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# THE SOCIOECONOMIC IMPACT OF SHORT-TERM LETS IN THE UK

A REPORT ON BEHALF OF SYKES COTTAGES

SEPTEMBER 2022



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# FOREWORD

At the STAA, our mission is to support the sustainable growth of the short-term letting sector in the UK by engaging with policymakers and other relevant stakeholders to work for a regulatory solution that balances the needs of communities with the interests of the sector. Our members, including Sykes Holiday Cottages, range from individual operators to multinational platforms and everything in between.

We welcome this new report, produced by Oxford Economics and commissioned by our member Sykes, and were delighted to be asked to participate in the steering group that helped to realise this piece of work. As this report demonstrates, short-term rentals are the economic lifeblood of the areas in which they are situated, providing direct employment and supporting local businesses alike. Moreover, assertions that our sector is having a negative impact on the housing market are shown to be heavily overstated; as we have long suspected, there are a myriad of complex factors which are pushing up house prices in this country and the impact of our sector is negligible.

This report will no doubt be a valuable contribution to the cause of evidence-based policymaking. We would like to thank Sykes for commissioning the report and Oxford Economics for producing it. We look forward to engaging with policymakers across the UK to advocate sensible, proportionate regulations, which address the concerns that some communities have whilst protecting the enormous value that our sector generates.

**Shomik Panda**  
STAA Director General



Short Term  
Accommodation  
Association

The UK Short Term Accommodation Association (STAA) is a trade association representing the short-term accommodation sector in the United Kingdom.



# EXECUTIVE SUMMARY

## BACKGROUND CONTEXT AND STUDY OBJECTIVES

The short-term letting (STL) market in the UK experienced a period of **growth** in the years leading up to the pandemic. As is often the case with markets that enjoy growth from a low base, **an evidence gap has emerged**; currently there is little comprehensive and rigorous quantitative evidence on the implications of the industry's growth. In parallel, a **variety of concerns** have emerged of **wider social consequences** that might be linked to the growth of the STL market. Notably, these relate to its impact on the **affordability and availability of housing** for residents and a perceived increase in the **volume of anti-social behaviour by guests**.

In response to these developments, on June 29, the Department for Digital, Culture, Media and Sport (DCMS) jointly with the Department for Levelling Up, Housing and Communities (DLUHC) **launched a public review into the impact of STLs**. The first stage of the review, ongoing at the time of writing, **involves a call for evidence**.

Against this background context, Sykes Cottages, a leading provider of STL properties with extensive operations in the UK, and The Short Term Accommodation Association, the trade association for the short-term rental sector, commissioned Oxford Economics to undertake an independent quantitative analysis centred on the following two research questions:

- **What is the economic footprint of the STL industry** in the UK including both the income generated for landlords and the impact stimulated by the wider tourist expenditure that it enables in these localities?
- **How has the growth of the STL industry affected housing affordability** in the UK as measured by house and rental prices?

## KEY QUANTITATIVE FINDINGS

**Following a period of growth, the pandemic had an initially chilling impact on activity, the STL market has proven to be remarkably resilient**

- According to AirDNA data, the average number of properties listed for short-term let during 2015 was just over 25,000, a figure that had **increased more than 10-fold to 290,000 by 2019**.
- In 2021, a period where travel restrictions were still in place, total nights stayed in STLs were down by 10% compared to 2019 while there was an overall fall of 55% in UK tourism nights.
- The **rebound has been particularly strong in rural areas** where STL demand recovered to its 2019 peak last year. In part, this has reflected the much faster return of domestic, compared to international, tourism in this period.

**The STL market's economic footprint in the UK is now material and is outsized in UK regions**

- In 2021, the total economic footprint of activity supported through the STL industry **contributed £27.7 billion to UK GDP**, output that sustained **nearly half a million jobs** across the country and boosted the **UK Exchequer to the tune of £4.6 billion**.
- These figures testify that the STL market is now a material engine of the UK economy. In 2021, the impact was equivalent to **1.4% of UK GDP** and the same share of total employment, and **over one-fifth of the tourism industry**.
- Across some regions of the UK, the relative contribution of the STL industry is much higher. In both **Wales and the South West**, two key industry hubs, **STL-linked activity was worth over 4% of regional GDP**.

- Wales and the South West both suffer from some of the highest rates of economic deprivation in the UK and have below-average incomes suggesting that **the STL market is disproportionately supporting demand in less prosperous areas of the UK**.

**Despite suggestions to the contrary, the impact of STLs on housing affordability in the UK has been minimal**

- At a **national level, the impact of STLs on housing affordability has been negligible**. We estimate that the average UK house price was 0.6% higher and the average rental price was 0.7% higher due to the growth of the STL market between 2015 and 2019. As growth of real house prices was 8.1% and rental prices was 6.9% during the same period, the impact of STL was limited.
- We found **evidence that the impact of STLs on housing affordability has been more significant in rural areas** but, even in these locations, the role of STLs in pushing house prices beyond the limits of first-time buyers (FTBs) has been **extremely modest compared to various more structural factors**.

**STLs typically account for a very limited share of the housing stock in the UK but there is considerable regional variation**

- **In general, despite recent growth, STLs generally account for a very low share of the housing stock**. The share of entire home listings in a typical UK local authority district (LAD) rose from **0.05% in 2016 to 0.31% in 2019**.
- **These average figures mask considerable regional variation**. The limitations of the data, however, mean that we are not able to judge the extent to which this growth has reduced the availability of housing in tourism hotspots.

## IMPLICATIONS FOR POLICY

The launch of the public review implies that new regulatory measures for the STL industry may be forthcoming. Appropriately balancing the interests of different stakeholders and anticipating and guarding against the potential for unintended consequences are crucial to good regulatory design. The balancing act will clearly be tricky, in part because the areas where STLs have become a particularly important bedrock of economic activity are also likely to be those where some of the wider social issues, that the review is intended to address, have become sources of controversy.

We believe that the evidence provided by this research can usefully inform the debate. It is clear that the various issues being examined by the policy review require careful scrutiny, but policymakers need to be cognizant of the risks associated with stymying the growth of a market that has provided a vital engine of demand in less prosperous areas of the UK, particularly during such a challenging macroeconomic period.



# 1. INTRODUCTION

## BACKGROUND CONTEXT

The short-term letting (STL) market in the UK experienced a period of growth in the years leading up to the pandemic. According to AirDNA data, the average number of properties listed for short-term let during 2015 was just over 25,000, a figure that had increased more than 10-fold to 290,000 by 2019. The trend has been far from unique to the UK, with the global market driven by the rise of the sharing economy facilitated by the development of hosting platforms, most notably Airbnb.

As is often the case with markets that enjoy growth from a low base, an evidence gap has emerged; currently there is no comprehensive and rigorous quantitative evidence on the economic implications of the industry's growth in the UK, in particular how it has affected its economic footprint. In parallel, a variety of concerns have emerged of wider social consequences that might be linked to the growth of the STL market. Notably, these relate to its impact on the affordability and availability of housing for residents and a perceived increase in the volume of anti-social behaviour by guests.

In response to these developments, on June 29, the Department for Digital, Culture, Media and Sport (DCMS) jointly with the Department for Levelling Up, Housing and Communities (DLUHC) launched a public review into the impact of STLs. The stated objective of the review is to evaluate potential policy measures designed to improve the experience of residents in popular tourism destinations. The first stage of the review, ongoing at the time of writing, involves a call for evidence.

## STUDY OBJECTIVES

Against this background context, Sykes Cottages, a leading provider of STL properties with extensive operations in the UK, commissioned Oxford Economics to undertake an independent quantitative analysis centred on the following two research questions:

- What is the economic footprint of the STL industry in the UK including both the income generated for landlords and the impact stimulated by the wider tourist expenditure that it enables in these localities?
- How has the growth of the STL industry affected housing affordability in the UK as measured by house and rental prices?

## REPORT STRUCTURE

For both research questions, we have sought to assess the topic at both the macro level (the aggregate impact across the UK) and to understand variation across individual regions. By narrowing the scope to focus on these two core economic effects, we do not aim to provide a complete evaluation of the socioeconomic impact of the STL market. Rather our aim is to provide a rigorous quantitative assessment of these two important channels for which the existing evidence base remains broadly anecdotal.

The remainder of the report is structured as follows:

- Chapter two describes the results from our economic impact modelling which quantifies the economic footprint of the STL sector in terms of GDP, jobs and tax revenue.
- Chapter three presents evidence from an econometric modelling exercise which sought to assess the impact of the recent growth of the STL sector on housing affordability in the UK and its regions. Using STL data, we also describe the evolution of STLs compared to the housing stock in the UK to draw inferences about its effects on housing availability.
- Chapter four concludes and seeks to draw out the lessons of our analysis for policymakers.

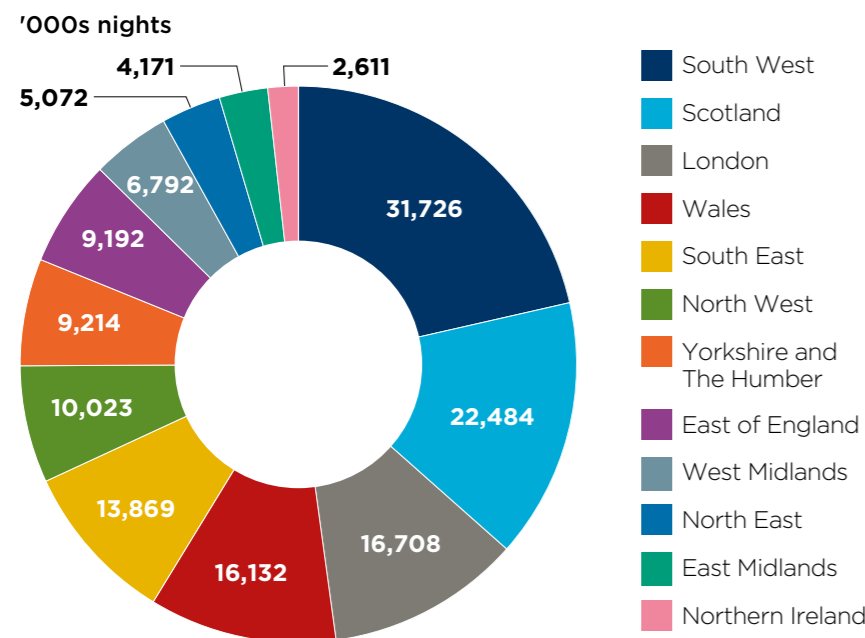


## 2. THE ECONOMIC FOOTPRINT OF THE STL INDUSTRY

In this chapter we present results which describe the economic footprint of the STL industry in the UK. Alongside the aggregate effect, we pay close attention to how this varies across the country and between urban and rural areas.

At the time of writing, the world is emerging from a global pandemic which unleashed an unprecedented level of economic disruption. In no sector was this more intense than tourism with restrictions on international, and sometimes domestic, travel causing a steep fall in demand that is yet to fully rebound. For this reason, we report modelling results for 2019, 2020 and 2021 to demonstrate the contribution of the industry pre-pandemic and its trajectory since.

**Fig. 1: Breakdown of STL nights by UK region in 2019**



Source: Oxford Economics

### 2.1 STL DEMAND PRIOR TO THE PANDEMIC

Following a sustained period of rapid growth, total nights in STLs in the UK reached almost 148 million in 2019.<sup>1</sup> Activity was far from evenly spread across the UK, with the four most important STL regional hubs: the South West, Scotland, London and Wales, accounting for almost 60% of the market or 87 million nights. The disruption created by the pandemic led, initially, to a dramatic fall in activity but, as we go on to describe in the next section the market has rebounded relatively strongly, although far from evenly, across the country.

### 2.2 TOURISM DEMAND BETWEEN 2019 AND 2021

#### Demand for STLs supported tourism during the pandemic

The UK tourist industry suffered an unprecedented shock as a result of the coronavirus pandemic, with nights spent in all accommodation down by 63% or 415 million in 2020 to 246 million. Household travel plans were subject to repeated restrictions during 2020 and 2021, which had a detrimental impact on the typical tourist activity that would be anticipated by accommodation providers. However as of 2021, the STL market has reported a faster recovery than all accommodation types, with the number of nights spent in STLs just shy of 133 million back up to 90% of 2019 levels (Fig. 2). There are a number of reasons for this, including the variety and capacity of STLs which are available to accommodate changing consumer preferences and requirements – such as the desire for reunions with friends and family after periods of isolation.

As a result of this, STLs have doubled their market share between 2019 and 2021 to 44% of total overnight stays across all accommodation types (Fig. 3). This highlights both the demand for STLs, and the importance that they have played in propping up domestic tourism during the height of

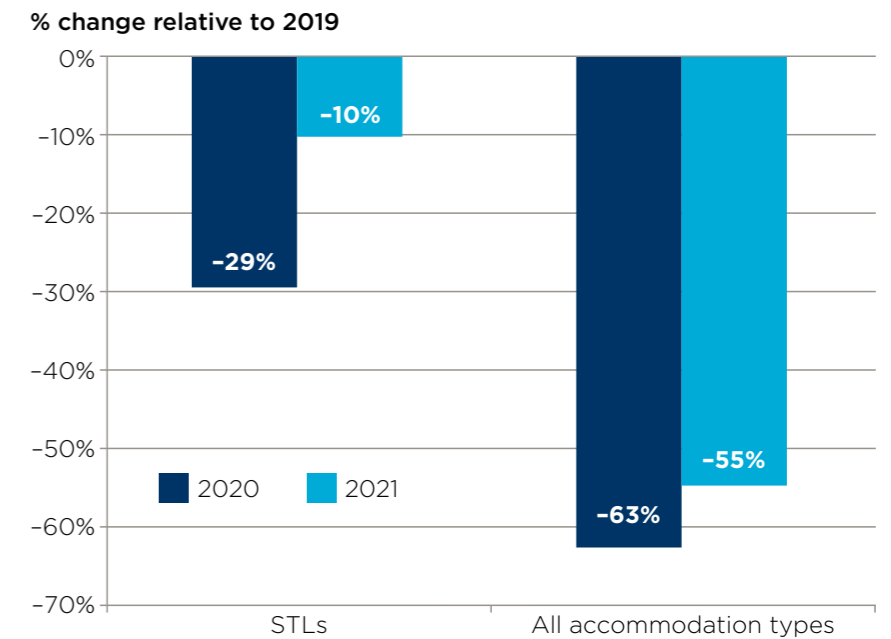
<sup>1</sup>Estimates for STL nights were developed by first combining AirDNA and Sykes Cottage data on the number of nights booked in individual properties across the UK in a given year. These results were then adjusted to account for other STL providers using accommodation supply data for other “peer-to-peer” accommodation services including other agencies, which was provided by Sykes Cottages.

the pandemic. But, of course, 2020 and 2021 were unique years for traveller behaviour in terms of their preference for domestic versus overseas trips. It is likely, therefore, that in the coming years the composition will move closer towards what was observed in 2019. Over the medium-term, however, we expect growth in “peer-to-peer” accommodation services to exceed that of the overall market; this will result in the resumption of STL market share gains in due course.

#### Demand in rural areas has rebounded much faster

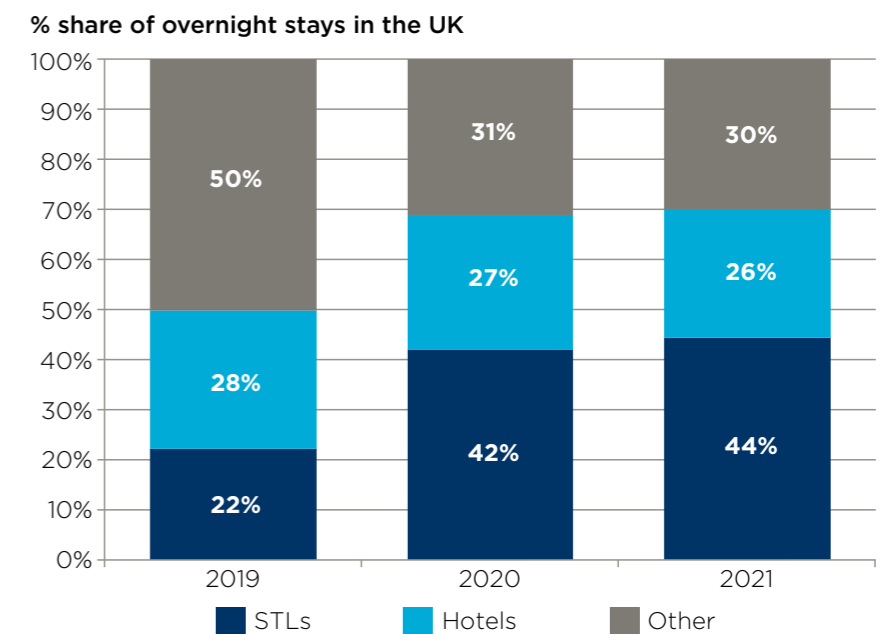
The effect of the pandemic on demand for STLs relative to other accommodation types has been more pronounced in rural areas compared to urban (Fig. 4). STL activity has made a strong recovery in rural areas. In 2021, STLs supported 100 million overnight stays, falling short of 2019 levels by just 1%. In contrast, demand for STLs in urban locations has failed to rebound as quickly, with total nights at around 32 million as of last year - 30% below pre-pandemic levels. Despite this relatively poorer performance, however, the STL market has proved to be more resilient than accommodation as a whole in terms of its recovery.

**Fig. 2: UK accommodation nights growth by type**



Source: Oxford Economics

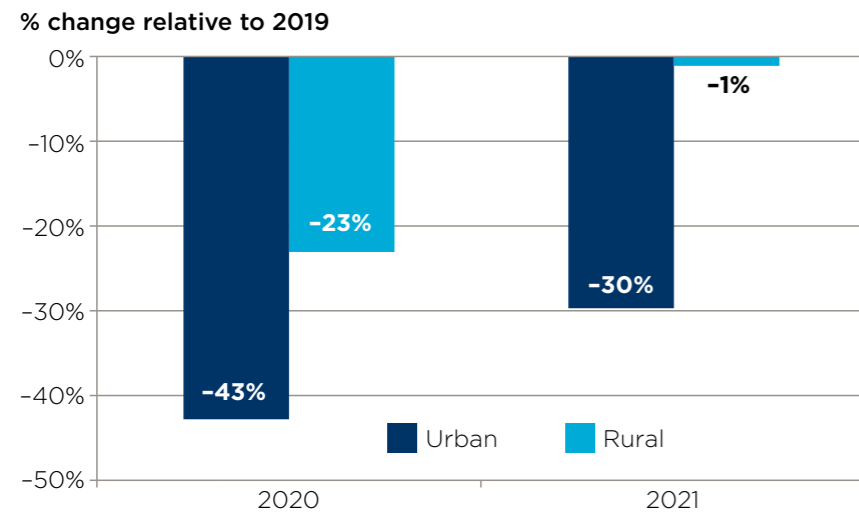
**Fig. 3: UK accommodation composition by type<sup>2</sup>**



Source: Oxford Economics

<sup>2</sup>Note: “other” includes non-paid accommodation

**Fig. 4: UK STL nights growth: urban vs rural**



Source: Oxford Economics

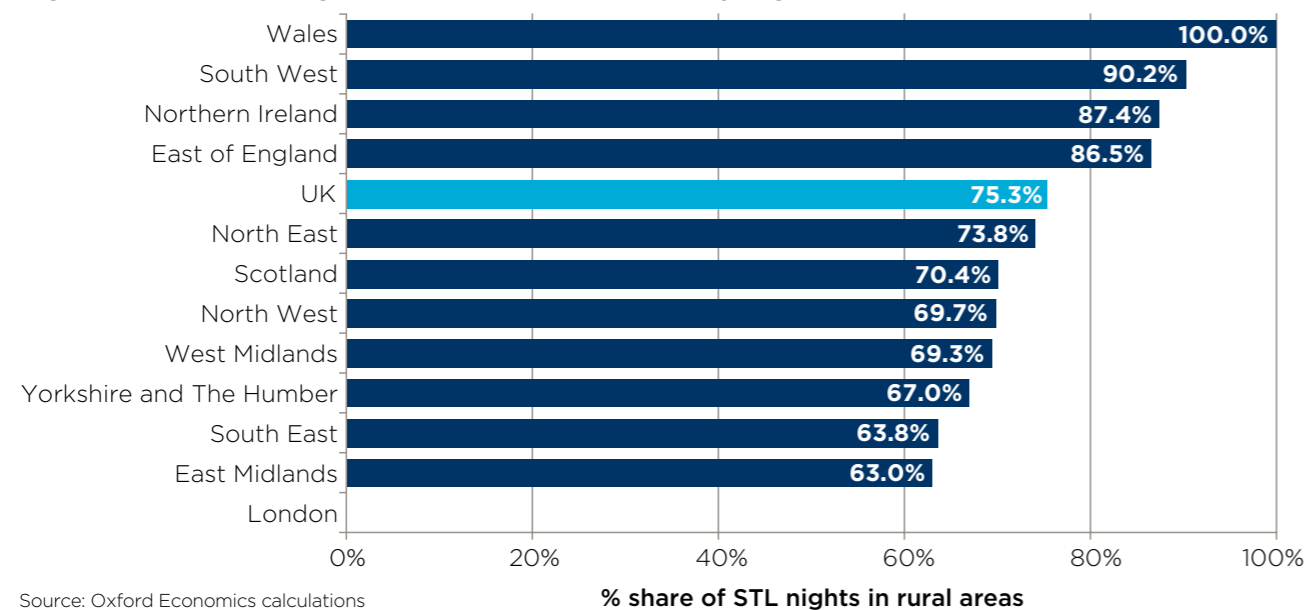
Taking data from 2021 as a benchmark, there is significant variation in the share of STL nights that take place in rural areas, as classified by the ONS, across the 13 major regions of the UK. At the most extreme ends, all STL nights in London took place in urban areas whilst, in contrast, in Wales 100% of STL stays were in predominantly rural locations.<sup>3</sup> Other regions where the STL market is strongly concentrated in rural areas include the South West, Northern Ireland and the East of England (Fig. 5).

**With implications for the composition of tourism demand across the UK**

Given this trend, one would expect that UK regions where the concentration of STL accommodation was more heavily weighted

towards rural locations will have outperformed during the pandemic. This has, indeed, broadly played out in practice although not in a wholly uniform pattern. In this section, we discuss and dissect these trends.

**Fig. 5: Share of STL nights in rural-classified areas by region in 2021**



Source: Oxford Economics calculations

<sup>3</sup>This might be viewed as a surprising statistic given that Wales is home to one of the 15 largest cities in the UK (Cardiff). The ONS classifies Cardiff as a largely rural area.

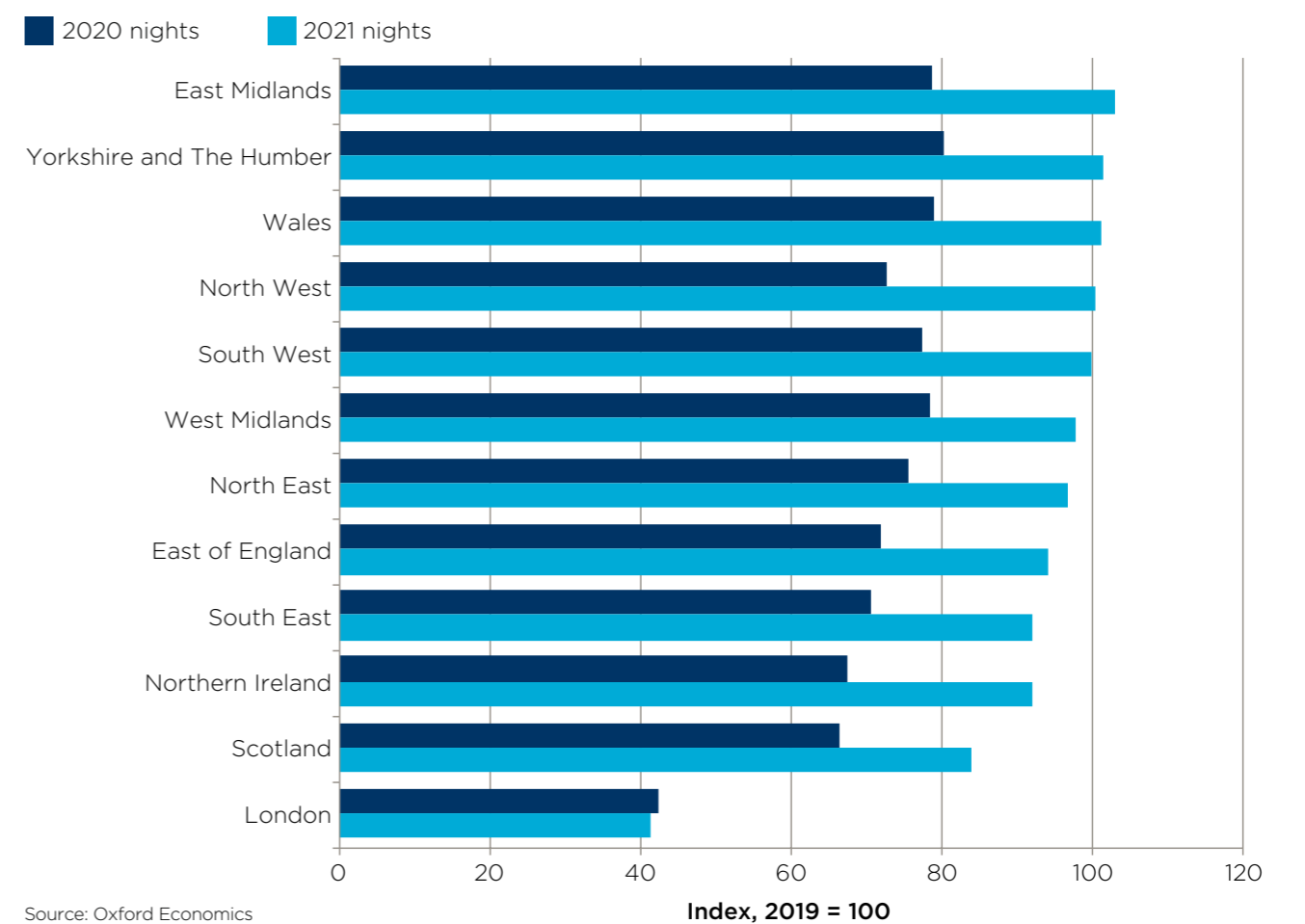
Fig. 6 describes the trajectory of demand for STLs in each region during the pandemic by comparing nights in 2020 and 2021 to 2019. In several cases, demand had already returned to its pre-pandemic levels last year, including in both Wales and the South West, where, as noted, STLs are heavily concentrated in rural locations that have been typically favoured by domestic tourists during this period. In sharp contrast, STL nights in London were still almost 60% down from their pre-pandemic

level in 2021, consistent with London's greater reliance on international tourists as a source of demand, with inbound foreign visits to the UK having recovered much less quickly than domestic tourism.

The correlation between rural concentration and the strength of the post-pandemic rebound is not perfect, however, and highlights some interesting nuances. For example, the East Midlands stands out in the data as the region which has enjoyed

(marginally) the strongest rebound in STL demand despite being relatively (in UK terms) urban centric: a possible reason for this is the diverse nature of the region, with destinations including both cultural and modern cities and coastal towns and countryside—most notably the Derbyshire Dales—appealing to a wide demographic.

**Fig. 6: Total nights spent in STLs, 2019-21**



Source: Oxford Economics

## CASE STUDY 1: A COTTAGE OWNER OPERATING IN ST. IVES

Sarah's (not their real name)<sup>4</sup> interest in St. Ives was first sparked following a visit with her husband in 2008. They fell in love with the town's beaches, restaurants, its cultural offering, and its people. A fond traveller, Sarah is adamant that the landscapes around St. Ives rival any of the many far-flung beach destinations she and her family have had the privilege of visiting.

Regular trips followed for Sarah and family from their home in Berkshire, and the desire to have their own Cornish bolthole grew. When a former B&B in St. Ives was listed for sale in 2015, Sarah saw it as an unmissable opportunity for her and her young family.

As a regular visitor to St. Ives, Sarah had observed a shortage of larger rental properties within the tourist accommodation stock and sought to capitalise on this gap in the market by purchasing and repurposing a property that was already serving as tourist accommodation.

As well as giving her and her family their own piece of Cornwall to enjoy, it also offered Sarah a chance to build and run her own enterprise—something she wanted and felt well-equipped to do with a background in advising start-ups. The business also had the potential to provide a much-needed degree of flexibility to balance alongside family life. Using her knowledge, Sarah put together a business case and used this to secure a business loan with which to purchase the B&B with an aim to re-establish it as a short-term holiday rental capable of filling the gap she had identified.

In 2018, an opportunity to purchase a second property presented itself. Assisted by profits from her prospering business, Sarah was able to secure the former hotel which she converted into another large short-term rental, again broadening its appeal beyond its previous use case.

Since starting her business, Sarah has reinvested much of her profits in St. Ives, principally through the use of local tradespeople to convert and maintain the properties to her desired specification, as well as cleaners to keep the properties well kept. Sarah regularly directs her guests to local businesses and events and endeavours to encourage investment in local businesses and services when possible.

Sarah's business model is centred on catering to larger groups—something that St. Ives struggled to offer before—which she believes has had the effect of extending St. Ives' appeal beyond just the peak summer months; her properties allow for large family gatherings and special occasions to be celebrated year-round. This offers a further boon to the St. Ives economy by bringing visitors to the area during what might otherwise have been a lean period.

Sarah's properties enjoy a global visitor base, although pre-pandemic most guests (around 80%) came from elsewhere in the UK, and a notable number from elsewhere in Cornwall. While most of her guests are repeat visitors to the area, a sizeable number were first-time visitors. The 47th G7 summit in 2021 in neighbouring Carbis Bay is a clear sign of the regard in which the area is held. This summit put west Cornwall on the map and will likely entice numerous visitors to St. Ives for the first time in the years ahead.

Sarah regards St. Ives as a thriving economic area which has become increasingly cosmopolitan due to the proliferation of quality bars and restaurants, along with its enviable portfolio of museums (chiefly the Tate St. Ives and Barbara Hepworth Museum). Without the availability of short-term holiday lets, Sarah argues that St. Ives would not be able to satisfy the levels of tourism demand sufficiently to make it the thriving town that it is.

Out of respect for her neighbours, and in the interests of maintaining the town's urbane reputation, Sarah operates a no-nonsense policy with guests made aware of how they are expected to conduct themselves in her properties prior to booking. She impresses that it is important to her that her business is not detrimental to the local area or her relationship with neighbours and residents of St. Ives.

On the topic of animosity among locals toward second homeowners, Sarah is of the belief that the degree of animosity is often overplayed by the media. While she acknowledged that some residents were likely to harbour some resentment towards those who owned second homes in the area, she was keen to point out that her business ensured the property was well-used throughout the year which brings money into the area. In addition to reinvesting most of her business's profits so far into the local economy, she also pays business rates which go into the coffers of the local council.

Sarah believes the lack of alternative accommodation options (e.g., hotels) in St. Ives is a problem for a town that has become acutely reliant on tourism for its prosperity. Short-term lets, in her view, shoulder a significant portion of the burden when it comes to accommodating visitors to St. Ives.

But their versatility is also a virtue; whereas hotels in many of Britain's seaside resorts find it necessary to close or reduce services during leaner winter months, the year-round appeal of short-term lets ensures a steadier flow of visitors into the town, and therefore a steadier flow of tourism spending. More wear and tear on short-term rental properties as a result in turn generates more work for local tradespeople and service providers.





**2.3 STL OCCUPANCY UNDERPINS TOURISM SPENDING**

**Overnight trips are associated with guest spending that supports a variety of different sectors**

The economic impact associated with STL stays goes further than the booking fees, with additional economic activity for the hosts and for the immediate area supported through spending by STL guests. Spending by overnight visitors in STLs feeds into many sectors of the economy. Looking at 2019 as a typical year (pre-pandemic), more than half of total visitor spend was allocated to the accommodation itself, with 56% going directly to the host. In monetary terms this generated £14.2 billion in revenue across the whole of the UK that year.

The retail and the food and beverage sectors were other large beneficiaries of visitor spend that year, making up 22% and 11% respectively (Fig. 7). The composition did not significantly change during the pandemic.<sup>5</sup>

**The resilience of STL guest spending has driven the recovery**

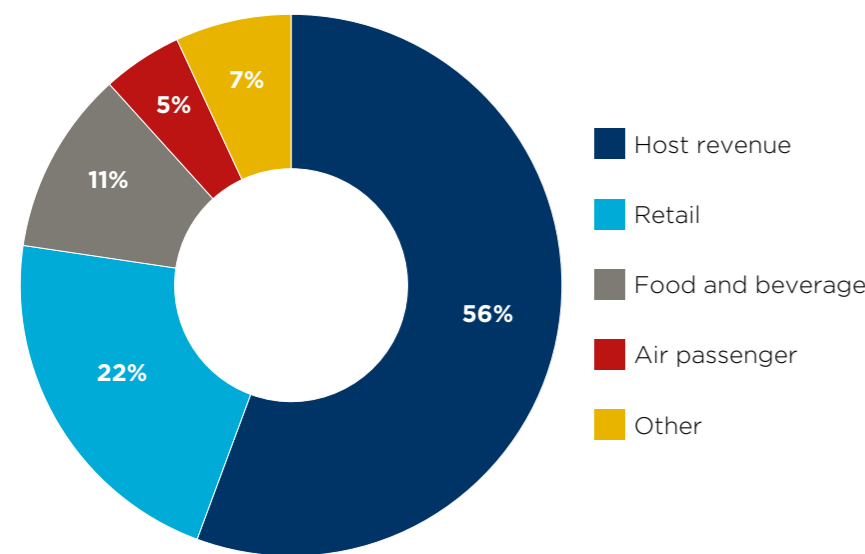
In 2021, spending growth in STL-linked tourism stood just 5% below its pre-pandemic level. This was significantly stronger than spending growth across the total market which was still 41% behind 2019 levels, mirroring the pattern evident in the nights data. However, after the initial decline in 2020, the relative

improvement of the total tourism market exceeded STL-linked tourism activity, with growth of 53% and 33% respectively. So, although STL-linked spending is relatively close to surpassing where it was in 2019, the pace of recovery during the most recently completed year (2021) has not been significantly stronger in STLs than other accommodation types. Rather, the relative resilience of STL activity primarily stems from it suffering a much smaller decline in demand (-29% compared to -60% overall) during the initial phase of the pandemic.

A similar point can be made by examining the share of visitor spending linked to STL activity and all other tourism activity over time (Fig. 9). In 2021, STL-linked tourism accounted for 23% of total spending by tourists, compared to 14% in 2019. However, in monetary terms spending reported a decline of £1.3 billion between 2019 and 2021 to £24.1 billion. This means that STLs' greater market share was not driven by higher spending growth. But rather, as noted above, spending by STL-linked tourists remained more resilient than those staying at all other accommodation types during the pandemic.

**Fig. 7: Visitors spend by sector, 2019**

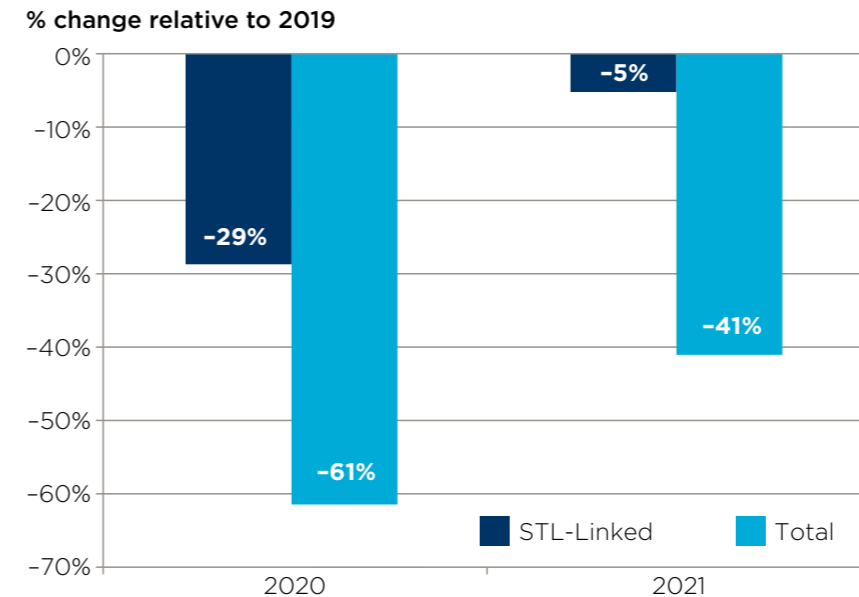
Share of total expenditure



Source: Oxford Economics

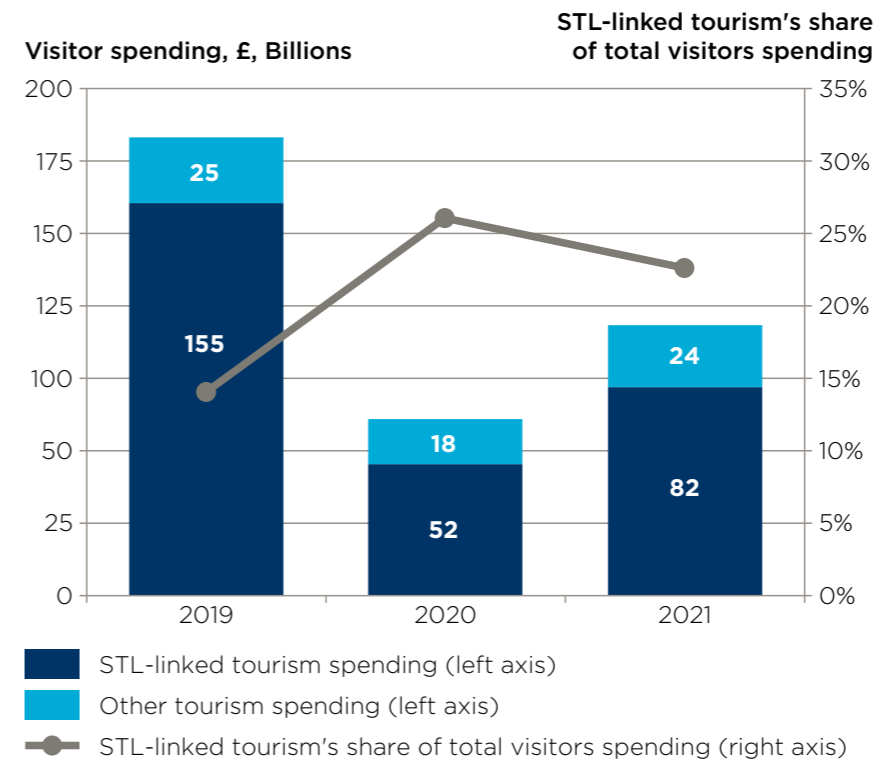
<sup>5</sup> Spending by overnight visitors in STLs was calculated by combining estimates for the volume of STL nights in rural and urban areas within each UK region with relevant spend per night figures. Spend estimates were initially developed using Visit Britain data on domestic and international visitor spend in specific UK regions. Calculations were then refined using the UK TSA and AirDNA and Sykes Cottages host revenue data for STLs.

**Fig. 8: Recovery of tourist spending growth in the UK over the pandemic**



Source: Oxford Economics

**Fig. 9: UK tourism spending composition<sup>6</sup>**



Source: Oxford Economics

<sup>6</sup> Total visitors spending include overnight guest spending as well as day trip spending.

Fig. 9 also shows that there was a small drop in STLs' share of tourism expenditure between 2020 and 2021, as spending rose faster for overnight guests and excursionists staying in other types of accommodation. The timing of this coincided with fewer international travel restrictions and more activity in high-contact service sectors. This suggests that as restrictions are fully removed on a global scale, the share of spending for STL tourists will likely decline to somewhere between the share in 2019 and 2021 over the short-term. We can assume this recovery will be gradual, especially given the level of disruption caused by staff shortages in the airline industry for international travellers so far in 2022. Over the medium-term, growth in STLs is expected to surpass that of the overall accommodation market resulting in market share gains in the longer term.

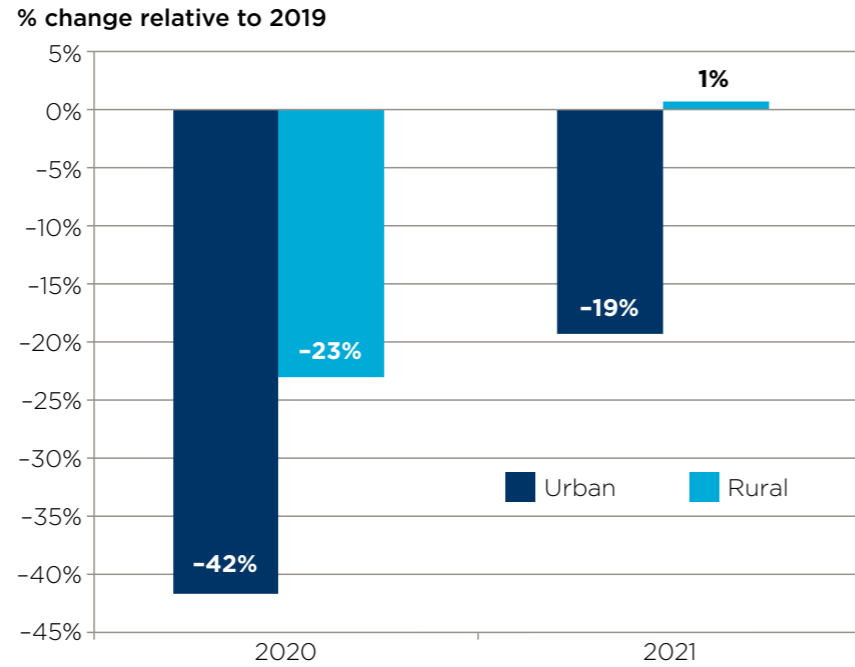
**Rural outlets benefit from tourism spending**

STL hosts, retailers, and food and beverage providers based in rural destinations are likely to have outperformed their urban counterparts in 2021. Fig. 10 shows that STL-linked tourism spending in urban areas remained 20% below pre-pandemic levels as of last year, weighing on total spending as well as offsetting the improvement in rural areas which moved back into positive territory.

The South West, Wales, and Scotland are traditional and established rural destinations for the tourism sector, while London is exclusively urban, and this is reflected in the STL-linked spending patterns. These regions and others with a high incidence of rural STL activity will have benefited disproportionately from the recovery.

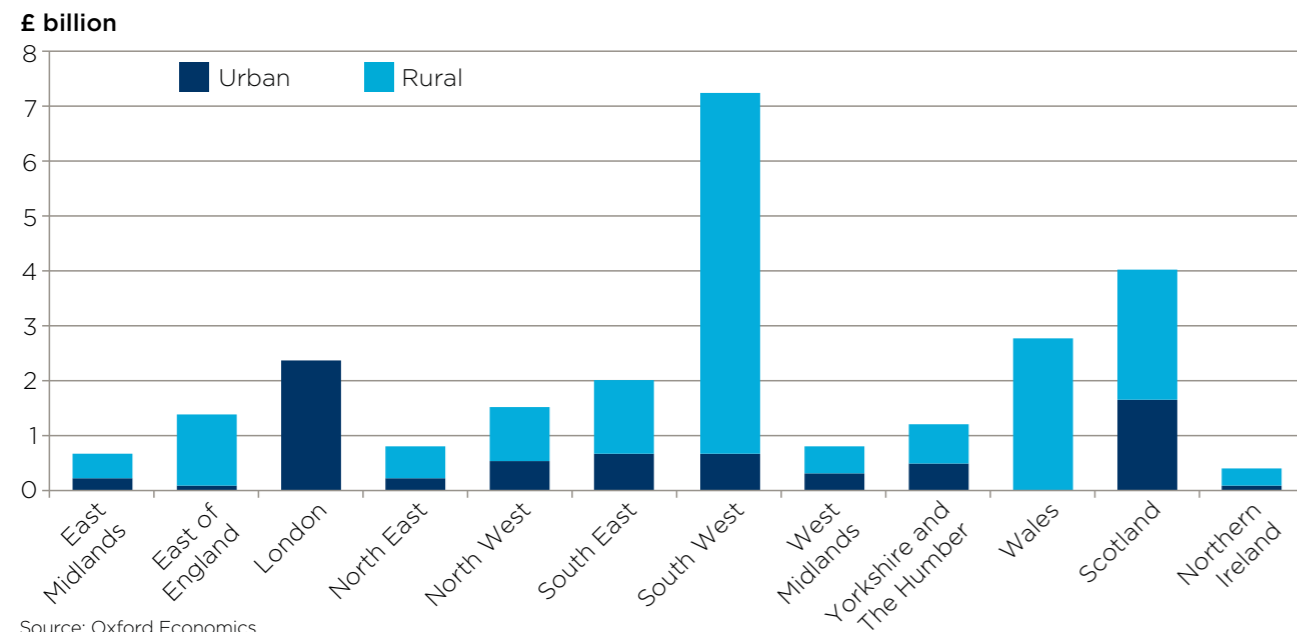
However, some regions saw a shift in spending towards urban STLs. The East Midlands and South East saw urban locations take a higher proportion of total STL-linked spending. In contrast, in Scotland and Northern Ireland the opposite pattern was apparent, with urban spending taking a larger hit than rural, and more so than the UK overall, indicating that there has been variation to the shape of the recovery in certain regions.

**Fig. 10: STL tourism spending growth: urban vs rural, % change relative to 2019**



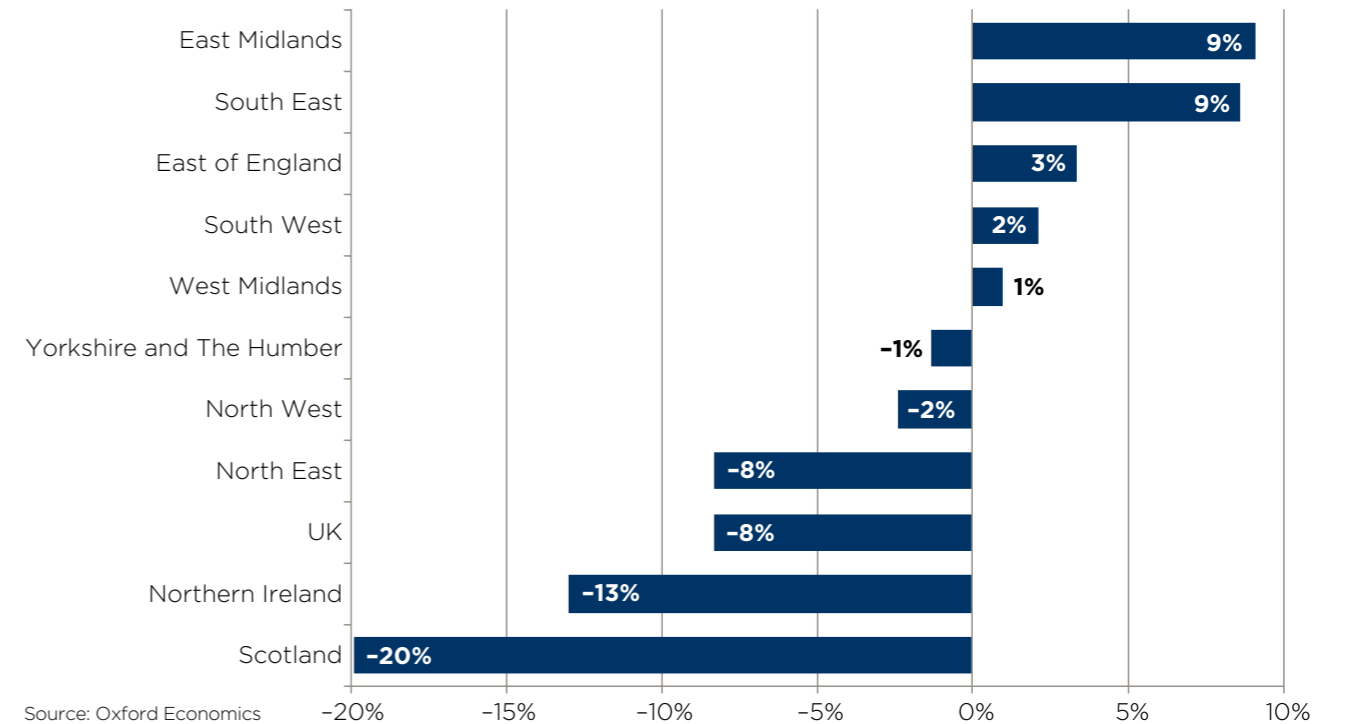
Source: Oxford Economics

**Fig. 11: STL-linked tourism spending by region in 2019**



Source: Oxford Economics

**Fig. 12: Change in the share of urban STL-linked spending between 2019 and 2021<sup>7</sup>**



Source: Oxford Economics

**2.4 ECONOMIC IMPACT OF STL-LINKED TOURISM**

We have quantified the economic footprint of STLs in the UK using a standard means of analysis called an economic impact assessment. This technique allows us to model the economic impact of STLs in terms of their contribution to annual GDP, the number of jobs supported, and the tax revenues generated.

The direct contribution of STLs captures the impact from both the STL guests and the STL hosts. The guests' impact stems from their expenditure on goods and services in the area they are staying in such

as restaurants, supermarkets, local transportation, and entertainment. Activity across these businesses will be positively affected by sales to STL-linked tourists. At the same time, money spent by hosts to improve the rental unit will likely support more self-employed people and SMEs in the trade sector.

It is also important to consider the secondary impacts of this activity on the overall economy. These can be grouped into two core channels of impact: indirect and induced effects. The indirect effect refers to

the economic production stimulated along the supply chain through STL host purchases of goods and services, which are used as inputs to their operation. Purchases are made from food wholesalers, linen suppliers, and utilities for example. As activity rises for them, so will B2B spending across businesses along the supply chain which, when aggregated, will feed into the whole economy. The indirect effect also encapsulates the activity supported in the domestic supply chains of the firms that facilitate guest spending in the local economy.

<sup>7</sup>London and Wales are excluded as these regions do not have a mix of urban and rural areas

The induced effect captures wider economic benefits that arise from the spending of income and wages of operators and employees included in the direct and indirect impact. This includes STL hosts and their contractors whose wages are paid by businesses across the supply chain that benefit from stronger direct spending in their purchasing sectors. Income for these groups will then re-enter the economy through other sectors and contribute towards GDP. The induced effect also comprises of the economic benefits that arise when those working within businesses supported local STL guest spending and their supply chains spend their earnings.

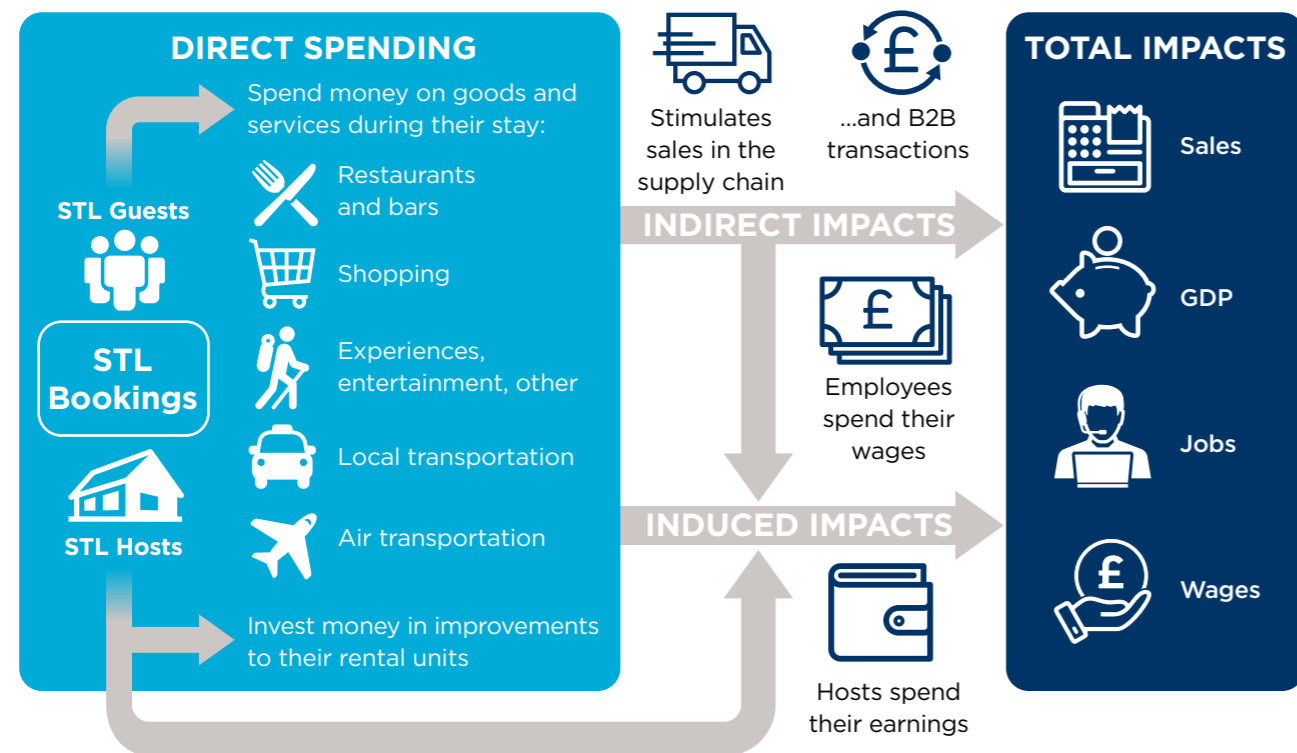
**2.4.1 Contribution to GDP**

**In total the STL industry contributed £27.7 billion to UK GDP in 2021**

The sum of the direct, indirect and induced impact represents the total economic impact of STLs. The direct impact of STL-linked tourism contributes the largest amount to UK GDP in both typical years such as 2019 and also throughout the pandemic. As of last year, the direct spending contributed £14.1 billion to GDP, with the indirect and induced impact a further £6.0 billion and £7.6 billion respectively, summing up to a total economic impact on GDP to £27.7 billion (Fig. 14).

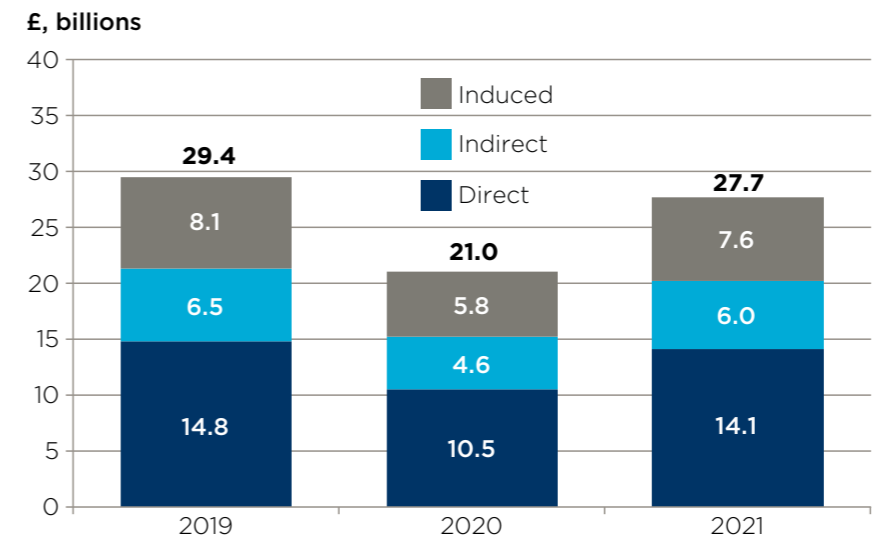
To put these numbers in context, our modelling results imply that STL activities contributed 1.4% to total UK GDP in 2021 (Fig. 15), recovering swiftly from the fall experienced at the height of the pandemic in 2020. While the proportionate contribution to the UK economy has remained broadly stable, its share of total tourism GDP increased by 11 percentage points between 2019 and 2021—accounting for 24% of total tourism GDP by the end of the period.

**Fig. 13: Schematic of economic impact**



Source: Oxford Economics

**Fig. 14: UK STL-linked tourism GDP impact**

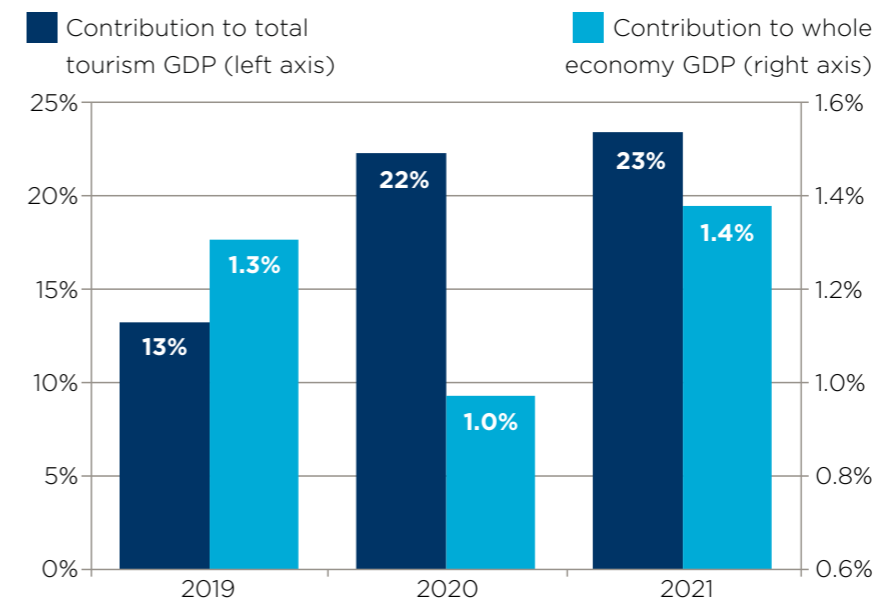


Source: Oxford Economics. Totals may not add up precisely due to rounding.

In the years preceding the pandemic, the tourism industry accounted for between 9% and 10% of national output (including indirect and induced effects).

By the end of 2021, tourism's share of national GDP had fallen to 5.9% reflecting the disproportionate impact of restrictions on mobility on the sector during this period.

**Fig. 15: UK STL-linked tourism as a share of total tourism GDP and whole economy GDP**



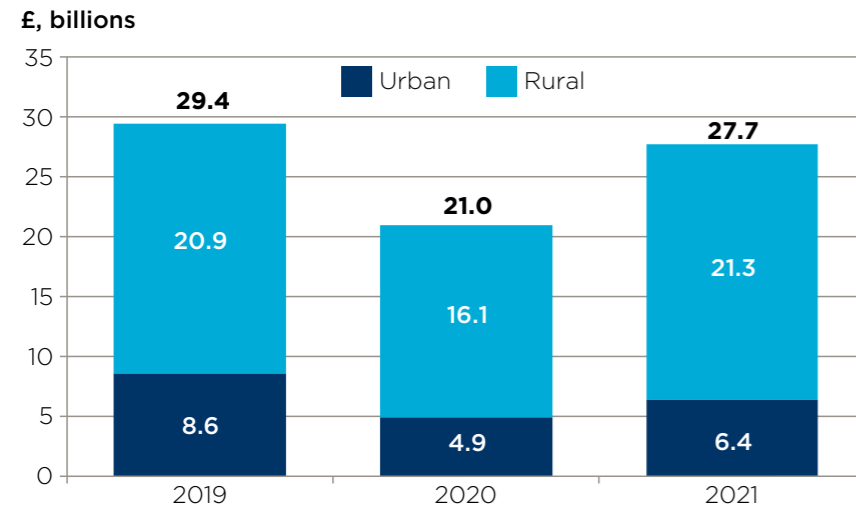
Source: Oxford Economics

As we recover from the pandemic, tourism's proportionate contribution to economic activity is expected to return to pre-pandemic levels with the STL industry likely to remain a key structural driver of this growth, as explained previously.

**Most of which was sustained in rural areas of the UK**

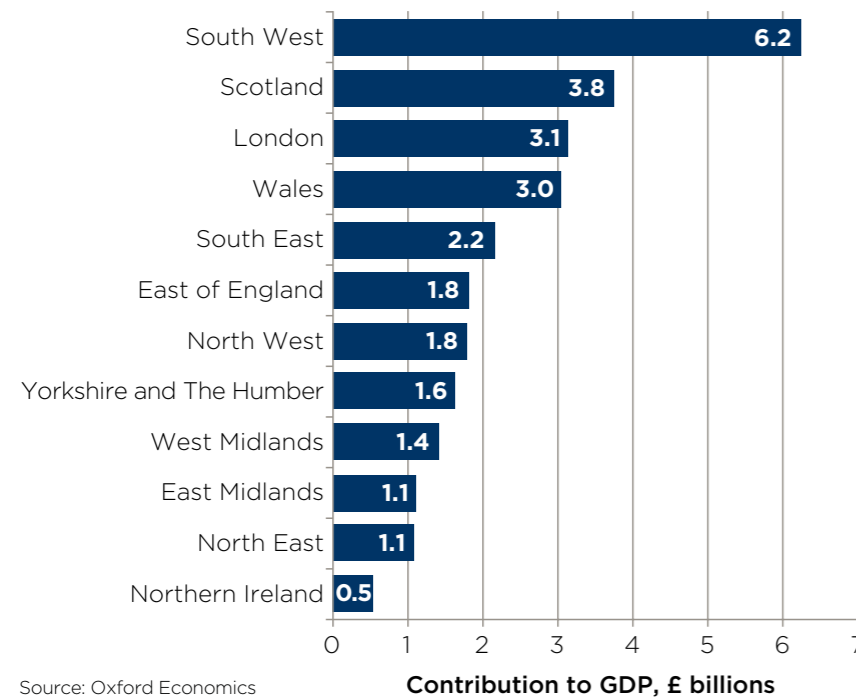
Breaking down these headline figures show that STLs based in locations classified as rural consistently take a larger share of the impact on GDP (Fig. 16). Consistent with the trends reported earlier in this chapter, rural STL-linked tourism expanded its share of the market compared with urban during the pandemic period. While rural STL tourism took a 72% share in 2019, this increased to 77% in 2021, with the total economic footprint from STL-linked tourism in rural areas exceeding its pre-pandemic peak whilst, in urban areas, the total economic contribution was down by more than 25% compared to 2019 in cash terms. Our modelling results, therefore, demonstrate that the STL sector assumed a vital role in revitalising rural economies across the UK which have been hit by the economic effects of the pandemic and the squeeze created by the lessening of fiscal support as restrictions on mobility were steadily released during 2021.

**Fig. 16: STL-linked tourism total GDP impact in the UK split between urban and rural areas**



Source: Oxford Economics

**Fig. 17: Economic impact of STL-linked activity by region**



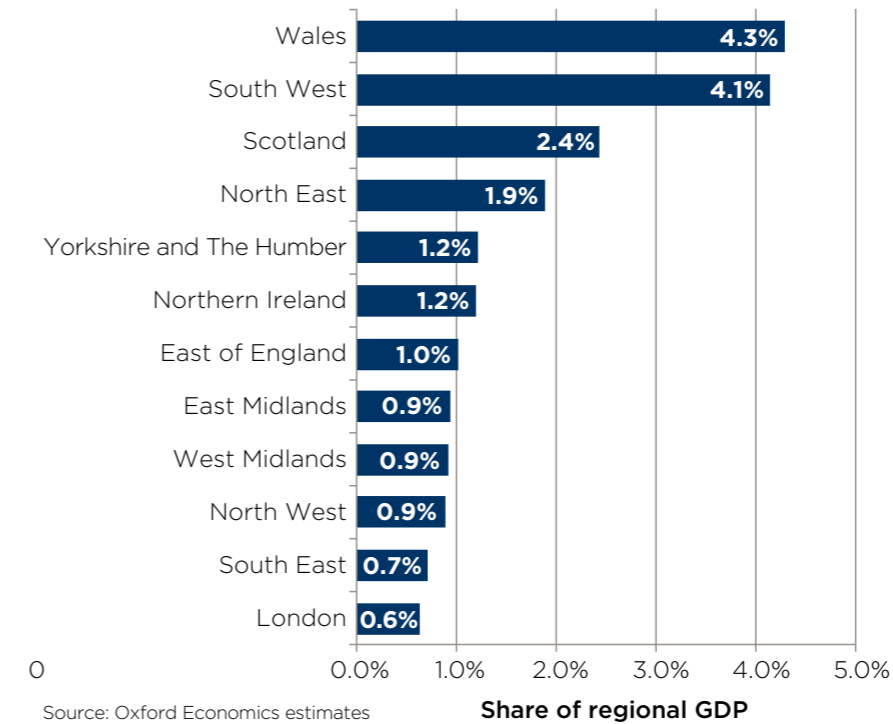
Source: Oxford Economics

**With the South West home to the largest regional impact**

Fig. 17 describes the distribution of STL's total economic contribution to GDP across 13 regions of the UK, illustrating very significant variation. In 2021, the STL industry contributed £6.2 billion to GDP in the South West, more than double the value of output in any other region apart from Scotland (£3.8 billion). Next up were London and Wales where the total economic contribution to GDP in 2021 was more than £3 billion.

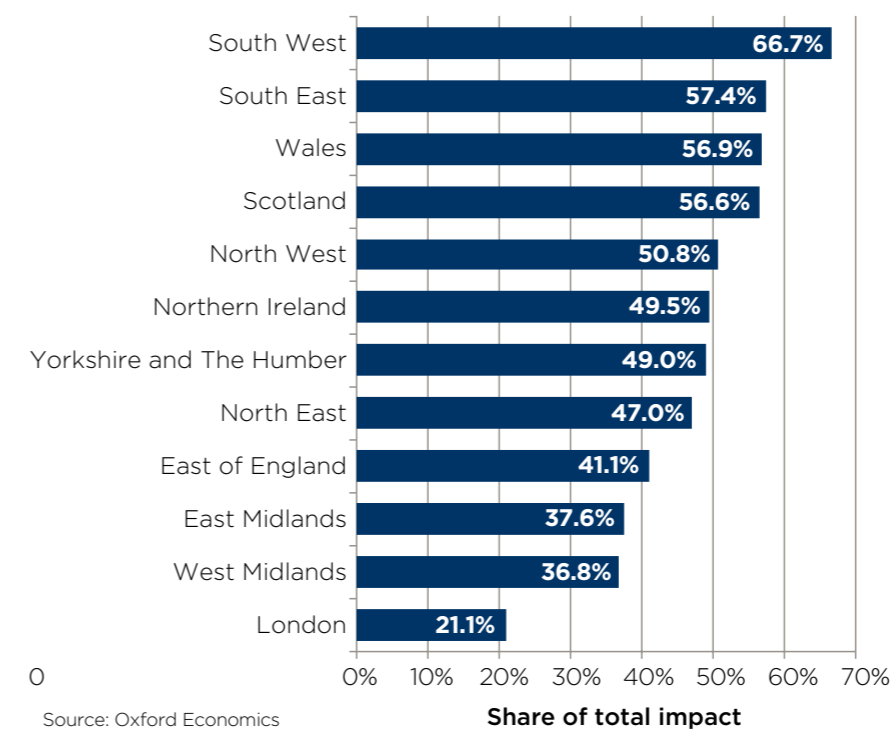
The importance of the economic footprint of STLs at a regional level, relative to overall regional GDP, is also instructive. The regions that are most reliant on STL-linked tourism are Wales and the South West (Fig. 18), as it contributes more than 4% towards total GDP, around double that of the remaining regions of the UK.<sup>8</sup> These are home to some of the countries most popular rural holiday locations that have become a key destination for UK tourists, especially while international travel was restricted—and is currently still disrupted.

**Fig. 18: STL economic impact by region, 2021**



Source: Oxford Economics estimates

**Fig. 19: Direct impact as a share of total by UK region**



Source: Oxford Economics

**In London the economic footprint from STL activity is significant but stems much more from its wider links to the resulting supply chain**

Inspecting this data further shows that there is significant variation in the makeup of this contribution across the regions, a symptom of structural differences in the composition of economic activity in these locations. On average, the direct impact accounts for approximately half of the STL market's total contribution to GDP in the UK, but this share is significantly higher in the South West (close to 70%) and, by contrast, just 21% in London.

Instead, the London economy benefits predominantly from the spending of STL tourists through indirect or supply chain links. London is in a unique position relative to other regions in the UK because of the range of businesses and sectors in the capital. There are many goods and services based in London which are able to be delivered and supplied across the country and in particular the South and South East of England. Plentiful access to labour, higher quality infrastructure, and knowledge provides companies based in London with a competitive advantage over firms based elsewhere in the UK.

## CASE STUDY 2: A COTTAGE OWNER OPERATING IN ST. IVES

Claire (not her real name)<sup>9</sup> was born in St. Ives to a family that provided holiday accommodation. She was raised in the town, before moving to London to pursue further education and resided there for 20 or so years. She then returned to St. Ives with her husband and first child where she has remained ever since.

Claire's first venture into holiday letting came about thanks to two holiday lets attached to the home that she and her family settled in upon their return to Cornwall. These lets provided Claire with an income for her family and formed the beginnings of her holiday accommodation business.

Later, she and her sibling inherited the holiday lets which had belonged to their parents, having served as short-term holiday lets since her parents purchased them 50 years prior. Claire identified that while these properties were once at the pinnacle of holiday accommodation available within St. Ives, they were no longer reflective of what visitors to St. Ives were looking for. In order for the business to continue succeeding, Claire determined that significant investment would be required.

She won permission from the local authorities to build new properties in the gardens of the existing properties. This project was undertaken in a systematic manner, with each phase of development funded by proceeds from the previous. While new properties were added to the tourist accommodation stock, some of the incumbent properties were sold back into the residential market or refurbished to match the high-end standard of the newly built properties.

A key tenet of Claire's business is to utilise only what is available to her—that which was handed down by her parents. She has grown her business by improving and being more efficient with the available space, rather than by expanding through the purchase of additional properties or land.

Claire's investment programme has been ongoing since she inherited the properties and continues to this day, with the final phase currently underway. Following the completion of this final phase of development, she intends to return to the initial development phase and begin a systematic programme of refurbishment to ensure each property is refurbished every five years, safeguarding their place at the top of the market. Claire expects that most of the company's profits will be reinvested to this end which has been the case since 2014. In addition to full-scale refurbs, she employs local tradespeople to maintain each property on a yearly basis to keep them looking fresh.

As salaried directors of the company, some portion of its revenue goes into the pockets of Claire and her sibling. Since both reside in St. Ives, most of these personal incomes are spent within the local economy.

Many of Claire's visitors (around 75%) have been to St. Ives before. Some are returning for the first time as adults having been there as children and now wish to show it to their own children. As a long-standing business, some customers have been returning for 40+ years. Around 90% of visitors to her properties visit from elsewhere in Britain, with the other 10% coming from overseas.

Claire endeavours to meet and greet each of her guests at least once during their stay. She considers herself as much a concierge as a host, regularly recommending a range of activities or hospitality options within St. Ives to suit the needs of her guests. Ultimately, her goal is for her guests to enjoy their trip to St. Ives to the extent that they will come back—whether to one of her properties or somewhere else.



**2.4.2 Contribution to employment**

**The STL industry supported nearly half a million jobs across the UK in 2021**

STL activity generates employment across the economy. This is initially a direct impact for the firms and sectors where visitors spend money on outlets such as museums and restaurants. But there is also an indirect impact across businesses that supply goods and services to these tourist-facing firms as well as to hosts, because greater demand will put pressure on labour, resulting in additional hiring, especially across peak-season. Jobs are also supported via the induced channel of economic impact because with more people employed and working

additional hours, more wages will be spent elsewhere in the economy, supporting jobs across all sectors in the UK economy.

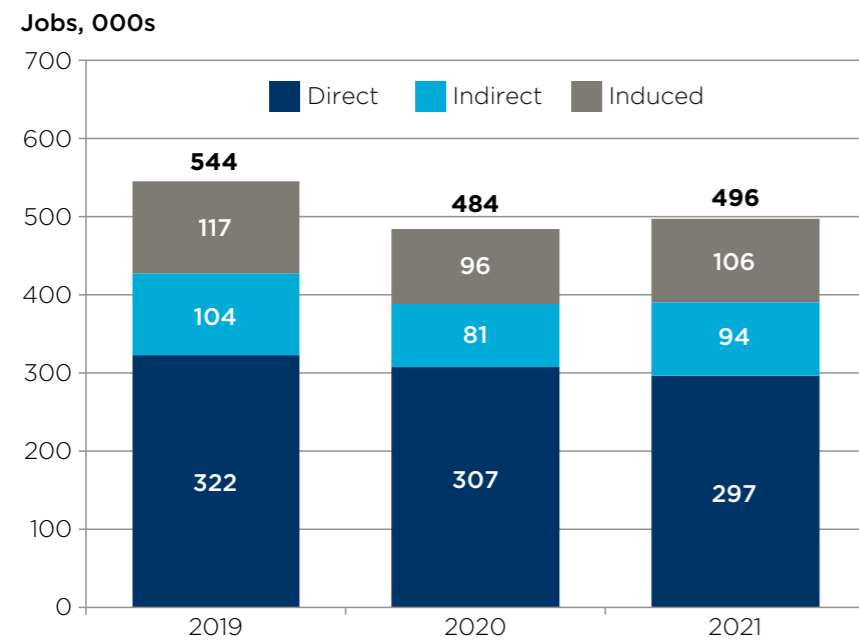
Employment across businesses directly used by tourists contributes the largest impact to employment, generating 297,000 jobs in 2021, making up around 60% of jobs supported by STL-linked tourism (Fig. 20). Employment directly impacted by STL activity remained more resilient than overall employment across the pandemic. The drop in the induced impact can be attributed to a number of factors, such as reduced willingness to spend and fewer opportunities to spend wages, especially during the lockdowns.

**Nearly 80% of these were in rural areas**

The contribution to employment from STL-linked tourism varies considerably across regions (Fig. 21). Around 383,000 jobs, or 77% of this employment, are generated in rural locations, with the remaining 113,000 in urban areas. The regional employment figures highlight key rural destinations such as the South West, Wales, and Scotland, which require greater levels of employment to cope with demand.

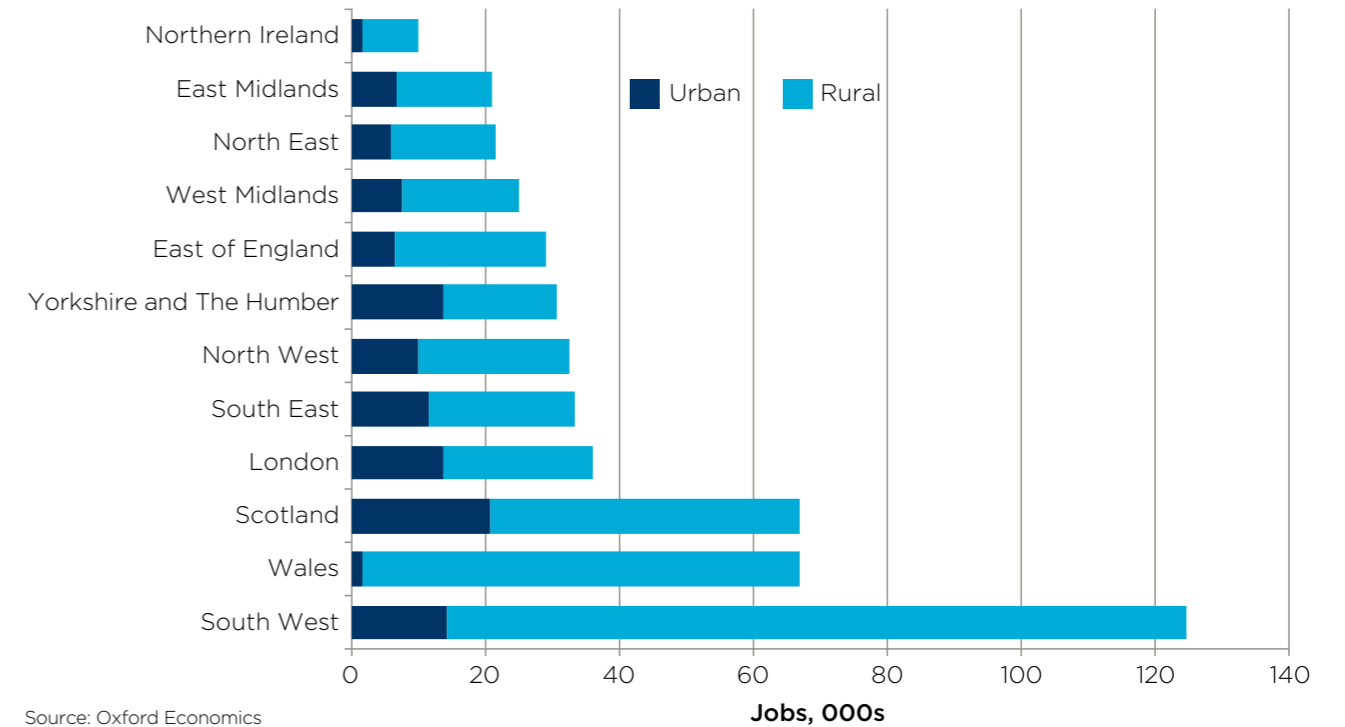
Employment linked to the STL economy has recovered faster in many sectors than seen across the STL activity overall. While total employment in 2021 was at 90% of 2019 levels, key sectors such as accommodation & food services and transport & storage are above this average, reflecting the faster recovery in nights and spending linked to STL activity. But jobs in retail and whole trade, part of the supply-chain channel impacted by STLs, lag behind the recovery in the overall economy (see Fig 22).

**Fig. 20: Jobs supported by STL-linked tourism by impact channel**



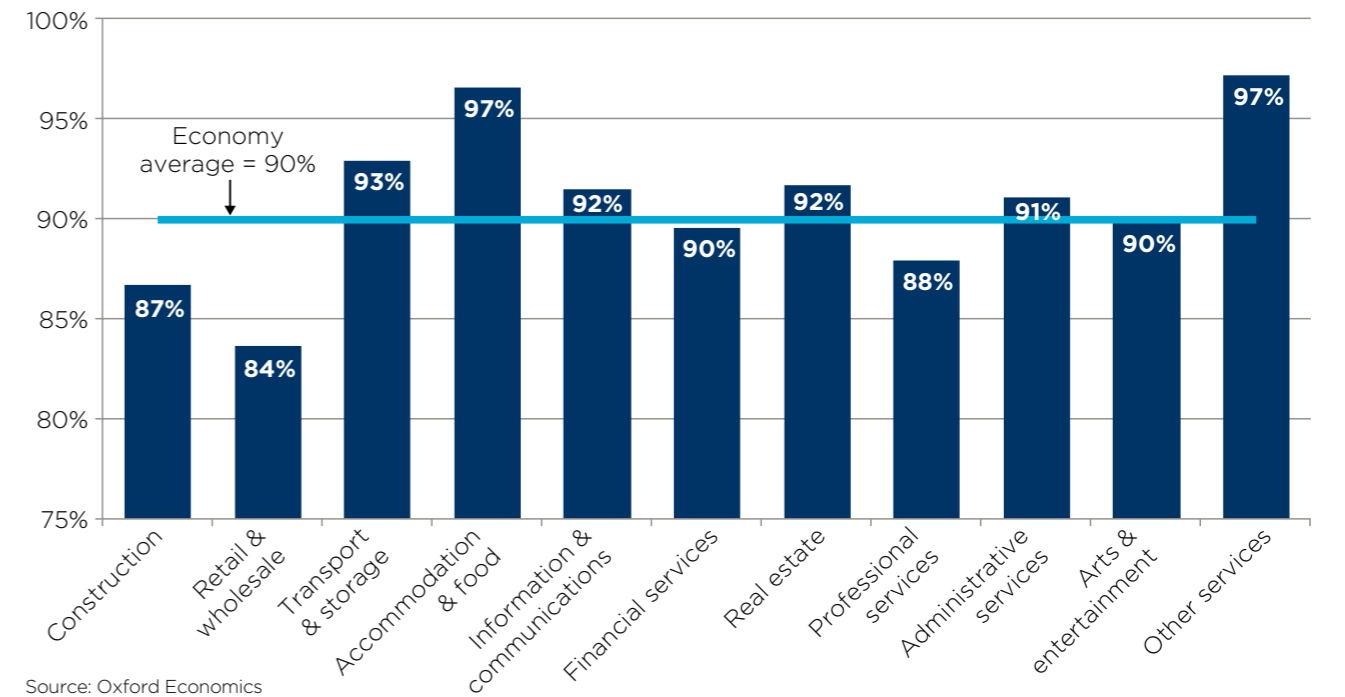
Source: Oxford Economics

**Fig. 21: Jobs supported by STL-linked tourism by region, 2021**



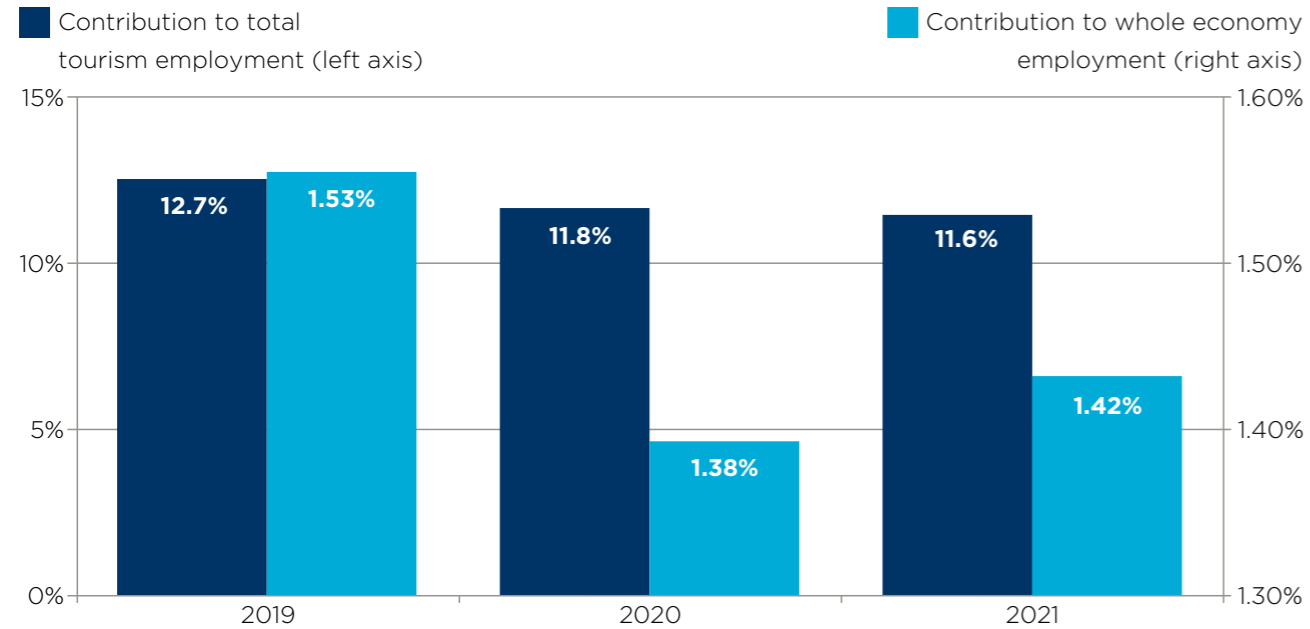
Source: Oxford Economics

**Fig. 22: Recovery of STL-linked employment, 2021**  
% change relative to 2019



Source: Oxford Economics

**Fig. 23: UK tourism STL-linked economic impact as a share of total tourism and whole economy employment**



Source: Oxford Economics

STL activities supported close to 500,000 jobs as of 2021 and contributed to around 12% of total tourism employment (Fig. 23) and 1.4% of whole economy employment. Employment across the tourism industry overall was in large part protected during the pandemic by the furlough scheme and other government support. This explains why STLs share of tourism employment during the pandemic has not increased, despite their relatively strong performance during this time.

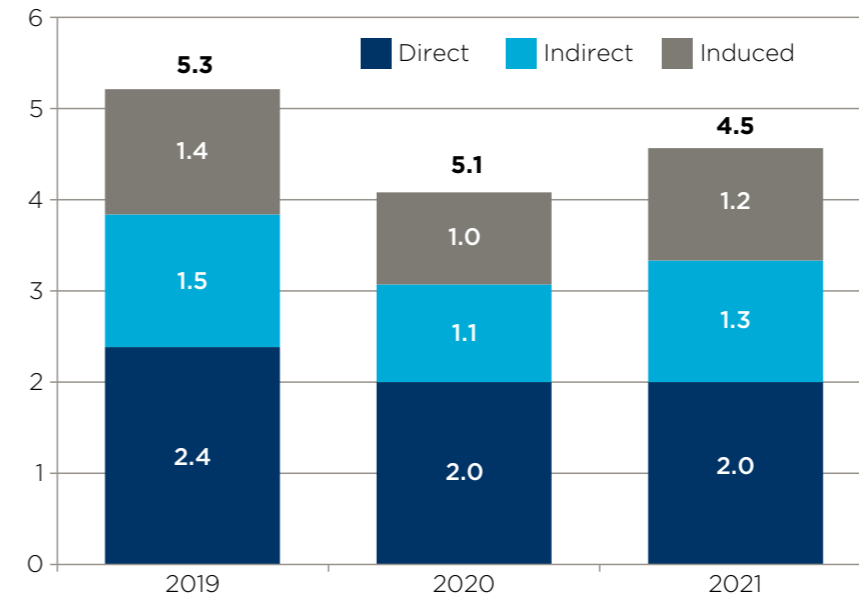
**2.4.3 Contribution to tax revenue**

**In 2021 the footprint of the STL market contributed £4.6 billion to the UK Exchequer**

In addition to STLs contribution to GDP and employment individuals and companies benefiting from STL-linked tourism generate tax revenues for the UK Exchequer. STL activities in the UK supported a total tax contribution of £4.6 billion in 2021. The total value of tax

receipts supported across the three impact channels decreased by 12% in cash terms between 2019 and 2021. The direct impact is the largest component of the total impact, accounting for on average 46% of total contributions over the three-year period.

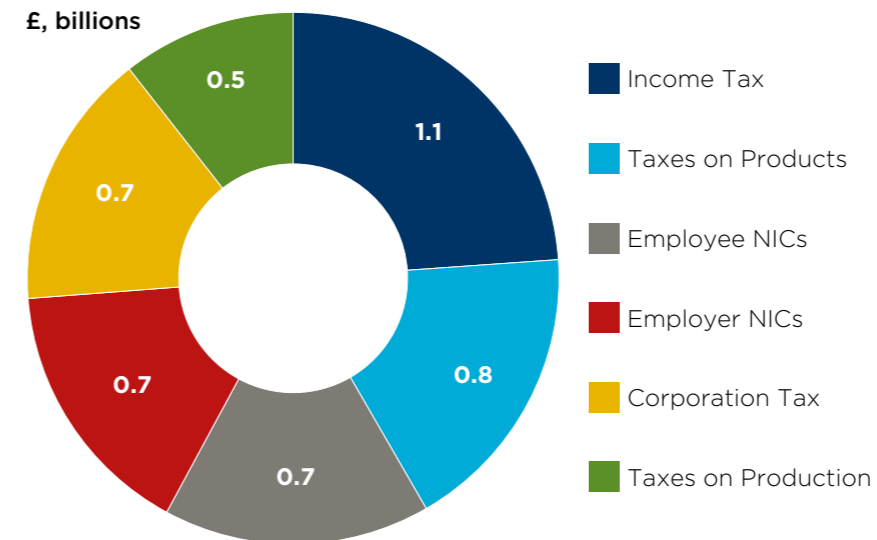
**Fig. 24: STL-linked tourism's total tax contribution, by impact**  
£, billions



Source: Oxford Economics

Tax contributions by STL-linked tourism is made through various channels. Employee associated taxes—income tax and NIC contributions—comprised the largest component, accounting for around 60% of the total tax contribution. However, please note this analysis does not include the VAT paid on goods and services purchased by guests and employees.

**Fig. 25: STL-linked tourism's total tax contribution, by type, in 2021**  
£, billions



Source: Oxford Economics estimates

## CASE STUDY 3: A BREWERY OWNER/OPERATOR IN ST. IVES

Marco has been a resident in St. Ives for 20 years. He founded the St. Ives Brewery 12 years ago.

Since opening the brewery, Marco has observed much change within St. Ives, particularly over the last six to eight years, during which time he has noticed an influx of wealth into the town. While St. Ives boasts a diverse range of visitors, Marco believes the number of high-net-worth visitors has increased dramatically.

He has noticed that the peak travel season is longer than before, and weekend breaks and “minimoons” are now filling up months that were once quiet when Marco first moved to the area. In his experience, both short and long stay visitors tend to spend more per head than would be expected of residents in a similar timeframe.

The growth of tourism to St. Ives has been great for his brewery. Marco says that visitors to the town are much more likely to try new things and therefore tend to buy his brewery’s beer. The additional tourism demand that St. Ives now enjoys outside of the busy summer months has made the brewery much more viable as a business. This increase in trade has helped the brewery to employ more people and give something back to the town that lent the brewery its name. With an expansion of the brewery currently underway, Marco hopes to see many more people join the family.

Roughly 30% of Marco’s beer is sold within St. Ives, with the rest sold within the Cornwall and through the brewery’s online store. It supplies around 100 businesses in the South West of England. This has steadily increased over time. As well as beer, Marco also offers brewery tours from time to time and intends to do more once the expansion is completed.

There has been a huge uptick in small scale brewing over the last dozen years, fuelled by people choosing to drink less quantity and more quality. But Marco has concerns about the ongoing cost of living crisis which will put a squeeze on some visitor spending and believes that some breweries that cannot afford to reduce costs will be pushed out of the market in the coming months and years. Cornwall has seen many breweries come and go over the last 12 years. For Marco and many businesses like his, a healthy tourism industry has never been more valuable.

Indeed, Marco believes that his hometown has an exciting future and is thankful for the visitors that come to spend time and money in St. Ives.



Malcolm McHugh/Alamy, Stock Photo



grahammanly/Shutterstock.com



# 3. THE IMPACT OF STLS ON THE HOUSING MARKET

## 3.1 STLS AS SHARE OF THE HOUSING STOCK

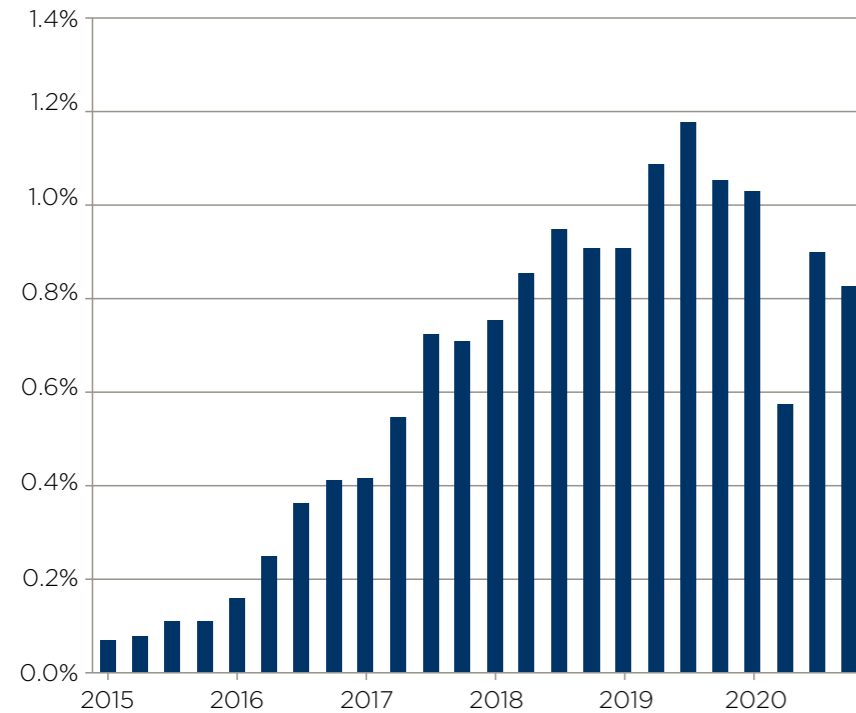
The five years prior to the pandemic saw rapid growth in the stock of STLS in the UK

As noted at the outset of the report, the STL market in the UK has grown rapidly in recent years. That growth in the volume of properties available for short-term let has strongly outstripped the rise in available dwellings to live in, leading to an increase in STL density—the number of STLS as a share of the total housing

stock. As shown in Fig. 26, STL density in the UK typically fluctuates during the year in line with the country’s seasonal tourist patterns, peaking in the summer months. The chart also clearly illustrates that the years leading up to the pandemic trended strongly upwards, with the share of STLS in the UK housing stock increasing from 0.1% in 2015 to an average rate of 1.1% in 2019. This pattern then reversed sharply in 2020, as social distancing restrictions caused a dramatic fall in tourist activity.

Fig. 26: STL housing density in the UK: 2015 Q1 - 2020 Q4

Share of dwellings



Source: Oxford Economics, AirDNA

### Growth was much stronger in rural areas with holiday hotspots in Scotland, Wales, and the South West

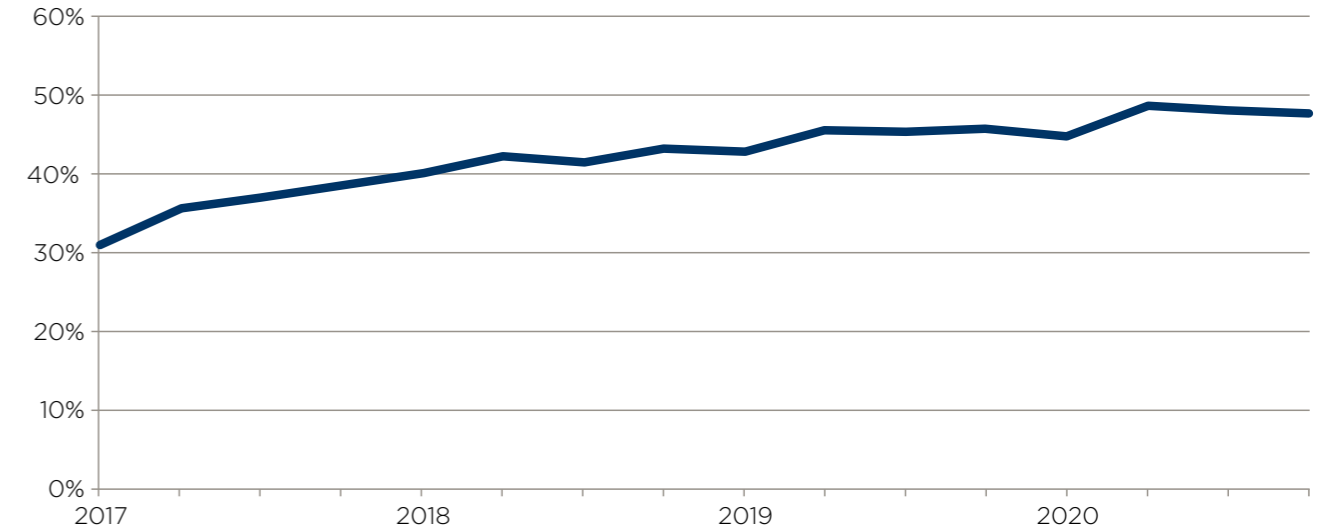
Another notable feature of the market has been that this growth has been disproportionately skewed towards rural areas. As illustrated in Fig. 27, the share of the STL market in rural areas climbed in 2017 and has continued to trend upwards since reaching almost 50% in 2020. This rapid ascent has naturally been fuelled by the growth of the market in many of the UK’s most notable rural tourism hubs in areas such as the Scottish Highlands, the Lake District, Cornwall, and the Pembrokeshire coast.

### And what happened to the UK’s housing market during this period?

In contrast to the very strong trend growth in STL incidence, average house and rental prices in the UK generally displayed a more stable pattern up to the pandemic. As shown in Fig. 29, real house and rental prices grew relatively strongly during 2015 and 2016, a period during which disposable income growth was fairly robust compared to levels seen since the global financial crisis (GFC). Subsequently, up to the pandemic, both house and rental prices broadly stagnated in real terms up to 2020.

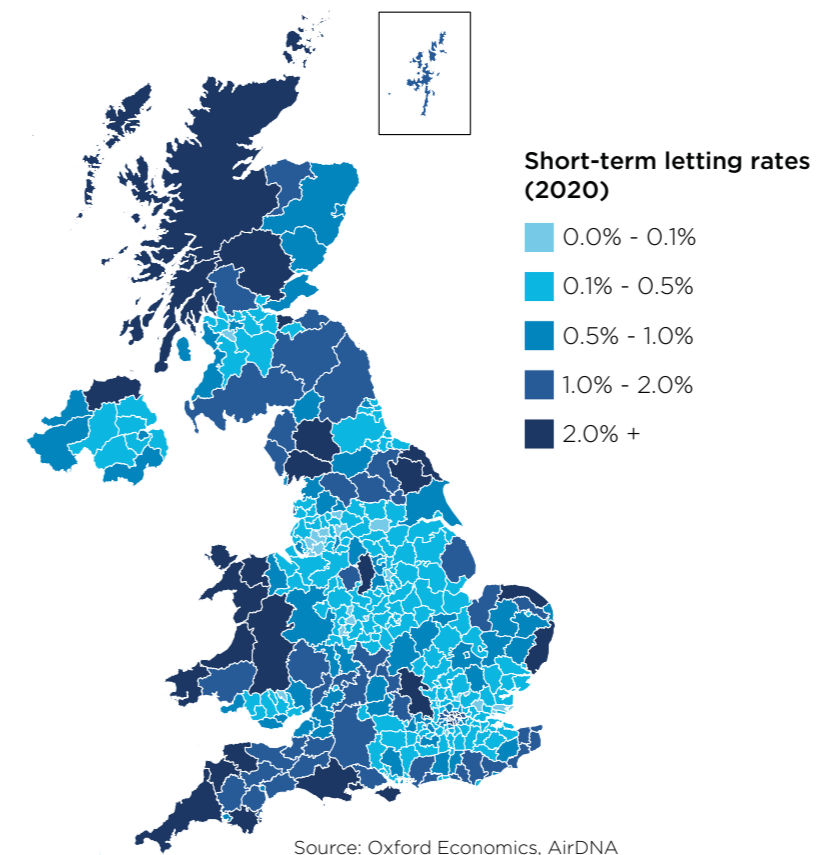
Fig. 27: Share of STL market in rural areas in the UK

Share of STL market



Source: Oxford Economics, AirDNA

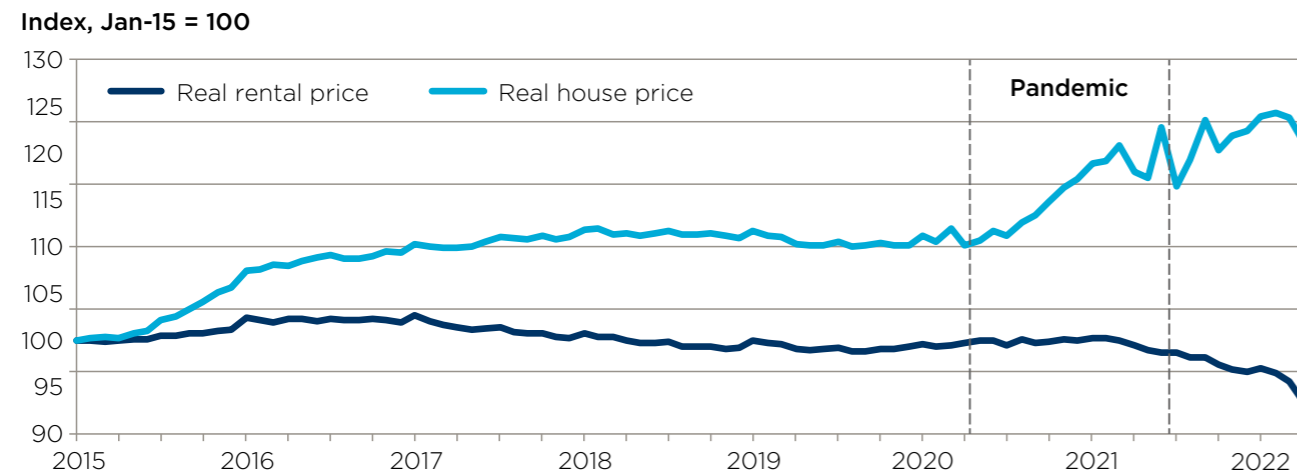
Fig. 28: STL incidence by local authority district in 2020



Source: Oxford Economics, AirDNA

Paradoxically, during the pandemic, the path of these two variables departed markedly. As shown, 2020 and 2021 was a period of turbocharged growth for average sales prices, with buyers tempted into the market by the temporary suspension of stamp duty land tax (SDLT) payments on property values up to £500,000, and a further cut in interest rates. Such an outcome was particularly at odds with the performance of the “real economy” with UK GDP contracting at its steepest rate in modern history. On the other hand, average rental prices continued to stagnate and then trend downwards in real terms with demand much more closely tied to underlying economic performance and being relatively unaffected by these policy measures.

**Fig. 29: UK house and rental price growth: 2015 - 2022**



Source: ONS data, Oxford Economics calculations

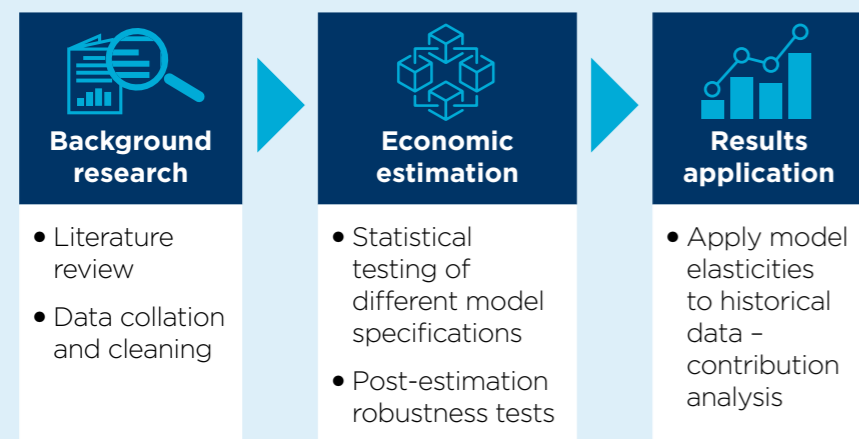
**MODELING THE IMPACT OF STLS ON UK HOUSING AFFORDABILITY—A QUICK GUIDE**

To assess how the growth of the STL market has affected the affordability of UK housing we have employed a three-step approach as illustrated in Fig. 30.

More detailed information on our methodological approach can be found in Appendix Two of this report. In summary,

- First, we undertook a set of background research tasks that informed our approach and laid the foundation for subsequent work. This included a detailed review of available literature and the collection and cleaning of various datasets that were required for our econometric modelling work.
- Next, we used this dataset to estimate an econometric model which aimed to explain variation in house and rental prices—both between different locations and over time—based on a set of economic drivers. As part of this we used data on STL incidence, as described, to test the hypothesis that by restricting available supply, the growth of the STL market has pushed up house and rental prices.
- Finally, we applied the results from the econometric model which describe the marginal impact of each driver to the observed changes in each variable. In so doing, we quantify the share of house/rental price growth between 2016 and 2019 that can be attributed to increases in STL incidence and other economic factors.

**Fig. 30: Three-step research approach**



**3.2 THE IMPACT OF STL INCIDENCE ON UK HOUSING AFFORDABILITY IN THE UK**

**3.2.1 House prices**

**In the five years leading up to the pandemic the growth of STL incidence had a negligible impact on UK house prices**

The econometric analysis shows that at the UK level, a 10% increase in STL density increases house prices by 0.25%. Between 2015 and 2019, the average house price increased by 8.1% in real (inflation-adjusted) terms and our modelling implies that less than one-tenth of this increase or 0.6 percentage points was attributable to the rapid growth of the STL market

during this period. According to ONS data, the average UK house price in 2019 equalled £230,600, implying that the impact of the increase in the incidence of STLs during this period was to push up the average sales price by just over £1,300 (or just £325 per year).

Our model not only isolates the role of STL incidence but can also be used to identify and size the contribution of other drivers (positive and negative). The full breakdown is illustrated in Fig. 31. This demonstrates that much more quantitatively significant causes of observed UK house

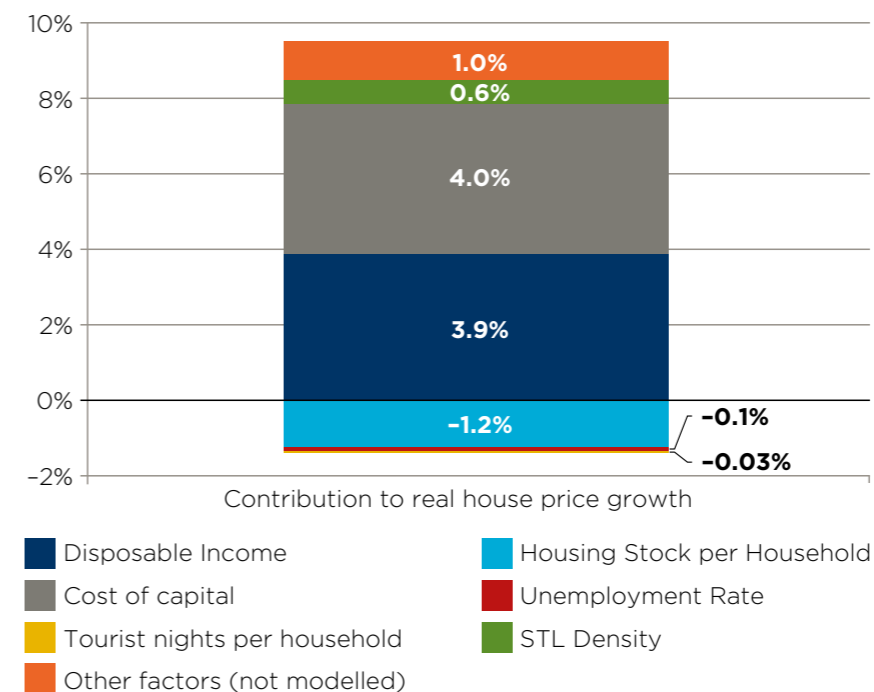
price inflation between 2015 and 2019 were the increase in the average level of household disposable income, which boosted real house prices by 3.9%, and the steady decline in mortgage interest rates which helped to ease the burden of financing requirements and pushed up prices by a further 4.0%.

**The impact was proportionately larger in rural areas but still relatively modest in aggregate**

Our analysis clearly demonstrates that at a national level, the impact of STL growth on real house prices has been negligible. Our approach also allows us to explore how this relationship varied within the UK.

Our analysis suggests that house prices in rural areas are both more sensitive to the growth of the STL market and, as described, STL incidence increased more rapidly, on average, in the build-up to the pandemic. Combined, these factors mean that the contribution of STL growth to house price inflation was almost twice as large in rural areas (1.1%) compared to the UK overall.

**Fig. 31: Breakdown of drivers contributing to UK real house price growth: 2015 - 2019**



Source: Oxford Economics estimate

Fig. 32 provides a similar overall breakdown of growth for rural areas between 2015 and 2019. Overall, the average sales price, after adjusting for inflation, increased by 7.6% during this period in rural local authority districts (LADs). Our modelling indicates, therefore, that just under one-seventh of this rise could be attributed to the increase in STL incidence, with disposable income growth and cheaper mortgage credit again identified as more significant drivers.

**Meanwhile the impact of STLs on house prices varied little between the British nations**

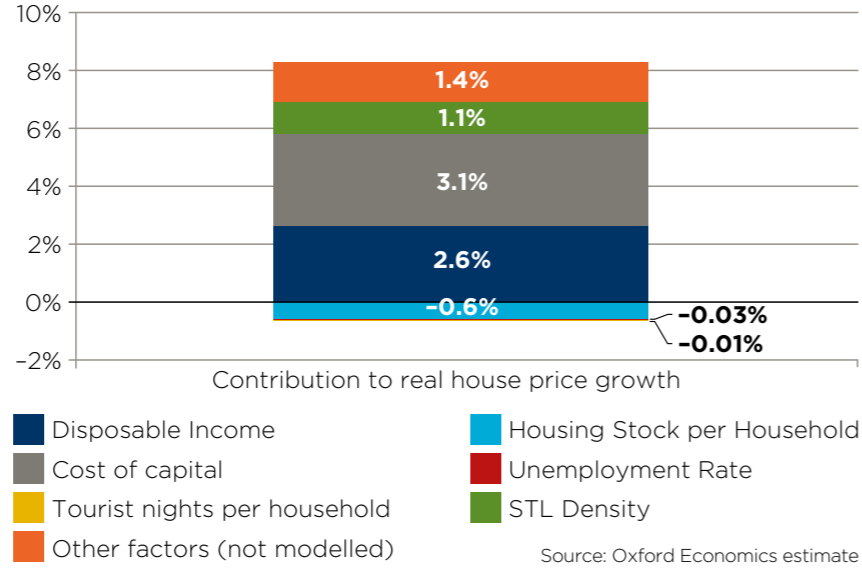
Similarly, we also assessed the impact of STL density on house prices varied England, Wales and Scotland. As illustrated in Fig. 33, our modelling indicates that this was very comparable with STL density found to have pushed up real house prices by 0.3% in England, 1.0% in Scotland, and 0.7% in Wales<sup>10</sup>.

**3.2.2 Rental prices**

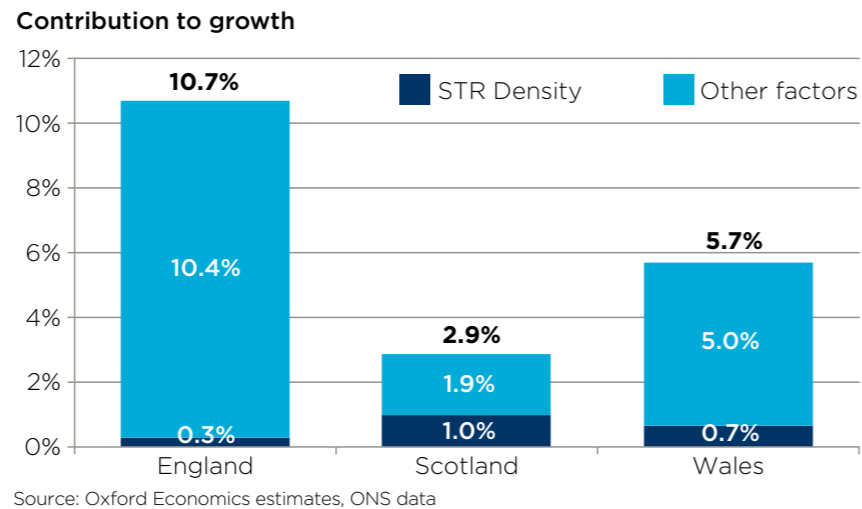
**The national impact of STLs on rental affordability was similarly modest**

Repeating this modelling approach but switching our focus to rental prices painted a similar picture as depicted in Fig. 34. Our modelling found that a 10% increase in STL density raised rental prices by 0.1%. Overall, we find that the growth of STL density between 2015 and 2019 resulted in UK rental prices being 0.7% higher

**Fig. 32: Breakdown of drivers contributing to UK real house price growth in rural areas: 2015 - 2019**



**Fig. 33: Contribution of STL density to house price growth in British nations**

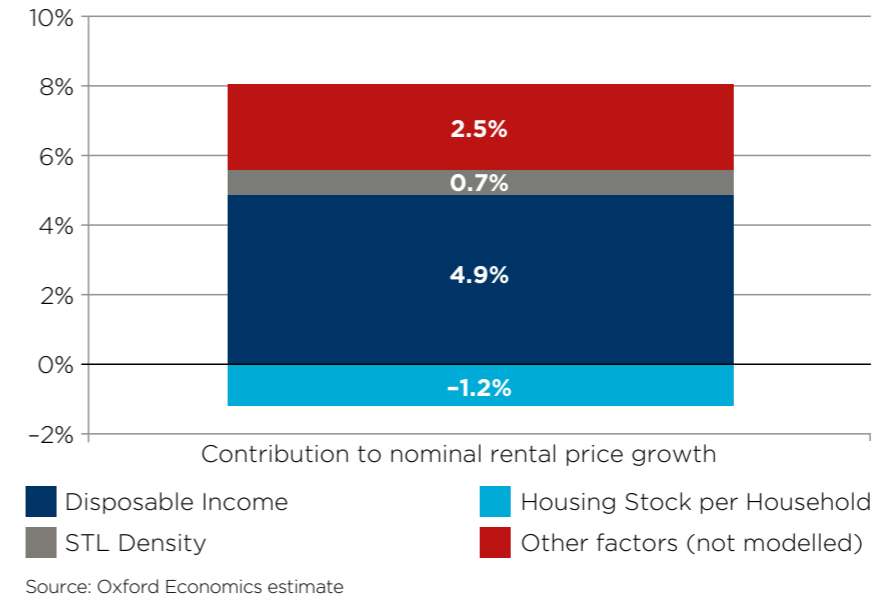


than they would otherwise have been, equivalent to just over 11% of the overall increase in this period.

Data availability precludes the more granular regional analysis produced in the previous sub-section for house prices.

Nevertheless, our modelling suggested that the contribution of STL density in London (0.2%) was lower than in the UK overall, consistent with the finding that the impact of STLs on house prices has been proportionately greater in rural compared to urban areas.

**Fig. 34: Breakdown of drivers contributing to UK nominal rental price growth: 2015 - 2019<sup>11</sup>**



**3.3 PUTTING THESE NUMBERS IN CONTEXT**

The topic of housing affordability, and the associated consequences for intergenerational inequality, has been a source of concern for policymakers for some

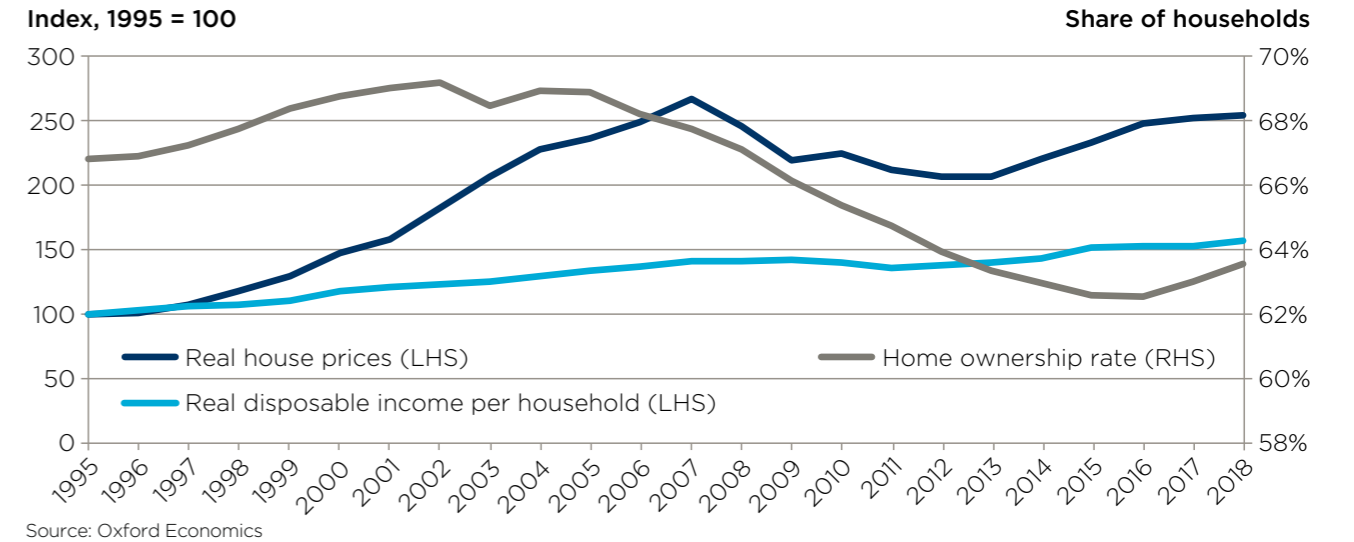
time. As shown in Fig. 35, house prices have outpaced income growth for a sustained period, which long pre-dates the boom in the STL market, a trend that has

eventually translated into a steady decline in the rate of home ownership.

The reasons for this are likely many and varied including new regulations imposed after the GFC which had a disproportionate effect on credit access for first-time buyers (FTBs), restrictions on the supply side of the market that have slowed the pace of housebuilding, and differences in earnings growth for FTBs compared to existing homeowners.

In this context, our modelling results demonstrate that at most, the STL market has marginally exacerbated a more chronic underlying problem. Although we have been able to provide some regional disaggregation, our modelling approach does not lend itself to providing insights at a hyper-local level.

**Fig. 35: UK house price and disposable income growth and home-ownership rates**



<sup>11</sup> For our rental price model, we decided to use nominal (rather than real) rental prices as the dependent variable. This choice reflected the fairly unusual performance of average rental prices during this period which declined in real terms despite steady increases in real disposable income per household (typically found to be the key driver of rental prices). Further discussion and justification for this modelling choice can be found in Appendix 2 of this document.

### 3.4 THE IMPACT OF STL GROWTH ON HOUSING AVAILABILITY

Although the primary focus of this report has been to investigate the impact of the growth of STLs on housing affordability, there has been much focus and discussion on the related issue of its impact on housing availability. In this section, we use data from AirDNA to describe trends in this context.

At the outset it is important to acknowledge some of the limitations of the data in this regard. The listings on AirDNA combine three types of STL listing:

1. **Entire place:** defined as a listing where guests have the entire house to themselves.
2. **Private room:** defined as a listing where guests have their own private room for sleeping but share common areas.
3. **Shared room:** defined as a listing where guests sleep in a bedroom or a common area that could be shared with others.

Given that concerns related to availability are linked to instances where houses are being effectively taken out of the stock of housing that could be purchased or rented by locals, it is logical to assume that category (2) and (3) listings are of limited relevance. For this reason, we have excluded these from the statistics presented in the remainder of this section.

A second key point to understand is that existence of a listing, even for an 'entire place', need not imply that the market has had any impact on the local effective housing stock. It is well documented that the rise of the platform

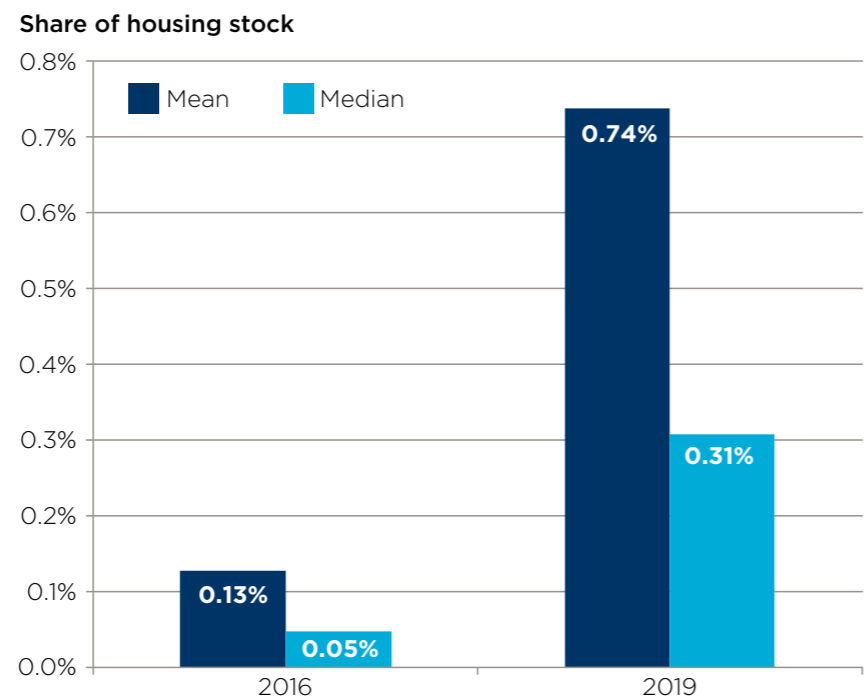
economy in this market has led to significant growth of what might be described as more 'occasional hosts' who let out their properties during periods when they are temporarily absent e.g., because they have gone on holiday. Clearly this type of activity has no impact on housing availability, but it cannot be disaggregated from our dataset.

Even with this important caveat, the AirDNA data can provide useful indicative information related to the potential scale of the impact. Mapping STL listing data to the relevant local authority district (LAD) area indicates that the share of entire home

listings in a typical LAD rose from 0.05% in 2016 to 0.31% in 2019 (given the evidence presented in chapter two this can be expected to be broadly representative of current conditions). This demonstrates that, in much of the UK, the impact of STLs on housing availability has not been meaningful. As illustrated in Fig. 36, however, the average (mean) share is more than double the median value highlighting that there is considerable variation across the UK. For example, ranking

LADs according to the 2019 data shows that in the top 10, entire home listings as share of the local housing stock averaged 5.2% or more than one-in-20 properties. LADs where the entire home listing share is highest are concentrated in predominantly rural communities and in some of the most affluent areas of London. Without more data and a more sophisticated modelling approach, it is not possible to assess the impact of STL growth on housing availability in these areas.

**Fig. 36: Entire home STL listings as a share of LAD housing stock**



Source: Airdna data, Oxford Economics analysis



## 4. CONCLUSION

This research has presented compelling evidence that the STL industry in the UK matters for the economy. Its footprint is material and, since a brief pause induced by the pandemic, seems set to continue to increase. Moreover, as described in chapter two, the relative importance of the STL market is proportionately largest in regions of the UK with lower-than-average levels of household income, providing a vital source of economic vitality in what is clearly, currently, an extremely challenging environment.

Strong growth of any market typically attracts the scrutiny of regulators and, more often than not, represent legitimate concerns related to external economic and social effects. In the context of the STL market, the most prominent of these include<sup>12</sup>:

1. The impact on the affordability and availability of housing for residents, particularly in holiday hotspot rural areas where social housing lists have lengthened in recent years, coinciding with the growth of the STL market.
2. The impact on the lived experience of residents in areas where the STL market has become more prevalent linked to issues associated with excessive noise and other types of anti-social behaviour.
3. The failure of hosts to properly abide by relevant health and safety regulations with knock-on effects for guests.

Our modelling work indicates that, nationally, the impact of the growth of STLs on housing affordability has been minimal. Moreover, digging down as far as data will allow indicates that this finding is consistent across rural and urban areas. As stated, the aim of our report is not to assess the potential size of social costs associated with the various other channels.

Appropriately balancing the interests of different stakeholders and anticipating and guarding against the potential for unintended consequences are crucial to good regulatory design. The determination of the point is the responsibility of the Government, but the second can be usefully informed by robust quantitative evidence as produced in this research. The results from our footprint modelling work, therefore, provide a useful guide to policymakers who are seeking to weigh up the potential social and economic trade-offs associated with new regulations.



# 5. METHODOLOGICAL APPROACH: ECONOMIC FOOTPRINT MODELLING

## OVERVIEW OF INPUT-OUTPUT MODELLING APPROACH

Indirect and induced impacts are estimated using an “input-output” model. This type of model sets out the goods and services that UK industries purchase from one another in order to produce their output (as well as their purchases from abroad). These tables also provide detail on the spending patterns of UK households, and indicate whether this demand is met by UK production, or imported products. In essence, the tables show who buys what from whom. Fig. 37 below demonstrates a stylised input-output model.

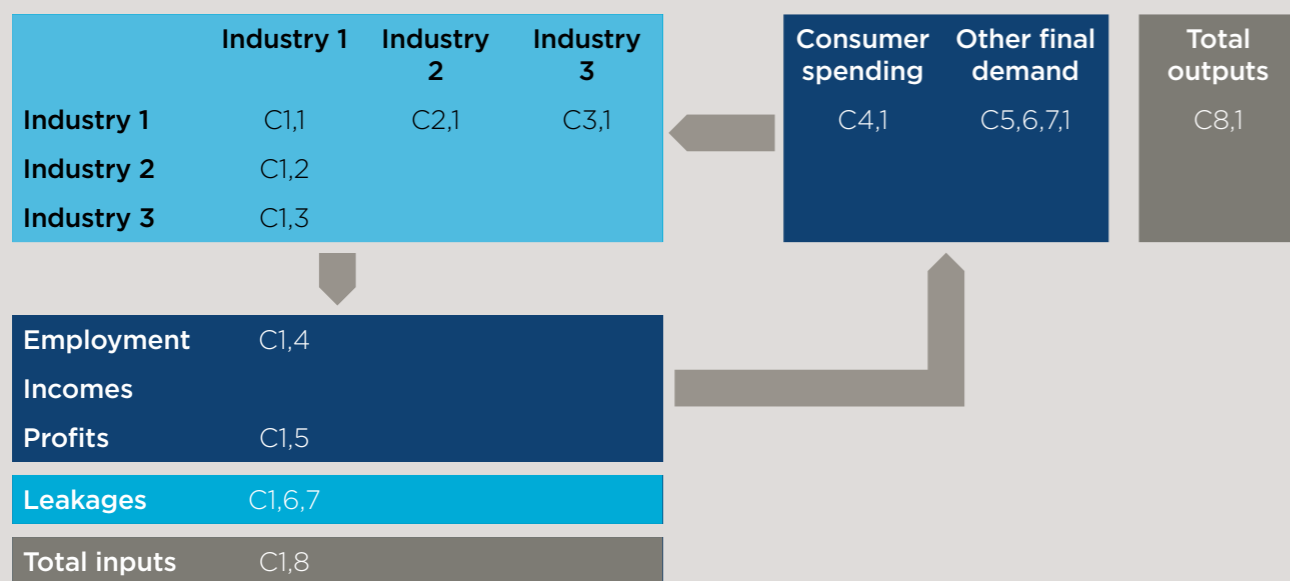
Using details of these linkages from the input-output tables, Oxford Economics constructed a bespoke UK impact model which traces the intermediate consumption impact, and capital good consumption impact, attributable to STL-linked visitor activity (this is known as the Leontief manipulation). This impact model quantifies all rounds of subsequent purchases along the supply

chain. These transactions are translated into GDP contributions, using UK-specific ratios of gross value added (GVA) to gross output, sourced from the UK input-output table.

Once we have obtained results for output and GVA, we estimate employment using productivity estimates. The calculation of the induced impacts is a discrete element of the model and incorporates the impact of STL visitor spending on purchases labour costs and final household consumption.

Indirect and induced impacts at the regional level were estimated using regional input-output models developed by Oxford Economics. These input-output models work in the same way as the national-level input-output model described above. However, they also incorporate inter-regional trade flows, which were estimated using regional national account data.

Fig. 37: A simplified input-output model



# 6. METHODOLOGICAL APPROACH: ECONOMETRIC MODELLING

## ECONOMETRIC APPROACH

We used a two-stage analysis to estimate the contribution of each driver of house price and rental prices, including the incidence of STLs. The first stage involves using econometric analysis to estimate the sensitivity of each driver to house price/rental price growth or in economics jargon the ‘elasticity coefficient’. The regression coefficient is used to proxy the sensitivity of house price/rental price to changes in the drivers. In the second stage, we use the change in the value of each driver alongside the estimated regression coefficients to estimate the absolute contribution during the modelling horizon period. This appendix describes both stages in detail.

Given that the data is organised across regions and over time, the model needed to be estimated in a panel data modelling framework. The following estimation approach were considered: pooled OLS; Random Effect (RE); Fixed Effect (FE); System Generalized Method of Moments (S-GMM); and Difference Generalized Method of Moment (D-GMM).

Pooled OLS and RE are the least robust of our selection of estimators. Unlike FE they are biased in the presence of individual specific fixed effects which are correlated with both the independent and the dependent variable. The FE estimator assumes that the only form of persistence over time is that of the country specific fixed effect. This may not hold in the case where unobserved shocks may persist over time. Given the persistent nature of both house and rental prices, serial correlation of this form would cause bias in our FE estimator. We, therefore, tested for residual serial correlation using the Wooldridge test. Since this test has as null-hypothesis that there is no first-order serial correlation and this null-hypothesis was rejected at the 1% level, our panel data has serial correlation. This suggests that a dynamic model might be adequate.

## DATA

We used regional data for the UK at local authority (LA) levels on a quarterly basis for the years 2015 to 2020. We use a range of data for the model and the source for each is summarised in Fig. 38.

All data, except for rental prices, were converted to local authority level using regional mapping data from the ONS.

Fig. 38: Data Sources

Variables	Disaggregation	Sources
Short-term lettings	Local Authority aggregated from postcode level data	AirDNA <sup>13</sup>
House price	Local Authority	Office for National Statistics (ONS)
Rental price	NUTS 1	Office for National Statistics (ONS)
Housing stock	Local Authority	ONS, NISRA, Gov.Scot
Number of households	Local Authority	Oxford Economics Databank
Unemployment	Local Authority	Office for National Statistics (ONS)
Disposable Income	Local Authority	Oxford Economics Databank
Cost of capital	UK level	Oxford Economics Databank
Tourism nights	NUTS 1	VisitBritain.org
CPI	UK level	Oxford Economics Databank

<sup>13</sup> Short-term lettings as measured by the count of Airbnb and HomeAway listings that were advertised for rent or had a booked day.

A dynamic model, which includes the lagged dependent variable an independent variable, will suffer from endogeneity and may suffer from Nickell bias. This bias can be remedied using the S-GMM or D-GMM estimators available as they may deal with the joint problem of serial correlation in the error term and endogenous country specific fixed effects.

After running Hansen's J-test of overidentifying restrictions and the Arellano-Bond test for AR(2) in first differences of the residuals we conclude that the D-GMM is preferred to the S-GMM modelling approach for both the house price and rental price models.

#### MODEL SPECIFICATION AND RESULTS

Based on an in-depth literature review, the chosen model specification for the house price and rental price models were as follows:

$$\ln(\text{House price}_{it}) = \alpha + \beta_1 \ln(\text{House price}_{it-1}) + \beta_2 \ln(\text{Income}_{it}) + \beta_3 \text{Dwellings per HH}_{it} + \beta_4 \text{Unemployment rate}_{it} + \beta_5 \text{Cost of capital}_{it} + \beta_6 \ln(\text{Tourism proxy}_{it}) + \beta_7 \ln(\text{Short term lettings}_{it}) + \text{Local authority FE} + \varepsilon_{it}$$

$$\ln(\text{Rental price}_{it}) = \alpha + \beta_1 \ln(\text{Rental price}_{it-1}) + \beta_2 \ln(\text{Income}_{it}) + \beta_3 \text{Dwellings per HH}_{it} + \beta_4 \ln(\text{Short term lettings}_{it}) + \text{RegionFE} + \varepsilon_{it}$$

where  $\ln$  denotes natural logarithm,  $\alpha$  denotes the constant,  $\varepsilon$  denotes the error term, and  $i$  and  $t$  represent the local authority and time respectively.

The results for the two models using various estimation approaches as discussed above are given in Fig. 39 and Fig. 40, respectively. For both models, the D-GMM approach is the preferred model as it passes all the key tests (Nickel bias, Sargan and Hansen tests). The models are estimated using all the UK regions.

A dynamic panel model offers various advantages over traditional econometric model in the sense that it accounts for the persistence of the outcome variable. It also allows estimation of the long-run coefficients for the explanatory variables as well as the contemporaneous or short-run ones. Dynamic panel data model also control for endogeneity of both the lagged dependent variables and the endogenous regressor without the need of finding instruments. Lagged values are used as instruments to ensure that the estimated coefficients are consistent.

The rental model is less robust than the house price model due to data limitation as we only have data for 12 regions for a maximum of 20 quarters. As a result, we marginally fail the nickel bias, but the coefficient of STL is consistently estimated at an average of 0.002 in the long run across all the models ran. This gives us confidence that the contribution of STL in rental price is robustly estimated.

Fig. 39: House price model results for the UK

House prices	Static OLS	Static FE	Dynamic OLS	Dynamic FE	S-GMM	D-GMM
House prices (t-1)	-	-	0.996***	0.779***	0.98***	0.85***
Income	-0.45	-1.08***	-0.07**	-0.30***	-0.44***	0.69**
Dwellings per HH	10.35***	0.32	-0.32**	-0.23	0.094	-2.08*
Unemployment rate	-0.17***	-0.006***	-0.001***	-0.002***	-0.003***	-0.002**
Tourism proxy	0.21***	0.004***	0.003***	0.017***	0.009***	0.017***
Cost of capital	0.51***	0.028***	-0.025***	0.023***	0.048***	-0.06**
STL	0.057***	0.015***	-0.002***	0.001**	-0.004***	0.0025*
Constant	13.52***	12.39***	0.052***	2.76***	0.27***	-
Local authority FE	No	Yes	No	Yes	Yes	Yes
# of observations	7021	7021	7021	7021	7021	6649
Robustness Tests						
Ramsey test	Failed	-	-	-	-	-
Nickel Bias	-	-	Failed	Failed	Passed	Passed
Sargan test	-	-	-	-	Failed	Passed
Hansen test	-	-	-	-	Failed	Passed

\* Significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level.

Fig. 40: Rental price model results for the UK

Rental price	Static OLS	Static FE	Dynamic OLS	Dynamic FE	SGMM	DGMM
Rental price (t-1)	-	-	0.71***	0.503***	0.453***	0.78***
Income	-0.01	-0.021	0.002	-0.005	0.03**	0.17***
Dwellings per HH	0.46**	-0.65	0.08	-0.33*	0.02	-0.42**
STL	0	0	0	0	0	0.001*
Constant	0.004***	0.004***	0.001***	0.002***	0.002***	-
Region FE	No	Yes	No	Yes	Yes	Yes
# of observations	246	246	246	246	246	233
Robustness Tests						
Ramsey test	Failed	-	-	-	-	-
Nickel Bias	-	-	Failed	Failed	Failed	Failed
Sargan test	-	-	-	-	Passed	Passed
Hansen test	-	-	-	-	Passed	Passed

\* Significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level.

We have also investigated the impact of STL on house price and rental price varies across regions. We found small variation in the coefficient of STL in the house price model, with the highest impact being in Scotland and the lowest in UK rural areas and England.

**Fig. 41: Regional effect of STL**

Effect of STL on:	UK	Rural	England	Scotland	Wales	London
House price	0.003*	0.002*	0.001*	0.004*	0.003	n/a
Rental price	0.001**	n/a	n/a	n/a	n/a	0.001

\* Significant at 10% level, \*\* significant at 5% level, \*\*\* significant at 1% level.

### CONTRIBUTION ANALYSIS

The contribution of each driver in determining house and rental prices is calculated using the estimated coefficient and the observed change in the variable over the period for which the models were estimated. For the analysis, given that the short-term letting data is available from 2015 onwards, we calculate the contribution for the period 2015 to 2019. We did not extend the analysis to 2020 because of the distortions in the data caused by the pandemic. For Wales and Scotland, we started the contribution analysis in 2016 because there were very little amount short term lettings properties available on the market in 2015.

The formula to calculate the contribution depends on whether the variable is natural logarithm or not in the regression. To illustrate, let's consider the house price equation where disposable income is in natural logarithm while cost of capital is not.

The contribution of variables in natural logarithm (say, disposable income) in house price for the period 2015 to 2019 is given as the percentage change in income between 2015 and 2019 multiplied by the regression coefficient ( $\beta_2$ ). Change in income is calculated using difference in logs.

Due to data limitations in the rental model, we only check for variation in London and the rest of UK. We did not find any significant difference in the coefficient for London.

$$\text{Contribution of Income}_{2015-2019} = \beta_2 \times \% \text{ change in income}_{2015-2019}$$

The contribution of variables not in natural logarithm such as cost of capital in the house price model is calculated as the coefficient multiplied by 100 and multiplied the change in cost of capital between 2015 and 2019 (as opposed to the percentage change).

$$\text{Contribution of cost of capital}_{2015-2019} = \beta_5 \times 100 \times \text{change in cost of capital}_{2015-2019}$$

The calculated contributions for house price and rental price for all the regions are given in Fig. 42 and Fig. 43, respectively. The large residual (factors not modelled) in the rental price model is a result of limited data as explained above and, consequently, not all factors affecting rental price could be included in the model.

**Fig. 42: Contribution of changes in house price**

	UK	UK Rural	England	Scotland	Wales
Changes in real house price	8.1%	7.6%	8.4%	2.9%	5.7%
Contribution of:					
Disposable Income	3.9%	2.6%	6.9%	2.2%	2.9%
Housing Stock per Household	-1.2%	-0.6%	-2.7%	-0.7%	1.5%
Cost of capital	4.0%	3.1%	6.3%	4.0%	2.5%
Unemployment Rate	-0.1%	0.0%	-0.1%	-0.2%	-0.1%
Tourist nights per household	0.0%	0.0%	-0.1%	0.3%	-0.1%
STL Density	0.6%	1.1%	0.3%	1.0%	0.7%
Other factors (not modelled)	1.0%	1.4%	-2.3%	-3.8%	0.4%

**Fig. 43: Contribution of change in rental prices**

	UK	London
Changes in Rental Price	6.9%	5.1%
Contribution of:		
Disposable Income	4.9%	9.1%
Housing Stock per Household	-1.2%	-2.2%
STL Density	0.7%	0.2%
Other factors (not modelled)	2.5%	-2.0%



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