



Demand responsive bus trials

July 2021



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The trials operated in areas of outer London with high car use

Introduction

Working with our partners to run two trials of demand responsive buses in Ealing and Sutton

Demand responsive buses enable customers to book a seat on a bus and use 'virtual bus stops' to complement the existing bus stop network. Bus routes are dynamic, adapting to demand in real time. The trials tested technology to enable customers to book on a mobile app, and also provided a phone booking option.

Following extensive market engagement and a competitive tender process, we launched on-demand services in Sutton and Ealing, areas identified for their high car use. Originally planned to run for 12-months, the schemes had to be cut short as a result of the pandemic. This meant some of the planned changes, surveys and testing could not happen, including:

GoSutton

- Driver scheduling and algorithm changes to target empty vehicle mileage (initial service priorities were ridership and quality of experience)
- Changes to the call centre operation to reduce operating costs

Slide Ealing

- Driver and customer satisfaction surveys
- Area expansion
- Refresh of, and new, promotional coupons to encourage ridership

We did not remove any existing public transport, instead the trials added to existing services. GoSutton could not be extended to Croydon or Morden as some users requested, as the trials had to be designed not to compete with existing services. There was no flexibility in driver hours, pay and conditions, as they had to be employed under the same terms as London bus drivers. As we worked with commercial partners, some information is commercially sensitive and cannot be shared.

Key requirements

We set parameters that had to be met.

Area

The trial had to be in outer London where it could complement existing public transport rather than compete with it.

Accessibility

The service must be able to meet accessible trip requests.

Passes

Freedom Passes must be accepted.

Capacity

The vehicles must be able to accommodate nine or more people and be compliant with the Ultra Low Emission Zone.

Staff

Drivers must receive the same terms and benefits as other London bus drivers.

GoSutton trial

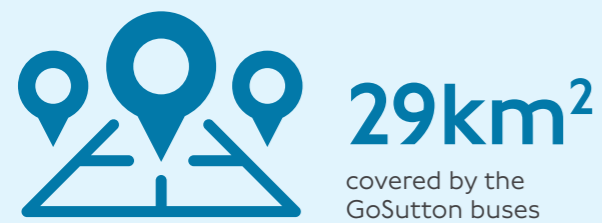


This trial launched in May 2019 and was run with our technology partner ViaVan and bus partner GoAhead. The GoSutton scheme covered an area of 29km² and ran from 06:30 to 21:30, seven days a week.

There were eight 14-seater Mercedes Cityline low-floor Sprinter buses, all of which were wheelchair accessible.

There was a flat fare of £3.50, which was reduced during the trial and with various promotions, with the lowest fare being £2.

The trial was suspended in March 2020 as a result of the coronavirus pandemic and terminated by May 2020.



All eight of the GoSutton buses were wheelchair accessible



Slide Ealing trial

The Slide Ealing trial launched in November 2019 and was run with our partner RATP DEV and technology partner MOIA.

The scheme covered an area of 27km² across Ealing and used 10 buses, each with a 10-seat capacity and fully wheelchair accessible.

The buses ran from 06:00 until 01:00 and operated seven days a week.

There was a flat fare of £3.50 at launch, which was reduced with promotions. The lowest fare charged during the trial was £2.50.

The trial was suspended in March 2020 as a result of the coronavirus pandemic and terminated by May 2020.



 10 fully accessible buses used in the trial

£2.50  was the lowest fare charged during the trial

The buses used in the Slide Ealing trial had a 10-seat capacity

Our customers

Passengers were generally satisfied with the ease of use, safety, cleanliness and accessibility

The response to both trials was largely positive, with services perceived to be high quality. We received strong positive feedback from the Sutton community, including a campaign to continue the service. There were very few safety incidents during both trials, with just some vehicle damage and antisocial behaviour being reported.

Ridership

There was high resident awareness of the trials, with three quarters of people surveyed in Sutton and a third of those in Ealing being aware of the services. However, ridership was still only a small proportion of the local populations. On average, 31 per cent of journeys on Slide Ealing and 47 per cent on GoSutton were made using a Freedom Pass.

By the end of the trials, there was an average of four trips per unique rider per four-week period. However, there was a subset of 'super users', with 14 per cent of GoSutton customers making more than nine trips per month.

Perceptions

GoSutton customers rated cleanliness, safety and security and driver attitude most highly. The short walk to the bus, which was around 100 metres on average, was also often noted.

Among the main concerns and barriers to using the service were confusion of a shared ride, door-to-door service and the virtual bus stops. There was a concern around safety at night, especially in quiet areas where there was no CCTV.

Due to the nature of the service, it was not always possible to schedule a ride, with between 65 per cent and 88 per cent of customers who requested a trip being offered one. There was also some sensitivity to wait time. Customers who accepted an offer on the Slide Ealing service had an average wait time of eight minutes and 42 seconds, while the average proposed wait time for those who rejected an offer was 10 minutes and 16 seconds.



4.8

out of five average rating from GoSutton passengers



97%

positive feedback from Slide Ealing customers



The response to the demand responsive buses was largely positive

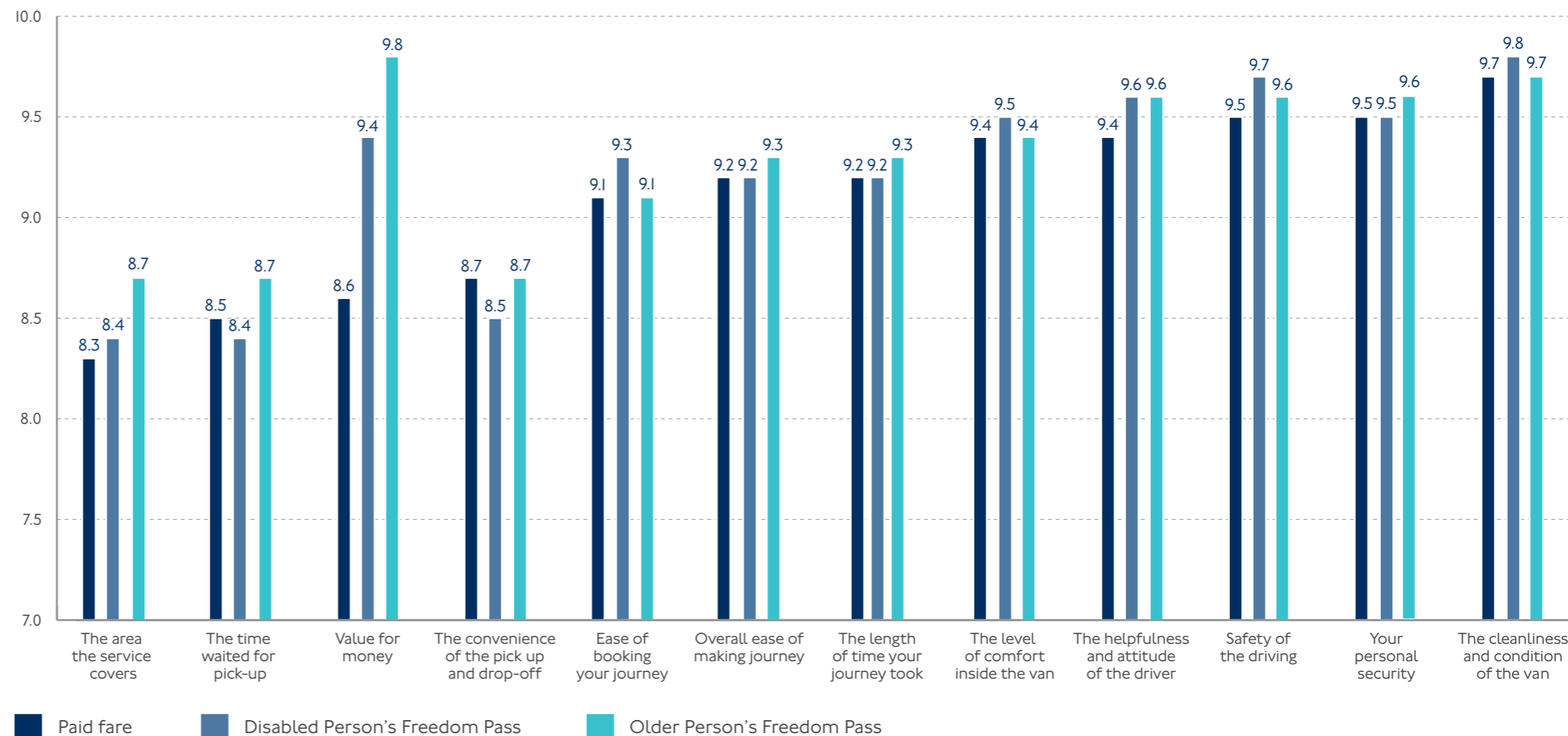
Bookings

The majority of bookings were made using the app, accounting for 90 per cent of bookings on GoSutton and 97 per cent of bookings on Slide Ealing. On GoSutton, 83 per cent of Freedom Pass bookings were made on the app and on Slide Ealing, 98 per cent of Freedom Pass bookings were made using the app. Users were satisfied with the digital experience and thought the apps were easy to use

However, there was a low conversion rate from app downloads to rides, with a third of people who created an account never requesting a ride. A quarter of those who made accounts took a ride on Slide Ealing, and 39 per cent on GoSutton.

Overall, phone bookings were low and proved costly for the service. The phone service was mainly used by Freedom Pass users and did not provide the same level of customer experience. There was no way to update non-app booking customers on the vehicle location or show visual directions to or from the bus stops.

GoSutton customer satisfaction survey (score out of 10)



Freedom Passes

We offer Freedom Passes to older people and to people with a disability who meet certain requirements.

The passes enable people to travel for free or at a discounted rate on buses, trams, Tube, DLR, London Overground and TfL Rail services.

A condition of our demand responsive bus trials was that Freedom Passes must be accepted.

Ridership

	GoSutton	Slide Ealing
Unique riders	5,547	1,846
Total trial rides	80,901	16,275
Highest periodic rides	10,717 (8th period, Dec price decrease)	5,183 (4th period, March 2020)
Wheelchair rides	10,517 (13% of all)	40 (<1% all)
Freedom pass rides	47%	31%



13%

of GoSutton customers were wheelchair users

3%

of Slide Ealing bookings were made over the phone, compared with 10% of GoSutton bookings



At the start of the trials, the average call time for the GoSutton service was 12 minutes. Even with efforts to reduce this, such as a recorded message directing to the app download and a different phone option structure, it was still 4.5 minutes. This compares with an average call time for Dial-a-Ride buses of four minutes.

There was some confusion among both app and phone bookings customers about the concept of virtual stops. For example, some users expressed frustration when pick-up/drop-off virtual stops differed each time for the same journeys.

Drivers quickly got used to using the app to board passengers and having the journeys automated by an algorithm in real-time. The algorithm could be adapted for local restrictions, changes in speed limits and to avoid roads that were closed or had traffic calming measures. This technology was also repurposed to support the delivery of care parcels during the pandemic.

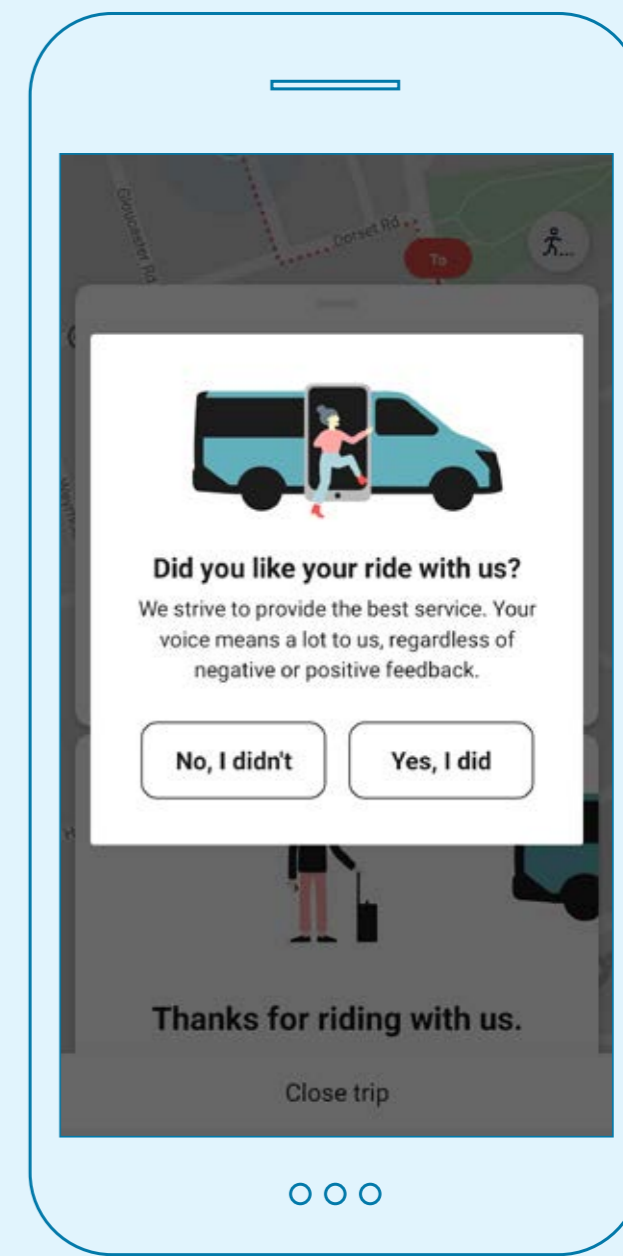
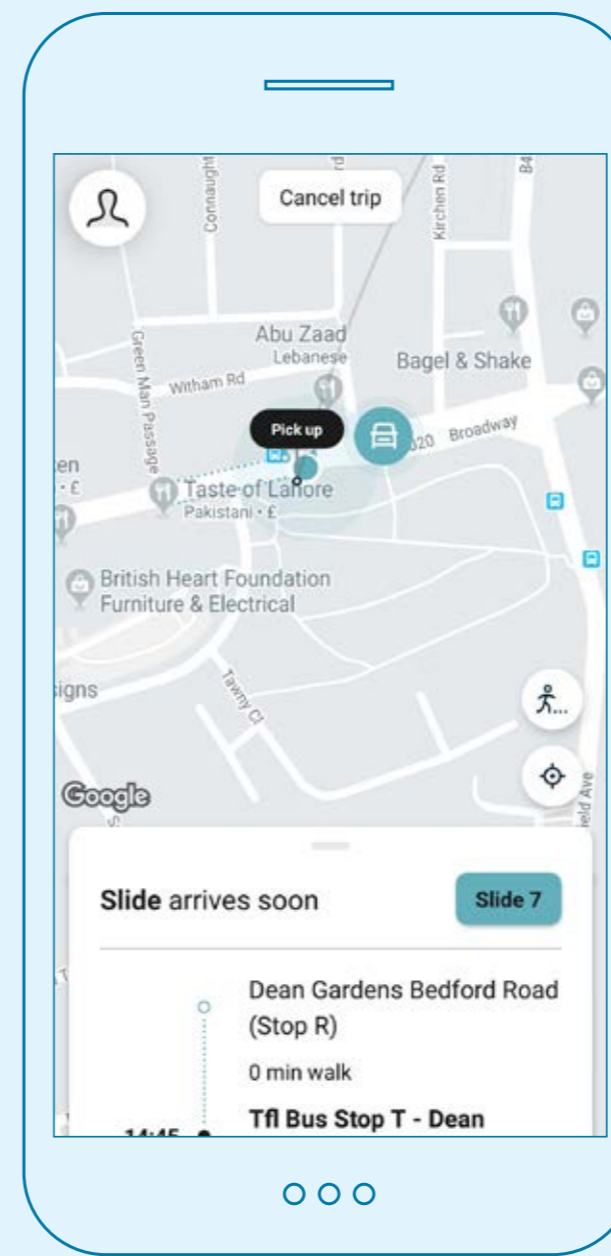
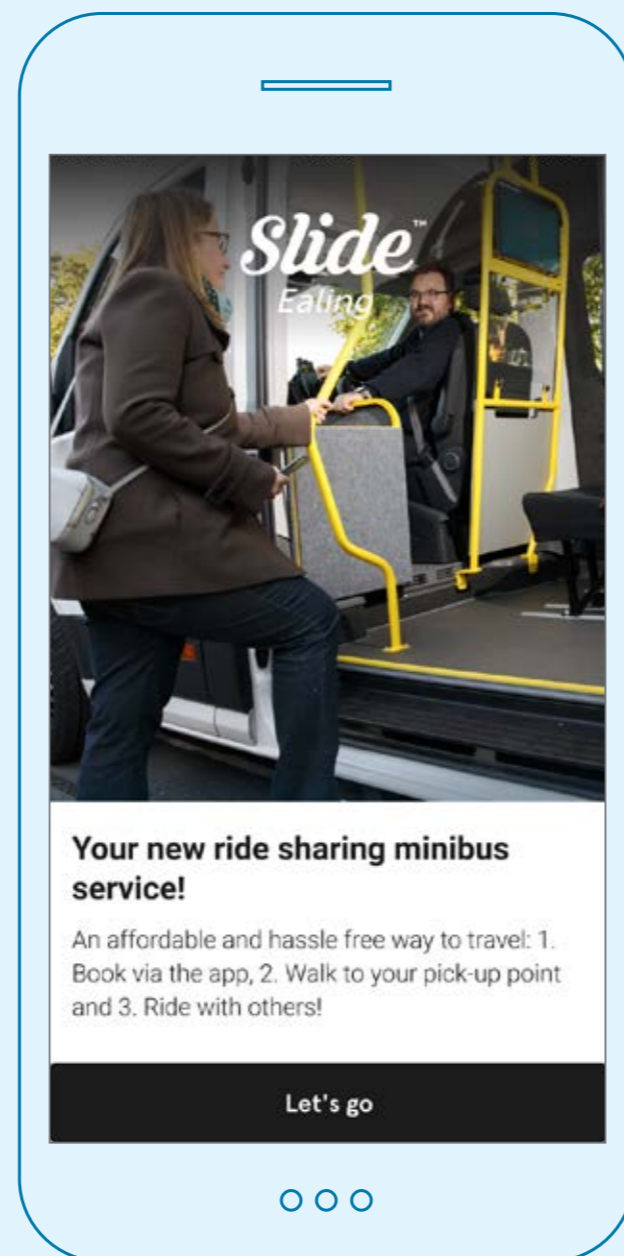
Coronavirus response

The technology used in the GoSutton trial was repurposed for Sutton Council to help it deliver emergency parcels during the first lockdown. ViaVan's technology took the council's list of deliveries and drivers and assigned the route to minimise mileage and maximise efficiency.

This helped the council maintain social distancing between volunteers, track parcel status and deliver more packages with fewer volunteer hours.

Digital experience

The technology enabled customers to book their service using an app on their phone. It included an intuitive layout, bus tracking and enabled us to gather feedback. The majority of customers were satisfied with the experience and thought the apps were easy to use.





The virtual bus stops helped reduce clutter from the streets

Community impact

The service offered more direct journeys, but it proved difficult to persuade people to use it

The virtual bus stops meant there was no street clutter, but the impact on the city is uncertain, owing to the proportion of shared rides and empty mileage. For example, empty mileage impacts on congestion and air quality. Both services had empty mileage on more than half the kilometres operated.

In February 2020, 36 per cent of Slide Ealing bookings and 56 per cent of GoSutton bookings involved sharing a vehicle for part of trip. Passengers per driver hour ranged from 2.0 to 3.9.

Journey patterns

The number of journeys that connected with public transport was low, only accounting for 10 per cent of GoSutton trips. However, there was no Oyster card or travelcard integration, which would have encouraged this and, aside from Sutton station, GoSutton did not serve major rail or Tube stations.

Ealing is already well served by Tube stations but requests from users were made for GoSutton to serve Croydon and Morden for quicker transport links into Central London.

Customers said the services improved their access, but during the trial it proved difficult to persuade people to switch to a demand responsive service. Qualitative research showed that there was a perception among non-users that this 'wasn't for them'. Research commissioned by TfL showed that current car drivers would continue to use their cars as they value freedom, privacy, comfort and speed.



60%

of GoSutton customers would use their car less in favour of the demand responsive buses¹



47%

of GoSutton customers said they would use the bus less in favour of the demand responsive buses²

1, 2 GoSutton customer satisfaction survey, November 2019

Demand profile – Slide Ealing

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	62	57	56	58	59	14	6
07:00	135	136	138	167	135	34	20
08:00	151	177	159	177	171	86	43
09:00	108	128	107	150	137	107	68
10:00	124	152	117	130	175	113	85
11:00	140	117	134	123	146	151	148
12:00	153	142	113	136	137	156	149
13:00	179	117	116	119	147	140	151
14:00	138	145	127	160	174	135	122
15:00	169	154	169	196	184	150	147
16:00	162	158	127	159	191	154	120
17:00	146	152	154	170	181	172	107
18:00	151	185	165	181	241	221	133
19:00	107	147	147	144	200	210	90
20:00	98	110	105	109	133	159	94
21:00	80	89	81	117	147	138	56
22:00	78	78	91	103	137	141	91
23:00	37	43	67	98	149	127	30
24:00	15	16	39	24	17	55	77

0-49 rides 49-99 rides 100-149 rides 150-199 rides 200-249 rides

Demand profile – GoSutton

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	10	34	364	338	393	34	9
07:00	272	877	937	890	908	978	387
08:00	359	794	793	800	830	832	605
09:00	746	958	894	972	909	939	878
10:00	707	1017	965	920	1015	975	900
11:00	843	925	904	933	901	929	877
12:00	789	902	904	936	1054	1001	961
13:00	835	906	928	908	942	848	818
14:00	676	826	901	888	897	811	808
15:00	793	898	948	919	921	984	799
16:00	679	743	776	733	785	810	735
17:00	577	744	714	777	695	718	778
18:00	549	703	764	754	751	758	831
19:00	576	575	714	682	736	720	797
20:00	431	458	461	491	473	611	546
21:00	145	144	19	14	21	18	222

0-249 rides 250-499 rides 500-749 rides 750-999 rides 1,000-1,250 rides

Friday and Saturdays were the most popular journey days, especially in the early evening, which is a similar demand profile for private hire vehicle trips. There was a low demand for journeys after midnight on Slide Ealing, but there was strong usage between 20:00 and 22:00.

Mode shift

It is hard to persuade people to shift from their preferred transport mode to another, so it is encouraging that 29 per cent of GoSutton customers would have taken a car or taxi if it had not been for the service.

The trials showed that there is actual and potential for people to switch modes. More than half (57 per cent) of respondents to the GoSutton survey said they would have previously taken a bus for one or two routes, with the trials providing a better transport experience for those who would have needed to take two or more buses.

‘This is a lifesaver for me as a carer of my disabled son. We don’t drive or have access to a car, and GoSutton has been amazing! It’s lessened our isolation and difficulties with travelling immeasurably’

GoSutton customer

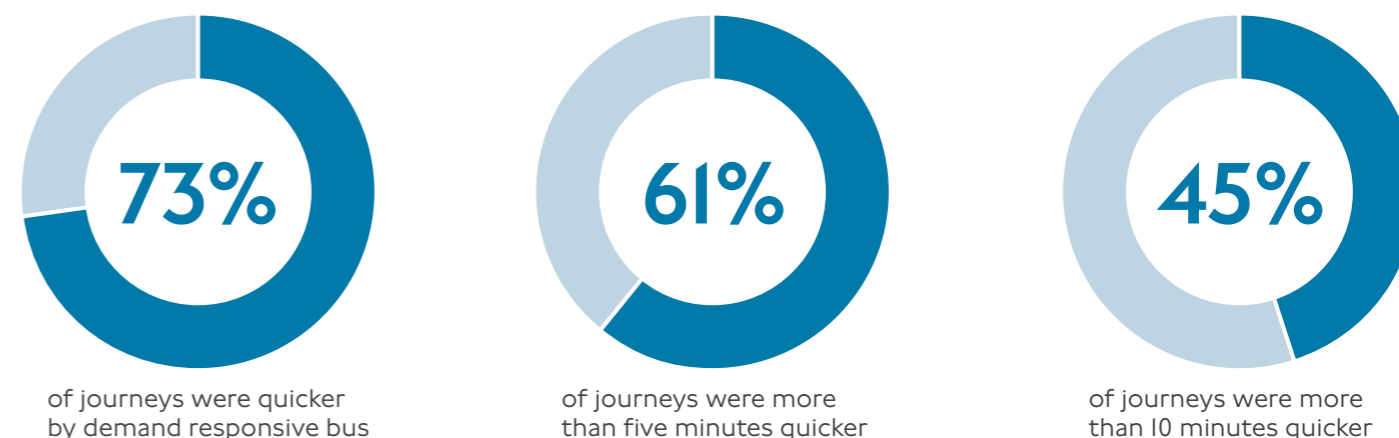
Similarly, in the survey, 60 per cent of respondents who currently drive said they would use their car less in favour of a demand responsive bus service. However, 47 per cent of bus users said they would use the bus less in favour of GoSutton.

An ‘in app’ question asked Slide Ealing users what mode they would have used in the absence of the demand responsive buses, with 19 per cent saying they would have taken a car and 13 per cent a taxi. Nearly half (45 per cent) would have used a TfL bus and 10 per cent would not have travelled.

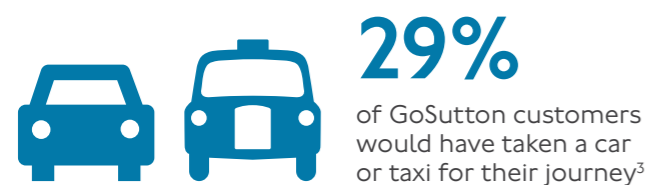
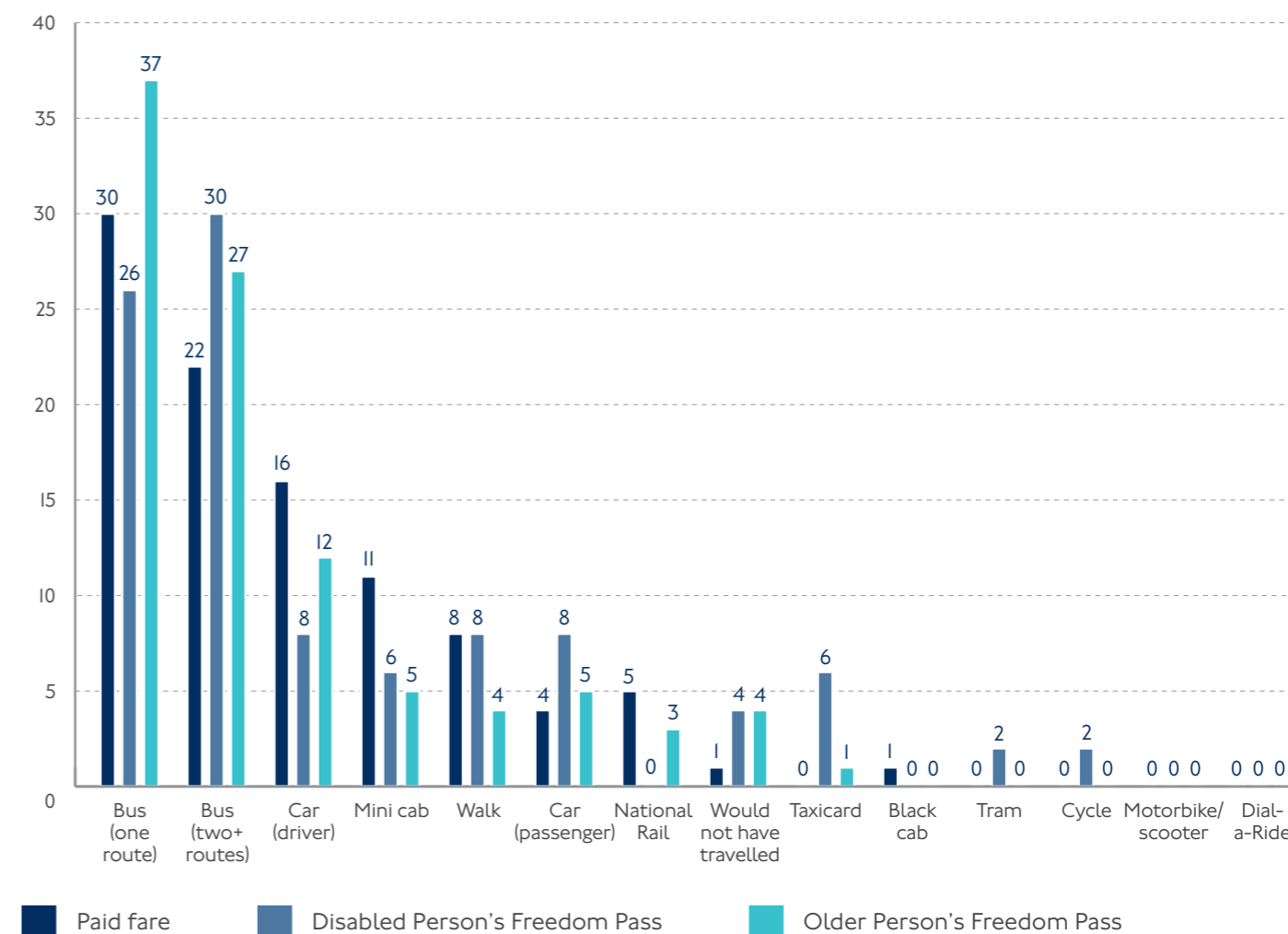
Pulse surveys of non-users found that people are ‘happy with their car’ and don’t understand enough about the bus trials to be confident enough to try them.

The demand responsive buses offered more direct journeys, with the Public Transport Accessibility Index increasing by 29 per cent for residents in Sutton. Journey time analysis showed 73 per cent of GoSutton journeys were quicker than public transport, including waiting and walking times. However, as the walk to a demand responsive bus pick up is often shorter than to another public transport stop, the impact on Londoner’s activity levels would need to be further explored.

Journey time savings on GoSutton compared to fixed public transport



Mode that customers would have used without the GoSutton buses (%)



3 GoSutton Customer Satisfaction Survey 2019

4 TfL Pulse Survey 2019

Commercial impact

We had a number of commercial considerations, including platform and marketing costs

Modelling showed that even with an established service, demand responsive buses were not cheaper per ride than existing bus subsidies. Freedom Pass holders used the service up to twice as frequently and were more likely to take a ride after they created an account.

In August, we lowered the price of the GoSutton service to £2 per ride, which helped grow the customer base and led to an increase in revenue.

People costs, including drivers, managers, call centre and data support, accounted for more than half of costs. Drivers were considered the 'face' of the services and helped with marketing and messaging. They were generally positive about driving these services and therefore invested in it. Driver recruitment was difficult for both services, owing to a general shortage of drivers in London and the rest of the country.

Customer support

Platform costs made up 10 per cent of the total costs, outweighing the technology cost on existing bus services, such as the iBus and countdown information systems. These costs included re-branding or building the existing app, changing algorithms to fit local conditions, the passenger and driver app creation, and hosting. The technology was sufficiently reliable, though it is dependent on having good 3G or 4G mobile signal coverage.

These services can be run without a dedicated customer support centre, although GoSutton provided call centre functionality, which was a significant expense. Slide Ealing did not have a call centre, with shift managers answering calls and emails, while the phone number was deliberately less prominent in marketing. Slide Ealing received around half the number of contacts as GoSutton per ride.



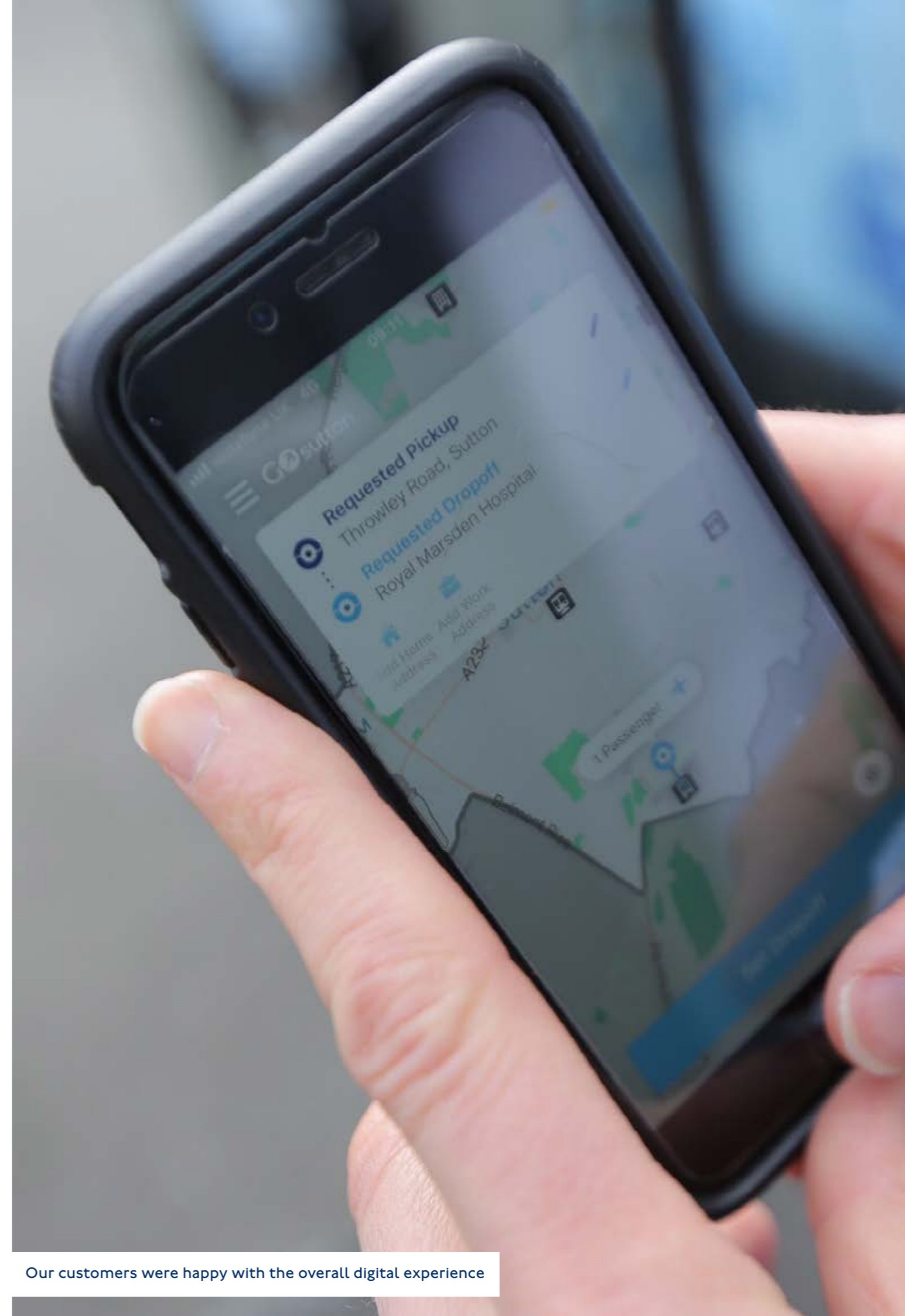
8.6

out of 10 paying customer rating for value for money of the GoSutton service



10%

of total costs were on the technology platform



Our customers were happy with the overall digital experience

Vehicles

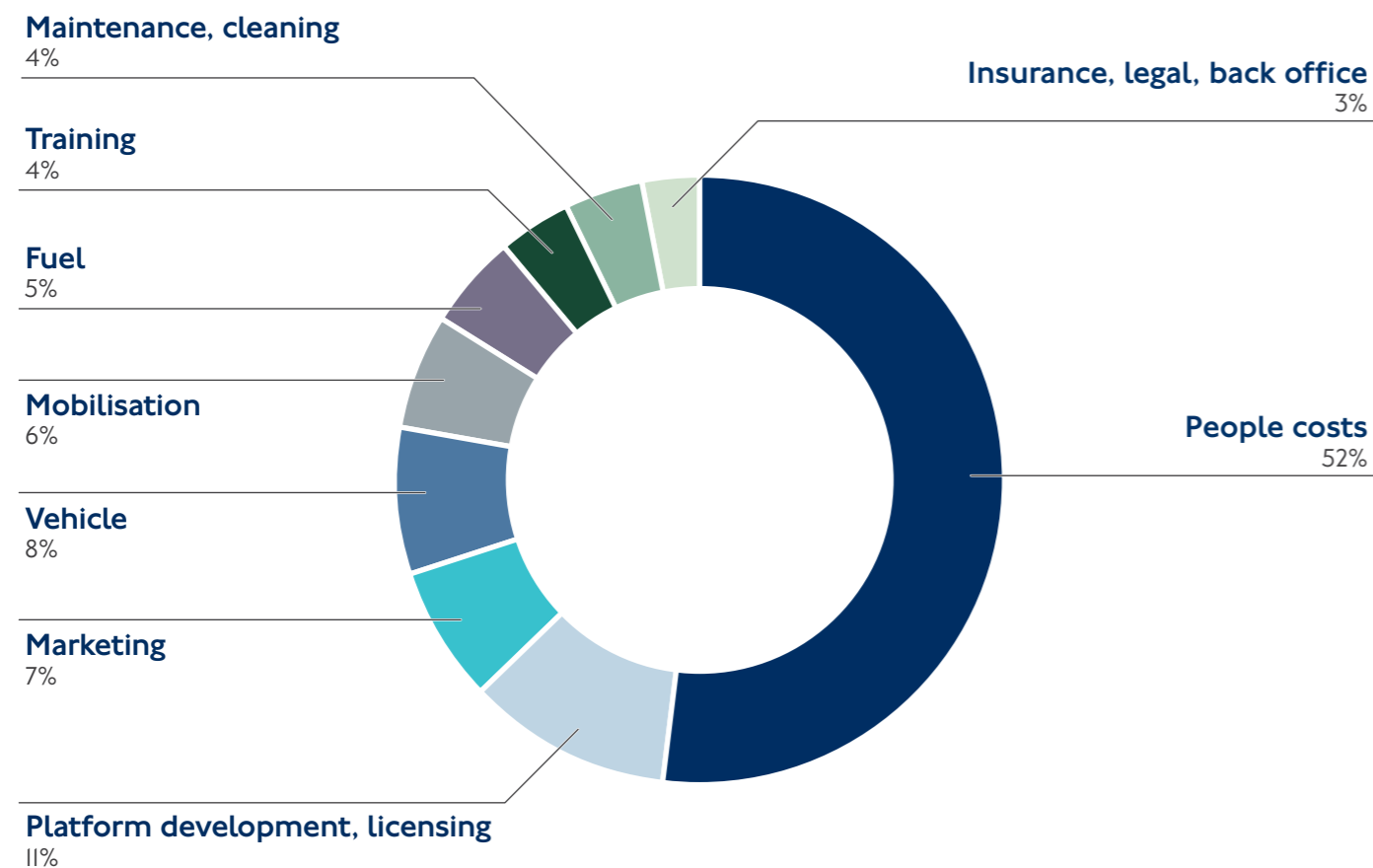
All of the service vehicles were Euro VI compliant, which means they met the required standard for exhaust emissions. In the Slide Ealing trial, the vehicles offered up to 10 seats, while there were 14 seats available on the GoSutton trial. While the operators were not required to have wheelchair access on every vehicle, both schemes chose to do so for efficiency and routing reasons.

Unlike conventional public transport, not all requests for trips could be served and this impacted on repeat customers and the perceived reliability for commuting.

On average, 12 per cent of requests for trips on GoSutton were not met, while 35 per cent of Slide Ealing requests went unmet. We used this data to revise the schedule during the trials, which helped improve the availability of the vehicles for customers.

Not being offered a request had a negative impact on customer retention, especially for new users. For example, 10 per cent of people who did not receive an offer on their first try of Slide Ealing did not try to book again. The reasons trips could not be served included limited seat availability, requesting destinations outside the trial area, or providing incorrect payment details.

Bus trial costs



Easy access

GoSutton offered access through a sliding side door and ramp, while Slide Ealing had access via a tail lift at the back of the bus. The Slide Ealing USB charging was not well used.



7%
of total costs were on the bespoke vehicles and their livery



3%
of customers on GoSutton connected to the Wi-Fi



The technology used has been adapted for our Dial-a-Ride buses

Outcomes

The trial results are informing our long-term view of demand responsive bus services

We have seen the importance of owning the data and having the in-house skills to interrogate the back-end systems and create reports. The positive feedback about high usage of the bookings apps among Freedom Pass users, accounting for more than 80 per cent of bookings, was used to inform a Dial-a-Ride survey on mobile phone ownership and walking ability.

We shared our evaluation criteria, key-performance indicators and tender documents with the Department for Transport ahead of its evaluation of Community Demand Responsive Transit funding bids for summer 2021. This will also inform its research and reporting metrics once live.

Several local authorities have expressed an interest in our demand responsive bus and transit services. We have informally shared knowledge with these authorities, while respecting the commercial sensitivities of our findings.

The technology used in demand responsive transport offers the chance for consolidation and optimisation of community transport. We are ready to provide information and advice as needed.

Technological advances

Our Dial-a-Ride service is using the learnings from the GoSutton and Slide Ealing trials to explore the potential to use the technology to improve efficiency and make services more cost effective.



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