anti-social behaviour and so on). While landlords have long evaluated tenants to mitigate letting risks, the shift now is from analogue qualitative methods to more algorithmically determined quantitative appraisals. These tools, at the intersection of 'proptech' and 'fintech,' combine financial services with property market insights. With increasing challenges in accessing quality, secure, and affordable homes, the examination of these digital intermediaries is crucial, especially as their current development outpaces the evidence base.

In the USA and Australia, significant public concern has already arisen over digital tenant referencing, focusing on issues such as rental tenant blacklists (Truu, 2023), excessive data collection (Convery, 2022a), lack of transparency (Convery, 2022b) and data breaches (Fields and Rogers, 2021; Przhedetsky, 2024). In the UK, while less widely reported, media coverage has raised concerns about the exclusionary nature of tenant screening, conditions attached to renting (Graham, 2021) and the intrusive use of 'Open Banking' for financial assessments before granting tenancy (Ciocănel *et al*., 2024). These screening processes are often overlooked but represent a critical, albeit seldom-discussed, aspect of the private letting process, with potentially significant implications.

The report reveals that the market for tenant risk profiling products comprises a continuum of analogue, hybrid and more automated digital systems, variegated by their use of digital data or documentary evidence and the degree of automation of the administrative processes. The proliferation of these tools has been fuelled by technological advances coinciding with housing market shifts and regulatory moves that shift perceptions of market risks, and institutional practices - such as insurance company requirements. The upshot is greater adoption of datafied systems to augment tenant selection and greater risk of housing exclusion from the mainstream PRS and of filtering marginal households into the lower end of the tenure. It was evident that human intervention to manually override many digital risk profiling recommendations was required to ensure tenancies could be granted, but then conditions - such as rent in advance and family guarantors - were imposed that not all households are able to meet. New forms of banking data hold the prospect of overcoming limitations experienced by households poorly represented in credit data, such as migrants and younger cohorts, but at the cost of allowing what some consider to be intrusive access to their intimate financial information. Income maximisation platforms that identify eligibility for social security benefits could also do more to overcome the exclusion of benefits tenants if technologies prevalent in the social rented sector are adopted in the PRS. These systems could produce more accurate and defensible affordability assessments.

The study also found that the data infrastructure in the PRS is limited, so not all tenant attributes that landlords identified as important are currently datafied, and critically there is no reciprocal market dataset that can test the risk profiling models' accuracy. The use of digital risk profiling speeds tenant selection processes and offers convenience for landlords, agents and tenants, but it is currently an incomplete project. The use and power of risk profiling tools are subject to temporal and geographical fluctuations in terms of the balance of power between landlords and tenants in weak or tight markets, but nonetheless they are shaping rental markets by becoming one of the main mechanisms through which people are socially sorted and allocated mainstream homes.

This report is the first to examine these digitally enabled tenant referencing or risk-profiling tools in the PRS from multiple perspectives and is based on data from our Nuffield Foundation-funded Code Encounters study.

Research methods

The wider project examined this digital risk profiling of tenants and mortgage borrowers currently influencing access to the housing market in England. The study involved building a large qualitative dataset of 122 in-depth interviews that included 50 interviews in the PRS with technology firms providing tenant referencing (TR) services (n=10), landlords (n=7), agents (n=5), insurers (n=1), industry stakeholders (n=7) and private tenants (n=20). Several authors suggest that studies of algorithmic decision-making should include the whole 'social-technical assemblage' (Kitchin, 2017) or the full 'regime of recognition' (Amoore, 2020), where the constellation of people and the institutional context surrounding the digital platforms or tools and their application and impact are considered.

Therefore, this study uniquely examined encounters with these digital risk-profiling tools from multiple perspectives, rather than focusing on the technology and proptech firms alone. The team conducted in-depth interviews with people involved with the production or construction of the tools by tech start-ups or existing tenant referencing companies; with landlords and agents routinely operating these systems in the field; and with tenants as data subjects, considering how they experienced the digital risk-profiling and with what impacts. Interviews were undertaken on Zoom; the audio was professionally transcribed, and the transcripts thematically analysed.

Additionally, we administered a survey to PRS landlords through a prominent landlord trade body. This survey, with 113 usable responses, captured both quantitative and qualitative data, leveraging open text fields to gather detailed perspectives on digital tenant risk profiling in practice. By integrating multiple viewpoints and considering the broader socio-technical contexts surrounding these technologies, the study aims to provide a comprehensive understanding of how digital tenant risk-profiling tools shape interactions within the PRS and influence housing market dynamics in England more broadly.

Further details about the research methods are available in the appendix to this report.

Report structure

The report examines digital tenant risk profiling tools in the context of evolving rental markets and digital innovation (Chapter 2). Chapter 3 discusses how landlords and agents manage risk in their search for the 'good tenant.' Chapter 4 addresses the level of automation in tenant referencing, highlighting tensions as the market transitions from analogue to automated systems and the importance of human oversight. Chapter 5 evaluates the digital data infrastructure in the UK's PRS and its potential future changes. Chapter 6 examines how referencing classifies and sorts people, potentially leading to exclusion or conditional lets. Chapter 7 explores tenant experiences with digital risk-profiling, noting both the benefits of speed and efficiency and concerns about privacy and system navigation difficulties. Chapter 8 offers some brief conclusions and summary recommendations.

Chapter 2: Background

Introduction

This chapter considers what we know about the housing market context that digital tenant referencing operates within, as this informs landlords and agents' risk mitigation and tenant selection strategies; and what the literature reports about 'proptech' innovations and algorithmic tenant profiling and referencing in rental markets. As such it provides contextual background to our study drawing upon a selective review and summary of the existing pertinent research literature. Readers already familiar with contemporary developments in the PRS and in 'proptech' in England may wish to skip to Chapter 3.

Private renting in transition

Private renting in the UK has expanded significantly, rising from around 9 to 11% of all households in the 1980s and 1990s to 19 or 20% since 2013, effectively doubling in size (DLUHC, 2024). With constrained access to both homeownership and social housing, the PRS is expected to accommodate a broader range of people (Kemp, 2011). The PRS now also houses more children than social housing, so getting the market right matters even more (Grayston et al., 2024). The market is highly segmented, with high-income households, students, benefit recipients, and young professionals finding long-term homes within it (Rugg and Rhodes, 2008). Recently, increased scrutiny and regulation have emerged due to perceptions that the market fails to meet tenants' needs regarding affordability, insecurity, property quality, and management.

Housing is a devolved matter in the UK, leading the Welsh, Scottish, and Northern Irish administrations to implement various regulatory measures to enhance the affordability, security, and quality of their private rental markets, such as longer tenancies, landlord registers, and rent controls (Marsh and Gibb, 2019). In England, reforms are more limited but still reflect significant change (Rugg and Wallace, 2022). Landlords now face the necessity of more active property management, higher energy performance standards, and the removal of mortgage interest tax relief for non-business landlords. Tenant protections have also increased, with stricter deposit regulations, a ban on additional tenant fees, and a pandemic-induced eviction moratorium. The proposed Tenant Reform Bill, now the Labour government's Renters Rights Bill, aims to remove no-fault evictions among its key ambitions. Over the last decade, welfare reform has diminished the effectiveness of housing benefit and local housing allowance for lower-income households, prompting many landlords to avoid renting to them (Hobson, 2023).

In response to changing risks, older landlords, facing additional responsibilities and shifting finances, are divesting, pausing acquisitions, or expanding portfolios on a more business-like basis (Rugg and Wallace, 2022). Concerns exist that sector growth has slowed and may begin contracting, as HMRC reported 11% fewer people reported rental income in their tax returns in 2020/21 compared to 2016/17 (CMA, 2023).

In this market context, tenants have faced constrained access to the PRS due to rising rents, bidding wars, and landlords' selective tenant choices. Rents in London rose 11.2% in the year to March 2024, compared to 6.1% in the North East (ONS, 2024). The proportion of PRS tenants in poverty is as high as 50% in the North East and exceeds a third in all regions except London, the South East, and South West, indicating greater pressure on landlords in the North and Midlands to accommodate low-income tenants (Rugg and Wallace, 2022). After hitting a low in 2010/11, homelessness presentations to local councils and rough sleeping have increased due to high rents, rising evictions, and the cost-of-living crisis (Fitzpatrick et al., 2023). Therefore, geographical and temporal factors impact tenants' access to the PRS and landlords' tenant selection, influenced by regulatory and welfare policies, as well as investment in and access to other housing tenures and income support.

Tenant selection and exclusion in rental markets

The UK private rental market, once described as a ‘cottage industry’ with individual landlords holding little stock and limited risk pooling (Rugg and Rhodes, 2008), has changed. Now, 48% of tenancies are held by landlords with five or more properties, while 43% are held by those with just one (DHLUC, 2024a). For a landlord with a single property, a tenant not paying rent represents a 100% income loss, a risk mitigated by owning multiple properties.

The PRS is dynamic, with landlords transitioning between accidental landlords, side property investors and business landlords whose portfolios are their main income source (Rugg and Wallace, 2022). In this changing market, landlords face pressure to select tenants carefully, as issues like rent arrears or property damage can be challenging to resolve legally. Common risk mitigation strategies include rental guarantee insurance, requiring rent in advance, or home-owning guarantors. Such measures necessitate tenant reference checks to ensure compliance (Wilson, 2023).

Landlord discussion forums reveal that while tenant referencing is common, it often deters applicants who may not meet certain criteria (see, for example: www.landlordzone.co.uk). A market survey found that 25% of renters were refused tenancies after failing financial assessments, while 45% were asked to provide a guarantor, and 32% of benefit recipients were denied a tenancy. Additionally, men were more likely than women to afford six months' rent in advance (Husmus, 2023).

The institutional context - regulation, equality legislation, market supply and demand and local geographies - shapes landlords' risk perceptions. Discrimination can occur based on attributes common among those with protected characteristics, such as receiving benefits or having children (Criado and Such, 2019; Soaita et al., 2022). Discrimination in UK housing has a long history, and while equality legislation has strengthened, subtle and less overt forms persist (Lukes et al., 2018; Preece et al., 2020; Vertraete and Moris, 2019).

Generation Rent (2023) found evidence of racial discrimination in rental applications, with Black applicants receiving fewer viewings and facing more scrutiny than white applicants. This highlights both subtle and overt exclusion in the rental process, blurring the lines between discrimination and discretion (Wolifson et al., 2024). Access to housing matters significantly, as housing conditions, security, and affordability are key social determinants of health (Thomson and Thomas, 2015) and influence access to labour markets, education, and amenities that enhance life opportunities. Discrimination by landlords or agents can funnel individuals into poorer housing, disproportionately affecting minorities and migrants (Lukes et al., 2018).

Welfare retrenchment drives housing unaffordability, with landlords increasingly avoiding benefit-dependent tenants due to reforms that reduced housing benefits' effectiveness (Lee et al., 2022; Rugg and Wallace, 2022; Fitzpatrick et al., 2023; O'Leary and Simcock, 2020). These reforms - reducing eligible rents, freezing rates, and shifting payments from landlords to tenants - have left benefit tenants with rent shortfalls, despite some access to discretionary housing payments (Clegg, 2023; Elliot, 2023). The CMA (2023) has raised concerns about discriminatory advertising practices that exclude benefit recipients, despite poor households on housing benefit being more likely to have rent arrears (Kemp, 2011).

Landlords' reluctance to rent to benefit recipients, while exclusionary, is understandable given challenges in obtaining direct payments from the Department of Work and Pensions (DWP) (Rugg and Wallace, 2022). 'No DSS' (which stands for 'Department of Social Security', a government department that has not existed since 2001 (becoming the DWP), but in popular discourse the 'DSS' trope has stuck) notices, banned for being discriminatory, have been replaced by 'professionals only' ads, achieving similar exclusion (Meers, 2024). Wainwright (2022) describes landlords' ideal tenant search as favouring young, urban, affluent professionals, often reflecting the attributes valued by tenant referencing companies.

'Proptech' and digital tenant risk-profiling

'Proptech' and 'fintech' refer to the integration of digital technologies in real estate, banking, and insurance, transforming traditionally slow-moving industries with new data resources, automation, and artificial intelligence (Baum, 2017). Proptech has enhanced data recording on property, land, and housing, enabling algorithmic processing and fostering new entrants and innovations in real estate (Landau-Ward and Porter, 2019). Digital technology, or 'platform real estate' as Shaw (2020) terms it, has profoundly impacted the housing market. Property sales portals like Rightmove, Zoopla, and Zillow provide data resources and real-time insights (Dunning and Grayson, 2014). These advancements support automated property acquisition models (Fields, 2022), influence shared housing dynamics and exclusion (Meers, 2024; Maalsen, 2020), facilitate short-term rentals (Cocola-Gant and Gago, 2019), and automate landlord management functions such as concierge services, rent recovery, and repairs (McElroy, 2024; Big Brother Watch, 2021). Additionally, aggregated digital data offers insights for build-to-rent projects (Nethercote, 2023), integrates smart home technologies (Maalsen, 2024), and may support eviction processes in the future. While critiques of these technologies suggest they maximise returns in a financialised housing system and amplify inequalities, they also acknowledge contributions to tenant empowerment and housing activism (Wolifson et al., 2024; Nic Lochlainn, 2021; McElroy, 2022).

This study focuses on digital tenant risk-profiling tools within the proptech and fintech landscape, often connected by APIs to automated landlord management platforms. Previously, information collection and decision-making were manual, but algorithms now enhance speed, efficiency, and reduce tenant selection costs (Schneider, 2020). Rona-Tias (2017) examines the 'off-label' use of credit reference data in housing and labour markets in the USA, where credit scoring is used to assess character. In England, digital tenant risk-profiling technologies have migrated from financial services to rental markets, especially after the 2019 tenant fees ban, which shifted selection costs to landlords (Wainwright, 2022). Major credit reference agencies like Experian, Equifax/Clearscore, and Transunion/CallCredit offer tenant reference products, while firms like Homelet, Van Mildert, and Lettings Hub combine CRA data with other resources for screening services. These checks often involve automated and manual processes, producing a categorical risk score based on identity verification, credit history, employment assessments, landlord checks, immigration status, DBS screenings, and sometimes Open Banking data (Wainwright, 2022; Ciocănel et al., 2023). Variations depend on national data infrastructures and regulations; for instance, tenant blacklists are used in Australia (Short, 2006), and criminal records and eviction data are common in the USA (Dunn and Grabchuk, 2010). In the UK, access to such resources is limited, although some proptech firms tap into local authority data on former tenant arrears and complaints (Wainwright, 2022).

A key concern with algorithmically enhanced decision-making is the risk of 'digital discrimination,' where automation can introduce biases in critical decisions (Criado and Such, 2019). For instance, Google's algorithms intended to identify top programmers inadvertently excluded women, reinforcing gender bias in tech recruitment. Similarly, the COMPASS predictive policing tool in the USA used neighbourhood crime data, reinforcing racialised over-policing (O'Neil, 2017; Eubanks, 2018; Unjima Noble, 2018). These issues arise when training data and data weighting decisions reflect prior biases, causing models to amplify existing inequalities. Algorithmic bias is related but not always discriminatory, as it generates decisions reflecting data patterns (Criado and Such, 2019).

Concerns about automated decision-making and bias extend to critiques of digital tenant risk profiling tools, which can lead to unfair or discriminatory tenant selection within the PRS (Przhedetsky, 2024; Wolifson et al., 2024). Landlords utilise these tools to identify ideal tenants, collecting data to rank, score, and classify applicants. This often involves moral judgments, favouring tenants who are young, urban, professional, and affluent -demographics that mirror those of the tech entrepreneurs behind these tools (Wainwright, 2022). Wainwright highlights challenges for renters outside these privileged groups, who are often overlooked by technological gatekeepers. While digital tools may reduce bias through objectivity in fixed scripts, structural biases can still persist, excluding those with zero-hour contracts or cash-based jobs—conditions more common among Black and Asian workers. In the USA, So (2022) found that digital tenant screening led landlords to deny tenancies to applicants with eviction filings or criminal records, even when cases were not upheld. As eviction and crime data are racially biased, minorities face a higher risk of exclusion from rentals. Schneider (2020) notes the erroneous and irrelevant data used in U.S. tenant screening, exacerbating exclusion.

Regulators in the USA and the UK are increasingly concerned about the impacts of digital risk profiling tools on tenants. The US Consumer Financial Protection Bureau (CFPB, 2022:2) notes that 'there is no independent or publicly available evidence that tenant screening reports are reliably predictive of future rental behaviour or reduce risks and costs to landlords.' Additionally, the CFPB highlights that many errors, especially in housing eviction data, can result in decisions based on erroneous, outdated, or ambiguous information. The US Department of Housing and Urban Development (HUD, 2024) has reminded tenant screening providers of their obligations under the Fair Housing Act due to the disproportionate impact of these tools on protected groups. Furthermore, TransUnion recently paid $23 million to settle a dispute over inaccurate data in tenant screening packages (Compliance Week, 2023). While concerns about data collection and privacy invasions are significant in the USA (McElroy, 2024), these issues may be less pronounced in the UK or EU due to GDPR regulations. Wainwright (2022) notes that in the UK, the training data for these models may lack robustness, leading to subjective assessments of tenant attributes that vary among providers. For example, the weight given to County Court Judgements (CCJs) - especially if small, old, or repaid - and the analysis of current account spending through Open Banking can differ significantly. The CFPB (2022: 3) echoes this concern, stating that ‘common practices in financial services credit risk operations, such as documented model validation and risk management, do not appear to be prevalent in tenant risk modelling.’ The UK Competition and Markets Authority (CMA, 2023: 25) started an inquiry into aspects of the PRS that may constitute unfair market practices that include the:

> ‘Lengthy and potentially intrusive information requests of prospective tenants and their guarantors has also been raised with us as a problem. We were told that their information could potentially be used to discriminate against some consumers on the basis of their personal circumstances and specific characteristics.’

The CMA (2023) also notes the imposition of conditions requiring high-salaried guarantors (family or friends who will cover rent if the tenant defaults) or advance rent of six to twelve months. Such requirements are often unattainable for those without savings or supportive networks, exacerbating exclusion during pre-tenancy screening. This report focuses on the effects of this screening process and the conditionality tied to tenancy guarantees.

In Australia, evidence shows that automated electronic screening is complex and varies based on the relative power of landlords and tenants in the local housing market (Short et al., 2006). The landlord’s target market segment and geographic context are crucial in the use of these screening tools. Research in England suggests that landlords in some northern markets have less flexibility in selecting tenants compared to those in the south, often accepting lower thresholds for proving integrity and identity (Wallace and Rugg, 2014). There is notable public backlash against what Australians call Renttech, where tenants incur costs to compile tenant passports to present their digital profiles to landlords, along with monthly fees for platforms to pay their rent (Bogle, 2024; Convery, 2022a, 2022b). Australia emphasises digital tenant screening and calls for tighter regulation due to concerns about privacy, bias, and the potential for platforms to circumvent existing regulations (DRW, 2023).

These scoring devices primarily aim to mitigate landlord risk but can exacerbate market power imbalances, disadvantaging certain groups. While discrimination and bias have long existed in rental markets, the introduction of data-driven and algorithmically enhanced decision-making necessitates scrutiny to prevent the reproduction of these biases (Landau-Ward and Porter, 2019).

Much of the literature discusses the potential of digital technology to transform housing markets, often focusing on housing justice or increasing value extraction. However, few studies investigate how digital tenant risk-profiling tools are actually used in everyday market practices and how tenants experience these algorithmic assessments.

Conclusion

The PRS in England has experienced significant transformation due to regulatory changes, market dynamics and the rise of digital technologies. Once dominated by small-scale individual landlords, the sector now includes a range of participants, from accidental landlords to professional investors managing large portfolios. These developments have led to more stringent tenant selection processes, often employing digital tenant risk-profiling tools that aim to enhance efficiency and reduce risk. However, while these tools streamline decision-making, they may inadvertently reinforce existing biases or create new forms of discrimination.

Digital tenant screening, which heavily relies on credit data and automated processes, can exclude applicants based on factors like income instability or past financial issues, disproportionately impacting vulnerable groups such as benefit recipients, minorities, and migrants. The emergence of 'proptech' has heightened these concerns, as algorithm-driven decisions often lack transparency and accountability, potentially leading to 'digital discrimination.' Regulatory bodies in the UK, USA and Australia have expressed concerns about the fairness and accuracy of these tools, particularly regarding their role in entrenching inequalities within the rental market.

As landlords navigate a landscape marked by rising rents, increased tenant protections, and evolving financial conditions, the challenge lies in balancing risk mitigation with ethical tenant selection. It is essential to ensure that digital innovations do not perpetuate discrimination, fostering a fair and equitable rental market. Ongoing scrutiny and regulation will be vital to prevent these tools from exacerbating existing housing inequalities while promoting responsible landlord practices.

Chapter 3: Managing risk and tenant pre-screening

Introduction

Having described the context within which our study took place, this chapter begins to draw upon the interview and survey data we collected in order to examine how landlords identify and control risk, how informal pre-screening checks are undertaken and landlords' perceptions of tenant referencing services.

Effective tenant selection is a key component of landlords' risk mitigation strategies. This process begins even before engaging with prospective tenants, involving due diligence on property purchases, financial structuring, expected yields, regulatory compliance, and enhancing business acumen through management practices and insurance coverage. Tenant selection is integral to how landlords navigate market risk. Understanding the external landscape—shaped by factors like welfare reform, regulatory pressures, and delayed court hearings—is part of a landlord's business acumen, though some are more adept at this than others (Wallace and Rugg, 2014).

Landlords manage tenant selection risk by hiring experienced letting agents or relying on their own experience. They might advertise directly on rental platforms or utilise third-party referencing tools. Tenant referencing practices vary among landlords; those who do use referencing often employ external data collection firms to supplement their qualitative assessments of applicants. However, referencing is not the sole determinant for tenancy approval. In the UK, formal tenant referencing occurs only after preliminary checks and viewings, which include basic affordability assessments and checks on employment and household status, often paired with in-person evaluations of the applicant's demeanour.

Typically, one candidate is selected for formal referencing, and if successful, granted a tenancy. While formal referencing is important, it usually informs just part of the decision-making process. Influenced by geographic and market segment factors, many decisions rest on subjective assessments, particularly when tenancy approvals are discretionary and sometimes conditional, as discussed in Chapter 6.

Managing risk

Landlords face many risks in the housing market, from considering what market segment they will operate in (student, professionals, those on benefits and so on), balancing the location, property acquisition, repairs, finance and rental income, to having confidence in their tenant selection. Risk changes over time as the external environment, market pressures and/or regulation changes, but landlords differ in their appetite for risk and their approaches to due diligence.

In weak housing market locations landlords have struggled to get tenants as there was often excess supply (Wallace and Rugg, 2014). Conversely, participants in our study in this post-pandemic era noted that the balance of power between landlords and tenants now favours landlords, with scores or even one hundred tenants reportedly applying for properties and attending viewings. Instances of rent bidding where tenants offer to pay more than the advertised rent to secure a home were also reported.

Landlords also have different risk appetites. For example, they differ in their view of tenants receiving benefits, as the balance of risk and reward in operating at the lower end and engaging with the housing benefit system may require more intensive management but can produce higher yields (Rugg and Wallace, 2022). The nature of the UK PRS, where many landlords have only one or two properties means that for them a single tenant with rent arrears or anti-social behaviour poses a greater risk than when losses are pooled across larger portfolios. As fewer tenants can exit renting for homeownership, landlords reported having to factor in more long-term risk with longer tenancies. Proposed regulatory change with the *Tenant Reform Bill/Renters Rights Bill* meant some landlords felt that constraining landlords' ability to remove tenants put greater pressure on getting tenant selection right at the outset. As one landlord in our study explained:

> 'Once you've handed over your keys you are stuck, because getting the property back is probably going to be a 12-month job, going through the courts.' (PRS Landlord 4)

Letting risks cannot be removed but need to be managed. Professional, experienced operators will use their experiential and tacit knowledge of the local markets to inform their decisions. Still, data services can bolster risk appraisal and due diligence by providing data on wider markets and rents (Wallace, 2008) and help them interrogate the best investments (Fields, 2022). New UK platforms like *Lendlord* review asset portfolios and appraise the buy-to-let mortgage market, and *OpenRent* or *Yardi* help landlords manage all or some elements of regulatory compliance by prompting them to upload gas and electrical safety certificates to tenancy files, ensure deposits are protected and support property management and maintenance. These platforms can minimise risk arising from poor business decisions and management practices. Tenant risk profiling or referencing tools perform a similar role in reducing risks arising from tenant selection. They seek to minimise non-payment of rent, or property damage, to ensure compliance with regulatory requirements like the internal border Right to Rent legislation (within which the UK Government legally requires landlords and agents to check a person's immigration status or face penalties for non-compliance).

Here we see tenant referencing offering comprehensive reassurance combined with digitally enhanced technology offering speed and deeper insights, but critically, we also see the retention of qualitative risk appraisal in tenant selection approaches. Formal referencing serves to reassure external agencies of robust landlord tenant selection and mitigate their own risk, conveying professionalism to other market players. These may include: mortgage lenders, who often want copies of referencing reports; insurance companies offering rental guarantee or deposit insurance to manage their own and the landlord's risks; and local authorities operating selective licensing schemes in low-value neighbourhoods with high concentrations of private renting, who, amongst requirement to comply with property and management standards, often require landlords to undertake tenant referencing.

Agents are the key customers of tenant referencing firms and the external verification of tenants they recommend to landlords also serves to mitigate their own risks and landlord obligations, although they can still be held responsible for referencing firm errors. Landlords also appoint referencing firms directly but do so less often than agents. Although we should operate cautiously due to small numbers, 82% of landlords we surveyed used referencing firms, directly or via their agents. Half the landlords (46%) used an agent and over a third (36%) self-managed, while for others the use of agents was property dependent. A total of 80% of the self-managing landlords did *not* use referencing tools, confident in their ability to request documentary evidence or appraise tenants directly. Some pertinent examples from our interview data provide more nuanced explanations for this:

> 'If as an agent you use a referencing provider that offers a rent warranty, you're legally obligated to make your client, your landlord, aware that they have the option of a rent warranty product. There have been agents who've been successfully prosecuted […] by their landlords because they used a referencing service that offered a warranty, the tenant would have qualified for it, the agent didn't make the landlord aware and […] the tenant ended up defaulting on the rent. I think for a lot it's about risk management.' (Agent 5)

> 'Our customer focus is big enterprise insurance companies but, also, buy-to-let landlords, as well. There are landlords that exist in that way that just do their own thing. Then, there's a significant number of landlords who are not confident with their own ability to judge whether a person is good or not and they want that security of an independent party giving them that reassurance. That's where we want to get to. It's one of the reasons why we started actually partnering with property portals, as well.' (TR10 - technology firm providing tenant referencing (TR) services).

> 'I've always used tenants referencing, but I know people who don't, or haven't done that and they tend to be with the lower priced properties. I know one lad in particular, he just seems to get people by word of mouth, so there you go, but always go through a referencing process, always, because it's potentially a high risk you're trying to reduce.' (PRS landlord 2)

Agents and landlords used referencing firms that saved them time and money, offered diligence about the data obtained, gave them confidence in the results and, of great importance, was that firms were amenable to discussions to resolve problems. While some agents and landlords used the same firm for long periods, following their shift from analogue to digital, agents and landlords commonly had experiences with several digital referencing firms. Switching firms had been prompted by time savings not materialising, poor quality reports, IT systems failing, insufficient checks of employer's emails, or some firms being inaccessible in person. Agents preferred companies where there was integration with current management systems through plug-ins or being embedded in new end-to-end proptech-type services. Using a referencing firm, however, did not wholly reallocate the risk.

> 'All the traditional firms, by the way, have in their terms, […] you can't hold us accountable for anything that goes wrong. We have that because even if we deem somebody lower risk, we're not guaranteeing anything, but the landlord took that agent to court over the quality of what was done. He actually won. The agent, it's not really their fault, they were trusting a third party.' (TR1)

Affordability and pre-screening

Pre-screening and affordability assessments prior to formal referencing are critical to tenant selection and influence the impact of digital tenant profiling on access to housing, as only people who are considered to be likely candidates for passing are put forward for formal referencing processes. In other countries this screening may also be undertaken using letting platforms (Predzetsky, 2024), but in this research the processes described were usually basic and analogue, except for the case of one large build-to-rent landlord whose company used *Salesforce* software, an AI augmented customer management system, with a built-in affordability tool for initial enquiries. Another platform provider was testing the use of checks made at the point of booking a viewing.

Landlords or agents collect basic information at the pre-screening stage about a tenant applicant's job and employment status, household circumstances, pet ownership or desired length of tenancy. The key requirement is that they are in good employment with high enough earnings that match 30 times the monthly rent or similar industry thresholds. Formal affordability checks are undertaken during tenant referencing but ballpark figures are used at this initial screening stage to avoid wasting time showing a property to someone who is not going to qualify and pass the tenant referencing process.

In the mainstream market, a 'good tenant' is typically seen as a young professional with permanent job and good earnings (Wainwright, 2022). While confident business landlords may view the benefit-dependent, lower end of the market as lower risk due to mediation by third-party agencies, the DWP, or a local authority (Rugg and Wallace, 2022), several tenants reported severe difficulties accessing homes when on benefits and were often not put forward for formal referencing. Our interviews suggested that these tenants were frequently filtered out at the pre-screening stage by agents not following up on inquiries or stating they would not pass affordability checks, even when tenants believed their benefits could cover the rent. One tenant acknowledged that some landlords were owed significant sums in unpaid housing benefit and that tenants sometimes took the money without paying rent. However, some landlords also recognised that direct payments to landlords make benefit income a secure, albeit complex, income source, with mediation by local authorities or the DWP making these lets viable. However, another landlord uses the prospect of failing tenant referencing to deter these low-income benefit recipient 'DSS' tenants.

> 'First thing they ask you is, what's your job, and what's your annual income? [...] It's illegal, I know. It's illegal to mention that people on benefits [...] is not accepted, but indirectly they are doing this by putting the minimum income high. [...] Some people, they call and ask us, 'What's your background? Are you employed?' As soon as we say we are not employed due to some medical reasons, [...] they don't show you any interest at all from that moment. They just want to end the phone call as quickly as possible. [...] This is what happened to at least 70 properties that we wanted.' (Tenant 17)

> 'You put on [*Open Rent* platform rental advert], I presume, it's what your bullet points are. Maybe no dogs, or pets, I should say. No 'DSS,' which I don't think you can say that now, but how I get around that is they've got to pass the credit finance.' (PRS Landlord 5)

Prior to the *Tenant Fees Act 2019,* which reduced the range of items that agents or landlords could charge to tenants, several people were put forward for referencing if they passed the initial screening as the tenants paid for the service. Now, as landlords pay for referencing, there are several sifting tactics along the process. During the communication process to express interest in a property and during a viewing, subjective assessments of the tenants can be important, even for large build-to-rent landlords. Tenant's presenting themselves as amenable and acquiescent are attractive qualities to agents and landlords, and tenants also benefit if their sentiment towards the property and tenancy contract accords with the landlord' wishes.

> 'For me, [the important quality] is considerate to the other tenants in the block, so pleasant. Affordable to pay the bills. [...] Keeps the flat nicely. Abides by all the conditions. I'm very nervous about subletting. I absolutely want to know if they want a partner or [...] if family is

living there. The way they treat me, too. If people are respectful and pleasant, but [...] a lot of it is really abiding by the contract (PRS landlord 3)

> ‘There's that screening when they first apply, and then when we do the viewings that's one-to-one with the person, and a lot comes out in conversation [...]. We're also doing some [...] soft checks as well on that viewing. [...] We're giving the landlord a long-term relationship with a person that they don't know, so we need to be sure that the person's going to be nice to deal with. Sometimes you go on a viewing and somebody's obnoxious. Then you do just think, why would I want to recommend you to the landlord when the landlord could be stuck with you [...] for two years’ (Agent 1)

> ‘I've never met the landlady. I don't know whether she had a deciding role in us taking the property or not. […] You always have to be on your best behaviour with the agents of course because they have quite an influence.’ (Tenant 20)

Tenant referencing extends beyond qualitative assessments of a prospective tenant's character and demeanour, providing landlords with reassurance about a broader range of factors that indicate the tenant's credibility as a risk. Landlords clearly value informal appraisals of tenants' soft attributes gained through personal encounters. The referencing report reflects the due diligence performed by the agent and referencing firm, but every interaction - whether a physical meeting, phone call, or email - contributes additional insights that inform decision-making.

In some cases, landlords expressed willingness to accept lower rents in exchange for securing reliable tenants, as this reduces overall risk. The role of agents in screening applicants and conducting thorough referencing is crucial in this context. Landlords need to trust their agents' judgement; one landlord mentioned switching agents to find someone skilled at qualitatively assessing candidates, balancing these insights with formal referencing. While one tenant believed that formal referencing was the sole determinant, it is evident that subjective assessments remain a vital component of tenant selection.

Formal tenant referencing

While qualitative assessment was important to reassure most people, formal referencing was vital to many, especially if wanting to convince third parties that their approach to managing risk was professional and the tenants credible.

> ‘Yes, there's a report, because of this movement from us to the landlord, we need a delivery mechanism so that all of the providers provide you a reference report. It's done the name check, it's done, the address check, the electoral role check, adverse credit history, banking checks, checks for sanctions because we're dealing with a lot of overseas people as well. [...] It could be sanction checks; it could be politically exposed people. [...] That report there will list all of those checks and [...] having a [...] digital piece of paper that we can hand over, [...] it's a useful report for the landlord to check through and gives them comfort.’ (Agent 4)

> ‘If they were a bad tenant then can you show me your bank statements where they missed payments, [...] verify that that is the case? For us, we're extremely confident [...] we are fair to both parties because as much as we want tenants to be able to access the homes that they need, we also don't want to create a world where landlords can't trust what we say about tenants [...]. For us, it's hard datapoints. We don't necessarily just take people at face value, even though that would be nice [...]. It doesn't serve the community to do that.’ (TR10)

In our landlords' survey, more than half (54%) said that the tenant referencing services were accurate in predicting the quality of the tenant and 58% disagreed that 'if a tenant can afford the rent, then credit history was not required'. However, 43% disagreed that they 'Fully trust automated services' indicating that the appraisal process warranted additional in-person or manual assessments of prospective tenants. In this vein, more than half (58%) said that it was 'Best to talk to the tenant than rely on referencing' placing importance on landlords' own qualitative assessments of the prospective candidate. The survey showed a range of landlord perspectives from enthusiastic to negative, but largely landlords considered the tools useful, as part of their assessments that help them manage risk

Conclusion

Tenant selection is a crucial aspect of how landlords manage risk, as they aim to grant tenancies to individuals likely to pay rent regularly, be easy to deal with, and avoid damaging the property or causing issues with neighbours. Landlords may conduct tenant searches themselves or hire an agent, whether they manage the property directly or not. Some landlords rely on their own instincts, especially at the lower end of the PRS, where many tenants may fail formal referencing procedures.

While tenant referencing is commonly used in the mainstream market to mitigate risks and is often required by lenders, insurers, and local authorities, it is only one part of the tenant selection process. Critical to this process is pre-screening, where households with lower income, benefits, children, or pets may be filtered out to ensure affordability and alignment with the landlord's expectations regarding tenancy duration and tenant characteristics.

Interactions during viewings also play a significant role, allowing landlords and agents to assess character and demeanour, which can help tenants with weaker profiles secure tenancies. Since the *Tenant Fees Act 2019*, landlords typically select only one applicant for formal referencing, making pre-screening and qualitative insights essential components of tenant selection even before formal processes begin.

Chapter 4: Automation of tenant risk profiling

Introduction

Digital tenant referencing tools do two things, automate the referencing process and use digital data resources to augment or replace manual or analogue sources of evidence to verify tenant applicants. This chapter examines the first issue, the extent to which referencing practices are automated and offers an overview of the models and their content.

Tenant risk profiling tools comprise analogue, hybrid or wholly automated systems pitched at different price points reflecting the level of human involvement and the level of confidence landlords or agents have in the outcomes. All may include the collection of credit bureau data to check address histories and the presence of CCJs or bankruptcies, but income, bank statements, employment status and previous landlord references are collected manually in analogue or hybrid systems. A wholly automated system may include Open Banking - platforms that provide an applicants' bank account transaction data for up to a year - to typically confirm rental payment history and (employment) income but may also appraise precise income and expenditure to support affordability assessments. The extent of algorithmic processing of tenant risk-profiling depends on three things: the automation of administrative processes, the datafication of relevant information landlords or agents require, and the extent to which there is confidence in proxy measures; and landlords' appetite for risk.

Tenant referencing models

Our interviews indicate that digital tenant referencing tools have emerged from inside and outside the rental industry. Many digital tenant referencing firms have origins in long-standing analogue services within the rental industry with founders having experience as landlords or agents. Other risk profiling tools emerged from outside the rental industry. Founders of new digital start-ups had motivations rooted in their own rental experiences of the PRS. Wainwright (2022) and Muir and Burgess (2019) cite proptech founders' experiences of poor rental management that spurred them to develop digital tools to enhance tenant experiences. In our data, technology firm founders were often similarly motivated, first developing tools to appraise the veracity of landlords after family members succumbed to rental deposit scam, or because they felt that too many tenants were unnecessarily excluded or were paying unaffordable rents. Our examination of the range of products currently available suggests a spectrum of services ranging from ones that retain a high level of manual processes and analogue information systems, to ones that adopt a range of digital data sources and algorithmic administration of workflows as well as final assessment, with most firms offering some hybrid system in between these polarities. Notably products have shifted the dial during the cause of the study towards the more automated workflows, more digital data and algorithmically processed recommendations.

One model of tenant referencing combines online and manual processes to ensure a thorough evaluation of potential tenants. Applicants begin by submitting their details and documents, such as bank statements and wage slips, through an online portal. Once submitted, a team of staff takes over, performing manual tasks like ordering credit bureau checks, contacting landlords and employers, and verifying the information provided, albeit done using electronic devices and email. The critical point is that the functions are not automated or drawing in digital data. This approach includes a range of comprehensive checks, examining past rent payment records, property damage history, and income. It also involves digital credit history searches, including CCJs, bankruptcy data, and alias names, along with analogue employment and landlord references. The system supports real-time application tracking and provides 24-hour online access, but relies heavily on manual administrative processes alongside its digital portal.

Other models have made greater use of new data technologies like Open Banking, and other ways to digitally connect with income verification services, as well as automating more administration and increasingly offering greater analysis of the range of data provided. Applicants still input their data through online portals, but these models integrate Open Banking technology to verify income and rent payments, offering enhanced credit information and fraud checks, and often check applications for consistency with previous applications and insurance company records. Models at the most advanced (technically speaking) end of the spectrum blend AI-driven fraud detection with real-time income and expenditure assessments to ensure financial obligations align with a tenant's income.

Our survey confirmed that there is moderate enthusiasm for digital and automated referencing tools, with landlords liking the speed, and lower costs associated with digital referencing, but not wholly reassured that digital data can fully replace employment and former landlord checks. Notably most firms therefore offer different tiers of referencing so they can be attractive across the whole market, with the most expensive, and slowest, products offering greater human involvement to check these aspects of the tenant applicant.

In summary, the tenant referencing industry is moving towards increasingly digital and automated systems. The first model maintains a hybrid approach with a blend of online and manual processes. The second model enhances automation with Open Banking and advanced technology, while the third model is leading the shift towards a fully digital system, relying on real-time financial data to provide a more accurate and inclusive assessment of tenants' financial situations.

Automating tenant referencing

Part of the automation of administrative systems is the drive for end-to-end property management software. Firms like *OpenRent*, *GoodLord*, or *Reapit* manage multiple aspects of the marketing, tenant onboarding, referencing, rent recovery and repairs management through to tenant exits via a single platform, managing workflows, providing contracts and letter templates and ensuring compliance. Tenant referencing services are often integrated via APIs to these new platforms. Several firms were offering such systems that brought added value and business retention, as users are directed to services within the platforms' wrapper. A large build-to-rent landlord was automating letting processes using *Salesforce* software to populate draft tenancy agreements, which according to them saved 30 minutes per let, and enabled them to let 5,750 properties across three schemes in three months.

Interest in digitising tenant referencing or risk-profiling was said to have been given impetus by two things: the Right-to-Rent checks that were introduced in 2015, where the Home Office enabled digital checks to ensure tenant applicants had the necessary immigration status to be granted a tenancy, and more importantly, by the *Tenant Fees Act 2019*. This act meant that landlords and agents could no longer charge tenants additional sums for referencing, tenancy renewals and other sundry charges during their tenancies (Wainwright, 2022).

Digitisation enabled faster lettings, bringing tenant selection in line with the tenant and landlord pressures to let homes quickly and avoid void losses. Automation also meant letting agents deploy staff to parts of the job that required human input - the sense-checking, decision-making and landlord and tenant liaison - rather than administration. As Wolifson *et al* (2024) note, digital automation still retains human labour but the platforms enable this to be outsourced to tenants who are responsible for the data input. Some landlords and agents referred to these referencing models as 'self-serve' models, although tenants who found the systems challenging may still present documents in person or send PDFs to the agents and referencing firms, where staff will sort and appraise the data manually.

> 'Most people tend to prefer to use the email link. They might not have all the information about the tenant. They may need to fill the online form in, and [...] the tenant can fill it in in their own time, when they are available.' (TR9)

> 'So, I'm going to be very stereotypical here, which is a little bit unfair, but we do see it, is obviously, the older generation, [...] or people that don't have the best English, [...] although our whole ID process we have in 26 languages so they can default to different languages to help them. However, [...] if they've really got stuck [with platform], they don't have to do it that way..' (TR4)

The CFPB (2022) explains that in the USA most tenant risk profiling is undertaken automatically or algorithmically, and manual verification occurs only when facts are disputed. As mentioned, our data shows that typically in England, tenant referencing, or risk-profiling is undertaken by firms adopting hybrid models, undertaking some automation of administration and digital data collection combined with analogue or qualitative data. In less automated hybrid models the agents or landlords may be inputting data into referencing platforms' portals and uploading PDFs of bank statements, wage slips or landlord references. Other hybrid models may go further using automatic email requests for employer and former landlord references and tracking progress of the referencing automatically. Some used AI systems to read PDFs of bank statements speedily but more typically these were reviewed manually. While all systems will draw down credit bureau information, wholly automated systems will produce more algorithmically profiled outputs based on Open Banking data, especially when using detailed income and expenditure data to feed into affordability assessments, rather than to just confirm the employment income and rent payment histories. Even when highly automated the decision-making remains largely categorical.

> 'I would say it's the Open Banking side of things. I think that's the closest that we've got to an algorithm. I still don't call it an algorithm because I've worked on stuff before and they've called it algorithms, and I'm not sure it's that fancy. [...] How we're taking the Open Banking data, assessing their affordability, and then we've got logic or an algorithm to [...] interpret that data. [...] That's the most advanced thing we're doing at the moment, in regard to that.' (TR7)

Participants portrayed the industry as slow to innovate and many are at the start of exploring automation and data to provide management insights to inform business decisions and in this instance tenant selection. Adopting new systems is done hesitantly but is progressing. But this balance of analogue and automated systems in hybrid products reflects market demand and the limited, or at least qualified, confidence landlords and agents have in fully automated risk-profiling models. Referencing firms talked about a cautious market, with people not necessarily wanting to change the way tenant referencing is undertaken because the new systems do not necessarily meet landlord or agent needs (TR7). The complexity of many people's circumstances precluded wholly automated systems for some firms. Nonetheless, firms recognised the drive towards automation and although many had origins in traditional analogue services, they were now positioning themselves to the broadest range of customers by offering different levels of service that balanced speed with confidence in reporting.

> 'What I would say, from the point of view of the industry, as the largest asset class in the world, property is probably the last to lean on technology and to embrace technology. The culture is very much traditional: "I know what I like; I like what I know." The level of data literacy is very low.' (PRS landlord 6)

> 'You have some products where the computer would do it all and it would flip it back to the agent and we have less than 5% of our product range that would do that. People don't typically buy that. We then have the next level where [...] technology does 75% and a human does a little bit. Then you obviously have the one where it's more [...] 50:50, and that is still our big product about 80% of the time.' (TR4)

> 'Where, with the referencing product range, strategically, we have tried to ensure that we've got a product for all appetites and markets, respective: we've got high human touch, low human touch; high integrated tech, low integrated tech – all of those types of different products.' (TR8)

The extent of automation is the balance between confidence and speed and the risk appetite of the individual landlord, as automated systems do not yet engender the same amount of confidence in their outputs as those that include an element of traditional referencing. There is a limitation, as former tenant landlord references and confirmation of employment and status is information not yet amenable to being datafied and therefore algorithmically processed.

> 'It depends on how much of a check the landlord or the letting agent wants to do on the tenant, so it depends on their risk appetite, really. I [...] balance it with the quality of the product, how quick they want a decision, their risk appetite and [...] how much they want to pay for it. All of those things drive different product choices.' (TR4)

> 'Yes, because all they're really doing is searching somebody's bank accounts, whereas some of the other ones do a little bit more [...] they'll confirm previous addresses, they'll get a reference from the landlord, [...] they'll confirm income [...] from the bank account or the online system. They'll do an affordability calculation and flag up [...] credit issues, so they give you more.' (PRS Landlord 2)

The drive to automate and increase the range and volume of digital data in tenant risk-profiling was apparent. Speed and efficiency were highly valued leading to the adoption of new data substitutes for former practices, like Open Banking. However, there were a number of reasons participants considered human involvement in decision-making critical. Referencing in most situations involves people who sit behind the online portals and resolve issues with people with complex circumstances. This is especially the case in hybrid systems where teams of people review the PDF bank statements, employer and landlord references, but is also the case even in more automated systems. Referencers check the applications for errors that a machine might just reject, or not comprehend that something feels ‘off’ or ‘something doesn’t feel right.’

> ‘More and more complication, [...] people having second jobs, government support, savings. There's all sorts involved [...] when you're trying to assess employers, [...] assess accountants. We need to assess the accounts, even. We will score the accountant and that will go into our risk. There's a whole bunch of stuff, so it's definitely challenging. [...] Our product at least is not automated. [...] The ideal thing would be to start automating some checks.’ (TR1)

> ‘If you think about it, the majority of the time, people have a very simple profile. They work in a company, they're either UK or EU citizens [...] very easy. Some of the time, [...] you come across someone who's not that easy to understand [...] then it becomes a human touch, [...] to understand what their actual story is, and it's about telling that story to the landlord.’ (TR10)

Human involvement is thus required in some systems to gather supporting information but frequently it is to help people with more complex circumstances, often driven by a more varied labour market, pass and/or override tenant referencing firm’s recommendations, discussed further in Chapter 6.

Conclusion

Tenant referencing tools in the UK are not fully digital or automated yet, though they are moving in that direction. Initially, these models relied on basic employer and landlord references, later incorporating CRA data. Over time, more digital data was added to verify income and combat fraud. Now, with Open Banking and detailed transactional data, algorithmic assessments are growing. However, hybrid systems dominate, as human oversight is still essential to interpret complex situations. Referencing services vary - some offer fast, digital-only checks, while others provide more thorough, expensive options that verify employment and landlord references through direct communication.

Chapter 5: Data infrastructure in the PRS

Introduction

The extent of automation in tenant referencing depends on how much of the information required is datafied. In the UK, there are critical data gaps, notably about employment contract quality and former landlord references. Though there are proxies, perspectives differ on whether what is available, via Open Banking, for example, are adequate substitutes.

> 'You have to dissect each of these sections one by one, to see what side can be done automatically, what side can't [...] Credit check is a database, so that's easy to automate. Previous residential history, not [...] easily automated, because verifying someone has lived there in the past, [...] proving that with documentation, and automating that side of the story, those are challenging things. [...] Appreciating a review given by a human, to see if it's a positive or negative review about a tenant, [...] requires a high level of technology, which I don't think is relevant to the rental industry, to be honest!' (TR2)

The following sections explore the core data and information resources used in tenant risk profiling.

Credit bureau information

Credit bureau information, supplied to referencing firms directly from the credit referencing agencies (CRAs) *Experian*, *Transunion*, *Equifax* or via credit information market brokers, is the core data resource that tenant referencing is built around, used to check identity, address histories, as well as information about debts, CCJs, insolvency and bankruptcies. CRAs and a range of market brokers can also provide data about fraud risk, current account turnover data, utilities data, as well as Open Banking transactional data. These data reserves are expanding at pace.

The credit check, previously considered important only for financial services, is central to the referencing process and digital records have been automatically drawn down from CRAs or brokers for some time. The confirmation of unpaid debts, CCJs, remains on a credit file for six years and indicates whether the sums have been repaid. All firms use credit bureau data to verify the presence of adverse credit and the identity and integrity of tenant applicants by ensuring the address history accords with the information relayed by the tenant, and in some cases, this includes fraud and anti-money laundering checks. Most referencing firms viewed applicants with CCJs negatively, even if the debts relate to loans, telecoms or utilities and not rents, especially if the prospective tenant had not disclosed the presence of debt during the pre-screening process. Some landlords advertised their use of credit checks to deter people with poor credit files from applying. However, other landlords and agents were ambivalent about the presence of adverse credit/CCJs and routinely sought additional information about the debts contained in the credit reports. Many reported that it is not uncommon for people to have CCJs that they did not know about, for small amounts relating to mobile phone bills for example, or people who had previously had debt problems that were now rectified but still present on their credit files. In these circumstances, referencing firms, landlords and agents would take a more nuanced approach to try to establish the circumstances in which the debt emerged and whether it had been repaid before making decisions about the letting.

> ‘All we're really looking for is if they've got any adverse credit history, any CCJs, or bankruptcies, IVAs [...]. Essentially, that's our express check, and they're [...] quicker to turnaround, because they're mostly automated [...]. We have an API with TransUnion which pulls back the information within a couple of minutes.’ (TR9)

> ‘Historical issues like CCJs [...] it's not for us, it's not an automatic ban. We take the view on [...] we do need to be told in advance. If a tenant doesn't disclose it and it comes up in a check, that is [...] a red flag. If a tenant is forthcoming [...] more times than not it's not an issue. We might require a guarantor or something.’ (Agent 5)

> ‘It [the CCJ story] sounded credible, it was for a very small amount. When you're taking tenants off the council, you kind of know they're not going to be absolutely pristine. I've had him for two-and-a-half years now. He's good as gold.’ (PRS Landlord 7)

> ‘It's [CRA information] more a soft-identity verification [...]. For us, it makes no difference. [...] No, it's of zero use for this use case. [...] Many people will prioritise rent payments over other forms of debt, so why are we penalising them by making them not able to access homes anymore? That's how we see it.’ (TR10)

Landlord references

In other countries referencing can draw upon existing databases to infer how well a previous tenancy performed. In the USA, the presence of housing court data reflects badly on tenants even if the landlord lost their case and the tenant’s concerns were upheld (Dun and Grabchuk, 2017). In Australia, referencing typically comprises consulting tenant blacklists (Short *et al*., 2006; Przhedetsky, 2024). In the UK, no former tenant databases exist that capture non-payment of rent, property damage or anti-social behaviour. Agents reported that landlords rarely register CCJs against tenants after rent arrears have accrued as it costs them more money. Moreover, landlords do not always go to court to evict tenants and sometimes bypass what they see as an expensive and time-consuming process by paying or negotiating with tenants to leave the property (Husmus, 2023: Rugg and Wallace, 2022). Rent payments can be captured in CRA files using Credit Ladder or *Rental Exchange* products, used to bolster tenant’s credit scores, but only for tenants that opt-in, so coverage is incomplete, charges apply and there is no evidence of the extent to which tenants’ positions are improved. Some firms considered these data more important than credit histories as it relates directly to rent, but interest in these products seems to have waned in recent years.

Often landlords and agents, therefore, still rely on references from current or former landlords for qualitative reputational information about how their previous tenancy was managed. Some landlords or agents, considered these to be problematic as relationships with previous landlords may have broken down, resulting in bad references that may not reflect the situation accurately, or good references that may be inaccurate as the previous landlord would like the tenant to leave. Participants noted that tenants may also put friends or family down as a reference therefore undermining the validity of any reference received. Some firms overcame this problem by checking the Land Registry to ensure that the person was the owner of the former property, and possibly the landlord. For these reasons some landlords did not have much faith in former landlord references although interviews suggest they remain widely used.

> ‘There is no way they can verify it other than the fact that they have received contact back from someone they thought was a landlord, a company who they thought was an existing company, ‘(Agent 1)

> ‘I've even seen some tenants [...] put their own email addresses for the landlord's reference. I'm like, do you not think we will see that it's the same email address? [...] Sometimes, it's an innocent reason like, “Oh, we just wanted to be fast,” or they had fallen out with the landlord and were concerned about what the landlord would say [...] It's not always nefarious reasons but we still check that the person who's giving us the information [...] is legitimately the owner of the home.’ (TR10)

In this context, proxies such as checking the on-time payment of rent through Open Banking can be sold as more objective assessments. Though limited, as Open Banking cannot determine whether the tenant was a nuisance neighbour or damaged property, they nonetheless offer a less time-consuming and more trustworthy alternative to landlord references.

Employment

The other key data collected manually regards employment references. Even in the early days of credit bureaus, employment terms had predictive capacity for payment defaults noting that in 1925 journeyman labourers with seasonal employment or day labourers in unskilled work where employers were changed frequently were at the bottom of the hierarchy of occupational desirability for credit (Lauer, 2017: 138).

Today agents and referencing firms are particularly keen to determine the terms of employment contracts, particularly precarious fixed-term contracts, temporary work or zero-hours contracts, as earnings may not be secure over the term of the tenancy. Interpreting the quality of the income source is paramount, but challenging to do without human input, not least when considering how confident someone in certain employment sectors might be in receiving overtime or bonuses.

Open Banking or accessing electronic wage slip data via APIs can show regular income but cannot tell if the contract and income will end tomorrow. Securing employment references, however, was challenging and the wording could be limited, although some agents followed up with telephone calls. An insurance firm we interviewed explained that they would not work with one particular tenant referencing company as it had insufficient checks on employers. Other firms check people purporting to be employers to ensure that they are not actually friends or family, by checking emails, Companies House or the internet.

Employees or tenant applicants were also reportedly embarrassed having to chase their HR departments for such letters, and the whole process is time-consuming, especially in larger organisations that have more formalised systems for supplying the required data. The confidence a landlord can have in the quality and sustainability of a person’s income was weighed more heavily than the affordability assessment as for many the cost-of-living crisis means that basic bills mean uncertainty in current affordability thresholds. This was especially the case for self-employed people for whom verifying income is a challenge.

> ‘So, we have to look at them at the current state of time, and [...] as far as we can, look at them into the future. A classic example [...] they want a 12-month tenancy but they're working on a fixed-term contract that's only three months long. At that point, we don't know

what they're going to be doing after that three months, but we know the tenancy is still going to carry on for 12 months. So, [...] there'd be a bit of a flag raised there to the letting agent' (TR8)

> 'If they say it [the stated income] is correct, we then would ask, "Well, is it guaranteed, or isn't it guaranteed?" If it's not guaranteed, then we won't include that in their gross income against the income to rent ratio at the end, again, depending on the type of job that they do.' (TR9)

> 'For that [self-employed], you'd want them to have accounts for a good few years. You'd want to be doing some checks on how they're rated [...], and at the back of my mind, I'd probably still want a homeowner guarantor, depending on how new the business was because [...] you don't know. All it takes is for them to have an accident or [...], and if they can't work then all your credit checks have basically gone out the window.' (PRS Landlord 4)

Another company insists that Open Banking is an adequate replacement to have confidence in the earning potential of tenant applicants and this is discussed further below.

> 'We've actually found that there was actually no point. You could have seen who they're employed by in their banking data anyway. Moreover, if an employer was trying to sack somebody tomorrow, they're not going to tell you about it because, again, they don't want the liability of someone going to tell them,' (TR10)

Open Banking

Open Banking is being deployed more frequently with respect to tenant risk profiling than for mortgage lending. Firms use Open Banking technology to 'automate and simplify the interpretation of bank-statement data' to appraise affordability and a person's propensity to pay (Experian, n.d.). The technology also provides for open payments that limit the role of third-party card services that intermediate payments between different entities, but here we focus on its use to analyse bank account transactional data. It is being used in numerous scenarios including to provide affordability assessments to automatically save spare cash (Plum), set limits on gambling apps (True Layer) or apply for short-term credit lines (Salad Money).

The technology links via APIs to other rent referencing or credit decision-making platforms and, in simple terms, provides access to a person's current account data for a period of up to 12 months in the past (for individuals and three years for business accounts) and for a period of 90 days after the consent is granted. Firms typically engage a Financial Conduct Authority licensed third-party broker which may be a CRA or a smaller intermediary that assumes the responsibility for accessing these data in line with regulations.

The brokers or data aggregators add value to these data by offering various analyses including individual transactions (each line of income and expenditure, and their timing), or by applying machine learning to categorise transactions to sum expenditure on utilities, food, entertainment, gambling, or fixed and discretionary spending, as well as types of income, employment, benefits, or money transfers from other accounts. It is possible to aggregate the data across several accounts to provide a granular portrait of actual financial behaviour, although often people will only supply one account that can frustrate the process. The timing of transactions can be recorded and the velocity of spending, how quickly once paid people run down the money in their account, from which providers infer positive or negative behaviours. Account holder consent is critical to Open Banking, not least as the concept was partially founded on the idea that people could have greater ownership of the data (Reynolds, 2021).

Firms that use Open Banking value the granularity and speed of the information provided and are beginning to go beyond simply confirming employment income and rent expenditure to looking at other categories of expenditures, such as child support or gambling that significantly influence affordability.

One firm's model was predominantly based on the rich insights obtained from Open Banking data that they considered to be a fairer reflection of people's actual financial circumstances than that provided by historic credit data. Their analysis of the risk of non-payment of rent punctured the view of an 'ideal tenant' being young professionals and found that those on lower incomes or people with minor CCJs households were no more likely to accrue rent arrears and therefore sought a radical reorientation of the evidence base on which the traditional models were built.

> 'For us, we're extremely confident in the fact that we are fair to both parties because as much as we want tenants to be able to access the homes that they need, we also don't want to create a world where landlords can't trust what we say about tenants in the first place.' (TR10)

Open Banking did pose some challenges and some firms were waiting to see how the technology developed before adopting it or were using it in conjunction with other data. Open Banking cannot confirm the quality of income, in terms of temporary employment or unguaranteed bonuses forming most of the wages, or that a person has not damaged the property or caused anti-social behaviour. The presence of multiple bank accounts, especially for couples, was problematic, leading one firm to use Open Banking with single people only. People also move money between accounts frequently and have different sources of income, get paid in cash or have side-lines with income from eBay, for example, making the levels of income unclear.

One firm explained that 40% of applications show a disparity between the employer's name or wage income on the application and within the Open Banking data and reverted to analogue employer references to resolve this, although they were more confident of identifying wage income than rent payments to landlords (TR7). Some referencing firms ask applicants to identify the wage income and rent payment themselves in the Open Banking data and then look for patterns in those payments but miss other significant sources of income or expenditure. Another use is to assess affordability but asks employers to confirm that they are still employed, the contract length and how much of that income is guaranteed.

Categorising income and expenditure are also not standardised across Open Banking operators and can be difficult as discretionary spending is undertaken in supermarkets or food staples purchased from Amazon, for example, confounding categorisation. Firms were committed to exploring the technology but often considered Open Banking to be incomplete.

> 'So, it tends to be – we're still learning. I think we're very much in the early stages of implementing this in our reference ourselves, but it's looking quite positive, but we're probably being on the cautious side because we want to make sure that we're doing the best for the tenant.' (TR7)

> ‘We acknowledge it is quite intrusive; we see a lot of their information, but it isn't [...] It is sometimes useful to help [...] demonstrate their credentials, so we use it; it's like a tool for us. We don't put everyone through it. If we feel it's necessary and [...] help them, because otherwise we're going to flag some risk, then they have the option to do it.’ (TR1)

> ‘That therefore can show somebody's affordability pretty quickly, but what that doesn't tell us is [...] have they just lost their job? Have they just quit? Are they on a temporary or permanent contract? Are their circumstances about to change? Out of that money coming into their bank, how much of it is salary and [...] guaranteed, and how much of it is variable, as an example. So, you could use the Open Banking data to give you a pretty good indication and a heads-up that [...] they do work for this company and they're getting pay from this company that's fairly consistent. But you still need [...] the human to have a look at things like documents, potentially, in terms of their contract of employment, or you need to ring the employer and have a chat with them, too. That's probably the best example.’ (TR4)

Tenants are asked to provide consent to data sharing when the tenant referencing portals links to the third-party Open Banking provider, and firms acknowledge that sharing of banking data is counterintuitive as it is contrary to consumer advice messaging. Two issues arise. Firstly, referencing firms note that dropout rates have been significant when Open Banking pages are reached, although are improving as the technology gets normalised. Secondly, there is pressure on tenants to opt for quick frictionless access to a home and some tenants felt compelled to consent to what they felt was an intrusive data request, so consent was not granted freely (Ciocănel et al., 2023). Firms acknowledged the landlord-tenant power imbalance in the PRS designed interfaces to give tenants confidence, and signalled other options to verify themselves, although this was not always clear to tenants.

> ‘I think there's that sort of expectation that to get this property I need to provide this [Open Banking consent], so I just want to do it as quickly as possible to get me in that property, especially in fast-paced markets, which we've seen a lot of at the moment.’ (TR7)

> ‘At first, my expectation was that maybe 10%, 20% of people would be actually willing to do this, etc., but then we saw adoption jumping to 50%, 60%, 70%.’ (TR2)

> ‘We thought, okay, maybe we'll have a 50% drop-off rate. Like I say, it's only been one person in that whole time. I think that speaks to how important housing is. When you ask someone objectively, “Would you give personal information to a tech company?” They're like, “No, never.” Then, when your landlord who you want to rent from says, “You have to give your personal information to this tech company,” then it just shows the power of the need for housing.’ (TR10)

Referencing firms themselves note that Open Banking provides intimate sensitive data about people, providing instant and detailed person profiles.

> ‘The way Open Banking works is, if you give access to someone to your account, based on the bank that you're using, you give access to, generally speaking, as a rule of thumb, the past 11 months of transactional data. So that's a lot of data about someone to make speculations as to what sort of a life they're living.’ (TR1)

> ‘Pretty much all the data, yes. That's why I always thought Open Banking to be an extremely scary thing. 'Give me your 11 months of data in half-an-hour, and I will tell you exactly what sort of a person you are in half a day.' (TR2)

> 'I don't know that they understand it; I think they just see it as being something that they're asked to do, and if they want to rent the place [...] they do it or they don't rent the place. Personally, I don't like Open Banking as a concept. I don't want to give my bank details to people. I think payslips are possibly enough. I'm not convinced that [...] It's a very personal thing, isn't it, your whole banking history? Knowing that someone is getting a salary is one thing, but seeing what they're spending it on, how many trips to McDonald's, and how much on Netflix, and gym memberships, and all that. I don't personally think a landlord needs to know that.' (PRS landlord 7)

One landlord mentioned that he uses paper bank statements to analyse tenant spending, focusing on what he views as frivolous purchases or loans. It's unclear if Open Banking is merely systematising the sharing of personal data. Many tenant participants found even paper statements intrusive, with some blocking out all but their balances to avoid scrutiny, while others were more relaxed. Some tenants felt unsure about their ability to decline Open Banking and felt pressured to use it despite discomfort, while others opted for it due to time constraints and its faster processing claims. Participants expressed concern about the amount of data shared, how it would be used, and whether humans would access it for assessments, which made one tenant particularly uneasy, even though human judgments are already embedded in the systems.

> 'I don't care too much. I know a lot of people care for this stuff, and it's important so they are right, but personally I don't care too much.' (Tenant 8)

> 'I do remember…my partner felt it was quite intrusive. He felt like it was quite digging deeper than what they would normally do.' (Tenant 12)

> 'Between that and a PDF, I'd probably say if Open Banking were more open about what it was trying to do, then that would be much better. If you had guarantees that it was completely no human intervention, that nobody would be looking at your transactions, that would be better, but I'm a little sceptical of the data privacy of it and it feels a little bit invasive.' (Tenant 13)

> 'Now, it doesn't affect me as much as it used to, sending over my bank statement, because I used to be really protective of my money and showing people how much I had, but then when you get into a situation where you're in need of something like benefits, or even a house, you have to let go of all of those things, and that is so uncomfortable.' (Tenant 7)

Despite being in its infancy, the use of Open Banking technology has rapidly expanded and represents a significant change in the way people are scored or rated in access to housing and is likely to produce winners and losers. For example, someone with a good, verified salary may have large loans or a gambling habit and consequently have a lower affordability level than someone with a lower income who manages their finances assiduously. Open Banking also raises the prospect of identifying those with weak financial profiles, with irregular income or who are 'getting by' but are financially strained. Kim et al (2023) note that Open Banking revealed indicators of financial vulnerability such as the extent of overdraft use, returned direct debit and very low disposable income that may preclude people from borrowing. These people still require housing but this granular insight indicates previously unrevealed risk and if used in housing may undermine rental applications in tight housing markets. These issues raise debates about the limits of scrutiny for a critical service and how much of our lives we are willing or are now compelled to share.

Fraud and Right-to-Rent checks

Other sources of data that were regularly used were CRA or credit information brokers provisions of anti-money laundering (AML) checks, Right-to-Rent and fraud and identity checking, including facial recognition to verify biometric data on passports. Several studies have found that this technology has misidentified or failed to recognise darker-skinned people (Stevens and Keyes, 2021). No firms, landlords or agents reported problems with these third-party platforms and noted that the digital systems they used were government-approved and provided certainty. Firms described how working with agents they had found sophisticated fraudulent bank statements being provided that they detected as a font in one place was slightly off. Open Banking and other digital systems can overcome these risks that manual referencing finds challenging to detect.

> ‘So, they go to extreme lengths to create these documents, to get through our systems, so we're always trying to improve that aspect of our referencing. There's a fraud database, Cifas [Credit Industry Fraud Avoidance System], we're looking to integrate into that, so we do feel like there's a lot that we can do in that space, and we can better support our team as they're going through these checks. At the moment, nothing that we do that's automated.’ (TR7)

> ‘They do a lot of this AI analytics of documents so they can pick up slight irregularities in type fonts, because apparently there's a lot of people doing fraudulent stuff where they've got a real bank statement but then they are photoshopping that bank statement to show a higher income, to show higher savings.’ (Agent 5)

> ‘The other thing that we implemented fairly recently is Know Your Customer checking – which we attach to a reference. By Know Your Customer, we're talking about the Right to Rent checks that legally have to be done; the AML checks that have to be done; and then, also, some additional enhanced ID checks that can be done, if the agent wants us to. With that, we partner with a third-party supplier, and we've integrated that into our system – we use face biometrics and liveness checking, and all of that good stuff. There's an algorithm that sits behind that that's been approved by the government, as to the level that's needed for Right to Rent checking. Again, that's been quite a big change in the industry.’ (TR8)

> ‘There's this Home Office system where they're provided with a - the person applying gets what's called a share code, and they can give us the share code, we can log onto the Home Office's website, and it basically does the work for you. Sometimes they haven't got their share code, or sometimes there's language barriers as well which makes the process quite difficult, but we usually find a way around it, because there's so many international tenants. Right to rent is fairly straightforward I would say.’ (Agent 1)

Right-to-rent checks have been found to lead landlords to be cautious and opt for tenants that may easily pass (McKee *et al*., 2021), and it was something that landlords interviewed expressed concern about, but agents considered these digital checks and facial recognition software unproblematic and had manual systems to overcome difficulties. Tenant participants had not experienced problems relating to these issues.

Social Media

Social media was not used in formal tenant referencing tools, unlike in other countries (Przhedetsky, 2024). Some referencing firms found social media added little to their models and data protection regulations prohibited them from using it after 2018. Agents, however, used social media informally to provide additional insights into prospective tenants, checking Google or social media platforms when they were uncertain about aspects of how tenants presented themselves. One agent ran additional Land Registry or address checks to gather information about applicants but considered social media important as it provides insights into tenants' circumstances. A referencing firm describes landlords' ambivalence about such additional data, but agents may feel compelled to dive deeper into a person's background to cover their own business risks in their relationships with landlords.

> 'It's more to understand what's going on in the background. So, we'll be trying to work out perhaps if someone [...] is in a relationship and they haven't told us, so we're not sure about maybe partners, or children. Trying to understand a bit more about their background is really all that shows us. A lot of the time obviously accounts are private, or blocked, so we can't really see that much, but there are ways we can search whereby we can try and find even just a snippet that might help us, give us a better picture [...].' (Agent 2)

> 'We sometimes use social media; we'll look people up on Facebook and what have you if we think that we're not being told or something's incorrect. [...] If we think that somebody's spinning us a line about what they do for a living then we'll have a bit of a google on them.' (Agent 1)

> 'I 100% believe that people live two different lives, so their lives on social media and their lives in real life are two different things. You can't make judgements on someone based on how they portray themselves on socials.' (TR2)

Referencing and insurance administrative data

Data from referencing and insurance claims has become a valuable resource, not least for those referencing firms linked to insurance companies. Firms have accumulated years of data on tenants from past referencing applications and landlord insurance claims for non-payment or property damage. The data retention policies of these firms vary, with some keeping data for 3 years under GDPR's legitimate business grounds, others for 12 months, and some for 6 years. This data reveals seasonal renting patterns and aids in matching staff to demand and tailoring services to tenants' socio-demographics, such as integrating Open Banking features. Although firms are starting to identify tenant risk indicators, they primarily use retained data to check new applications for consistency. One insurance firm with six years of data plans to assess which referencing products best minimise insurance claims, but limited claims data - despite having over 600,000 cases - hinders strong conclusions.

The insights from this accumulated data may be limited, as it pertains only to pre-screened tenants and those that had already passed formal referencing, not the broader renting population. Unlike financial services, rental markets lack reciprocal data-sharing arrangements that would provide broader insights. One participant suggested recording court evictions as CCJs to prevent tenants with poor histories from bypassing referencing. A firm operating a tenant onboarding platform is considering adding rent arrears management to create a rent payment history for future referencing, though this feature is not yet in use. The trend points toward greater use of data and predictive analytics to identify the 'ideal tenant,' but the models' effectiveness remains uncertain without a comprehensive record of tenant behaviour.

> ‘Now, the good thing is here, is because we often insure the property to make sure that the rent's paid, well, you've got a lot of claims data then that obviously, is telling us if we're putting the wrong or the right people into properties. We're doing up to 25,000 a month in terms of references, so 1000 people or more a day, and therefore, you start to learn if the letting agent or the tenant are saying, 'Well, that's unfair', or they're thinking, crikey, you should stop this person. They've been a nightmare since they've moved in, or they haven't paid the rent. So, you do it sometimes on feedback, but we don't have to tweak the rules very often. They've stayed very static for quite a long period of time.’ (TR4)

> ‘With this automation process, we're still learning. If you said to me, “What's your ideal tenant?” Well, we might have a few: “Well, it's early-thirties; young professional; going up in the world with a salary of X; no partner,” or whatever. We might have an ideal tenant, but actually, we can't tell you what our ideal tenant is at the moment, because we're now just beginning to assemble the data to take a look at, “Is someone in the healthcare industry less likely to default than someone…?” [...] We haven't got those data sets yet, but we're looking now at building a view, with a little bit more experience.’ (PRS Landlord 6)

Referencing firms’ business models are often also using customer data, landlords, agents and tenants, to segment customers and upsell additional products, like utilities, removals or a range of insurance products.

> ‘[They] give you, like a risk assessment to say whether they're high risk, moderate risk or low risk, that type of thing. Then they usually send you information about other products they want to sell like rent protection insurance and that type of thing.’ (PRS landlord 2)

Upselling of other products and services is a part of agents and referencing firms’ business models, and the data accumulation is also used to focus marketing, such as utilities, removals or other property-related services. Not all firms engage with this or sell tenants’ data, however, which they see as advantageous when engaging new clients, as they are solely centred on referencing their customers.

Tenant passporting

Tenant passporting is a nascent idea that tenants will assume the responsibility of collating digital data to demonstrate their credibility as tenants and present these digital compendiums to agents and landlords. Tenants would, therefore, essentially be referencing themselves, reversing the current practice of agents and landlords undertaking the risk-profiling. In competitive rental markets, agents and landlords are often overwhelmed with applicants, and the idea is that tenants would enhance their profile and get ahead of the queue for accommodation by offering early reassurance of their circumstances. Several firms already have or were developing these types of products and hoped to see their use grow in the market. Adoption rests on tenants feeling the need to produce such verification when approaching agents, and landlords need to be confident of the data shown, with tangible time and cost savings for them. One firm talked about leads from leading property portals prompting tenants to pre-qualify themselves before approaching agents and landlords to create a market for these products, or others promoting their use through deposit protection firms, whilst another considered there to be a market among tenants to enhance their profiles to secure homes.

> ‘I think tenants should fill in their data once and that should be the record, and then they can take it with them when they move and they haven't got to go through hoops, really. *Q: Is there any appetite among agents and landlords?* I think the bigger appetite really is the tenants.’ (TR4)

The development of a rental score as part of tenant passports was also raised, which would reflect the sum of the multiple attributes, much as credit scores are an aggregate reflection of our financial data, albeit a crude one. The rental score would be used to screen tenants prior to viewings. Similar systems are available in other countries, such as the Snug product in Australia, where the more data people provide the greater the score. Tenants can be unclear about what data is required, how to present themselves, while some attributes like pet ownership or benefit receipt are beyond their control and they can be challenging for digitally excluded and there is no space to offer narrative explanations of minor old crimes or thin credit files (Przhedetsky, 2024). The Snug pre-qualification system also at one time included higher rental scores if tenants were willing to bid over the advertised rental asking price but regulators have now curtailed that practice after a backlash (Convery, 2022b; Truu, 2023).

The emerging UK products place the onus on tenants to present themselves well and, not least when combined with Open Banking, would shape how we manage our lives and finances. This would be much in the same way as how credit scores have influenced how people present to financial service industries, taking out credit cards and repaying debts to show positive data in credit files (Ferreri and Sanyal, 2021). More positively, tenant passports make referencing more transparent to tenants as they never typically see the full data nor that shared with agents or landlords, so making tenants organise and hold the data overcomes tenant privacy, security and intrusion concerns apparent in current referencing practices. Passports would display to agents or landlords the limit of a prospective tenant's affordability, rent payment histories provided via services like Credit Ladder and identity and the information is accessible to them using the passport services platforms.

> ‘It’s a bit like the employment industry, where instead of saying, 'I'm going to come and look round a job, and then I'll submit my CV.' It's: 'I'm going to give you my CV, and then you can decide which one you're going to narrow it down to.' The same sort of thing applies, really, where - we're trying to drive the market a different way, where all tenants will have a Property Passport, which shows how suitable they are to a particular tenancy.’ (TR6)

> ‘Traditionally, tenants have been a little bit wary of referencing companies; it feels a little bit smoke and mirrors: you don't really know what's happening to your information, or what you're being assessed on. Whereas Property Passport is much more transparent, in that way; the product lasts for the lifetime of the tenant - so they can keep updating it, keep coming back to it.’ (TR8)

> ‘We're currently looking at pre-qualified leads and gaining more information at the point of enquiring on a property on [parent company site]. All agents want to understand are the simple questions like do you have pets, do you smoke, they tend to be consistent questions that they ask, [...] how can we validate that as early on in the journey as possible. [...] A lot of letting agents ask for it upfront when they're looking at the leads that they've got through, I'm booking in the viewings, how can I best understand who's going to actually move forward with this. It always comes back to can they afford it, so they'll ask everyone's salaries, and try and get that picture as early on as possible.’ (TR7)

However, as mentioned earlier, our current data infrastructure is such that not all information landlords need is available digitally, including typical employment and former landlord data. Opinions also differed as to how much data tenant passports would include. One firm noted that tenant passporting does not obviate the need for full tenant referencing, it just accelerates pre-screening, as good salaries, affordability and credit files may obscure unguaranteed bonuses, contract employment or property damage.

Furthermore, it was unclear who would fund tenant passports. Current referencing might only last three months so one firm considers that it would be unfair to charge for tenants to pre-qualify themselves to view properties and would offer the basic screening verification for free, with landlords still funding full referencing.

Some agents however assumed that passporting would replace referencing and did not see a sufficient use case if it was limited to pre-screening as they had concerns about how firms could reflect agents' and landlords' various affordability criteria. Others viewed passporting positively, not least when linked to Open Banking Credit Ladder type products that gather rent payments from CRA reporting as there is a clear tenant benefit to improve their files and credit scores and promote inclusion. There were also opportunities for upselling as passport data would be valuable for marketing purposes, as well as a repository for information that reduced the information agents are required to gather. Standardising the information to meet a range of agents' and landlords' needs was also an obstacle for some, however keen.

> 'Which we don't when we're doing the pre-qualification because it is just a pre-qualification, it's not a full reference. It's just to put them ahead of the queue. So, we know that if they paid their rent regularly, we know that their affordability is where it needs to be and that they don't have any really in your face bad credit, they're going to be a pretty good tenant. So, if they decide because they've got such a massive amount of income coming in that they can have wild parties every weekend, that's not something we would know at that point. That would come up once they actually are accepted as a tenant for that property and then the agent runs proper full referencing on them.' (TR6)

> 'I think Open Banking and the development of Open Banking is absolutely the future for this. I see the ownership of the reference perhaps moving towards the individual because there are lots of potential benefits that go with owning your own credit status. There's a lot more checks and balances that are required for who our status is, do we have a passport, do we have a driving licence, and so having a product where you can, you've got your own status in a digital format… You could have your passport in there, you can have your driving licence in there, and you can have lots of other forms of identification in there that have other uses in our life, and one of those is renting properties. So, I think there will be an advantage or a growth in that area.' (Agent 4)

> 'It's something that different companies are currently working on, but I think it's something that could really help tenants in the marketplace having a block of data that they can basically carry around with them, that they can give to an agent and say, yes, here's all my details, you can plug me into your system, and I can move through the process a bit quicker because maybe I've already passed referencing elsewhere, or whatever it might be. So, the sharing of referencing data, I think that's quite key around tenant passporting. That would certainly make tenants' lives a lot easier.' (Agent 2)

Reinforcing the turn towards tenants assuming responsibilities to present themselves well to landlords and agents, one market player also considered the possibility of tenants having to take out indemnity insurance to cover the risk they pose to landlords.

While some tenant participants cautiously welcomed the idea of tenant passports, although expressing concerns about social scoring, others considered it a marginal benefit as pre-qualification left intact the imbalanced structure of demand and power in the rental market that left tenants disadvantaged.

> ‘I think that would be good. There are limits to it in that more of a sort of, with tenants I'd be worried about that Black Mirror episode, Nosedive, where everything is rated, and it makes life a bit of a nightmare, but I kind of like the idea of having a reference history. The thing that comes to mind is with mortgages, they're proposing to have a sort of track history where if you've been renting for a couple of years, you can then use that towards a mortgage, and that's in the pipeline. If they had that, that'd be really good [...] If you only had to do the paperwork once, that would be brilliant, rather than every single time you move house.’ (Tenant 19)

Conclusion

Tenant referencing has traditionally focused on verifying tenants’ self-presentation for a tenancy. Recently, referencing firms have begun using automated systems and extensive financial and administrative data to gain deeper insights into tenants’ situations, enabling landlords to be more selective. However, fully automated systems face challenges due to data gaps, particularly in verifying employment and landlord references, as digital payslips or Open Banking often fall short in confirming income stability or tenant behaviour. While digital and automated models provide speed, more checks, and fraud prevention at lower costs, Open Banking can encounter tenant resistance due to privacy concerns. Tenants frequently feel pressured to share additional data to secure housing, resulting in prequalification tenant passports. These passports shift the responsibility to tenants to compile digital data, including rental scores, to demonstrate their credibility in the rental market. As scrutiny of financial data intensifies, tenants may need to manage their banking transactions like credit scores, altering perceptions of credibility in the private rental sector, although this may only impact a small margin.

Chapter 6: Classification, exclusion and conditionality in tenant selection

Introduction

This chapter examines how the models discussed earlier evaluate prospective tenants' suitability, determining who qualifies or is rejected. It emphasises that pre-screening is essential for understanding housing exclusion, yet it is often neglected in discussions about digital tenant referencing tools. These tools can exacerbate housing exclusion, particularly when there is insufficient human oversight. Landlords frequently disregard the recommendations from these tools, leading to conditional leases that some tenants may struggle to fulfil. Additionally, few in the housing market consider the overall effects of tenant selection. While direct discrimination is acknowledged, the indirect consequences for other groups are often ignored. Technological solutions, such as adjustments to platforms, Open Banking, or tools aimed at increasing income, may enhance tenant profiles but can also have negative repercussions for others. Importantly, these solutions do not tackle the root causes of exclusion, which often stem from issues outside the housing market, like employment and benefits. Furthermore, they do not change the existing power imbalances within the housing system.

Classifying tenants

Referencing reports generally follow a pattern, though the terminology may differ. They often include categories like a straightforward ‘pass’ or ‘fail,’ or terms such as ‘suitable,’ ‘passable,’ or ‘unsuitable.’ Some reports ‘recommend,’ ‘do not recommend,’ or ‘recommend with caution.’ Others assess risk levels, labelling them as ‘high,’ ‘medium,’ ‘medium-low,’ or ‘low.’ Additionally, some systems use a traffic light approach: ‘green’ for accept, ‘red’ for refuse, or ‘orange’ for situations where further reassurance is needed.

Occasionally, reports provide a percentage risk rating or scores, but final assessments are usually categorical, indicating a confident or borderline pass or fail, categorised by checks like CCJs, fraud, or affordability. Reports often include a narrative summary to help landlords and agents understand the assessments and explain findings to prospective tenants. The amount of data shared with agents or landlords varies. Landlords in our sample often did not fully understand the reports or how data influenced firms’ recommendations. Firms struggled with how to present data, debating whether to reflect all insights or just indicate if adverse credit or affordability issues were present. Overall, firms believed landlords preferred clear guidance on whether a tenant was acceptable rather than interpreting scale data, although some landlords still received or wanted such reports.

> ‘We have so much technology, so many answers to give, and then we started giving it and realised, at the end of the day, a landlord really does not care about it, really does not care about it. All they want is a simple yes, no. Nothing more than that.’ (TR2)

> ‘One of the common bits of feedback in the early days was, landlords would phone up agents to say, we don't understand the reports, they're confusing, what does this mean, and they would have to explain it best they could. We have a report that's just very clear.’ (TR1)

Landlords differed in their engagement with and understanding of the reports and of the data that sits behind them. They often relied on agents' interpretations, wanting simple explanations in line with firms’ comments above, but also wanting a greater narrative content to explain ambiguous or conditional findings. Occasionally, landlords wanted to see the source data and how it related to the recommendations.

> ‘Landlords that we've dealt with for a long time, I would suggest that some of them possibly don't even bother to read it, because they rely on us to say there's an issue here. Occasionally you'll get a landlord who misunderstands something on the report, or just generally doesn't like the sound of something that we think is perfectly okay, but they think isn't.’ (Agent 1)

> ‘I don't know if they all do this, but one of them bases it on the Equifax risk score. That's one of them does that, but the others quite often, they have some form of risk assessment, so I don't know if the others do it on the same basis. I think they base it on this Equifax risk score. [...] Basically, the risk score seems to be very high, high, medium and low, [...] I'm not exactly sure how that works, to be perfectly honest, but it must be around their credit record.’ (PRS landlord 2)

> ‘For me, because I keep referencing reports, and I find it difficult to understand the conditional. It's fine when everything is right, and you say accept, but it's when it goes wrong, or when it says conditional on this. I think that doesn't really help me as a landlord. I want to know can those conditions be met or if there's a risk score of 564, what does that mean? I want them to be more clear, transparent, understandable for someone, but it's not there.’ (PRS Landlord 3)

Concerns about data privacy and data security were other reasons to limit data sharing with landlords, as firms were uncertain of agents’ and landlords’ data management practices. Also, some firms confined reports to confirming that the tenant could afford the rent charged, as fears that informing landlords of the maximum affordable rents would prompt them to charge tenants more. Providing limited pass-or-fail data balanced the needs of both landlords and tenants, although, in practice, indicative household incomes are disclosed during the pre-screening period so this point about tenant protection may be moot.

Who fails tenant referencing?

People are refused tenancies due to tenant referencing and this section outlines the common reasons for exclusion. Few put figures on the volume of failed assessments but estimates advanced were from 4% to 9-10% with another 15% being subject to conditional lets (see more on this below). One-half of our landlord survey respondents had refused tenants based on the reference obtained. The proportions above appear low but nearly one million (955,000) private lets were made in 2021/2 (DLUHC, 2024: Table FA4301 (S216)), so a rough estimate might be that up to 10,000 people a year are impacted by referencing refusals and refused a mainstream private rental. The interviews suggested that people at risk were those with poor affordability, non-standard employment, adverse credit such as younger people and migrants, older people reliant on savings and people on benefits, although firms did not report analysing outcomes. The impact of this for tenants was that they remained in or could only access poorer quality property, but could also mean homeless presentations if in high-pressure areas.

Affordability not being met was the most common reason reported for failing referencing. The cost-of-living crisis has reportedly seen refusal rates increase as incomes have not kept pace with rents and household finances are under pressure. The security of employment income was important too, not just the amount, which meant that people with non-standard forms of employment or in receipt of ‘lumpy’ income commonly failed. Some referencing firms checked *HMRC* or *Companies House* data to verify self-employed accounts but irregular, insecure or cash earnings undermined confidence in tenant applicants. Fixed-term contracts, especially where the employment contract termination date was prior to the end of the initial tenancy period were difficult as rents have to be affordable over the full tenancy. *The Tenant Reform Bill/Renters Rights Bill*, proposed under the Conservative government and anticipated to be passed under the Labour government, may limit the ability of landlords to evict tenants without reason, carrying the risk that more tenants could be excluded as landlords look for longer-term sustainability.

> ‘I think, probably the most important information, is the employment and income information, to see what employment they've got and whether it's like full-time employment or the length of time they've been there, and the income level they've got, so to see whether it's affordable. That's why it's quite hard sometimes to do the self-employment people, or people who are taxi drivers, because it's a bit of a cash culture then with taxi drivers. It's a bit more hard to assess them.’ (PRS landlord 2)

> ‘So, it's a bit hard to say but obviously, the removal of fixed-term tenancies is going to cause a problem, because people that are on a temporary contract, for example, do you let them in or not? If they've got a contract that ends in six months' time, whereas before, you'd grant them a six-month tenancy, if I was a landlord, I would be declining them in the new world.’ (TR4)

Credit files were used to check debt, verify identity, and confirm address histories. Some landlords instantly rejected anyone with bad credit, while others accepted small or old debts if explained during pre-screening. Credit data also helped verify that an applicant's history matched third-party data, boosting confidence in their integrity. Discrepancies raised doubts and increased perceived risk. Young people or UK migrants with thin credit files found it difficult to prove their identity and credibility, making it hard to secure a tenancy. If other attributes were confirmed, these applicants might qualify for a conditional let.

Older people with low incomes but high savings also struggled with models based on regular employment income, which often ignored tenant wealth or assets. This left them needing a guarantor or paying rent in advance, with interest benefiting the landlord. Finding a family guarantor was also difficult due to role reversals, where adult children were asked to support their parents. One insurer had a policy that required even millionaires to have a guarantor if they lacked employment income, but now cases are underwritten individually. Despite changes, older tenants still reported similar issues with product structures, where platforms privileged income over savings.

As we saw above, the pre-screening process will often remove prospective tenants reliant on benefits from being selected for properties. Two tenants who got to a referencing stage were unable to physically enter the amounts of benefit income into the referencing platform or could only tick a box to indicate that some of their income comprised benefits, leaving them unable to demonstrate their affordability. However, some referencing agencies do include a tenant's income from the benefits system in their affordability assessments (TR1, TR9) but are aware that some landlords or agents will informally not support these tenants and filter them out in the adverts or screening process.

> 'Just being told by the councils and my Universal Credit work coach your allowance is up to £1,200 a month for housing benefit, and then I go and look at a place that is £1,200 a month, for example. You can't afford it. I was like, well, I know, I know I'm unemployed, but that's why my housing benefit is going to cover it and I can prove that I have that. Not good enough.' (Tenant 5)

> 'There is no proper section for people who are claiming benefits. You can only click an option called unemployed. That's it. So, the other thing is, if you select employed you can put your employment details and your income and all these things, but if you select unemployed you can't even put your income details. Nothing from your benefits. It's like you don't... You can't even prove there on that website you have an income from the government.' (Tenant 17)

> 'We recently distinctly added government support, as we include government support as affordability, but we've made it more distinct in the report now. I think there's a lot more people claiming in the past month or two because of cost of living and things being impacted. We don't discriminate on that at all, and in fact our insurance partner doesn't either, so as long as people can meet the affordability even with the government support, you could take out an insurance product which would completely de-risk.' (TR1)

Exclusions based on insecure employment or benefit receipt highlight the perceived risk associated with straying from the 'ideal' tenant profile. While these exclusions may be justified, they can lead to indirect discrimination if certain groups are disproportionately affected. In 2020, Shelter successfully challenged an agent's refusal to rent to benefit recipients, noting that women and disabled individuals were overrepresented among claimants. This conflict with equalities legislation resulted in a ban on the common 'No DSS' rental advertisements.

The evolving labour market also affects access to housing, as landlords increasingly view insecure employment as a risk that leads to exclusion or conditional tenancies. Currently, 21% of workers are in severely insecure jobs, often due to low pay, zero-hour contracts, or solo work, with another 34% in moderately insecure roles - disproportionately affecting young people and some minority ethnic groups (Florrison, 2024). While these workers generally earn less and rely more on benefits, the two most common occupations are 'wholesale and retail' and 'professional scientific,' indicating that insecure contracts span various skills and pay levels. ONS data shows that self-employment, zero-hour contracts, and temporary work are more prevalent among Asian, Black, and female workers (ONS, 2020; ONS, 2023; TUC, 2023). Thus, restricting access to the mainstream rental market due to employment insecurity significantly impacts specific protected groups.

Evidence of direct exclusion was limited, as few agents or landlords who excluded on protected characteristics are likely to participate in the study or give voice to such practices. Nonetheless, agents and referencing firms intimated that landlords did occasionally discriminate and had challenged this illegal behaviour and/or terminated business with them. Areas where discretion can be exercised offer opportunities for discrimination and it is unclear if some groups are more or less likely to be offered conditional lets, or indeed are able to meet the terms of such lets (see below). Where the models are involved, few firms, landlords or agents could articulate how these models performed in terms of the outcomes for people with protected characteristics. One firm had an equality impact assessment in their sights after the next upgrade of their model was complete, but for others, it had not been considered.

> ‘It’s one of those things where I think that letting agents and landlords probably make greater allowances for people such as myself rather than those that sound or look a little bit different from myself, really.’ (Tenant 11, white middle-class male))

> ‘We haven't [done equality impact assessment]. It's kind of on our radar to do that, especially because we are in the AI space, because we have a model that is effectively creating its own - it's helping with decision-making. We're taking that responsibility on ourselves to make sure that we are equitable. It's part of the company ethos to do that as well. Yes, we are aware of it. We haven't done the impact yet. It is on our roadmap of things to do once our full upgrade has happened.’ (TR10)

> ‘I don't think it's possible for us to do that either, because to be considered, when it comes to us, they're already being considered for the tenancy. If that happens, it will be at an earlier stage. We are looking at the earlier stage too and develop something maybe in that space, but until we have that, we won't assess anything like that. Ethnicity isn't something we would capture, it's irrelevant. It's not something we would even capture to even then look at that. You obviously can see it in names, foreign names, and if people are moving to the UK.’ (TR1)

> ‘I just think that it's an essential tool for landlords, and it's going to become more so with the changes in policy, which potentially start to exclude groups of people, particularly people who haven't got a credit history or who are reliant on benefits. I'm thinking it's not necessarily going to help certain groups of tenants the proposed changes, and I think it's probably something that's going to be used more by landlords.’ (PRS Landlord 2)

Overriding referencing recommendations

Landlords and letting agents are hesitant to fully rely on automated processes because people are complex, and certain risks might be reconsidered with more personal information or additional data. Trust in automation is not fully established, and landlords ultimately want to rent out their properties. Referencing companies, seeking business from landlords and agents, collaborate with them to reach mutually beneficial decisions. Even advanced algorithms in referencing still require human effort to match people to the models (Beer *et al*., 2023).

> ‘I think it is finding the balance, so obviously, we have seen some new companies come into our industry. Where they're purely tech, they haven't worked, and they don't really do what the letting agent wants them to do.’ (TR4)

> ‘There can be scenarios there where the technology helps us to identify, okay, this looks like it could decline but actually, what the data is showing me, the Open Banking data, for example, is showing me there's something else there. I'm going to make a call, I'm going to see if this person has got any other forms of income, is there anything else that could be put against it. So, I guess in terms of the service proposition, it's very much that we are helping people to get into their homes. Ultimately, letting agents want to let property, we want them to let property, so we've got leads for the rest of the products that we sell through the platform.’ (TR8)

> ‘We could go to a fully tech solution, but actually, what we'll do is just switch off a load of business and therefore, we'll switch off some partners, and actually, some of these letting

> agents purchase - one of our biggest ones purchases a thousand policies from us, so we couldn't have that. They're in London as well, so you're generally going to find a lot more of the quirky things will be in London because people are coming from overseas, etc., a lot more often, and its new start-up companies, etc. So, we wouldn't ever want to switch off that manual, human intervention because you'll just lose a load of business. It might become efficient, but it's not what we're about.' (Insurer 1)

Despite efforts to help applicants meet criteria, landlords and agents often override the recommendations from referencing tools for several reasons. These tools use fixed criteria and thresholds that do not easily account for regional differences, property desirability, or fluctuations in supply and demand. They also cannot capture the personal sentiments of landlords or agents; positive impressions from pre-screening conversations can sometimes offset weaknesses in a tenant's profile.

Financial pressures play a significant role as well. Landlords facing financial strain and lacking diverse property portfolios may hesitate to reject applicants and restart the referencing process, opting instead to accept tenants despite negative recommendations to avoid vacancies. Moreover, referencing tools are designed around the concept of an 'ideal tenant' - someone with stable employment, a regular income, full-time contracts, and a strong credit history. However, many applicants have more complex situations, such as self-employment, irregular income, non-British status, or short job tenures, which do not fit these models.

Although referencing firms have staff to evaluate individual circumstances, landlords frequently choose to accept tenants or impose conditions even with unfavourable referencing outcomes. This approach reflects the practical needs and complexities of the rental market.

Our survey indicated that 40% of landlords had overridden the referencing firms' recommendations, mostly in the prospective tenants' favour, because of sickness, use of a guarantor or a good account of their circumstances, although in one instance it was against the prospective tenant as they were a migrant with little UK history. Reasons most cited for overriding the referencing firm's advice were that the risk could be managed by using rent upfront or a guarantor, that tenants could offer strong accounts explaining poor references due to life circumstances, they 'deserved a chance' and that the referencing systems 'fail to understand non-standard employment.'

Beyond the quantified data available through referencing, landlords asserted the importance of their 'gut feeling', their intuition, experiential knowledge or personal subjectivities. Landlords can just reject the recommendations or if they have rental guarantee insurance, they will have to get the referencing or insurance company to approve their decision, which involves a human review of the circumstances.

> 'The current tenants that we have in there now, they both came back as unsuitable because they didn't pass the affordability. [...] By the time we'd gone through all this toing and froing of the information they needed to provide, and we were communicating ourselves then through *WhatsApp*, I'd already started to have a bit of a relationship with them. You start to build trust, and I just thought, well, sod what the credit checking thing says. I trust them to be reputable tenants. They seem very keen. We decided to rent the house to them anyway.' (PRS Landlord 1)

> ‘It varies from landlord to landlord. It never ceases to amaze us when we get, sometimes landlords will come to us to draw up paperwork, the legal documentation for them, because they've already found a tenant, and sometimes we're very wide-eyed at how little checks they've done on that person and how little they know about them. It'd be a friend of a friend, and ‘oh it'll be fine’, and so we always offer them the referencing service under their circumstances, and they may or may not take it, and sometimes we think, oh crikey.’ (Agent 1)

> ‘That's the bulk of our workload, is the manual referrals. It will generally be the agent that will come to us. It won't be the referencing company. The referencing company generally have hard and fast rules. They will occasionally refer one to us, but it depends what reference - I don't know what referencing companies you've spoken to, but they all work slightly differently. Some will be a pass or a fail, and some will be, well, it's over to you, here are the details behind it. It's up to you whether you think they pass or fail, and then everything in between. [...] So we default back to our standard terms and conditions that they need to meet. So basically, going back to: there must be the ID, there must be the affordability, there must be the clean credit check. If they don't, then it's a manual referral to us and we'll do it.’ (Insurer 1)

Referencing tools would be more exclusionary if greater effort was not made to fit people into the fixed models or if landlords always went with their recommendations.

Conditional lettings

Referencing firms, landlords and agents may limit tenants failing the risk profiling process by finding ‘other avenues’ to support tenants into homes and help agents and landlords let property. A family member or friend acting as a guarantor is a common way of mitigating the risk as another person can be held responsible for tenancy breaches. Another method to mitigate risk is asking for rent to be paid in advance, to cover the rent for the minimum contractual period of 6 or 12 months for example. If affordability could not be established, tenants were also occasionally asked to pay a partial sum of rent in advance that, if deducted from the rent for the tenancy period, would bring the rent payment down to affordable levels. These conditions are typically applied to overcome exclusion for the reasons outlined above - non-standard employment, CCJs, weak affordability and so on.

> ‘The rest of the reference is good, they've passed the income to rent ratio, positive reference from current agent/landlord, but they do obviously have this CCJ against their credit file, so they've had some sort of problem in the past. They have been honest about it. They have declared it. In that situation, that would be our amber outcome if you like. Essentially, that would be ‘recommend with a guarantor’, in most situations.’ (TR9)

> ‘That's probably been the safest and most secure way, because you've got your money up front, and you can worry about what happens at the end of 12 months.’ (PRS Landlord 4)

> ‘I think every landlord will prefer upfront rent. Yes, but that's not, it's not always available at that time so it's a guarantor or nothing. There isn't really, it's rare that you're getting upfront rent or a guarantor because landlords generally will go for upfront rent so it's usually one or the other.’ (Agent 4)

> ‘It might be that they fail referencing, and they do have a CCJ, but actually the landlord says, 'Actually it was paid off, and I'm really not fussed about it, because of their salary I'm willing to still put them into the property.' It's us giving a recommendation from our assessment, do we think they can afford it, but it's up to the landlord at the end of the day, and the letting agent if they want to put that individual into the property.[...] Like CCJ, the

> type of CCJ, the amount that they're for, are they satisfied, unsatisfied, depending on those, we could potentially fail you, but we'll again try and get a guarantor, rent in advance before we do that.' (TR7)

Guarantors must be referenced and sign the tenancy agreement as they will be liable for rent or property damage should the resident tenant encounter problems. One agent considered guarantors as highly effective for the industry and put their growth down to the period prior to the *Tenant Fees Act* as the cost of referencing guarantors was another source of fees for agents. Another agent observed that the use of guarantors was a function of the increasing data availability and scrutiny by referencing tools in the context of perceived or actual increases in letting risk. The spread and codification of referencing, the fear of lengthy court cases and the way risk is borne by various parties with insurance, licensing or lenders mean that guarantors are routinely used as a backstop to cover individual liabilities.

> 'I think there were probably cases in the past where we wouldn't have known about bad credit. Not that I'm saying that a guarantor is only requested for bad credit, because that's not the case at all. It could be because they're short on income, or there can be all sorts of reasons why we might want a guarantor. It's certainly become, since the pandemic, much more common, and I think it's because of that feeling that life is much more uncertain.' (Agent 1)

Agent and tenants reported that guarantor salary thresholds were higher than for the tenant, at a multiple of 36 or 38 times the monthly rent, rather than say 30, which are common industry standards. Guarantors require clean credit files and are often expected to be homeowners, conditions that not all people can access within their families or friendship networks. Third-party insurance firms can step in for some people to act as a guarantor at a cost, but few people reported the use of these firms in practice, and they typically only work with professionals and students. While some tenants may be sanguine about guarantors, they were particularly problematic when tenants in the wider market were older and/or had no family or friends who would meet the stricter criteria required. Incredulity and embarrassment at having to ask for a family member's or friend's support was apparent. Tenants reported having to get more distant relatives to support them, including grandparents, parent's new partners, uncles or son-in-law, not just immediate parents stretching familial bonds. Some of these relationships were unproblematic but others reflected tensions, not least if the proposed guarantor failed the referencing tests or if they were unhappy at assuming the responsibility, or when tenants are jointly and severally liable for the rent not just their individual share.

> 'That was literally the only person. Like I said, my family, they're all basically on benefits, so I couldn't have asked any of them. My partner's family are very working-class, they work and - well, they're self-employed now, so they were basically the only option. It was really hard to even get that, because my partner's uncle was really unsure. He didn't want to have responsibility in his name.' (Tenant 7)

> 'Yes, it was quite embarrassing, so for the last option, because you know that you can't get the house without asking your friend or begging your friend to be this guarantor. You know that's the last thing left. If that person doesn't agree for that, that means there is no way you can get the house. Even if you have enough money in your account to pay for the deposit and the first month's rent, even though you can prove that you are getting enough money from the government, you need to have a guarantor.' (Tenant 17)

> ‘I think one thing that's really insulting actually, is that a lot of people ask adults who are trying to rent somewhere for a guarantor, and I think that's absolutely insulting. I have had that a couple of times, and I've made it quite clear that I shouldn't have even been asked for a guarantor, because I'm at a certain age, I'm an adult. [...] if you can pay your rent and you can prove that you paid your last six months of rent with receipts or whatever, then it really shouldn't be an issue.’ (Tenant 15)

> ‘They were a bit uncomfortable about it because my mum who was going to do it is soon going to be retired. She didn't have a P60 that they were asking for. So they were concerned that they'd either have to show bank statements going quite far back or show details of a big savings account which was uncomfortable for them.’ (Tenant 3)

In highly competitive housing markets, even having a guarantor might not be enough for some people to secure a home if they fail affordability tests. For example, an older woman returning to the South East after many years abroad struggled to find a home despite having a guarantor. Additionally, if more affluent tenants are available, landlords might not consider a guarantor or rent in advance, as they have other options and do not need to take on additional risk. Guarantors can also be problematic for landlords. There have been cases where agents failed to get guarantors to sign contracts, couldn’t locate them when arrears occurred, or faced difficulties with overseas students' guarantors, who were not subject to British legal action for unpaid rent. Some landlords, having had negative experiences, stopped using guarantors altogether. Despite this, interviews indicate that guarantors and occasionally rent in advance are still widely used to manage risk, often influenced by recommendations from referencing firms or agents seeking to protect their positions.

Overcoming exclusion in digital referencing

A minority of tenant reference providers were driven by their own renting experiences, whether as landlords, agents, or part of referencing firms. Some were explicit about wanting to represent tenants fairly and promoted the inclusivity of their products. One firm found traditional referencing, even with greater automation and digital data, too narrow and self-reinforcing, often excluding good but marginal applicants, as landlords and agents tend to propose only those likely to meet the criteria. Some landlords also valued their own judgement over referencing, especially in markets where tenants often fail assessments such as in the lower end of the PRS, where low-income or tenants on lower-incomes is commonplace, but landlords still want to rent out properties and support tenants.

Open Banking was viewed as a tool that could better reflect a person's financial behaviours, particularly for affordability assessments. During our fieldwork, referencing firms were using Open Banking only to confirm income and rent payments. However, the market is moving towards using Open Banking to provide a more nuanced, real-time picture of a person's financial situation, potentially overcoming issues like thin credit files or old CCJs. Even with outdated CCJs, precarious employment, or state benefits, detailed bank transactions could demonstrate regular income and good financial management. If this isn’t the case, the assessment still offers a fairer depiction of income, expenditure, and affordability.

One firm relied heavily on Open Banking for assessments, showing that people outside the traditional ‘good tenant’ model were still viable options. They analysed data over three years for insurance companies, revealing little difference in tenancy performance on rent and property damage across different types of tenants. This suggests insurers should not price risk higher for groups with weaker profiles. With limited housing options, rethinking tenant referencing was important to this participant.

> ‘What's been great about that is because we are one of - if not the first and maybe we're probably the only who don't focus on things like CCJs, who don't focus on credit scores. We're one of the places that tenants can go to, to get access to a home even if, perhaps, they've had issues in the past. Other referencing agents and risk classifiers will immediately say, “No,” to you if you've had any issues in the last four years. Four years is a long time to be homeless. What do you want people to do?’ (TR10)

During the study, more firms began incorporating enhanced Open Banking features into their referencing products. However, some firms expressed concerns that instead of reducing exclusion, Open Banking might actually reinforce and amplify existing biases. While firms may review basic income and expenditure, interviews with credit decision-making firms revealed that they often make inferences based on this data. For instance, the timing of transactions, such as shopping late at night, could be interpreted as a higher risk of non-payment. Similarly, spending on categories like gambling or pornography might be flagged as concerning. The way this detailed data is used is subjective, as what conclusions people infer from the presence of such data are not always clear, but with the potential to influence decisions more broadly and consistently across all assessments. Kim et al. (2023:17) also highlight that many risk indicators found in Open Banking datasets are correlated with protected characteristics and that taking a ‘blindness’ approach, or “fairness through unawareness”, is not tenable.

> ‘The second risk is how you analyse the data, so what you do with the data. I think that point opens the door for discrimination even more. The idea of Open Banking is you utilise technology to avoid bias, but the technology is built by humans. [...] You don't write algorithms out of thin air; you write algorithms based on human decisions. If your existing humans are making decisions one way, discriminating one side of the population, your algorithm is going to replicate that, so there's a risk of running that, which I think is a worry. It can be as simple as not looking at people who are self-employed, and not accepting the […] and that's why they're failed, all the way to exploiting people who are working in a specific company, and exploiting people who are working in a specific country. Anything, really. You name it, it's possible, and that's the issue.’ (TR2)

Other tools used extensively in social housing (and the topic of Report 3) are income maximisation platforms used to identify exact benefit entitlements, after changes in circumstances or to identify unclaimed forms of support. One such product is *EntitledTo* could be incorporated into private renting tenant referencing platforms to enhance the market position of tenants on benefits, and provide landlords and agents with more defensible positions if tenancies are refused.

Conclusion

Tenant referencing tools evaluate a person's credibility as a 'good tenant' using a combination of digital and analogue data. Although referencing firms have different practices, their thresholds are generally fixed, and staff attempt to factor in complex, non-digitised circumstances. Certain groups, such as those with non-standard employment, thin or adverse credit histories, and benefit recipients, are often deemed unsuitable for tenancies. Older individuals may also face challenges with these models. Despite formal recommendations, landlords frequently disregard them, opting instead for conditional lets that require a guarantor or rent in advance - conditions that many tenants find uncomfortable or difficult to meet, even as they feel relieved to secure housing.

Some firms suggest that Open Banking could improve fairness by providing more accurate affordability assessments, but no analysis of referencing models or letting outcomes has been performed. Additionally, tools used in social housing to confirm and maximise benefit entitlement could also help in private renting. While some models could be adjusted to be more inclusive, the primary causes of exclusion stem from factors outside the housing market, such as the labour market and welfare system. These issues are exacerbated by the limited supply of affordable housing, causing landlords and their systems to adopt a more risk-averse approach.

Chapter 7: Tenant experiences of referencing

Introduction

We have heard from some tenants already in earlier chapters, but here we focus on their experiences with tenant referencing, their feelings about the level of scrutiny and how trust was built to encourage data sharing. The tenants in our sample were recruited with the assistance of Generation Rent, a private rented sector tenant advocacy organisation, who circulated the research invitation on our behalf. We interviewed 20 in total across a range of different circumstances. Given its size, the sample is unlikely to be representative of PRS tenants in England as a whole, but we are confident that it is diverse enough to provide valuable insights.

Many tenants were generally accepting of the process, even if they were initially hesitant because they had gone through it multiple times before. They observed that tenant referencing has become more digital in recent years, leading to an increase in the amount of data requested. Some tenants found the volume of data excessive and the details intrusive but felt they had no choice but to participate because they needed a home. The digital platforms did not work well for everyone, particularly for tenants on benefits or with savings, as these systems often failed to accurately reflect their situations. While well-known brands helped alleviate concerns about data sharing, many tenants did not fully understand why certain information was requested or how it was processed and stored. Although some tenants were given privacy statements, many admitted they did not read them.

Referencing processes

Many tenants were generally positive about digital referencing, especially if their experience was smooth. However, some felt they had no choice but to go through the process because their need for a home was more important than concerns about privacy or data security. The platforms were mostly easy to use, but those with more complicated situations sometimes found them difficult to navigate. Tenants preferred user-friendly platforms that allowed them to track the progress of their referencing, were accessible on their phones, and provided the results. They disliked platforms designed only for agents and landlords that did not show progress or share information with them. Even when platforms were effective, the process could still be delayed if agents or landlords did not review the completed references quickly.

> ‘I didn't have any secure feeling at all when I gave that information. It's just, I don't care, you know? All I care about is getting a house, because in my situation it was difficult.’ (Tenant 17)

> ‘I think they're quite self-explanatory, quite straightforward. Idiot-proof, you know what I mean? Half the time they don't let you carry on until you've filled everything you need to fill as well, which makes them quite easy to use.’ (Tenant 6)

> ‘I got an email from an online portal called [name of referencing firm], and yes, this was all new to me because, as I said, the last time I did something like this you didn't do anything online! It was all done over the phone, or in the office with bits of paper, and pens and

signatures, remember those days? Yes, so it was quite good. I thought it was very efficient, it worked very smoothly.' (Tenant 18)

'When you follow everything, then you fill the form in, you're not really getting updates about what's going on. I received one or two emails saying they have the information. After that, I had to contact my estate agent to get the information, because the information from that I get, it's like, it isn't really a tenant friendly, I would say, online referencing website. It's not tenant friendly. It's just for the landlords or the agents.' (Tenant 17)

'So, I think partially with the credit check and financial check and all of that stuff, the fact that it's largely firms you haven't heard of is also frightening! Which is not something that the firms can often do anything about, so I guess that's not fair, but yes.' (Tenant 13)

One firm considered that digital referencing platforms offered tenants greater transparency in the referencing process, as the tenant has access to a portal that indicates what information has been received and what information remains outstanding. Firms were certainly shifting in this direction to improve the customer journey through the process and were very sensitive to feedback, undertaking tweaks and redesigns to products frequently. Another firm reported minimal pushback from tenants. Many tenant participants were confident of their ability to rent because they had secure jobs and regular high monthly earnings but saw that for some the referencing process may constrain access to housing. Other tenants had difficulty representing themselves on the platforms as they relied on benefits or savings and the digital interface was not structured in ways conducive to them providing this information.

'They should give more options, I think, for people who are not unemployed, like they have to, I think... The person who designed the platform, or the person who's instructed it, should have done some research on something like that with other people who are on different types of income. There are some people who are unemployed, but they're getting interest from their fixed deposits and inheritance and all those things. Even those people can't prove that they're reliable on that, you know what I mean? They should do more research and make the platform more friendly for every type of people. That's what I think.' (Tenant 17)

'He might be getting so many hundred less because he's on furlough, but we were getting that back [from universal credit] and then some from other... There was nowhere to put that in, so we just looked like we were earning not enough.' (Tenant 6)

'I think it's fair enough. If they're going to credit reference you, then obviously they need to act as if you were getting a loan. You'd be asked the same questions; you'd have to prove your income and so on. I don't think that's unreasonable, but the criteria is rigid, so if your circumstances don't fit that - you could have £50,000 in the bank - you won't get it if you don't have an income. You could be a millionaire, you won't get it, so it's silly. It doesn't take into account people's individual circumstances.' (Tenant 9)

Intrusiveness

Tenants and even landlords reflected on how the volume of data requests far exceeded their experiences renting in the past, and was excessive, although digital platforms made it easier to provide information. While tenants understood the need for some verification, tenants frequently considered the referencing process to be intrusive. Some tenants were more concerned about questions about their relationships with other tenants than about their finances, but concerns about the changes in the depth and breadth of data referencing firms now require, which accompanied the digitisation and automation of the processes, was frustrating to many renters.

> 'Again, it's sort of like, this is quite intrusive, and so I can see the use of using online platforms like [automated referencing firm] and all of these things, but I feel like it's really intrusive into our lives. When I first rented my first house, with my first boyfriend, I was 21, so that was a really long time ago, [...] this was back in 2005 or 2006 [...] But it was not very intrusive. They just had very basic information held on us, and unless somebody went in there and robbed the place, which why would you do that, no one's really going to access the information. I think there's pros and cons to everything, so there's pros to having the digital [automated referencing firm] platforms, but the cons are that it is intrusive. I feel like it's really intrusive now.' (Tenant 12)

> 'In fact, it's more comprehensive than going for a job, it really is. It's one of the most comprehensive forms I've done. [...] Even more comprehensive than a bank.' (Tenant 19)

> 'I think that again, all the information that you are - how much you earn, this, that and everything, I don't really think it should be relevant. I think it should only be, I think, showing that you can pay your past rent, and you have a rent book or something that states that you're always, and your past landlord can say that you've always paid your rent. That should be sufficient, and it's not any more. [...] I think that's changed loads over the years.' (Tenant 15)

> 'They wanted to see my last six months of rent paid, which for them is a little bit - I didn't want to send them my statements, so I literally... Luckily my old agents sent receipts online, so I was able just to screenshot those with the dates and put that into a folder and send it to them, because otherwise when you're going through your statements and stuff, I don't think that's very appropriate. I don't think they need to know that. [...]Yes, well, it's personal isn't it how I spend my money. They just need to know that I can pay my rent.' (Tenant 14)

> 'It's almost like they need an insight of our whole life, to see if we're worthy enough to rent! [...] A lot of it, like the bank statements, and asking who our parents were, our friends, all of this stuff was something that I… I was so desperate at the time to get a job, I didn't really take it in, but at the time, I was saying to my partner, I said, 'This isn't what I'd done before. They didn't ask for all of this before.' It might be different because it's a flat, instead of a room. I'm not too sure, but it was very, very intrusive, in a way.' (Tenant 7)

Referencing firms, agents, and landlords rarely received complaints from tenants about the amount of data requested during the referencing process. One landlord pointed out that the data required for tenant referencing is less than what's needed for a mortgage, which involves a longer commitment of 25 to 35 years compared to a typical 12-month tenancy. However, the lack of complaints does not necessarily mean tenants were satisfied with the process. The power imbalance in the landlord-tenant relationship, combined with the influence of landlords or agents during pre-screening, may have discouraged tenants from voicing their concerns. Additionally, any dissatisfaction with the process was often overshadowed by the tenants' urgent need for a home.

> 'Some are even angry, but it's quite rare. We're doing, I don't know exactly how many a day, but probably about 1000 a week. You're always going to have some, every so often, so a very small percentage.' (TR1)

> 'I think the expectation is there when you've been through it before, but if you're going through renting the first time it can feel really invasive and like, oh, actually why am I providing this. So, something that we're really looking to do over the next couple of years is

how can we support them through that whilst making that data more accurate for customers, but also, we always want to try and pass a tenant to get them into a property.' (TR7)

'I did have one case recently where they felt that the amount of questions they were asked to provide was an invasion of their privacy, but I said, 'The landlord and us, we have a right to know that you can afford the property and that you are who you are.' Yes, most of the time, I'd say 99% of the time, people are happy, but every now and then you'll get someone that just doesn't like it.' (Agent 3)

'I think from the point of view of a tenant, I think the data that they have to supply these days, I know I'm in a very privileged position to own my own home, but then to also own other properties. If I think back to what it was like when I was renting the property myself, I think it's hugely difficult now for people to have to apply all this information for a credit check.' (PRS Landlord 1)

Tenants often do not fully understand why certain data is requested during the referencing process. For instance, the need for address histories was frequently questioned. This information is typically used to cross-check with credit information bureaus and references to ensure consistency, align with landlord references, and confirm the tenant's integrity. However, some tenants were worried that frequent moves might be viewed negatively by referencing firms, agents, and landlords, leading to assumptions about their stability. Tenants feared that frequent moves, often due to job or rental market instability, might be misinterpreted as chaotic behaviour or even used to check for criminal histories.

Data protection regulations require that data collection be sufficient and proportionate for decision-making. Despite this, many tenants felt that the amount of data requested was excessive. One referencing firm mentioned that they use an accelerated data request process. If a tenant appears likely to fail the initial checks, additional data is requested to give them a better chance of success, similar to how an interviewer might ask more questions to give a job candidate a fair opportunity to respond. The firm also noted that they have reduced the amount of data collected, focusing only on information that directly influences their recommendations.

Digital exclusion

Digital exclusion was not considered too problematic as rarely did someone not have an email address or access to a device. However, some older people found difficulties using the platforms and providing digital evidence, either as tenant applicants or as guarantors, frequently resorting to family members helping or taking physical documents to agents' offices for copying and signing off. But clearly, automation represents a challenge for those with limited access or skills to engage with digital services.

'That's something that I think we've got to manage expectations of the tenant completing those. Sometimes again, it can depend on if you're tech-savvy or not, sometimes these things can be really jarring. I know my dad called me the other day and was like, 'I can't use this, help me.' It was like a facial scan thing, and he was like, 'Oh my gosh, I don't know what's going on.' So again, we've got to be really mindful of the demographic of our users and how do we support each demographic as they're going through this process.' (TR7)

'I tried to contact [digital referencing firm], and there was a - what do you call it? - chatbot called [Otto?], and I've actually got an email with the transcription in it. I tried to explain that I was struggling with the photography! The robot didn't understand, basically, and said that

> he'd try and get someone to call me back, but no one ever did, unfortunately. It might be because I was so quick to speak to the estate agent, that I think it was solved before they got back to me. [...]Told him that I was posting all the paper documents to him First Class, so that if there was any problem with the software, then at least he had those documents, and he could, if necessary, email them… I think that's what happened in the end. He helped me out, and he just took photos of a few of them and emailed them across for me, and then emailed me back to say it was all acceptable and okay.' (Tenant 16, older person)

Trust

Trust in the systems gathering tenant's data was paramount. The customer-facing interface had to reassure and give people confidence that the platform could be trusted with their personal information. This was especially the case where Open Banking was used and tenants directed to third-party providers to give consent to their banking transaction data. Some tenants were professional web developers and aware of the requirements of GDPR and cyber-security issues, ensuring they looked for secure platforms with padlock symbols near the URL on their browser, that data collection was proportionate and that information about data retention was apparent. One noted how landlords had in the past asked for bank statements and other personal data to be sent via email which was insecure, rather than gathered through encrypted services or portals, and so only released information in portions to minimise the consequences of data loss.

Other tenants felt they had little choice but to trust referencing firms, landlords, and agents, even though the privacy information provided was often incomplete. One tenant, who was also a web developer, noticed security issues on the site used by his guarantor and agent. Despite these concerns, his desperate situation forced him to continue using it. Others had mixed feelings about these sites. Some were unsure if they received all the necessary privacy information but felt reassured by the reputation and widespread use of the platforms.

A few tenants were uncertain about how their data was used or sold and its impact on their credit score (even though it's unrelated). Nevertheless, most remained relatively unconcerned. Some tenants recognised the importance of security but admitted that they didn't read the privacy notices, despite realising that the information they shared could potentially be used to clone their identity. Their primary focus was on securing a home. It is also unclear how self-managing landlords and agents handle data retention, especially when they request PDFs or paper copies of bank statements and passports. While this method may be less compliant with data protection regulations, it typically involves fewer people's personal data than large referencing firms do.

> 'I just have to trust them, that they're doing the right thing. Yes, what choice do we have, really? [...] there was a full, you know, this is confidential data, will not be shared with anybody else. I didn't notice anything about data retention, about how long they keep the data for and what they do with it when they've got it. Do they keep it on file for a while, or do they destroy it? What do they do with it? Yes, so I don't know, I don't remember reading anything about…[...] They would only share the data with somebody else within the same group of companies, they wouldn't [go] outside, yes.' (Tenant 18)

> 'They give you a lot of information about how… Where the money goes and who looks after the… All of that but they don't give you much about the documents you've supplied. Perhaps they should say this is kept in a safe place or registered somewhere so that, for the term of the let, this is protected. [...] So that's why I was worried about them holding this

> material, but *HomeLet* is quite a creditable group so perhaps I will just have to accept that they'll look after this information.' (Tenant 4)

An agent who operates in the high-end rental property market reports that the power imbalance between tenants and agents was slightly different to the mainstream tenants who felt constrained about their ability to resist the referencing scrutiny. Some prospective tenants in premium rental markets do not want to disclose their income and net worth, so agents resort to data transfer contracts with them to assure that the rental will be granted subject to approval and specify what is required in the data sharing agreement.

Conclusion

Digital referencing enabled tenants to provide information easily with speed but not all tenant circumstances sit comfortably within the platforms with some on benefits or with large savings unable to represent themselves well given the interfaces provided. A large proportion of tenants felt the volume of data requested in modern rental markets was excessive and intrusive but acquiesced as they needed the home. Uncertainties about data security and privacy were overcome with trusted brands and the ubiquity of firms, but tenants did not always find systems were clear about why data was requested, how it might be processed and about data management policies, although not all read detailed privacy statements.

Chapter 8: Conclusion

There is a growing ability for landlords to be more selective when choosing tenants, thanks to the expansion of financial and administrative data. This data is collected, monetised and made available to provide insights into individuals' lives. Technological advancements, coupled with increasing landlord risk aversion and competitive housing markets, have created more opportunities for landlords to be selective. These digital innovations in tenant referencing, although common, are not widely discussed, and there is limited evidence on their impact in the UK. This study is the first to examine how England's PRS has developed and uses these digital tools, and how these tools impact tenant selection.

The research aimed to understand digital tenant referencing tools amid concerns that algorithmic scoring methods might negatively affect certain groups. Literature often describes these tools as powerful surveillance mechanisms that can be exclusionary and unfair to tenants, and that they support greater financial value extraction in housing markets (Wainwright, 2022; Nethercote, 2023; Sadowski, 2020). However, Sawyer *et al*. (2014) highlight the importance of computers in supporting, rather than replacing, market intermediary roles. They suggest that technology should be viewed as part of 'digital assemblages,' which include the production, deployment, and effects of algorithms (Kitchin, 2017:19). This study took these recommendations into account by exploring the broader context around these tools and gathering extensive qualitative data from various stakeholders, including landlords, agents, tenants, and technology firms.

The transition from analogue to digital tenancy management and referencing tools has led to faster third-party verification and reassurance about tenants, freeing up time for landlords and agents. Digitalisation allows for the integration of a broader range of data into referencing models. New data sources, such as company accounts, wage slips, identity verification, and banking transaction data, provide richer insights for tenancy decisions. The systematisation of these tools has given landlords more confidence in an uncertain economic and regulatory environment. This could lead to more rigorous tenant scrutiny to avoid complex eviction procedures.

Some tenants find digital referencing acceptable and understand its rationale, but many view it as intrusive, especially those with non-standard employment, thin credit histories or those relying on benefits. Older individuals and others have faced difficulties using these platforms and often resorted to physically providing paper documents to agents. Even highly automated referencing models require significant human interaction to interpret data and facilitate tenant acceptance. This can result in conditional tenancies, the use of guarantors, or requiring rent in advance to mitigate risks when granting a tenancy to someone with a weaker profile. Not everyone can meet these conditions, and no firms have yet examined the impact of referencing tools on protected groups, despite their associations with groups that might struggle with referencing requirements.

Fully automated digital risk profiling is unlikely to become prevalent in the near future. Automation alone cannot fully capture the nuances of individual circumstances or address the varied risk appetites of landlords. The threshold for tenancy entry is subject to change based on place, neighbourhood, property, person and evolving external factors such as market shifts, welfare policies, or regulations. Landlords may need to accept higher risks in certain market segments, potentially yielding higher returns. Furthermore, not all tenant attributes are yet datafied (e.g., employment contract terms) or datafiable (e.g., a person's demeanour and outlook). In some cases, qualitative aspects of a person are prioritised over quantifiable data, as landlords may still rely on personal impressions and market conditions. Human oversight and manual processes remain evident even in highly automated systems. The future depends on the data gaps that may be filled, the regulatory context and balance of forces in the housing market.

Credit reporting plays a significant role in rental access, with credit checks being routine. Many landlords and agents refuse applicants with adverse credit, although some may consider how the debt occurred and whether the individual has managed to repay it. Even if a tenancy is granted in such cases, it is often conditional on a guarantor or advance rent. With platforms like *Credit Karma* making it easier to monitor credit files and credit histories being used in various sectors beyond finance (e.g., telecoms, utilities, employment, housing), more people are monitoring their credit scores. *Transunion* (2024) reported that 78% of UK adults believe monitoring their credit report is important, and 41% monitor it at least monthly. Credit bureaus have worked to educate the public to manage their credit profiles effectively, as noted by Watson (2009), and individuals are compelled to present their best digital self, or what Fourcade and Healey (2024) have recently termed, *eigencapital* to the market.

This notion derives from a broader concern with how digital categorisation and evaluation based on data profiles are reshaping cultural life, economic competition and social stratification. Automated systems for measurement rationalise hierarchical structures, embedding moral considerations within operational logic and often disadvantaging certain groups. Technological innovations have significantly improved data collection and analysis, prompting firms to adopt new digital processes, which often follow trends set by others. This has led to more granular classifications based on digital social capital or *eigencapital*, derived from online activity. Individuals must now manage their digital profiles to ensure positive outcomes, with vulnerable citizens, or the 'lumpenscoretariat' (Fourcade and Healey, 2024:131), often facing poorer provisions due to these digital categorisations.

Open Banking further amplifies this trend, presenting new financial market disciplines that require customers to adapt and present themselves favourably. Weaknesses in housing systems, such as a shortage of affordable housing and constrained access to homeownership, add pressure on private rental markets. Welfare retrenchment has made housing benefits less effective, and insecure income and precarious jobs increase vulnerability. The poorly functioning court system also contributes to landlords' risk mitigation strategies, leading to intrusive screening practices that may exclude certain groups.

The accuracy of referencing models is difficult to assess due to the lack of performance data, unlike financial services where reciprocal arrangements exist between CRAs and financial firms. Some tenant referencing firms and insurers are building data stores that may offer insights but are self-reinforcing, only including tenants who passed their checks. The impact of referencing tools on protected groups is not a priority for most market players, raising concerns given the prevalence of protected groups among those for whom models work less well.

There are mechanisms within digital tenant referencing systems that could improve the position of vulnerable groups. Open Banking, now common in tenant referencing, could provide more accurate affordability assessments and address gaps in incomplete credit histories, benefiting young people or migrants. Benefit income maximisation systems like

EntitledTo, used in social housing, could also bolster the position of marginal tenants if integrated into referencing tools. However, the market may remain cautious about systems that directly pay tenants or offer insufficient housing benefit amounts.

Tenant passports, which incorporate rental histories, could enhance some profiles but are likely to be more beneficial for affluent tenants in competitive markets, potentially exacerbating the challenges faced by lower-income tenants. Tenant referencing thus reflects and reinforces social sorting, with digital processes accelerating the division of tenants into different rental sectors based on their profiles. Conditional tenancies and additional requirements for tenants with weaker profiles contribute to the digital risk profiling that often places certain tenants at a disadvantage.

The research indicates greater movements towards automation and the use of digital data resources to profile people, not least using tools of intimate surveillance such as Open Banking and putting greater emphasis on tenants to self-present themselves in rental markets that largely favour landlords. These processes challenge the extent to which we incrementally accept increased personal scrutiny and social scoring mechanisms into critical services such as housing.

Recommendations

Across the Code Encounters project, we identified universal themes that need to be addressed as well as sector specific that require attention, including the following that are relevant to Government, those responsible for financial education, risk profiling technology firms, trade bodies, lenders, landlords and agents.

10. **To make visible how data and algorithms have been used in each decision** Provide greater transparency in the way data is gathered from and about tenants and clarity about how these data will be used.

11. **To establish agreed guidelines on the appropriate use of algorithms for stakeholders within the sector and tenures** Provide guidance to landlords on what referencing tools can do and how algorithms and new data resources are deployed.

12. **To produce guidance on the use of data and algorithms for tenants** Increase public awareness of how they must manage their digital profiles, including banking transaction data, much in the same way as the importance of managing credit scores has permeated financial education and public consciousness.

13. **To retain human oversight in decision making** Not all people fit algorithmic models so human oversight should be maintained to ensure fairness.

14. **To ensure the explainability of decision making** Organisations must be able to fully articulate how a decision was reached, including the data used, where algorithms were involved and the human oversight of the outcome.

15. **To ensure the retention of flexibility and individually tailored decision-making** We would suggest having a system in place in which the inputs into algorithmic

processing can also be adapted to enable flexibility and to ensure that both input and outcomes remain flexible and adaptable to the individual being assessed.

These recommendations are discussed in more detail in our *Overarching summary report 1.* Below are additional observations for private renting.

16. **To ensure defensible and fair decisions surrounding affordability for tenants in receipt of benefits** Tenant referencing firms should consider incorporating benefit maximisation tools into their platforms to support the accurate affordability assessments of low-income tenants.

17. **To ensure referencing models are free from unintended indirect discrimination** All firms and users of risk profiling tools should consider equality impact assessments to ensure that some groups are not disadvantaged in comparison to others in profiling recommendations and in the final letting outcomes.

18. **To ensure the predictive capacity of the models is secure** Model accuracy in private and social renting was uncertain and firms and users should undertake work to test the predictive capacity of the tools against suitable datasets.

References

Amoore, L. (2020) *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*. Durham: Duke University Press.

Barret, C. (2021) Why should I let my landlord spy on my finances? *Financial Times* https://www.ft.com/content/40b433b1-17a3-4f44-9396-bc1c915bf8a2 Accessed 28 June 2024.

Baum, A. (2017) *PropTech 3.0: The Future of Real Estate*. Oxford: Said Business School, University of Oxford.

Beer, D., Wallace A., Ciocănel A., Burrows R. and Cussens, J. (2023) 'Automation Hesitancy: Confidence Deficits, Established Limits and Notional Horizons in the Application of Algorithms within the Private Rental Sector in the UK', *Information, Communication & Society*, 27 (10) DOI: 10.1080/1369118X.2023.2264954

Big Brother Watch (2021) *Poverty Panopticon: The Hidden Algorithms Shaping Britain's Welfare State*. Big Brother Watch.

Bogle, A. (2024) 'The Australian tenants who are charged to pay their rent.' *The Guardian.* https://www.theguardian.com/australia-news/2024/sep/18/renttech-real-estate-ailo-snug-ignite-renters-ntwnfb Accessed 18 September 2024.

Christie, H., Smith, S.J. and Munro, M. (2008) The Emotional Economy of Housing. *Environment and planning A* 40(10): 2296–2312.

Clegg, A. (2023) *A Temporary Thaw: an analysis of local housing allowance uprating over time.* London, Resolution Foundation.

CMA (2023) *Rented Housing Sector: Consumer Research Project Update Report.* London, Competition and Market Authority.

Ciocănel A., Wallace A., Beer D., Cussens J. and Burrows R. (2024) Open Banking and data reassurance: the case of tenant referencing in the UK. *Information, Communication & Society*, 27 (10) https://doi.org/10.1080/1369118X.2024.2310481

Cocola-Gant, A. and Gago, A. (2021) Airbnb, buy-to-let investment and tourism-driven displacement: A case study in Lisbon. *Environment and Planning A: Economy and Space*, 53(7), 1671-1688. https://doi.org/10.1177/0308518X19869012

Compliance Week (2023) *TransUnion* settles with CFPB, FTC over tenant screening accuracy. https://www.complianceweek.com/regulatory-enforcement/transunion-settles-with-cfpb-ftc-over-tenant-screening-accuracy/33711.article Accessed 28 Jun 2024.

Consumer Financial Protection Bureau (2022) *Tenant Background Checks Market*. Washington DC: Consumer Financial Protection Bureau.

Convery, S. (2022a) 'They're held over a barrel': in the overheated rental market, tenant vetting can go too far. *Guardian.*

https://www.theguardian.com/australia-news/2022/may/29/theyre-held-over-a-barrel-in-the-overheated-rental-market-tenant-vetting-can-go-too-far Accessed 28 June 2024.

Conver,y S. (2022b) Imperfect match: Australian renters in the dark over use of data by tech company Snug. *Guardian* https://www.theguardian.com/australia-news/2022/nov/17/imperfect-match-australian-renters-in-the-dark-over-use-of-data-by-tech-company-snug Accessed 28 June 2024.

Criado, N. and Such, J. (2019) Digital discrimination. In: Karen Yeung ML (ed.) *Algorithmic Regulation*. Oxford: Oxford Academic Press, pp. 82–97.

DLUHC (2024) *English Housing Survey Headline Report 2023*. London Department of Levelling Up Housing and Communities.

DLUHC (2024a) *English Private Landlord Survey 2021: main report.* London Department of Levelling Up Housing and Communities.

DRW (2023) 'DRW calls for regulation of RentTech amongst housing crisis' 7 August 2023. Digital Rights Watch https://digitalrightswatch.org.au/2023/08/07/renttech/ Accessed 2 September 2024.

Dunn, E.. and Grabchuk, M. (2010) Background Checks and Social Effects: Contemporary Residential Tenant-Screenin Problems in Washington State, Seattle Journal of Social Justice 9(1); https://digitalcommons.law.seattleu.edu/sjsj/vol9/iss1/13.

Dunning, R.J. and Grayson, A. (2014) Homebuyers and the representation of spatial markets by information providers. *International Journal of Housing Markets and Analysis* 7(3). emeraldinsight.com: 292–306.

Elliot, J. (2023) Government must raise housing benefit as crisis deepens for private renters. York, Joseph Rowntree Foundation. https://www.jrf.org.uk/housing/government-must-raise-housing-benefit-as-crisis-deepens-for-private-renters Accessed 28 June 2024.

Eubanks, V. (2018) *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*, St. Martin's Press.

Experian (2019) *Making the Invisible Visible: Exploring the power of new data sources,* London: Experian UK

Experian (n.d.) How categorisation and aggregation bring Open Banking to life https://www.experian.co.uk/blogs/latest-thinking/automated-credit-decisions/how-categorisation-and-aggregation-bring-open-banking-to-life/ Accessed 28 June 2024.

FCA (2023) *Financial Lives 2022: Key findings from the FCA's Financial Lives May 2022 survey.* London Financial Conduct Authority.

Ferreri, M. and Sanyal, R. (2021). Digital informalisation: rental housing, platforms and the management of risk. *Housing Studies*, 37(6), 1035–1053. https://doi.org/10.1080/02673037.2021.2009779.

Fields, D. (2022). Automated landlord: Digital technologies and post-crisis financial accumulation. *Environment and Planning A: Economy and Space*, 54(1), 160-181. https://doi.org/10.1177/0308518X19846514

Fields, D. and Rogers, D. (2021). Towards a critical housing studies research agenda on platform real estate. *Housing, Theory and Society*, 38(1), 72–94. https://doi.org/10.1080/14036096.2019.1670724.

Fitzpatrick, S. Bramley, G., McMordie, L. Pawson, H., Watts-Cobbe, B.. and Young, G. (2023) *The Homelessness Monitor: England 2023.* London, Crisis.

Florrison, R. (2024) *The UK Insecure Work Index 2024*, Lancaster University.

Fourcade, M. and Heal, K. (2024) *The Ordinal Society*, London: Harvard University Press.

Generation Rent (2023) *Minority Ethnic People More Likely To Be Ignored When Searching For New Privately Rented Homes.* https://www.generationrent.org/2023/11/08/minority-ethnic-people-more-likely-to-be-ignored-when-searching-for-new-privately-rented-homes/ Accessed 28 June 2024.

Graham, J. (2021) 'My landlord wants six months' rent upfront' *BBC Radio 5 Live* https://www.bbc.co.uk/news/business-57289888 Accessed 28 June 2024.

Grayston, R., Hudson, N. and Lloyd, T. (2024) *Is the private rented sector shrinking?* York, Joseph Rowntree Foundation.

Hobson, F. (2023) *Local Housing Allowance (LHA): Help with rent for private tenants*. London, House of Commons Library.

HUD (2024) HUD warns on AI-fueled housing discrimination. https://www.nextgov.com/digital-government/2024/05/hud-warns-ai-fueled-housing-discrimination/396305/ Accessed 28 June 2024.

Husmus (2023) Moving in the UK: Challenging an unfair renting model. London, Husmus. https://static1.squarespace.com/static/5cdaae1065a7071779d6a4f7/t/627b83670e9a5e1d01217428/1652261743091/Husmus_Report_Challenging+an+unfair+renting+model.PDF Accessed 28 June 2024.

Joyce, R., Mitchell, M. and Keiller ,A. (2017) *Low-income households increasingly exposed to rent increases.* London, Institute for Fiscal Studies.

Kemp, P. (2011) Low-income Tenants in the Private Rental Housing Market. *Housing Studies* 26(7-8): 1019–1034.

Kim, S., Andreeva, G., and Rovatsos, M. (2023) *The Double-edged Sword Of Big Data and Information Technology for the Disadvantaged: A Cautionary Tale From Open Banking.* Edinburgh, Credit Research Centre, University of Edinburgh. https://www.crc.business-school.ed.ac.uk/sites/crc/files/2024-06/the-double-edged-sword-of-big-data-and-information-technology-for-the-disadvantaged_0.pdf Accessed 4 November 2024.

Kitchin R. (2017). Thinking critically about and researching algorithms. *Information, Communication & Society,* 20(1), 14–29. https://doi.org/10.1080/1369118X.2016.1154087

Landau-Ward, A. and Porter, L. (2019) Digital Innovations, PropTech and Housing – the View from Melbourne. *Planning Theory and Practice* 20(4) 582-590

Lauer, J. (2017) *Creditworthy: A history of consumer surveillance and financial identity in America.* New York, Columbia.

Lee, Y., Kemp, P.A. and Reina, V.J. (2022) Drivers of housing (un)affordability in the advanced economies: a review and new evidence. *Housing Studies* 37(10). Routledge: 1739–1752.

Lukes, S,. de Noronha, N. and Finney, N. (2018) Slippery discrimination: a review of the drivers of migrant and minority housing disadvantage. *Journal of Ethnic and Migration Studies* 45(17) 3188–3206.

McElroy, E. (2024). The work of landlord technology: The fictions of frictionless property management. *Environment and Planning D: Society and Space*, 0(0). https://doi.org/10.1177/02637758241232758

McKee, K., Leahy, S., Tokarczyk, T. and Crawford, J. (2021) Redrawing the border through the ‘Right to Rent’: Exclusion, discrimination and hostility in the English housing market. *Critical Social Policy*, *41*(1), pp.91-110.

Maalsen, S (2020) ‘Generation Share’: digitalized geographies of shared housing. *Social and Cultural Geography* 21(1): 105–113.

Maalsen, S. (2024). Home in cybersymbiosis: making home with digital oddkin. *Information, Communication & Society,* 27 (10) https://doi.org/10.1080/1369118X.2024.2311243.

Marsh, A. and Gibb, K. (2019) *The private rented sector in the UK: An overview of the policy and regulatory landscape.* Glasgow, UK Collaborative Centre for Housing Evidence (CACHE).

Meers, J. (2021) “Professionals only please”: discrimination against housing benefit recipients on online rental platforms. *Housing Studies*, 39(1), 29–51. https://doi.org/10.1080/02673037.2021.2014416.

Meers, J. (2024). The new ‘lettings agent’s window’: interface design and discrimination on online rental platforms. Information, Communication & Society, 1–23. https://doi.org/10.1080/1369118X.2024.2333836.

Muir, K. and Burgess, G. (2019) *Reinventing renting: The application of digital technology in housing for ‘Generation Rent’.* Centre for Digital Built Britain, Cambridge University.

Nethercote, M. (2023). Platform landlords: Renters, personal data and new digital footholds of urban control. Digital Geography and Society, 5, 100060. https://doi.org/10.1016/j.diggeo.2023.

Nic Lochlainn, M. (2023) Corporate landlords and disruption through consolidation in post-crash Dublin's private rental sector. *Digital Geography and Society* 5(100074). Elsevier BV: 100074.

O'Leary, C. and Simcock, T. (2022) Policy failure or f***up: homelessness and welfare reform in England. *Housing Studies* 37(8): 1379–1395.

O'Neil, C. (2017) *Weapons of Math Destruction: How big data increases inequality and threatens democracy,* New York, Broadway Books.

ONS (2020) *Coronavirus and self-employment in the UK*. London: Office of National Statistics.

ONS (2023) Permanent and temporary employment. London, Office of National Statistics.

ONS (2024) Private rent and house prices, UK: April 2024. London Office of National Statistics. https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/privaterentandhousepricesuk/april2024 Accessed 28 June 2024.

Parker, J., & Dugmore, K. (1977). Race and the allocation of public housing -a GLC survey. *Journal of Ethnic and Migration Studies*, *6*(1–2), 27–40. https://doi.org/10.1080/1369183X.1977.9975501

Przhedetsky, L. (2024). Mediating access: unpacking the role of algorithms in digital tenancy application technologies. Information, Communication & Society, 27 (10) https://doi.org/10.1080/1369118X.2024.2334904.

Preece, J., Bimpson, E. and Robinson, D. (2020) *Forms and mechanisms of exclusion in contemporary housing systems: A scoping study.* Glasgow, UK Collaborative Centre for Housing Evidence (CACHE).

Razaghi, T. and Heagany, M. (2022) 'Wake-up call for real estate agencies': Harcourts hit by data breach. *Sydney Morning Herald.* https://www.smh.com.au/property/news/wake-up-call-for-real-estate-agencies-harcourts-hit-by-data-breach-20221103-p5bvaq.html Accessed 28 June 2024.

Reynolds, F. (2021). *Open Banking. A consumer perspective*. London, Barclays. https://doi.org/10.1016/s0378-4274(21)00410-0

Rona-Tas, A. (2017). The Off-Label Use of Consumer Credit Ratings. *Historical Social Research / Historische Sozialforschung*, *42*(1): 52–76.

Rugg, J. and Rhodes, D. (2008) *The private rented sector: its contribution and potential.* York, Centre for Housing Policy.

Rugg, J. and Wallace, A. (2022) *Property supply to the lower end of the English private rented sector.* York, Centre for Housing Policy.

Sadowsk,i J (2020) *Too Smart: How Digital Capitalism Is Extracting Data, Controlling Our Lives, and Taking Over the World*. Cambridge: MIT Press.

Sawyer, S, Crowston, K. and Wigand, R.T. (2014) Digital assemblages: evidence and theorising from the computerisation of the US residential real estate industry. *New Technology, Work and Employment* 29(1): 40–56.

Schneider, V. (2020) Locked out by Big Data: How Big Data Algorithms and Machine Learning May Undermine Housing Justice. Columbia. Human. Rights. Law. Review. 52, 1 https://hrlr.law.columbia.edu/files/2020/11/251_Schneider.pdf.

Shaw, J. (2020) Platform Real Estate: theory and practice of new urban real estate markets. *Urban geography* 41(8): 1037–1064.

Short, P., Minnery, J., Mead ,E.R.., O'Flaherty, M. and Peake, A. (2006) Tenancy Databases, Professional Practices and Housing Access among Low-Income Tenants in the Private Rental Sector in Australia, *International Journal of Urban and Regional Research*, 30(4); 930-943, https://doi.org/10.1111/j.1468-2427.2006.00701.x.

So, W. (2022) Which Information Matters? Measuring Landlord Assessment of Tenant Screening Reports. *Housing Policy Debate*. Routledge: 1–27.

Soaita, A., Simcock, T. and McKee, K. (2022) *Housing Challenges Faced by Low-Income and Other Vulnerable Privately Renting Households*. Glasgow, UK Collaborative Centre for Housing Evidence (CACHE).

Stevens, N.. and Keyes, O. (2021) Seeing infrastructure: race, facial recognition and the politics of data. Cultural Studies, 35(4–5): 833–853. https://doi.org/10.1080/09502386.2021.1895252.

Thomson, H. and Thomas, S. (2015) Developing empirically supported theories of change for housing investment and health. *Social Science and Medicine* 124: 205–214.

Transunion (2024) Consumer Credit Monitoring Unlock the growth potential of credit education engagement. London, Transunion. https://www.transunion.co.uk/content/dam/transunion/gb/business/collateral/report/transunion-consumer-credit-monitoring-report.PDF Accessed 28 June 2024.

Truu, M. (2023) Think you're on a 'rental blacklist'? Here's how it may have happened, and what to do about it. *ABC News* https://www.abc.net.au/news/2023-04-24/rental-blacklists-tenancy-databases-should-you-be-worried/102249222 Accessed 28 June 2024.

TUC (2023) *BME women far more likely to be on zero-hours contracts.* London, Trades Union Congress. https://www.tuc.org.uk/blogs/bme-women-far-more-likely-be-zero-hours-contracts Accessed 28 June 2024.

Umoja Noble, S. (2018) *Algorithms of Oppression: How search engines reinforce racism.* New York, New York University Press.

Verstraete, J. and Moris, M. (2019) Action–reaction. Survival strategies of tenants and landlords in the private rental sector in Belgium. *Housing Studies* 34(4): 588–608.

Wainwright, T. (2022) Rental proptech platforms: Changing landlord and tenant power relations in the UK private rental sector? *Environment and planning A* 55(2): 339-358

Wallace, A. (2008) Knowing the Market? Understanding and Performing York's Housing. *Housing Studies*, 23(2): 253–270. https://doi.org/10.1080/02673030801893172.

Wallace, A. and Rugg, J. (2014) Buy-to-let mortgage arrears: understanding the factors that influence landlords' mortgage debt. York: *Centre for Housing Policy*.

Watson, M. (2009) Planning for a Future of Asset-based Welfare? New Labour, Financialized Economic Agency and the Housing Market. *Planning Practice and Research* 24(1): 41–56.

Wilson, W. (2023) *Selective licensing of private rented housing in England and Wales.* London House of Commons Library.

Wolifson, P., Maalsen, S. and Rogers, D. (2024) Discrimination in the time of digital real estate: Illustrating a rental schema in the Australian setting. *Digital Geography and Society* 6: 100088.

Appendix: Code Encounters project research methods

Rationale

The Code Encounters project was conceived to examine the constellation of actors that surround the digital tools used to profile tenants and mortgage borrowers in relation to their access to different housing tenures. This enabled the study to examine the full 'regime of recognition' (Amoore, 2020) or 'socio-technical assemblage' (Kitchen, 2017) connected to the production, operation and impact of the tools.

Distribution of interviews

The findings presented in the three tenure reports and associated briefings are based on the qualitative insight gleaned from 122 in-depth interviews from national stakeholders, lenders, landlords, letting agents, technology firms, social landlords, consultants, private and social housing tenants and mortgage borrowers. Table 1 shows the distribution of interviews across the different housing tenures.

Table 1 Breakdown of in-depth interviews

	Construction	Operation	Impact	Stakeholders	Total
PRS	10	13 (including 7 landlords,5 agents and 1 insurer) (Landlord survey, n=113)	20 PRS tenants	7	**50**
SRS	6	15 landlords	15 SRS tenants	3	**39**
Lending	7 Credit tech firms	9 (including 3 brokers, 4 lenders & 2 consultants)	12 borrowers	3	**31**
Across Tenures				2	**2**
Total	**23**	**37**	**47**	**15**	**122**

For reference, the interview quotes in the four reports have some self explanatory labels but others are coded as followed: CR Credit risk decision software firms; SH social housing landlords; TR tenant referencing firms; ST social housing tenant; SRS firm, software firms working with social housing landlords; MB mortgage borrower; and Tenant, private rented sector tenant.

Recruitment -Technology firms constructing digital tools

The technology firms who produce the digital risk profiling tools were directly invited to participate in the research through internet searches of relevant companies or approached using snowballing techniques, where other participants recommended that we speak to firms developing technology in this space. PRS firms were all engaged with tenant referencing and were at various points on a spectrum from hybrid analogue-digital systems to ones that were almost wholly platform-based, and reflected the whole market of providers. Social housing firms were more disparate, with some offering income maximisation and tenant onboarding tools, to some engaging with triaging and understanding the customer base, and others producing customer management systems. Credit lending firms comprised those offering digital software services to support credit risk decision-making activities including data collection and analysis or comprehensive platforms, alternative credit risk profiling for loan providers, platform mortgage broker services, and consultancy activities. There was some overlap with some lenders designing software in-house.

Recruitment - Landlords, lenders, agents and brokers using digital tools

Private sector landlords and letting agents were recruited to the study in various ways, using direct approaches after internet searches, posts inviting participation on online landlord's forums, and the online survey distributed by the National Residential Landlords Association. The online survey was hosted on the *Qualtircs* platform and obtained 113 usable responses. It asked about landlords' use of digital tools, motivations and some attitudinal questions about their sentiment towards the tools regarding accuracy, confidence, understanding etc. There were several open text boxes from which we derived qualitative data. The rest of the survey was analysed descriptively using SPSS. Landlords ranged from one large national build-to-rent operator to landlords with a single property, but were mostly those with a handful of properties, reflecting the membership base of the organisation used for recruitment.

Social landlords were recruited via direct approaches and via a research invitation circulated by the National Housing Federation, the trade body for housing associations in England. Social landlords were predominantly drawn from the north of England (n=10) and the remainder from the south (n=5), although classification is challenging as some landlords include some housing stock across multiple regions. Some were large-scale providers, others smaller community associations, but were typically medium-sized regional associations, with two local authority housing departments included.

Mortgage lenders and brokers were recruited to the study using direct approaches and snowballing techniques. The mortgage lenders included a large national lender, smaller building societies and specialist lenders, including one buy-to-let lender.

Recruitment of tenants and mortgage borrowers - the subjects of the digital tools

Private rented sector tenants were recruited with the assistance of Generation Rent, a private rented sector tenant advocacy organisation, who circulated the research invitation on our behalf. The research invitation to recruit mortgage borrowers for the study was circulated on our behalf by the Homeowners Alliance. Mortgage borrowers and private tenants were drawn from around England, although London was over-represented. Social housing tenants were identified by a market research company and drawn from London, Birmingham and Manchester in roughly equal measure. Tenants and borrowers were selected if they had moved within the last two years to aid recall of their experiences of risk-profiling and were awarded £20 Amazon vouchers as a thank-you for their participation. Social housing tenants received £30 vouchers as they had proved harder to engage.

Analysis

Interviews were undertaken on Zoom with almost all interview audio files being professionally transcribed with the remaining three digitally transcribed, checked and corrected by the researchers. Thematic analysis was undertaken supported by Nvivo. The analysis was informed by the literature review but researchers were alive to many issues that arose directly from the data.

Ethics

Ethics approval for the research was obtained from the University of York.