

Extended Abstract

Please do not add your name or affiliation

Paper Title	Exploring local food networks in Gloucestershire and North Cotswolds - considering rural resilience
--------------------	--

Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	200 words max
<p>Encouraging local food supply has emerged as a favoured policy approach to tackle various contemporary challenges, from reducing transport emissions to improving economic resilience and quality of life. Although increasingly discussed, little empirical analysis has explored the complex relational networks that define how small and medium-sized enterprises (SMEs) operate in local food and drink markets. This paper presents early results from a novel approach to investigate the dense networks of firms in the local food and drink supply chains of Gloucestershire and the north Cotswolds. Following a detailed pilot, we used social network analysis to map the supply networks of food and drink businesses and calculated key network metrics. Our results reveal the interconnected nature of businesses (farm shops, producers, retailers and wholesalers), working together to facilitate local supply. In particular, farm shops emerge as central figures within these networks, maintaining collaborative relationships that can foster product and process innovation among and between their suppliers. While policies for economic development tend to focus support on large or 'high growth' firms, our initial findings suggest potential for alternative strategies better tailored to the specific needs of SMEs in local networks, fostering business 'ecosystems' characterised by diversity, interdependence and resilience.</p>	
Keywords	Small and medium-sized enterprises (SMEs), local food networks, social network analysis, rural resilience, policy
JEL Code	D22 Firm behaviour - empirical see: www.aeaweb.org/jel/guide/jel.php?class=Q)
Introduction	100 – 250 words
<p>Business in rural areas is characterised by a relatively higher proportion of SMEs and micro-businesses, when compared to the national average. Government funds for investing in economic growth, enterprise or regeneration often target larger firms, or firms with potential for rapid growth, based on the notion that this will most effectively increase local employment or incomes. However, as partners in NICRE (the National Innovation Centre for Rural Enterprise), we identify many situations where rural businesses act as interlinked elements in an ecosystem, in which the interdependence of many smaller players may be as important as their individual competitiveness, and thus backing fast growth may not bring 'the greatest good for the greatest number'. We suggest that if we can better understand the functional characteristics of economic networks of rural businesses, we may identify different criteria for measuring 'success' and think differently about how best to target support.</p>	

Through investigation focused on local food and drink networks, we are aiming to better understand such networks and recommend how government policy could be improved, in ways that will strengthen rural economies and foster innovation. Understanding the links between local food SMEs and the position and roles of participating firms within this network can enable policy makers to better understand why and what kinds of distributed networks may be critical to the growth, resilience and economic success of rural enterprise in future. This, in turn, should lead to more effective policy support.

Methodology

100 – 250 words

Data collection for local food and drink supply chains in Gloucestershire and the north Cotswolds took place in four phases (2019 to 2023), progressing incrementally. Initially, we assembled and updated a list of businesses operating in the local food and drink sector, through online searches and personal knowledge. A snowball sampling technique was chosen to begin collecting network information. Pilot sampling involved approaching three farm shops for face-to-face data collection, with all showing initial interest but only one fully engaging, due to time constraints. This pilot provided a valuable case study, enabling an online survey to be designed and circulated to relevant firms via a wide range of local partners. However, with very low response rates in turbulent and demanding market conditions post-Covid 19, we identified a need for an alternative strategy. Many companies disclose details of supply relationships with other food and drink companies on their websites, which proved a sufficient starting point to build a picture of the network without requiring further direct engagement. It enabled us to classify each company according to its type (i.e. farm shop, retailer, producer or wholesaler, or various combinations), and SNA software could then be used to explore how these companies are interconnected. Examining relational criteria across the network, and using our pilot case study and initial scoping, we could identify the different roles of business types and examine their contributions to network characteristics. This helped us consider the value of a network-focused approach to rural enterprise and innovation, and potential policy implications.

Results

100 – 250 words

UCINET software was used to map the network of SMEs in our local food and drink supply chains. 803 actors and 1,269 links were identified in the network. Measures of ‘in-degree’ and ‘out-degree’ centrality provide a good understanding of the relational networks of suppliers and recipients of products. Unsurprisingly, primary producers stand out as main senders or suppliers: they have a much higher out-degree rate within the network, followed by wholesalers and farm shops. Most of them supply between 1 and 4 other enterprises in the network. On the other hand, retailers have the lowest out-degree centrality, indicating that they have fewer outdegree ties and a lower volume of products sold on to other firms in the network. Retailers have the higher in-degree centrality, followed by wholesalers and farm shops, which indicates them as main recipients of products from others. Analysis of



the farm shops shows that 35% have more than 4 suppliers, almost 18% have between 10 and 49 suppliers and 5% have more than 50 suppliers. In addition, over 60% of farm shops are in K-core 2 or higher, with over 25% in K-core 5, indicating their vital role in sustaining the local food system. From our pilot case, we identify potential for this role to encourage local producers to innovate and enhance their product range and quality, as well as to foster greater collaborative activity across the network, to promote local products, and improve customer understanding. We are now considering options for the next phase of work and would value the opportunity to discuss these with other conference delegates.

Discussion and Conclusion

100 – 250 words

The development of network maps has enabled us to visualise and characterise the interconnectedness of local food and drink businesses, whether farm shops, producers, retailers or wholesalers. Through the use of SNA, we have identified patterns in relationships, examining how individual businesses are linked to others and contribute to the wider network. Relationships between suppliers and stockists are critical in ensuring that the supply chain functions properly and products are delivered effectively to end users. Results from the network maps show that certain SMEs play pivotal roles at the local level. Their centrality within the interconnected network highlights the crucial position of farm shops for maintaining the efficiency and sustainability of the system. The network maps enable us to consider new options for government policy, addressing challenges and identifying opportunities to better support rural SMEs. In order to foster a resilient and collaborative business environment, they highlight the potential value of supporting interconnected local food networks and their effective functioning, rather than individual businesses. Acknowledging the challenges of collecting data on relational networks directly from SMEs, the use of online secondary data offers an advantageous approach to studying linkages between firms. Despite limitations in terms of scope and depth, it has enabled us to gain meaningful insights, to identify and illustrate patterns of relationships in food exchange; and explore how policy might be more specifically developed to support and strengthen rural business networks of this type. We are keen to discuss potential next steps for this work.