

Hybrid buses

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Research conducted by Synovate

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1. Executive summary

Research was commissioned in order to assess customers' and bus drivers' views of eight different hybrid bus models (from four different manufacturers) currently in operation in London. Face-to-face quantitative interviews were conducted with 1,213 customers on hybrid buses across ten routes. Face to face qualitative mini interviews were conducted with 40 bus drivers across eight garages.

The main findings of the research are as follows.

This research does not provide a conclusive preference for one particular model.

- Most Wright Bus and ADL models can be considered for fleet expansion:
 - Wright Bus models 4 and 1 have higher customer ratings and good bus driver feedback;
 - Wright Bus model 1 has particularly good bus driver feedback for driver controls / comfort;
 - ADL model 6 has higher customer ratings, and more positive driver feedback.
- Volvo and Optare models are rated less positively than most Wright Bus and ADL models:
 - Volvo has weaker customer feedback and weakest bus driver feedback;
 - Optare has relatively weak customer feedback, and relatively weaker bus driver feedback.

Support for hybrid buses is very high.

- 96% of customers support their introduction. 81% strongly support this.
- All bus drivers welcome the introduction of hybrid buses:
 - all recognise and appreciate the environmental benefits;

- all models are considered quieter than diesel buses, and almost all models give a smoother ride.

More detailed feedback on the performance of particular models is as follows.

- There are no major differences in overall customer ratings across the bus models.
- When prompted with specific attributes of the bus and quality of ride, customers on Wright Bus and ADL models tend to give higher ratings than those on Volvo and Optare models.
 - Wright Bus model group 4 is rated best for (less) vibration.
 - ADL model 6 is rated best for appearance, and ease of getting on / moving around inside.
 - Wright Bus model 3 is rated worst for appearance, the ease of getting on and moving around inside, and for smoothness of ride (pulling away and stopping).
- All bus drivers like all the hybrid bus models for being quieter than diesel buses. Almost all models are considered to give a smoother ride than diesel buses.
- Feedback on specific models shows Wright Bus and ADL models to be generally rated better by bus drivers than Optare and Volvo models.
 - Volvo model (group 7) is seen as unsafe due to a 'power surge' when braking. It is the only model where the diesel bus is preferred to the hybrid bus.
 - The Volvo, Optare and Wright Bus model group 4 are all considered to have slow pick-up / responsiveness.
 - Wright Bus model group 3 is seen as lightweight, not robust, and lacking 'feel'. Some drivers complained of vibrations or 'shudder'. This is consistent with the relatively low customer feedback on smoothness of ride for this model.

2. Introduction

2.1 Background

Hybrid buses are powered by an electric motor, which is in turn charged by a conventional diesel engine. This arrangement means that hybrid buses are quieter, cleaner and more fuel efficient than standard diesel buses.

At the time of writing, there are more than fifty hybrid buses operating on ten London bus routes. Transport for London (TfL) are committed to having all new buses entering service after 2012 will be hybrid buses. This will equate to around 10% of the fleet being hybrid buses.

Eight different hybrid bus models from four different manufacturers are in operation. TfL are running extensive tests on these models in order to inform the decision as to which model(s) to recommend for full roll-out. Customer and driver feedback on the hybrid buses currently in operation was required to inform this decision making process.

2.2 Research objectives

Customer research is required to measure satisfaction with experiences of the different hybrid buses. This is particularly in relation to noise and smoothness of ride (especially when pulling away from a standstill). This feedback is required on a model by model basis.

Hybrid buses are identified as such through posters on and inside the buses. These identify the benefits of hybrid buses (e.g. less noisy, a smoother ride). As such, customer research was not required to provide a comparative assessment of hybrid buses against diesel buses operating on the same routes. Feedback from bus drivers was also required, to formally collect their views of the different hybrid bus models.

3. Research details

3.1 Methodology

Face-to-face quantitative interviews were conducted with customers on hybrid buses across ten routes. Interviews were brief, averaging 7-8 minutes in duration. See Appendix 5.1 for the full questionnaire.

Face-to-face qualitative mini interviews were conducted with bus drivers at eight bus garages operating hybrid buses. Interviews were conducted before the start or after the end of shifts, or during breaks. Interviews were 10-15 minutes duration. See Appendix 5.2 for the full discussion guide.

3.2 Sample

1,213 customer interviews were conducted on eight different hybrid bus models across ten different routes. See Appendix 5.3 for full customer sample profiles.

Manufacturer / Model		All	Route									
			16	24	129	141	276	328	360	371	482	E8
Wright Bus	1	199			120				79			
	2	44						44				
	3	30		30								
	4	182				30		152				
ADL	5	328	146	75							107	
	6	145							145			
Volvo	7	108				108						
Optare	8	177					60					117
All		1,213	146	105	120	138	60	152	123	145	107	117

40 bus driver interviews were conducted. Five interviews were conducted at each of eight different garages:

- Walworth (route 129, Wright bus model 1)
- Camberwell (route 360, Wright Bus model 2)
- Stockwell (route 24, Wright Bus model 3)
- Westbourne Park (route 328, Wright Bus model 4)
- Hounslow Heath (route 482, ADL model 5)
- Fulwell (route 371, ADL model 6)
- Wood Green (route 141, Volvo model 7)
- West Ham (route 276, Optare model 8)

3.3 Timescales

Customer interviews were conducted between 22nd July and 22nd August 2009. Bus driver interviews were conducted between 24th August and 4th September 2009.

Interpreting the research findings

Customer interviews

Differences in the customer data are highlighted / commented on only if they are statistically significant at the 95% level.

Bus driver interviews

The data from the bus driver interviews is qualitative in nature. The opinions of the bus drivers in the sample are not necessarily shared by all bus drivers.

Note also that different bus drivers had different levels of experience of driving the hybrid bus models in question, and some (but not all) had experience of driving more than one bus model type.

Caution is therefore advised when drawing inferences about the comparative performance of the hybrid bus models of the basis of this bus driver feedback in isolation.

4. Main findings

4.1 Customer evaluation of hybrid bus models

4.1.1 Overview

This research does not provide a conclusive preference for one particular model. Most Wright Bus and ADL models can be considered for fleet expansion.

- Wright Bus models 4 and 1 have higher customer ratings and generally good bus driver feedback.
- Wright Bus model 1 has particularly good bus driver feedback for driver controls / comfort.
- ADL model 6 has higher customer ratings, and more positive driver feedback.

Other models are considered to have one or more points of weakness.

- Volvo has weaker customer feedback and weakest bus driver feedback: a 'power surge' on braking means bus drivers consider it unsafe and prefer diesel buses.
- Optare has relatively weak customer feedback, and weaker bus driver feedback.
- Wright Bus model 3 is less well rated by customers, particularly for appearance, ease of getting on and moving around, and smoothness of ride. Consistent with this, bus drivers feel it is lightweight, not robust and lacking 'feel'.
- ADL model 5 has reasonably high ratings, but is seen as less comfortable to drive.

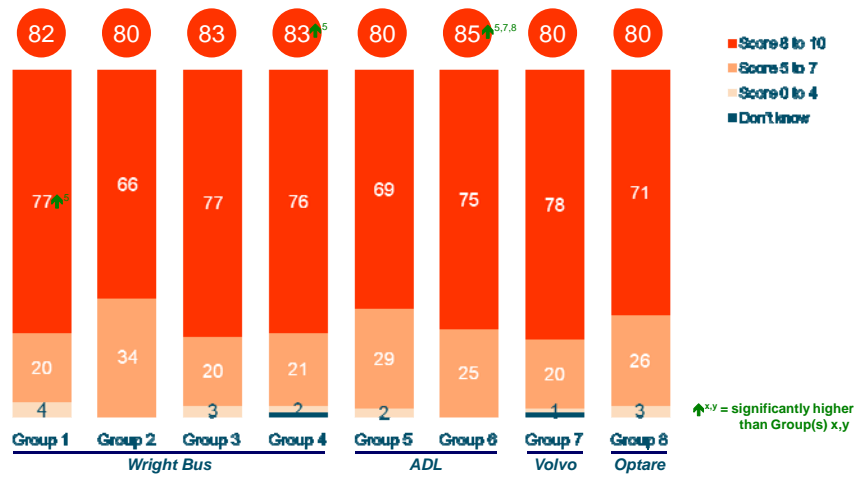
4.1.2 Overall / unprompted evaluation by customers

The majority of customers are satisfied with the hybrid bus they are travelling on. There are very few significant differences in the ratings of customers across the different models (see *fig.1, over*). There are no significant differences when the data is aggregated to a manufacturer level (see *fig.2, over*).

fig.1

Overall satisfaction with bus: by model

% / mean rating (0 = extremely dissatisfied, 10 = extremely satisfied, mean 0-100)

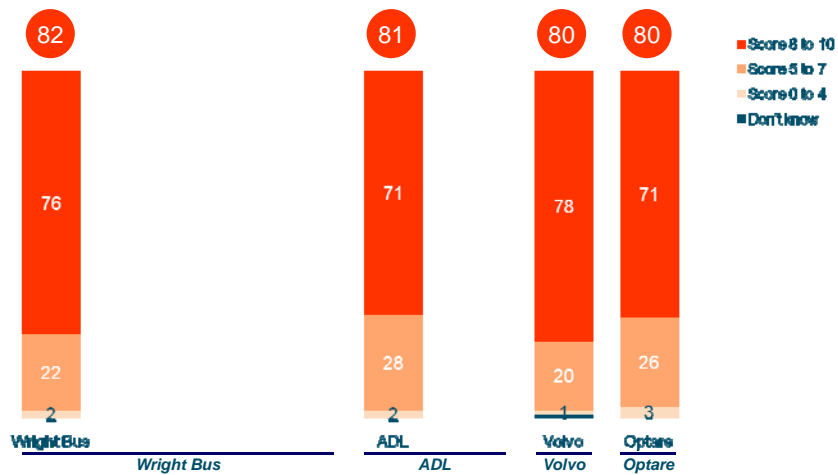


Source: Q2 - Overall, how satisfied are you with this bus that you are travelling on now?
Base: All customers on each model (n=199 / 44 / 30 / 182 / 328 / 145 / 108 / 177)

fig.2

Overall satisfaction with bus: by manufacturer

% / mean rating (0 = extremely dissatisfied, 10 = extremely satisfied, mean 0-100)



Source: Q2 - Overall, how satisfied are you with this bus that you are travelling on now?
Base: All customers on each manufacturer (across models) (n=455 / 473 / 108 / 177)

Almost all customers (93%) like at least one aspect of the bus (see *tab. 1, below*). However, relatively few customers mention aspects that could be specifically attributed to the hybrid engine (see *grey shaded rows*): 7% like that it is quiet / not noisy; 6% like the smooth ride; 3% like that it is environmentally friendly / has low emissions. Of these, there are few statistically significant differences across the different models. However, no customers on Wright Bus model 3 mention that it is a ‘smooth ride’.

Aspects of bus particularly liked (unprompted): tab.1
by model

Manufacturer Model	Total	Wright Bus				ADL		Vol	Opt
		1	2	3	4	5	6	7	8
<i>n</i>	1,213	199	44	30	182	328	145	108	177
	%	%	%	%	%	%	%	%	%
ANYTHING	93	93	79	97	99	94	94	96	86
Clean / tidy / neat	33	28	14	27	38	43	35	20	28
Spacious / roomy	13	5	7	7	13	14	16	16	20
Comfortable / more leg room	12	9	2	13	10	12	23	8	10
New	10	3	0	7	12	9	12	8	19
OK / good / nice (general)	8	5	5	7	12	7	12	10	7
Quiet / not noisy	7	7	7	13	6	8	6	6	5
On time	6	14	7	7	4	6	3	2	4
Smooth ride / smooth	6	5	9 ⁸	0	8 ⁸	9 ¹⁷⁸	8 ⁸	3	1
Frequent	6	5	2	20	7	10	4	1	2
Air conditioning	6	1	2	7	18	4	2	9	2
Direct route/ good route	5	11	11	13	3	5	3	2	1
Not crowded / empty	5	8	14	3	4	4	6	5	2
Convenient / close to home	5	13	16	3	2	4	4	4	0
Fast / quick	5	8	2	3	6	5	4	1	5
Others each <5% (total)									
Env. friendly / low emissions	3	1	2	3	4	4	1	3	5
Hybrid bus / electric	1	2	0	0	2	1	1	1	0
Don't know	1	1	5	0	0	1	1	2	2

Source: Q3 – What – if anything – do you particularly like about this bus?
Base: all customers on each model (n=1,213)

Similarly, there are few statistically significant differences across manufacturers (see tab.2, below)

Aspects of bus particularly liked (unprompted): tab.2
by model

<i>Manufacturer</i>	Total	Wright Bus	ADL	Vol	Opt
<i>n</i>	1,213	455	473	108	177
	%	%	%	%	%
ANYTHING	93	94	94	96	86
Clean / tidy / neat	33	31	40	20	28
Spacious / roomy	13	8	15	16	20
Comfortable / more leg room	12	9	15	8	10
New	10	6	10	8	19
OK / good / nice (general)	8	7	8	10	7
Quiet / not noisy	7	7	8	6	5
On time	6	9	5	2	4
Smooth ride / smooth	6	6	9	3	1
Frequent	6	6	8	1	2
Air conditioning	6	8	3	9	2
Direct route/ good route	5	8	4	2	1
Not crowded / empty	5	7	5	5	2
Convenient / close to home	5	8	4	4	0
Fast / quick	5	6	5	1	5
Others each <5% (total)					
Env. friendly / low emissions	3	2	3	3	5
Hybrid bus / electric	1	1	1	1	0
Don't know	1	7	8	2	2

Source: Q3 – What – if anything – do you particularly like about this bus?
Base: all customers on each model (n=1,213)

One third of customers (34%) mention something they dislike about the bus they are travelling on (see *tab.3, below*). Very few customers mention aspects that could be specifically attributed to the hybrid engine, or might be expected to be removed or reduced by the hybrid engine: 2% mention the noise, 1% the smoothness of the ride, <1% the bus shaking / vibrating. There are few significant differences across models for these aspects, although significantly more customers on Wright Bus model 3 mention that it is *'not a smooth ride'*.

Aspects of bus particularly disliked (unprompted): by model tab.3

Manufacturer Model	Total	Wright Bus				ADL		Vol	Opt
		1	2	3	4	5	6	7	8
<i>n</i>	1,213	199	44	30	182	328	145	108	177
	%	%	%	%	%	%	%	%	%
ANYTHING	34	37	48	27	29	36	40	19	32
Takes too long to come	5	9	9	0	5	5	2	0	7
Not frequent enough	4	9	9	3	3	3	3	1	6
Crowded (at peak times)	2	3	0	3	2	2	3	2	3
Poor / inconsiderate driver	2	1	2	7	4	2	1	0	2
Uncomfortable / narrow seats	2	0	0	0	4	2	6	0	1
Slow	2	1	7	0	3	2	1	1	2
The noise it makes / noisy	2	1	0	0	2	1	4	1	2
Others each <1% (total)									
Not a smooth ride	1	0	0	7 <small>1478</small>	0	2	2 ¹	0	0
Bus shakes/ vibrates	<1	0	0	0	0	0	1	1	0
Don't know	1	1	2	0	1	1	0	1	2

Source: Q4 – What – if anything – do you particularly dislike about this bus?
Base: all customers on each model (n=1,213)

Similarly, there are few significant differences across manufacturers (see *tab.4, below*).

Aspects of bus particularly disliked (unprompted): by manufacturer						tab.4
<i>Manufacturer</i>	Total	Wright Bus	ADL	Vol	Opt	
<i>n</i>	1,213	455	473	108	177	
	%	%	%	%	%	
ANYTHING	34	34	37	19	32	
Takes too long to come	5	7	4	0	7	
Not frequent enough	4	6	3	1	6	
Crowded (at peak times)	2	2	2	2	3	
Poor / inconsiderate driver	2	3	1	0	2	
Uncomfortable / narrow seats	2	2	3	0	1	
Slow	2	2	1	1	2	
The noise it makes/ noisy	2	1	2	1	2	
Others each <1% (total)						
Not a smooth ride	1	<1	2	0	0	
Bus shakes/ vibrates	<1	0	<1	1	0	
Don't know	1	1	1	1	2	
<i>Source: Q4 – What – if anything – do you particularly dislike about this bus?</i>						
<i>Base: all customers on each model (n=1,213)</i>						

4.1.3 Prompted evaluation by customers

There are more significant differences in ratings across models when customers are prompted to consider specific aspects of the bus and the bus journey (see *fig.3, over*).

Key differences are:

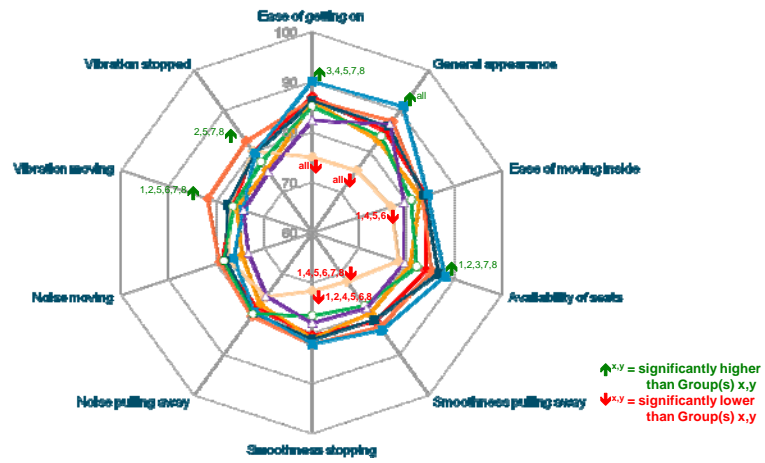
- ADL group 5 is rated highest for general appearance, ease of getting on, availability of seats;
- Wright Bus model 4 is rated highest for the amount of vibration when the bus is moving and when the bus is stopped;
- Wright Bus model 3 is rated lowest for general appearance, ease of getting on, ease of moving around inside, and smoothness when pulling away and when stopping.

fig.3

Satisfaction with aspects of bus: by model

% / mean rating (0 = extremely dissatisfied, 10 = extremely satisfied, mean 0-100)

Group 1 Group 2 Group 3 Group 4 Group 5 Group 6 Group 7 Group 8



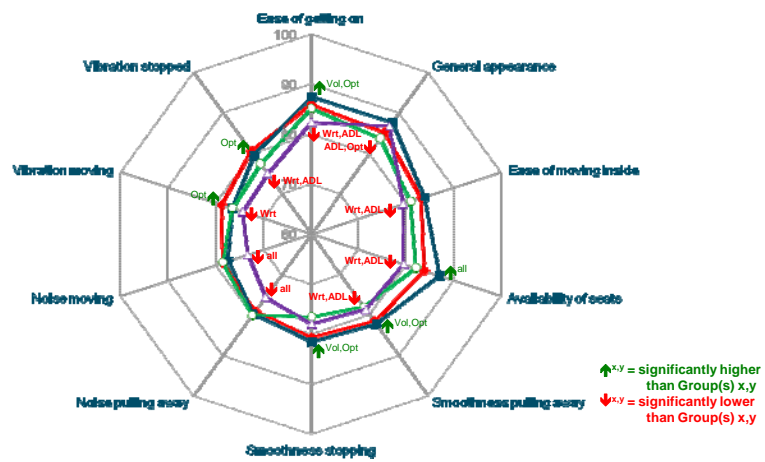
Source: Q5 - And how satisfied are you with the following for this bus journey?
 Base: All customers on each model (n=199 / 44 / 30 / 182 / 328 / 145 / 108 / 177)

fig.4

Satisfaction with aspects of bus: by manufacturer

% / mean rating (0 = extremely dissatisfied, 10 = extremely satisfied, mean 0-100)

Wright Bus ADL Volvo Optare



Source: Q5 - And how satisfied are you with the following for this bus journey?
 Base: All customers on each manufacturer (across models) (n=455 / 473 / 108 / 177)

When considered at a manufacturer level, Wright Bus and ADL models are generally rated better than Optare and Volvo models (see fig.4, previous).

- The ADL models (5,6) are rated highest for availability of seat, and higher than Volvo and Optare models for ease of getting on and smoothness when stopping and pulling away.
- The Optare model (7) has the lowest ratings of all manufacturers for the ease of getting on and moving inside, the availability of seats, the level of noise pulling away and when moving, and the level of vibration when moving and when stopped.

4.2 Bus driver evaluation of hybrid bus models

4.2.1 Overview

All bus drivers consider the hybrid buses to have positive aspects. Almost all give a smoother ride, a quieter ride, are more comfortable to drive, and are recognised as being more environmentally friendly.

Some models also have some negative aspects, including: the consistency of and control over braking; the speed of pick up; lightness of controls; reliability; position of controls; passenger bell. For the most part these are not mentioned for most models. Usually these negative aspects are mentioned by a minority of drivers. Positive aspects usually outweigh the negatives. However there is notably negative feedback for the Volvo model (7).

4.2.2 Positive aspects of hybrid buses

All drivers consider the hybrid buses to have positive aspects. These are almost all raised in the context of comparison with the diesel buses they also drive.

- Smoother ride: mentioned by drivers of all models.
- Quieter: mentioned by drivers of all models.

- More comfortable to drive: the smoother ride means most hybrid buses are also considered reasonably comfortable to drive. Driver position and controls are mentioned as being better by drivers of Wright Bus models 1 and 2, ADL model 5 and the Optare model (8).
- Environmental benefits: mentioned by drivers of all models.

Smoother ride

Most models are perceived to give a smoother ride than diesel buses. Wright Bus models 1,2 and 4, ADL models 5 and 6 and Optare model 8 are all particularly praised for a smoother ride than the diesel buses.

*“With the [Group 1] bus, it’s just like you’re driving a train; quick, quiet, and no jerks, just smooth all the way. On some diesels, if you are stationary, the bus would just shake horrendously, but with the hybrids they’re just motionless, which makes the journey better for drivers and passengers”
(Driver, Wright Bus model 1)*

*“Braking is just so smooth, none of this jerking and shaking while your foot’s on the brake. When you stop, you actually stop with the bus being motionless, and while you’re in the process of braking, the bus is as quiet as anything”
(Driver, Wright Bus model 1)*

*“The buses I used to drive wobbled from side to side but these buses don’t wobble. It’s a much smoother journey which is great for the passengers as they don’t lose their balance when the bus jolts.”
(Driver, Wright Bus model 4)*

*“They’re better than diesel buses because they slow down before you put your foot on the brake. I’ll take my foot off the accelerator and the bus starts to slow down right away. That’s good for when I’m pulling into stop or even when I need to stop or slow down in traffic.”
(Driver, ADL model 6)*

*‘The smoothness is remarkable. Especially when pulling off. The bus won’t physically allow you to jerk. It just glides.’
(Driver, ADL model 6)*

Drivers of the Wright Bus model 5 are used to driving diesel 'SPs'. The SPs are unpopular as they are seen as uncomfortable and driving them smoothly takes a lot of effort. The hybrid buses are seen as a great improvement to these models in particular:

*"They [the SPs] are very hard to drive smoothly. You have to feather the accelerator all the time. When you change gear you know it's going to jerk so you're looking the mirror to check that passengers aren't standing up. With these [ADL model 5] there's no jerking when changing gear. You've got one continuous gear so it's very smooth."
(Driver, ADL model 5)*

Drivers of the Optare model (8) mention the more solid suspension giving a smoother ride:

*"It's firmer and rides over bumps more smoothly."
(Driver, Optare, model 8)*

Quieter

All hybrid bus models are recognised as being quieter. This is recognised as a significant benefit to customers and to drivers themselves.

*"One customer came up to me and just said how pleased they were with the journey. They said how smooth and quiet it was and they liked how they could just sit there in peace."
(Driver, Wright Bus model 3)*

*"Hybrid buses make it better for the customer. They can listen to their music or talk to their friends without having to shout over the noise of the engine. Plus, the engine being quiet makes it easier for us drivers to concentrate."
(Driver, Wright Bus model 2)*

*"They are a lot quieter which makes me feel more relaxed on long shifts."
(Driver, Wright Bus model 4)*

More comfortable to drive

As most models are considered to give a smoother ride, this in turn makes the hybrid buses easier to drive.

“The smoothness is very important. We’re driving all day so need good quality buses. It also makes it easier on my legs on a long journey. They’re not as sore at the end of the day.”

(Driver, ADL model 6)

“When you’re turning, it makes the journey easier as it only takes a slight turn of the wheel for the bus to fully move. The steering on the hybrids is much lighter, which is good as my arms ache less.”

(Driver, Wright Bus model 2)

Some models are specifically praised for being better laid out or designed, so that the driving position and / or controls make the buses easier and more comfortable to drive. Wright Bus models 1 and 2, and ADL model 5 are mentioned by all drivers as being comfortable in this regard.

“When you’re in the cockpit, it’s must more comfortable in the hybrid. The seat’s comfier and the controls are all in the right places and are easy to navigate. In the old buses I used to get back ache because of the driver seat being an awkward shape, but now I can just sit back, relax and get on with the job.”

(Driver, Wright Bus model 1)

“The pedals seem to be in a better position, which again makes it easier to brake more smoothly and give passengers a more comfortable ride. I find them a lot more comfortable to drive. The layout of controls places everything within easy reach.”

(Driver, ADL model 5)

However, some drivers of ADL model 5 also said that the driver’s seat was uncomfortable.

Environmental benefits

All bus drivers are positive about the environmental benefits: lower fuel use, less emissions, and less polluting.

“If they’re better for the environment then that’s great.”

(Driver Wright Bus model 4)

*“The fuel they’re using is good. They are practically running on fresh air.”
(Driver, ADL model 6)*

Even if some drivers say hybrid buses offer the same sort of driving experience as diesel buses, they prefer hybrid buses for the environmental benefits alone.

*“I’d prefer to drive a hybrid, driving them is almost exactly the same as a diesel minor and they’re much better for the environment. They’re easy to drive anyway, so everyone should be driving hybrids.”
(Driver, Wright Bus model 2)*

Other positive aspects

Drivers of the Wright Bus model 3 and ADL model 5 in particular the **speed** of these buses being good.

*“They’re much quicker these buses. I’ve driven both the ADL bus and obviously diesels and the Group 3 bus is the fastest one I’ve driven. It’s important that these buses are fast, not in terms of speeding, but just pulling out of stops quickly as sometimes you only have a few seconds to pull away before you’ll get stuck there for ages.”
(Driver, Wright Bus model 3)*

*“It’s important having that [the faster pick-up], especially when you’re driving around the airport. Sometimes you need to be able to pull away quickly.”
(Driver, ADL model 5)*

*“The best thing about it is the noise, it’s silent! It doesn’t shudder when you drive either and that’s why I prefer it to the older buses. The Wright Bus has a retarder braking mechanism that means when you brake it’s just so smooth and the retarder comes off as soon as you accelerate or pull away, meaning there’s no jerking at all.”
(Driver, Wright Bus model 3)*

4.2.3 Negative aspects of hybrid buses

Some models also have some negative aspects. These are often not mentioned for most models. Usually these negative aspects are mentioned by a minority of drivers, and positive aspects usually outweigh the negatives. However there is notably negative feedback for the Volvo model (7).

Consistency of and control over braking

All drivers of the Volvo model (7) mention a key issue with the braking: when a driver brakes, the bus accelerates forward and stops in a position that is not in the intended place. Consequently this model is seen as difficult to drive, and potentially unsafe.

*“Every time you go to brake, there’s a huge power surge in the engine that kicks in when you hit the brake, so what happens is it shoots forward sharply and you end up stopped in a position a few yards ahead of where you intended”
(Driver, Volvo model 7)*

*“It’s really dangerous. When I first went out I nearly hit the vehicle in front of me as it just shot forward. Now I know when I’m driving the Volvo to brake a few seconds before I should do”
(Driver, Volvo model 7)*

*“Diesels are my preferred bus over hybrids, in most ways they’re very similar and in fact hybrids are better for the environment. But the most important thing is safety and reliability. The constant moving forward when you brake is putting drivers and passengers in danger as well as other members of the general public and this has got to be the priority. The regular breakdowns are also a problem, if we break down all the time then passengers won’t use us again and we’ll lose business”
(Driver, Volvo model 7)*

Some drivers of the Optare model (8) mention the difference in braking controls compared with diesel buses. They feel that the technology interferes with the way they would normally drive.

*“I prefer them to slow down by themselves when I take my foot off the pedal. In the hybrid bus you feel some kind of mechanical braking.”
(Driver, Optare model 8)*

Consistency and speed of pick up

Some drivers of some models mention issues with pick up. Some drivers of Wright Group model 4 and Optare model 8 feel a lack of power when pulling off.

“You have to use the handbrake more on these buses. There’s a steep hill on my route and it means that when I’m trying to pull away the bus rolls back a little before it gets going.”

(Driver, Wright Bus model 4)

“You can have your foot on the gas and the passengers shout ‘go then!’. It takes several seconds for the things to kick in.”

(Driver, Optare model 8)

Some drivers of ADL model 6 said the driving speed was restricting.

“At times it feels like you are creeping along.”

(Driver, ADL model 6)

“It can be dangerous. Other people on the road behind don’t realise that you cannot go faster and try to overtake, causing dangerous situations.”

(Driver, ADL model 6)

Most drivers of the Volvo model (7) say this model does not pull away smoothly, creating an unsafe environment when driving.

“Pulling out of bus stops is a big issue with the Volvos. When you pull out, it just jerks and has the feeling of stalling. Now, they’re automatics so they don’t stall, but the jerking when pulling away is unsafe because you feel as if you can overshoot into oncoming traffic at any time”

(Driver, Volvo model 7)

Lightness of controls

A minority of drivers (of Wright Bus models 2 and 3) say the different feel of the hybrid bus makes them difficult – or at least different – to drive.

“When you turn the wheel, you can hardly feel the motion in the wheel because the steering’s so light. When you turn, it sometimes feels as if it’s not working because you can’t feel anything”

(Driver, Wright Bus model 2)

“I have to admit I don’t feel totally safe driving it, although I’m sure it is safe, when you turn the wheel you just don’t feel anything. It’s just so light driving the bus that you can’t tell if it’s doing what you want it to. With the diesels, you could feel everything, the braking, the turning and you knew it was all working fine, but with these hybrids, you don’t get any of that feeling which isn’t always

a good thing”
(Driver, Wright Bus model 3)

“It just takes getting used to I suppose. I’ve been driving the hybrids for about 6 months now and they don’t feel natural to me. Give it a year’s time with more experience driving the hybrids, I may get used to it more and then I won’t feel unsafe driving it.”
(Driver, Wright Bus model 3)

Reliability / Ease of repair

A number of the drivers of the Wright Bus model feel it to be ‘lightweight’.

“It just doesn’t feel right. It’s just not robust enough to last in the long term; the doors are lightweight, the wheel is tiny and the mirrors are in a poor position”
(Driver, Wright Bus model 3)

The majority of Volvo model 7 drivers find it to be unreliable. Two of the five drivers interviewed personally have experienced breakdowns.

“I’ve had several problems with this bus, including breaking down. I’ve been a driver for 8 years and some of the time when you break down in diesel buses you can fix it yourself at the roadside as it’s usually something simple. But with the Volvo it’s designed differently, so (even) if it’s something really simple, there’s nothing you can do to fix it and you feel useless not being able to help”
(Driver, Volvo model 7)

“The controls are awful. Considering how new the buses are you’d expect the control buttons to work properly, but on numerous occasions I’ve had to press the same button 5 or 6 times for it to work”
(Driver, Volvo model 7)

Some drivers mention that the hybrid buses are not as easy to fix if they break down.

“The engineers had no idea what to do. They came along and couldn’t see what the fault with because they don’t know how to look at electric buses.”
(Driver, Wright Bus model 4)

Destination turner

Some drivers of ADL model 6 and Optare model 8 mentioned difficulties with destination turner. Drivers on the ADL model 6 complain the destination has to be changed manually (not automatically, on the diesel buses).

'It's really annoying as on the old buses we literally just had to press a button to change the destination on the front of the bus but now I have to wind it on with my hand and it takes so many turns between each location that it makes my arm sore. If it's an electronic bus then why can't they use that to put a button in it?'

(Driver, ADL model 6)'

Some drivers of the Optare model (8) say the position of the controls make it is difficult to see what they are doing.

Passenger bell

Some drivers on Wright Bus model 1 and Optare model 8 said the passenger bell was too loud and sounded for too long.

"When they press the bell, it just constantly rings and there is nothing more distracting when you're driving than having such a loud bell ringing in your ear. The bell is much louder on these [Group 1] buses than diesels"

(Driver, Wright Bus model 1)

"There's a risk of drivers losing their temper with the constant ringing."

(Driver, Optare model 8)

4.2.4 Customer feedback reported by bus drivers

Some drivers mention that customers have given feedback about the buses.

*“One customer came up to me and just said how pleased they were with the journey. They said how smooth and quiet it was and they liked how they could just sit there in peace. Apart from that time nobody else has approached me, but I’m sure they all prefer travelling on a hybrid”
(Driver, Wright Bus model 3)*

Drivers on route 482 (ADL model 5) mention that regular customers have noticed the hybrid buses, and have given positive feedback around how much smoother and quieter they are.

Drivers of the Optare model (8) mention that some customers have commented on the quietness of the journey, and also that the seats seem to offer more legroom.

4.3 Comparisons of hybrid buses with other buses

4.3.1 Overview

Customers were not asked to directly compare the hybrid bus with diesel buses. Around half of customers consider the journey they are on (on a hybrid bus) to be better than other journeys on the same route. Very few say it is worse. For most, any positive comparison is not necessarily directly due to the potential advantages of hybrid buses over diesel buses.

Bus drivers prefer hybrid buses over diesel buses for the environmental benefits, quietness and smoothness of ride. However, those with experience of the Volvo model do not prefer this specific model over diesel buses, as they consider it to be unsafe (due to a 'power surge' when braking).

4.3.2 Comparisons with other journeys on the same route, by customers

Around half of customers consider the journey they are on (on a hybrid bus) to be better than other journeys on the same route (*see fig.5, over*). Very few say the journey is worse.

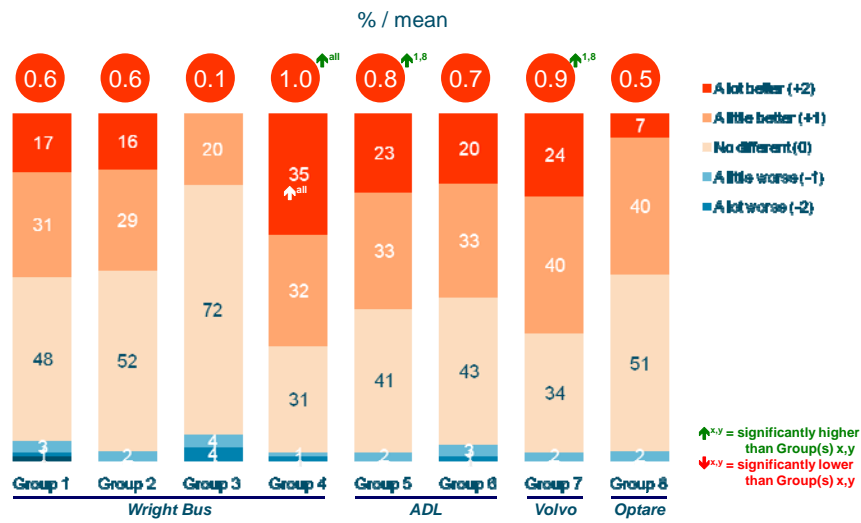
Customers on Wright Bus model 4 are significantly more likely to say their journey is better than other journeys on the same route. Customers on Wright Bus model 1 and the Optare model (8) are less likely to say this compared to some other models: Wright Bus model 4, ADL model 6 and Volvo (model 7).

Customers on the Optare model (8) are significantly less likely than customers on other models to say their journey is better than others on the same route (*see fig.6, over*).

This comparison with other journeys on the same route is the same for customers who say they are aware they are travelling on a hybrid bus and those that are not.

fig.5

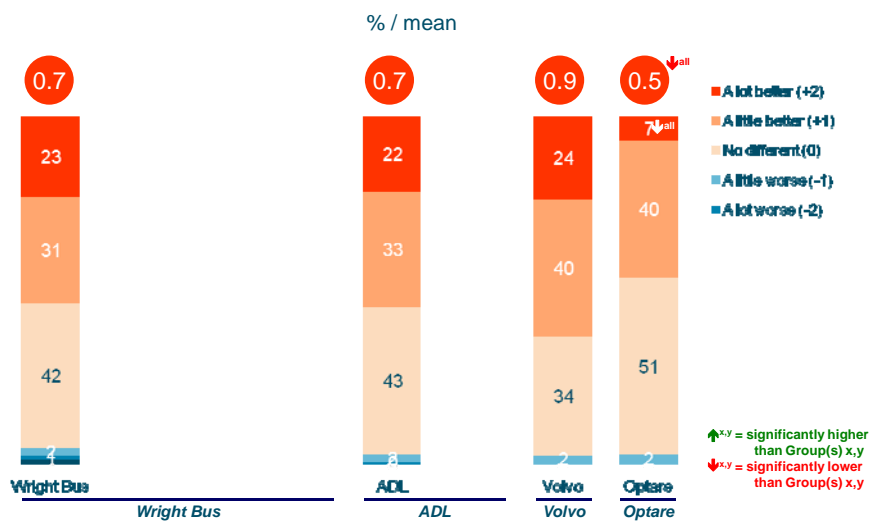
Comparison with other journeys on same route: by model



Source: Q8 - Compared to other journeys you have made on this route, would you say that this particular journey is...
 Base: All customers who have travelled on each route in last 12 months (n=175 / 38 / 25 / 177 / 285 / 136 / 95 / 152)

fig.6

Comparison with other journeys on same route: by manufacturer



Source: Q8 - Compared to other journeys you have made on this route, would you say that this particular journey is...
 Base: All customers who have travelled on each route in last 12 months (n=410 / 412 / 95 / 152)

Of those saying the journey is better, 15% mention a smoother ride, and 12% mention a quieter ride / no vibrations (see tab.5, below). Customers on ADL models 5 and 6 are significantly more likely to mention these as reasons for their journey being better than others.

Reasons for journey being better than other journeys on the same route (unprompted): by model tab.5

Manufacturer Model	Total	Wright Bus				ADL		Vol	Opt
		1	2	3	4	5	6	7	8
<i>n</i>	585	83	17	5	117	159	72	61	71
	%	%	%	%	%	%	%	%	%
ANYTHING	98	100	100	100	99	96	96	98	100
Clean	18	10	0	0	23	21	11	11	27
Frequent / on time / reliable	17	31	18	0	6	22	8	10	20
Smoother ride	15	8	18	0	14 ₈	24 ₁₄₇₈	24 ₁₄₇₈	10	3
Quiet / no vibrations	12	8	12	0	11	15	18 ⁸	13	7
Comfort / more comfortable	11	10	0	40	9	10	25	11	3
Fewer people / less crowded	10	17	6	0	3	10	13	8	13
More space / enough space	8	2	6	0	10	9	8	13	7
New bus	7	1	6	20	13	3	13	5	13
Faster / quicker journey	5	6	6	20	2	3	10	8	8
No traffic / less traffic	5	6	24	0	3	7	4	2	6
Cooler / air cond. / ventilation	4	1	0	0	11	2	0	15	0
More seats	4	6	0	0	5	6	3	0	4
OK / alright / good (general)	3	4	6	20	2	3	0	7	6
More direct / easier route	3	7	12	0	3	3	1	3	3
Eco friendly	3	1	12	0	4	4	1	8	0
Modern / modern bus	3	0	0	0	12	1	4	0	0
Others each <3% (total)									
Don't know	1	0	0	0	0	1	3	0	0

*Source: Q9 – Why do you say that [a little better / much better]
Base: all customers on each model considering journey is better than other journeys on that same route (n=585)*

Customers on ADL buses are significantly more likely to mention the smoother ride as a reason for the journey being better than customers on any other manufacturer's models (see *tab.6, below*).

Reasons for journey being better than other journeys on the same route (unprompted): by manufacturer						tab.6
<i>Manufacturer</i>	Total	Wright Bus	ADL	Vol	Opt	
<i>n</i>	585	222	231	61	71	
	%	%	%	%	%	
ANYTHING	98	100	97	98	100	
Clean	18	16	18	11	27	
Frequent / on time / reliable	17	16	18	10	20	
Smoother ride	15	12 ^{Opt}	24 ^{all}	10	3	
Quiet / no vibrations	12	10	16	13	7	
Comfort / more comfortable	11	9	15	11	3	
Fewer people / less crowded	10	9	11	8	13	
More space / enough space	8	7	9	13	7	
New bus	7	8	6	5	13	
Faster / quicker journey	5	4	5	8	8	
No traffic / less traffic	5	5	6	2	6	
Cooler / air cond. / ventilation	4	6	1	15	0	
More seats	4	5	5	0	4	
OK / alright / good (general)	3	3	2	7	6	
More direct / easier route	3	5	2	3	3	
Eco friendly	3	4	3	8	0	
Modern / modern bus	3	6	2	0	0	
Others each <3% (total)						
Don't know	1	0	1	0	0	

Source: Q9 – Why do you say that [a little better / much better]
Base: all customers on each model considering journey is better than other journeys on that same route (n=585)

4.3.3 Comparisons with diesel buses, by bus drivers

With the exception of drivers of the Volvo model 7, most bus drivers consider the hybrid buses to be an improvement over the diesel buses. Hybrid buses are preferred because of the smoother and quieter ride, (often) more comfortable / easier driving experience, and for the environmental benefits (see section 4.2.2 for full details).

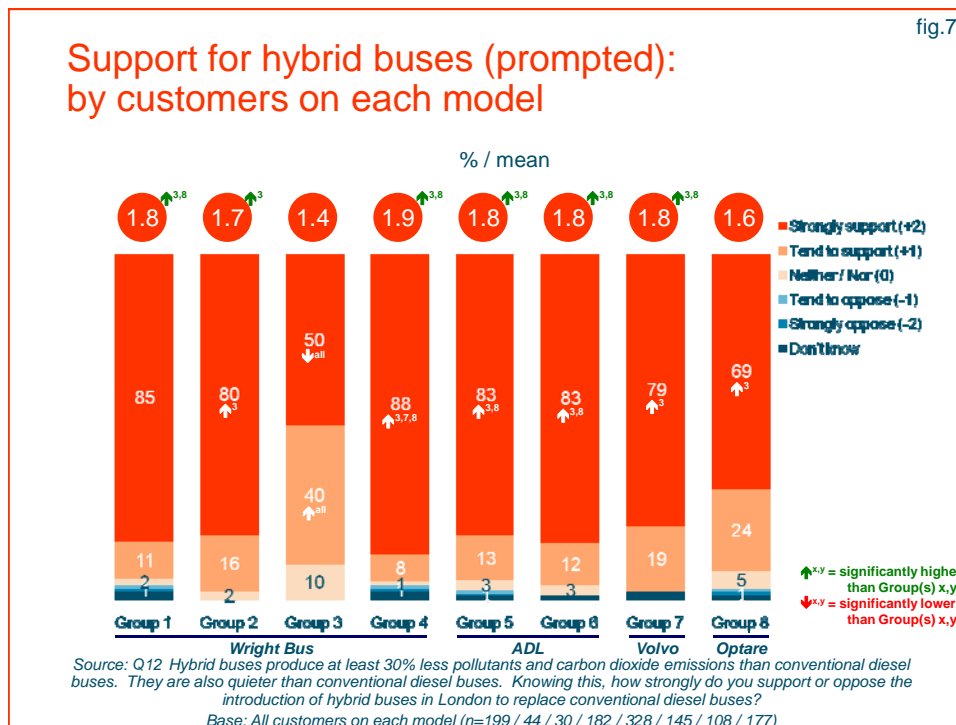
4.4 Support for hybrid buses

4.4.1 Overview

Support for hybrid buses in general is very high. 96% of customers support their introduction; 81% strongly support this. All bus drivers welcome the introduction of hybrid buses, recognising the environmental benefits and improved quality of ride (quieter and smoother).

4.4.2 Support for hybrid buses among customers

Overall, 96% of customers support their introduction; 81% strongly support this. The majority of customers on each route support their introduction (see fig.7, below). However, support is lower among customers on Wright group model 3 (which has lower customer ratings for smoothness of ride). Customers on Optare (model 8) have lower levels of support than customers on most other routes.



Support for hybrid buses is even higher among those customers who are aware they are travelling on a hybrid bus: 97% support the introduction of hybrid buses, and 87% strongly support their introduction.

4.4.3 Support for hybrid buses among bus drivers

For almost all models, bus drivers enjoy driving the hybrid buses and are looking forward to seeing them rolled out on other routes.

“Hybrids are the way forward, definitely. Compared to the diesels, they’re smoother, quieter and much more comfortable. All round they’re the better bus and I think honestly most drivers including myself are in favour of the roll out to be honest”

(Driver, Wright Bus model 1)

“Yeah it’s going to be good [the roll out], it’s going to be better for the planet and driving it’s going to be easier. If they’re rolling it out, I’d rather drive the ADL bus though as it’s an all round better bus, but I could live with driving the Wright Bus I guess” (Male, driver)

Even when drivers have a poor view of a particular model of hybrid bus, they still support the introduction of hybrid buses more generally, recognising the benefits over diesel buses.

“The roll out across the entire bus route would be fantastic. The Volvos have their problems, but once these are sorted or they get other hybrid buses in, I’m really looking forward to driving them. Overall when both diesels and hybrids are working properly, there’s hardly any difference between them, so you may as well have buses that reduce CO₂ emissions if it’s going to have no impact on driving standards or safety.”

(Driver, Volvo model 7)

Many drivers say they are quite proud to be driving the hybrid bus. This is due largely to the fact that they are less polluting and are quieter, and so are giving a more pleasant experience to customers.

5. Appendices

5.1 Questionnaire

INTRODUCTION - READ OUT

SAY Good morning / afternoon / evening. I am from Synovate, an independent market research company and we are currently conducting a research project on behalf of Transport for London, looking at customers' experiences of travelling by bus. The interview will only take a few minutes and the answers that you give will form part of a confidential market research study. Would you be willing to help us?

Q1 What is the main purpose of your bus journey today?

**PROMPT USING ANSWERS BELOW IF NECESSARY
SINGLE CODE ONLY**

	c.36
Going to / from place of work	1
Going to / from place of education	2
Visiting friends / relatives	3
Theatre, cinema, concert etc	4
Sporting activity / event	5
Other social (e.g. pub, restaurant)	6
Museum / exhibition	7
Shopping	8
Personal business (e.g. doctor, bank, church)	9
Sightseeing	0
Holidays	X
Business travel	V
Other (<i>please specify</i>)	c.37 1
(Refused)	X
(Don't know)	V

Q2 Overall, how satisfied are you with this bus that you are travelling on now?
Please use a scale of 0 to 10, where 10 is extremely satisfied and 0 is extremely dissatisfied.

SINGLE CODE ONLY

	Extremely dissatisfied					Extremely satisfied					DK	
	0	1	2	3	4	5	6	7	8	9		10
This bus	0	1	2	3	4	5	6	7	8	9	X	V

c.38

Q3 What – if anything – do you particularly **like** about this bus?

WRITE IN ALL ANSWERS FULLY

c.39
c.40
c.41
c.42

Q4 And what – if anything – do you particularly **dislike** about this bus?

WRITE IN ALL ANSWERS FULLY

c.43
c.44
c.45
c.46

Q5 And how satisfied are you with the following for this bus journey?

Please use a scale of 0 to 10, where 10 is extremely satisfied and 0 is extremely dissatisfied.

SINGLE CODE ONLY FOR EACH

		Extremely dissatisfied					Extremely satisfied					DK		
		0	1	2	3	4	5	6	7	8	9	10		
a	The ease of getting on this bus	0	1	2	3	4	5	6	7	8	9	X	V	c.47
b	The general appearance of this bus	0	1	2	3	4	5	6	7	8	9	X	V	c.48
c	The ease of moving around inside this bus	0	1	2	3	4	5	6	7	8	9	X	V	c.49
d	The availability of seats on this bus	0	1	2	3	4	5	6	7	8	9	X	V	c.50
e	The smoothness of the ride when pulling away from a bus stop	0	1	2	3	4	5	6	7	8	9	X	V	c.51
f	The smoothness of the ride when stopping	0	1	2	3	4	5	6	7	8	9	X	V	c.52
g	The level of noise this bus makes when it is pulling into and away from a bus stop	0	1	2	3	4	5	6	7	8	9	X	V	c.53
h	The level of noise inside this bus when it is moving	0	1	2	3	4	5	6	7	8	9	X	V	c.54
i	The amount of vibration when this bus is moving	0	1	2	3	4	5	6	7	8	9	X	V	c.55

j	The amount of vibration when this bus has stopped	0	1	2	3	4	5	6	7	8	9	X	V	c.56
---	---	---	---	---	---	---	---	---	---	---	---	---	---	------

Q6 How often would you say that you travel using buses in and around London?
INTERVIEWER NOTE: By 'London' we mean all of Greater London, not just central London.
PROMPT USING ANSWERS BELOW IF NECESSARY
SINGLE CODE ONLY

c.57	
5 or more days a week	1
3 or 4 days a week	2
2 days a week	3
Once a week	4
Once a fortnight	5
Once a month	6
Less often than once a month	7
Not in the last 12 months	8
This is the first time	9
(Don't know)	V

Q7 And how often would you say that you travel on **this bus route** in particular?
PROMPT USING ANSWERS BELOW IF NECESSARY
SINGLE CODE ONLY

c.58		
5 or more days a week	1	ASK Q8 AND Q9
3 or 4 days a week	2	
2 days a week	3	
Once a week	4	
Once a fortnight	5	GO TO Q10
Once a month	6	
Less often than once a month	7	
Not in the last 12 months	8	
This is the first time	9	
(Don't know)	V	

ASK IF USED THIS BUS ROUTE IN LAST 12 MONTHS (CODES 1-7 AT Q7)
OTHERS GO TO Q10

Q8 Compared to other journeys you have made on this route, would you say that **this** particular journey is...
READ OUT
SINGLE CODE ONLY IN FIRST COLUMN BELOW

c.59

A lot worse	1
A little worse	2
No different	3
A little better	4
Much better	5
(Don't know)	V

**ASK IF USED THIS BUS ROUTE IN LAST 12 MONTHS (CODES 1-7 AT Q7)
OTHERS GO TO Q10**

Q9 Why do you say that?

WRITE IN ALL ANSWERS FULLY

c.60
c.61
c.62
c.63

Q10 Were you aware that this bus is a **hybrid bus**?
Hybrid buses use a combination of electric and diesel motors to power them.

SINGLE CODE ONLY

c.64

Yes	1
Unsure	2
No	3
(Don't know)	V

Q11 How strongly do you support or oppose the introduction of hybrid buses in London to replace conventional diesel buses? Do you...

READ OUT

SINGLE CODE ONLY

c.65

Strongly support it	1
Tend to support it	2
Neither support nor oppose it	3
Tend to oppose it	4
Strongly oppose it	5
(Don't know)	V

Q12 Hybrid buses produce at least 30% less pollutants and carbon dioxide emissions than conventional diesel buses. They are also quieter than conventional diesel buses. Knowing this, how strongly do you support or oppose the introduction of hybrid buses in London to replace conventional diesel buses? Do you...

READ OUT

SINGLE CODE ONLY

c.66	
Strongly support it	1
Tend to support it	2
Neither support nor oppose it	3
Tend to oppose it	4
Strongly oppose it	5
(Don't know)	V

Q13 Have you had a seat or have you been standing for most of this bus journey?

SINGLE CODE ONLY

c.67	
Had a seat	1
Standing	2
(Don't know)	V

ASK IF ON A DOUBLE DECK BUS

Q14 Have you mostly been downstairs or upstairs on this bus journey?

SINGLE CODE ONLY

c.68	
Downstairs	1
Upstairs	2
(Not applicable)	X
(Don't know)	V

Q15 And have you mostly been at the front, the middle or the back of this bus?

SINGLE CODE ONLY

c.69	
Front	1
Middle	2
Back	3
(Don't know)	V

CODE FOR ALL – DO NOT ASK

Q16 Gender

c.70	
Male	1
Female	2

Q17 What age are you?
SINGLE CODE ONLY

c.71

Under 16	1
16 to 19	2
20 to 24	3
25 to 34	4
35 to 44	5
45 to 54	6
55 to 59	7
60 to 64	8
65 to 74	9
75 or older	0
(Refused)	X
(Don't know)	V

Q18 To which of these ethnic groups do you consider you belong?
READ OUT
SINGLE CODE ONLY

c.72

White	1
Mixed	2
Asian or Asian British	3
Black or Black British	4
Any other ethnic group	5
(Refused)	X
(Don't know)	V

Q19 Do you have any long-term physical or mental impairment which limits your daily activities or the work you can do?
PROMPT USING ANSWERS BELOW IF NECESSARY
CODE ALL MENTIONED

c.73

Mobility impairment	1
Age related mobility difficulties	2
Visual impairment	3
Hearing impairment	4
Learning difficulty	5
Mental health condition	6
Serious long term illness	7

Other	8
No / None of these	0
(Refused)	X
(Don't know)	V

Q20 Can we contact you again in the future about this study?

c.74	
Yes	1
No	2

Q21 Can we contact you again in the future about other market research studies we may be conducting?

c.75	
Yes	1
No	2

READ OUT TO ALL

SAY Thank you very much for your help with this study. You may receive a phone call from our Quality Control department to check that the interview has been carried out correctly.

HAND RESPONDENT THANK YOU LEAFLET

CHECK FRONT PAGE DETAILS ARE COMPLETE AND CORRECT

INTERVIEWER TO CODE FOR EACH SUCCESSFUL INTERVIEW

Q22 How full was the bus?

SINGLE CODE ONLY

c.76	
Completely full	1
No available seats, many standing	2
No available seats, few standing	3
No available seats, nobody standing	4
Seats available	5
(Don't know)	V

INTERVIEWER TO CODE FOR EACH SUCCESSFUL INTERVIEW

Q23 Record if the respondent has any of the following items **not** stowed in the luggage spaces.

MULTICODES POSSIBLE

c.77	
With shopping bags	1
With shopping trolley	2
Baby buggy / pushchair (folded)	3

Baby buggy / pushchair (open)	4
Small child / baby in arms	5
Suitcases / heavy luggage	6
Other large / awkward items	7
(Don't know)	V

5.2 Bus driver discussion guide

Introduction

- Purpose of the research
- Synovate introduction
- Garage
- Length of service
- Route(s) usually driven
- Type(s) of buses usually driven (double decker, bendy bus, single decker)

Experience with hybrid buses

- How long been driving hybrid buses?
- How often drive hybrid buses? (e.g. every shift, every other shift, etc.)
- On what routes do they drive hybrid buses?
- What model hybrid bus(es) have they driven:

Evaluation of hybrid buses (overall / vs. diesel buses)

- Fleet number and vehicle registration number of the hybrid bus(es) referring to
- What do they think about the way hybrid buses drive?
- What is good about hybrid buses?
- In what ways are they better than diesel buses? How important are these features? *NB! Take careful note of which model they are referring to*
- What is not good about hybrid buses?
- In what ways are they worse than diesel buses? How important are these drawbacks? *NB! Take careful note of which model they are referring to*
- Overall, do they prefer to drive hybrid buses or diesel buses?
- Why do they prefer to drive hybrid buses / diesel buses?
- Overall rating of satisfaction with hybrid buses (10 = extremely satisfied, 0 = extremely dissatisfied)

Evaluation of hybrid buses (models)

- Do they prefer a specific model of hybrid bus?
- Which model do they prefer?
- Why do they prefer a specific model?
- Why is this model better than other hybrid bus models?
- (Where relevant) What are the strengths and weaknesses of the different hybrid buses?

Notes for probes on hybrid buses evaluation:

Wherever possible –get comparisons between hybrid buses and diesel buses/ plus (where relevant) between different models of hybrid bus. Wherever relevant/ possible - take careful note of which model they are referring to.

Noise levels

- What do they think about the noise levels of hybrid buses?
- Are they referring to road noise / engine noise / exhaust noise?
- How important are sound and noise levels?

Ride comfort / Smoothness of ride

- What do they think about the ride comfort of hybrid buses?
- How are they when pulling off / slowing down in particular?
- How important is ride comfort / smoothness of ride?

Overall performance

- What do they think about the performance of hybrid buses?
- What do they have in mind when they think about performance? (Pulling off? overtaking? going up-hill? etc.)
- How important is performance?

Acceleration

- What do they think about the acceleration of hybrid buses?
- What do they have in mind when they think about acceleration? From standstill? At speed?
- How important is acceleration?

Handling

- What do they think about the handling of hybrid buses?
- How important is handling?

Ease of operation

- What do they think about the ease of operating hybrid buses?
- Is there anything they find difficult?
- How important is ease of operation?

Reliability

- What do they think about the reliability of hybrid buses?
- What do they have in mind when they think about reliability?
- How important is reliability?

Hybrid bus roll-out

- Are they looking forward to hybrid buses being used on all routes in a few years?
- Why / why not?

Customer feedback

- Have you had any feedback from customers regarding the hybrid buses?
- What do customers think of them?

Any other comments

Thank & close

5.3 Bus customer sample profiles

Socio-demographics									
<i>Manufacturer Model</i>	Total	Wright Bus				ADL		Vol	Opt
		1	2	3	4	5	6	7	8
<i>n</i>	1,213	199	44	30	182	328	145	108	177
	%	%	%	%	%	%	%	%	%
Gender									
Male	47	40	45	43	46	57	35	47	46
Female	53	60	55	57	54	43	65	53	54
Age									
Under 16	2	2	2	0	0	1	6	0	2
16 to 34	50	53	30	43	58	50	38	58	48
35 to 54	29	23	36	27	29	35	23	30	29
55+	19	21	32	30	13	13	34	12	21
Ethnicity									
White	61	70	59	90	69	46	77	54	56
BAME (NET)	39	30	41	10	30	53	23	44	44
Mixed	4	5	2	0	5	3	3	6	4
Asian or Asian British	14	11	5	7	8	29	6	5	14
Black or Black British	16	13	27	3	16	15	9	26	20
Any other ethnic group	5	2	7	0	2	6	5	8	6
Refused	1	1	0	0	1	1	1	2	0
Disability / Impairment									
Any (NET)	5	4	7	3	3	6	9	3	6
None	94	95	93	93	96	94	91	95	94
Refused	<1	1	0	0	0	0	0	2	1
<p>Source: Q15 / Q16 / Q17 / Q18 / Q19 Base: all customers on each model (n=1,213)</p>									

Bus usage frequency

Manufacturer Model	Total	Wright Bus				ADL		Vol	Opt
		1	2	3	4	5	6	7	8
	<i>n</i>	1,213	199	44	30	182	328	145	108
	%	%	%	%	%	%	%	%	%
Bus usage (any route)									
5 or more days a week	68	65	68	57	71	69	66	70	69
2 to 4 days a week	24	27	25	23	19	24	26	23	23
Once a week	3	4	0	3	4	3	5	1	4
Less often than weekly	5	6	7	17	5	4	3	6	4
Bus usage (this route)									
5 or more days a week	37	22	32	40	34	43	43	46	36
2 to 4 days a week	36	38	31	26	32	41	27	28	40
Once a week	10	13	16	0	14	6	13	6	10
Less often than weekly	17	27	18	33	19	10	17	20	15
<p>Source: Q6 / Q7 Base: all customers on each model (n=1,213)</p>									

Type of bus / Position on bus

<i>Manufacturer Model</i>	Total	Wright Bus				ADL		Vol	Opt
		1	2	3	4	5	6	7	8
		<i>n</i>							
	1,213	199	44	30	182	328	145	108	177
	%	%	%	%	%	%	%	%	%
Type of bus									
Single deck	47	92	100	0	0	5	100	1	100
Double deck	53	8	0	100	100	95	0	99	0
Position on bus									
Downstairs (single deck only)	47	92	100	0	0	5	100	1	100
Downstairs (on double deck)	29	6	0	43	54	54	0	41	0
Upstairs	25	2	0	57	44	40	0	58	0
Position on bus									
Front	26	25	25	43	23	22	41	20	25
Middle	42	48	43	50	51	47	24	40	31
Back	32	27	32	7	26	31	34	38	41
Whether seated / standing									
Had a seat	98	98	98	93	95	100	99	99	97
Standing	2	2	2	7	5	<1	1	1	3
<i>Source: Q_bus_type / Q14 / Q15 / Q13</i> <i>Base: all customers on each model (n=1,213)</i>									

Journey purpose

<i>Manufacturer Model</i>	Total	Wright Bus				ADL		Vol	Opt
		1	2	3	4	5	6	7	8
	<i>n</i>	1,213	199	44	30	182	328	145	108
	%	%	%	%	%	%	%	%	%
Journey purpose									
To / from place of work	42	35	48	30	41	51	33	52	35
Business travel	1	0	0	7	0	1	1	0	1
To / from place of education	3	10	5	3	2	2	0	3	3
Shopping	19	14	16	23	19	16	29	12	25
Visiting friends / relatives	14	15	14	3	17	13	13	19	14
Personal business	8	10	9	17	9	5	8	7	12
Other social	4	2	0	0	7	3	7	3	7
Sporting activity / event	2	3	0	0	2	2	3	0	1
Theatre, cinema, concert etc	1	3	9	0	1	1	1	1	1
Sightseeing	1	4	0	3	1	1	1	0	0
Holidays	1	2	0	10	0	2	0	0	0
Museum / exhibition	1	4	0	3	0	1	0	0	0
Other	2	1	0	0	2	3	4	3	3
<i>Source: Q1</i> <i>Base: all customers on each model (n=1,213)</i>									