Surveys of next-day last-mile parcel operations in central London

FTC 2050
FREIGHT TRAFFIC CONTROL

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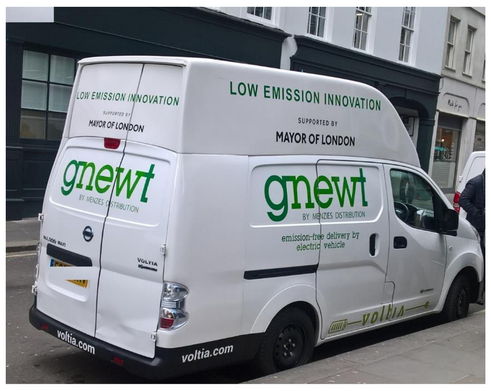
Surveys undertaken by FTC2050 team

Surveys undertaken in October 2016 provided a unique insight into parcel carrier operations in central London.

Surveyors accompanied drivers from Gnewt Cargo and another major carrier as they delivered and collected parcels, following in vehicle and on foot.

Data were collected using:

- GPS trackers carried by drivers and in vehicles
- An IPhone tracking app (Route Tracker 2) carried by the surveyors
- Manual recording of parking locations, delivery addresses, parcel loads and associated times
- Parcel scan data provided by carriers after completion of rounds, including delivery and collection times and locations



GPS tracker

Parcel carrier activity (83 vehicles and drivers) using GPS tracking data, 25-27 October 2016 in WC1, WC2 and W1 postcode sectors

Note: 3 colours relate to 3 vehicle depots used

Characteristics of the 25 surveyed rounds

Vehicle round statistic	Min	Max	Mean	St.Dev.	Unit
Round duration, of which:	5.1	10.3	7.3	1.4	hour
- vehicle parked	33%	77%	62%	11%	%
Driving distance within delivery area	3.6	20.5	11.9	5.1	km
Average vehicle speed within delivery area	2.6	12.3	7.0	2.4	kph
No. of items delivered and (collected)	57 (1)	274 (62)	118 (9)	46 (12)	#
Total walking distance	4.6	12.5	7.9	2.3	km
Average walking distance per customer	67	145	105	22.8	m
No. of customers served	32	120	72	23	#
No. of parking stops, of which:	14	72	37	12	#
- proportion on street	80%	100%	95%	5%	%
Time taken to deliver or collect (once parked)	1.6	6.8	4.1	1.2	minutes/ customer

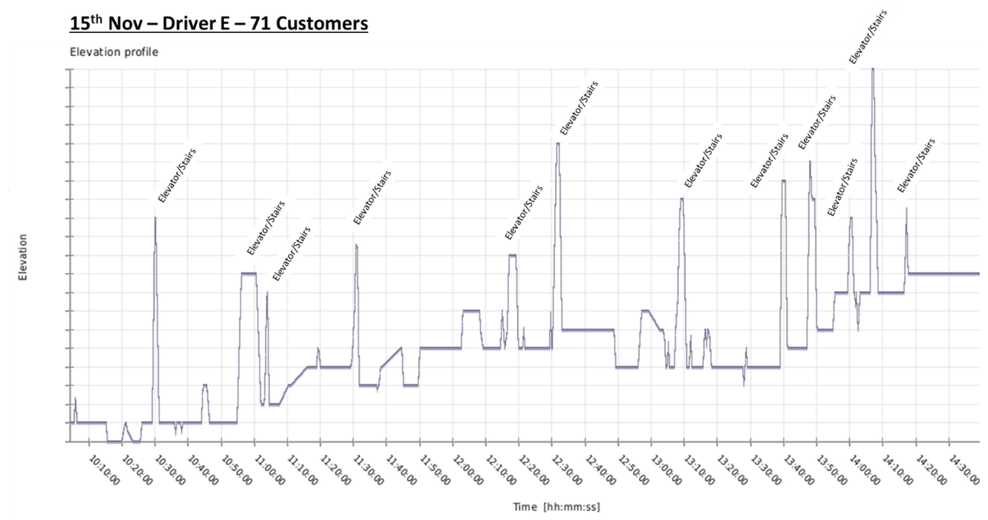
Tasks identified in last-mile parcel deliveries and collections

Sequence	Description of task
1.	Vehicle scheduling decisions - the order in which to carry out parcel deliveries
2.	Loading parcels onto the vehicle, typically in reverse order (first in, last out)
3.	On-route vehicle navigation decisions
4.	Deciding where to park
5.	Deciding how many addresses to deliver to once vehicle is parked and finding parcels in back of van
6.	Optimizing walking tours from/to vehicle and delivery points
7.	Locating entrance to building, which may not correspond with address on parcel (e.g. deliveries at rear of building)
8.	Finding the delivery reception point inside the building and gaining whatever proof of delivery is required (e.g. signature)
9.	Make decisions about what to do when no-one is available to receive the delivery
10.	Make scheduled collections (typically towards end of round)
11.	Decide whether unscheduled collection requests can be accommodated (depending on time taken and location)

Key findings from the fieldwork

- Average round duration (time between vehicle leaving depot and returning) was 7.3 hours with an average of 118 items delivered to 72 customers per round
- Vehicles made 37 parking stops on average each day
- 95% of parking locations were on-street (by the kerbside)
- Average distance driven within the delivery area (excluding stem mileage) was 11.9km with a mean speed of 7kph
- Vehicles were parked for approx. 65% of their time away from the depot
- Parked time was 4.1 minutes per customer (including time spent unloading parcels, walking to customer's premises and gaining proof-of-delivery) and 8.1 minutes per stop (as driver could deliver to more than one customer per stop)
- Average distance walked was 7.9 km (equating to 105m per customer)
- Average driving and parking times per parcel delivered were 1.5 and 2.3 minutes respectively
- There are substantial differences in performance between experienced and novice drivers
- Additional survey work in the City of London in 2017 using altimeters found that drivers had to use lifts or stairs inside buildings to reach approximately 15-20% of all consignees

Elevation graph obtained using an altimeter from a vehicle round in the City of London, 2017



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Academic project partners:

University of Southampton; Lancaster University; UCL; University of Westminster; University of Liverpool

Industrial project partners:

Transport for London; Corporation of London; gnewt cargo; TNT; CitySprint We deliver

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