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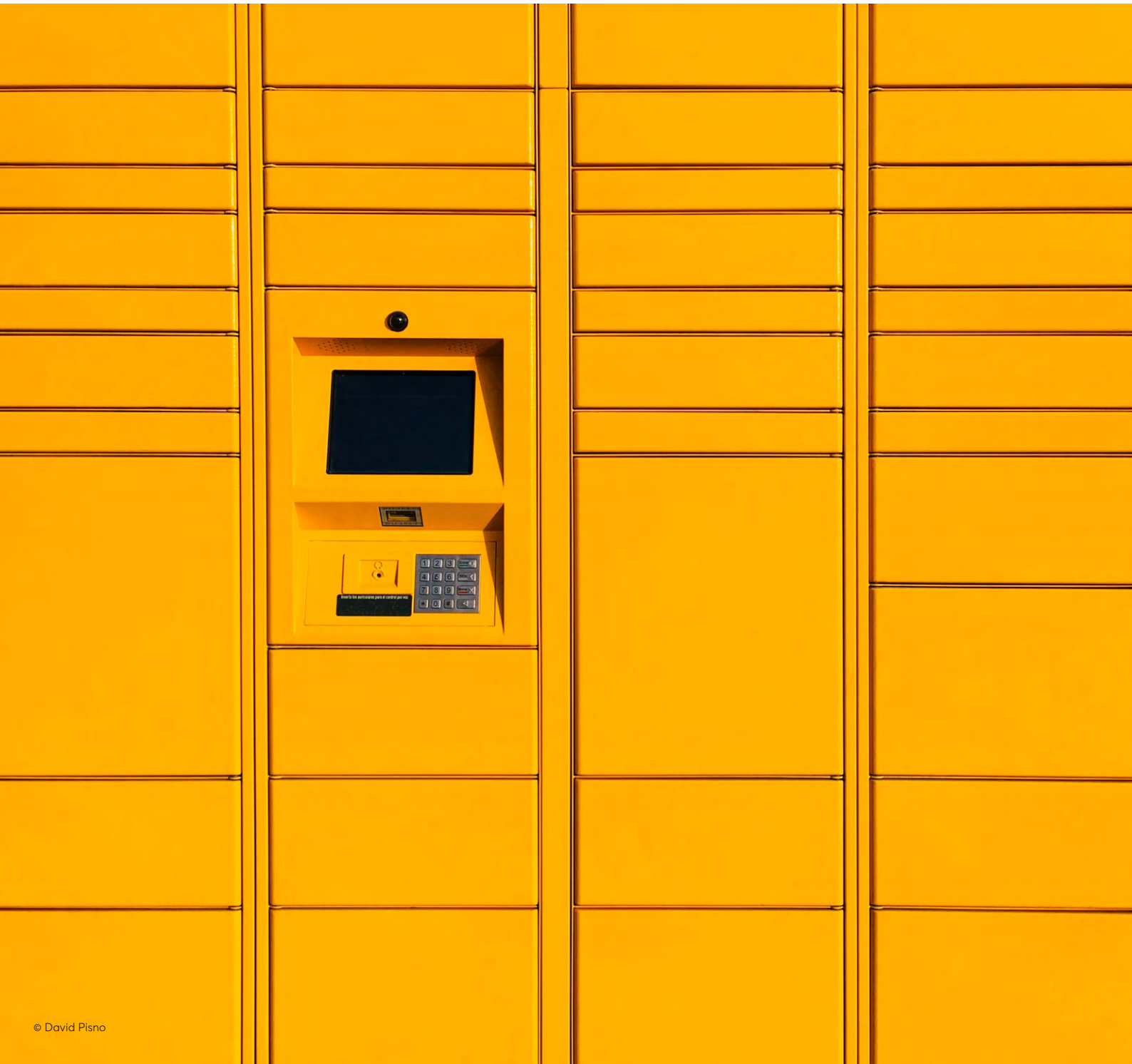
Millie Mitchell, Nicolas Bosetti and Claire Harding



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Summary

Online shopping is booming across the UK, leading to an increasing number of parcels out for delivery. The last mile of these deliveries – between a local depot and people's homes – has a substantial impact on London.

- The number of kilometres travelled by light commercial vehicles in London has grown over the last 20 years, despite the kilometres travelled by other motor vehicles (such as cars and taxis) decreasing.
- More home deliveries means more vans on London's roads, contributing to air pollution and congestion.
- We estimate that home deliveries resulted in 100 million kilograms of CO2 emissions in London during 2020-21.

Increasing the use of out-of-home delivery options – such as Click & Collect, parcel shops and parcel lockers – can offer several benefits over home deliveries.

- **Benefits for London's environment**: If Londoners walk or cycle to collect their parcels, this could reduce carbon emissions, air pollution and road congestion by reducing the number of locations a delivery van needs to visit.
- **Benefits for London's businesses**: Out-of-home deliveries can offer delivery cost savings for retailers, drive footfall on high streets, and provide additional revenue for shops acting as collection points.
- **Direct benefits for Londoners**: Out-of-home delivery can be more convenient for Londoners returning to the office and for people whose work is shift-based.

To realise the full benefits, Londoners should walk or cycle to collect and return their parcels.

- If people drive to collect their parcels, this could have worse environmental impacts than home deliveries.
- But combining parcel collection into trips that people are already making will reduce these effects.

Currently only a very small proportion of parcels are delivered to out-of-home collection points.

- Not all Londoners are aware of the out-of-home options available to them.
- The deliveries market has prioritised consumer choice and delivery speed for lower prices, leaving few incentives for consumers to switch away from home delivery.
- People aren't aware of the environmental impacts of home deliveries.

Based on a consumer trial, providing customers with environmental or convenience messaging at checkout can encourage them to choose out-of-home deliveries.

- We partnered with the Behavioural Insights Team to test how customers might be "nudged" to choose Click & Collect.

- Providing environmental messaging at the checkout was the most effective nudge, resulting in 71 per cent of checkouts using Click & Collect (compared to 40 per cent of checkouts in the control group where there was no messaging).

- Convenience messaging also had a significant effect compared to the control group, increasing the number of Click & Collect checkouts to 62 per cent.

- The majority (82 per cent) of Londoners surveyed who chose to Click & Collect stated that they would walk or cycle to collect their parcel.

To support this behavioural change, the parcel collection and returns infrastructure in London needs to improve.

- Collection and return points should be located strategically to maximise convenience for Londoners. We recommend that there should be collection points within 250 metres of 90 per cent of Londoners' homes.

- Most current collection and return points are clustered around high streets and shops. But many Londoners do not live in these areas. Parcel lockers in areas that are more residential are best placed to fill this service gap.

- Collection points should feel safe and be accessible for all users.

- Parcel lockers should be seen as essential pieces of street furniture – like bike racks, bus stops and postboxes.

- More collection points should be carrier-agnostic: this would reduce clutter and increase the number of options in convenient locations for customers.

In order to achieve these benefits we recommend that:

- Local authorities, the Greater London Authority (GLA) and environmental groups should campaign to raise awareness of the environmental benefits of out-of-home deliveries.

- Retailers and delivery providers should nudge customers to choose out-of-home delivery.

- Local authorities and the GLA should encourage the appropriate use of parcel lockers in the public realm.

- Parcel locker providers should develop more attractive lockers that can positively contribute to public spaces. This could be aided by the Mayor's Design Advocates or a public design competition.

- The parcel sector should collaborate to enable a more open network of collection infrastructure. A densely populated London borough would be a good location to test a pilot of a fully open network at scale.

1. Parcel deliveries today

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The boom in parcel deliveries and returns

Online shopping is booming, with almost 30 per cent of all retail sales value now generated online.[1] This trend is set to continue, as the value of the UK's e-commerce industry is predicted to reach £133 billion by 2025.[2] The convenience (for many people) of home deliveries has played a major role in the popularity of online shopping. According to data from Oberlo, free delivery is the number one reason customers give for choosing to shop online (50 per cent of respondents), followed by coupons and discounts (39 per cent) and the ability to read reviews (32 per cent).[3]

Consumer expectations around parcel deliveries have become more demanding as businesses compete to reduce their prices and increase their delivery speeds. Though they once commanded a premium price, next-day deliveries are now often free or available for a low-cost subscription, despite creating high costs for the retailers themselves.

> "As an industry we shifted the behaviour by appealing to people's pockets"
> **Parcel shop provider**

> "Anywhere you are in London, your goods can be delivered the next day. That is why I choose it"
> **Lambeth resident**

Spurred on by the COVID-19 pandemic, parcel volumes reached 4.2 billion in 2020-21,[4] suggesting that over 580 million parcels were delivered in London alone. But it's not just parcel deliveries that have been increasing – parcel returns have too. Returns are more frequent with online shopping (compared to in-store), and it is estimated that 30 per cent of all online purchases are returned.[5] Most online returns of clothing can be explained by items being the wrong size or style, rather than defective: size and style can be trickier for customers to determine when browsing online compared to shopping in-store.[6] However, one-third of online clothing customers purchase items that they expect to return – even before they have received and seen the product up close.[7]

Seasonal surges

The Christmas period sees a spike in online shopping each year, and with it a surge of parcel deliveries. In 2020, delivery company Hermes (now EVRi) reported that they delivered 72 million parcels between Black Friday and Christmas Eve, representing 11 per cent of their annual total.[8] This presents challenges for delivery companies, as they have to be able to accommodate this additional volume in their systems: many opt to hire seasonal staff to help handle this period.

One possible solution to help ease the pressures on infrastructure at this time of the year is to employ meanwhile-use pick-up sites. Meanwhile-use pick-up sites would utilise temporarily empty locations (such as vacant shops) for out-of-home parcel deliveries. These sites would ease pressure because, in absorbing some of the increased parcel volume, pick-up sites require fewer delivery journeys compared to the equivalent increase in home delivery journeys. These sites could even be used to host parcel lockers – which would reduce the need to hire additional staff.

Importance of the last mile

Parcels go through several stages of delivery before they reach their destinations. But it is the final stage of this process – between the local depot and our homes – that attracts the most concern, due to its cost to the retailer and to the planet. This stage is known as **the last mile** (although this name is a little misleading as the actual distance of this final stage can vary). Traditionally, this journey is undertaken by a delivery driver, who will load up their van with parcels at the depot before delivering to each individual home.

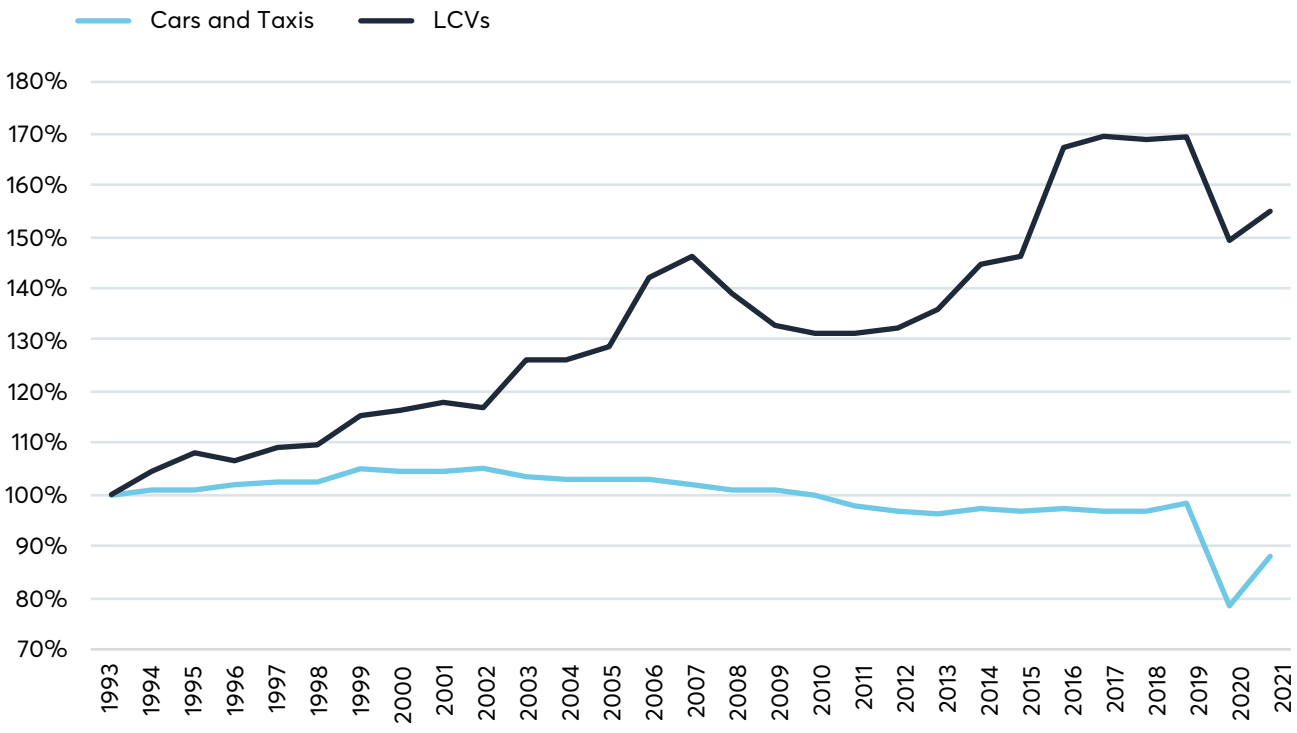
The last mile is complicated and expensive for retailers: it is estimated to account for between 40 and 55 per cent of all supply chain costs.[9] This is partly because parcels must be split between smaller vehicles for the last mile, which reduces the scale efficiencies that are achievable in earlier stages of the delivery process. But the true cost is often not passed on to the customer, with retailers instead absorbing this into their pricing along with other supply chain costs.

The last mile represents not just a financial cost, but a big carbon cost too. We estimate that in London the last mile accounted for approximately 100 million kilograms of CO2 emissions last year – the equivalent of heating around 36,000 homes.[10] According to predictions from the World Economic Forum (WEF), the emissions from delivery vehicles will rise by up to 32 per cent by 2030 if the current delivery system doesn't change.[11]

Impact on the city

Last-mile deliveries have real impact on our cities, mainly due to the air pollution and congestion associated with delivery vans. In 2021, light commercial vehicles (LCVs) accounted for 16 per cent of motor traffic in London, following a long-term upwards trend. Figure 1 shows how this growth trajectory contrasts with other forms of motor vehicles since 1993. Whilst not all LCVs are delivery vehicles, the boom in online shopping over the last 20 years has undoubtedly played a role in this increase.

Figure 1: London vehicle kilometres travelled, indexed against 1993 levels



Source: Department for Transport (2021) Road Traffic Statistics

Road transport is the biggest cause of air pollution in London,[12] and delivery vans contribute substantially towards it. Over 60,000 life years were estimated as lost due to air pollution in London in 2019.[13] This is mostly a result of emissions such as PM2.5 and NOx generated by combustion engines in transport. But non-exhaust emissions from brake and tyre wear also create particulate matter that worsens air quality. Whilst air pollution poses a danger to all Londoners, there is evidence that poorer and minoritised ethnic children are exposed to higher levels.[14]

Beyond the air pollution effects, delivery vans also contribute to wider congestion issues within London. Congestion is estimated to have lost drivers an average of 148 hours in 2021, making London the most congested city in the world.[15] Moreover, this is not just a cost to drivers – congestion also costs London's economy £5.1 billion per year.[16]

However, much of a delivery van driver's time is not spent driving, but delivering parcels on foot from a parked van. It has been estimated that parcel vans in London spend between 3.5 and 4.5 hours parked at the kerb side each day.[17] In so doing, they are taking space away from other road users such as cyclists and pedestrians.

These impacts on the city are made worse by missed deliveries and courier returns. When people are not at home to receive their parcel and there is no safe space in which to leave it, delivery drivers have to make the same journeys more than once – and so the carbon footprint, air pollution and congestion impacts rapidly increase. The additional van journeys as a result of courier returns have similar effects. Furthermore, the environmental impacts of online shopping are also affected by showrooming behaviours – when customers physically view items in shops before later ordering online.

The growth of ethical consumerism

In recent years there has been a growing development of ethical (and sustainable) consumer culture. More and more people are becoming concerned about the impacts of their purchases on society and the environment. Survey data from Deloitte has found that 64 per cent of people limit their consumption of single-use plastic, and 40 per cent have purposefully shopped with brands that have environmentally sustainable practices or values.[18]

However, the same survey also found that 48 per cent of consumers say they don't have enough information to adopt a more sustainable lifestyle, while 52 per cent say it is too expensive. There is an opportunity with online shopping to show how parcel collection might offer a sustainable alternative to home deliveries without increasing the price the consumer pays.

Glossary

Some of the terms appearing in this report are used in different ways across the literature. The following shows how we define them for the purposes of this research:

- **Active travel:** Making journeys by physically active means, e.g. walking or cycling.
- **Last mile:** The final segment of a parcel's delivery journey between a depot and the recipient's home.
- **Active last mile:** When the final segment of a parcel's journey is performed by the recipient on foot or by bike. The parcel is collected by the recipient from a nearby out-of-home delivery location, rather than being delivered to their home.
- **PUDO:** Pick-Up and Drop-Off points – a catch-all term used for parcel shops, lockers and in-store Click & Collect.

- **Parcel shops:** Businesses which act as PUDO points for delivery carriers. Most of these are convenience stores, but some only offer parcel pick-up and returns services.

- **In-store Click & Collect:** When retailers use their bricks-and-mortar stores as a PUDO point for their online customers.

- **Parcel lockers:** Automated self-service lockers that are filled by delivery carriers and allow customers to collect parcels, often using QR codes. Parcel lockers can be placed anywhere and can be accessible 24/7.

- **Drop density:** The number of people or businesses receiving deliveries in an area.

- **Micromobility:** Small vehicles such as bikes, scooters, cargo bikes, trikes and pedivans (both pedal and electric).

2. Why grow parcel pick-up?

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The evidence presented in the previous chapter shows that the existing model of home delivery cannot continue for much longer. As online shopping continues to grow, more needs to be done to ensure that the increased number of parcels is not accompanied by rises in carbon emissions, air pollution and congestion. This chapter looks at how an "**active last mile**" might deal with the increase in parcel deliveries.

Solutions to make deliveries more sustainable

Electric delivery vans

The electrification of delivery vehicles is a huge step towards cleaner, less carbon-hungry deliveries. Electric vans substantially reduce air pollution from tailpipe sources and carbon emissions, especially if electricity sources are renewable. But an electric van is still a van – and it still adds traffic to London's streets. Vans are often an issue when they are stopping or parking, which accounts for more than 3.5 hours of their day on average.[19] Clear and accessible pavements are a key component of Healthy Streets as set out in the Mayor's Transport Strategy – but delivery vans, whether electric or not, often present a major obstacle to this. Furthermore, electric delivery vans also contribute to air pollution in London. Electric vehicles are heavier, which can result in them producing higher levels of non-exhaust emissions (from brake and tyre wear) than ordinary vehicles.[20]

Micromobility and walking deliveries

In the last few years, innovative last-mile delivery solutions such as cargo bikes have arrived in London. Cargo bikes offer a low- (and potentially zero-) carbon alternative for home delivery, as the last mile is undertaken by cyclists. Their size allows them to move more quickly through traffic and utilise routes not available to vans or lorries, meaning that deliveries arrive more quickly and reliably. Cargo bike delivery is a model that has been shown to provide benefits in areas of high-demand density,[21] but this does mean that their advantages are more limited in less dense parts of outer London.

Cargo bikes can also be used to transport parcels to out-of-home delivery points. However, they are more labour-intensive as a delivery solution than the existing system. Cargo bike delivery is a physically demanding job – even with electrical assistance – and our interviewees reported that shortages of labour within the industry are a major challenge.

> "Labour shortages are an issue in the warehousing and last-mile delivery industries […] Prices are going up. Salaries are going up. Which all make it harder and harder to make last-mile delivery feasible."
> **Logistics expert**

Another possible last-mile solution in London is on-foot parcel porters, similar to the service offered by Royal Mail. This was trialled by Transport for London in the City of London and Southwark.[22] The trial found that when parcels were delivered by porters the total vehicle parking time at the kerbside could be reduced by up to 65 per cent, with the total driving time reduced as much as 71 per cent. Increased labour time for delivery staff did result in higher costs than conventional deliveries, but with wide-scale rollout these costs could be mitigated by falling van and driver costs. Parcel delivery by walking porters is yet to be rolled out in London commercially, and the upfront costs and risks to the provider mean it is unlikely to happen without policy intervention.

Urban logistics hubs

In our upcoming research entitled *Urban Logistics Hubs: What are London's needs?*, we explore the role that inner-city logistics hubs could play in unlocking the potential of low-carbon last-mile solutions like cargo bikes.

Urban logistics hubs (often known as microhubs) provide space for goods to be transferred from larger vehicles (such as lorries and vans) onto cargo bikes. These hubs need to be located near to residential areas due to the smaller delivery range of cargo bikes compared to traditional delivery vehicles. But suitable land for urban logistics hubs is often difficult to come by.

The experts interviewed in the research suggested that urban logistics hubs could be included in new major development hubs and also emphasised the need to protect existing schemes.

At-home parcel boxes

Another recent solution includes personal at-home parcel boxes which allow customers to receive their deliveries securely even when they are not at home. These boxes can help reduce missed deliveries as well as the corresponding increase in last-mile costs. Yet they still involve vans (or bikes) visiting each home individually – and for the many Londoners who live in apartment buildings, individual boxes are not a feasible solution.

All of these solutions bring big and small fixes to mitigate the impacts of home deliveries, and they will need to be developed and adopted in combination with one another to make the last mile more sustainable. Reducing the share of deliveries that we receive at home will also be essential.

The benefits of an active last mile

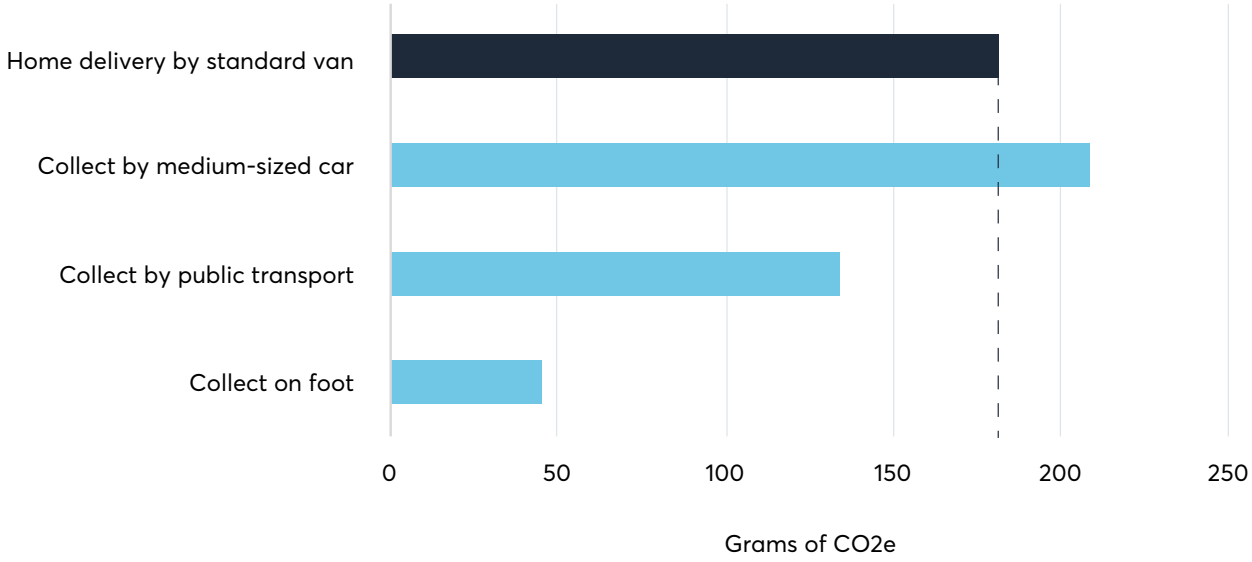
In 2021, home deliveries accounted for between 83 and 95 per cent of all parcels in the UK.[23] Boosting the number of out-of-home deliveries and returns is one solution that will not only help reduce the environmental impacts of online shopping, but will also provide benefits to London's local businesses and to Londoners themselves.

Benefits for the environment

By consolidating more deliveries to fewer locations, out-of-home parcel collection diminishes the number of miles travelled by delivery vans. This reduces not only the carbon footprint of last-mile deliveries, but also the associated air pollution and congestion. However, these benefits can only be realised if consumers travel to collect their parcels on foot or by bike – or by combining the collection with a trip that they are already taking. While out-of-home is often touted as the carbon-friendly alternative by solutions providers, estimates of its benefits have too often overlooked the transport method used by the recipient to pick up or return parcels.

Figure 2 compares the carbon impacts of delivering to a collection point with the carbon impacts of receiving a parcel at home, calculated for different transport modes over a 0.3-mile journey in London. It shows that parcel pick-up can create large savings in CO2 emissions relative to deliveries, but only if people pick-up their parcel using active travel or public transport (or if they were going to travel to the pick-up location anyway).

Figure 2: Carbon emissions for a 0.3-mile parcel journey in London



Source: Data from co2.myparcel.org.uk/

It should be noted that the data used to calculate the carbon emissions of collection via public transport (as shown in Figure 2) is UK-wide, not London-specific. We would expect this figure to be lower in London due to the increasing electrification of TfL's bus fleets and energy efficiency systems on the Underground.[24] But walking or cycling to collect a parcel will always offer the least carbon emissions of all transport options.

In more rural areas of the UK, the population is too spread out to allow for parcel collection points within walking distance of everyone's homes. However, as the UK's densest city, London can readily host a network of parcel shops, lockers and in-store Click & Collect points. Of course, density is not the only important characteristic of a successful parcel pick-up and drop-off point: accessibility, convenience, safety and customer service all play an important role too. These factors will be discussed at greater length in Chapter 4 of this report.

Benefits for London's businesses

For retailers, out-of-home deliveries can offer cost savings when compared to expensive home deliveries. This is because the last mile accounts for 53 per cent of the total cost of shipping.[25] The WEF estimates that if all deliveries were sent to multi-brand parcel shops for customer collection instead of to individual homes, delivery costs could be reduced by 17 per cent.[26] Furthermore, a recent Doddle survey of retailers found that 50 per cent reported an increase in conversion rate since adding out-of-home delivery options, while 61 per cent of UK retailers offering out-of-home delivery reported an increase in average order value at checkout.[27]

Alongside cost savings and additional revenue for retailers, out-of-home deliveries and returns can also offer benefits to stores that operate as collection points. Research has shown that 85 per cent of people will make an additional purchase in-store when collecting their parcel.[28] In interviews, parcel shop operators described long waiting lists of local convenience stores eager to host collection points, precisely because of this additional revenue.

Even for the retailers not offering parcel services, increased active last miles can have knock-on effects for other local businesses. If more people walk to collect their parcels they are likely to go into other shops, cafés and restaurants as part of this journey. In this way, increased out-of-home deliveries might offer some support for London's struggling high streets.

Direct benefits for Londoners

With more Londoners returning to the office, fewer people are likely to be at home to receive deliveries on a day-to-day basis. In 2021, almost seven in ten online shoppers in the UK experienced an issue with receiving their deliveries,[29] and four in ten reported feeling stress or anxiety while waiting.[30] This could be for many reasons, such as the uncertainty of knowing what time a parcel may arrive at home while also needing to attend appointments or run errands. Collecting parcels from out-of-home locations may offer a more convenient, less stressful solution for receiving online shopping – provided that the location is easily accessible.

Furthermore, over one-third of Londoners are not getting the recommended amount of physical activity each week.[31] Whilst parcel collection points should be close to people's homes or workplaces for convenience, collecting a parcel could also help nudge people towards having longer walks while they are out. Furthermore, in reducing the number of delivery vehicles on residential streets, out-of-home deliveries can make street space more attractive for pedestrians, which in turn helps to reinforce a healthier lifestyle.

3. How parcel collection and returns work today

Options for consumers

People ordering goods online today can often choose between delivery to their home or an out-of-home delivery – though the exact mix of options and the relative costs of each can vary considerably depending on what they are ordering and from whom.

This chapter looks at the options people have for deliveries, excluding food and large furniture items. Food is excluded because grocery deliveries tend to be bulky and require refrigeration or freezing, while hot food orders need to be delivered fast and kept warm. Large furniture is excluded because it is generally not practical to collect a large item like a bed from a locker or parcel shop.

In broad terms, there are two options for out-of-home deliveries: delivery to a shop, or delivery to a parcel locker. Shop deliveries may be to the retailer the item was bought from, or from a retailer who takes parcels from other retailers – usually a parcel shop, corner shop or supermarket. Locker deliveries may be to a service-specific locker owned by a particular carrier or retailer, or to a "carrier-agnostic" locker that can be used by different carriers or retailers.

The advantages and disadvantages of each option will depend on the needs and preferences of the person ordering, the size and weight of the item(s) ordered, and the locations offered for pick-up. Figure 3 summarises the main advantages and disadvantages of different options.

Figure 3: Advantages and disadvantages of out-of-home delivery options for consumers

Option	Type	Advantages	Disadvantages
All out-of-home deliveries		• No need to stay in or risk missing delivery • Simpler for people without a front door to the street • Greener & more sustainable	• Need to get to delivery point and get parcel home
Lockers	All	• Long opening hours, often 24/7 • Quick: usually no queue for collection • Privacy about order content	• Some locations can feel unsafe, especially at night • Access/QR codes can be awkward to use • No in-person help available
	Carrier-specific	• Relationship with a trusted brand	• Less convenient as customer may need to visit several locations for multiple orders
	Carrier-agnostic	• More convenient and flexible, especially for multiple orders	• Brands may be less recognised • Can be harder to manage returns
Shop deliveries	All	• Convenient high street locations • Staffed: help available, and can feel safer	• Usually shorter opening hours than lockers • Can need to queue • Less privacy about order
	Retailer-specific	• Sometimes a cheaper option • Sometimes no need to pay until collection • Can be easier to check/try on items and so avoid returns	• Requires trip to specific shop • May have shorter opening hours than other options
	Multi-carrier parcel shops	• More convenient and flexible, especially for multiple orders • May have longer opening hours	• Can be harder to manage returns • May not have trusted brand relationship

However, not all of these options are always available to consumers when they are shopping online. A recent survey of retailers found that 47 per cent of respondents in the UK did not offer out-of-home deliveries, compared to six per cent of Spanish retailers and 16 per cent of French retailers.[32]

People might also avoid having a parcel delivered to their home by instead having it delivered to their place of work, or to a friend or neighbour. There is not much data available on this practice because parcel carriers cannot always tell whether an item is being delivered to the place it will be used. During our research for this report, we heard that some employers allow staff to have items delivered to their offices – but others do not, because managing them takes up too much staff time and storage space.

Case Study: Click & Collect in shopping centres

Whilst most shopping centres have retailer-specific Click & Collect offers, some also host dedicated Click & Collect stores. Meadowhall shopping centre in Sheffield is home to one of these stores, operated by Collect+. Customers can use one of the two fitting rooms to try on clothing purchased online straight after collecting it, allowing them to return the parcel immediately if needed.

Unlike traditional in-store Click & Collect, Collect+ is multi-carrier and not retailer-specific, which offers more convenience for customers as they don't have to make additional journeys. The faster returns enabled by this model can also offer environmental benefits from reduced wastage. Instant returns not only reduce the likelihood of clothing being returned in an unsellable condition: they also mean it can be returned before the item goes "out of date" and is no longer being sold – a particular issue for the fast fashion industry.

Awareness

In order for people to choose out-of-home deliveries, they must know that they are a possible option. From our interviews it seems that consumers are not always aware of all the options available to them, particularly for the different forms of collection (the various types of lockers and stores). There is some evidence that people are less aware of the possibility of using lockers for returns than they are of using them for deliveries.[33]

> "You get to post office and like, you can be super lucky, like I was, or they can be a massive queue forever"
> **Lambeth resident (on returning a parcel)**

This could be a fruitful area to raise awareness of different options, since return rates for online shopping are high.[34]

Consumer characteristics

The choices people make about where to have their items delivered depend in part on who they are. People with some disabilities or health conditions might avoid using pick-up points because they would struggle to carry a parcel home. People who are able to might choose a pick-up point because it means they will get some exercise:

> "There's a tool station about 20-25 minutes' walk from me and I ordered a service there the other day and I could have had it delivered for free, but I thought, you know what? I'm just going to walk there cause it'll get me walking."
> **Lambeth resident**

People who are not comfortable using technology might avoid a locker that needs a QR code to open. In focus group research, we found that these codes can cause problems even for people who are comfortable with technology. Whilst some lockers do also operate using a PIN code – which may help to improve accessibility – this is not currently well known. Women might be more likely to avoid isolated or unlit locations. Research from the Citizens Advice Bureau found that people on low incomes were more likely to miss a parcel delivery because they were out; this was also more common for healthcare workers.[35]

There is also evidence that people of different ages have different preferences, with younger people more likely to prefer out-of-home delivery in general and more likely to want to use QR codes and self-service kiosks to retrieve their orders if they use in-store/kerbside collection.[36] It is not clear to what extent these choices reflect different absolute preferences or different levels of awareness of the options available.

Product characteristics

People's willingness to collect an item depends in part on how easy it is to carry. In our research, we heard that consumers are more likely to collect items if they are fairly lightweight and easy to carry. When discussing locker collection, people were more worried about collecting high-value goods like laptops than lower-value goods like clothes.

Bulkier products can be impractical to move around, especially if the trip to collect them needs to be combined with other tasks like collecting children from school or buying groceries. For these items, other low-carbon options – e-vans, cargo bike deliveries or walking deliveries – may be better.

Environmental choices

Consumers in the UK and beyond are increasingly concerned about ethical and sustainable retail choices. It seems that awareness of the environmental impact of deliveries is fairly low, with only about one-quarter of consumers thinking that sustainability is "very important" when making a decision about their delivery option.[37] However, when people are given information about the environmental impact of different options, many are willing to change the mode of delivery they choose, even if this does not come with a cost saving.[38] People are concerned about both carbon emissions and more immediate issues with traffic and pollution:

> "I think for me it's about having one less van on my street annoying me and my neighbours"
> **Lambeth resident**

There is some evidence that younger people are more willing to change their delivery option to a more sustainable one[39] – although as with other age differences in consumer preferences, this may reflect different levels of awareness rather than different levels of concern.

Reasons for not using out-of-home delivery

There is considerable scope to increase the proportion of deliveries made out-of-home – especially in inner London, where it is plausible for most people to walk to a pick-up point. Some of the barriers to this that we heard about in our research include:

- **No out-of-home option:** Not all retailers currently offer an out-of-home delivery option or clearly display such an option on their websites.
- **Lack of awareness** of the available options for out-of-home delivery, or of the environmental benefits of using them.
- **Lack of incentive** to switch to out-of-home deliveries when in-home deliveries are cheap and convenient (at least for people who are able to stay at home to await deliveries).
- **Inconvenient collection points**: Not close enough to people's homes; difficult to reach (for example if across a busy road or a railway line); not close to other amenities; not open for long enough hours.

> "You need places where you would naturally go either when you're going to work and you home from work, if you're going shopping or supermarket or library"
> **Lambeth resident**

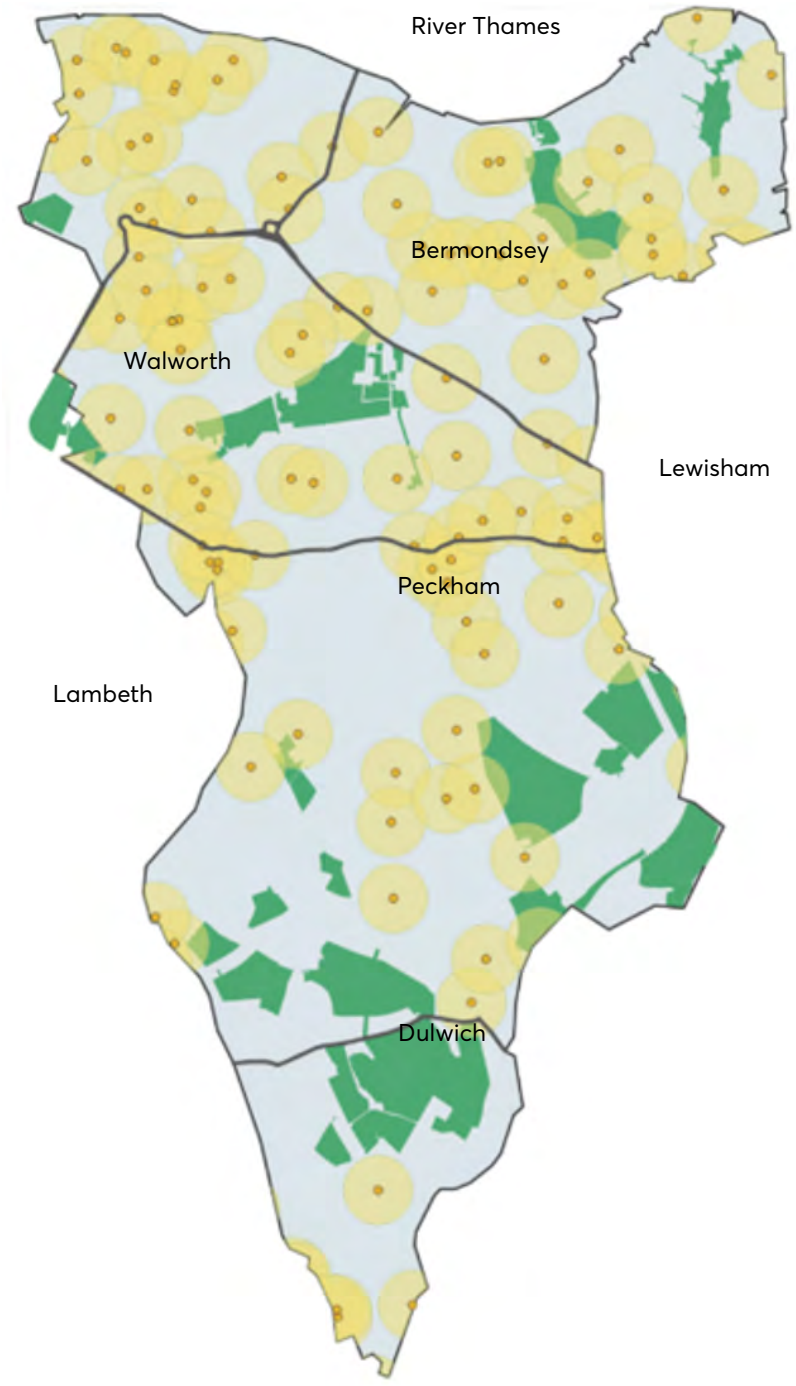
- **Unsafe or unattractive collection points** in poorly lit areas, without a clear line of sight to the street.

> "That's another thing I think about as well. It's well lit. It's never completely empty"
> **Lambeth resident (on why they would choose a particular collection point)**

- **Poor experiences** with previous out-of-home deliveries, or options changing quickly.

We discuss how these barriers could be addressed in the following chapters of this report.

Figure 4: PUDO points in Southwark marked with 250-metre radius



Source: Author's research from Google listings of pick up points

Southwark parcel collection points

This map shows that 46 per cent of Southwark sits within 250 metres of a PUDO point. This indicates that in Southwark, we could be well on the way to our target of 90 per cent of Londoners living within 250 metres of a PUDO point.[40] These areas are mainly on major roads and clustered around shops and other commercial premises. The map reveals that the northern part of Southwark is very well served for collection points, but there are large gaps in the central and southern areas of the borough.

This map shows PUDO points but does not indicate which carriers can use them. Most collection points are limited to specific carriers, meaning that even Londoners who live within these 250-metre catchments may be unable to collect all their deliveries conveniently.

4. Can Londoners be "nudged" to choose parcel collection?

Currently, out-of-home delivery is estimated to only account for between 5 and 17 per cent of parcel deliveries in the UK.[41] As a result, boosting out-of-home deliveries in London will rely upon driving significant change in people's online shopping behaviours. "Nudging" is a behavioural science term describing interventions that aim to influence behaviour towards a desired outcome without enforcing that behaviour.[42] As part of this research, Centre for London has partnered with the Behavioural Insights Team to understand whether Londoners could be nudged to choose parcel collection more frequently.

The experiment

The Behavioural Insights Team recruited 3,204 online shoppers living in London to take part in an online randomised control trial that tested the effectiveness of three nudges at an online shop checkout. Participants were also asked a series of survey questions about their online shopping habits.

In the trial, the participants were asked to navigate through a simulated online shopping environment for the purchase of a t-shirt (low-value and easy to carry), a laptop (high-value but still reasonably easy to carry), and a set of four pillows (relatively low value, light but tricky to carry). The sample was randomly split between four test groups:

1. **Control:** Participants were shown an online checkout without any nudge interventions.

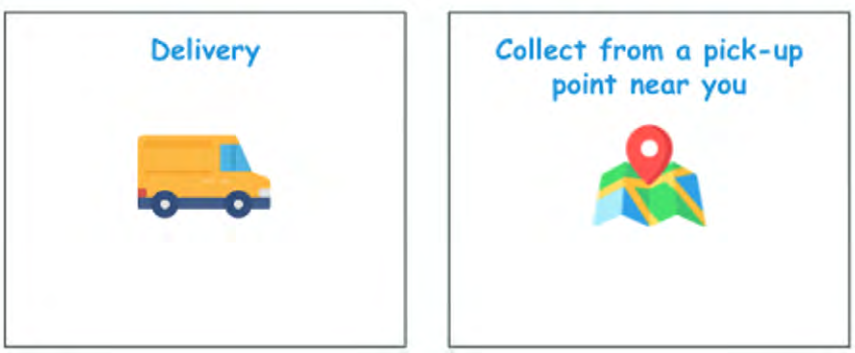
2. **Default:** The Click & Collect option was moved to the left-hand side and was pre-selected.

3. **Environment framing:** Participants were given messaging indicating that Click & Collect is better for the environment than home delivery.

4. **Convenience framing:** Participants were given messaging that conveyed the convenience of Click & Collect for them.

All groups were first presented with a binary choice between home delivery and Click & Collect (see Figure 5) before being taken to a second page where they could browse both options. It was on this second page that pricing information was introduced – Click & Collect options were free, whereas home delivery started at £3.95. The term "Click & Collect" was used to encompass three delivery options: a locker, a convenience store and a large supermarket. All these options were labelled as being either a 5- or 10-minute walk away. Finally, in the environment and convenience framing groups, participants were prompted to reconsider their choice if they tried to checkout with home delivery selected. For further information on the research design, please see the Appendix to this report.

Figure 5: Nudge framing



Control condition

Figure 5: Nudge framing (cont)

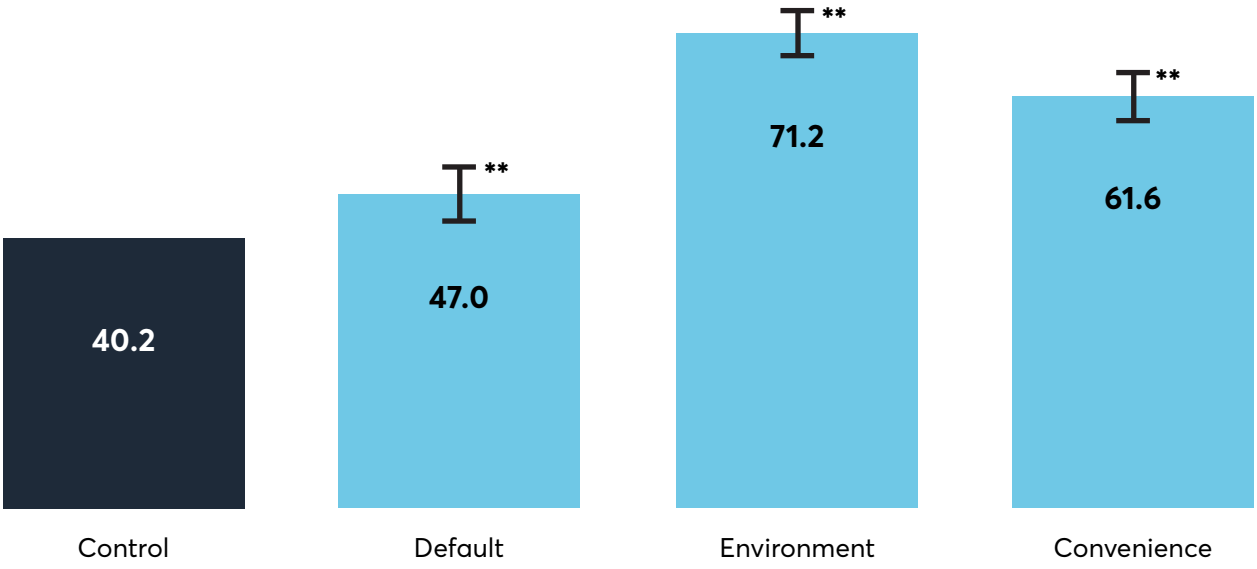
Source: BIT trial

Effectiveness of nudges

In this trial, all the nudges significantly outperformed the control group (see Figure 6), suggesting that Londoners can be nudged to choose parcel collection. The environmental nudge was the best performer, resulting in Click & Collect being chosen for 71 per cent of checkouts (compared to 40 per cent in the control condition), while the convenience nudge was the second most effective, leading to Click & Collect being chosen for 62 per cent of checkouts across all three products.

The results of the trial don't perfectly mirror real-world behaviours: 40 per cent of the control group in the trial chose out-of-home delivery, compared to just 5 to 17 per cent of actual parcels being collected in 2021.[43] This difference can be explained in part by the fact that people knew this was an experiment, so they wouldn't have to physically go to collect the parcel. As a result, they may have been more willing to select Click & Collect than they would be in practice. Click & Collect was also free in this experiment whereas home delivery was charged – this is not always the case in real online shopping. These limitations mean we are unlikely to see effects of this size in the real world. However, because the limitations apply to all four of the test groups, we would still expect the nudges to be effective at encouraging people to switch to Click & Collect compared to standard checkout designs.

Figure 6: Proportion of Click & Collect choices across all products



Note: N = 3,204. Choices = 9,612. ** p < 0.01, * p < 0.05, + p < 0.1. Primary outcome. Multivariate logistic regression, including covariates. Corrected for multiple comparisons using the Hochberg procedure. Source: Data collected by BIT on 6-22 September 2022.

In approximately one-fifth of checkouts, participants browsed other delivery options after making their initial choice. However, participants in the environment framing group were significantly less likely to browse the other options, suggesting that this framing had resulted in a "stickier" initial choice.

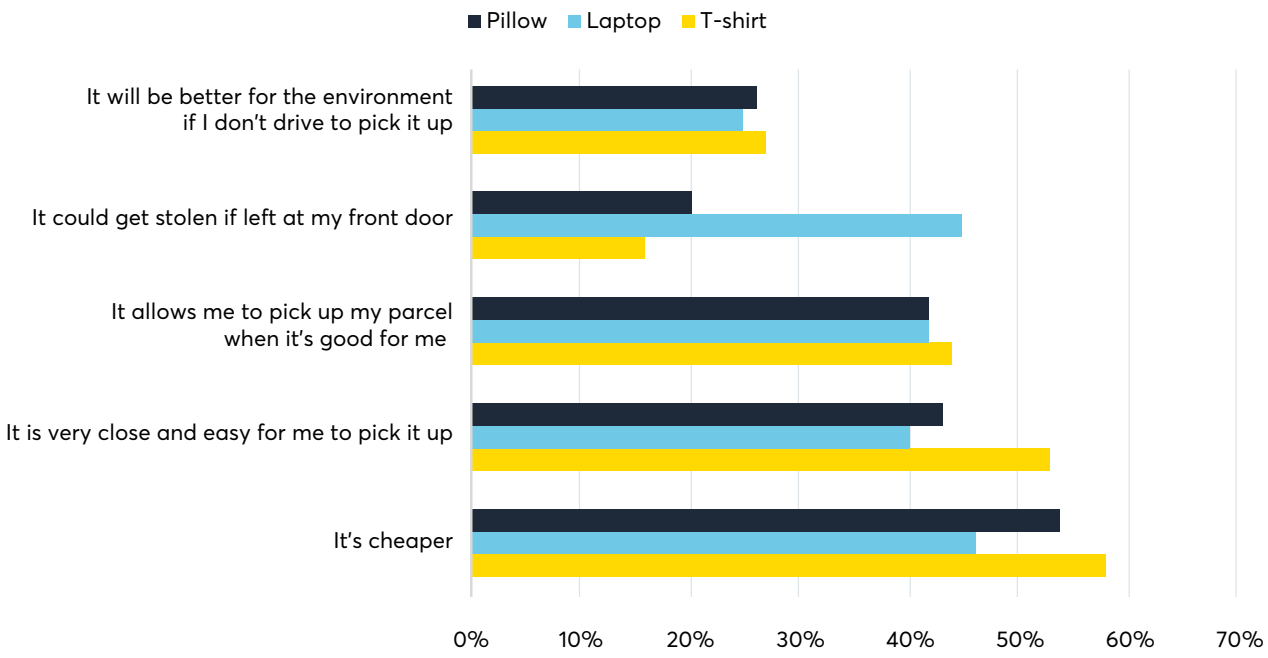
Across all arms, the number of Click & Collect choices increased by 14 percentage points between the initial choice and the final choice. It is likely that this increase was driven by the price difference between the home delivery and Click & Collect option that was shown on the second screen.

Reasons for choosing their delivery method

After the trial, participants were asked to select the reasons why they chose the delivery method they did. Whilst cost was the reason most often reported, convenience factors such as proximity and flexible collection times were the second- and third-most reported reasons.

By comparison, altruistic reasons such as environmental benefit were reported to be less important, despite the strong performance of the environment framing nudge. However, looking specifically at those in the environment framing group, around 45 per cent did state that the benefits for the environment were a driving factor in their Click & Collect choice. The information provided in the environmental framing may have increased the awareness of participants who might not otherwise have considered this an important factor.

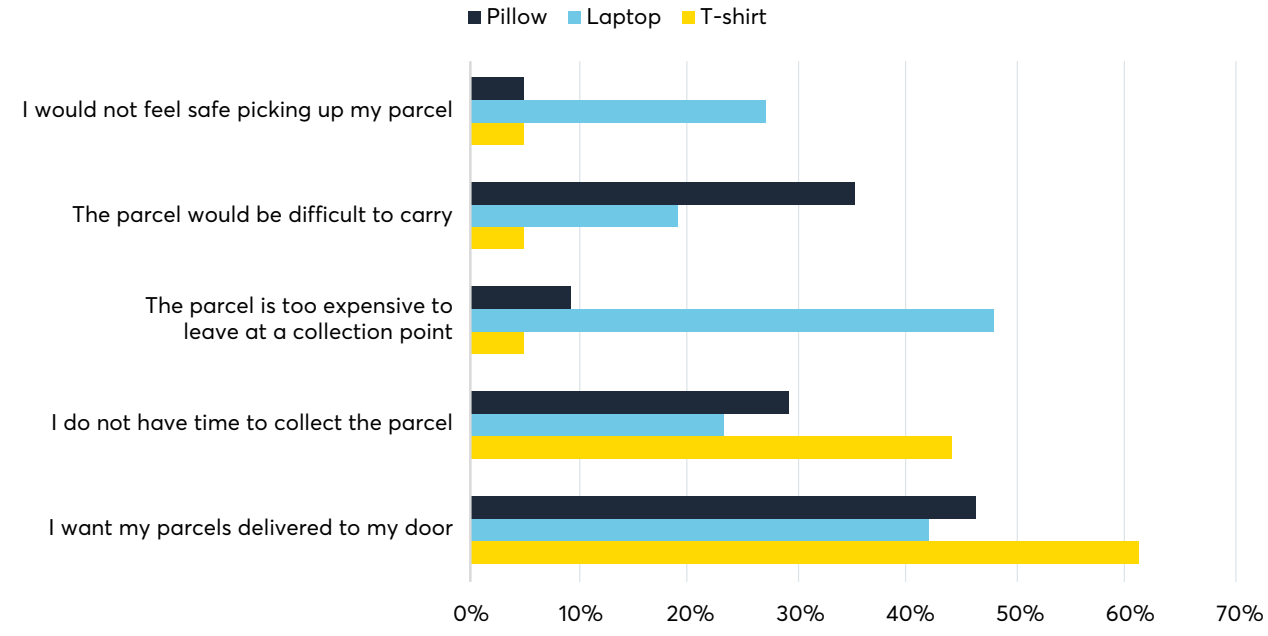
Figure 7: Reasons for choosing Click & Collect



Source: Data collected by BIT on 6-22 September 2022.

Among those who chose home delivery in the trial, the convenience of having the parcel delivered to their door was the main reason given (see Figure 8 below). Approximately one-third cited the lack of time to collect their parcel as an important factor.

Figure 8: Reasons for choosing home delivery



Source: Data collected by BIT on 6-22 September 2022.

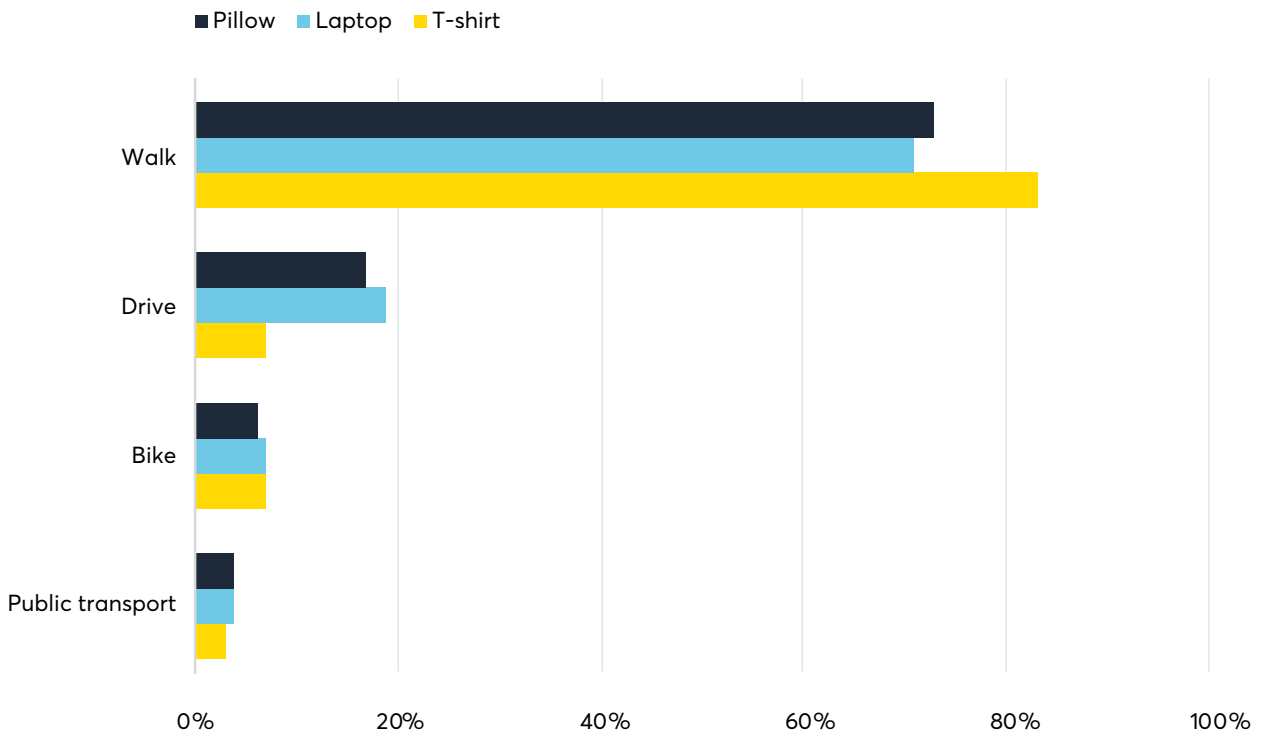
How would Londoners collect their parcel?

As explained in Chapter 2, the environmental benefits of increasing out-of-home deliveries are dependent on the mode of travel by which people collect their parcels. The aim of increasing out-of-home deliveries is to reduce vehicle traffic in London and not to replace van journeys with car journeys.

In the trial, participants were told that the pick-up points were located up to a 10-minute walk away. By framing the proximity of the pick-up points in walking time rather than distance, the intention was to make clear the convenience of the location. Encouragingly, of the Londoners who chose Click & Collect in this trial, 83 per cent stated that they would use active travel to collect their parcel.

The collection method did vary by product (see Figure 9), with Londoners more likely to drive to collect the expensive laptop and bulky pillows than the cheap and light t-shirt. This is not a surprising result, and demonstrates that increasing out-of-home deliveries is not always suitable for all items.

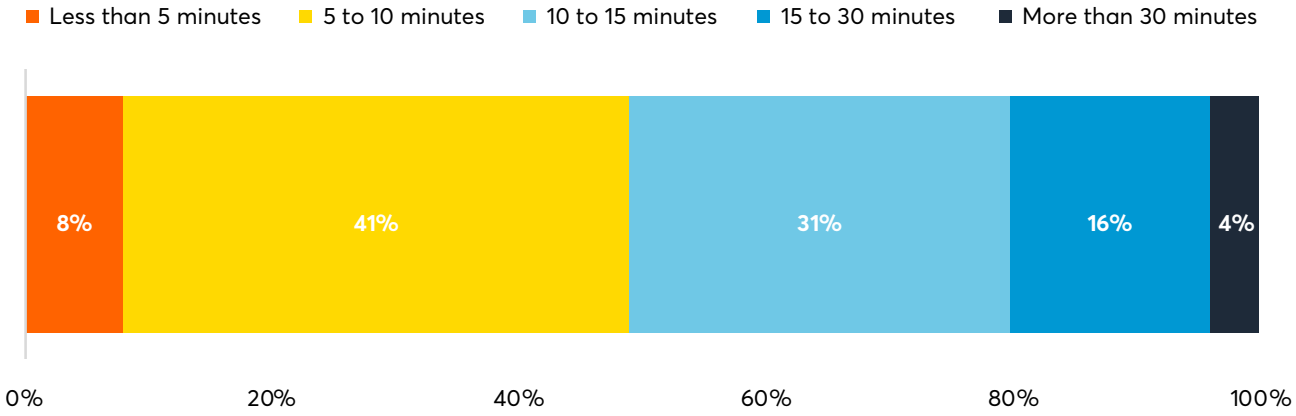
Figure 9: Collection method of participants choosing Click & Collect



Source: Data collected by BIT on 6-22 September 2022.

In the survey, all participants were also asked how long they would be willing to travel to collect a small parcel. Around half were willing to travel for more than 10 minutes to pick it up; 41 per cent said they would travel 5 to 10 minutes, and 8 per cent said less than 5 minutes. It should be noted that these are stated preferences and so may differ from actual behaviours. Many people will optimistically state as part of a survey that they will walk for a given amount of time – but in a busy week they might view that same time commitment as inconvenient. Also, proximity to an individual's home isn't the only factor in how far they would be willing to travel: if a collection point is located near other places they plan to go, such as their child's school or their local station, then they may be willing to travel further.

Figure 10: Length of journey Londoners are willing to make to collect parcels



Source: Data collected by BIT on 6-22 September 2022.

Attitudes towards nudges

The checkout page is one of the most sensitive areas of online shopping, with a lot of attention paid by retailers to their "conversion rates" (a metric describing the proportion of shoppers completing with a purchased product). The delivery options present at checkout play a major role in this conversion: survey data from Metapack found that 45 per cent of respondents who abandoned their baskets did so because of unsatisfactory delivery options.[44] Convincing retailers to change their checkout pages is therefore not easy.

However, most of the participants in this trial were supportive of the nudges that they were shown. Around three-quarters of participants in the environmental and convenience framing groups thought that the nudges they were presented with were informative and should be adopted by retailers. This positive reaction is encouraging for the adoption of these nudges in practice.

5. How parcel collection should work

Locations of collection and return points

The location of parcel collection and return points is crucial to their success. They should be located close enough to people's homes or workplaces that they are seen as a convenient alternative to home delivery. Proximity also helps ensure that people don't drive to collect their parcel but instead use active travel.

Currently, collection points tend to be clustered around high streets and major roads (this can be seen in the map of Southwark in Chapter 3). This clustering is not surprising, as most collection points are themselves shops. There are also benefits associated with collection points placed in locations that Londoners already visit, such as high streets, supermarkets and gyms: this is because parcel collections or returns can be easily combined into trips that people are already taking.

Nonetheless, 62 per cent of Londoners do not live on or around a high street.[45] In order for these people to view out-of-home delivery as a convenient option, collection and return points also need to be located in residential areas. Local convenience stores do help to bridge some of this gap, but they don't exist everywhere.

Parcel lockers are a key way to increase the number of PUDO points in residential areas, as they don't require staff to oversee the collection or return of the parcel. This means that there is much more flexibility in where they are located. Yet at the moment, lockers are mostly located on private land – often outside convenience stores, supermarkets or petrol stations. This is mostly driven by a lack of alternative land supply, and therefore there is a need to explore how other kinds of land can be made available for lockers to be placed in non-commercial locations.

> "One of the biggest challenges in Britain is space and parcel lockers. It's amazing, you would think there was space everywhere for a parcel locker. But it's very hard to find the right locations and a lot of locations come with the need for planning consent"
> **Parcel locker provider**

Case Study: Parcel collection in Poland

Poland has over 74,000 out-of-home parcel collection points, which includes the largest network of parcel lockers in Europe.[46] This number is set to continue increasing as out-of-home deliveries make up the largest growing segment of the wider deliveries market. Parcel lockers are very popular among consumers: a survey from Colliers found that 32 per cent of people used them exclusively to receive their deliveries.[47]

Whilst the large-scale rollout of collection point infrastructure has been key to the success of parcel collection in Poland, experts we interviewed also explained that Poland's less reliable home delivery service has played a role in out-of-home's popularity. In Poland, the use of parcel lockers has been made more attractive by the inconvenience of the alternative, which has helped to drive consumer demand. Although in London home deliveries are currently very convenient for most people, it is important to consider how the infrastructure for parcel collection can be boosted alongside interventions to increase consumer demand.

Safety

Even where parcel collection and return points are a short distance from Londoners' homes, people who have had negative experiences of using a locker or shop are unlikely to change their behaviours in the long term. The perceived safety of a PUDO point is key to this experience – especially for lockers where there is no member of staff present.

There are two aspects of safety to be considered: first, the safety of the parcel, and second, the safety of the person collecting or returning. In our focus group, participants expressed concern about getting a higher-value parcel delivered to a locker, but they were also unaware of the safety features typically built into them (such as their locking systems, lighting and security cameras). These attitudes were reflected in the survey of Londoners in partnership with the Behavioural Insights Team. 48 per cent of participants felt that the laptop was too expensive to leave at a collection point, compared to just 5 per cent for the t-shirt and 9 per cent for the pillows. Yet conversely, of those participants who *did* choose to collect the laptop, 45 per cent did so because they were concerned it could be stolen if left at their front door by a delivery driver. More needs to be done to raise awareness of how safe out-of-home parcel infrastructure is for higher-value parcels.

Despite this, many lockers are located in unappealing locations (e.g. at the rear of petrol stations), which may not feel safe for the person collecting – especially in the evening or at night (see Figure 11). This concern is likely to be worse for women and other minoritised groups such as disabled adults, who are more likely to report feeling unsafe in public spaces after dark.[48] To improve the safety of parcel lockers, they should be placed in locations that are well lit and visible to bystanders.

Figure 11: Parcel lockers behind petrol stations

© Josh Cottell

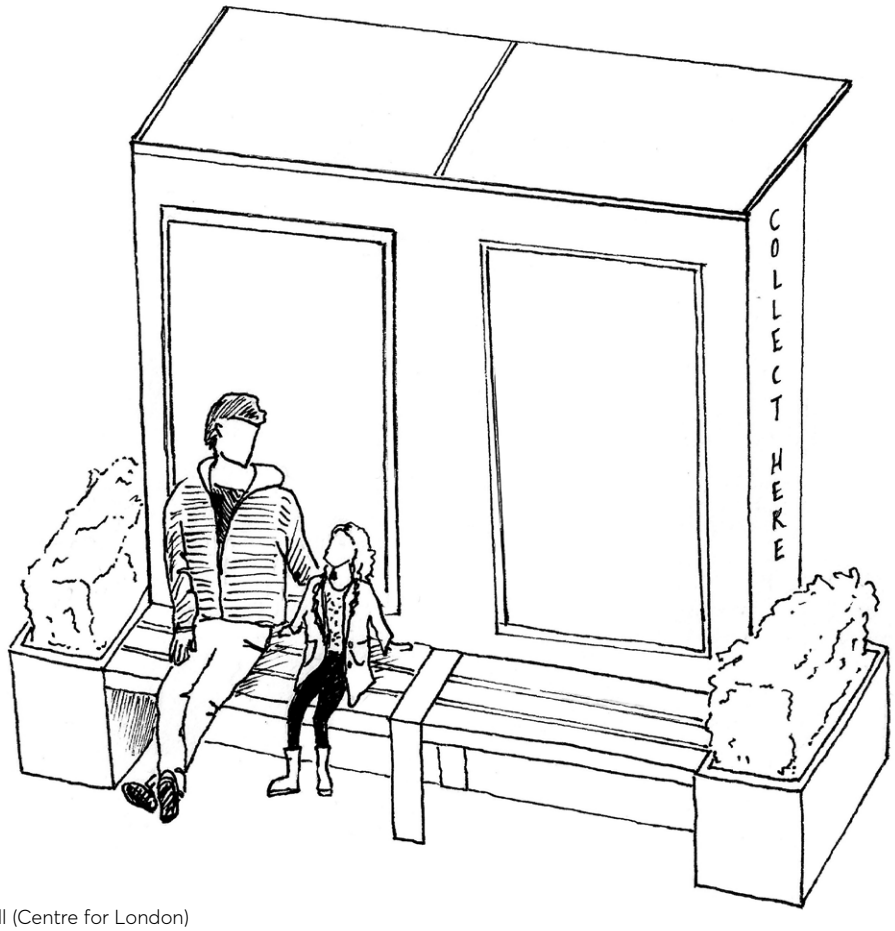
Lockers as street furniture

In order to place more PUDO points in better, safer locations, it is important that we come to see parcel lockers as essential pieces of street furniture. “Street furniture” is a term used to describe an array of objects and equipment that sits in the public realm, from small bins and benches to larger bus stops and cycle racks. Typically, it serves a public purpose that helps to justify the object taking up pavement space.

Lockers placed in the street need to be granted planning permission from the local authority. This is granted on a case-by-case basis, and locker providers have to pay to apply. As part of this process, planning officers take into account material considerations such as the design, placement and effect of the locker on its surroundings. Most London local authorities don’t have specific planning policies in place setting out guidance on lockers. Whilst the *London Plan* does suggest having parcel boxes in new developments for missed deliveries, it offers no guidance on how they should be dealt with in other settings.[49] This raises additional challenges and uncertainties for locker providers when submitting their applications. The case-by-case nature of planning permission means that even in boroughs where planners are receptive towards parcel lockers, the rollout of multiple locations is a slow process.

The design of parcel lockers is driven by practicality, which has led to most of them being relatively unattractive metal boxes. Yet while most other street furniture also has functionality at its core, there are several examples of careful design leading to aesthetically pleasing results. Well-designed street furniture can add character to a place (such as the iconic red postbox), or serve multiple public purposes (such as planters with built-in benches).

Figure 12: Parcel locker integrated with a bench



By Millie Mitchell (Centre for London)

Figure 13: Parcel locker next to bus stop

By Millie Mitchell (Centre for London)

Currently, it may be hard to imagine parcel lockers being ubiquitous on London's streets. For 90 per cent of Londoners to live within 250 metres of a PUDO point, there has to be a widespread rollout of this infrastructure. Cycle parking has undergone a similar rollout journey and is now found everywhere in London, even in conservation areas. The known social and environmental benefits of cycling have led to substantial interventions in street space like the Santander Cycles – which, as one of our interviewees noted, you would be surprised *not* to see.

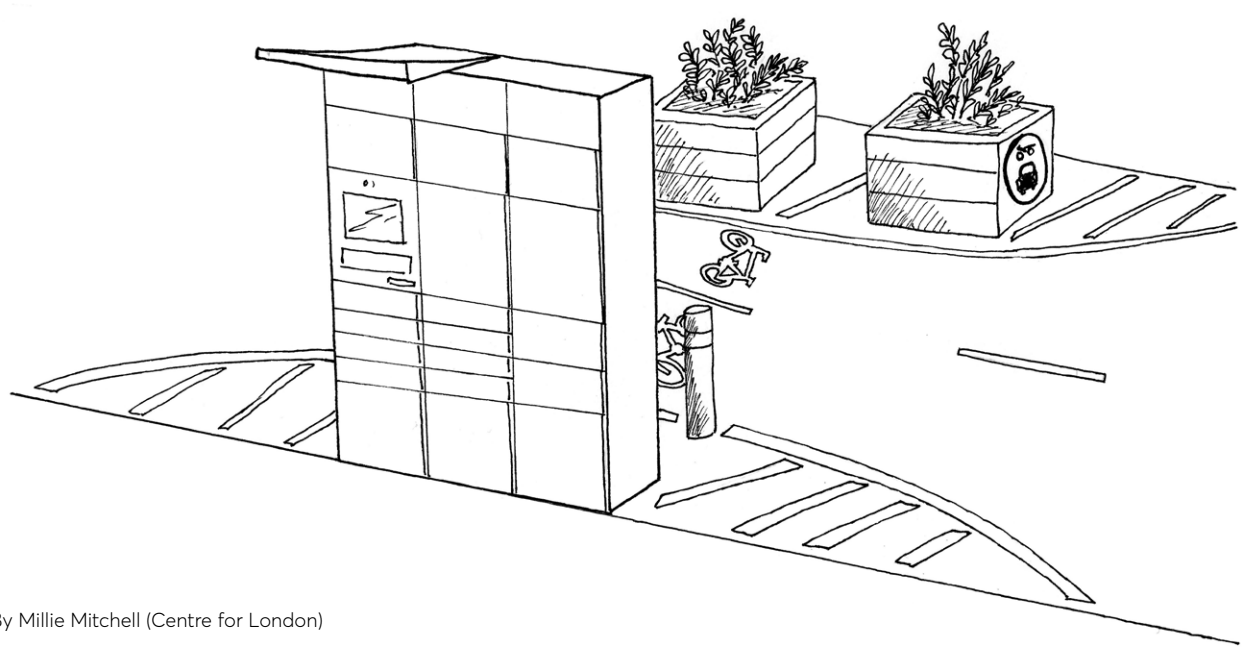
Of course, if parcel lockers are to be integrated into more streets, it is important that this does not negatively affect accessibility for other users. The same principles should be applied as those used to judge the appropriateness of other street furniture. For example, if a street is already too narrow or congested, it would not be a suitable location for a locker.

Collaboration

Retailers and delivery providers collaborating with one another on out-of-home parcel collections and returns can bring several benefits. One clear concern for local authorities about the integration of parcel lockers into street space is that unnecessary clutter will be created by the arrival of multiple brands of lockers in one space. If carriers can collaborate to share locker infrastructure, this can help reduce the risk of cluttering while increasing the convenience of their service to consumers.

Collaboration between local authorities and the parcel sector can also help ensure that lockers (and other parcel collection infrastructure) are strategically placed, rather than being driven by the availability of private land. Local authorities could identify locations with poor air quality and help providers place lockers in this area by enabling land and planning permissions. Parcel lockers could also be incorporated into existing local authority schemes aimed at reducing vehicle traffic, such as Low Traffic Neighbourhoods and School Streets.

Figure 14: Parcel locker in a Low Traffic Neighbourhood



By Millie Mitchell (Centre for London)

Greater collaboration could also offer benefits for in-store parcel collections. If retailers could collaborate to enable the in-store Click & Collect of their products in the brick-and-mortar stores of partnered retailers, this would further increase the convenience of out-of-home delivery. Some major retailers are already doing this: for example, John Lewis customers are able to get their parcels delivered to Co-op shops. This kind of collaboration could be especially useful for clothing customers, who would be able to try on their products in a partner store and return the item if necessary without making an additional journey.

Parcel packaging

Another small but important consideration in boosting out-of-home deliveries is that the parcels themselves need to be easy to transport on foot. Too often, small objects are placed in oversized boxes that are difficult to store at collection points and difficult for people to carry home. Many parcels do not come with handles as standard. This can raise additional issues if people have combined their parcel collection with other journeys, such as shopping or collecting their children from school. Retailers should consider how their packaging can be redesigned with parcel collection in mind.

Out-of-home grocery deliveries: an emerging opportunity

Although Click & Collect is offered by most major UK supermarkets, it typically takes the form of collecting your shopping from the store or from a designated point in the store's car park. But could parcel lockers offer a new alternative?

In Sweden, almost 50 per cent of grocery orders placed online are collected rather than delivered, and many of these go to grocery lockers.[50] These lockers are temperature-controlled, with ambient, chilled and frozen compartments, and so are not interchangeable with regular parcel lockers.

Expensive home deliveries in Sweden have helped this market thrive, as the cost difference incentivises consumers to choose out-of-home delivery. But supermarkets in Sweden have also showcased how to use their lockers in TV and influencer marketing campaigns, boosting uptake further.

Food delivery vans are much heavier and consume more fuel than ordinary delivery vehicles because they must carry additional temperature-controlling equipment. Whilst a family-sized food shop is much harder to collect on foot or by bike, grocery lockers located close to journeys that Londoners are already taking by car or public transport can offer positive benefits.

Recommendations

Increasing the use of out-of-home deliveries in London will require both demand- and supply-side changes. The recommendations set out in this final chapter cover both. First, we suggest how consumers can be influenced to use out-of-home deliveries more frequently; second, we set out how London's parcel collection and returns infrastructure can support this behavioural change.

Recommendations to change consumer behaviours

Campaigns to raise awareness

Local authorities, the GLA and environmental groups should campaign to share the message about the environmental benefits of out-of-home deliveries.

- Campaigns could focus on air pollution or carbon emissions, depending on the priorities of the campaigning organisation.
- Campaigns should put emphasis on the importance of walking or cycling to collect parcels, or suggest integrating collection into existing journeys.
- Retailers should respond to this campaign to help reinforce messaging about ethical consumerism.

Nudging online shoppers to choose out-of-home delivery

Retailers should offer and encourage the selection of out-of-home delivery options on the online checkout page.

- This could include providing environmental information or convenience messaging as per the results of the Behavioural Insights Team trial.
- Environmental messaging can be nuanced, and retailers should provide more detailed information about the benefits to avoid suspicions of greenwashing.
- Where possible, out-of-home delivery options should be cheaper than at-home deliveries.
- Retailers should test different approaches to see what works best for their customers.

Recommendations to improve parcel collection infrastructure

London needs a better network of well-located collection and return points – made up of a mixture of in-store Click & Collect, parcel shops and parcel lockers – in order for more people to choose out-of-home deliveries. For this to happen:

- All online retailers should offer out-of-home delivery options to their customers.
- Business Improvement Districts (BIDs) should work with their members to improve the number and spread of shops acting as parcel collection points.
- Local authorities and their partners should encourage and support shops to act as collection points, particularly shops in residential areas that are currently underserved.

The following recommendations are focused on lockers because, while the market is already delivering store-based collection options, there is a greater need for policy change to increase the number of lockers available. Lockers can also help to make out-of-home delivery an option for people who do not live near to shops.

Opening up the PUDO network

The parcel sector should collaborate to increase the number of open or multi-carrier PUDO points. The following box discusses how this could work.

What could a local open or multi-carrier PUDO pilot look like?

The advantages of an open PUDO network were set out in Chapter 5 of this report. However, there are several challenges in achieving this, such as the risk appetite of delivery providers who want to feel confident in the ability of the open network to maintain their services. These concerns are understandable, but it doesn't have to happen everywhere all at once. There are densely populated areas of London that are well equipped to host a local pilot scheme for testing this system in a relatively low-risk setting.

A local open or multi-carrier PUDO pilot would involve all (or at least most) PUDO operators in the pilot borough allowing all delivery providers to deliver to their collection points. Delivery providers would offer all the PUDO points in that borough to the consumer at the retailer's checkout page. The open network could utilise a pre-allocation system to give delivery providers the certainty that there is capacity at the PUDO point for their parcels. Pre-allocation systems are already common in air freight and reduce the need for the delivery organisations to share huge amounts of live data.

There are several kinds of organisation that could orchestrate this pilot. A major courier could step forward to act as an anchor organisation – or it could be a trusted third party such as a public body. Alternatively, multiple carriers and PUDO operators could enter a joint venture. Whilst delivering such a collaboration would be complex – requiring joined-up thinking about the wider distribution network from all stakeholders – the rewards could be significant.

Improving the locations of parcel lockers

Local authorities and the GLA should encourage the appropriate use of lockers in the public realm.

- They should enable the strategic location of parcel lockers through the planning framework.
- The *London Plan* should set a requirement for parcel collection points to be included in all new large-scale housing developments.
- Shopping centres should consider converting empty units into parcel collection points with fitting rooms, which could reduce returns and drive footfall.

Placing parcel lockers in street space

- Parcel locker providers should develop more attractive lockers that can positively contribute to public spaces.
- This might include combining lockers with other street furniture such as benches and planters, as well as testing alternative finishes and lighting.
- The Mayor's Design Advocates could help take on this challenge – or the Mayor could launch a design competition.

Appendix

Behavioural Insights Team trial

Sample size and characteristics

An online sample of 3,204 Londoners were recruited during the period 6th to 22nd September 2022. All the participants stated that they had previously shopped online. The demographic makeup of this sample is shown below.

Figure 15: Demographic makeup of sample

Gender		Age		Ethnicity	
Men	47%	18-24	23%	White	60%
Women	53%	25-54	67%	Asian	17%
		55+	11%	Black	13%
				Mixed / Other	9%

Note: Percentages may not add to 100 per cent due to rounding.

It should be noted that this sample doesn't capture the digitally excluded, nor people who are not inclined to complete online surveys.

Experiment methodology

Participants were asked to proceed through a simulated online checkout for three items: a T-shirt, a laptop and a set of four pillows. These items were selected for their varying price and size. The participants proceeded through the simulated checkout for each product separately, and they were shown the products in a random order.

Participants were randomly split between four test groups:

1. **Control:** Participants were shown an online checkout without any nudge interventions.

2. **Default:** The Click & Collect option was moved to the left-hand side and was pre-selected.

3. **Environment framing:** Participants were given messaging indicating that Click & Collect is better for the environment than home delivery.

4. **Convenience framing:** Participants were given messaging that conveyed the convenience of Click & Collect for them.

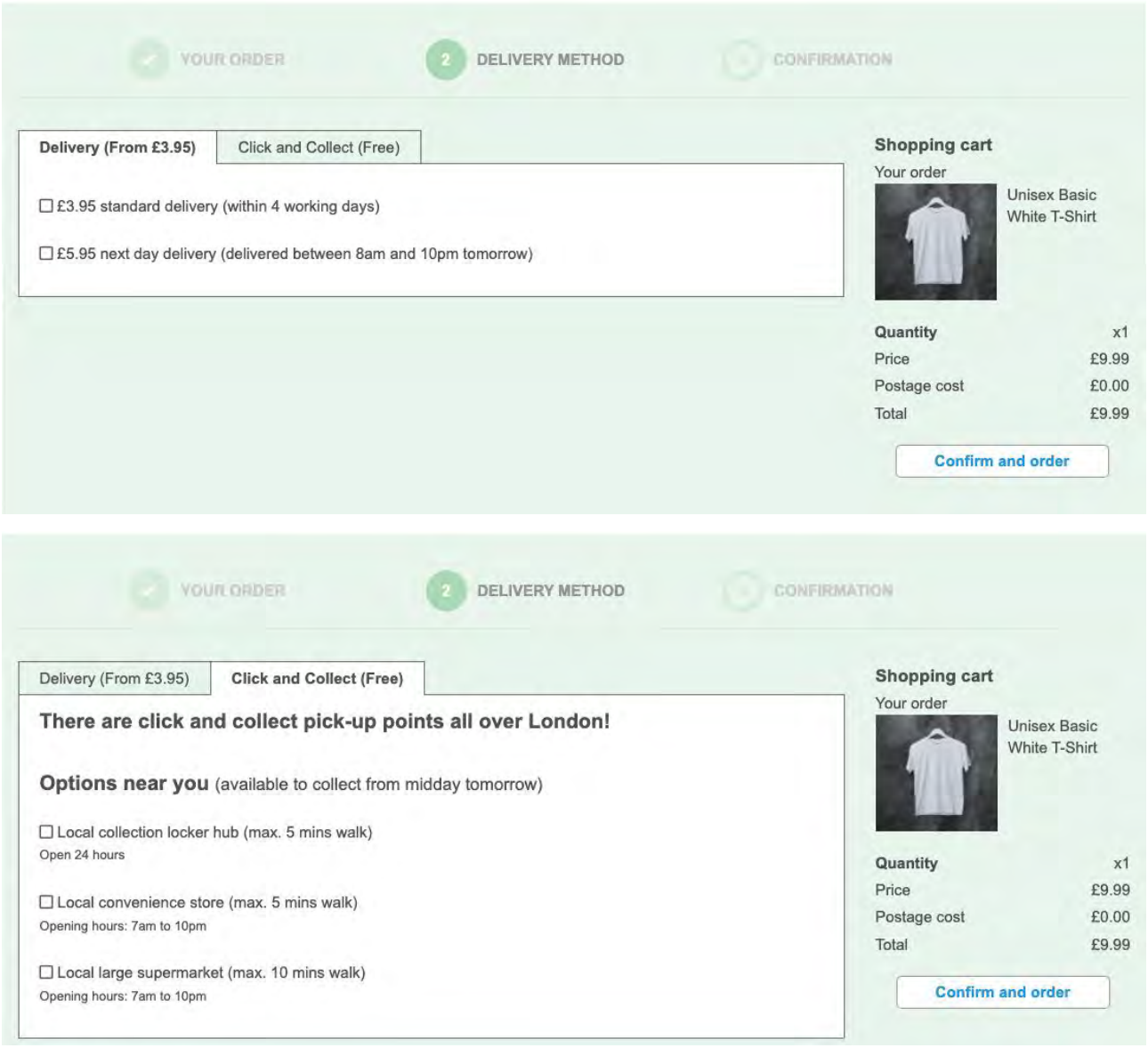
All groups were initially presented with a binary choice between home delivery and Click & Collect. The appearance of this binary choice varied according to their test group (see Figure 5).

Having made this binary choice, participants were taken to a second page where they could browse the options available to them. This second page introduced a cost differential (as shown in Figure 16 below): the collection option was offered free of charge, while delivery started at £3.95. All participants were offered the same options at the same prices at this stage.

In the environment and convenience arms, participants who tried to check out with home delivery were prompted to reconsider their option with a pop-up box showing further environment or convenience messaging (see Figure 17).

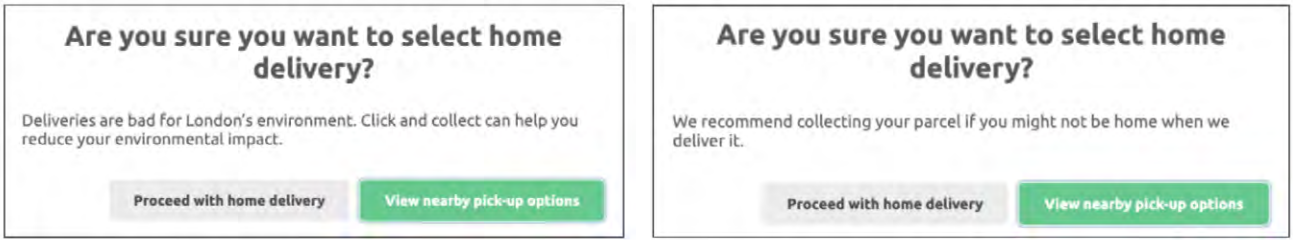
When the participants had finished the online checkout for all three items, they were shown a series of survey questions about the decisions they had made and their usual delivery preferences.

Figure 16: Trial pages displaying different delivery options



Source: BIT trial

Figure 17: Pop-up seen in the environment (top) and convenience (bottom) arms if participant checked out with home delivery



Source: BIT trial

Endnotes

1. ONS (2022) Detailed online and instore retail sales, Great Britain, January 2021 to April 2022. Retrieved from: https://www.ons.gov.uk/businessindustryandtrade/retailindustry/adhocs/14510detailedonlineandinstoreretailsalesgreatbritainjanuary2007tofebruary2022 https://www.ons.gov.uk/businessindustryandtrade/retailindustry/adhocs/14771detailedonlineandinstoreretailsalesgreatbritainjanuary2021toapril2022
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