MISSED ANOTHER HOME DELIVERY?  
THE POTENTIAL FOR  
LOCAL COLLECT POINTS

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Home delivery headaches
The home shopping revolution

- £2 billion sales per month
- 43 million parcels per month
Problems with home shopping

I can't shop online because I'm always out when they deliver. The last time I had to traipse to a depot in the middle of nowhere on Saturday to get my stuff. Where's the convenience in that?
Shopper

The reason websites rarely offer time or date options is because few carriers are able to offer these services and if they do, the cost is far too high. As a result, the number of customers who would actually be prepared to pay for them is too small.
Retailer

We asked retailers what delivery services they wanted, then piloted the results - but they never want to pay a realistic price. New delivery services will only become cheaper when volumes are high. It's chicken and egg.
Carrier
Problems with home shopping

• 12% of e-retail home deliveries will be 1ST TIME DELIVERY FAILURES, i.e. 65 million of the 540 million total
• 2% of e-retail home deliveries will be UNDELIVERABLE, i.e. 10.8 million of the 540 million total
• £682 million of direct costs will be borne by Consumers, Retailers and Carriers due to internet shopping delivery inefficiencies and failures
• £1.26 of inefficiency cost will be placed on every internet shopping delivery
Costs of inefficiencies

- **Direct Cost To Consumers:**
  2,466 man-years of wasted time, valued at £12 per hour = £259m

- **Direct Cost To Retailers:**
  £300 million due to 1st time failures & undeliverables

- **Direct Cost to Carriers:**
  £123 million cost of delivery re-attempts

- How can we improve the ‘last mile’ operation?

- Could collection/delivery points (CDPs) reduce carrier and householder mileage associated with failed deliveries?
Locker Boxes
Collection Points

The Problem … 20% of deliveries fail first time!

What stores are open 15-hours a day?

Collectpoint.com
Examples: Royal Mail

- 16,000 post office locations in the UK can be used as delivery points for certain E-tailers
- You download address book from Royal Mail and add your own preferences

Local Collect uses the 16,000 post offices as collection points
No. of Home deliveries received

- Deliveries/year
- Deliveries missed first time

Household type

- "family": 14.3
- "professional": 11.5
- "elderly": 9.0

No. of deliveries/year
Home to Royal Mail sorting office (RTN)
Home to Parcel Force Depot (RTN)

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<tr>
<th>Quickest (km)</th>
<th>Time (mins)</th>
<th>Cost (£)</th>
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The Collectpoint System

- 83% stated that they would consider using Collectpoint
- 87% stated that they would prefer to use a Collectpoint near their home (instead of work).
- Only 12% would choose to collect a package between 07:00 and 09:00
- 41% would collect packages between 17:00 and 23:00
- 48% would consider walking to the Collectpoint to collect their packages
- 43% would travel by car
Distance to nearest Collectpoint

No. of respondents

Distances from home to local Collectpoint (radial miles)

<0.25 0.25-0.5 0.5-0.75 0.75-1 1-2 2-4 >4
Problem of failed deliveries

Redeliver

Local collect point
Key factors

- Delivery failure rate
- Customer distance to collect points
  - density of collect points
- Customer distance to carrier’s depot
- Carrier’s round distance
  - number and density of deliveries
  - delivery failure rate
  - density of collect points
Parameter values used

- Delivery failure rate: 10%, 30%, 50%
- Redelivery failure rate: 50%
- Number of delivery addresses on round: 50
- Proportion driving to collect point: 50%
- Proportion driving to carrier’s depot: 87%
Carrier’s round – existing method

- 50 addresses on delivery round
  + a number of redeliveries

- Randomly sampled from 1600 Winchester households

- Round optimised, including redeliveries, using vehicle routing model
Carrier’s round – collect point

- Same 50 addresses on delivery round
- Each collect point visited after all addresses in vicinity visited
- All collect points visited
- Optimal route is unclear
Delivery failure rate v carrier distance

existing collect point

carrier distance (km)

delivery failure rate

10% 30% 50%
Delivery failure rate v carrier time

existing
collect point

0 2 4 6 8 10

carrier time
(hours)

10% 30% 50%
delivery failure rate
Failure rate v customer distance

- Existing
- Collect point

Customer distance (km)

Delivery failure rate

10% 30% 50%
Summary impact of collect point

Customer mileage
- Big reduction (depot distance crucial)

Carrier mileage
- Slight increase (delivery failure rate crucial)

Carrier time
- Little impact (delivery failure rate crucial)
Further research

- Assess impact of trip-chaining
- Optimal routing strategies for carriers
- Deliver direct to collect point
- Consider other scenarios
  - more collect points
  - not all collect points to be visited
  - wider delivery areas
- Vehicle capacity issues