

Future of Buses

Report prepared by 2CV for TfL
April 2020

Contents



- Method overview
- Quantitative response to concepts
- Recommendations
- Appendix



Our journey to developing future bus concepts

A multistage process that tells us what current and potential customers want from buses in the near future

Knowledge alignment

Consolidating existing knowledge around bus use, challenges and current initiatives.



'Concepting' Workshop

Ideas were developed across six key opportunity areas identified in the knowledge alignment:



Greenhousing day

Over the course of four focus groups, 12 concepts were reduced and refined off the back of customer feedback.



Concept validation

This left us with 6 concepts to work up and take into quant validation:

Better information

Better journey times & reliability

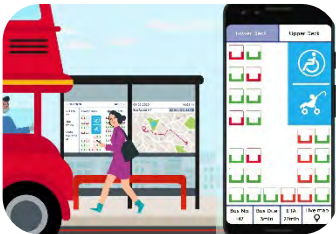
Better facilities

Better connections

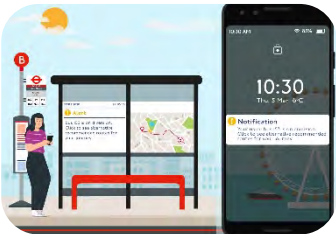
Better comfort

Better personal security

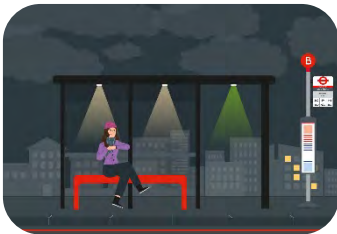
12 core concepts were built from these ideas and refined for customers to review in the next stage



Routine information



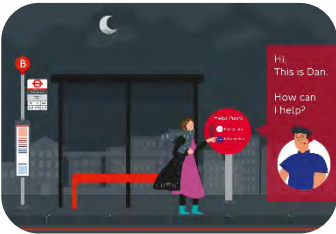
Live disruption information



Comfortable bus stops



Comfortable bus design



Safer bus journeys



Connected bus

During this process, we also consulted with specialists to provide insight for future-proofing the bus offer

Knowledge alignment



'Concepting' Workshop



Greenhousing



Concept validation

PHD researcher at
Mobility Institute and
Brunswick University of
Technology, Germany

Head of Product at
Zipcar (now Eurostar)

Director at UCL Centre
for Transport Studies

Futurologist at a global
consultancy

Head of Innovation at
East West Railway
and Reading Buses

Due to
timing of
these
interviews,
impact of
COVID-19
on future
trends was
also
explored
with these
specialists

*Specialist opinions are shown
throughout this report*

Summary

Customers see buses playing a key role in a future London – an inclusive service for a greener, less congested London. Ultimately, TfL need to build **confidence** in the experience of taking the bus. This can be executed through **information**, developing trust in **a safe environment**, and creating expectations of **a comfortable experience at the stop and once on the bus**.

- Customers are now accustomed to highly accurate real-time information in all areas of their lives, making accurate, live information crucial to give customers a sense of control over their journeys.
- Waiting for the bus is spoken about as the most negative part of bus journeys and should be prioritised in future improvements, so customers feel supported throughout the journey.
- Simple measures like lighting help create a sense of a safer environment, more effectively than customer help points – and can have a significant impact to allay safety concerns.

The three concepts we recommend taking forward for further development all speak to these needs: live disruption information, comfortable bus stops and comfortable bus design.





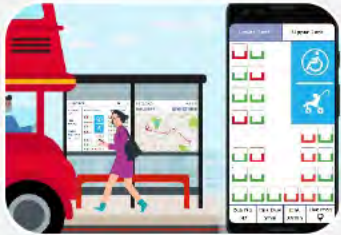
Response to concepts

Reminder of the concepts

The full description of each concept as shown to respondents can be found in the appendix

1

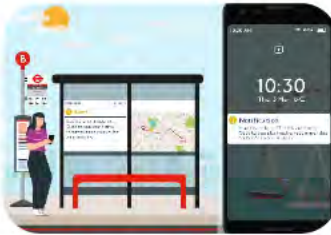
Routine
information



Providing high quality live information to support customers on their journey, including live maps at stops and live seat availability through mobile devices

2

Live disruption
info



Live disruption information delivered at the bus stop and on customer's devices, including re-routing advice and push notifications to alert customers in advance to network issues.

3

Comfortable
bus stops



A shelter and seating at every bus stop, with lighting that allows the bus driver to see the customer is waiting.

4

Comfortable
bus design



A more spacious bus design with smarter air flow and temperature control, giving customers more personal space and a comfortable environment when on the bus.

5

Safer bus
journeys



Support for customers when things go wrong, including help points at bus stops that allow customers to speak to an advisor for help.

6

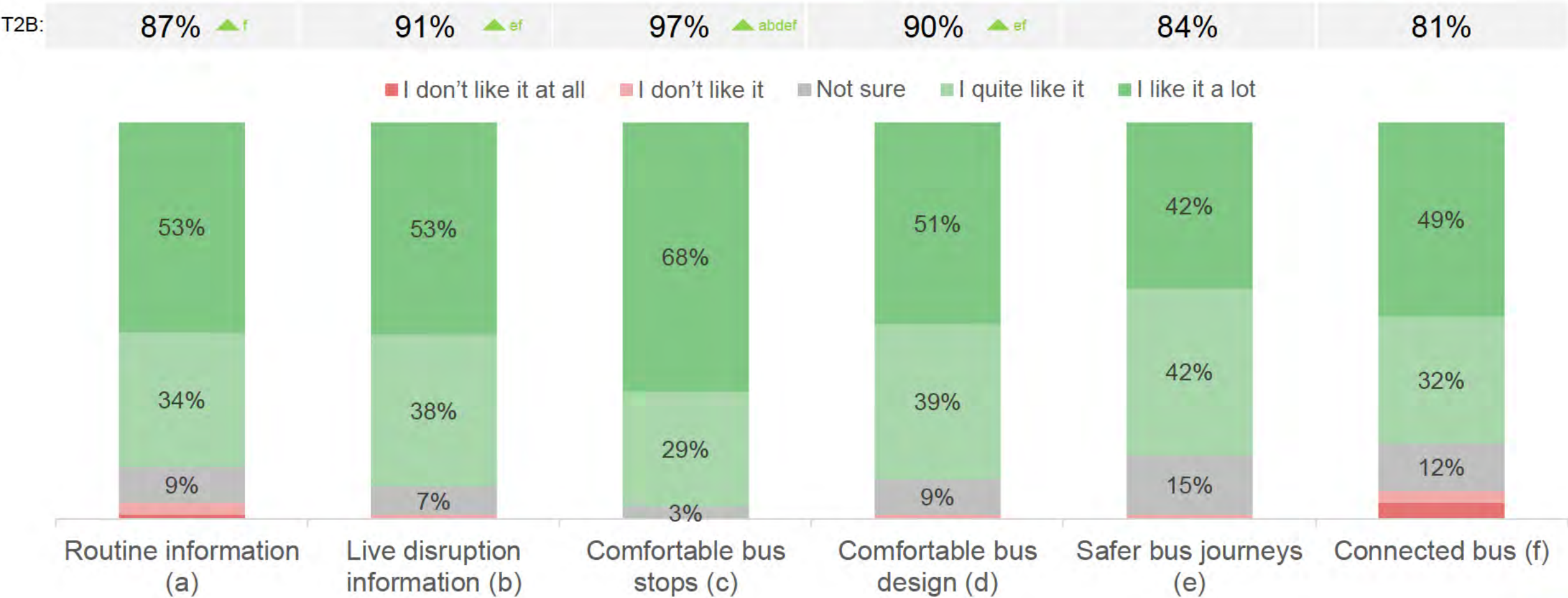
Connected
bus



USB charging ports and free Wi-Fi when on board the bus, to help customers stay connected during their journeys.

All our concepts had very strong appeal among respondents

The response from customers was very positive compared to other concept tests 2CV have run: after several stages of refinement, all concepts were widely liked and very few respondents rejected them



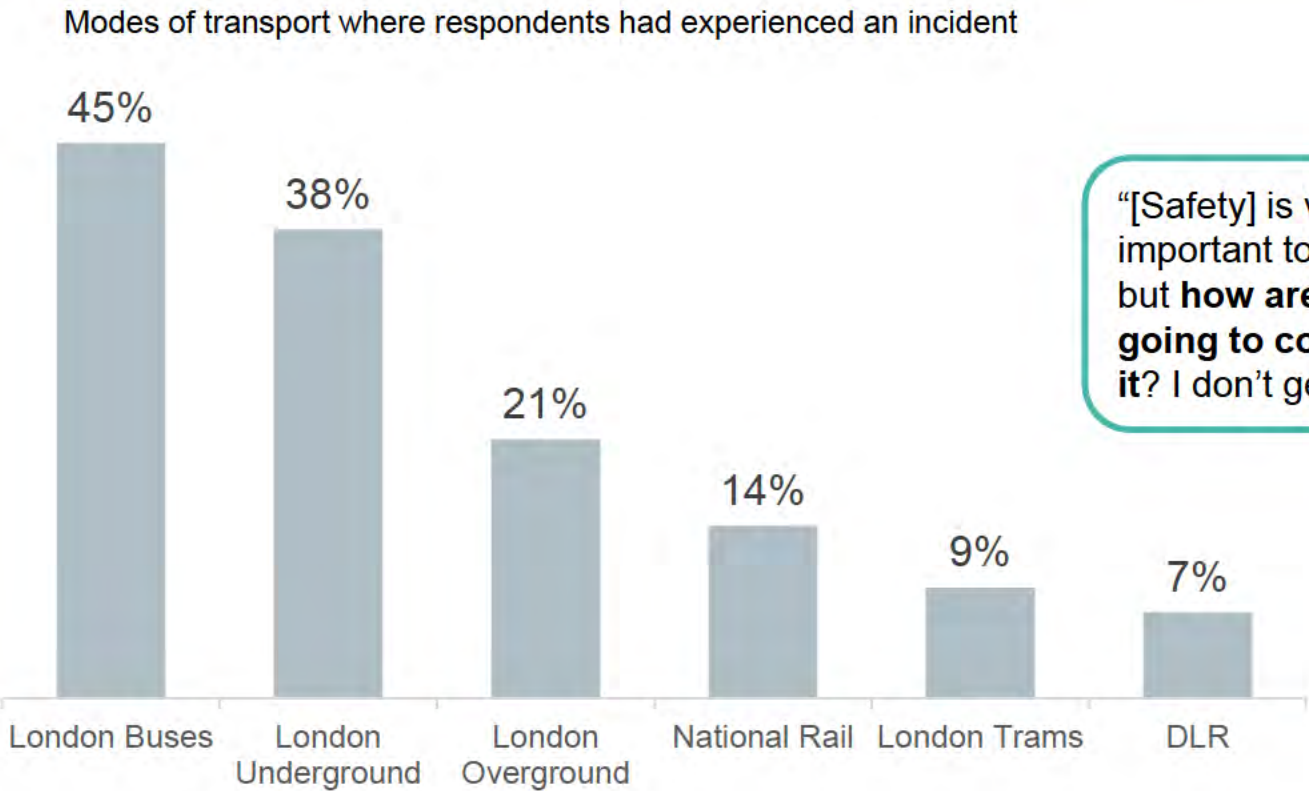
Disruption info and comfortable bus stops lead on multiple KPIs

Though all are appealing, these two concepts stand out. For the KPI of intent to increase bus usage, **comfortable bus design** jointly leads and therefore also merits closer consideration

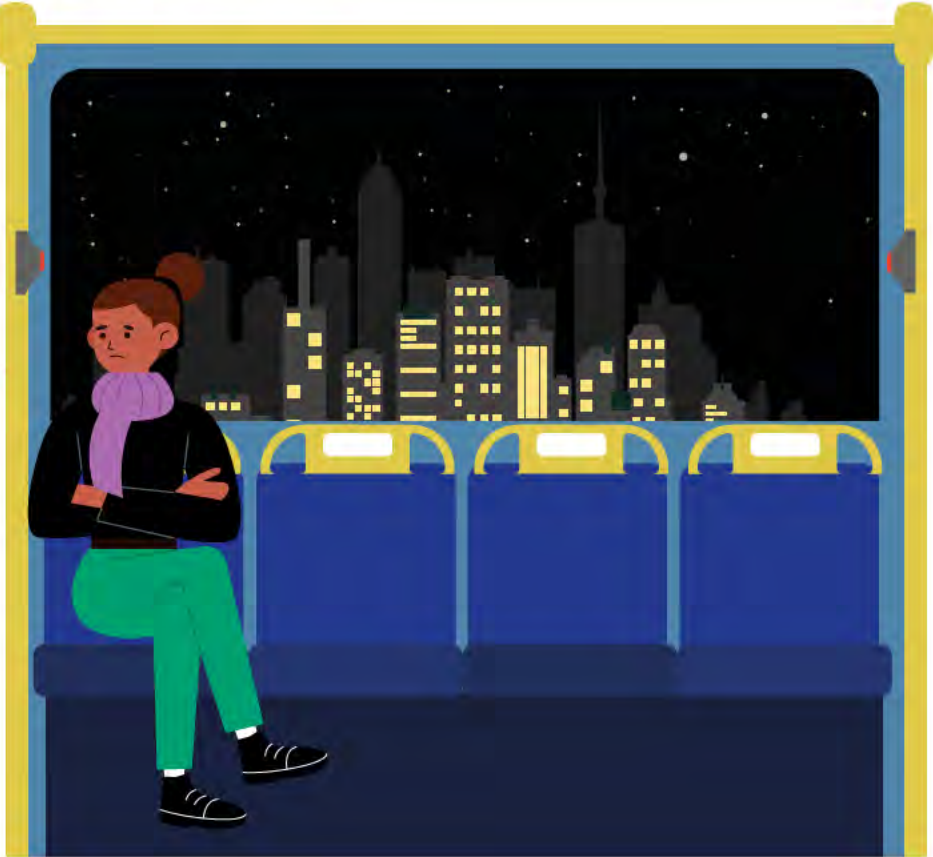
Rank against other concepts All respondents	Routine information	Live disruption information	Comfortable bus stops	Comfortable bus design	Safer bus journeys	Connected bus
Appeal	4	2	1	3	5	6
Relevance	4	1	2	3	6	5
Believability	4	2	1	6	5	2
Would consider taking bus more	3	1	3	1	6	5
More confident to take bus	2	2	1	5	4	6

Though the safer bus idea appears less engaging, safety *is* a concern

Respondents were most likely to have experienced an incident on board a bus vs other modes. The less regulated, outside environment of the bus network can erode confidence



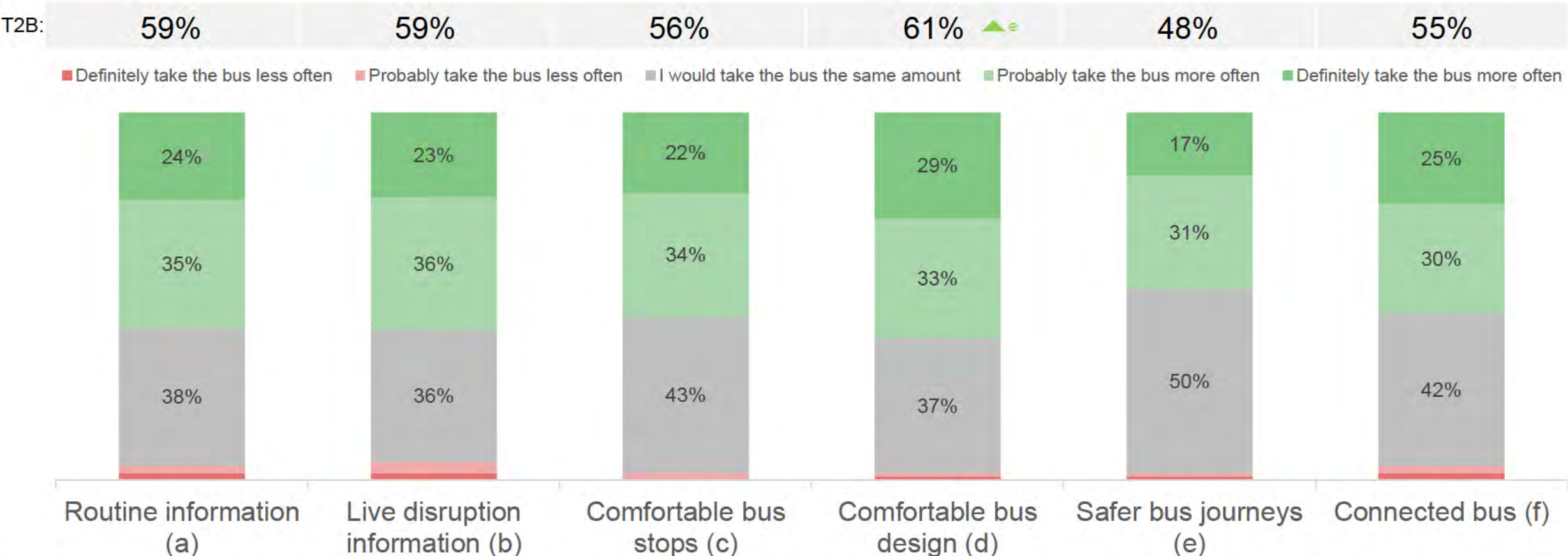
“[Safety] is very important to me but **how are you going to control it?** I don’t get it”



Q | CL1. In the last six months, have you ever experienced an incident where you felt worried about your personal security (i.e. being safe from crime or antisocial behaviour) when using public transport in London?
Base | Those who had experienced an incident (603)
Verbatim comment from Bus Priorities qualitative hall test (2019)

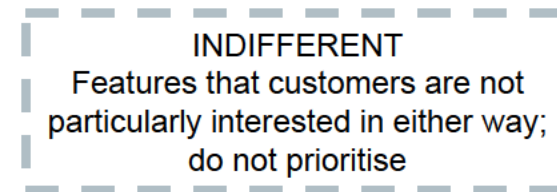
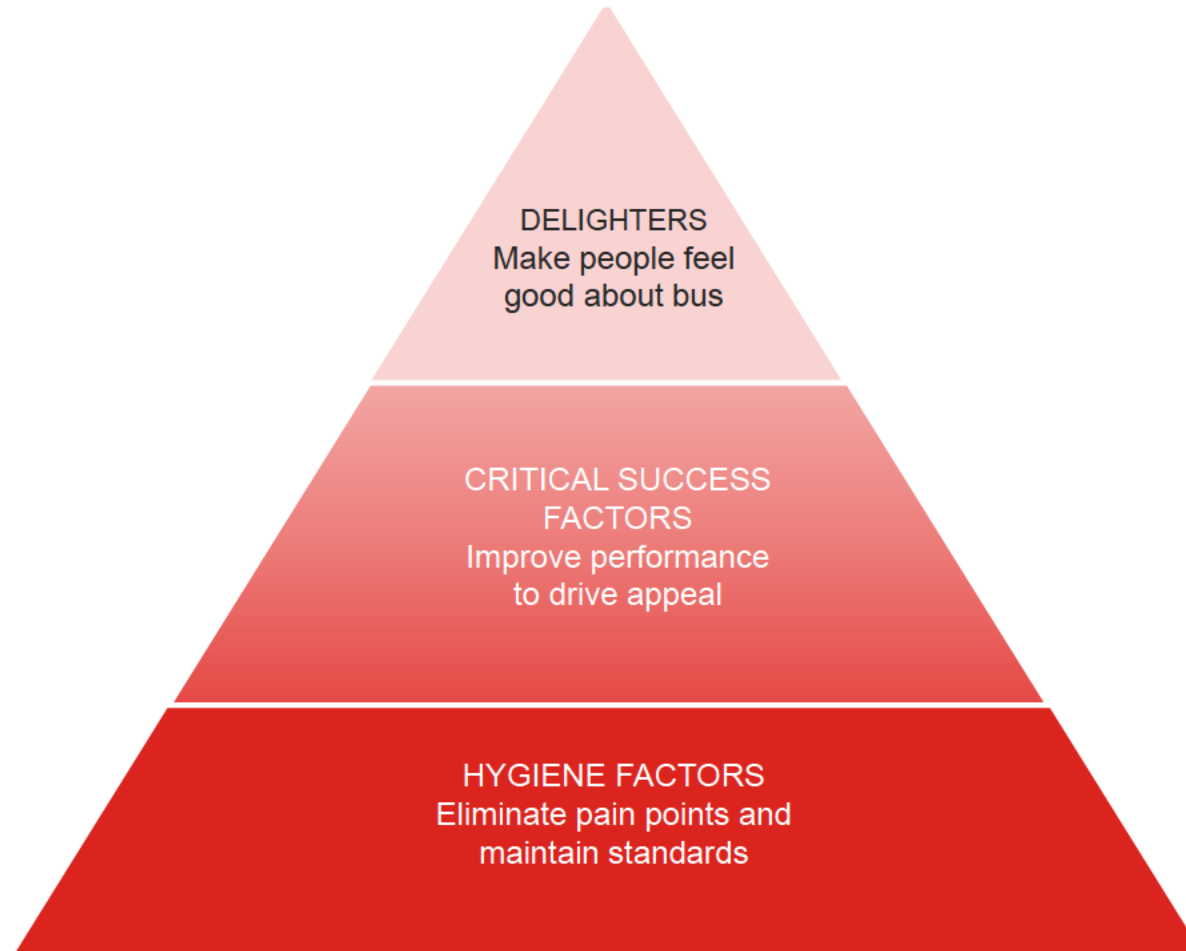
Non-users/considerers of the bus indicated increased intention to use the bus in future if the concepts were introduced

The **comfortable bus design** concept, with more space and better airflow throughout the bus, had a strong impact on intentions among this group



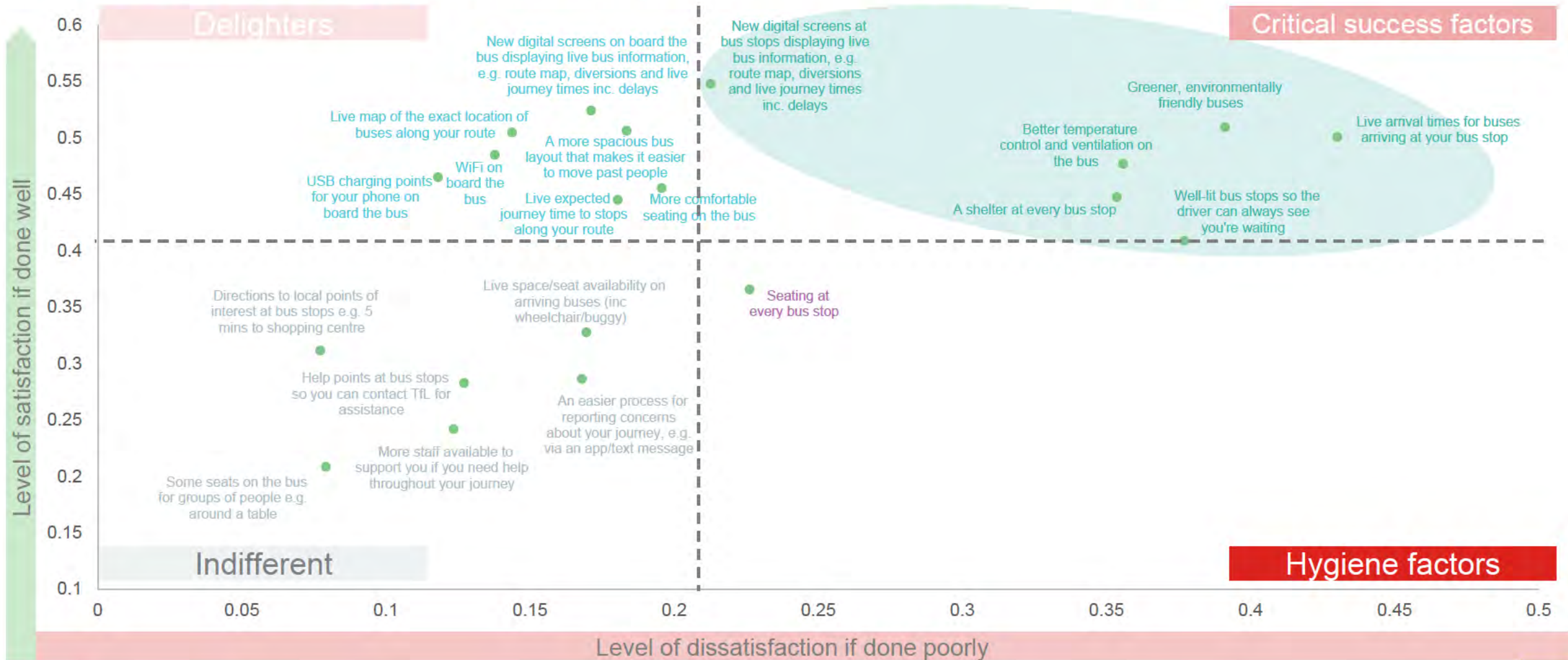
Using Kano methodology to build on the existing TfL hierarchy of needs, we delved deeper into specific elements of each concept

We tested a range of elements from the concepts (as well as a number of other elements that were not part of the concepts) to classify them into the 4 Kano categories



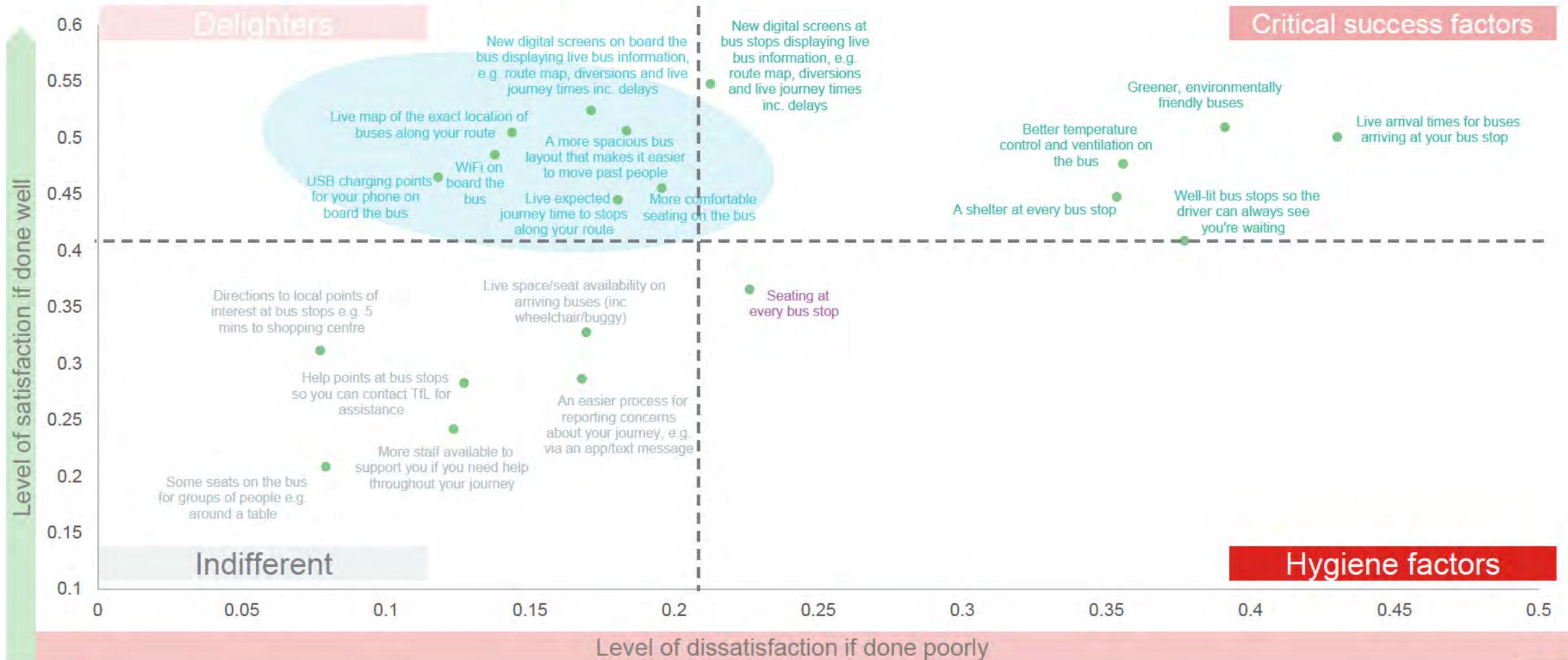
Elements around waiting for the bus are critical to satisfaction

Delivering a better experience to people waiting for the bus will improve satisfaction and help limit frustration – previous TfL research has identified that this is a point of friction in bus travel



Many elements of the new ideas are exciting to customers

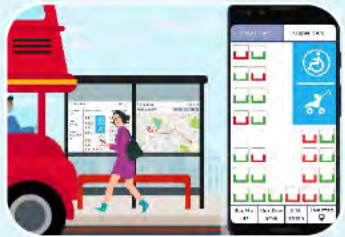
Technological innovation in information delivery and a more comfortable bus design could help to move the dial on enticing people to consider bus



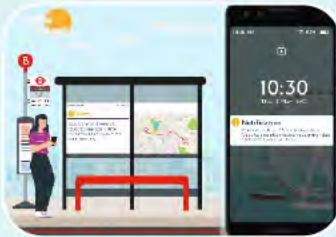
We will now explore the concepts in more detail

As routine and live disruption information share many features (though answering different needs), these concepts will be considered together

Live information



Routine information



Live disruption information



Safer bus journeys



Comfortable bus stops



Comfortable bus design



Connected bus





Live information concepts

Routine information and live disruption information

Live disruption info performed more strongly than routine info

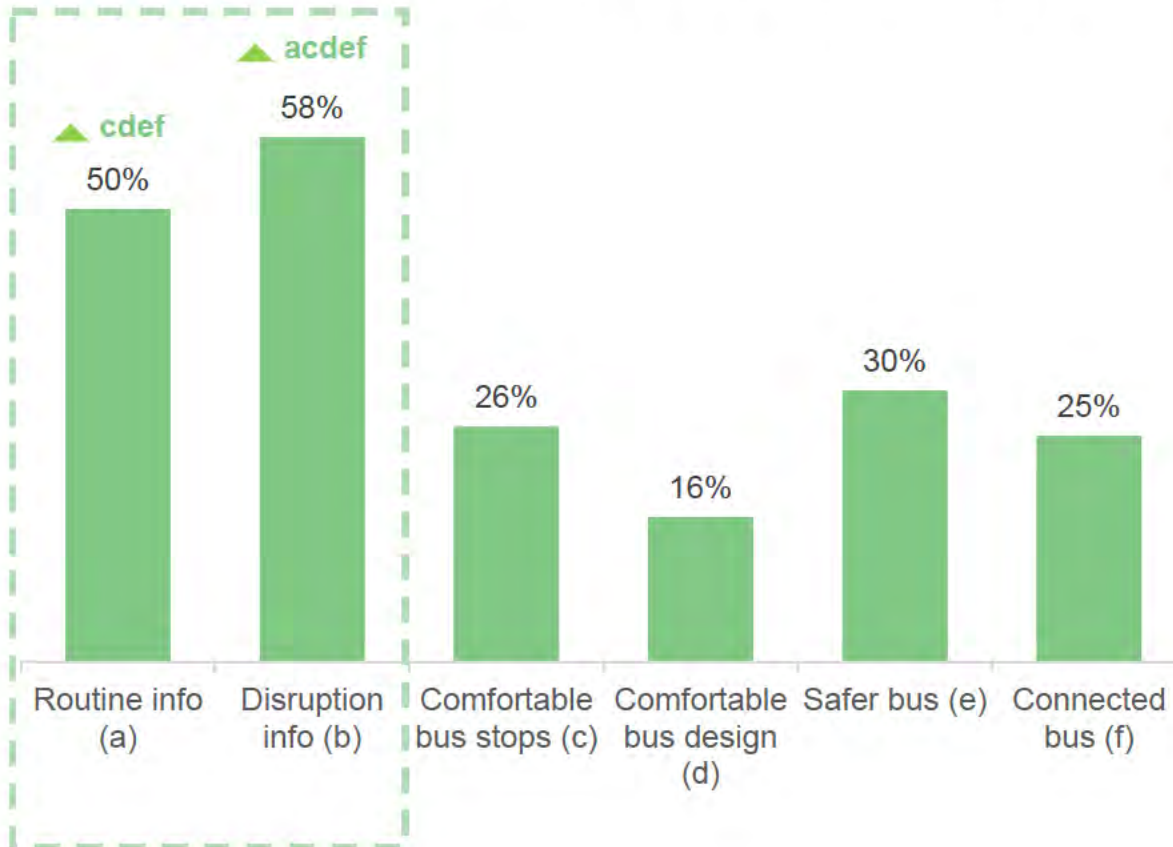
To understand this, we need to pick apart the need for information and how it supports customer journeys

Rank against other concepts All respondents	Routine information	Live disruption information	Comfortable bus stops	Comfortable bus design	Safer bus journeys	Connected bus
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Information gives a sense of control and confidence in travel

Information concepts tap into the pain point around the uncertainty that bus travel can create

'I would feel more in control of my bus journeys'



'It would make me feel more confident knowing how to continue my journey and save time'

'A great idea which takes away any uncertainty'

'It's been needed for some time now: good quality collective data from a trusted source'



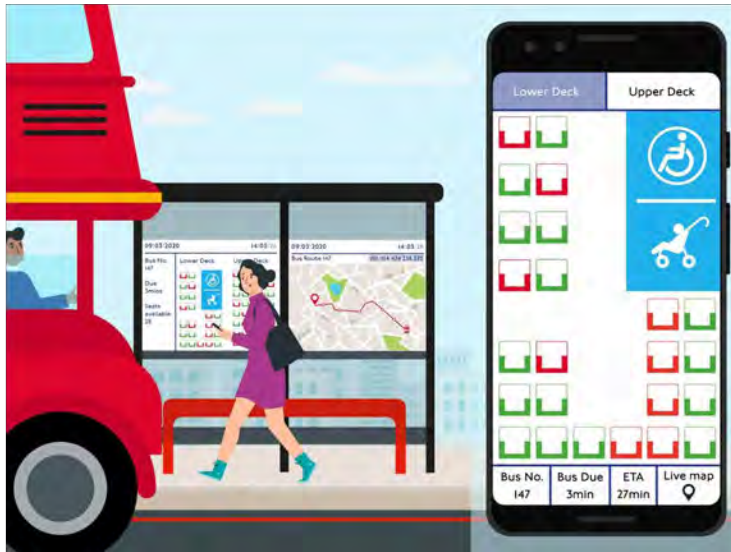
"There is a real opportunity on the bus to use information to make a more pleasant customer experience. You have 80 people in a confined space – how do you keep them feeling good about their journey, enhance their well-being?"

Specialist opinion

The demand for “live” information has strong appeal

Most like the prospect of live information when things go wrong. Though some ‘extra’ information features are delighters now, they could well become expected critical success factors in the future

1 Routine information



Sometimes it's hard to know which bus you should be taking, or exactly when your regular bus will arrive and whether there'll be space to get on – it makes it hard to rely on the bus.

A brand-new information system will deliver **accurate, live bus information**, before and during your trip. You'll be able to **track the live location of your bus on a map**, how much space there is on board, and **how long it'll take to get to your destination** – via TfL's website, travel apps and new digital screens at the stop and on the bus.

You can trust information about your bus, and make an informed decision about your journey.

45%

Accurate, **live bus information**

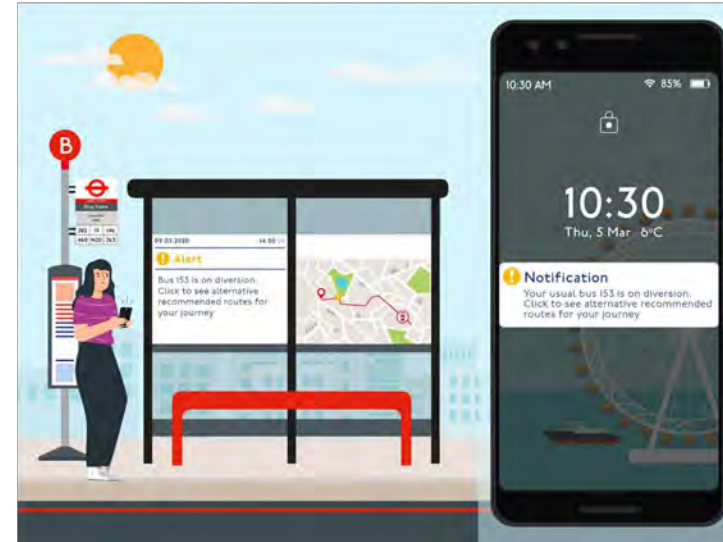
45%

You'll be able to track the **live location** of your bus on a map

36%

How long it'll take to get to your destination

2 Live disruption information



It can be frustrating when your bus journey's delayed, and you don't know what's happening or the best way to continue your journey.

A brand-new information system will deliver **accurate, live information when things go wrong** before and during your trip. You'll be able to **see disruption and diversions on a map**, including stops that are closed and expected impact on journey times – via TfL's website, travel apps and new digital screens at the stop and on the bus. **Push notifications will proactively suggest alternative routes**. Your driver will explain what's happened.

If disruption occurs, you'll know what to do about it and feel more in control of your journey

52%

Accurate, **live information** when things go wrong

35%

See disruption and diversions on a map

33%

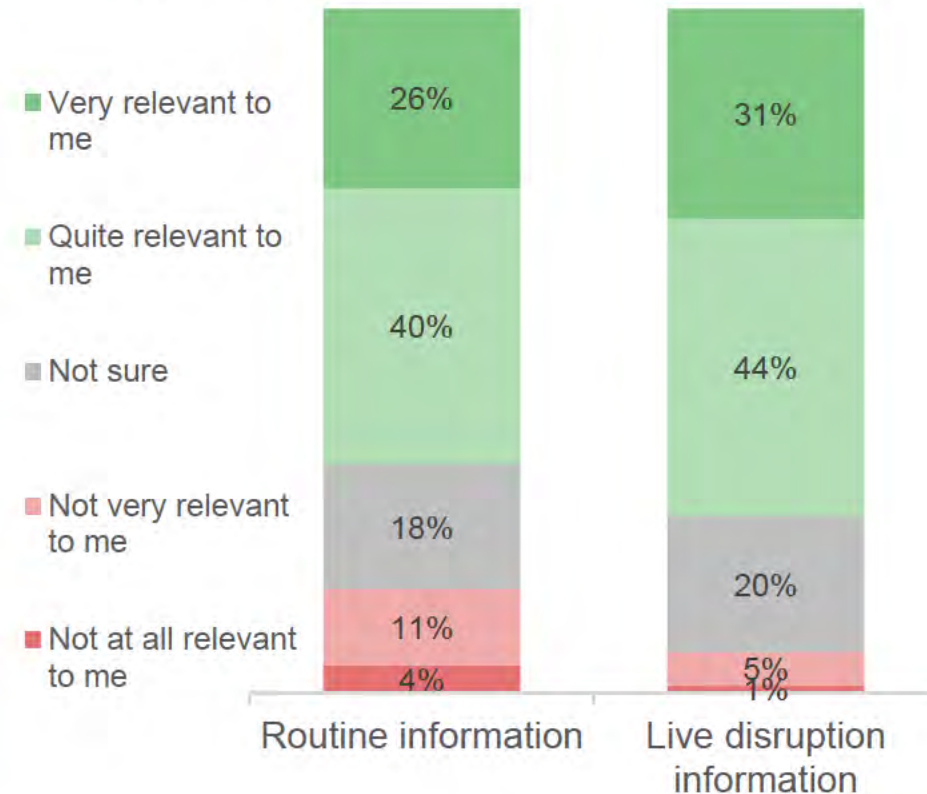
Push notifications will proactively suggest alternative routes

Live disruption info seems a better opportunity than routine info

Disruption information has greater potential to drive up frequency of bus travel - and is more relevant even to non-users/considerers of the bus

Routine information vs. Live disruption information ranking against all 6 concepts All respondents	Routine information	Live disruption information
Appeal	4	2
Relevance	4	1
Believability	4	2
Would consider taking bus more	3	1
More confident to take bus	2	2

Relevance | Non-users and non-considerers of bus



Live disruption info is solving a much more panic-inducing problem, therefore has a bigger impact than routine information

- Customers recognise that buses are at the mercy of their environment and so disruptions feel inevitable
- Disrupted journeys are a big pain point, especially when customers don't expect them or find out too late into their journey
 - Not all customers know how to 'self soothe' and figure out the best course of action in a disruption
 - This may stem from a deeper routed issue; the fact that people don't really understand how the bus network works/ fits together, it feels very complex.
- Therefore customers place greater importance on a proactive solution to helping them cope with disruption than routine information.



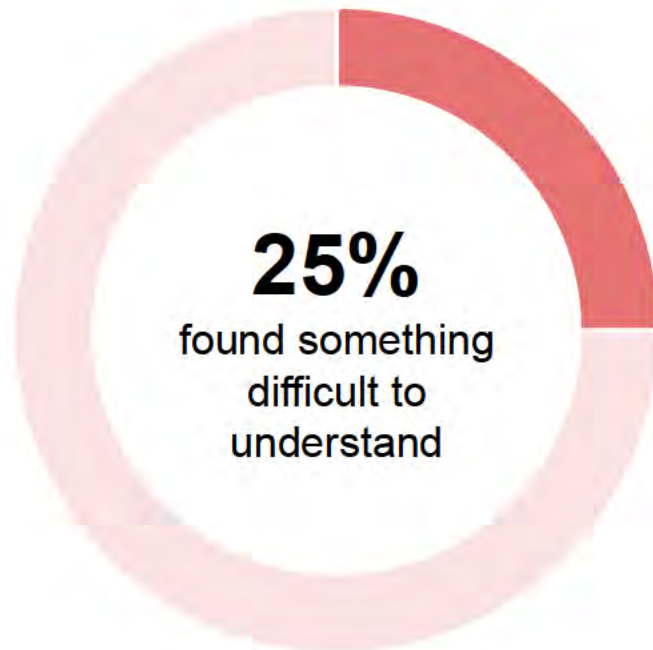
Live arrival times and screens at bus stops are both critical success factors

"The current iBus is too basic for our more connected future city, it needs to have greater capacity to deliver more detailed and visual live information about the bus you are on, especially in the event of delays."

Specialist opinion

Customers need more support to understand how to access info

Push notifications were not familiar to everyone, nor was the driver's role in helping with journey planning. Consider communications about this concept carefully



'How will commuters find out? Do they have to sign up in advance for updates?'

'How will bus drivers contact people when they are driving?'

'Don't really understand how the technology could do this. Not sure what the push notifications would say as you'd have to tell TfL where you're wanting to go'





Safer bus journeys

Many people have prior experience with feeling unsafe on the bus, especially women – making safety a key need to address

Bus is the transport mode where people are most likely to have experienced an incident

Modes of transport where respondents have felt unsafe



Q | CL1. In the last six months, have you ever experienced an incident where you felt worried about your personal security (i.e. being safe from crime or antisocial behaviour) when using public transport in London?

Base | Total (2417), Routine information (403), Live disruption information (401), Comfortable bus stops (404), Comfortable bus design (403), Safer bus journeys (406), Connected bus (400).

▲ Sig. higher than other gender @ 95% CL

And yet the safer bus journeys concept does not strongly appeal

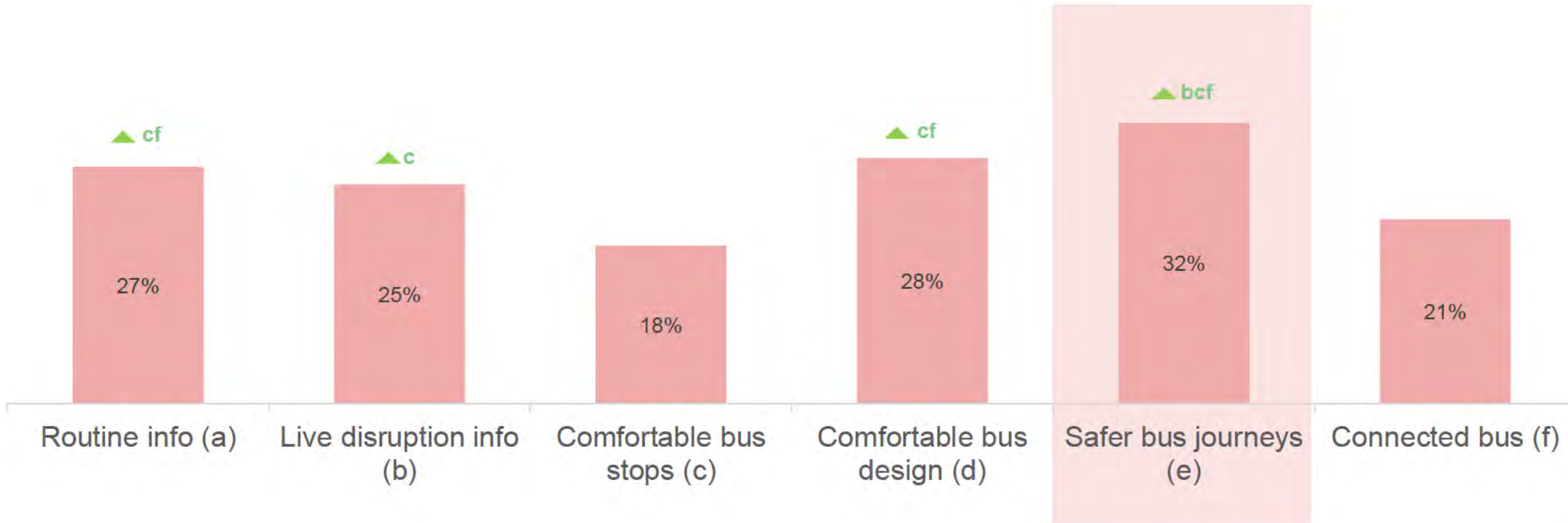
Its weaker performance vs. other concepts suggests that whilst safety is a key need, this concept is not answering it adequately

Rank against other concepts All respondents	Routine information	Live disruption information	Comfortable bus stops	Comfortable bus design	Safer bus journeys	Connected bus
Appeal	4	2	1	3	5	6
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The safer bus concept was not fully understood

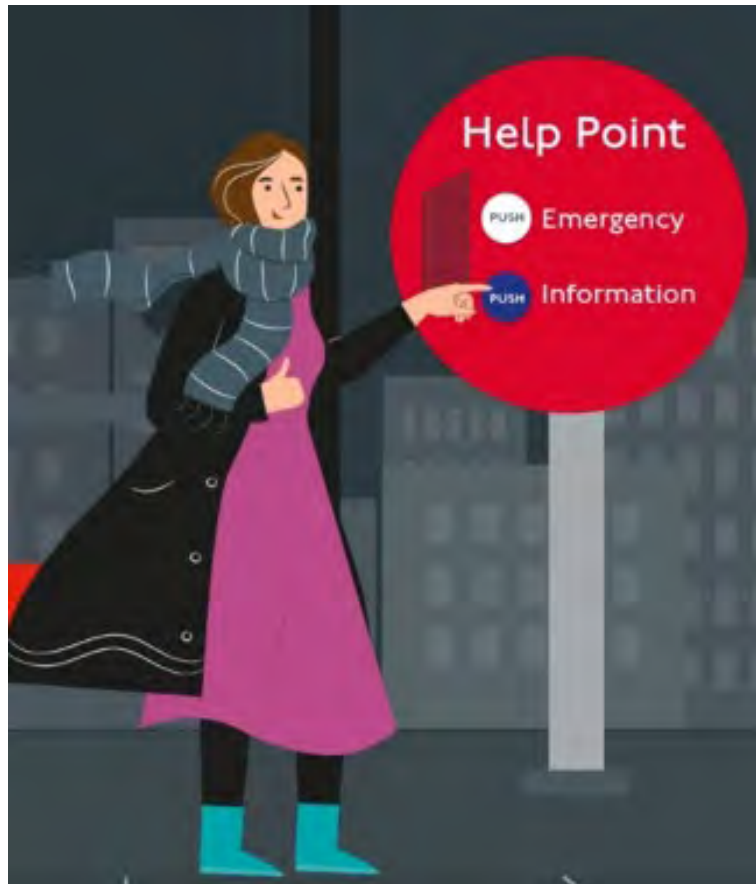
Of all the concepts tested, it caused the most confusion among respondents

Had difficulty understanding the concept | All respondents



People did not understand how the help points could support them in a moment of immediate danger

Introducing help points at bus stops doesn't answer the need to reassure customers that their safety is protected; its function is after the fact, rather than preventative



'Person or bot?'

'Not sure how a help point can help anyone feeling unsafe or in any immediate danger'

'How is your query acknowledged? How soon do they get back to you? How do they get back to you? Through the machine?'

'How would it help you if you used it when you were harassed by someone? Would they be able to respond immediately?'

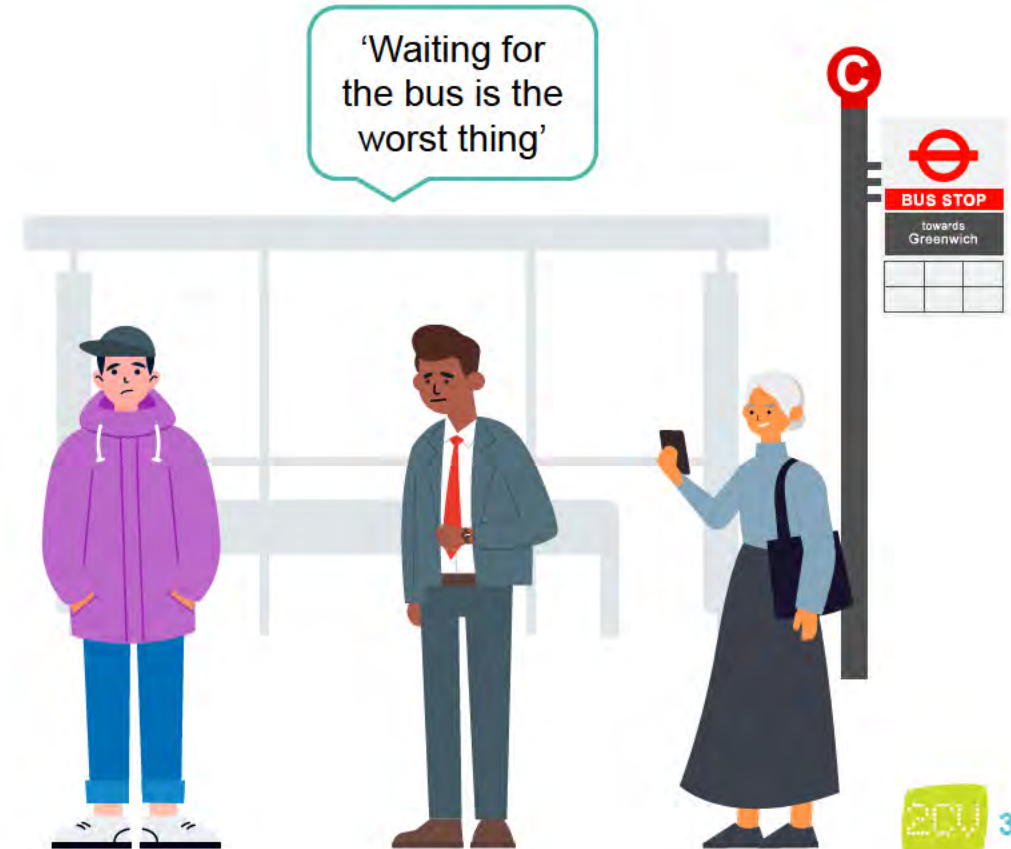
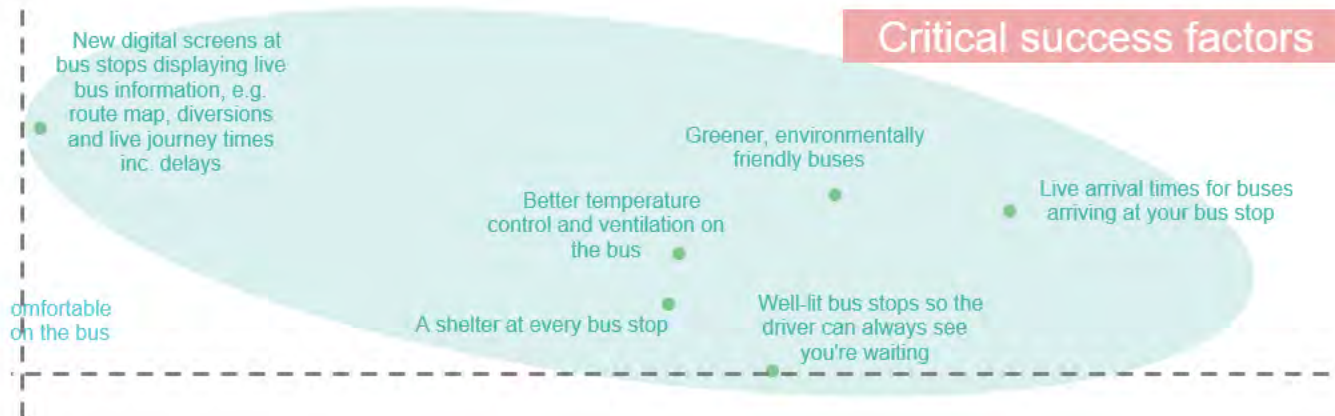


Comfortable bus stops

Improving bus stop experiences will increase customer satisfaction

TfL research* has shown that waiting at the stop is twice as frustrating as delays whilst on bus – and Kano analysis determines that many bus stop features are performance factors

*Shelters, lighting and live arrival times at the stop are all **critical success factors**: the better they are delivered, the more satisfied customers will be*



Q | B1a. How would you feel if this feature was present when taking the bus? B1b. How would you feel if this feature wasn't present when taking the bus?

Base | All respondents (2417)

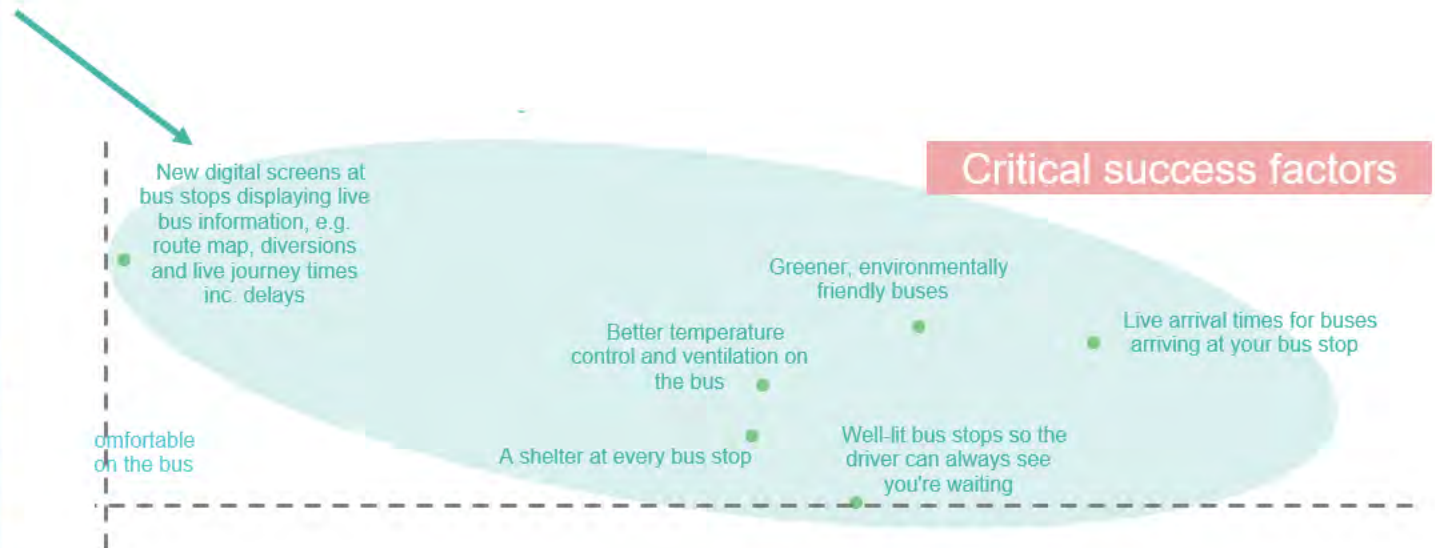
* 'Why Does Passenger Journey Time Matter?' – Geoff Hobbs, 2020

As such, this was one of the highest performing concepts

Rank against other concepts All respondents	Routine information	Live disruption information	Comfortable bus stops	Comfortable bus design	Safer bus journeys	Connected bus
Appeal	4	2	1	3	5	6
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Design of bus stops should also keep in mind known customer priorities around information

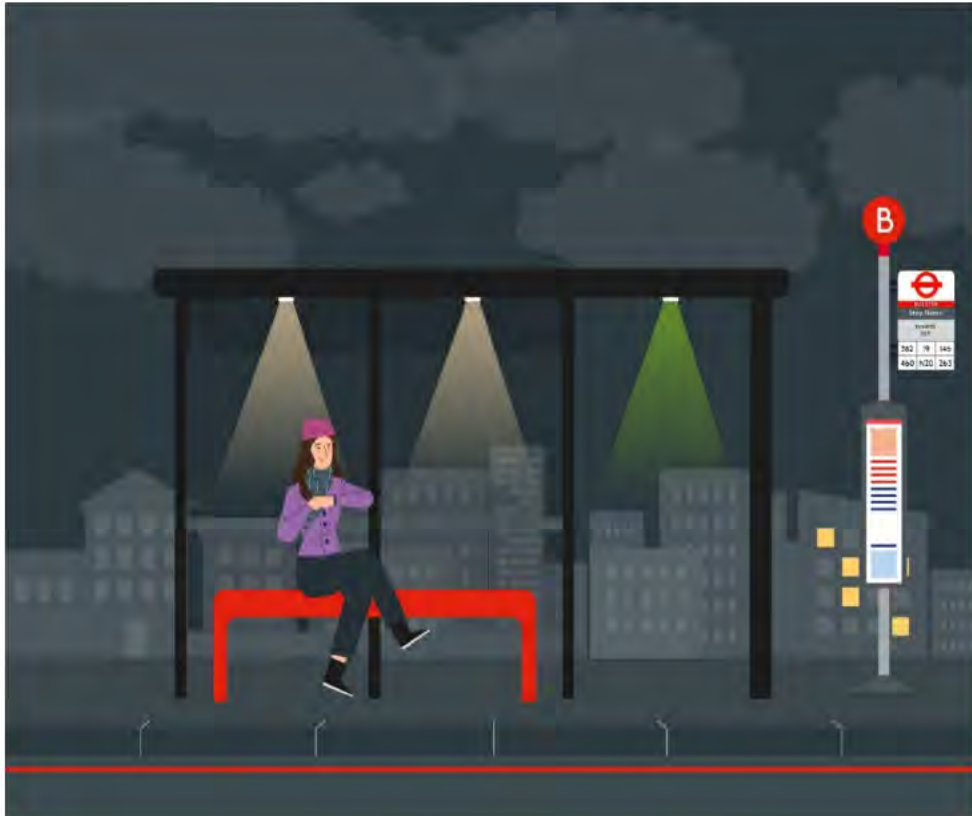
Though not a part of this concept, digital screens **at the stop** are a critical success factor, whereas screens on the bus are classified as a delighter



Comfortable bus stops unintentionally delivers to safety needs

Though comfortable bus stops wasn't intended to focus on safety, people identified the additional lighting in this concept as a safety feature – and a key reason to like the concept

3 Comfortable bus stops



Waiting for a bus isn't always pleasant, especially when it's dark and rainy and you're not sure whether the driver will see you.

There will be a **shelter** and **seating** at every bus stop. **New lighting will highlight the stop** and make sure the driver can see you're waiting.

A brighter, more comfortable place to wait for the bus wherever you get on – and you can feel more confident the bus will stop for you.

56%

New lighting will highlight the stop

48%

Shelter

43%

Seating

'Bright lights to deter crime'

'The lights will make me feel more safe'

Through the additional lighting, comfortable bus stops therefore has a strong impact on feelings of safety on the bus network

Well lit bus stops is a critical success factor, likely due to answering this safety need. *Feeling safe* is crucial to confidence in taking the bus

"It would make me feel safer, and well looked after."

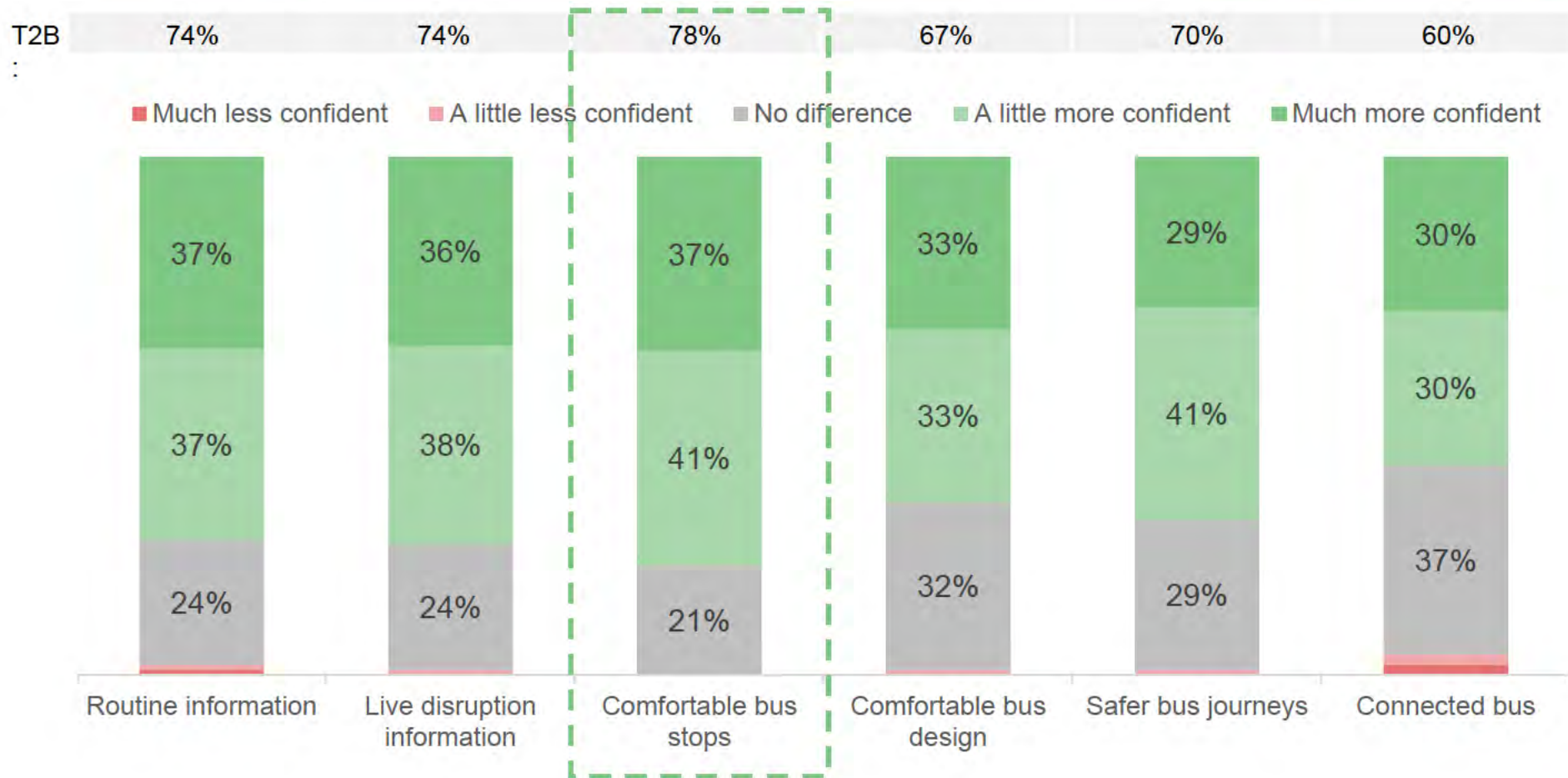
"It sounds comforting and as a woman I think the well-lit aspect is important especially at night if you are alone."



▲ Sig. higher than other concept shown @ 95% CL

Improvements to the stop can give customers confidence

Ultimately, a safe environment and live information delivery give customers control over their journeys



'I like the idea of updates so you can decide whether it's worth waiting'

'Would make waiting for a bus at night more comfortable and less worrying'



Q | C0a. Which of these best describes how you feel about the idea?

Base | Total (2417), Routine information (403), Live disruption information (401), Comfortable bus stops (404), Comfortable bus design (403), Safer bus journeys (406), Connected bus (400).



Comfortable bus design

Comfortable bus design showed a softer overall performance

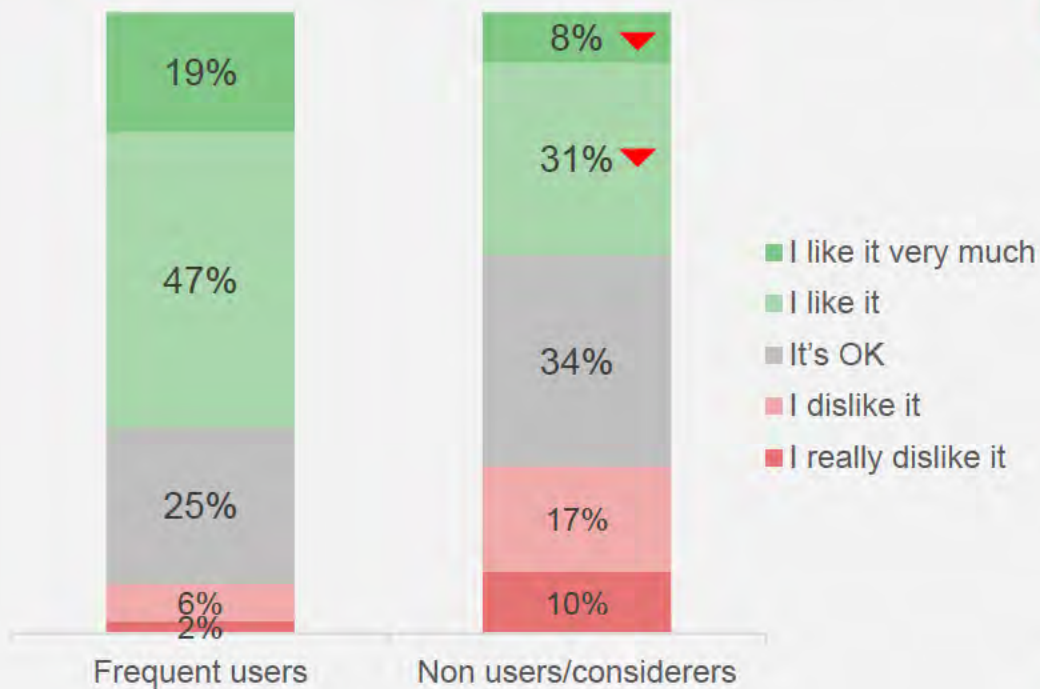
But given it was the #1 concept for considering taking the bus more in the future, it has strong potential to move the dial on patronage and should be carefully considered

Rank against other concepts All respondents	Routine information	Live disruption information	Comfortable bus stops	Comfortable bus design	Safer bus journeys	Connected bus
Appeal	4	2	1	3	5	6
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Would consider taking bus more	3	1	3	1	6	5
More confident to take bus	2	2	1	5	4	6

Non-users feel less positive towards the bus, often related to negative perceptions of comfort and crowding

This makes **comfortable bus design** the #1 concept for intent to increase patronage among this growth audience

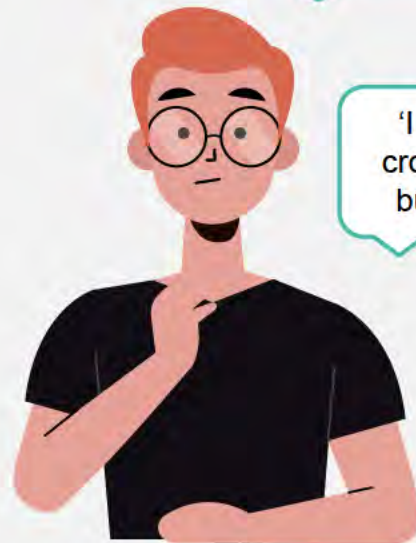
Enjoyment of bus | Frequent vs. non-users



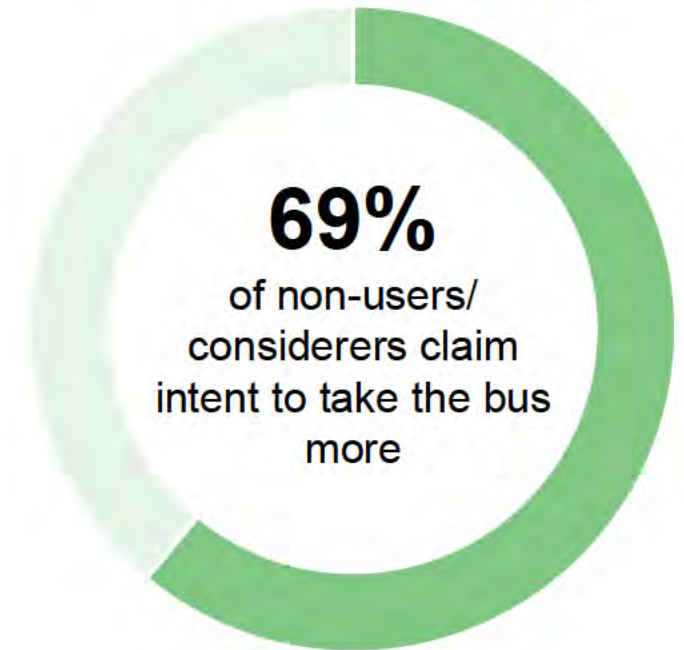
'My main problem with the bus is comfort'

'Buses are dirty, unpleasant & fares are too high'

'I hate crowded buses'



With more comfortable bus design...



The comfortable bus concept answered existing pain points – particularly around space and high temperatures

Temperature control was identified as a critical success factor in Kano analysis

4

Comfortable bus design



The bus is not always the most comfortable place to be: it can feel too hot or cold, and sometimes it can be difficult to get on or off, or move around the bus.

A new bus layout will **create more space in the bus**, so passengers don't have to squeeze past each other to get on or off. Seats will be re-designed – with more leg room, more padding and **more personal space**. Improvements to air circulation will make it feel less stuffy, and **temperature will be automatically regulated**.

You'll enjoy a much more comfortable journey, whether you sit or stand.

'I hope the temperature control & air circulation references mean there will be **air conditioning** - I try to avoid buses completely in the summer due to them being too hot.'

47%

Create more space in the bus

39%

More personal space

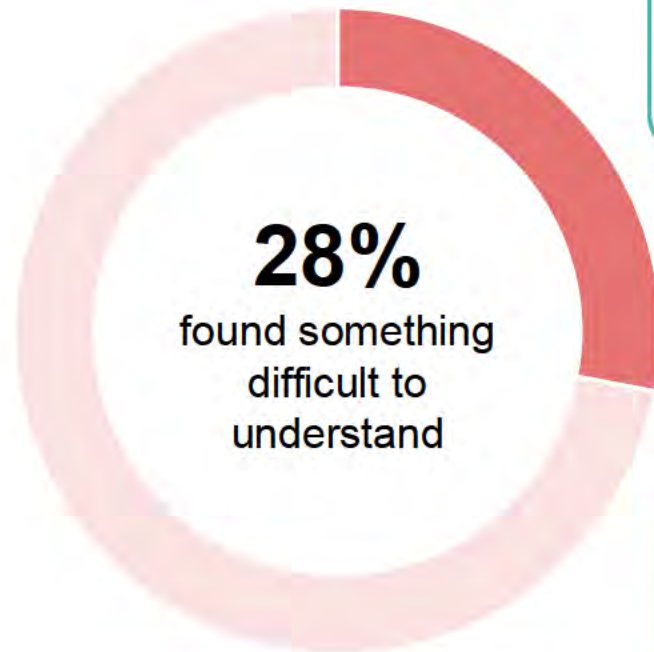
38%

Temperature will be automatically regulated



But respondents identified a trade-off between comfort and capacity

It was not well understood how more a more spacious bus could be created without loss of seats or space – changes to the layout require further development with customers



'I don't understand how space will then not be a concern. Will this mean less overall seats- I would rather sit down in a stuffy full bus than have to stand'

'[don't understand] how more space can be created from same area without compromising passenger capacity'

'That there would presumably be less room for people on board the bus. So there would either have to be more buses, or the buses would - ironically - be even more crammed!'



"Introduction of tables and improving seat space and design will help people use their time on the bus as they like. For example to do a bit of work, read a book or watch a show on Netflix without the feeling of being in the way. It is possible to do this without reducing capacity"

Specialist opinion

People were mostly indifferent to the idea of group seating

Few responded positively to this idea – with some raising concerns about intimidation by groups of people sitting together

Kano classifications | Some seats for groups of people e.g. around a table

■ Indifferent ■ Unwanted ■ Excitement ■ Hygiene ■ Performance



This was the only feature with a significant 'unwanted' score

'I think these table seating areas would get abused by younger people'

'It would be good for travelling with the grandchildren, but you can't guarantee you'll be able to sit at them'





Connected bus

Against KPIs, this concept is not as strong as others

Though people believe it could be delivered, it is less likely to move the dial on increasing patronage vs. other concepts explored

Rank against other concepts All respondents	Routine information	Live disruption information	Comfortable bus stops	Comfortable bus design	Safer bus journeys	Connected bus
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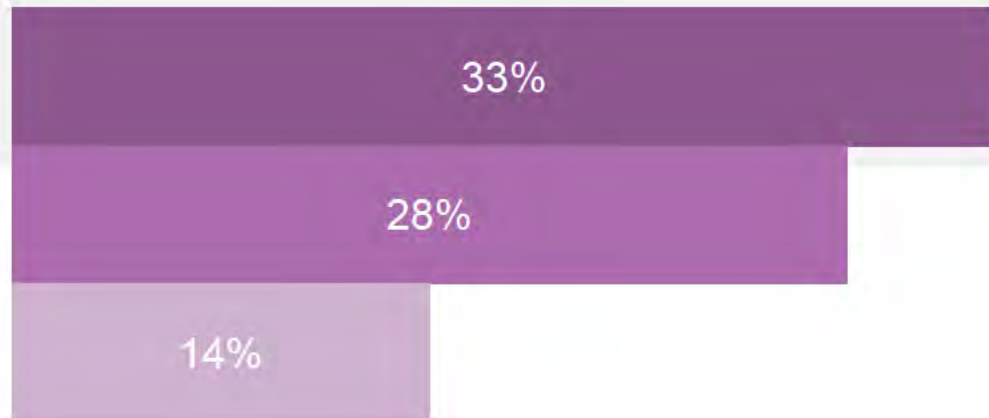
The connected bus was more relevant to younger groups

But even among the younger 16-34 age group, this was not the most successful concept. Some linked it back to existing information and journey planning needs

Intention to increase bus usage if connected bus concept was introduced (TB) | By age



■ 16-34 ■ 35-54 ■ 55+



#3

Rank of 6 concepts in intention to increase bus usage (behind comfortable bus design and routine info)

'Not having to worry about getting lost as I can always find my way if my phone isn't dead through Google Maps'

'More accurate timing of buses arriving'



USB charging points are more appealing than on board Wi-Fi

Almost half like the idea of being to charge their devices on the go

6

Connected bus



When you're out and about, sometimes you can feel worried that your phone battery or data might run out.

Once on the bus, brand-new USB charging points and on-board WiFi will allow you to stay connected, wherever you are.

You won't need to worry about your phone anymore; trust your bus to keep you connected.

46%

Brand-new USB charging points

37%

On-board WiFi

23%

Stay connected, wherever you are

People questioned the necessity, security and practical aspects of the connected bus

Large mobile data packages limit need for Wi-Fi



'Mobile data is available on the bus so Wi-Fi is not that useful'

'there is no need for free wi-fi as everyone gets enough data allowances with their phone package'

*76% of Londoners have a data package of 500MB+**

Some don't trust the security of public Wi-Fi



'I don't really like the idea of logging into a public WiFi due to hacking and identity theft'

'open to abuse and unwanted hacking'

Doubts over how features would be used/shared



'I question whether it will cause problems with people moving around to try to plug in their phones'

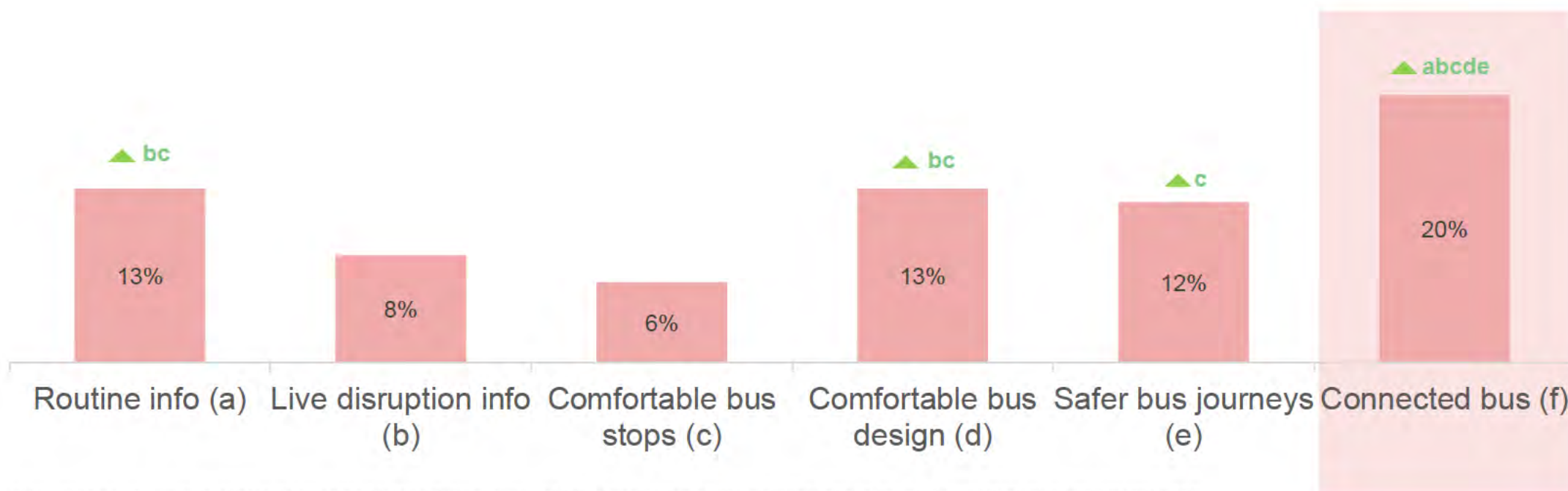
'To use the USB charging points would we have to bring a charger with us?'

Customers see this as a poorer use of funds vs. other concepts

This was particularly true for older bus users, with over one-third of 55+ respondents believing this would be a poor use of funds.

Believed the concept was a poor use of TfL funds | All respondents

'There are other priorities for TfL'



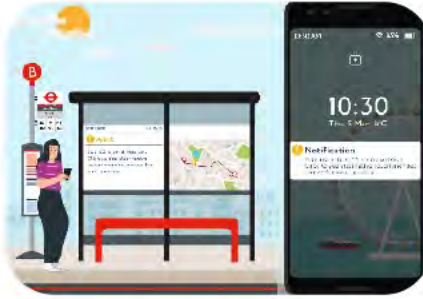
Q | C11. Imagine you were in charge of planning for the future of buses at TfL. Considering all the elements of bus travel, do you think that implementing this idea would be a good use of TfL funds to improve bus services?
Base | Total (2417), Routine information (403), Live disruption information (401), Comfortable bus stops (404), Comfortable bus design (403), Safer bus journeys (406), Connected bus (400).

▲ Sig. higher than other concept shown @ 95% CL



Recommendations

There are 3 concepts with strong potential to move forward with



Live disruption information

KEEP

Live, accurate info through multiple touchpoints to support customer journeys

DEVELOP

Practical mechanism for journey planning and driver's role



Comfortable bus stops

Better lit bus stops, with shelters and seating

Support with broader safety fears across bus network



Comfortable bus design

Air conditioning and better consideration of space

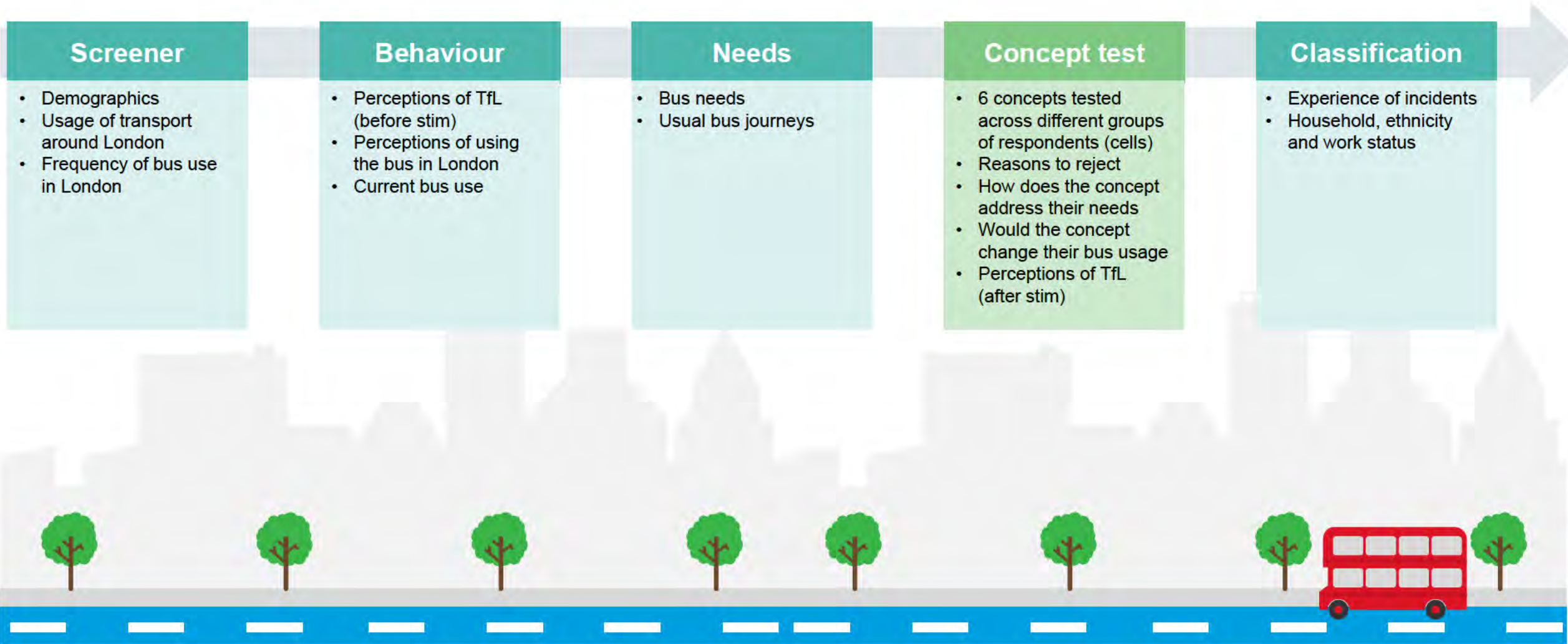
Balancing space with capacity. Group seating is not popular

A large, light blue arrow pointing to the right, composed of several overlapping, semi-transparent arrow shapes.

Appendix

Through quantitative validation, we were able to measure the performance of each concept against a number of KPIs

The questionnaire flow included questions on current behaviour and needs, before concept evaluation

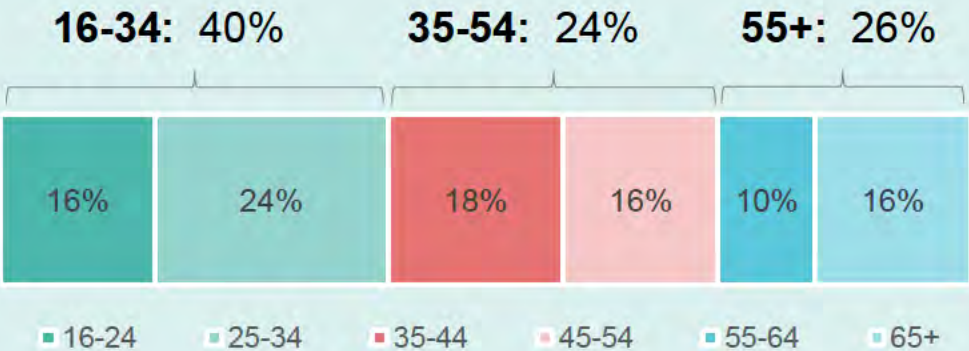


Who we spoke to

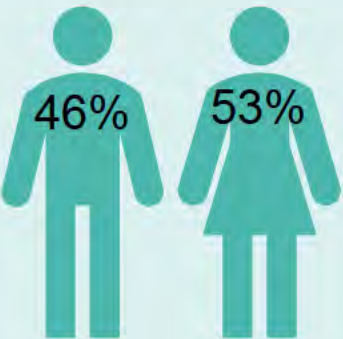
We spoke to 2,400 Londoners, each of whom saw and evaluated one of our six concepts

DEMOGRAPHICS

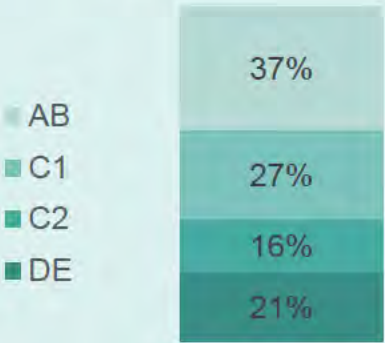
Age



Gender

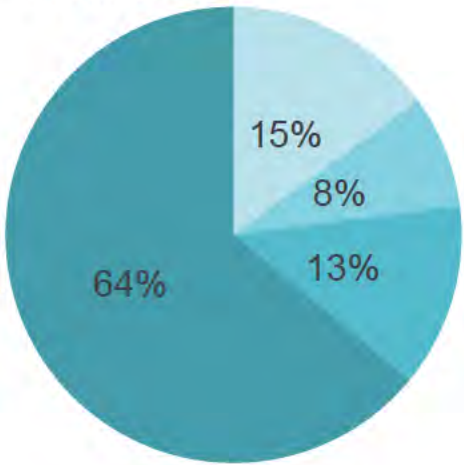


SEG



Current bus behaviours

- Not bus user
- Not current user
- Infrequent bus user
- Frequent bus user



London regions



North	27%
East	16%
South	18%
West	23%
Central	14%

Frequent = at least once a week; Infrequent = less regularly

Better connections, reliability and journey times concepts were not taken for further validation

We know that customers want these things to happen, but they are largely operational decisions

Local network with more services and different types of services to meet local needs

- Expansion of more routes outside of town centres
- Routes that reach more residential areas
- Better links for retail and leisure journeys

More like the tube

- Better connections
- More intuitive route numbers
- Better integration with other modes

More direct bus routes

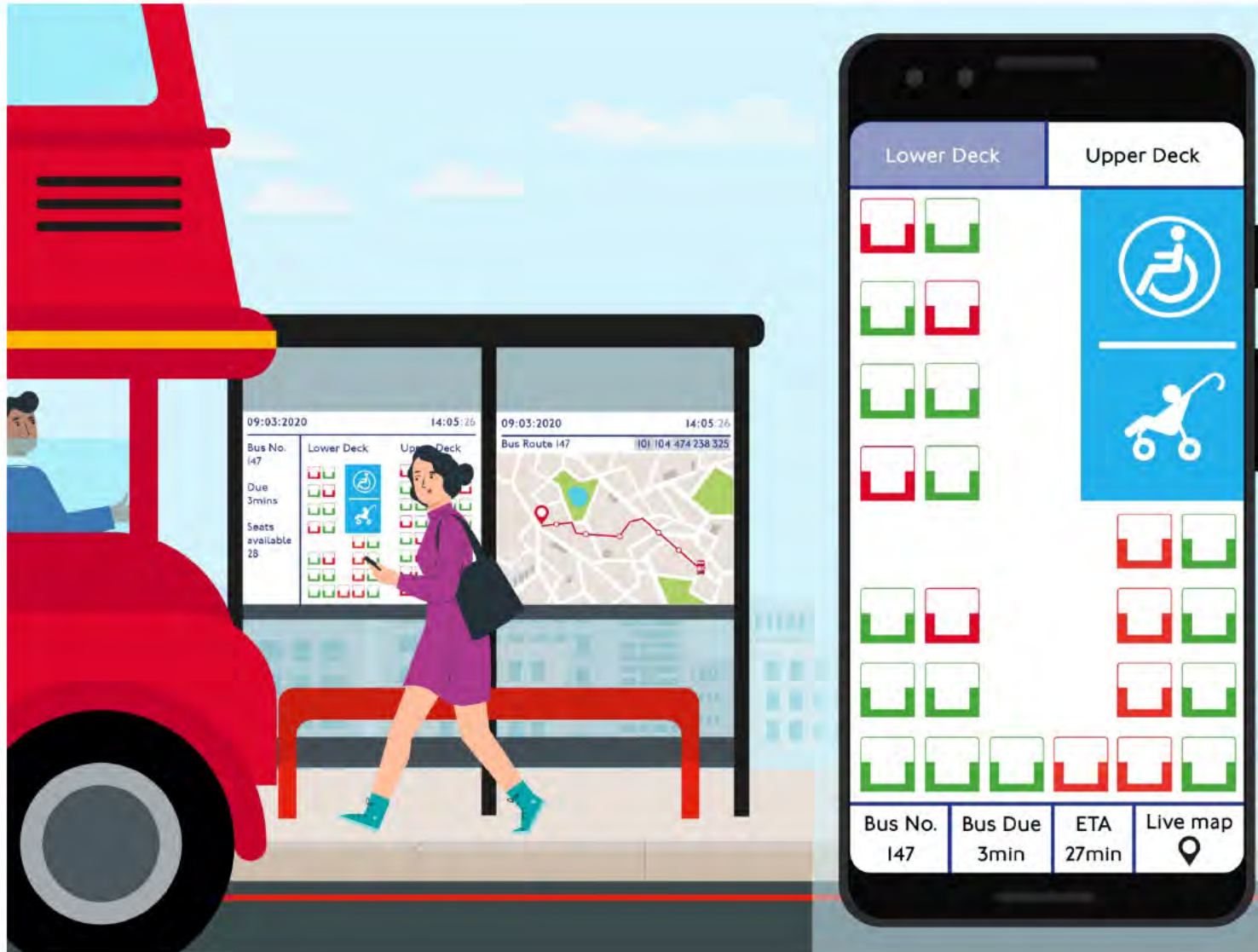
- Fewer stops
- Some passengers may need to walk a bit further to access the stop for the direct routes

Buses are a priority on the roads

- All bus lanes are 24 hours
- Priority for buses on roads at every junction
- Bus only roads

Concepts taken forward for validation focused on the elements not constrained by operations

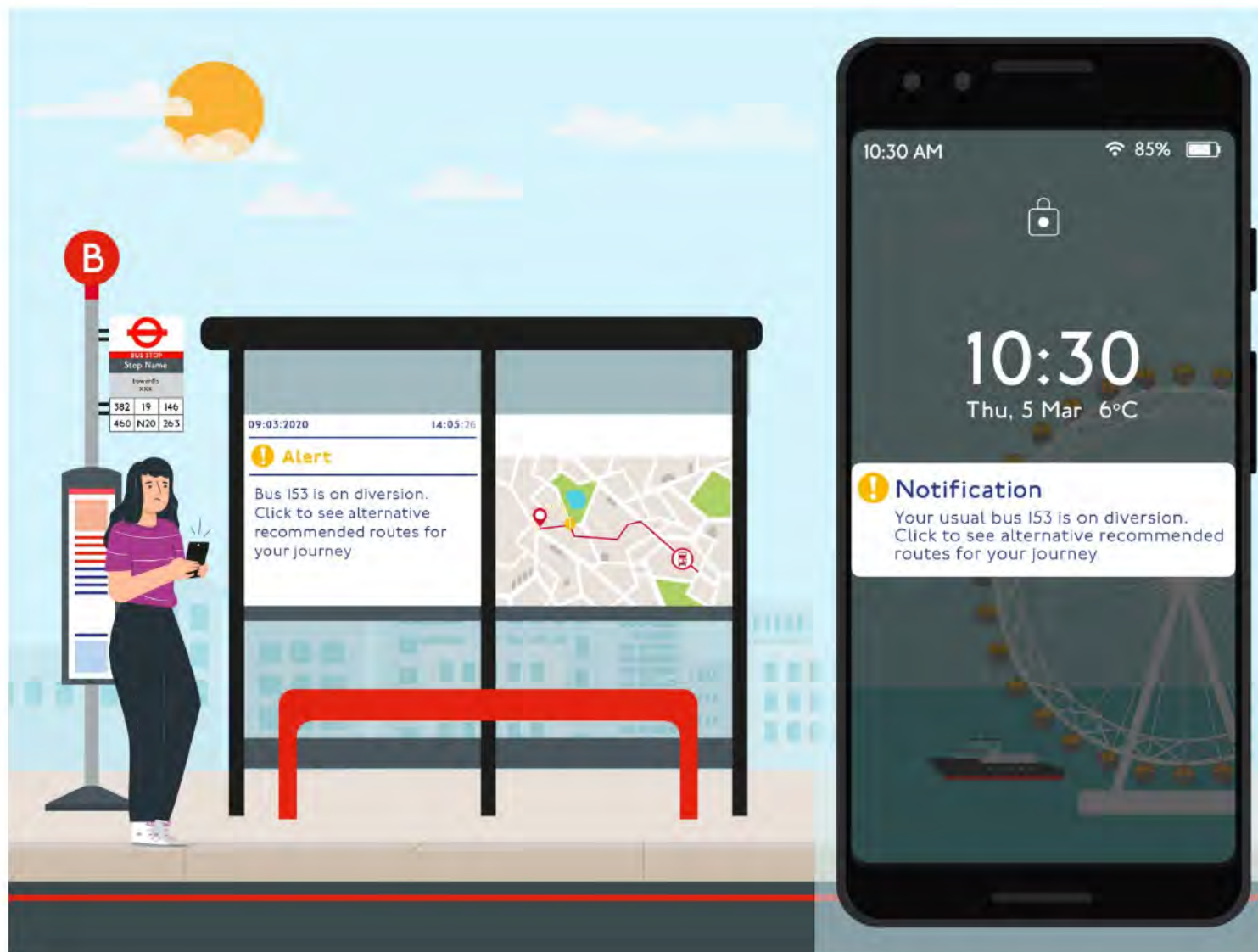
1 Routine information



Sometimes it's hard to know which bus you should be taking, or exactly when your regular bus will arrive and whether there'll be space to get on – it makes it hard to rely on the bus.

A brand-new information system will deliver accurate, live bus information, before and during your trip. You'll be able to track the live location of your bus on a map, how much space there is on board, and how long it'll take to get to your destination – via TfL's website, travel apps and new digital screens at the stop and on the bus.

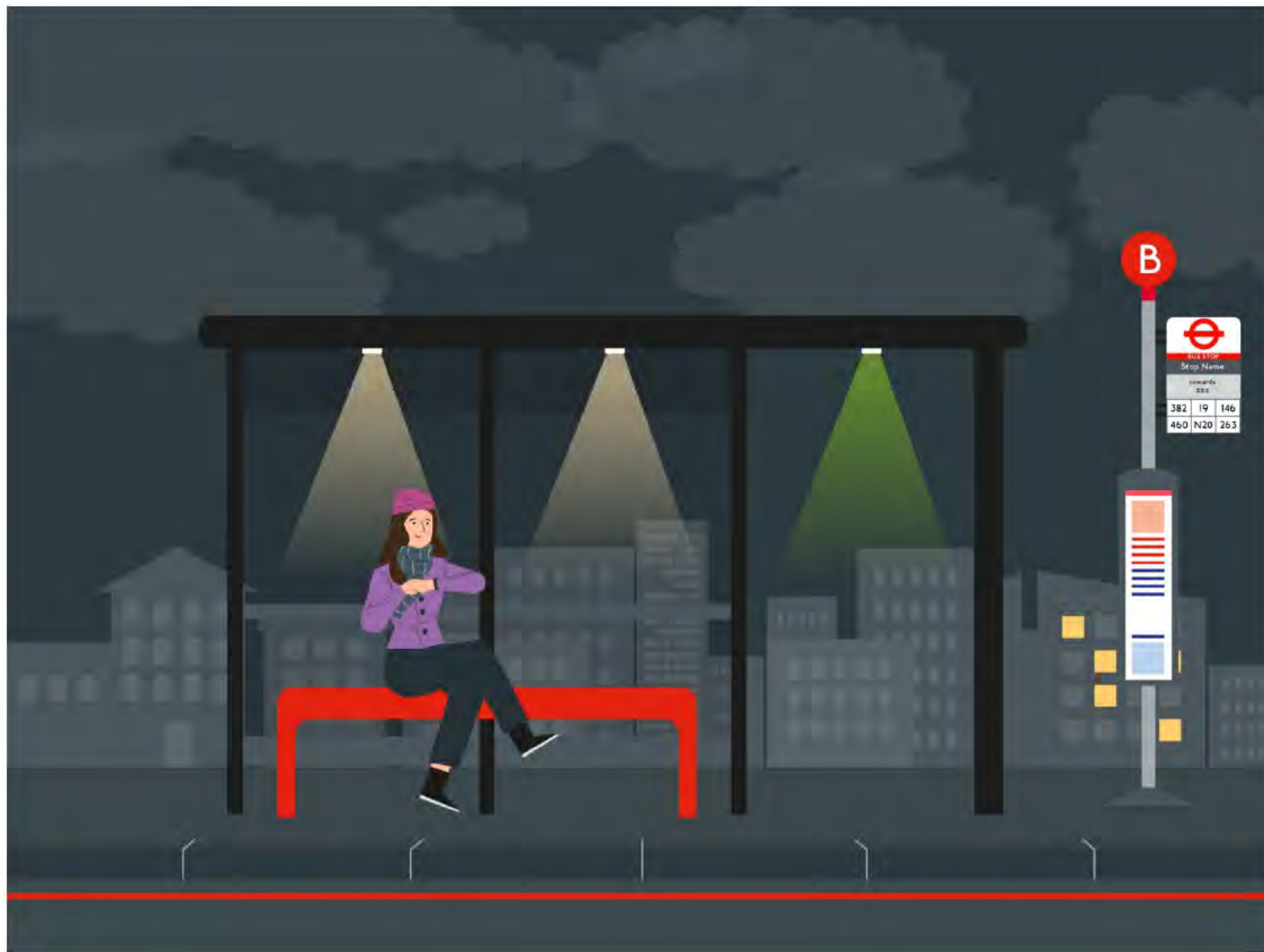
You can trust information about your bus, and make an informed decision about your journey.



It can be frustrating when your bus journey's delayed, and you don't know what's happening or the best way to continue your journey.

A brand-new information system will deliver accurate, live information when things go wrong, before and during your trip. You'll be able to see disruption and diversions on a map, including stops that are closed and expected impact on journey times – via TfL's website, travel apps and new digital screens at the stop and on the bus. Push notifications will proactively suggest alternative routes. Your driver will explain what's happened.

If disruption occurs, you'll know what to do about it and feel more in control of your journey.



Waiting for a bus isn't always pleasant, especially when it's dark and rainy and you're not sure whether the driver will see you.

There will be a shelter and seating at every bus stop. New lighting will highlight the stop and make sure the driver can see you're waiting.

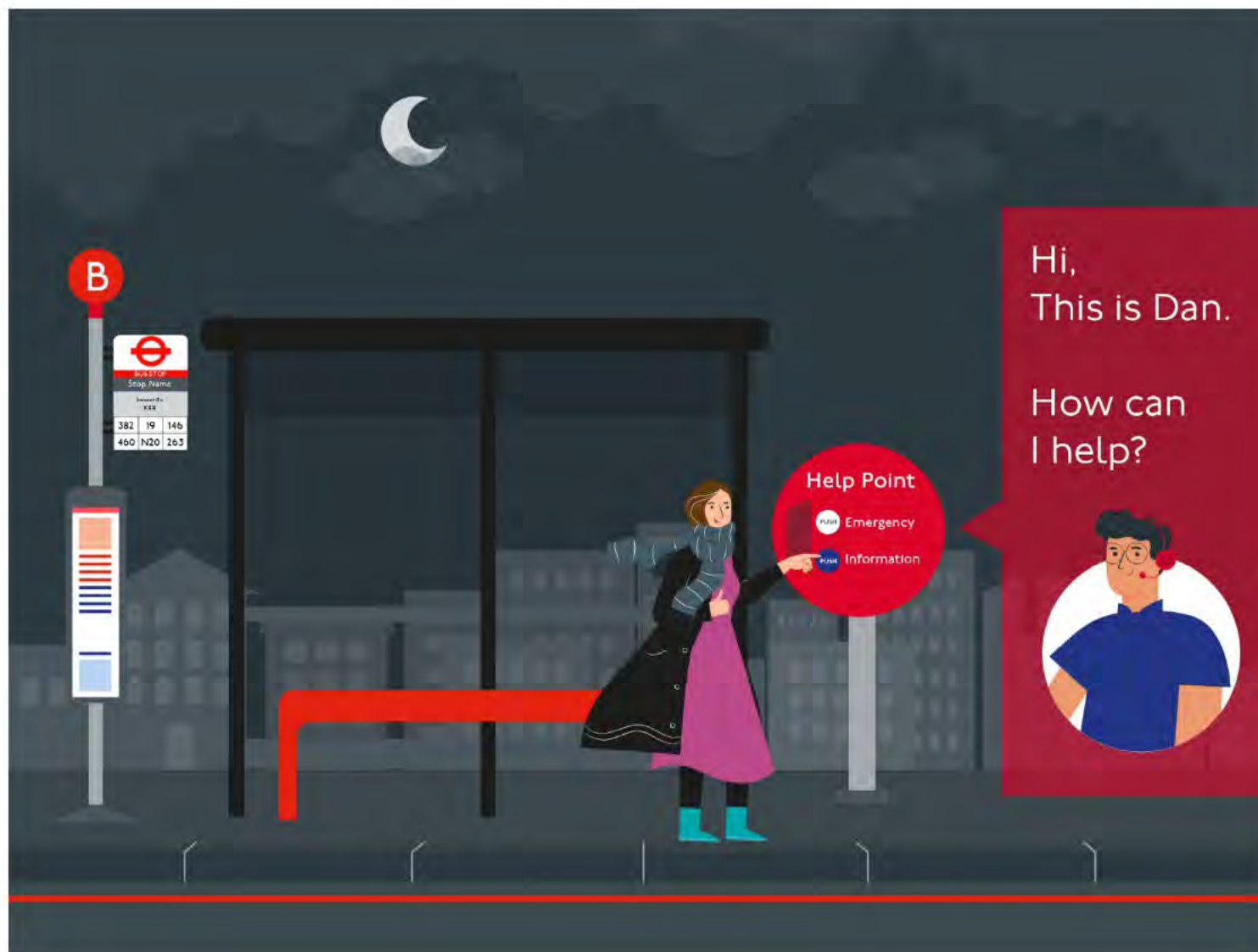
A brighter, more comfortable place to wait for the bus wherever you get on – and you can feel more confident the bus will stop for you.



The bus is not always the most comfortable place to be: it can feel too hot or cold, and sometimes it can be difficult to get on or off, or move around the bus.

A new bus layout will create more space in the bus, so passengers don't have to squeeze past each other to get on or off. Seats will be re-designed – with more leg room, more padding and more personal space. Improvements to air circulation will make it feel less stuffy, and temperature will be automatically regulated.

You'll enjoy a much more comfortable journey, whether you sit or stand.



There are elements of taking the bus that can make you feel uneasy or even unsafe – especially when travelling alone, at night or on an unfamiliar route.

A new communication process will enable you to report concerns more easily. Help points will be available at bus stops, and staff will offer greater assistance and support throughout your journey. Your feedback will be acknowledged and you'll receive a response when the issue is resolved.

You'll feel safe taking the bus, confident you'll be supported during your journey and confident that TfL will act on your feedback.



When you're out and about, sometimes you can feel worried that your phone battery or data might run out.

Once on the bus, brand-new USB charging points and on-board WiFi will allow you to stay connected, wherever you are.

You won't need to worry about your phone anymore; trust your bus to keep you connected.



Thank you

[Redacted] 2cv.com

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