
Food ‘on-demand’: learning from sustainable last-mile freight logistics

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Abstract

ICT is fostering growth in grocery, takeaway and home delivered meals, and pushing away from more sustainable food systems such as community cooking, shopping, and growing. We highlight the importance of considering this emerging on-demand food landscape as an infrastructure analogous to other freight services which are already facing scale and sustainability challenges.

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Introduction

Digital technology is increasingly mediating the way in which food is acquired. In 2015, 37% of UK online retail sales was due to grocery, takeaway and other home delivered meals. Transport and logistics is contributing 12% of the environmental impacts associated with food systems over local, national and international networks [6].

Modern food chains are both complex and varied, making

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the transparency of the environmental impacts linked to the transportation and demand for food difficult to accurately capture and quantify [4]. Adding to this complexity are the growing variety of ways in which food is transported across the last mile to customers ‘on-demand’, including online shopping, and meal delivery services¹.

Changing impacts of food

The practices surrounding purchasing, consumption, storage, and preparation of food are complex [3], and depend on a variety of meanings and competencies, and issues including affordability, convenience, and expectations around ‘normal meals’ (e.g. meat and two veg). Variations in practice lead to more and less sustainable ways of doing food [5].

Increasingly, digital technology can be seen as a gateway to more sustainable food practices (e.g. local food growth, food sharing, pop-up assemblies from local food sources², tools for sustainable food communities) but also—and more mainstream—as a tool that enables convenience and on-demand meal and food consumption (e.g. Just-eat, Deliveroo). Technology provides fast access for consumers to eat what they want when they want. These on-demand food and meal services encourage environmental impacts surrounding ‘last-mile’ deliveries and food preparation and likely less sustainable configurations and performances of food around individual meals and separate ‘food journeys’—moving us away from more sustainable group and bulk cooking [4], and further removing the consumer from concerns regarding the ingredients and its environmental impacts and origins [2].

¹ Deliveroo is a UK based company that delivers cooked meals from customers favourite restaurants to their home. <https://deliveroo.co.uk>

² <http://thefoodassembly.com/>

Reflecting on last-mile deliveries and Food

The number of parcel deliveries in the UK is estimated to be 1 billion per annum in 2015, up by 15.7% year on year [7], in part due to a shift towards on-line shopping [1]. Last-mile freight traffic has implications for environmental sustainability due to increased congestion.

Loss leading or ‘apparently free’ delivery squeezes margins and makes investment in more sustainable alternatives difficult. Importantly, changes in inner city regulation, particularly congestion and emissions charging, is creating an opportunity for ‘clean last mile’ services. Our early results with freight providers suggest aggregation and sharing is possible, but requires new IT systems and infrastructure that respects tacit knowledge of drivers and schedulers. Data and visualisation can also provide policy makers with new understandings that can improve the design of better urban and kerbside infrastructure for sustainability.

Discussion

The design of sustainable food systems requires that we consider last-mile deliveries, food practices and the demand for food (“food as a services (FaaS)”) together. Freight transport is rich in ongoing technology enabled innovation (aggregation, re-timing of deliveries, drop boxes, drones and autonomous vehicles). While the sustainability of these innovations remains to be quantified, what can we learn from this domain? Consumers ‘require’ convenience when it comes to food. Convenience feeds and is fed by new business-models surrounding on-line food shopping and the “gig economy” around food delivery. Delivery isn’t free and has associated environmental and social costs. Can we make these costs transparent, and communicate them effectively to change this culture? ICT is at the centre of this revolution; can it reshape these services and infrastructures towards more, rather than less, sustainable practice?

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