NICRE
National Innovation Centre
Rural Enterprise

Infrastructure and networks: rural enterprises and the Levelling Up agenda

State of Rural Enterprise Report

No 2, May 2022

Contents

We are the National Innovation Centre for Rural Enterprise, a unique hub of innovation and research excellence working with a network of national and local partners.

We collaborate, research and co-design ideas and solutions to foster rural enterprise and unlock the potential in the UK's rural economies.

Executive summary

This report presents findings of a survey of **over 4,000 businesses** across three English regions – the North East, the South West and the West Midlands. It is intended to **provide an assessment of the ways in which rural and urban enterprises experience a range of local infrastructure factors**, including public services and digital connectivity, **and we compare their connections to business networks and community links.**

The survey, conducted between June and August 2021, covered both farm and non-farm rural businesses as well as a comparison sample of urban businesses. This report concentrates on the findings for non-farm businesses (3,526 firms).

Within rural areas we distinguish between enterprises in three types of rural locations (town and fringe, villages, hamlets and isolated dwellings) and find strong differences between rural and urban enterprises' perceptions of the quality of their local infrastructure and services.

Overall, 34% of rural enterprises judged their broadband quality to be 'poor' or 'very poor', compared to 20% of urban enterprises. Rural businesses in our sample were almost twice as likely as urban businesses (36% vs 19%) to rate their transport infrastructure as 'poor' or 'very poor'. Public transport was rated 'poor' or 'very poor' by 57% of rural firms and 21% of urban firms. 49% of rural firms judged the availability of affordable housing in their local area to be 'poor' or 'very poor', compared to 30% of urban firms. And similar proportions of rural firms gave their local basic services (e.g., banks and post offices) the lowest ratings, with 50% judging them 'poor' or 'very poor' compared to 30% of urban firms.

We use statistical models to explore the strength of the relationship between the different elements of infrastructure and measures of resilience.

The findings highlight the singular importance of local broadband quality to business resilience during the Covid-19 pandemic. Higher quality local broadband was associated with a 5.3 to 6.3% increase in the likelihood of being a resilient rural firm. However, while high quality broadband is the most consistently significant of the infrastructure indicators, with more immediate impacts on resilience for rural enterprises, our analysis also points to other structural factors which have a role to play in enabling long term adaptation and development of rural business, including transport infrastructure, public transport, affordable housing provision and availability of basic services. This evidence highlights the importance of addressing the full breadth of rural infrastructure deficits in the Levelling Up agenda.

Some obstacles to business development are felt particularly keenly in rural villages and more isolated areas. This applies to broadband quality, provision of public transport, and transport infrastructure. The level of these problems (e.g. a quarter of businesses located in hamlets and isolated dwellings describe their broadband quality as 'very poor') is often masked in previous national surveys of businesses and official statistics (e.g. Ofgem). Affordable housing and poor access to services (e.g. banks, post offices) is a widespread problem across different types of rural settings, and may impact on the ability of businesses to attract and retain employees.

We observe different patterns of business connections among rural and urban enterprises, with rural firms in villages and hamlets and isolated dwellings less likely to report that they know, interact with and feel supported by, other businesses. We also observe variations in community links, and on the reported benefits of such links, depending on the location of the firm, with rural firms in villages and rural town and fringe locations more likely to have supported community social and environmental activities than those in more isolated areas.

Our data also suggest material differences between the three English regions in which we conducted our study, emphasising stronger urban-rural contrasts in the North East than either the West Midlands or South West. For example, North East rural firms were more likely than their urban counterparts to report connections to other businesses. They were also more likely to report benefits of social, environmental and community engagement, including better employee retention, and improved employee skills, than urban firms.

Overall, the report highlights significant variation in experiences of **infrastructure, business and community connections** among rural compared to urban enterprises, with variation amplified in certain rural locations. The findings highlight the need for a **flexible and nuanced approach** to policies and interventions aimed at addressing enterprise and economic development, informed by a more differentiated understanding of the infrastructure challenges that enterprises experience across rural areas. Taking into account **differences within rural areas** is as important as rural and urban comparisons in understanding the experiences of rural businesses.

1. Introduction

Current uncertainties mean that **business resilience** – the ability to adapt and rebound strengthened from a crisis - is of heightened interest to a range of **stakeholders** including business leaders, policymakers and support agencies.

Prior research has linked various factors with business resilience, some of which are associated with the business' environment and location, and which are often related to the availability of key resources. This suggests that where a business is located may have material implications for its ability to access key resources which may help it to bounce back from a crisis. However, research has not extended to an investigation of the broader environmental and locational factors associated with rural enterprises which may have a bearing on their ability to survive adversity and flourish. Given that enterprises located in rural areas of the UK account for around one quarter of all UK businesses, addressing this gap in knowledge has implications for many firms and the agencies that support them.

This second report in the NICRE State of Rural Enterprise series draws on data for over 3,500 businesses collected in 2021 to explore differences in local environmental resources as experienced by rural and urban firms. It follows our first report in January 2022 about the effects of the Covid-19 pandemic on rural businesses.

We compare how rural and urban firms experience a range of local infrastructure factors, including public services and digital connectivity. We also compare their connections to business networks and their community links. Our analysis extends beyond simple rural and urban comparisons to include firms in different types of rural locations. We cover three rural location types – town and fringe, villages, and hamlets and isolated dwellings. These comparisons allow

us to identify differences between firms based in rural and urban areas, but also between rural areas in terms of the resources that enterprises can access, and to draw out implications for the Levelling Up agenda. We also focus on the link between these factors and business resilience.

The population of interest in the NICRE Rural Enterprise Survey is private sector for-profit and not-for-profit businesses employing at least one person. It is first and foremost a rural business survey. We also include data from a reference sample of urban businesses which allows us to provide an initial comparison between rural and urban enterprise at different points in the report. The survey covered 4,055 businesses in total, made up of 2,666 rural non-farm businesses, 860 urban non-farm businesses and 529 farms.

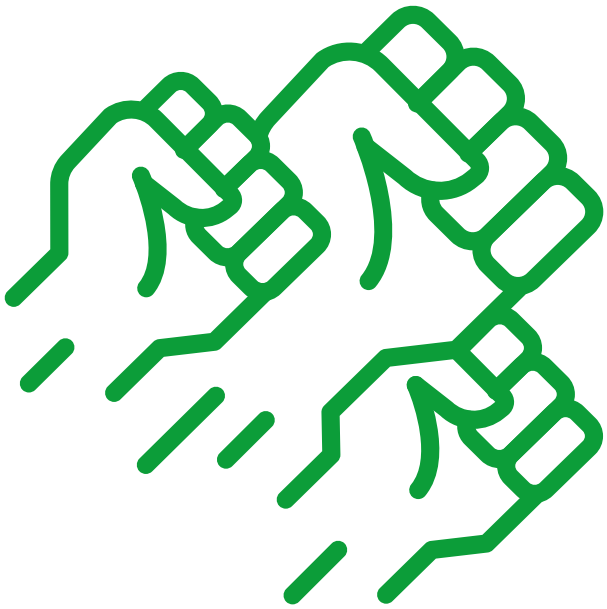
We surveyed 1,284 businesses in the North East, 1,383 in the West Midlands and 1,388 in the South West. Table 1 provides an overview of the sample. The survey was conducted using Computer Assisted Telephone Interviewing (CATI), which has proven to be the best means of reaching the appropriate personnel within a business. Interviews were conducted between June and August 2021. As the sample was weighted by firm size, responses are weighted to give regionally representative results for the rural and urban business populations. The weighting process and description of the sample characteristics are set out in Appendix A. The analysis in this report excludes farms.

Table 1: Numbers of interviews for rural vs urban and by region

	All regions	North East	South West	West Midlands
Total	4055	1284	1388	1383
Rural	2666	875	900	891
- Town	1032	462	334	236
- Village	696	193	257	246
- Hamlets	938	220	309	409
Urban	860	280	288	292
Farms	529	129	200	200

Note: The NICRE Rural Enterprise Survey included both farms and non-farms. However, within the scope of this report, we excluded farms from the analysis.

2. Business resilience



We now turn to **data** which offers insight into the resilience of respondent businesses. We focus on three key measures of **business resilience**: change in turnover, whether the enterprise generated a profit or surplus, and change in cash reserves.

Figures 1 to 3 detail these three key performance metrics respectively, in the year prior to the survey, a year strongly impacted by the Covid-19 pandemic. Figure 1 shows the change in turnover reported by rural and urban firms in the previous 12 months, and suggests that overall, rural firms were more likely to have reported an increase in turnover, but that this varied considerably by region. West Midlands rural firms were considerably more likely than their urban counterparts to have increased turnover, while in the North East, a greater proportion of urban firms reported an increase.

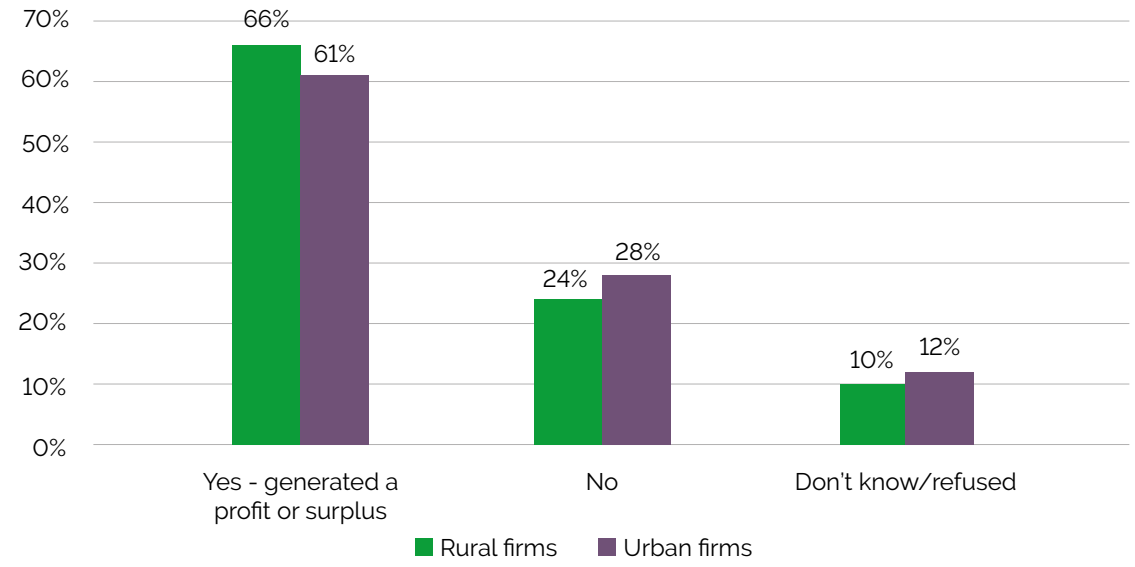
Overall, as shown in Figure 2, a similar proportion of rural and urban firms generated a profit or surplus over the same period. While there was little variation by size of firm, we observe some considerable differences between sectors reflecting the impact of the Covid-19 pandemic,

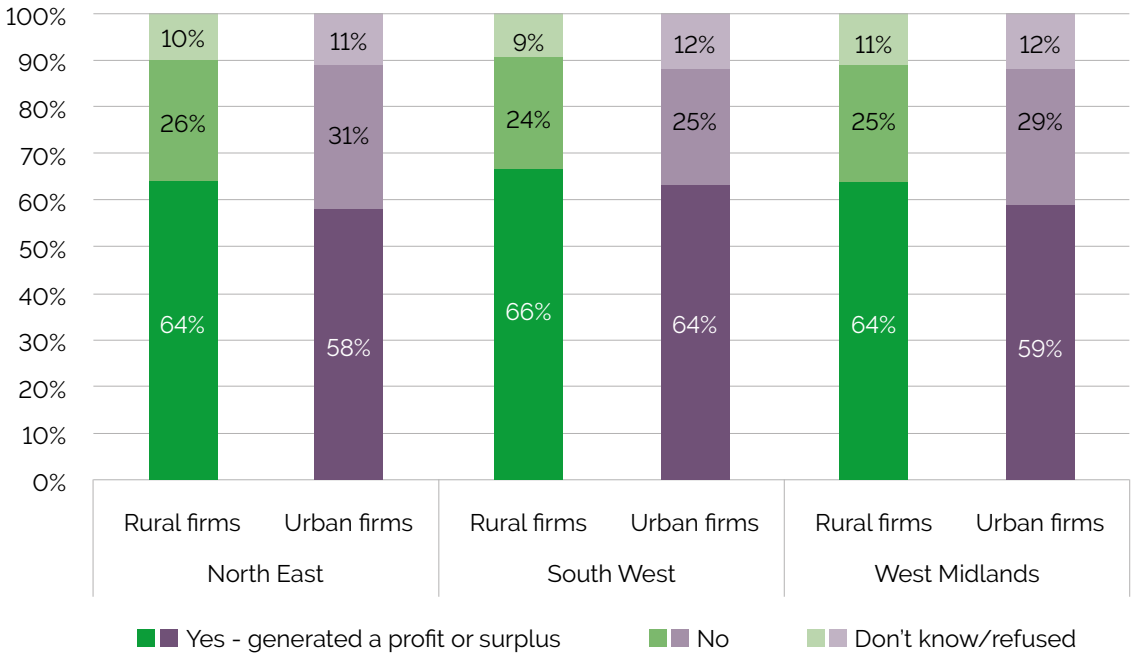
with hospitality and other service sector firms much less likely to have generated a profit than firms in other sectors (for detail see Figure 3 in The State of Rural Enterprise Report No.1). This is consistent with ONS data on the varying fortunes of business sectors during the pandemic (ONS, 2021a). Perhaps surprisingly, the majority of firms, both rural and urban, reported that their cash reserves were about the same as the previous year, but overall urban firms were slightly more likely to say that they were in a worse position than rural firms (see Figure 3).

Figure 1: Change in turnover in the previous 12 months, rural vs urban and by region

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

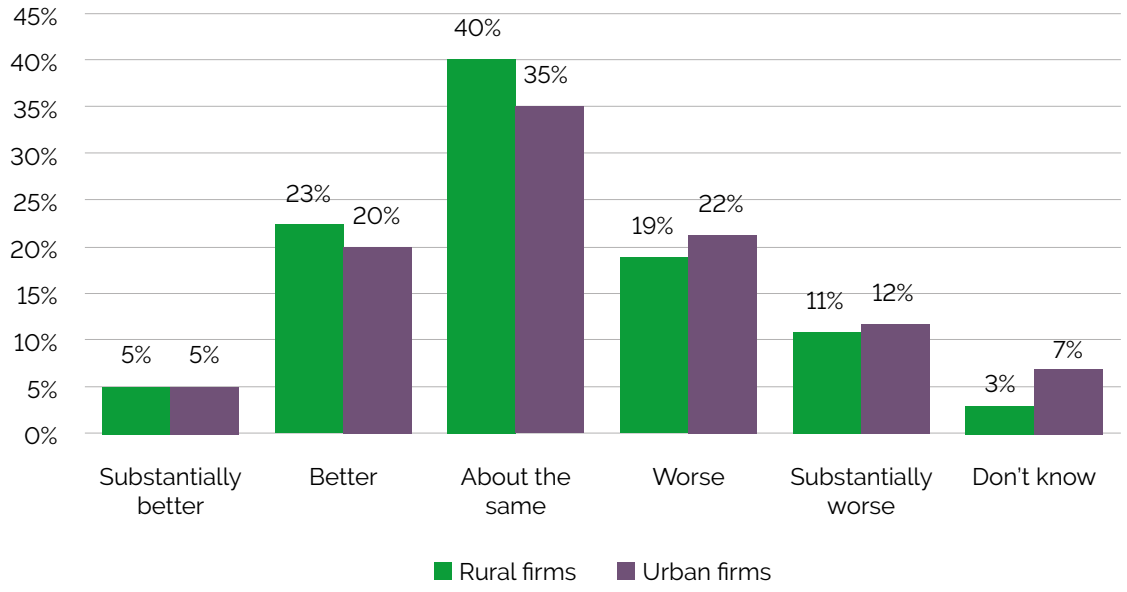
Figure 2: Proportion of businesses that generated a profit or surplus in the last financial year, rural vs urban and by region

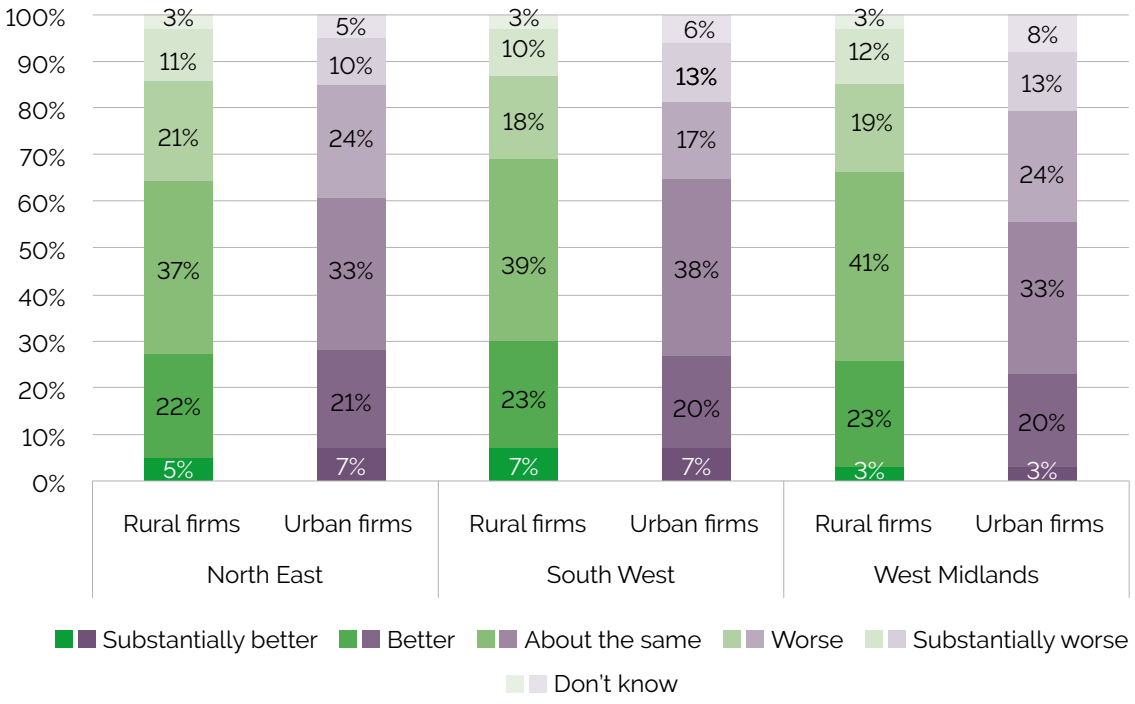




Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

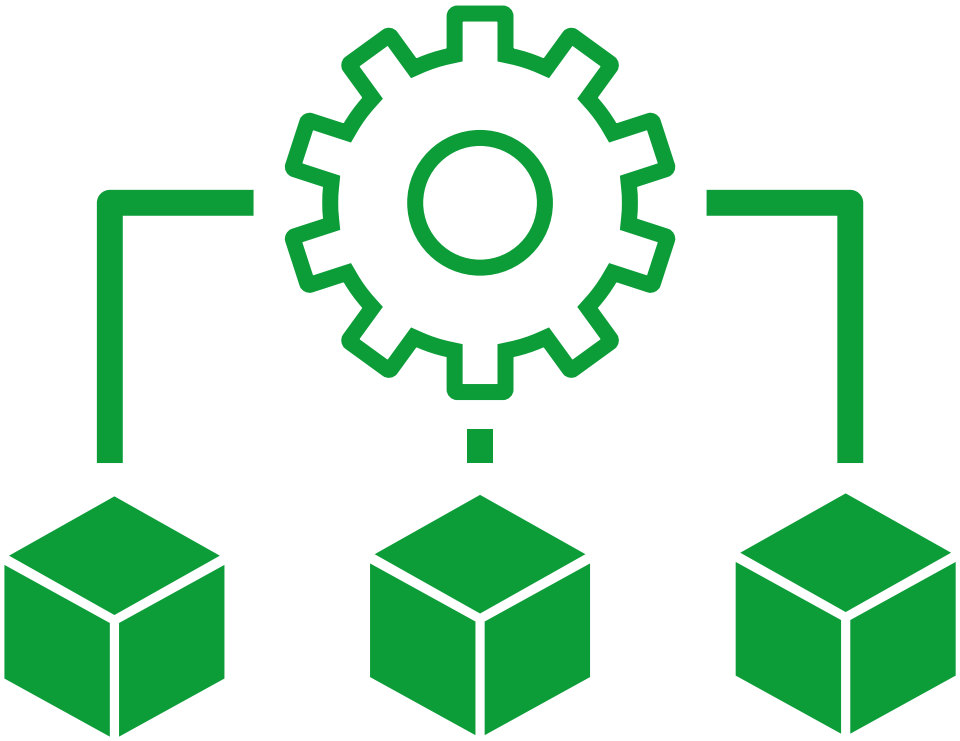
Figure 3: Business cash reserves compared to previous 12-month period, rural vs urban and by region





Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

3. Infrastructure quality



In this section we begin with a focus on **location-related infrastructure factors**, including broadband quality, transport infrastructure, affordable housing availability and provision of basic services.

As shown in Figure 4, there are notable differences between rural and urban firms' perceptions of broadband quality. Overall, 34% of rural firms judged their broadband quality to be 'poor' or 'very poor', compared to 20% of urban firms (Figure 4). This varied very little by region (Table 2). Overall, rural firms were slightly less likely to judge their broadband to be 'excellent' than urban firms (18% vs 20%). A more granular analysis of rural business responses reveals substantial differences between rural locations. 10% of rural firms in town and fringe locations judged their broadband to be 'very poor', compared to nearly 23% of village-based firms and more than 25% of hamlet-based firms.

In Figure 5, we show that overall, rural firms were twice as likely than urban firms (36% vs 19%) to rate their transport infrastructure as 'poor' or 'very poor' than their urban counterparts. Only 9% of rural firms overall rated their transport infrastructure as 'excellent'. Here again, there are large differences between firms in different rural locations, with 12% of town and fringe-

based firms judging their transport infrastructure as very poor, compared to more than 18% of village-based firms and 22% of hamlet-based firms. There is some variation between regions (Table 3). West Midlands rural firms expressed the most dissatisfaction with their local transport infrastructure with the highest proportion of firms giving it the lowest rating (19%).

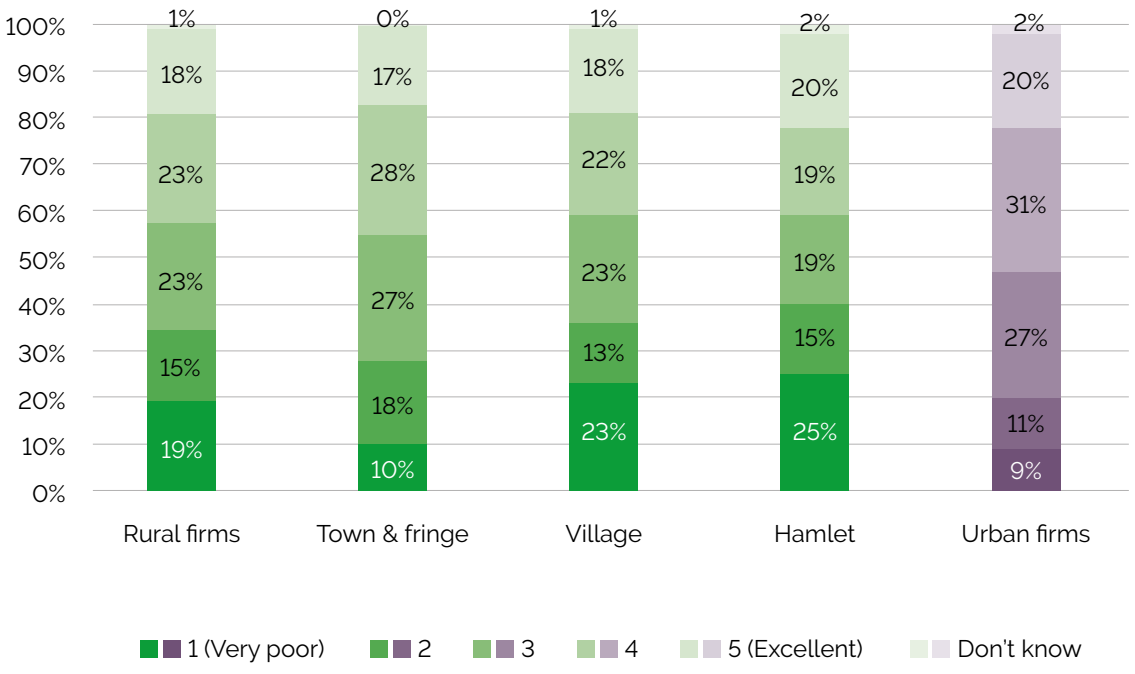
Figure 6 shows that rural and urban firms' perceptions of their public transport quality also diverge considerably, with 57% of rural firms rating their public transport as 'poor' or 'very poor', compared to only 21% of urban firms. The proportion of rural firms rating public transport in their area as 'very poor' increases in rural villages and more isolated areas, with around 23% of town and fringe-based firms judging it as 'very poor' compared to around 40% of village-based and 42% of hamlet-based businesses. Rural firms in the North East were twice as likely as those in the other regions to consider their public transport to be 'excellent' (12% vs 6% in South West and 5% in the West Midlands) (Table 4).

Overall, 49% of rural firms judged the availability of affordable housing in their local area to be 'poor' or 'very poor', compared to 30% of urban firms (Figure 7). This proportion is similar in firms in all types of rural locations. South West rural firms were the most likely to say that availability of affordable housing in their area was 'poor' or 'very poor' (55%) (Table 5).

Finally, rural firms were much more likely to give their local basic services (e.g., banks and post offices) the lowest ratings, with around 25% judging them 'very poor' compared to only 11% of urban firms (Figure 8), with little variation in different types of rural area (Table 6).

These findings highlight the importance of addressing the full breadth of rural infrastructure deficits. They also indicate that in addition to considering overall rural and urban comparisons, it is important to note differences within rural areas. While all the infrastructure indicators we assessed are rated significantly more poorly by rural firms, for broadband, transport infrastructure and public services we also notice significant variation between rural areas, with decreasing quality of these infrastructures and local services in rural villages and hamlets and isolated dwellings.

Figure 4: Rural firm perceptions of broadband quality, rural vs urban and by type of rural location



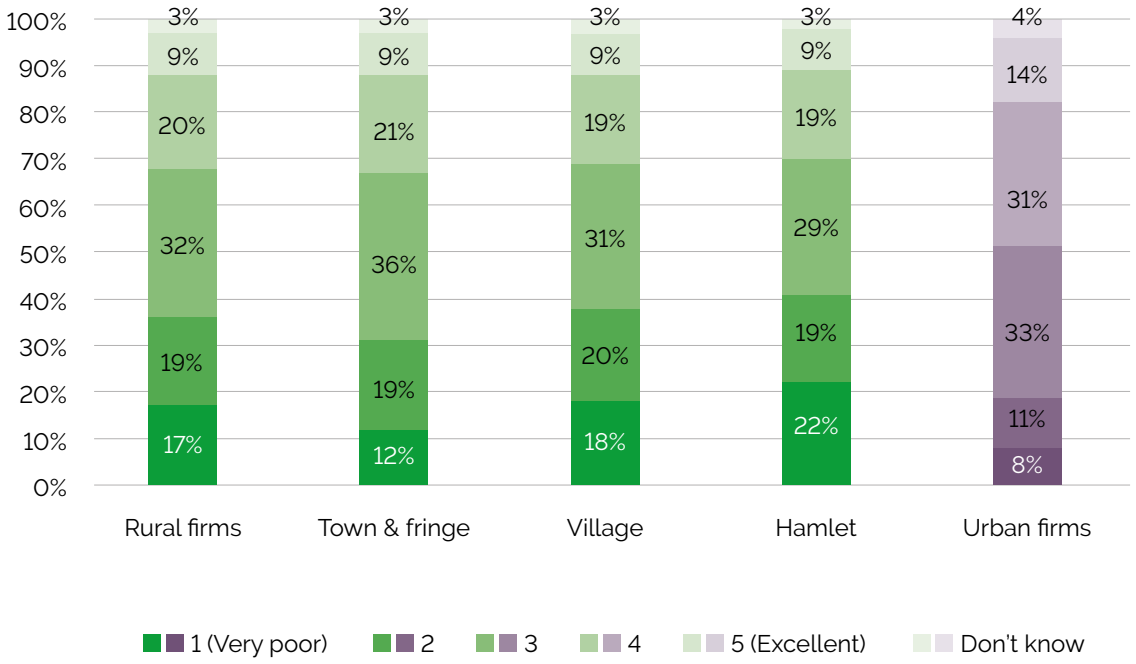
Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 2: Rural firm perceptions of broadband quality, rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Very poor	17.8%	19.1%	19.6%
2	15.3%	15.7%	14.8%
3	23.3%	23.4%	22.3%
4	24.2%	21.9%	25.0%
Excellent	18.4%	19.0%	17.2%
Don't know	1.0%	0.9%	1.2%
Rural by location			
Town & fringe			
Very poor	14.3%	9.7%	6.1%
2	15.3%	19.7%	14.6%
3	24.1%	28.5%	25.6%
4	27.3%	25.4%	36.7%
Excellent	17.8%	16.4%	16.6%
Don't know	1.2%	0.3%	0.5%
Village			
Very poor	14.9%	23.3%	23.7%
2	13.4%	12.0%	14.2%
3	24.2%	22.2%	25.3%
4	26.0%	23.1%	19.2%
Excellent	21.5%	18.1%	16.8%
Don't know	-	1.3%	0.9%
Hamlet & isolated dwellings			
Very poor	27.1%	25.4%	25.2%
2	17.0%	14.8%	15.3%
3	20.7%	19.0%	18.6%
4	16.7%	17.3%	21.4%
Excellent	16.9%	22.3%	17.7%
Don't know	1.6%	1.3%	1.7%
Urban firms			
Very poor	6.1%	10.9%	7.8%
2	11.8%	9.5%	11.9%
3	28.0%	20.8%	31.9%
4	32.5%	37.3%	26.4%
Excellent	20.9%	19.4%	20.1%
Don't know	0.8%	2.0%	1.8%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Figure 5: Rural firm perceptions of transport infrastructure, rural vs urban and by type of rural location



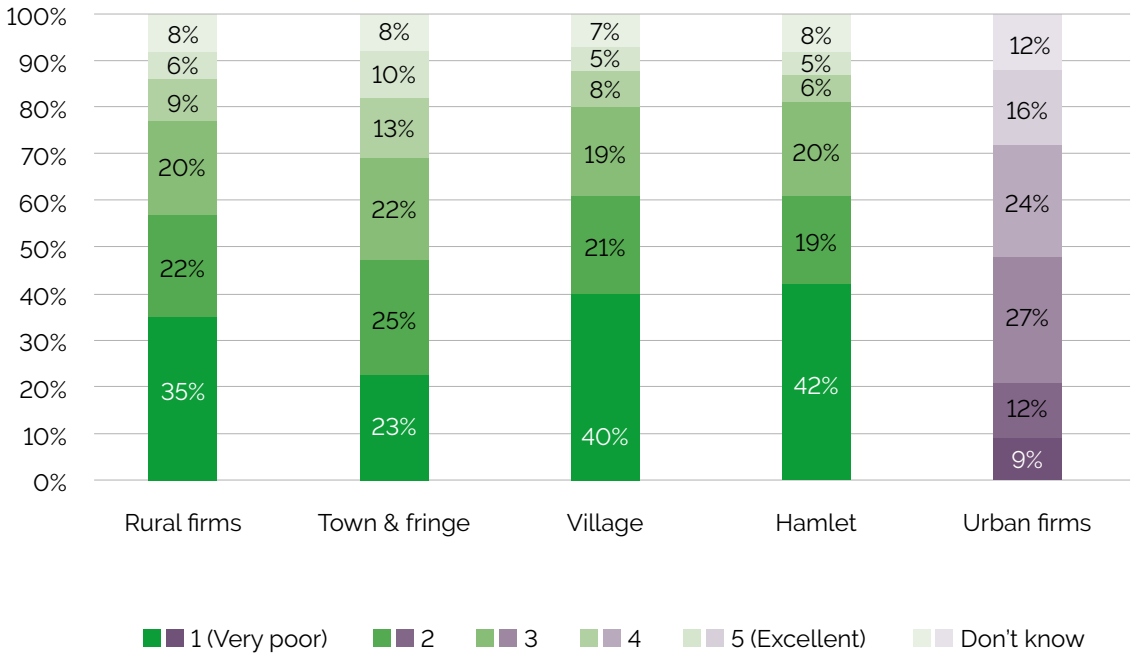
Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 3: Rural firm perceptions of transport infrastructure, rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Very poor	16.2%	16.9%	19.0%
2	16.0%	21.0%	15.7%
3	28.3%	33.1%	31.0%
4	23.6%	18.2%	20.9%
Excellent	12.2%	8.0%	9.6%
Don't know	3.6%	2.8%	3.8%
Rural by location			
Town & fringe			
Very poor	14.0%	12.1%	12.1%
2	16.5%	20.9%	13.8%
3	31.0%	37.6%	35.4%
4	21.0%	19.4%	25.7%
Excellent	13.4%	7.5%	9.2%
Don't know	4.1%	2.5%	3.8%
Village			
Very poor	13.9%	17.9%	20.0%
2	13.8%	23.4%	13.8%
3	24.9%	30.8%	32.7%
4	34.8%	17.1%	17.4%
Excellent	9.5%	7.1%	13.5%
Don't know	3.2%	3.7%	2.6%
Hamlet & isolated dwellings			
Very poor	22.5%	20.9%	22.4%
2	17.1%	19.2%	17.9%
3	26.1%	30.5%	27.5%
4	19.4%	17.8%	20.0%
Excellent	12.2%	9.2%	7.7%
Don't know	2.9%	2.5%	4.5%
Urban firms			
Very poor	3.0%	11.1%	7.3%
2	8.8%	13.2%	9.3%
3	28.6%	36.8%	32.1%
4	37.3%	26.4%	32.3%
Excellent	17.5%	11.6%	13.8%
Don't know	4.8%	0.8%	5.3%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Figure 6: Rural firm perceptions of public transport, rural vs urban and by type of rural location



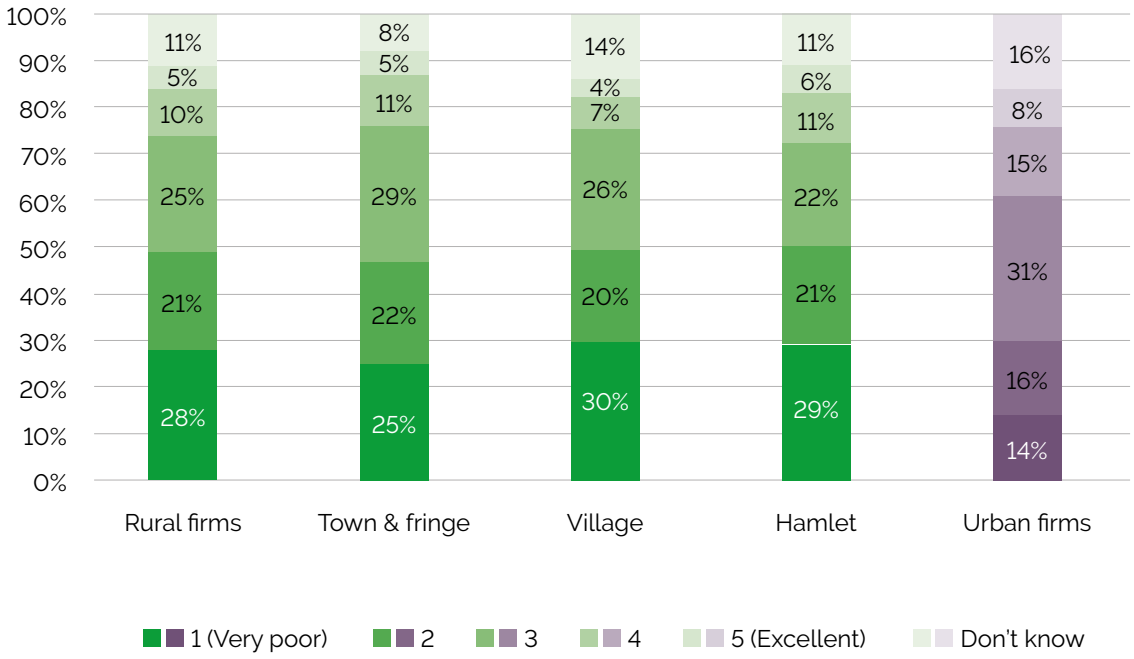
Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 4: Rural firm perceptions of public transport, rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Very poor	26.3%	35.0%	36.9%
2	17.6%	23.2%	20.0%
3	20.0%	20.2%	20.7%
4	14.4%	8.3%	8.6%
Excellent	11.9%	6.4%	4.9%
Don't know	9.8%	6.9%	8.9%
Rural by location			
Town & fringe			
Very poor	16.8%	23.8%	23.3%
2	16.3%	28.5%	22.4%
3	25.1%	20.7%	23.8%
4	15.3%	11.7%	13.2%
Excellent	15.8%	9.3%	7.7%
Don't know	10.7%	6.2%	9.6%
Village			
Very poor	30.3%	41.1%	40.4%
2	19.3%	23.0%	17.4%
3	16.2%	19.2%	18.6%
4	18.3%	7.1%	7.8%
Excellent	7.0%	3.9%	6.3%
Don't know	8.9%	5.8%	9.5%
Hamlet & isolated dwellings			
Very poor	41.5%	41.6%	42.9%
2	18.7%	17.9%	20.1%
3	13.2%	20.5%	20.1%
4	9.5%	5.8%	6.3%
Excellent	8.3%	5.5%	2.4%
Don't know	8.9%	8.6%	8.2%
Urban firms			
Very poor	8.6%	10.9%	6.9%
2	6.4%	13.2%	13.6%
3	24.2%	29.5%	26.0%
4	33.4%	20.4%	24.6%
Excellent	17.1%	16.8%	15.3%
Don't know	10.3%	9.2%	13.7%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Figure 7: Rural firm perceptions of the availability of affordable housing, rural vs urban and by type of rural location



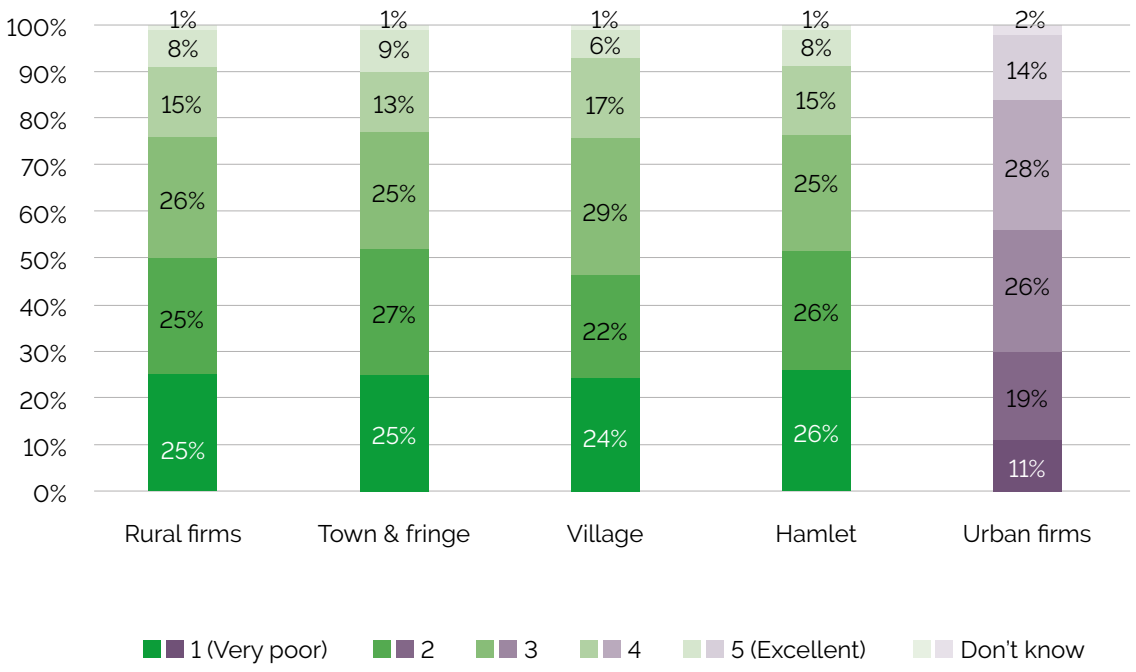
Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 5: Rural firm perceptions of the availability of affordable housing, rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Very poor	21.5%	33.4%	20.4%
2	19.0%	21.5%	20.8%
3	27.0%	22.9%	29.3%
4	12.5%	8.7%	11.1%
Excellent	8.2%	4.0%	5.7%
Don't know	11.8%	9.5%	12.8%
Rural by location			
Town & fringe			
Very poor	17.3%	31.2%	15.4%
2	19.3%	22.6%	22.3%
3	29.0%	27.1%	34.3%
4	13.6%	10.1%	10.5%
Excellent	9.8%	4.0%	4.3%
Don't know	11.0%	5.0%	13.2%
Village			
Very poor	24.6%	34.2%	22.3%
2	11.9%	19.5%	21.8%
3	26.7%	24.5%	27.6%
4	14.7%	4.8%	9.4%
Excellent	8.0%	2.5%	6.4%
Don't know	14.0%	14.6%	12.6%
Hamlet & isolated dwellings			
Very poor	27.1%	34.9%	22.2%
2	24.2%	22.1%	19.3%
3	23.3%	17.2%	27.3%
4	8.6%	10.6%	12.5%
Excellent	5.3%	5.2%	6.2%
Don't know	11.6%	10.0%	12.6%
Urban firms			
Very poor	8.1%	20.6%	11.8%
2	13.6%	18.8%	13.9%
3	34.6%	27.3%	32.5%
4	16.2%	15.6%	14.7%
Excellent	14.3%	4.8%	8.4%
Don't know	13.1%	13.0%	18.7%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Figure 8: Rural firm perceptions of basic services (e.g., banks and post offices), rural vs urban and by type of rural location



Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 6: Rural firm perceptions of basic services (e.g., banks and post offices), rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Very poor	24.7%	25.8%	24.3%
2	23.9%	27.0%	21.9%
3	25.5%	24.8%	29.7%
4	14.3%	14.4%	15.0%
Excellent	10.2%	7.4%	7.8%
Don't know	1.5%	0.6%	1.4%
Rural by location			
Town & fringe			
Very poor	23.1%	25.4%	25.8%
2	24.5%	29.1%	22.1%
3	27.5%	21.8%	32.6%
4	12.5%	14.5%	8.0%
Excellent	11.2%	8.6%	9.7%
Don't know	1.2%	0.7%	1.8%
Village			
Very poor	25.8%	25.5%	21.4%
2	20.4%	25.4%	16.3%
3	24.4%	28.1%	33.5%
4	22.9%	14.6%	20.7%
Excellent	4.1%	5.7%	7.9%
Don't know	2.4%	0.8%	0.3%
Hamlet & isolated dwellings			
Very poor	26.8%	26.3%	25.0%
2	25.7%	26.2%	24.9%
3	22.7%	25.2%	25.8%
4	10.3%	14.3%	15.8%
Excellent	13.2%	7.6%	6.8%
Don't know	1.4%	0.4%	1.7%
Urban firms			
Very poor	10.0%	6.6%	14.9%
2	21.1%	23.0%	15.9%
3	31.2%	22.8%	26.5%
4	22.4%	32.8%	26.6%
Excellent	14.9%	13.5%	13.6%
Don't know	0.4%	1.3%	2.5%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

4. Business connections and community activity

This section considers aspects of **'soft infrastructure'** surrounding enterprises in terms of their connections to other businesses, and their participation in community activities. This could be the opportunity to engage directly with **local suppliers** and **business service providers**, enabling joint efficiency gains, supporting the training of the next generation at local level as well as exchanging experiences with new technologies.

We begin with an analysis of firms' links with other businesses in their localities.
Figures 9 to 11 focus on the links that firms report having to other businesses in their areas. In Figure 9, we can see that overall, similar proportions of rural and urban firms (23% vs 24%) strongly agree that they are acquainted with a lot of other business leaders in their local area. However, this overall rural figure conceals a mixed picture, with nearly 28% of firms in town and fringe locations strongly agreeing, compared to less than 20% of those in village or hamlet locations. Similar proportions of rural and urban firms strongly agree that they often interact with neighbouring businesses (around 22%) as shown in Figure 10, but again, we see a distinct difference among rural firms, with 27% in town and fringe locations strongly agreeing but less than 20% in villages and hamlets.

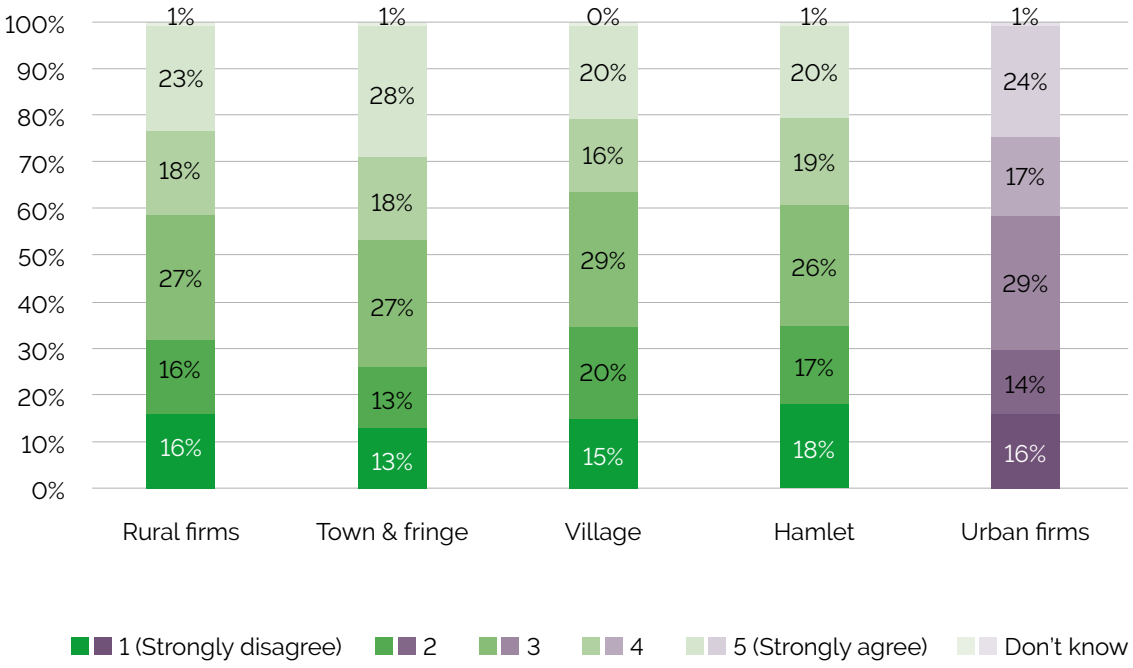
When it comes to deriving support from other businesses, as shown in Figure 11, overall similar proportions of rural and urban firms strongly agree that businesses in their local area tend to

support each other when there is a problem (18% rural vs 19% urban). Again we see differences among businesses in different types of rural location, with 23% of town and fringe-based firms strongly agreeing compared to 13% and 17% of village and hamlet-based firms respectively.

When we compare the three regions, for urban firms we see similar patterns of engagement with other businesses in all regions (Tables 7, 8 and 9). However, our data indicates that rural firms in the North East appear to have stronger links with other businesses than North East urban firms, and than rural firms in the South West and the West Midlands. For example, 47% of rural North East firms agree or strongly agree that they know a lot of other business leaders in their area compared to 38% in the South West and 42% in the West Midlands, and we see a similar picture for rural firms reporting interaction with, and support from, other local businesses.

These findings suggest that when it comes to connections to other businesses, exploring differences within rural areas, notably between town and fringe, villages, and hamlets and isolated dwellings, may be more revealing than a simple, binary rural - urban comparison in understanding the experiences of rural businesses. Similarly, the differences we observed between the three regions in which we carried out the study indicates that regional variations may also have an impact on firm-level outcomes.

Figure 9: Agreement with the statement 'I know a lot of other business leaders in the local area', rural vs urban and by type of rural location



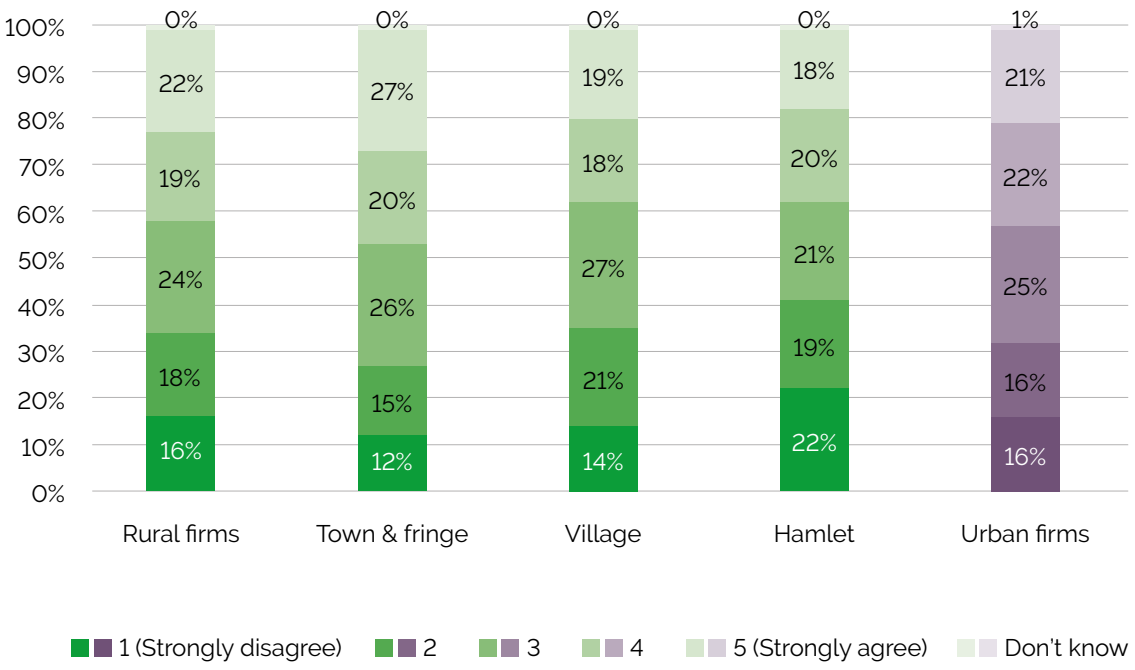
Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 7: Agreement with the statement 'I know a lot of other business leaders in the local area, rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Strongly disagree	13.8%	14.2%	18.4%
2	12.8%	17.5%	14.6%
3	25.8%	29.3%	24.5%
4	16.6%	16.9%	19.8%
Strongly agree	30.4%	21.3%	22.2%
Rural by location			
Town & fringe			
Strongly disagree	12.2%	11.5%	19.0%
2	10.6%	13.8%	10.8%
3	25.7%	28.6%	25.2%
4	14.7%	17.9%	20.7%
Strongly agree	36.4%	26.9%	24.2%
Village			
Strongly disagree	14.4%	15.3%	12.9%
2	12.7%	22.5%	16.4%
3	27.2%	30.7%	26.8%
4	20.0%	14.4%	18.8%
Strongly agree	23.7%	17.1%	24.2%
Hamlet & isolated dwellings			
Strongly disagree	16.2%	16.1%	21.2%
2	17.2%	17.1%	15.9%
3	24.9%	28.9%	22.7%
4	17.5%	18.1%	19.8%
Strongly agree	24.4%	19.0%	19.8%
Urban firms			
Strongly disagree	15.9%	13.6%	17.3%
2	18.5%	10.3%	15.4%
3	26.0%	34.9%	25.9%
4	14.8%	17.5%	16.2%
Strongly agree	24.8%	23.7%	24.1%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Figure 10: Agreement with the statement 'I often interact with neighbouring businesses', rural vs urban and by type of rural location



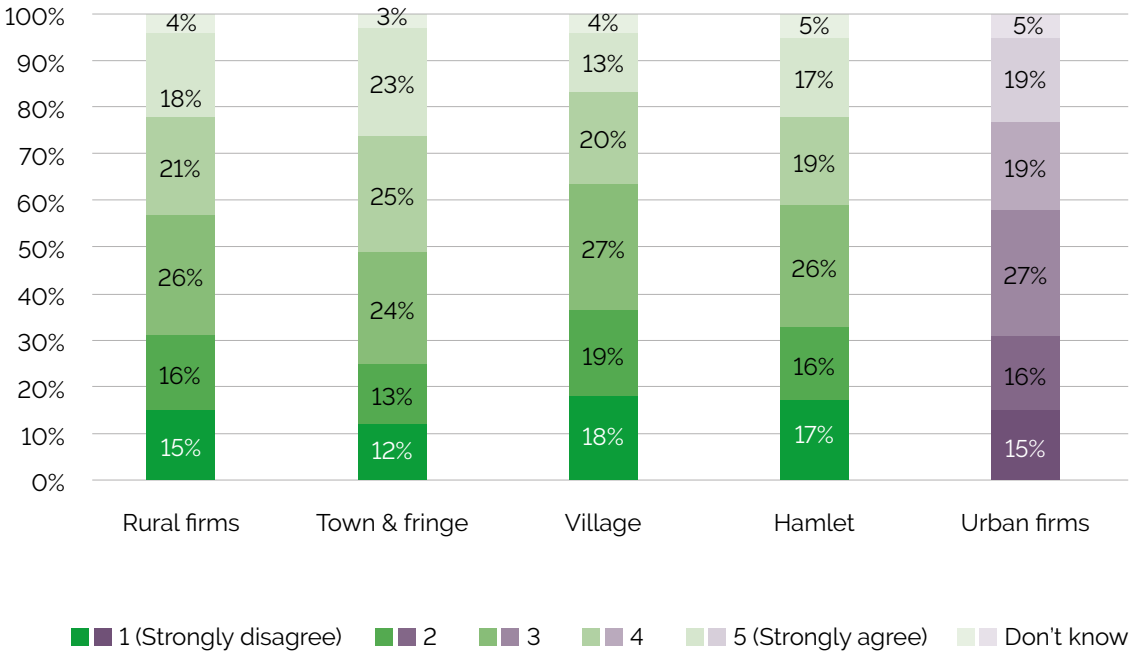
Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 8: Agreement with the statement 'I often interact with neighbouring businesses', rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Strongly disagree	16.1%	15.6%	17.9%
2	12.8%	18.9%	18.4%
3	23.8%	24.8%	23.6%
4	23.2%	18.3%	19.5%
Strongly agree	23.2%	22.2%	20.3%
Rural by location			
Town & fringe			
Strongly disagree	15.0%	9.5%	14.2%
2	10.9%	15.8%	15.1%
3	23.7%	26.7%	26.0%
4	24.5%	18.6%	20.6%
Strongly agree	25.2%	29.1%	23.9%
Village			
Strongly disagree	14.5%	15.1%	12.8%
2	14.0%	23.5%	18.6%
3	25.5%	27.8%	26.8%
4	21.0%	16.1%	19.5%
Strongly agree	22.6%	17.5%	22.2%
Hamlet & isolated dwellings			
Strongly disagree	19.6%	22.3%	22.9%
2	15.5%	18.3%	20.3%
3	22.5%	20.4%	20.4%
4	22.4%	20.0%	18.9%
Strongly agree	20.0%	18.9%	17.2%
Urban firms			
Strongly disagree	14.7%	15.7%	16.3%
2	18.0%	17.0%	13.7%
3	22.0%	24.4%	26.1%
4	18.0%	21.7%	23.3%
Strongly agree	27.2%	21.3%	19.6%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Figure 11: Agreement with the statement 'Businesses in the local area tend to support each other when there is a problem', rural vs urban and by type of rural location



Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

Table 9: Agreement with the statement 'Businesses in the local area tend to support each other when there is a problem', rural vs urban, by region and type of rural location

	North East	South West	West Midlands
Rural firms			
Strongly disagree	14.4%	14.6%	17.4%
2	12.6%	16.4%	15.9%
3	25.3%	24.6%	27.2%
4	21.1%	23.8%	16.6%
Strongly agree	22.6%	17.1%	17.5%
Rural by location			
Town & fringe			
Strongly disagree	15.5%	10.7%	11.9%
2	9.4%	13.1%	16.1%
3	23.3%	24.9%	23.0%
4	24.1%	28.1%	17.7%
Strongly agree	24.4%	21.5%	24.9%
Village			
Strongly disagree	12.1%	17.1%	20.5%
2	16.8%	21.4%	13.3%
3	27.9%	23.5%	34.1%
4	16.1%	22.4%	15.3%
Strongly agree	20.0%	11.0%	14.6%
Hamlet & isolated dwellings			
Strongly disagree	14.0%	16.6%	18.8%
2	15.3%	15.5%	17.2%
3	27.2%	25.3%	25.8%
4	19.7%	20.5%	16.7%
Strongly agree	21.0%	17.7%	14.9%
Urban firms			
Strongly disagree	16.5%	11.7%	16.7%
2	15.9%	16.0%	15.0%
3	27.2%	30.9%	24.1%
4	16.2%	22.8%	17.9%
Strongly agree	22.5%	16.3%	19.3%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

We now turn our attention to the extent to which enterprises are involved in their local communities. Figures 12 to 17 report on the percentage of enterprises that have engaged with social, environmental or community activities, and the outcomes that they identified from this engagement.

Overall, as shown in Figure 12, just over a third of rural firms reported some kind of social, environmental or community engagement activity. This was similar to the proportion of urban firms. In all areas, larger rural firms, measured in terms of the number of employees, were more likely to have engaged in social environmental or community activities, and a greater proportion of rural hospitality and other services firms reported such engagement. Rural firms in village and town and fringe locations were more likely to have supported community social and environmental activities in contrast to those in more isolated areas. We also observed some regional differences, as shown in Table 10, with 28% of West Midlands rural firms reporting such engagement compared to 38% of those in the South West firms and 36% of rural North East firms.

As shown in Figure 13, rural and urban firms in all regions reported good outcomes of these activities, with 85% of rural and 87% of urban firms saying that they had a positive community impact.

Examining the specific outcomes that firms reported, overall around half of firms said that they experienced improved employee skills as a consequence of community-based activities, with slightly more urban firms than rural firms (53% vs 51%) reporting this. However, as shown in Figure 14, in the North East, rural firms were considerably more likely than their urban counterparts to point to improved skills in their employees (58% for rural firms vs 44% for urban). Around 40% of firms said that these activities had helped them to attract or retain employees with North East rural firms more likely than their urban counterparts to report this effect (40% vs 34%) (Figure 15).

Figure 16 shows that overall, 30% of rural firms compared to 26% of urban firms said that community activities had helped firms to develop new products or services, and that, at 37%, the proportion for rural firms in the North East was much higher than for rural and urban firms in the other two regions.

Overall, 80% of rural firms and 79% of urban firms felt that supporting social environmental and community causes enhanced their reputation (Figure 17). Here again we note differences among rural firms in different locations, with those located in hamlets and isolated dwellings less likely to report that their community activities enhanced their company identity or reputation.

Although overall we note a similar profile in rural and urban firms when it comes to the adoption of community activities, a more detailed analysis of rural firm responses suggests some differences among rural firms in different types of rural locations. We also find regional differences in the adoption of community initiatives.

Figure 12: Proportion of firms supporting any kind of activities with a social, environmental or community objective, rural vs urban and for rural firms by size and sector

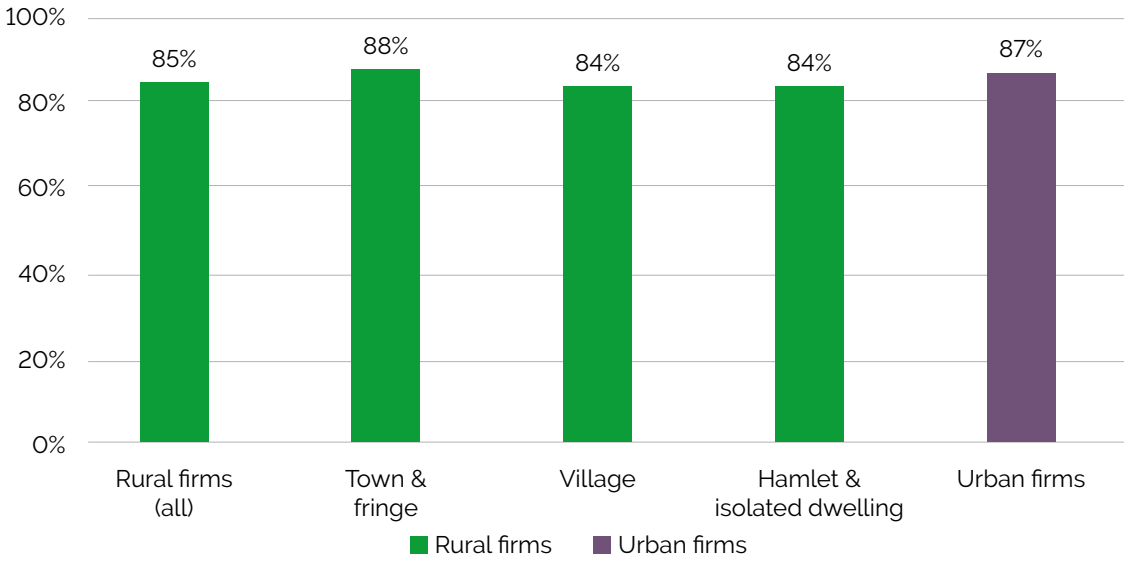
Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

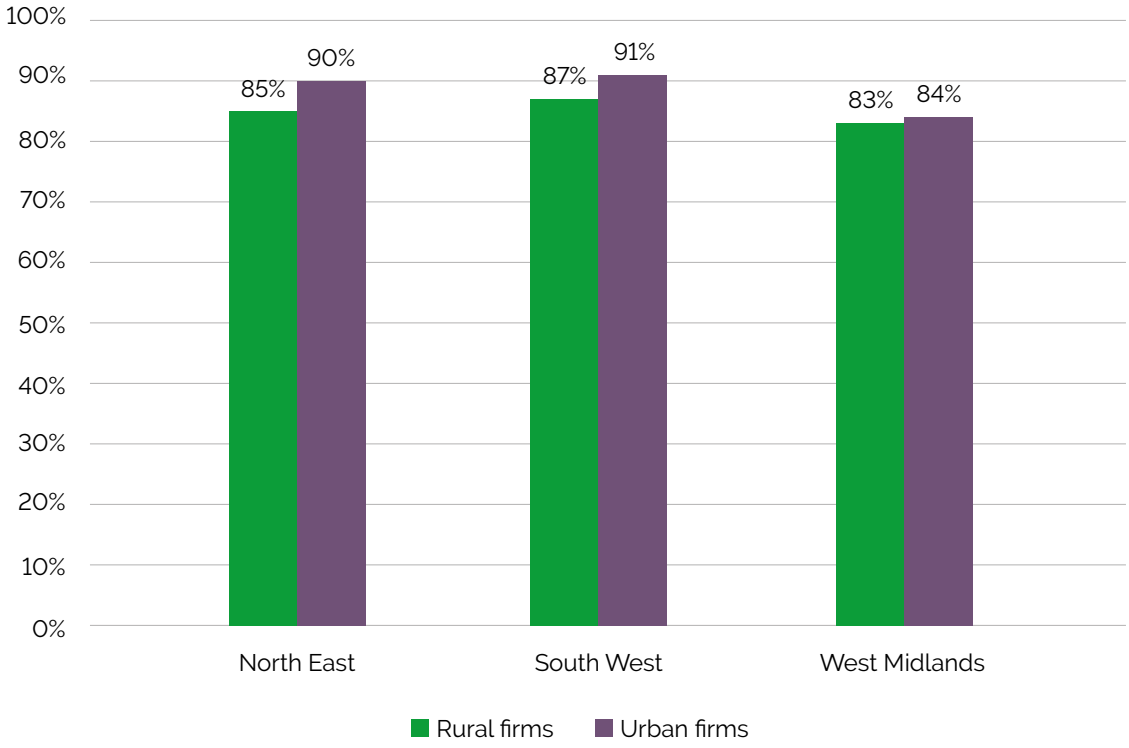
Table 10: Proportion of firms supporting any kind of activity with a social, environmental or community objective, rural vs urban, by region and for rural firms by size, sector and location

	North East	South West	West Midlands
Rural firms (all)	**36.4%**	**37.5%**	**28.4%**
Rural by size			
Less than 10	34.2%	35.3%	25.1%
10 to 19	41.1%	40.6%	42.1%
20 to 49	42.9%	39.1%	41.7%
50 plus	58.5%	55.8%	41.6%
Rural by sector			
Production	35.1%	29.9%	26.4%
Construction	25.4%	33.1%	11.6%
Wholesale, retail & transport	29.7%	31.4%	29.5%
Hospitality	42.3%	54.3%	34.9%
Business services	35.8%	38.2%	24.8%
Other services	52.2%	47.6%	52.8%
Rural by location:			
Town & fringe	34.1%	38.1%	31.2%
Village	40.2%	41.2%	28.1%
Hamlet & isolated dwelling	37.5%	33.8%	27.0%
Urban firms	37.2%	31.2%	32.7%

Base: Unweighted total 3,526 firms; 2,666 rural firms, 860 urban firms; 1,155 NE firms, 1,183 WM firms, 1,188 SW firms

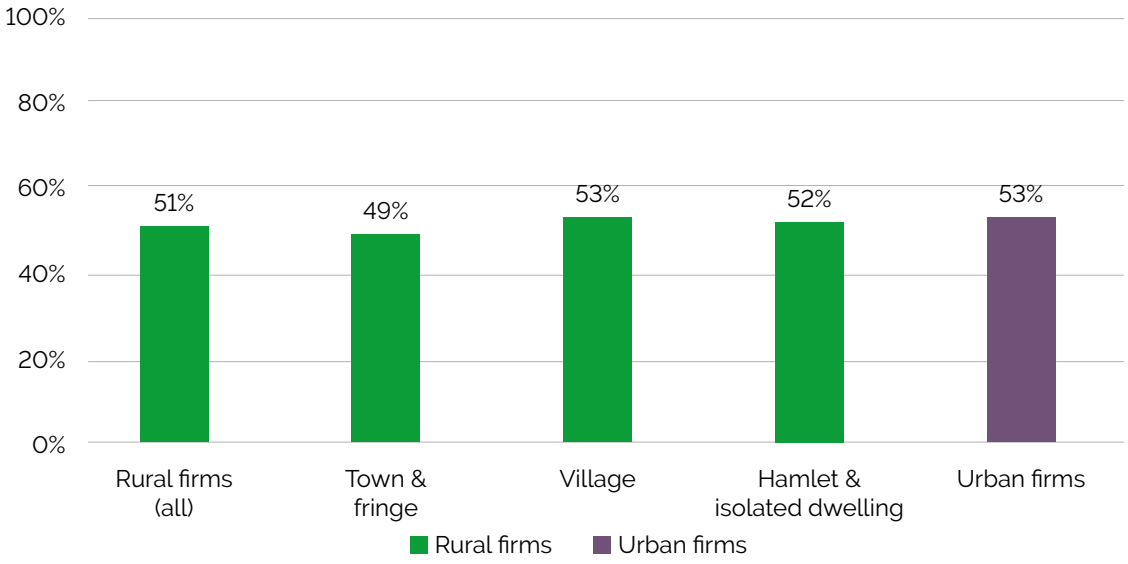
Figure 13: Proportion of firms involved in social, environmental or community activity reporting a positive community impact, rural vs urban and by region

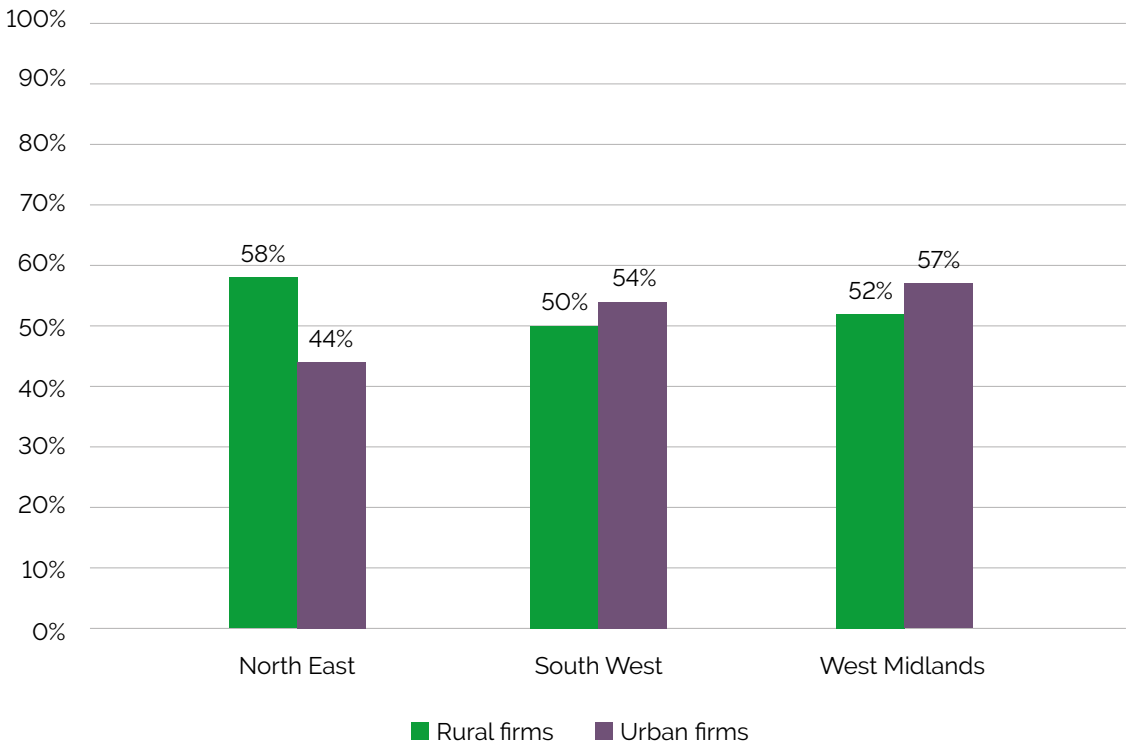




Base: Unweighted total 1,379 firms; 1,018 rural firms, 361 urban firms; 452 NE firms, 430 WM firms, 497 SW firms

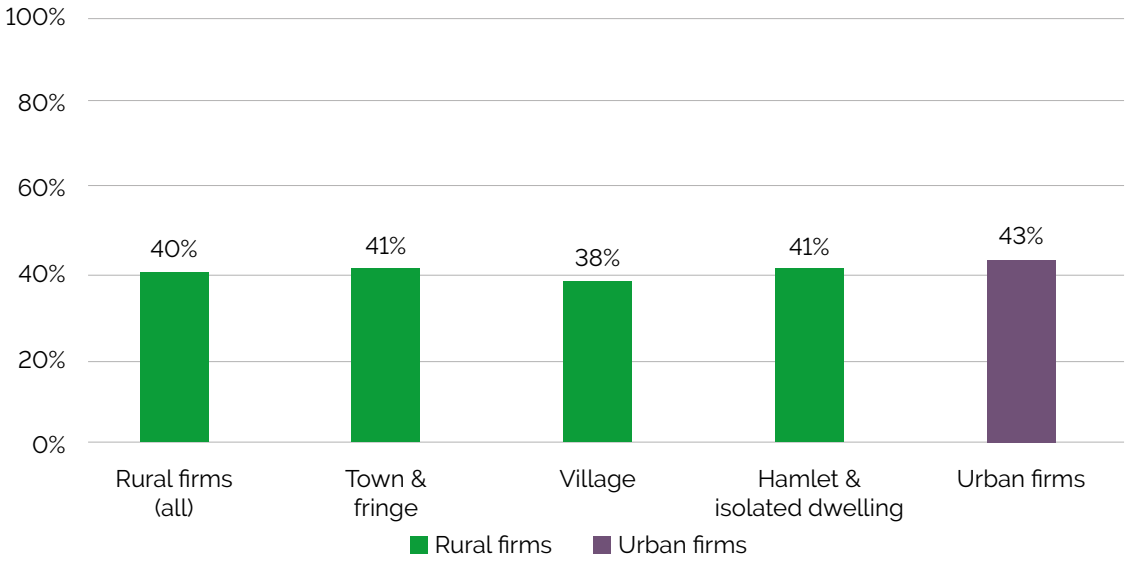
Figure 14: Proportion of firms involved in social, environmental or community activity reporting that this has helped their staff to develop new skills, rural vs urban and by region

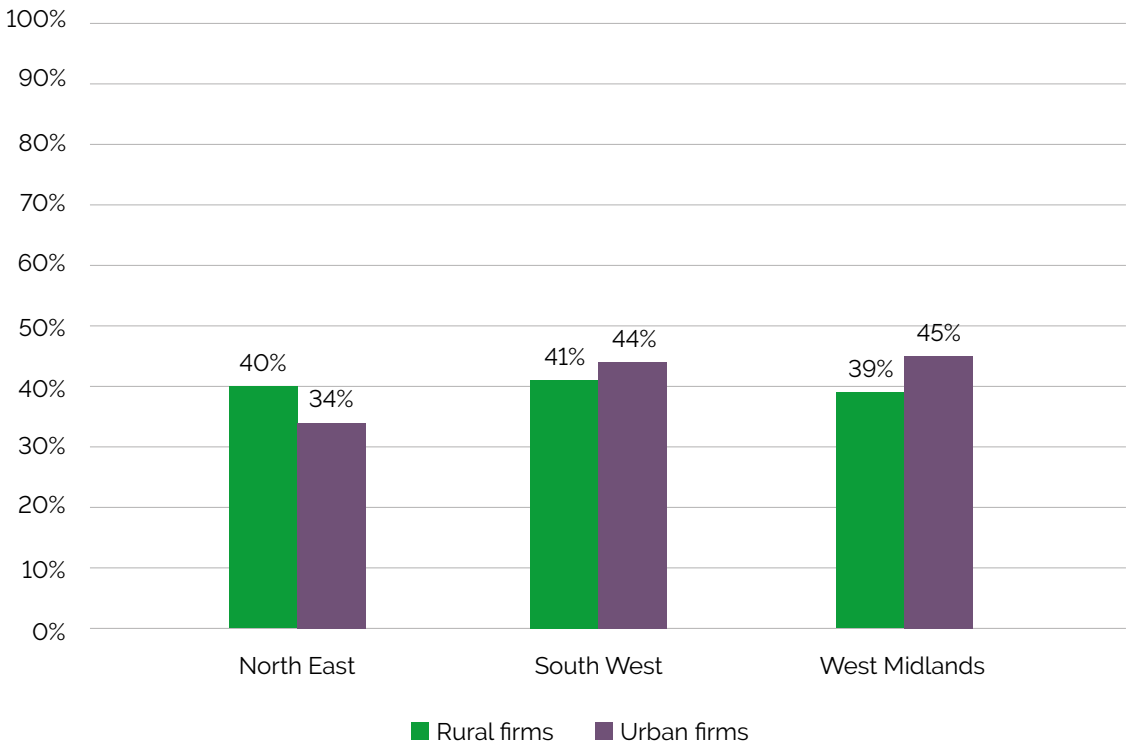




Base: Unweighted total 1,379 firms; 1,018 rural firms, 361 urban firms; 452 NE firms, 430 WM firms, 497 SW firms

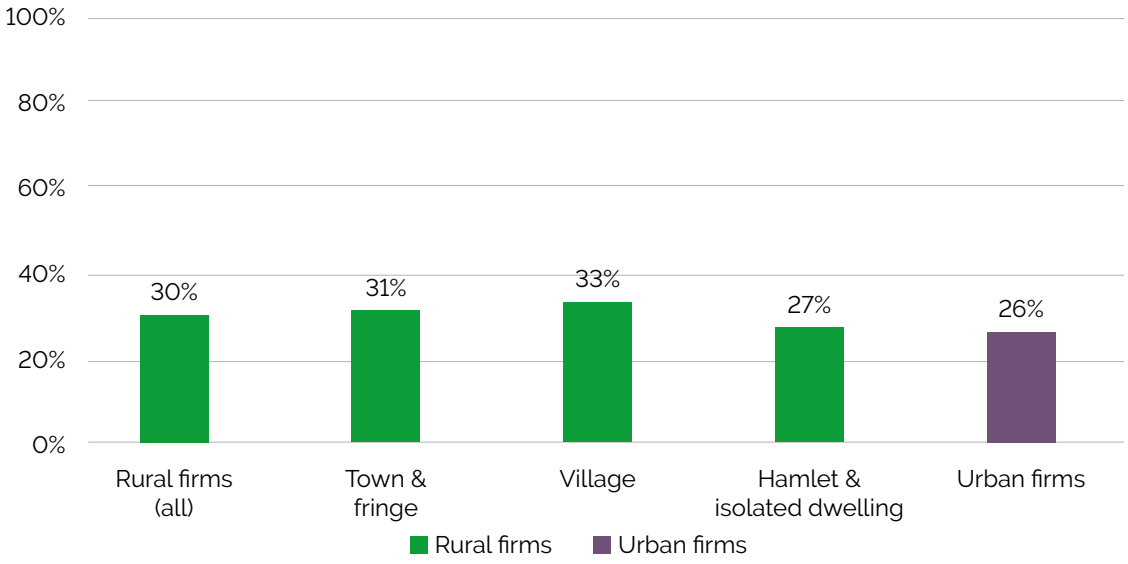
Figure 15: Proportion of firms involved in social, environmental or community activity reporting that this has helped them to attract or retain employees, rural vs urban and by region

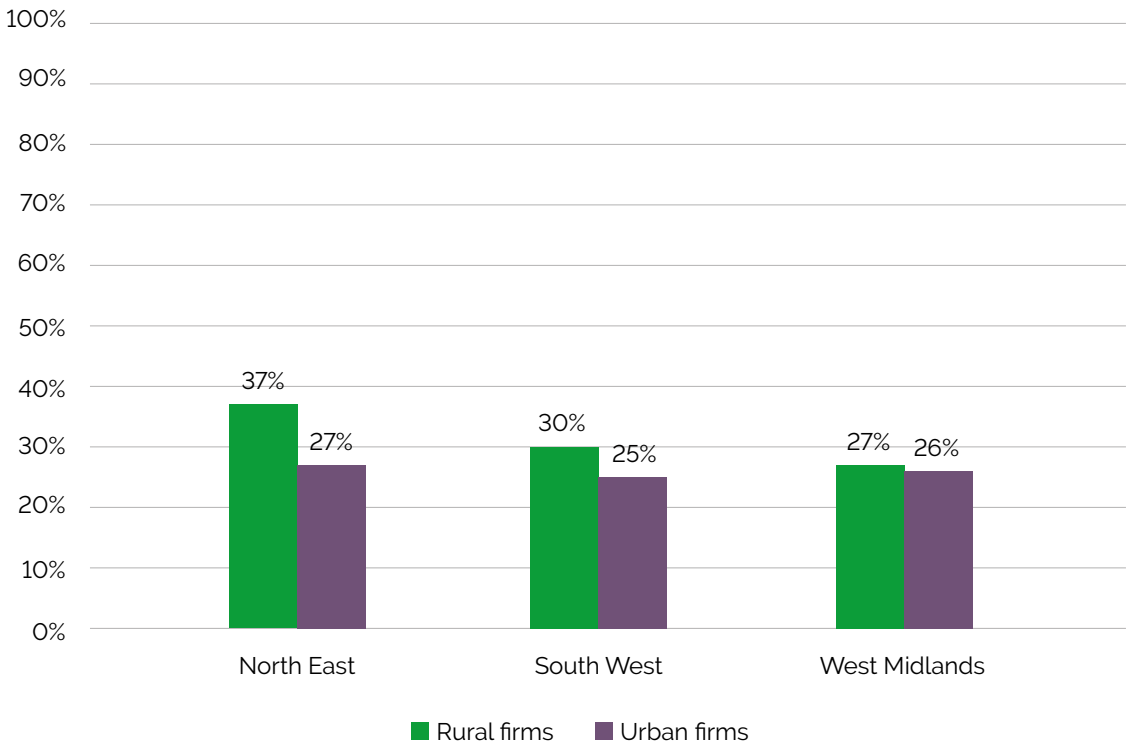




Base: Unweighted total 1,379 firms; 1,018 rural firms, 361 urban firms; 452 NE firms, 430 WM firms, 497 SW firms

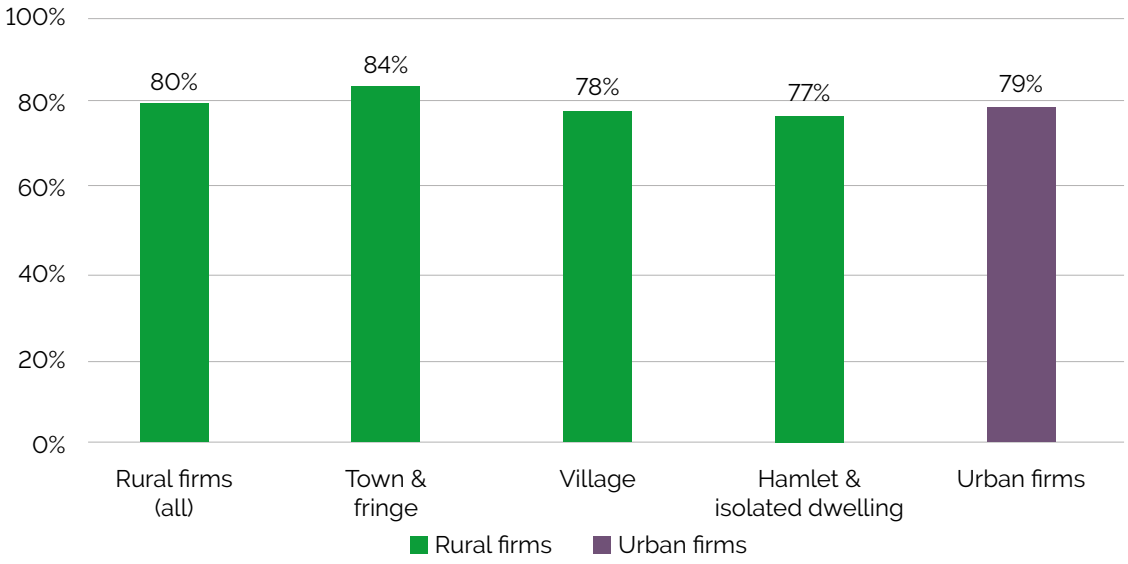
Figure 16: Proportion of firms involved in social, environmental or community activity reporting that this has helped them to develop new products or services, rural vs urban and by region

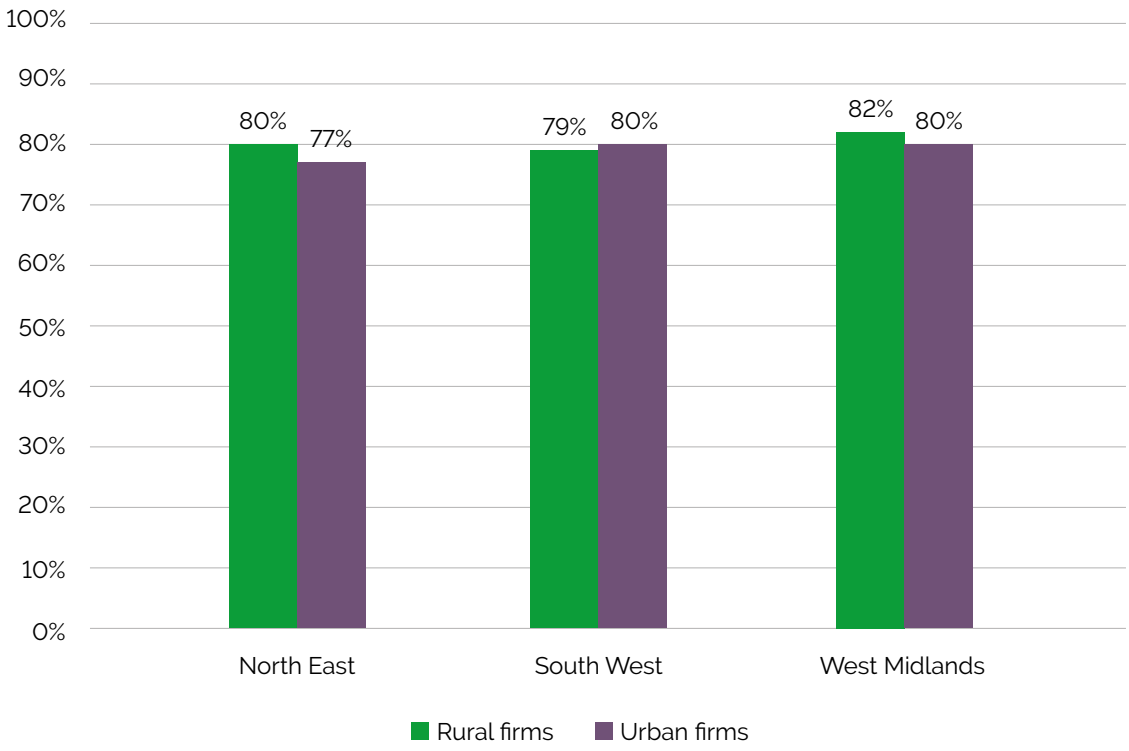




Base: Unweighted total 1,379 firms; 1,018 rural firms, 361 urban firms; 452 NE firms, 430 WM firms, 497 SW firms

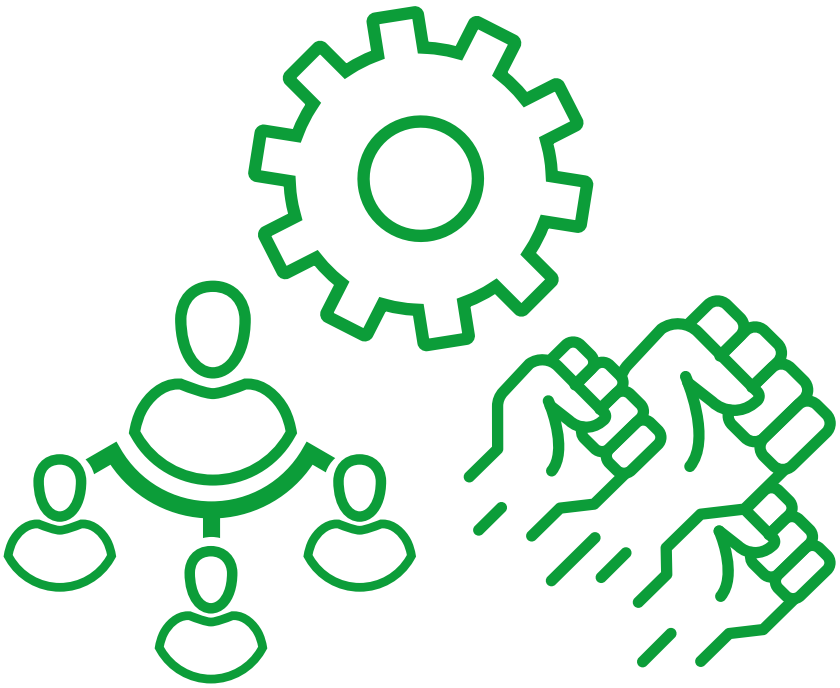
Figure 17: Proportion of firms involved in social, environmental or community activity reporting that this has contributed to their company identity or reputation, rural vs urban and by region





Base: Unweighted total 1,379 firms; 1,018 rural firms, 361 urban firms; 452 NE firms, 430 WM firms, 497 SW firms

5. Linking infrastructure factors, business and community engagement to resilience in rural firms



We used statistical analysis to examine the links between **firm-level resilience** and factors related to **infrastructure** and networks in their local area. The analysis focused on three key indicators of firm **resilience** - change in turnover, profitability and cash reserves.

Using multivariate regression analysis, we examined the links between these three key indicators of resilience and the factors related to firm environment and location discussed in the previous chapters. These included local infrastructure factors like broadband, public transport, transport infrastructure, affordable housing and basic services, as well as the extent of business connections and community engagement reported by respondent firms.

It is important to note that our data is cross-sectional, which means that it was collected from respondents in one wave of fieldwork. This means that it offers a snapshot view rather than an evolving picture over time, and for this reason our statistical analysis identifies associations rather than causal relationships. Nevertheless, the analysis allowed us to highlight which local infrastructure and network-related factors have the strongest links to business resilience and short-term response to the pandemic.

A full account of the analysis undertaken is available in Appendix B, along with a table setting out the results. In general terms the impact of each of the individual infrastructure indicators proved statistically insignificant, showing little consistent correlation with resilience in rural firms. The exception was local broadband quality which had a strong and statistically significant positive correlation with resilience across each of the three models (Table B1 in Appendix B). Higher quality local broadband was associated with a 5.3 to 6.3% increase in the likelihood of being a resilient rural firm. In other words, and notwithstanding the importance of the other infrastructure factors to long-term adaption and development, high quality broadband was the most significant of the infrastructure indicators in terms of improving business resilience for rural companies during the height of the pandemic.

In addition to this, we also found notable differences between sectors, reflecting the impact of the Covid-19 pandemic. Firms in hospitality were less likely to have sustained turnover or remained profitable in the year prior to the survey. No consistent regional differences were evident.

6. Conclusions

Access to a range of infrastructures and external resources can improve business **outcomes** and increase the **ability** of a business to adapt and bounce back from adversity.

Understanding whether firms based in rural areas are more likely to struggle to access critical resources than their urban counterparts can therefore potentially shed light on significant differences between urban and rural businesses, which may in turn deliver key insights to guide policy aimed at Levelling Up.

With this in mind, this report examines rural and urban enterprises' perceptions of a number of infrastructure factors, as well as their links to other businesses and their connections to their local communities. We go beyond simple rural and urban firm comparisons, by offering a more in-depth analysis of rural firms' experiences between regions and across different rural settings.

Firstly, we find strong differences between rural and urban enterprises' perceptions of the quality of their local infrastructure and services, with rural enterprises often reporting lower quality than urban enterprises. Overall, rural enterprises are much more likely to judge a range of infrastructure factors to be poor than their urban counterparts. Broadband is a key infrastructure challenge for many rural enterprises, with 34% of rural enterprises vs only 20% of urban enterprises judging their broadband quality to be 'poor' or 'very poor'. This quality disparity is exacerbated in rural villages, and hamlets and isolated dwellings. We see similar rural-urban differences in the perception of transport infrastructure and public transport services. We also note major rural-urban differences in perceptions of affordable housing availability and the quality

of basic services that are widespread across different types of rural settings. This evidence highlights the importance of addressing the full breadth of rural infrastructure deficits in the Levelling Up agenda.

Secondly, we observe different patterns of business connections among rural and urban enterprises. Overall, similar proportions of rural and urban enterprises say they are acquainted with, interact with, and feel supported by, other local businesses. However, rural enterprises in villages and hamlets and isolated dwellings are less likely to report that they know, interact with, and feel supported by, other businesses.

Thirdly, we observe variations in community links, and on the reported benefits of such links, depending on the location of the firm. Rural enterprises in village and town and fringe locations are more likely to have supported community, social and environmental activities than those in rural hamlets. Here we also note differences among rural enterprises of different sizes and in different sectors. Rural and urban enterprises engaged in these activities are equally likely to report improved skills and improved retention of staff, but rural enterprises are more likely than their urban counterparts to report that such activities helped them in developing new products or services.

As well as differences based on the type of rural location in which enterprises are based, our findings indicate some clear variation among the three geographical regions surveyed, in the reported impacts of community engagement, in the extent of business network links, and in the reported quality of infrastructure factors.

The analysis also highlights the relationship between infrastructure and resilience, showing the significance of local broadband quality to business resilience during the Covid-19 pandemic. Higher quality local broadband was associated with a 5.3 to 6.3% increase in the likelihood of being a resilient rural firm.

The significant results indicating a positive relationship between broadband quality and firm resilience, as well as the already well-known problems with access to and quality of broadband, demonstrate clearly a failure in this market. This requires policy intervention to overcome the barriers preventing comprehensive high-quality broadband. Improving broadband quality in rural areas is likely to enhance resilience and in turn productivity growth of rural firms.

Overall, the report highlights significant variation in experiences of infrastructure, business and community connections among rural compared to urban enterprises, with variation amplified in certain rural locations. The findings highlight the need for a flexible and nuanced approach to policies and interventions aimed at addressing enterprise and economic development, informed by a more differentiated understanding of the infrastructure challenges that enterprises experience across rural areas. Taking into account differences within rural areas is as important as rural and urban comparisons in understanding the experiences of rural businesses.

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Appendix A: Weighting procedure

Weighting procedure

We derive the weights for non-farm businesses based on the enterprise population from the Business Structure Database (ONS, 2021b). Within each region, firms are weighted by size-band (four size-bands), sectors (six sectors), and urban-rural types (two types). As this report considers the nonfarm rural economy, farms were excluded from the weighting process. Weights were derived for both the non-farm rural economy and the non-farm urban comparison group.

Across the three regions surveyed samples were structured by firm size band, sector and between urban and rural areas. This structured sample requires sampling weights to be developed to allow representative results to be obtained for urban and rural areas within each region. Table A1 below provides the achieved sample divided by region and urban/rural. Table A2 provides the business population in terms of the count of business units in each cell derived from the Business Structure Database (BSD) 2020 (ONS 2021b). The BSD is the annual abstract from the Inter-departmental Business Register and is itself based on VAT and PAYE data. This was accessed through the UK Secure Data Service.

Table A3 provides the sampling weights derived as the ratio of the business population relative to the number of respondents. Note that in a small number of cases where the numbers of respondents in a particular industry/size band cell is small, cells have been amalgamated to avoid extreme weighting numbers.

Table A1: Respondent numbers – rural firms

Respondents	Rural firms				
North East	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	62	9	7	7	85
Construction	55	11	8	3	77
Wholesale and retail, transport	163	22	19	3	207
Hospitality	68	23	10	2	103
Business services	154	31	15	10	210
Other services	120	32	27	14	193
Total	**622**	**128**	**86**	**39**	**875**

South West	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	53	43	33	17	146
Construction	34	14	11	3	62
Wholesale and retail, transport	118	48	22	17	205
Hospitality	50	36	34	4	124
Business services	100	33	25	17	175
Other services	75	48	40	25	188
Total	**430**	**222**	**165**	**83**	**900**

West Midlands	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	56	49	22	12	139
Construction	32	23	10	6	71
Wholesale and retail, transport	104	42	22	23	191
Hospitality	56	38	17	6	117
Business services	113	41	28	13	195
Other services	81	42	32	23	178
Total	**442**	**235**	**131**	**83**	**891**

Table A1: Respondent numbers – urban firms

Respondents	Urbanl firms				
North East	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	14	10	11	16	51
Construction	10	4	3	6	23
Wholesale and retail, transport	23	14	9	12	58
Hospitality	10	8	10	2	30
Business services	26	7	10	15	58
Other services	17	12	11	20	60
Total	**100**	**55**	**54**	**71**	**280**
South West	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	16	13	5	12	46
Construction	5	2	3	3	13
Wholesale and retail, transport	26	14	12	10	62
Hospitality	11	8	11	5	35
Business services	27	7	5	18	57
Other services	28	11	11	25	75
Total	**113**	**55**	**47**	**73**	**288**
West Midlands	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	13	5	11	19	48
Construction	7	7	5	3	22
Wholesale and retail, transport	25	13	15	13	66
Hospitality	5	13	10	7	35
Business services	26	9	10	15	60
Other services	14	16	13	18	61
Total	**90**	**63**	**64**	**75**	**292**

Table A2: Population numbers – rural firms

Respondents	Rural firms				
North East	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	1,198	137	95	81	1,511
Construction	966	104	43	24	1,137
Wholesale and retail, transport	1,258	159	90	35	1,542
Hospitality	782	212	112	27	1,133
Business services	1,734	157	75	72	2,038
Other services	847	184	112	62	1,205
Total	**6,785**	**953**	**527**	**301**	**8,566**
South West	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	7,096	776	486	275	8,633
Construction	5,310	454	182	64	6,010
Wholesale and retail, transport	6,400	1,043	501	217	8,161
Hospitality	2,997	1,041	722	149	4,909
Business services	11,454	874	401	191	12,920
Other services	4,007	768	610	383	5,768
Total	**37,264**	**4,956**	**2,902**	**1,279**	**46,401**
West Midlands	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	3,825	457	322	254	4,858
Construction	2,768	237	101	44	3,150
Wholesale and retail, transport	3,935	513	273	154	4,875
Hospitality	1,341	396	243	85	2,065
Business services	6,610	556	268	157	7,591
Other services	2,013	388	347	216	2,964
Total	**20,492**	**2,547**	**1,554**	**910**	**25,503**

Table A2: Population numbers – urban firms

Respondents	Urbanl firms				
North East	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	1,484	380	292	272	2,428
Construction	2,801	309	187	73	3,370
Wholesale and retail, transport	4,658	715	338	185	5,896
Hospitality	3,160	652	344	102	4,258
Business services	6,675	756	450	319	8,200
Other services	3,693	720	576	478	5,467
Total	**22,471**	**3,532**	**2,187**	**1,429**	**29,619**
South West	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	3,320	707	511	427	4,965
Construction	7,912	743	311	146	9,112
Wholesale and retail, transport	10,253	1,493	773	425	12,944
Hospitality	5,500	1,381	669	222	7,772
Business services	18,342	2,086	1,210	834	22,472
Other services	7,668	1,682	1,401	1,038	11,789
Total	**52,995**	**8,092**	**4,875**	**3,092**	**69,054**
West Midlands	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	5,104	1,327	1,099	828	8,358
Construction	7,722	695	349	144	8,910
Wholesale and retail, transport	17,532	2,210	1,056	589	21,387
Hospitality	6,289	992	518	159	7,958
Business services	24,845	2,229	1,168	835	29,077
Other services	8,999	1,966	1,389	1,124	13,478
Total	**70,491**	**9,419**	**5,579**	**3,679**	**89,168**

Table A3: Sampling weights – rural firms

Respondents	Rural firms				
North East	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	19	15	14	12	18
Construction	18	9	5	8	15
Wholesale and retail, transport	8	7	5	12	7
Hospitality	12	9	11	14	11
Business services	11	5	5	7	10
Other services	7	6	4	4	6
Total	**11**	**7**	**6**	**8**	**10**
South West	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	82	82	15	16	59
Construction	120	120	17	21	97
Wholesale and retail, transport	54	54	23	13	40
Hospitality	60	29	21	37	40
Business services	93	93	16	11	74
Other services	53	16	15	15	31
Total	**87**	**22**	**18**	**15**	**52**
West Midlands	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	68	9	15	21	35
Construction	87	10	10	7	44
Wholesale and retail, transport	38	12	12	7	26
Hospitality	24	10	14	14	18
Business services	58	14	10	12	39
Other services	25	9	11	9	17
Total	**46**	**11**	**12**	**11**	**29**

Table A3: Sampling weights – urban firms

Respondents	Urbanl firms				
North East	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	106	38	27	17	48
Construction	280	77	62	12	147
Wholesale and retail, transport	203	51	38	15	102
Hospitality	316	82	34	51	142
Business services	257	108	45	21	141
Other services	217	60	52	24	91
Total	**225**	**64**	**41**	**20**	**106**
South West	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	535	54	102	36	108
Construction	535	372	104	49	701
Wholesale and retail, transport	394	107	64	43	209
Hospitality	500	173	61	44	222
Business services	679	298	242	46	394
Other services	274	153	127	42	157
Total	**469**	**147**	**104**	**42**	**240**
West Midlands	**Less than 10**	**10 to 19**	**20 to 49**	**50 plus**	**Total**
Production	393	265	100	44	174
Construction	601	601	70	48	405
Wholesale and retail, transport	701	170	70	45	324
Hospitality	405	405	52	23	227
Business services	956	248	117	56	485
Other services	643	123	107	62	221
Total	**783**	**150**	**87**	**49**	**305**

Sample profile

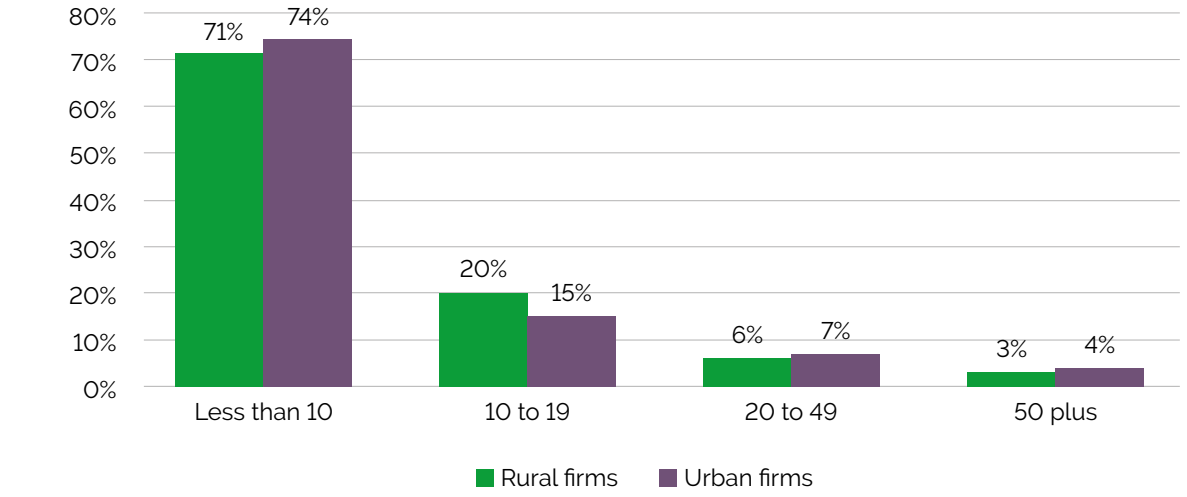
Figures A1 and A3 show the profile of respondents by size, sector, and business age. Responses are weighted to provide a representative view of private sector businesses in urban and rural areas within each region.

Overall, the majority of the surveyed firms in both rural and urban areas are micro (less than 10 employees) and small businesses (10-49 employees) (Figure A1). Compared to urban firms, relatively fewer rural firms are micro businesses (71.2% vs 73.6%) but more are likely to be small businesses, although there is significant variation across regions. Around 80% of surveyed rural firms in the North East and West Midlands are micro businesses, and 17% are small businesses, while 65% of rural firms in the South West are micro and a third are small ones.

Firms in rural areas are more likely to be in the production (including manufacturing) and construction sectors than those in urban areas, but less likely to be in business or other services (Figure A2). These differences are largely consistent across the three regions (Figure A2).

Around half of respondent firms had been operating for more than 20 years, with a higher share of rural firms in this older age category, with the proportion of younger businesses similar across regions but slightly lower in rural areas than in urban areas (Figure A3).

Figure A1: Profile of respondent firms by size, rural vs urban and by region



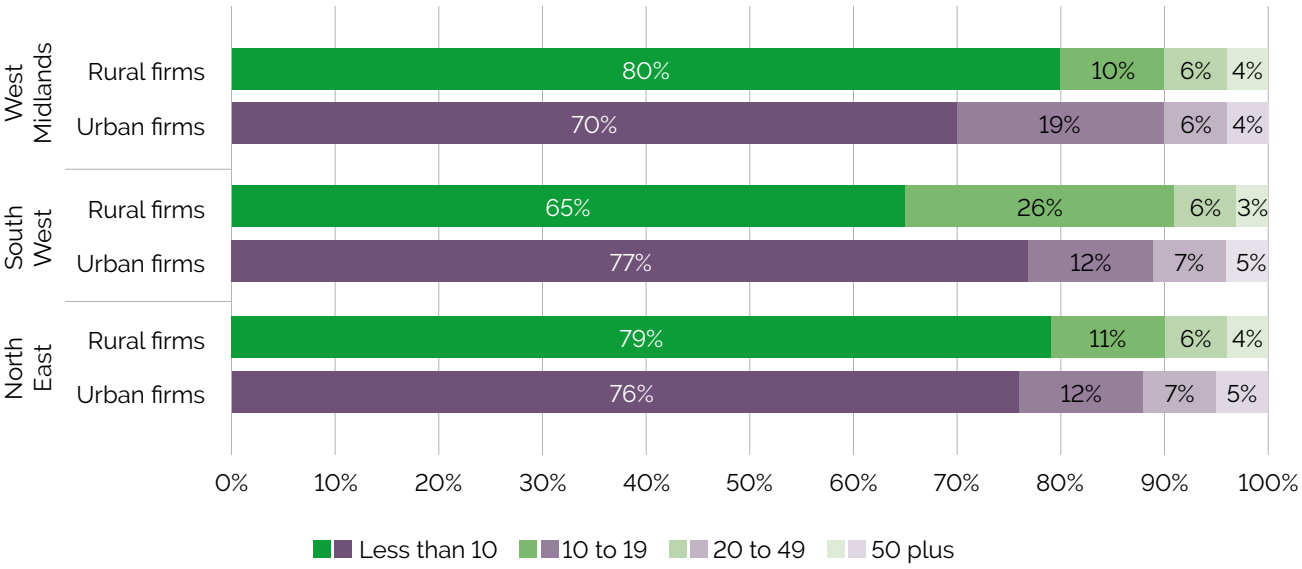


Figure A2: Profile of respondent firms by sector, rural vs urban and by region

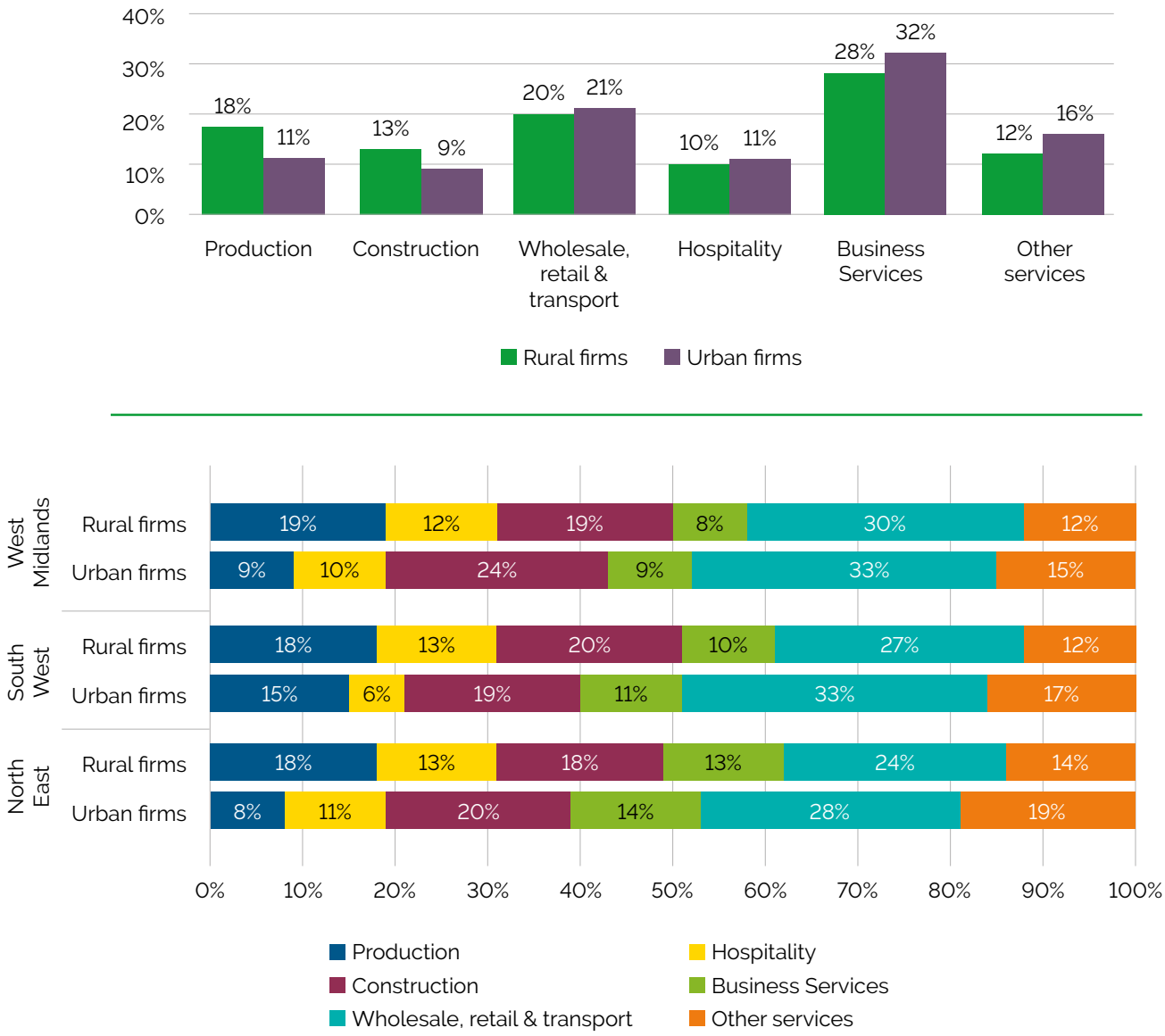
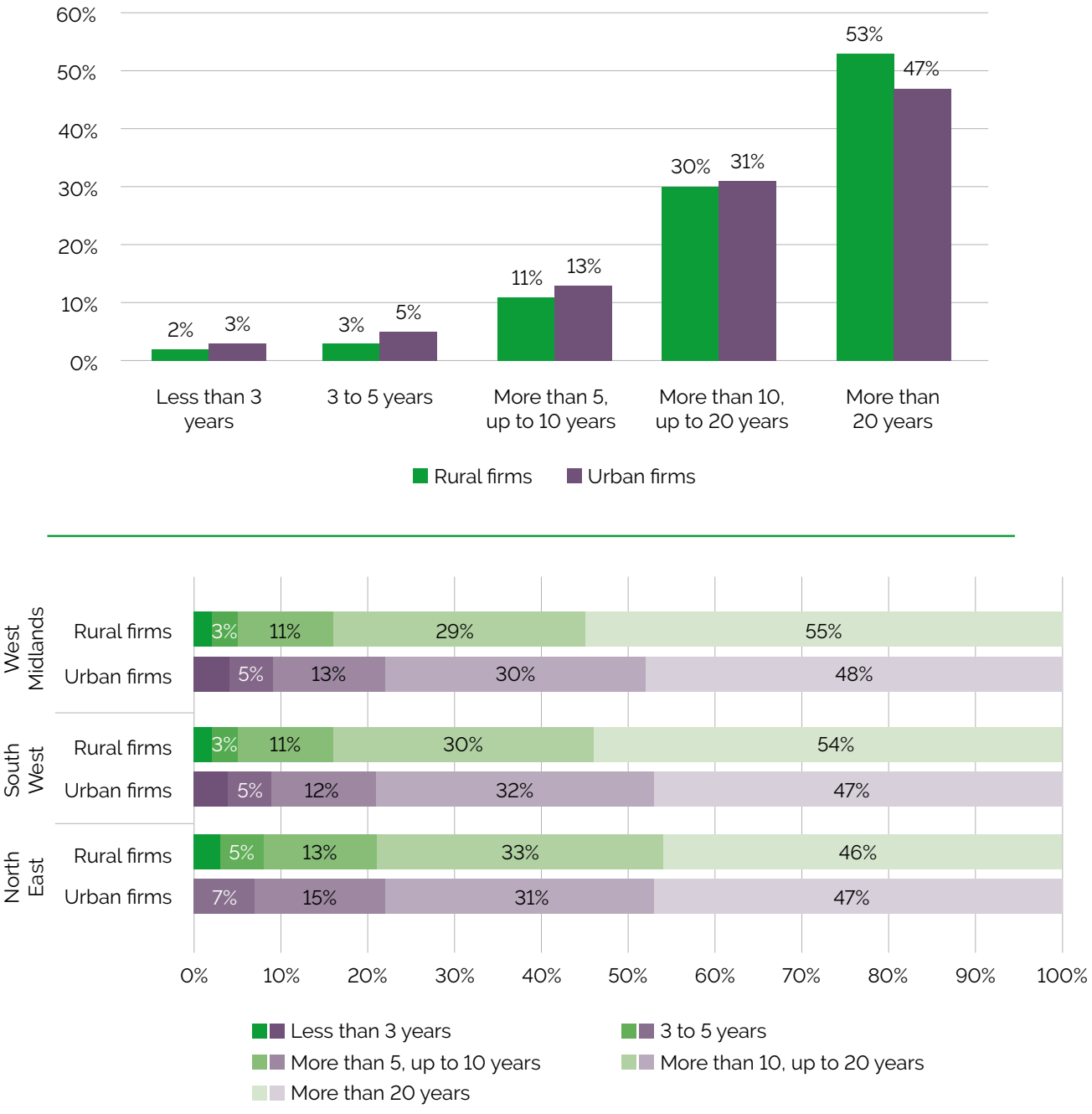


Figure A3: Profile of respondent firms by age, rural vs urban and by region



Figures A4 and A5 present the type of firm and legal status of respondent businesses respectively. The data indicate that the majority are independent for-profit businesses. The number of sole proprietorships is notably higher in rural areas. This is also the case for independent for-profit firms (with the exception of the South West) (Figure A4), partnerships and limited liability partnerships (Figure A5). Sole proprietorships are especially prominent in the North East in both rural and urban areas (Figure A5). There is a higher share of private limited companies (Figure A5) in urban areas in all regions. Similarly, a higher share of branches and subsidiaries (Figure A4) is seen in urban areas (with exception of the South West, where there is a rural emphasis on this business model).

Figure A4: Profile of respondents by firm type, rural vs urban and by region

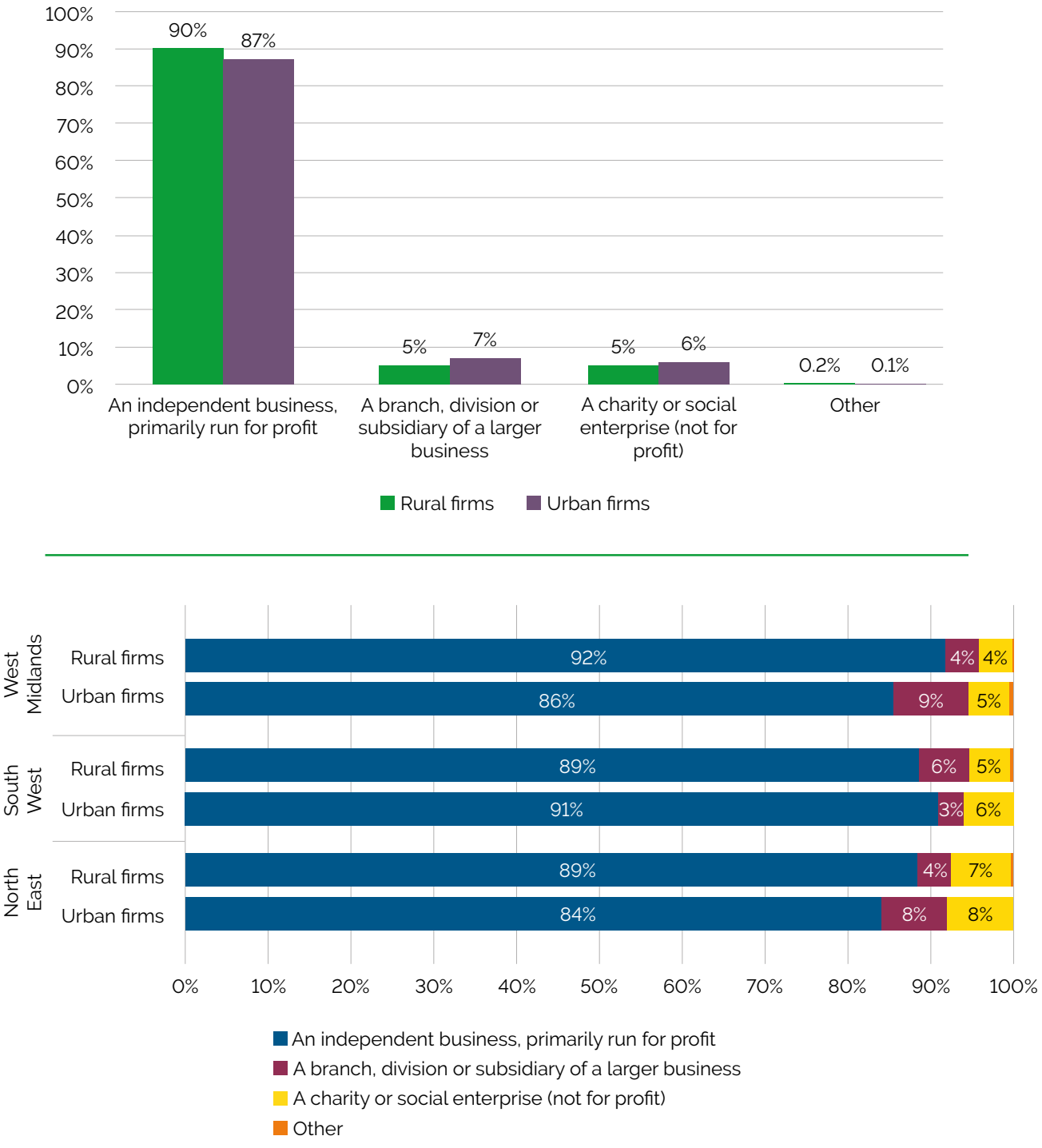
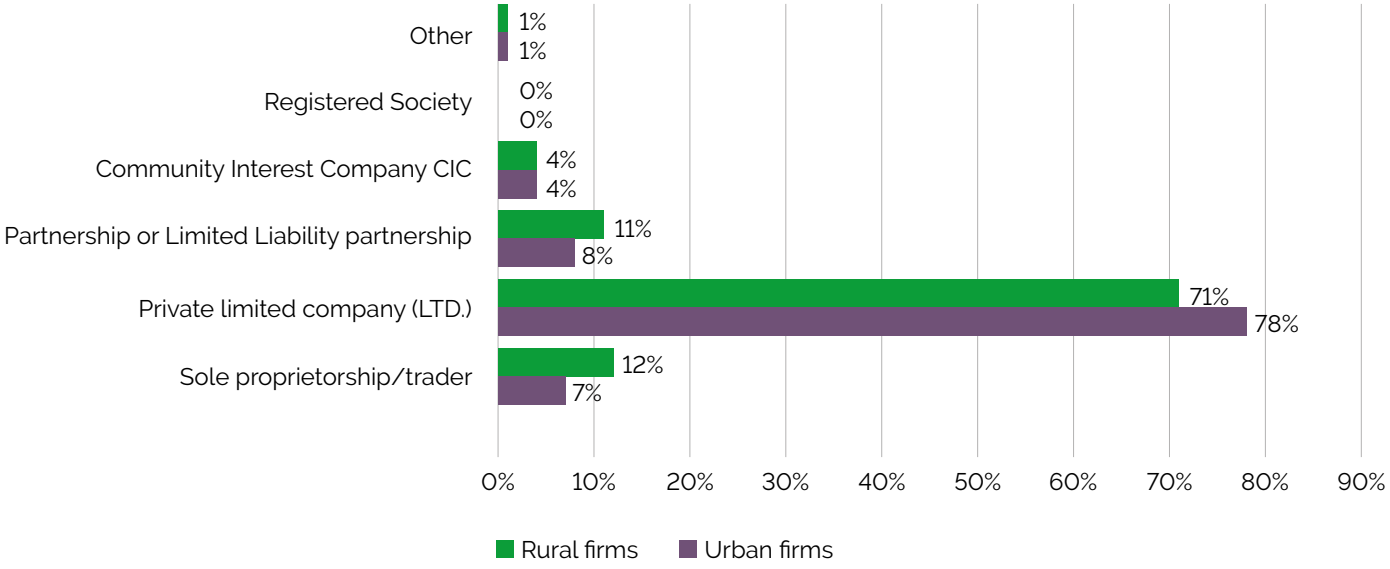


Figure A5: Legal status of respondent firms, rural vs urban and by region



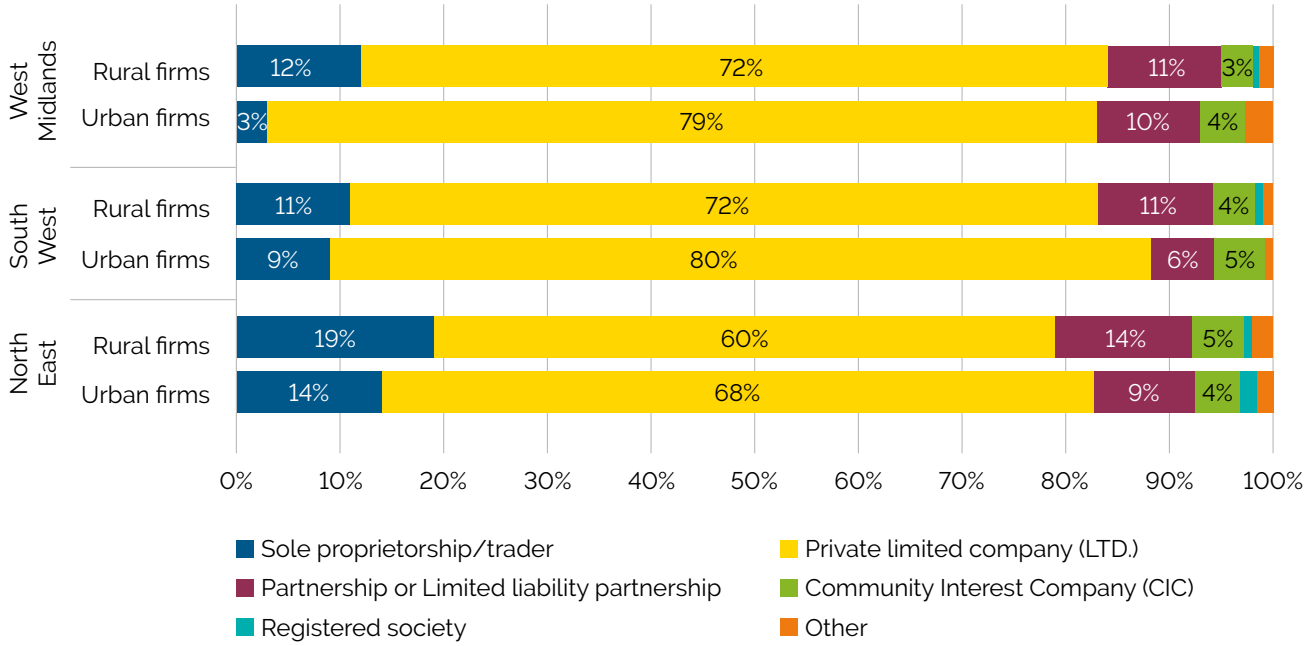
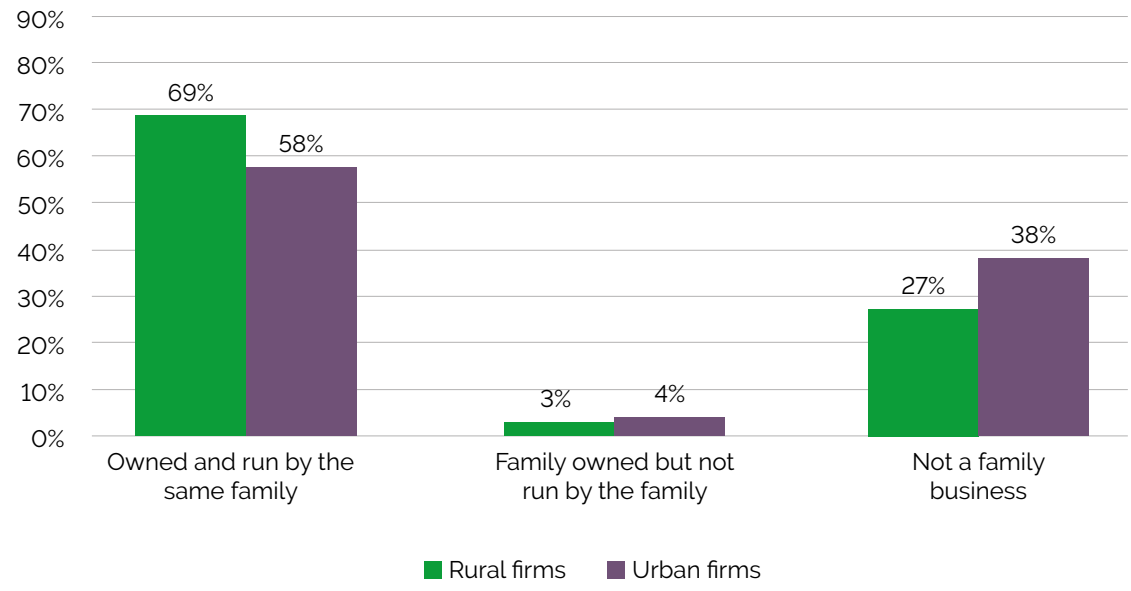


Figure A6: Family-owned business, rural vs urban and by region



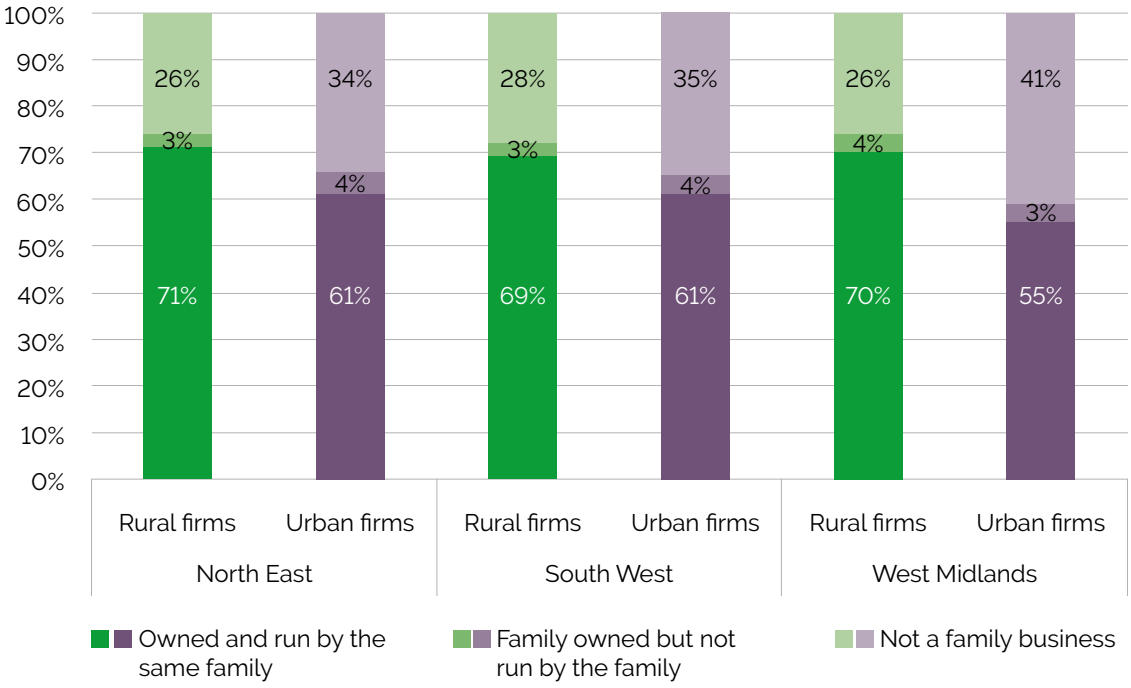
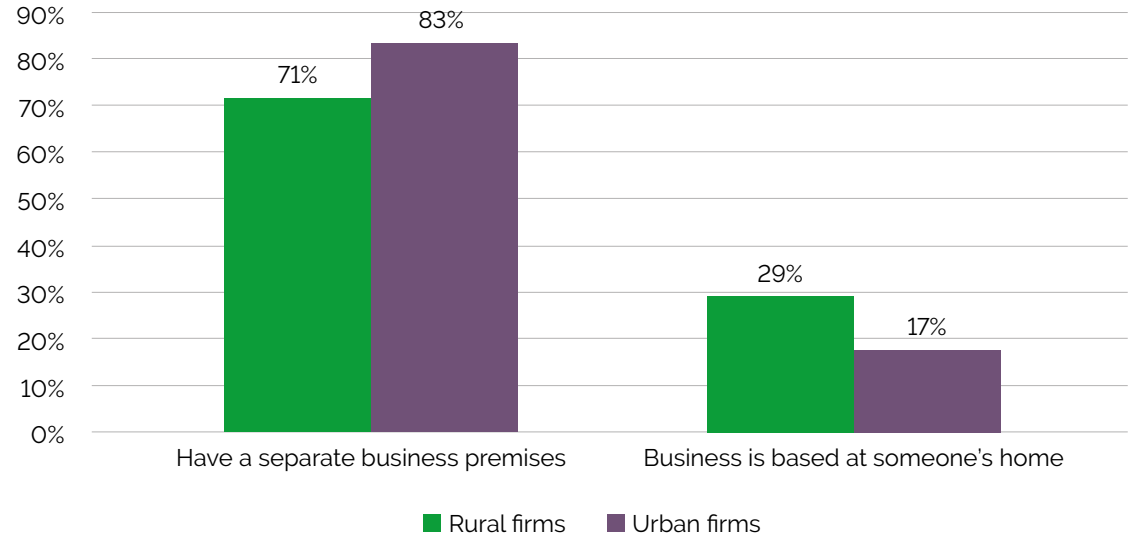
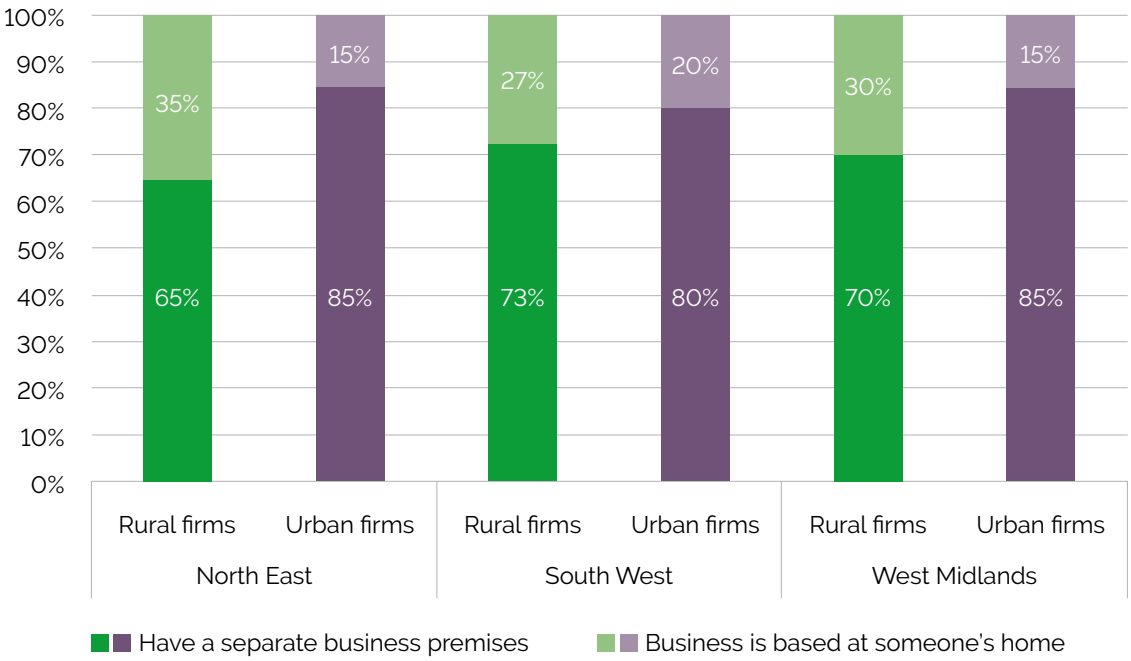


Figure A6 shows that the proportion of businesses that are family owned is notably higher in rural, compared to, urban areas. This holds in all regions. Figure A7, indicates that in all regions (and especially so in the North East), rural firms are notably more likely to be home-based than urban firms.

Figure A7: Home-based business, rural vs urban and by region





Appendix B

Probit models for resilience and infrastructure indicators: marginal effects

We estimate simple multivariate models for rural firms. In each case our dependent variables – the resilience indicators – are defined as binary variables taking a value 1 if turnover or cashflow were sustained or increased during the previous year, or whether the firm returned a profit in the previous year. Independent variables are also converted into binary variables from the Likert indices in the original survey. In each case, strong interaction or local services perceived to be of good or very good quality take a value of 1 in the models. Positive values of the coefficients therefore indicate a situation where the perceived quality of local services or interactions are positively related to organisational resilience. Coefficients in Table B1 are marginal effects, the average percentage effect of each variable on the dependent variable. These are interpreted as follows: where firms saw local broadband quality as high this was associated with a 6.3% increase in the probability of having sustained turnover. Note that the models for rural firms include a series of control variables designed to help isolate the effects of the infrastructure and business environment indicators. These include: business age, size, extent of local sales, sector and region.

Table B1

	Sustained turnover	Profitability	Sustained Cashflow
Broadband quality	0.063**	0.053*	0.057**
	(0.032)	(0.027)	(0.029)
Transport infrastructure	-0.033	0.022	-0.019
	(0.035)	(0.030)	(0.031)
Public transport	0.007	-0.051*	-0.004
	(0.035)	(0.030)	(0.032)
Affordable housing	0.032	0.036	-0.027
	(0.032)	(0.028)	(0.028)
Basic services	-0.011	0.051*	0.035
	(0.032)	(0.026)	(0.028)
Know lots of local business leaders	-0.015	0.011	0.002
	(0.039)	(0.032)	(0.034)
Often interact with neighbouring businesses	0.033	-0.011	-0.014
	(0.041)	(0.034)	(0.035)
Businesses tend to support each other	0.047	0.037	0.058*
	(0.038)	(0.033)	(0.033)
Business engaged in community activity	0.034	-0.001	-0.047*
	(0.032)	(0.027)	(0.028)
Business age (years)	-0.002	0.002	0.001
	(0.002)	(0.002)	(0.002)
Proportion of local sales (%)	0	0	0
	(0.001)	(0.001)	(0.001)
Employment (number)	0.000*	0	0
	(0.000)	(0.000)	(0.000)
Production	0.281***	0.182***	0.177***
	(0.051)	(0.041)	(0.044)
Construction	0.300***	0.179***	0.239***
	(0.063)	(0.054)	(0.057)
Wholesale, retail, transport	0.202***	0.176***	0.174***
	(0.046)	(0.037)	(0.040)
Hospitality	-0.117**	-0.165***	-0.045
	(0.055)	(0.040)	(0.044)
Business services	0.216***	0.184***	0.172***
	(0.048)	(0.039)	(0.041)
North East	-0.069**	0.013	0.002
	(0.033)	(0.028)	(0.029)
West Midlands	-0.005	0.027	0.048*
	(0.033)	(0.028)	(0.029)
N	1814	1739	1913
chi2	99.462	158.403	1913
rho	0	0	0
r2p	0.058	0.105	0.049
bic	1126.93	876.49	1050.09

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