



FlipGig - Digitally transforming deliveries and collections in the gig-economy: fairer and more sustainable last mile parcel logistics

Workshop summary

Motivated by significant growth in online sales & returns, free and low cost delivery, and also an increase in life-style and 'gig' economy workers without guaranteed or sufficient work; the project set out to explore more dynamic and sustainable operating models, and how software platforms and operating practices could promote fairness and sustainability.



Significant growth in delivery to home and B2C. Also in gig workers and independent contractors.

- worked with commercial partners to understand their business as usual
- looked at ways of distributing work more fairly between couriers
- more sustainable approaches reusing civic assets such as carparks as micro-consolidation points – leading to a trial with a major carrier

The project developed and explored:

- methodologies for studying gig work remotely
- conducted fieldwork in Manchester, York, Edinburgh – despite a global Pandemic!
- challenges faced by gig logistics workers

Learning from gig workers

Challenges of gig logistics, 29.4.2022



Our findings are valuable for a wide range of stakeholders, specifically:

- **Logistics** - Deliver more sustainably using micro-consolidation
- **Software** - Avoid unfair algorithmic approaches and user interfaces
- **Workers** – benefit from more transparency to customers, fairer work conditions
- **Customers & Restaurants** - consider how gig workers should be treated
- **Cities** – see how to design civic spaces for this hidden demography
- **Unions** – methods for reaching a set of workers who are challenging to reach & represent due to their independent and atomised status

At the workshop we presented our findings and results in a series of short talks (linked from this document) followed by a poster session and panel discussion. This document aims to capture key discussion points, and potential for future work and impact.

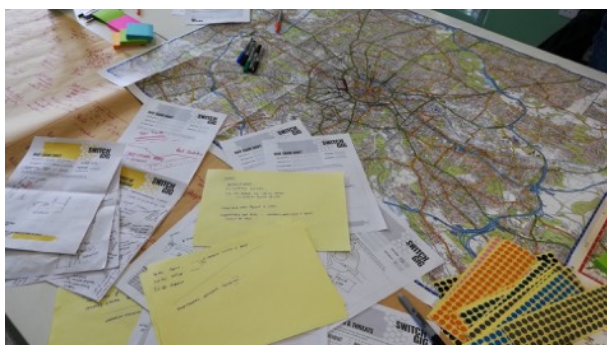
Talk 1 - Challenges

The first talk presented results of fieldwork with gig logistics and food couriers in Manchester, York and Edinburgh, using a range of largely remote methods developed during the project. These are important for giving gig workers a voice in urban design and to understand fairness and the lived experience of this atomised workforce.



Slides: <https://tinyurl.com/flipgig-challenges>

Discussion points:



- Who is allowed to stop where to make deliveries in cities. Gig and private companies are often not treated the same as the post office - but actually it was noted the post office are often are given more license than they are formally

allowed.

- Public liability. How do you ensure that workers are responsible / respectful of public safety. They're under pressure to work fast, but are not as accountable as liveried/employed workers, or covered by blanket liability insurance. With the rise of faster EV bikes and scooters sharing pavements etc. with cyclists and pedestrians, there is a public safety question.
- Need for joined up thinking around introducing EV platforms such as electric scooters in smart, liveable cities etc. Note, e-scooters stuck in the snow in Sweden last winter, making clearing cycle paths much more time consuming (implications for system.)
- Note growth in self converted E bikes that are not limited - e.g. 30mph+! increasingly being used in cities - gig work is the 'wild west'.



Interesting to follow up on:

- Analysis of the difference between novice and experienced worker pay
- Can see that tips for gig workers are very low... but we're a tipping society? Is this a lack of accountability for not tipping due to the digital nature of these platforms? N.B. Asking for money digitally via text message etc. is easily considered as phishing etc. which can be problematic.
- Where are the areas of non-service/ not served by gig work, and is this explicit or an emergent property?



Talk 2 - Civic micro-hubs and portering



The second talk focused on analysis of how civic assets such as car parks could be used as micro-consolidation hubs, allowing a shift

from van journeys to a more sustainable last mile based on porters (walking) and cargo cycles. We analysed data from business as usual for a major logistics operator and showed how this might be transformed at various civic scales (Portsmouth, Romsey, Lyndhurst).

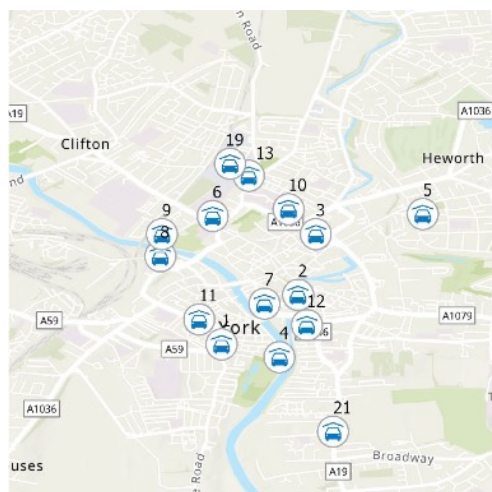
Slides: <https://tinyurl.com/flipgig-civicmicrohubs>



There is a key question in the comparative analysis about how long a delivery takes (dwell) time for different modalities. Pre-sorting is an important factor, also in highrise drops.

Discussion points:

- We have shown this works even at smaller scales offering potential for community champions who do your local deliveries and get to know their customers
- You can reduce from 47 vans to 35 porters, but this assumes a huge bespoke 1000L trolley. Who owns these assets, and manages them; are mobile depots with charging an option?
- If vans are going 'back home' with drivers after their round rather than back to a depot which may be partly due to constraints and affordability of civic land for logistics and space for charging, how will this change the availability of charging for EV vans and other EVs in these areas?
- Could they take the battery home? - will there be contention for charging points between work and domestic vehicles?
- Commercial rates being charged for real estate, so loss of this in cities might lead to significantly longer and less efficient stem mileages (vans going into/out of cities etc.)
- With a bigger vehicle feeding the micro-hubs, will the driver and van then be idle? They may have extra work in making collections and delivering larger parcels (uglies).



Interesting to follow up on:

- DfT research funding; council owns industrial estates which are dense areas often with lots of vacant space, could this be exploited with some joined up planning?
- At the neighbourhood scale there's also social questions. e.g. going to the library to collect your item might be healthier vs. everyone waiting at home as individuals and not having the social contact.

- Carbon savings of collections.

Talk 3 - Fairness and route scheduling

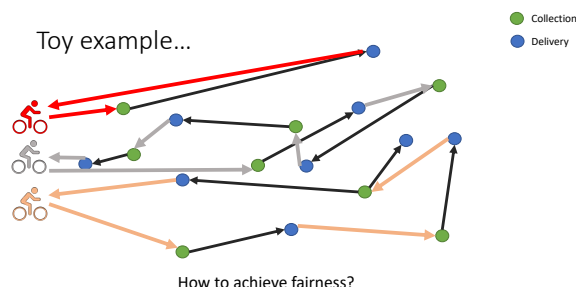
The third talk focused on introducing fairness for the Gig-economy couriers in terms of work scheduling, and exploring the meal delivery problem using a mathematical model and a more scalable heuristic approach. This is important given the significant volumes of meals and parcels that are delivered and the complexity of generating good routes. We also talked about the importance of sorting and pre-packing.



Slides: <https://tinyurl.com/flipgig-fairerallocation>

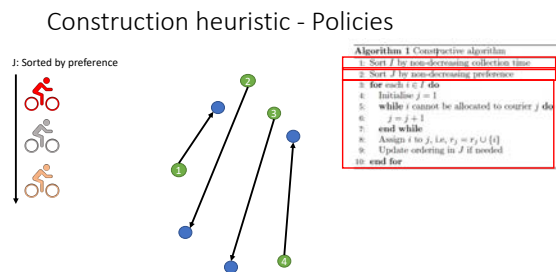
Discussion points:

- Interesting how gig workers make real world decisions about which gigs to accept quickly, given the complexity. It's possible to lose 'reputation' digitally (e.g. holiday, illness) and have to start again!
- This approach assumes you know all the orders in advance rather



than incrementally? Acknowledged we do need to work with time intervals etc.; is possible in the simulation framework.

Interesting to follow up on:




- Observation: we've assumed fairness for workers over one day, but it may be possible to be fair over a longer period of time which might allow more efficient daily solutions which are less fair on a given day, but make up for it on successive days.

- Feasible packing is important. In supermarket warehouses, you don't want pet food on top of crisps or roll cage wheels to jam if the load is too heavy (known problem). Similarly, logistics workers with a car stuffed full of parcels will not be sorted for efficient drop offs, and you see this with grocery delivery vans at the kerbside juggling trays that are out of order.

- May also be useful to think about load distribution and balance, especially for cargo bikes. We need to solve this problem in multiple stages and potentially change the routing to optimise feasible packing.

Talk 4 - Engaging the public (meal deal game)

Premise



- The working lives of gig economy couriers is hectic, complex and often times unfair.
- Meal Deal is a card game that models a simplified but representative system of marginalisation experienced by gig working couriers*
- Couriers are marginalised in numerous, invisible ways
- Couriers also enjoy parts of the work
- Influenced by fieldwork with gig economy couriers in Manchester, York and Edinburgh, Meal Deal articulates the lived experiences of couriers to raise awareness and challenge preconceptions of workers providing an essential service through Covid-19 and the everyday lives of millions of global customers.

The final talk focused on a card game we're creating with partner project Switch-Gig and Tales of Engagement funding to transfer some of the learning about gig worker experiences into a form that can be widely appreciated.

Slides: <https://tinyurl.com/flipgig-mealdeal>

This was seen as a useful output of the project. Interest in using the game as part of training within a logistics operator was expressed.

Open discussion

We then had a round table discussion around potential impacts arising from the project, interesting lines of enquiry for the future, and other related points from different expert perspectives.

Land use and trip generation

1. We discussed the need to join up planning, building, street use, logistics and so on to gain a benefit across these sectors. The need also to collect evidence from previous and ongoing pilots to inform policy with an evidence base.
2. A critical concern for a sustainable last mile is where cargo bikes can be stored & charged, and where consolidation can happen close enough to delivery points.
3. Land use planning needs to be more agile. Land use planning can take 18 months, but businesses are looking to change more rapidly than this. Dark stores are emerging generating ancillary problems to deal with - e.g. enforcing traffic rules.
4. The land use database, TRICS, which is used for planning has travel into/out of buildings based on surveys from 7am-7pm (freight is often operating outside of this) - so this chronically underestimates freight impacts of building users!
5. There's a need to up-skill local authority planners to consider the trip generation of this kind of B2C traffic. For people movement there is a legal obligation, freight is not a concern until low traffic neighbourhoods are needed. Land use is changing, there's dark kitchens emerging, and e.g. rates levels drives different building use. Venture capital backing for innovative startups can drive up rental prices and force out logistics from traditional real estate, for example.
6. Dark kitchens, ocado and nocardo (not all communities want these things in their community). There are legal challenges to dark kitchens, e.g. applied for retail but used for storage... CBRE etc. challenging, pushing up prices of 'what's left' for legitimate operators.

Gig work and unplanned emerging properties

1. On paper gig work should be family friendly due to flexibility. But tiny percentage of workers are female, and is it safe for female gig workers?

2. Gig work - what is it doing to social cohesion, the workers might need to work 80h for 40h of money (social justice, no public toilet etc. - not in the pay and conditions of the people!). Could lead to anti-social working hours (for youngsters, 18-21) - pushing work into evening; security issues of working these hours especially for goods like wines or cigarettes which could lead to challenges with drunk customers, citizens etc. Safety/gender equality issue here.
3. Social justice of gig work. How many gig workers are using food banks, can't afford to get out of shared housing etc. and thereby into other forms of work and are therefore 'stuck'?
4. The Paris March 22 gig survey results, published on 29th April (today). 26% of those surveyed had had road accidents serious enough to be going to emergency room. There will be more than this!
5. High number of undocumented gig workers in Paris. There's account sharing up to 25% and their renting these accounts from official workers (10Ks), provides jobs for migrants + restaurants, plus construction, plus gig workers!
6. Paris is trying a 'house of couriers' which provides coffee, toilet etc. legal help; access to get legal help, the city are paying for the lawyers, to help with establishing credibility for residency or to sue Deliveroo etc. - only used to date by 60 out of 40K workers so far! (N.B. the government through taxes are paying for something the companies aren't paying for!)

Data availability and enabling research

1. More data is needed to do carbon footprint assessment of freight, especially the myriad of operators and small vans in the last mile.
2. There is increasingly a barrier to getting data to illustrate this potential. GDPR and IP concerns has many businesses opting to 'play it safe', which is a barrier to this kind of research. Repeating earlier studies is now problematic due to privacy fears over location tracker use, which can provide vital insights into how logistics works in practice. Vehicle telematics only provides one part of the story given the kerbside and delivery activity on foot etc.
3. The freight transport zone (FTZ) project has significant funds to sponsor practical trials of last mile innovations including micro & macro consolidation.
See: www.solent-transport.com/solent-future-transport-zone/
4. Is there a data hub? Not all operators have good data sets - e.g. driver on 'job & finish', know start time [mining for gold]

5. In London, we (TfL) don't know what most vans are containing, are they logistics? Unmarked vans are hard to capture on film and process automatically. In London, there is data for the congestion zone to DVLA, can get 1 type of van, but 18 types of HGV, so little differentiation of vans. We don't know if they are freight, service vehicles etc. or even who the owner is (is this a data integration problem?)

Innovative practice and role of regulation

1. When logistics operators do work together and consolidate this can be effective, c.f. Menzies in the highlands and islands of Scotland. Regulation to mandate this, e.g. to clean up the last mile etc., could be a route forward.
2. We could use 7-8,12t vans which are more people friendly, but there's an artificial divide = extra training needed you may as well go to 18t makes more sense (black & white legislation needs to appreciate the knock on implications!) - need to rethink the legislation to get the incentives right for the sustainability outcomes we want.
3. Companies are protective of these data. New French legislation has led to the disclosure of mean revenue for gig workers so that workers are informed; this accelerated access to major private company data. Also an independent database of gig workers to feed into election information.
4. Business improvement districts - who engages with the businesses? Logistics can't talk to their customers (don't have time or resources), lack of trust as businesses believe they're just trying to save their costs, if not on an open book contract. How to integrate these things?
5. 30 x Dutch cities will have to do zero emissions zone, so have set up platforms - they will have to provide indicators e.g. weekly deliveries, and need to enable data sharing if they want to continue delivering (e.g. monthly) - enabling the writing of net 0 roadmaps for this sector.
6. Not just 'public travel', can I link when travel occurs to avoid logistics peak hours. Changing collective behaviour can have adverse consequences or help spread demand on the roads. e.g. During the Olympics, TfL did 're-mode your trip, retime your trip, use a bike' messages to consumers - can we use the same techniques to allow for deliveries? i.e. Think about the timing of people movement and logistics collectively?

Business practice and hidden drivers

1. There is no free delivery, but consumers are increasingly expecting and being driven towards this.

2. Business procurement and associated delivery trips are often overlooked, and they comprise 85%-90% of all delivery activity. What about B2B, e.g. pre-finished goods, construction goods are not allowed before 8 or after 6, also utilities, waste vehicles - these are not looked at!
3. Insurance, liability - unfair competition between companies with employees (which pay for a uniform, holiday etc.) and gig workers, especially in terms of follow up in case of dangerous behaviour and public liability. Workers mainly are not paying for liability cover. Will they give way to buggies or take shortcuts that put the public at risk? Will their vehicles be fit for purpose/ meet safety standards? The 'good' gig operators who do accommodate and pay for this are picking up costs the less reputable ones aren't (e.g. maintenance, facilities). How to avoid the unscrupulous taking over and driving the good players out of business due to their lower costs.

There's no single solution or magic bullet for all towns and cities. Rather bikes, trolleys and on foot represent a suit of solutions - for different regions, and users. For example, flat areas might be well suited to E-bikes, avoiding problems with batteries and seriously hilly terrain! Careful planning of where logistics and consolidation is located, and facilities for gig workers are needed to get a beneficial outcome for the workers and the city.

Conclusions

We believe that there is significant potential for towns and cities to benefit from cleaner last mile deliveries using more sustainable last mile options and micro-consolidation, potentially reusing civic assets such as car parks, libraries and other public buildings. This could lead to more and better work for gig logistics workers. Key to this may be a commitment to a 'fair and sustainable gig work zone' which sets limits to the available work and share of work available. Thinking through the system including infrastructure changes needed, facilities for workers, platforms/ vehicle choice (likely electric) and aspects of access and safety could lead to a greener and more efficient system that is simultaneously better for workers and citizens, while also promoting more socially sustainable and equitable work.

We recommend trials at different civic scales to demonstrate this potential. This would allow the development of appropriate policy that ensures that gig platforms address issues including lack of transparency, systemic bias toward less sustainable transport options, issues of public liability, and desirable infrastructure changes including integration of micro-consolidation, portering, pedal and electric vehicles to promote these emerging types of work and the sustainable reshaping of our towns and cities. Engaging currently separate stakeholders in the system including gig workers, logistics operators, and city

governance and planning is essential to realise these potential social and environmental benefits.



The presentations and posters from the event are linked from our website:

<http://flipgig.org> (or scan the QR code)

You can contact the project lead Prof. Adrian Friday by email on a.friday@lancaster.ac.uk

For more info on the Solent Future Transport Zone, see: <http://www.solent-transport.com/solent-future-transport-zone/> or contact Prof. Tom Cherrett, t.j.cherrett@soton.ac.uk