The University of Birmingham and Future Flight Challenge: Future Flight Survey 2024

Conor Cotton, Kate Gosschalk, James Konn and Seb Grandon-White

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Executive summary

Current levels of awareness of the future flight technologies measured in this survey is mixed. While the vast majority of the UK public have heard of non-passenger carrying drones, far fewer have heard of advanced air mobility (eVTOLs) or electric/hydrogen regional air mobility.

Whilst overall there is a sense that the benefits of future flight technologies outweigh the drawbacks, the research highlights the nuances of this perception, with the public recognising a number of different pros and cons. The main perceived benefits relate to providing support to emergency services, access to isolated areas/communities, reducing fossil fuel usage and creating new jobs. The top cited drawbacks focus on cyber security, their impact on wildlife, safety concerns, congestion in the sky, privacy and that they may only be accessible to the most wealthy in society. A geographical split in terms of perceived uses of these technologies is apparent; for both drones and eVTOLs, respondents are generally more likely to perceive them to be beneficial in remote and rural areas compared to urban and suburban ones.

When it comes to the development of future flight technologies specifically, people view these as among the lowest priorities for investment in relation to other forms of sustainable transport, favouring on ground transport. Regional electric or hydrogen flight across UK or in rural/remote areas were seen as higher priority than electric flight in urban areas. The UK public also hold mixed views on the role of future flight technologies in tackling climate change. While a majority agree that in practice new technologies don't help to tackle climate change and that they mostly help make companies money, a majority also agree that new technological developments will be fundamental to tackling the climate crisis.

There is strong support for greater levels of government involvement in the technology and transport sectors, as well as on climate change. Large majorities support greater government involvement in the transport system, with most saying that the government should regulate private companies to ensure they take action on climate change, and that it is the role of the government to ensure that the benefits of new technologies benefit everyone. However, people generally report low levels of trust in both local and national government to accurately explain and mitigate the impacts of technology on society, as well as to ensure that future flight technologies are safe. Generally, there is greater trust in local government, however there is greater trust in national government for making decisions that would ensure future flight operations are rolled out in a way that best meets the interests of people living in the UK. These low levels of trust in government could be bypassed by an independent body (acting as a link between government, industry and the UK public which has the public's support).

When it comes to future adoption of future flight technologies, people anticipate non-passenger carrying drones becoming a widespread technology in the UK in ten years' time, though the proportions saying this about eVTOLs are somewhat lower. A majority do however say they would feel comfortable being a passenger in an eVTOL once introduced, though only after they had been operating for a number of years. While women are less comfortable with a variety of aspects of future flight technology development, the

finding that people would feel more comfortable riding in an eVTOL after they have been in use for a period of time holds regardless of gender.

Introduction

Background and objectives

The Future Flight Challenge Social Science was commissioned by the University of Birmingham and funded through the UK Research and Innovation (UKRI) Future Flight Challenge, delivered by Innovate UK and the Economic and Social Research Council (ESRC). This research series aims to gain an understanding of public hopes, concerns and expectations towards three specific types of future flight technologies. These are:

- **Drones:** Unpiloted, non-passenger carrying vehicles varying in size but could carry loads of 2-3 tonnes or be used to capture images and data for surveillance and inspection of infrastructure.
- **Advanced air mobility:** Electrical vertical take-off and landing vehicles (eVTOLs) that could provide short journeys for a number of passengers (currently expected to be up to 6 passengers but these numbers could increase in the future). These journeys may be up to 100-150 miles and can include short hops (e.g. 10-12 miles).
- **Electric or hydrogen regional air mobility:** Electric, hydrogen or hybrid aircraft providing short-medium range journeys between fixed locations for 10+ passengers.

A previous edition of this research was conducted in 2022, with the current survey being the first of two waves planned for 2024.

This wave of research analysed a range of different topics focused on the UK public's views on future flight technologies and related issues, including:

- Awareness of future flight technologies
- Perceptions of future flight technologies (including their potential benefits and drawbacks for different types of areas in the UK)
- Prioritisation of investment in future flight technologies compared to existing forms of transport (e.g. rail)
- Expectations for governance of future flight technologies (including the role of government versus the private sector in taking action in the sector)
- Future adoption of future flight technologies (including whether people perceive these technologies to be viable in the short-term, and how open they would be to using them once developed)

Sampling

Fieldwork for this survey was carried out from the 28th of March – 11th of April 2024, among a representative sample of 3,279 adults aged 18+ living in the UK. All respondents who took part in the survey were drawn from the YouGov panel of over 400,000 active panel members who live in the UK.

To ensure representativeness, quotas were set during fieldwork on age, gender, social grade, urban/rural status and region. A small boost was applied in Northern Ireland, to ensure a minimum sample of 100 was collected here. This was then weighted down to its natural population incidence at the data cleaning stage.

Survey design

The survey was designed by the team at the University of Birmingham, with YouGov researchers reviewing and refining the initial draft. The final survey was piloted to n=100 respondents to ensure that all questions were easy to understand and that the routing worked.

Interpretation of the research findings

Throughout the report, results are reported for each topic at the overall level, before differences across key demographic groups are noted. Differences between demographic groups are only reported when they are statistically significant at $p<0.05$. This helps to ensure that only 'true' differences in behaviour and attitudes are focused on in the report (i.e. they are less than 5% likely to be a result of chance).

Definitions

Analysis is included in this report by social grade, a socio-economic metric classification which groups people into four classifications based on "the occupation of the Chief Income Earner (CIE)" of their household[1]. This report compares those in social grades AB, C1, C2 and DE as classified by the National Readership Survey (NRS).

The way in which social grade is classified is listed below:

- AB: higher and intermediate managerial, administrative and professional occupations
- C1: supervisory, clerical, and junior managerial, administrative and professional occupations
- C2: skilled manual occupations
- DE: semi-skilled and unskilled manual occupations, unemployed and lowest grade occupations

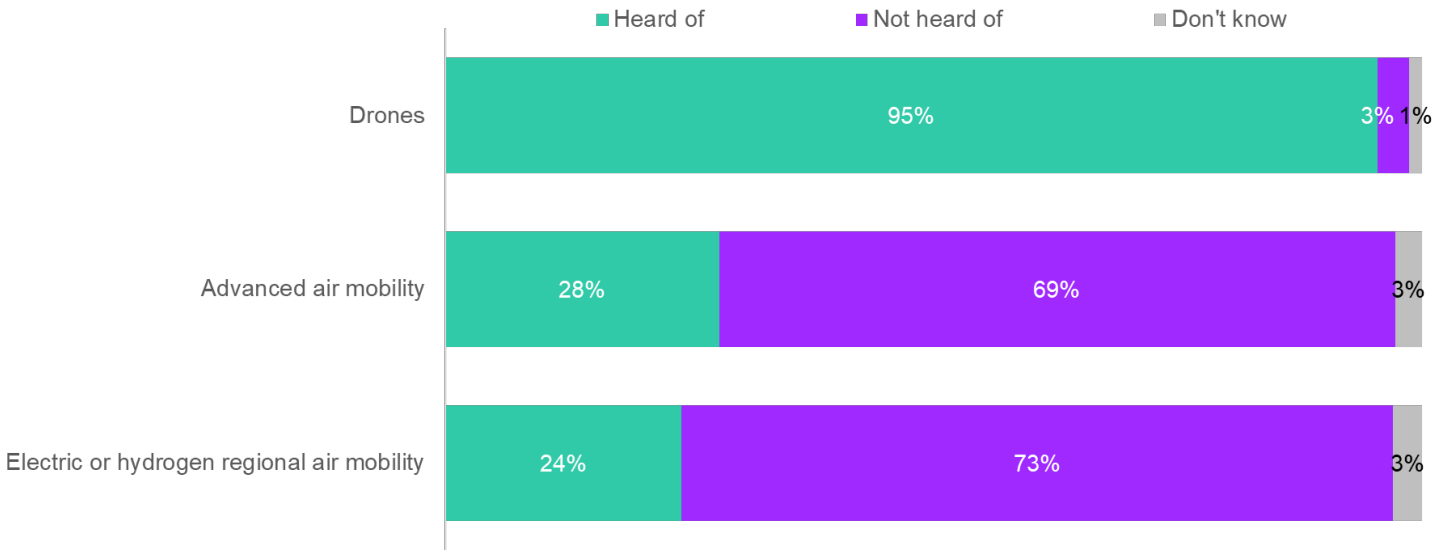
In the report, these are grouped into social grades ABC1 and C2DE.

[1] National Readership Survey: 'Social Grade' (link here)

Awareness of future flight technologies

Awareness of drones is high, with the vast majority (95%) of those living in the UK saying they have heard of them. This comes at a time when drones are reported on in mainstream media and used in multiple aspects of day-to-day life, including photography, surveillance, deliveries, farming and medicine.[2] Far fewer have heard of advanced air mobility (28%) or electric or hydrogen regional air mobility (24%) technologies, with the majority saying they have not previously heard of these (see Figure 1).

Figure 1. Awareness of future flight technologies



Q9. Firstly, for each of the following types of technologies, please tell us if you have heard of them or not heard of them before today:
Base: All (n=3,279)

Awareness of drones is high across the board, at around nine in ten for each of the different demographic subgroups. For example, it is broadly similar by gender (96% of men and 95% of women), age (92% of 18-34s, 96% of 35-54s and 97% of those aged 55+) and social grade (97% of ABC1s and 93% of C2DEs). There are also no differences in awareness based on whether someone lives in an urban or rural area (95% urban, 97% suburban and 98% rural).

When looking at the other future flight technologies that were asked about, there is a clear gender divide with men more likely to say they have heard of them than women: advanced air mobility (41% men vs. 16% of women) and electric or hydrogen regional air mobility (35% vs. 14%). There are no stark differences in awareness by age, social grade nor whether someone lives in an urban or rural area.

[2] BBC News: Drones: available here

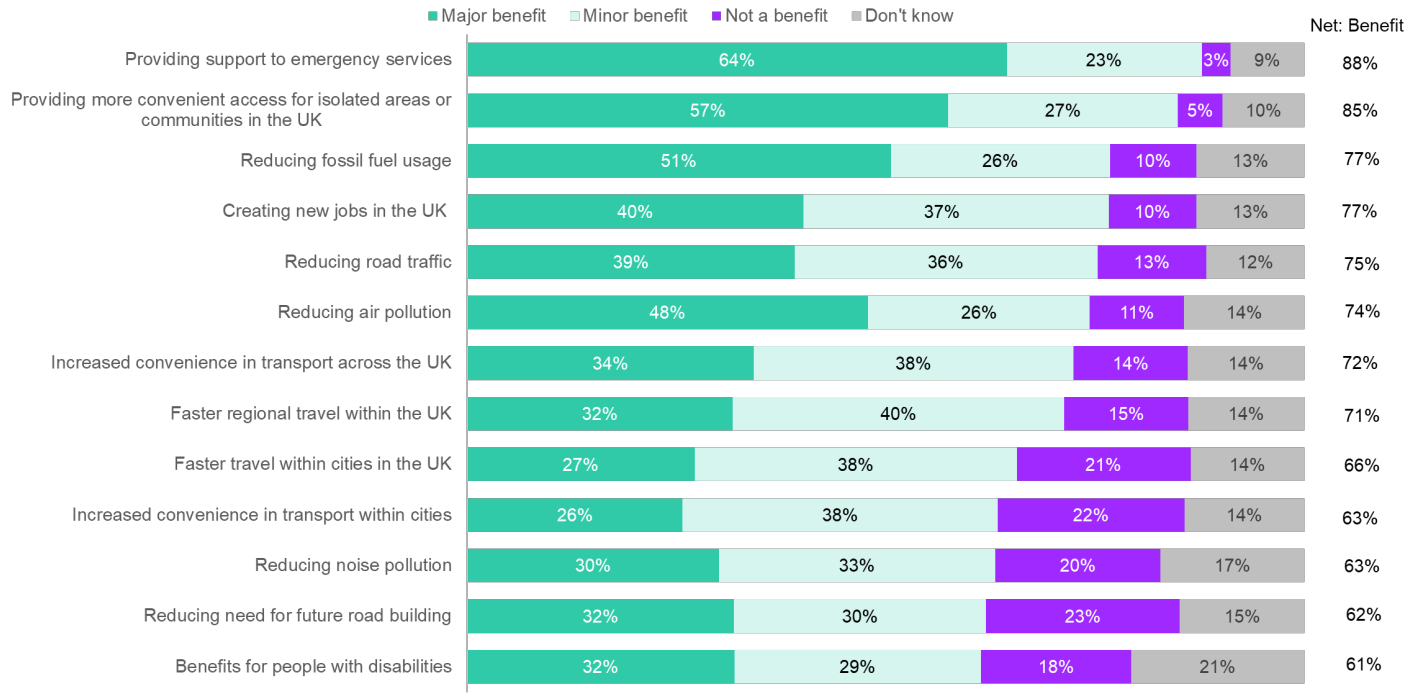
Perceptions of future flight technologies

Whilst overall there is a sense that the benefits of future flight technologies outweigh the drawbacks, the research highlights the nuances of this perception, with the public recognising a number of different pros and cons. In particular, there is a view that drones and eVTOLs could benefit emergency services and serve those living in remote/isolated communities, however there are concerns about cyber security, the environment and safety.

Benefits of future flight technologies

The research shows that the public see a number of different benefits to drones and eVTOLs, which are especially seen as beneficial for providing support to emergency services and access to isolated areas/communities (88% and 85% respectively see these as areas which will benefit – see Figure 2). There is also a sense that these technologies will create new jobs in the UK, with three in four (77%) recognising the benefits for employment. Fewer think that these technologies will have a beneficial impact on reducing noise pollution (63%) and reducing the need for future road building (62%), though these views are still held by the majority. A similar proportion (61%) say that drones and eVTOLs will bring benefits to people with disabilities, a view which is held among both those with and without a disability.

Figure 2. Benefits of future flight technologies



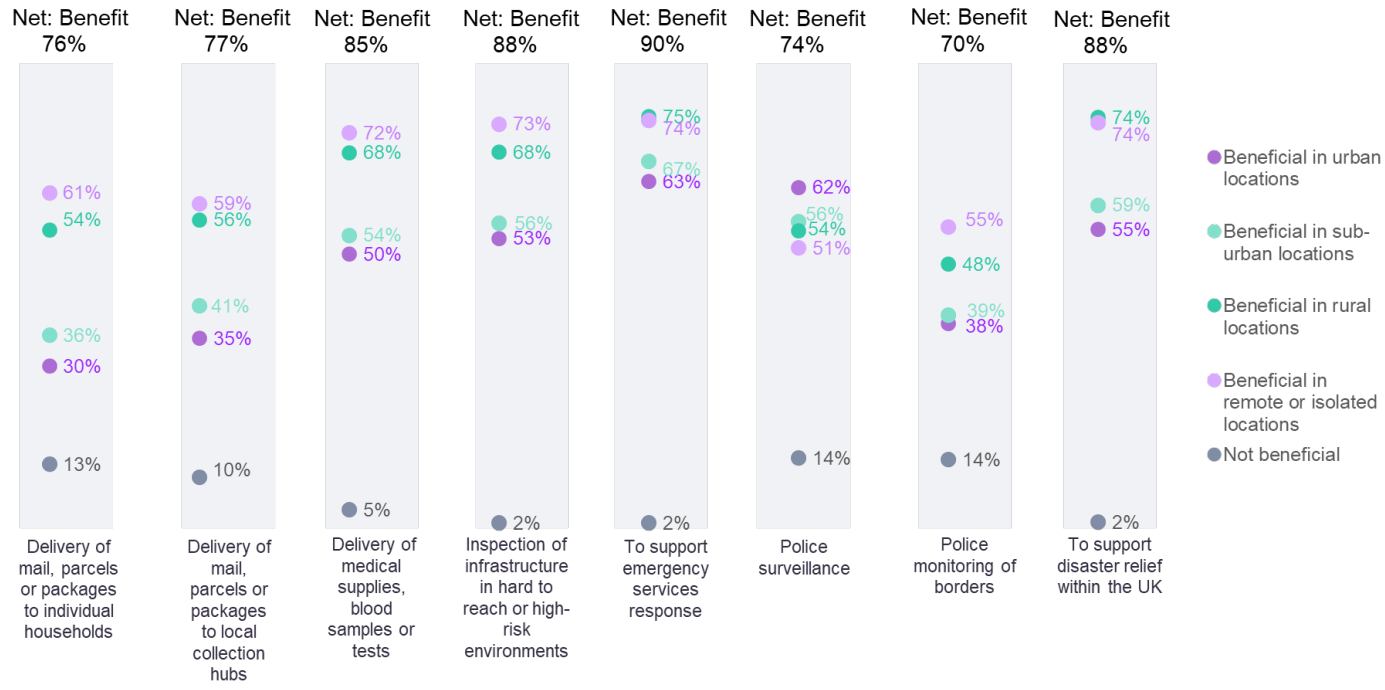
Q9. A number of potential benefits of drones and eVTOLS have been suggested. For each of the potential benefits listed below, please tell us whether you think it will be a major benefit, minor benefit or not a benefit of drones and eVTOLS.
Base: All (n=3,279)

Those in higher social grades are slightly more likely to say that drones and eVTOLs would benefit almost all of the areas listed (than those in lower social grades). However, the differences are marginal at around 5 to 10 percentage points. There are not notable differences by age or whether someone lives in an urban or rural area.

Perceptions of drone use regionally

There is a general sense that non-passenger carrying drones would be more beneficial in some locations than others, with use cases in lower population density remote or rural locations more likely to be viewed as beneficial (see Figure 3). This is the case for a range of different uses from delivering to households to police surveillance and disaster relief.

Figure 3. Benefits of drone use regionally



Q2a. For each use listed, please indicate whether you think non-passenger carrying drones would be beneficial or not beneficial within different types of community in the UK. Please select all communities, if any, where you think this technology would be beneficial.

Base: All (n=3,279)

Following earlier findings, drones are seen as most beneficial when supporting emergency services response, such as search and rescue, fire services and motorway accidents. This is particularly the case in remote (74%) and rural (75%) locations, though the majority also see this as beneficial in sub-urban (67%) and urban (63%) locations. Drone use delivery of medical supplies is seen as beneficial in the UK by almost all (85%). Whilst this is seen as most beneficial in remote/isolated (72%) and rural (68%) locations, half see this as beneficial in urban (50%) and sub-urban (54%) locations. This pattern is seen for the majority of the uses of drones listed, with people being more likely to see them as beneficial in rural/remote areas than in urban/sub-urban ones.

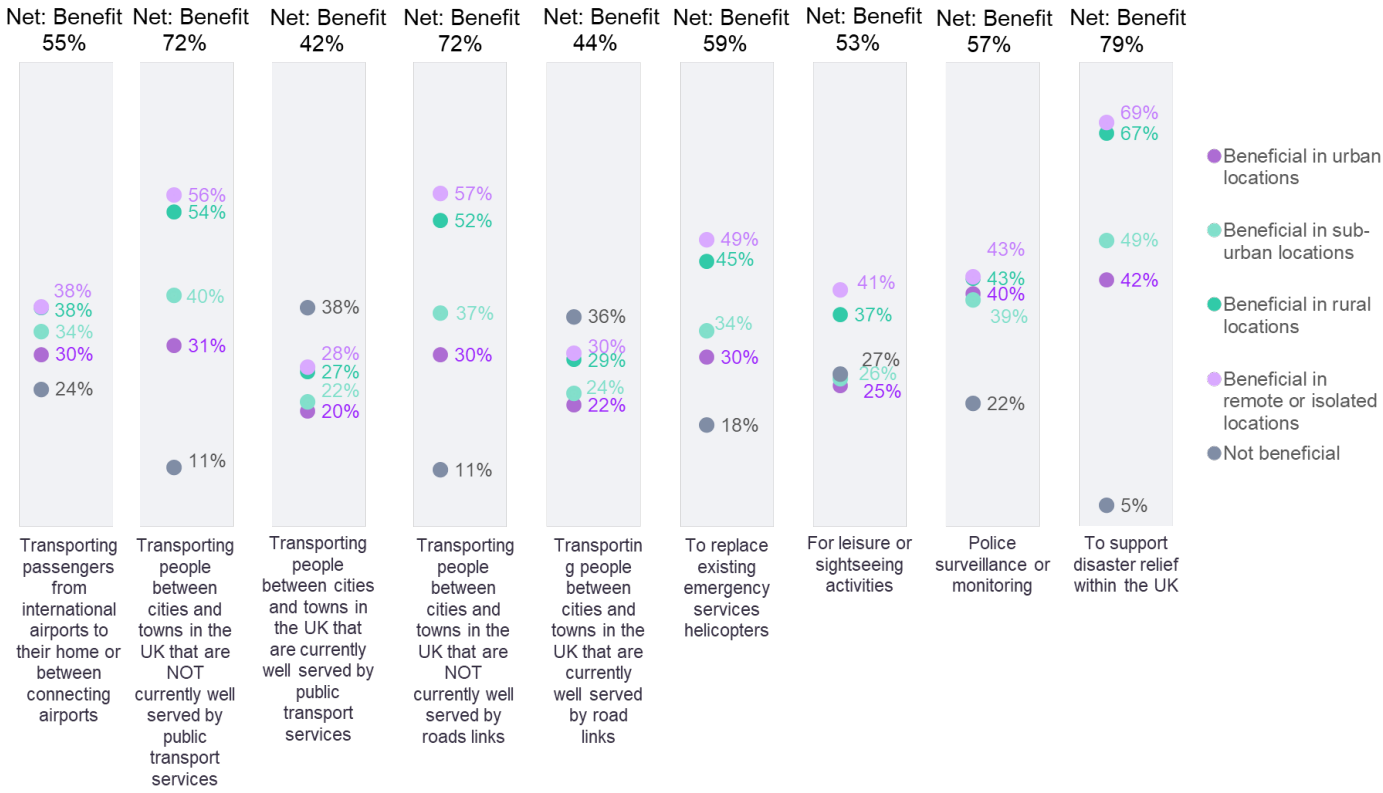
When thinking about home deliveries, drones are seen as most useful to those living in remote/isolated (61%) or rural (54%) locations. However, far fewer see them as useful in sub-urban (36%) and urban (30%) locations. Those in younger age groups are more likely to see drone deliveries as useful in urban and sub-urban areas (39% and 41%), higher than for those aged 55+ (21% and 31% respectively). Similar findings are seen when thinking about drone deliveries to local collection hubs.

Drone use for police surveillance is seen as beneficial in all of the locations listed, though it is particularly seen as beneficial in urban locations (62% vs. 54% in rural areas). This is the only use of drones listed that people see as more useful in urban locations than in rural/remote ones. It is notable that those who are living in rural or suburban locations are more likely to say police drones would be beneficial in urban locations than those who are themselves living in urban locations (70% rural and 69% suburban vs. 60% urban).

Perceptions of eVTOL use regionally

When thinking about eVTOL use, many of the same regional patterns emerge. EVTOLs are most likely to be seen as beneficial for disaster relief, which is higher when thinking about remote (69%) and rural (67%) locations than in sub-urban (49%) and urban (42%) locations (see Figure 4).

Figure 4. Benefits of eVOTLs use regionally



Q3b. For each use listed, please indicate whether you think eVTOLs would be beneficial or not beneficial within different types of community in the UK. Please select all communities, if any, where you think this technology would be useful.

Base: All (n=3,279)

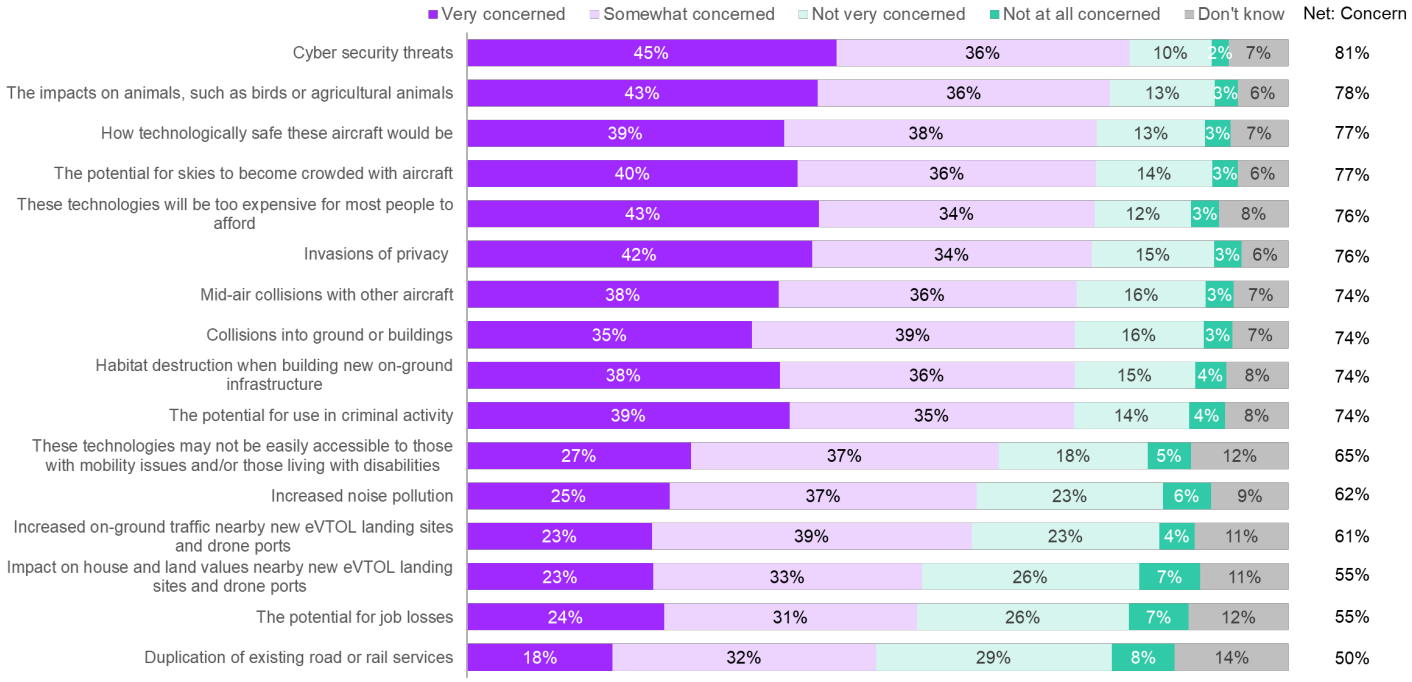
EVTOLs are more likely to be seen as beneficial in remote (57%) or rural (52%) locations when thinking about transporting people between cities and towns in the UK that are not well served by road links (compared to 30% for urban areas). Very similar findings emerge when thinking about areas that are not well served by public transport (56% remote and 54% rural vs. 31% urban).

When thinking about transport connections within the UK between or to international airports, fewer see eVTOLs as useful. In urban locations, three in ten (30%) see these as useful, rising to 38% of those in remote or rural locations. EVTOLs are least likely to be seen as beneficial in areas that are currently well served by public transport services or roads.

Drawbacks of future flight technologies

The survey also prompted respondents to think about the drawbacks of drones and eVTOLs. It is worth noting that whilst majorities see a number of benefits (as outlined above), similar proportions also cite a number of concerns. The concerns span a range of areas, from cyber security to the environment and safety.

Figure 5. Drawbacks of future flight technologies



Q8. A number of potential drawbacks of drones and eVTOLs have been suggested. For each of the potential drawbacks listed below, please tell us how concerned or unconcerned you are about it in relation to the development of drones and eVTOLs.

Base: All (n=3,279)

For example, four in five (81%) say that they are concerned about cyber security threats (e.g. hackers attacking vehicle operating systems) with similar proportions saying they are concerned about the impacts on animals (such as birds or agricultural animals) (78%), the technological safety of these aircrafts and the

potential for crowded skies (both 77% - see Figure 5). Three in four (76%) say they are concerned that these technologies will be too expensive for most people to afford, with 43% who say they are 'very concerned' about this. This view is broadly consistent among those in higher and lower social grades. Fewer are concerned about the potential for job losses, though concern is reported by over half (55%).

It is worth noting that concerns are shared among both those who have heard of drones and eVTOLs and those who have not, suggesting that prior awareness does not have an impact on perceptions. Those in older age groups are more likely than those in younger ones to report concerns in a number of different areas, including cyber security threats (87% of 55+ vs. 73% of 18-34), mid-air collisions (82% vs. 64%) and collisions into the ground or buildings (80% vs. 66%). There are also some differences by gender, with women more likely to be concerned about some of the potential drawbacks of drone and eVTOL use than men. This is particularly the case when thinking about the environment: impacts on animals (85% of women vs. 72% of men) and habitat destruction (81% of women vs. 66% of men) or accessibility for those with mobility issues/living with disabilities (71% of women vs. 56% of men).

Overall perceptions of future flight technologies

When considering both the benefits and drawbacks of these new technologies (drones and eVTOLs), the majority say that the potential benefits outweigh the potential drawbacks (58%). Yet still two in five (42%) say the opposite (the drawbacks outweigh the benefits). This suggests views are relatively split on perception of future flight use.

Groups who are more likely to feel that the potential drawbacks outweigh the potential benefits include women (48% vs. 35% of men), those in Wales (49%), those in lower social grades (48% of C2DEs vs. 36% of ABC1s) and those with a disability or long-term health condition (46% vs. 40% who do not have one). There are no notable differences in perceptions by age or location (urban/sub-urban/rural).

Perceptions of recording flight data

In the survey, respondents are told that drones and eVTOLs would need to record flight data during flight (e.g. for navigation). Views are split on concern over this with around two in five saying they are concerned (43%) and a similar proportion saying they are unconcerned (41%). A further 16% say they don't know. Concern is slightly higher among those aged 55+ (47%), in comparison to those aged 35-54 (42%) and 18-34 (39%). There is no difference by gender (men: 42% vs. women: 44%) or political affiliation (left: 42%, centre: 48%, right: 43% and those who don't know where they sit politically: 40%).

Those concerned about invasions of privacy (e.g. from low-flying air vehicles, in-air video-recording) are more likely to say they are concerned about drones and eVTOLs recording flight data (50% vs. 25% who are not concerned).

Perceptions of the impact of technology on society are very mixed. People are split when it comes to whether they think new technology benefits them in practice, while a strong majority agree that new technologies mostly improve the lives of those who are better off. However, people are much more upbeat on the potential for new technologies to benefit future generations. When it comes to development of future flight technologies specifically though, people view these as among the lowest priorities for investment, favouring advancement of existing transport formats.

A similarly mixed picture is seen when it comes to technology and climate change; while a majority agree that in practice new technologies don't help to tackle climate change and that they mostly help make companies money, a majority also agree that new technological developments will be fundamental to tackling the climate crisis.

Future flight technologies and society

Transport development and investment

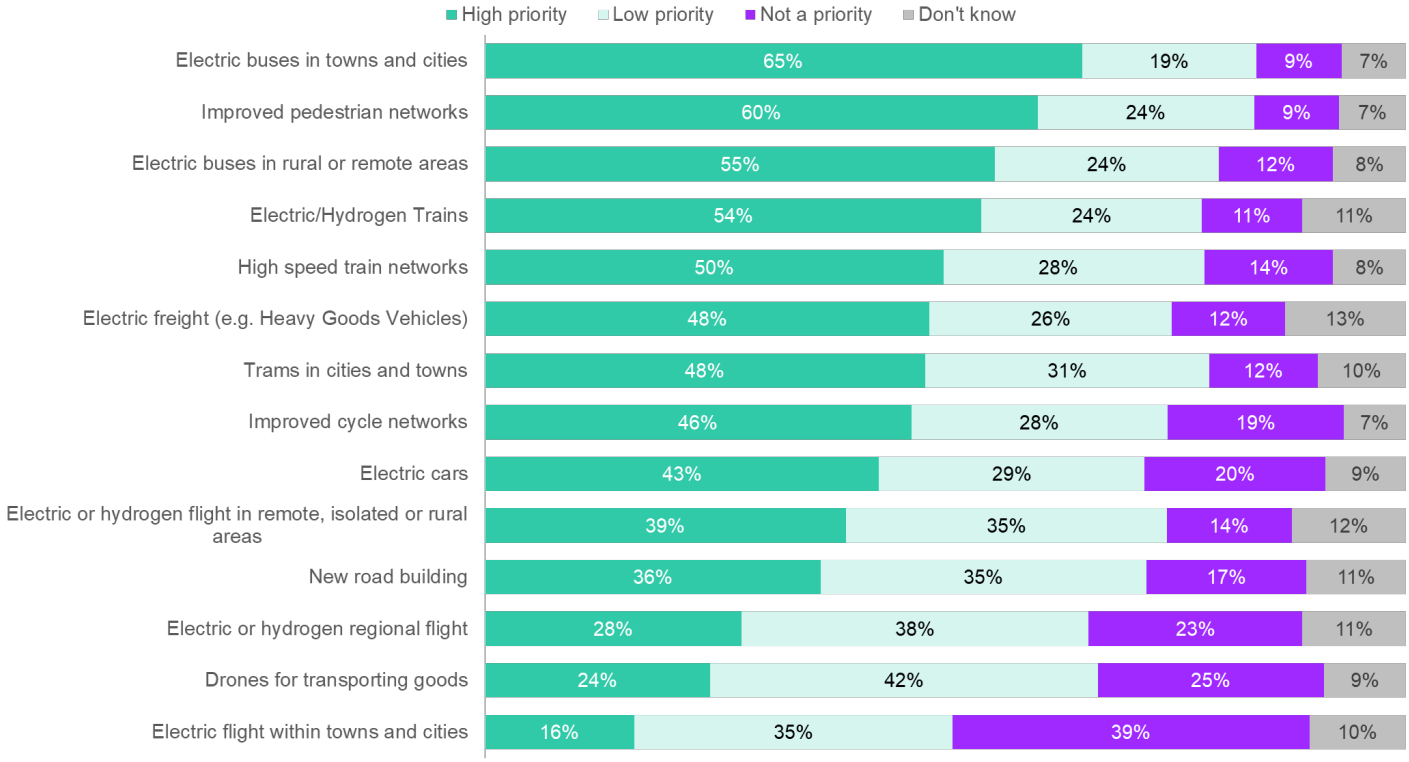
Future flight technologies are seen to be among the lowest priorities for UK transport investment in the next 10 years. As Figure 6 shows, the four types of future flight technologies ranked within the bottom five out of 14 different types of transport investment in terms of the proportions saying they are high priority in the next 10 years, and all also rank highly in terms of the proportion saying they are not a priority.

The top performer here is investment in electric or hydrogen regional flight in remote, isolated or rural areas, mirroring findings discussed earlier in the report, though still less than half (39%) say this is high priority in the short-term. When looking at levels of prioritisation of different types of transport infrastructure as a whole, it is clear that investment in what are currently perceived to be more environmentally friendly forms of existing public transport options, specifically electric buses, pedestrian networks, and electric/hydrogen trains, are prioritised by the UK public.

Although future flight technologies rank towards the bottom of the list in terms of the proportions saying they are a high priority across all groups, there are some demographic differences in terms of the proportions who do say this. Men are more likely than women to say that electric or hydrogen regional flight is a high priority (32% vs. 22% of women), while the same divide is seen for drones (29% vs. 21%) and electric flight within towns and cities (19% vs. 13%). There is evidence that divisions by age are centred on where people are more likely to live. Those aged 18-34 are the most likely age group to say that electric or hydrogen regional flight between regions, towns and cities is high priority (35% vs. 23% of those aged 55+), as well as electric flight within towns and cities (22% vs. 12% of those aged 55+), though the opposite trend is seen for future flight technologies in rural areas; 44% of those aged 55+ say this is a high priority for them, compared to 36% of those aged 18-34. Those in ABC1 social grade and those from an ethnic minority background are also consistently more likely to prioritise investment in flight technologies than

C2DEs or white respondents, though this is also the case for other types of transport development, indicating that support for investment across the board is mostly what is driving this.

Figure 6. Priorities for transport development and investment in the UK in next 10 years



Q10. Now thinking about transport within the UK, for each of the following types of transport development and investment, please tell us whether you think it should be a high priority, low priority or not a priority over the next 10 years.

Base: All (n=3,279)

There are also differences in investment prioritisation by self-described political orientation. While there are some exceptions among certain types of transport, when it comes to non-future flight types of transport infrastructure, those who self-describe as left wing are most supportive of increased investment, followed by those in the centre, while those on the right and those who say they don't know are least supportive of increasing investment. However, when looking at the four types of future flight technologies listed, patterns by political affiliation are much less clear. For example, while 30% of those on the left and 31% of those in the centre say that electric or hydrogen regional flight is a high priority for them, there is only a marginal gap to those on the right (26%) or who don't know (25%) who say this. Similarly small divides by political affiliation are seen for the other two types of flight technologies mentioned. When it comes to drones for transporting goods, the pattern is flipped, with those on the left and who don't know (both 21%) less likely to say this is a high priority than those on the right (28%) or in the centre (30%).

Overall, these findings were reflected when respondents were asked to weigh up whether investment in new transport technologies (e.g. eVTOLs) is more or less important than investment in existing transport infrastructure (e.g. rail and road) as a whole. The most common response here is that both are equally important (48%), with 43% saying that investment in existing infrastructure is more important, and just 9% saying new transport technologies. It is clear that while the UK public generally supports efforts to transform all aspects of the transport system, when it comes to making choices over which to prioritise, decarbonised modes of more familiar existing forms of transport perform much more strongly.

Future flight technologies and climate change

Overall perceptions and importance of future flight technologies in tackling climate change

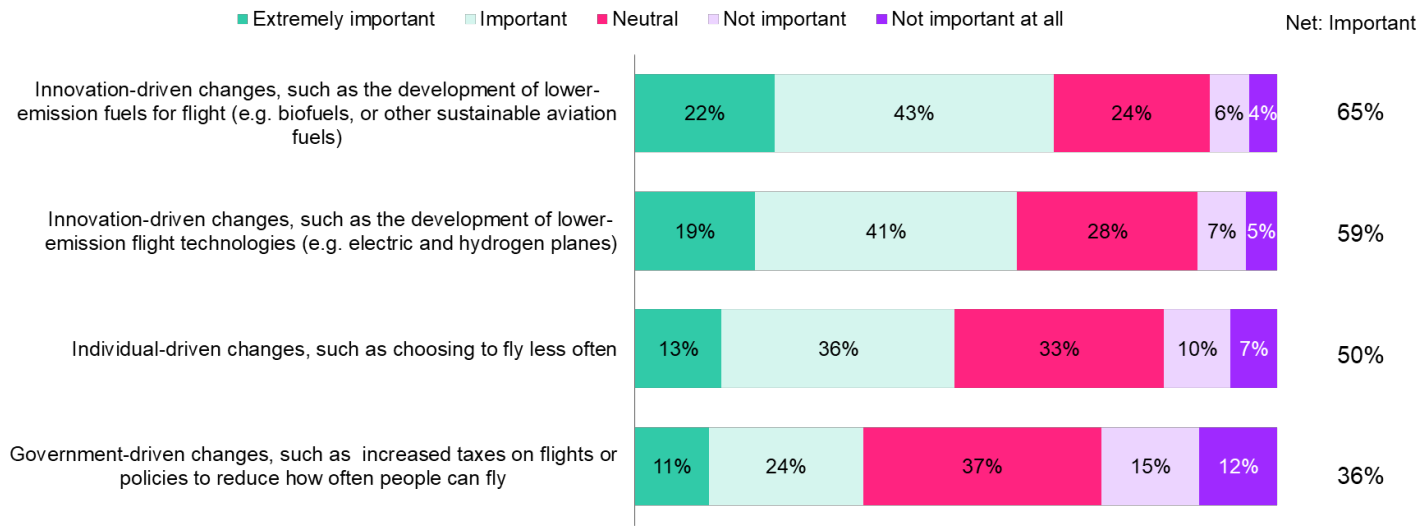
At an overall level there is scepticism concerning the level of impact that technological innovation can bring to limiting climate change, with a majority (56%) agreeing that in practice, technology and innovation doesn't help tackle climate change, instead agreeing that they mostly help companies make money. This perception is particularly evident among women (59% vs. 54% of men) and those with a disability or long-term health condition (60% vs. 54% without one). However, views on this are complex, with a similar majority of respondents also agreeing that new technological developments will be fundamental to tackle the climate crisis (58%).

Technological innovation in the aviation industry is also seen as important to help tackle climate change in the future. Around three in five (59%) respondents believe that innovation involving lower-emission flight technologies is important to tackle climate change, rising to two thirds (65%) when respondents were asked about the importance of lower-emission fuels (see Figure 7). Groups from higher social grades are much more likely than lower social grades to feel that technological changes to future flight is important, both in terms of innovative changes to develop low emission fuels (71% of ABC1s vs. 59% of C2DEs) and for lower emission flight technologies for future flights (66% of ABC1s vs. 33% of C2DEs). There is also evidence of a generational divide, with older age groups (55+) being more likely than younger age groups (18-34) to support innovative changes in fuel (72% vs. 62%).

Fewer think that government-driven changes, such as increased taxes on flights or policies to reduce how much people fly, are important to tackle climate change. Around one in three (36%) think government-driven change is important, a similar percentage to the proportion that have a neutral opinion (37%).

A clear pattern is evident based on the frequency at which an individual flies (either domestic or internationally). Those who fly monthly or more are less likely to say that development of lower emission flight technologies are important for tackling climate change (42%, compared to 64% of those who fly less often and 55% who never fly), the same is true for development of lower-emission fuels (43%, compared to 69% who fly less often and 64% who never fly). The same pattern is seen in terms of the proportion who

Figure 7. Importance of actions to change the way we fly in tackling climate change



Q33. For each of the below statements about changes in the way we fly, please tell us to what extent they are important or unimportant to tackling issues around climate change.

Base: All (n=3,279)

say individual-driven changes, such as flying less often, are important (39% of those who fly monthly or more, compared to 48% who do so less often and 57% who never fly), while those flying monthly or more are also less likely to see government-driven change as important vs. those who never fly (32% monthly or more, 34% less often, 40% never). This data indicates that there is a general belief among frequent-flyers that changes to the way we fly are generally not an important element in tackling climate change.

A divide is also seen by political orientation. Those who self-describe as left-wing are substantially more likely to perceive all four changes listed as important for tackling climate change. While there are some small differences depending on the specific type of change, those who self-describe as right-wing or centre, or who don't know, perceive these changes to be important at roughly similar levels. For example, 73% of those on the left say that development of lower-emission future flight technologies are important, compared to 54% on the right, 53% in the centre and 45% who don't know. Three in five (60%) of those on the left say that individual-driven changes are important (47% centre, 43% right, 41% don't know), while 50% say government-driven changes are important (28% centre, 27% don't know, 24% right).

Unsurprisingly, there is also a substantial gap between those who agree vs. disagree that climate change is the biggest threat to civilisation, with those who agree more likely to say that each of these changes to the way we fly are important to tackling climate change. For example, this group is twice as likely to say that individual-driven changes are important (61% vs. 34%), while they are 23-points more likely to say that development of future flight technologies are important.

Support for different measures proposed to tackle climate change

The survey also prompted respondents on whether they agree about various measures that could help reduce the impact of climate change. A common theme emerges that more respondents agree with

measures that wholly or partly involve technological solutions to help tackle climate change. This is particularly evident in that 86% agreed that the government should invest in better public transport systems, whilst around six in ten (59%) agree that they would support legislation that replaces freight vehicles with electric ones.

Support for technological solutions contrasts with other possible options that help tackle climate change in future flights, such as by limiting travel habits on a societal scale. Three in ten (32%) agree that as a society we should be *travelling* less, and half (50%) agree that we should be *flying* less, suggesting that the public are more receptive to technological solutions than personal behavioural changes to mitigate the impact of climate change.

Consistent with the previous section, those in higher social grades are much more likely than those in lower social grades to agree that they would support legislation that replaces freight vehicles with electric ones (66% of ABC1s vs. 51% of C2DEs) and that the government should invest in better public transport systems (89% of ABC1s vs. 83% of C2DEs). Although there are few notable differences between those living in urban and rural locations, those aged 55+ are slightly more likely than younger age groups (18-34 year olds) to agree that the government should invest in better public transport systems (89% vs. 81%).

Governance of future flight technologies

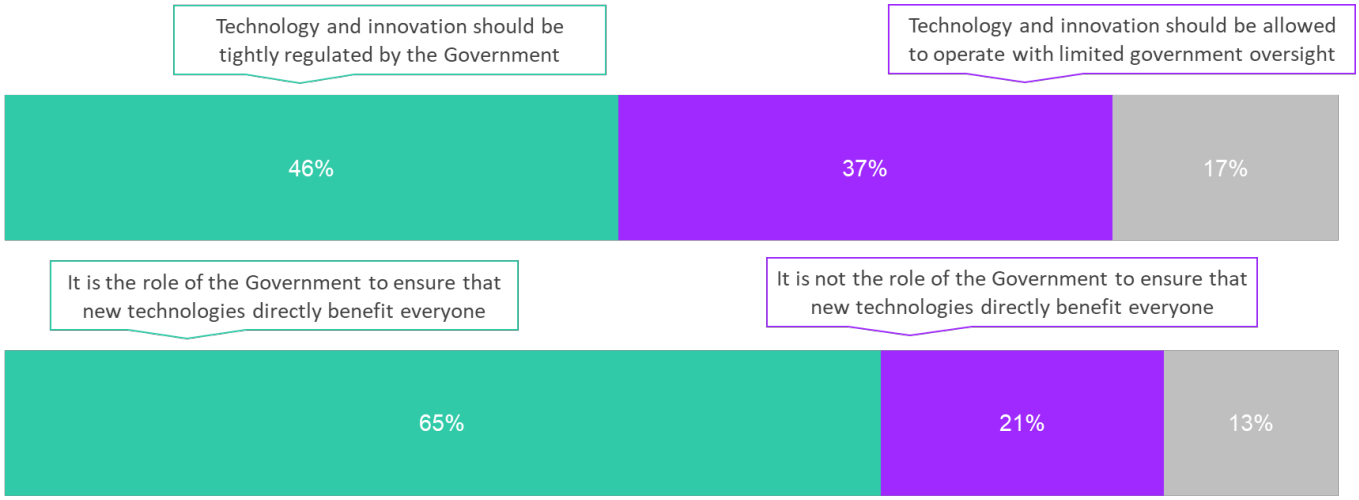
There is strong support for greater levels of government involvement in the technology and transport sectors, as well as on climate change. However, people generally report low levels of trust in both local and national government to accurately explain the impacts of technology on society, as well as to ensure that future flight technologies are safe.

The role of government in technology, transport and climate action

Respondents were presented with five questions relating to technology regulation, transport systems and climate action, each with a contrasting statement advocating for greater or lesser government involvement and asked which came closer to their point of view.

When it comes to technology, 46% agree that technology and innovation should be tightly regulated by the government, compared with 37% who believe that technology and innovation should be allowed to operate with limited government oversight, and 17% who say they don't know. An even greater gap is seen when it comes to the role of government in ensuring that new technologies directly benefit everyone; 65% say that this is the role of government, compared with 21% who say it is not (see Figure 8).

Figure 8. Government and technology



Q16a, Q16b. On balance, which of these statements comes closest to your point of view?

Base: All (n=3,279)

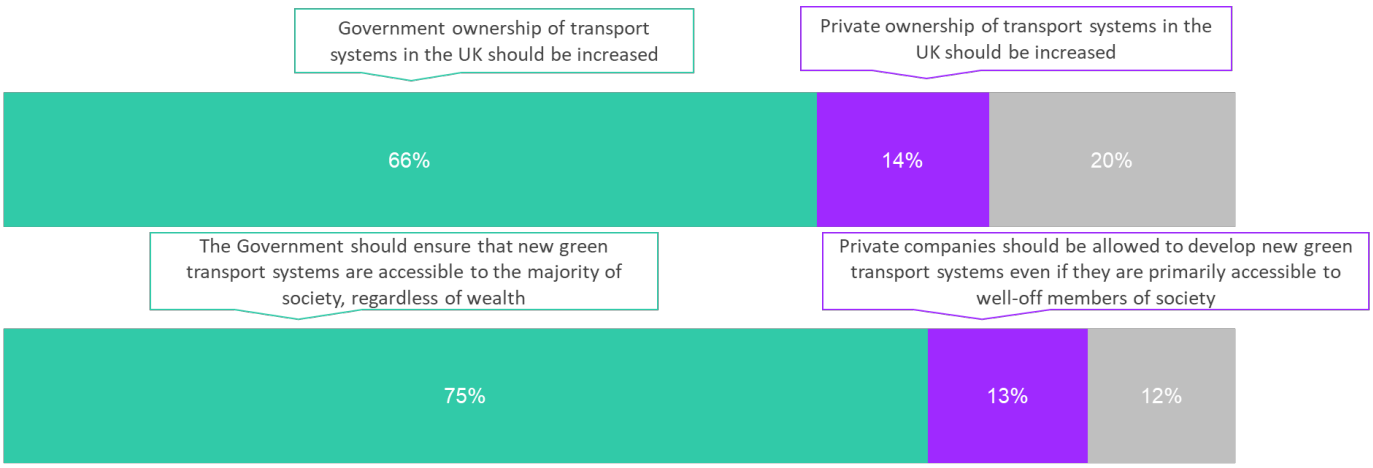
Note: Grey denotes 'don't know'

Women are more likely than men to support government intervention in these ways. For example, half (51%) of women say that technology and innovation should be tightly regulated by the government, while only 30% believe technology and innovation should operate with limited government oversight. A smaller divide is seen by age; those aged 55+ are 8 percentage points more likely to support government intervention in both situations mentioned when compared to those aged 18-34, though this difference is

mostly due to younger people being more likely to respond that they don't know. Even those who say they lean right politically support government intervention to ensure that new technologies benefit everyone (53% vs. 37% who are opposed to this).[3] This is greater amongst those who say they are centrist (66%), and even more so for those who say they lean left politically (77%). Those that are unsure of their political leaning are the next most likely to state it is the role of the government to ensure that new technologies directly benefit everyone (56%), comparable to those who say they lean right (53%).

Even greater majorities support the role of government when it comes to transport (see Figure 9). Two-thirds (66%) say that government ownership of transport systems in the UK should be increased, compared to just 14% saying that private ownership should be increased. Similarly, 75% say that the government should ensure that new green transport systems are accessible to the majority of society, regardless of wealth, compared to 13% preferring a private sector solution even if primarily accessible to well-off members of society. The same trends are seen by gender and age, while those from white backgrounds and those in ABC1 social grades are also slightly more likely to report favouring greater government intervention in transport systems.

Figure 9. Government and transport



Q16d, Q16e. On balance, which of these statements comes closest to your point of view?

Base: All (n=3,279)

Note: Grey denotes 'don't know'

Finally, there is also support among the majority (77%) for the government regulating private companies to ensure that they take action to tackle climate change, compared with only 12% who say they should not do this (see Figure 10). Again, this is a position held across all demographic groups.

[3] Those who lean right on the political spectrum tend to support lower levels of government intervention in the economy than those on the left.

Figure 10. Government and climate change

Q16c. On balance, which of these statements comes closest to your point of view?

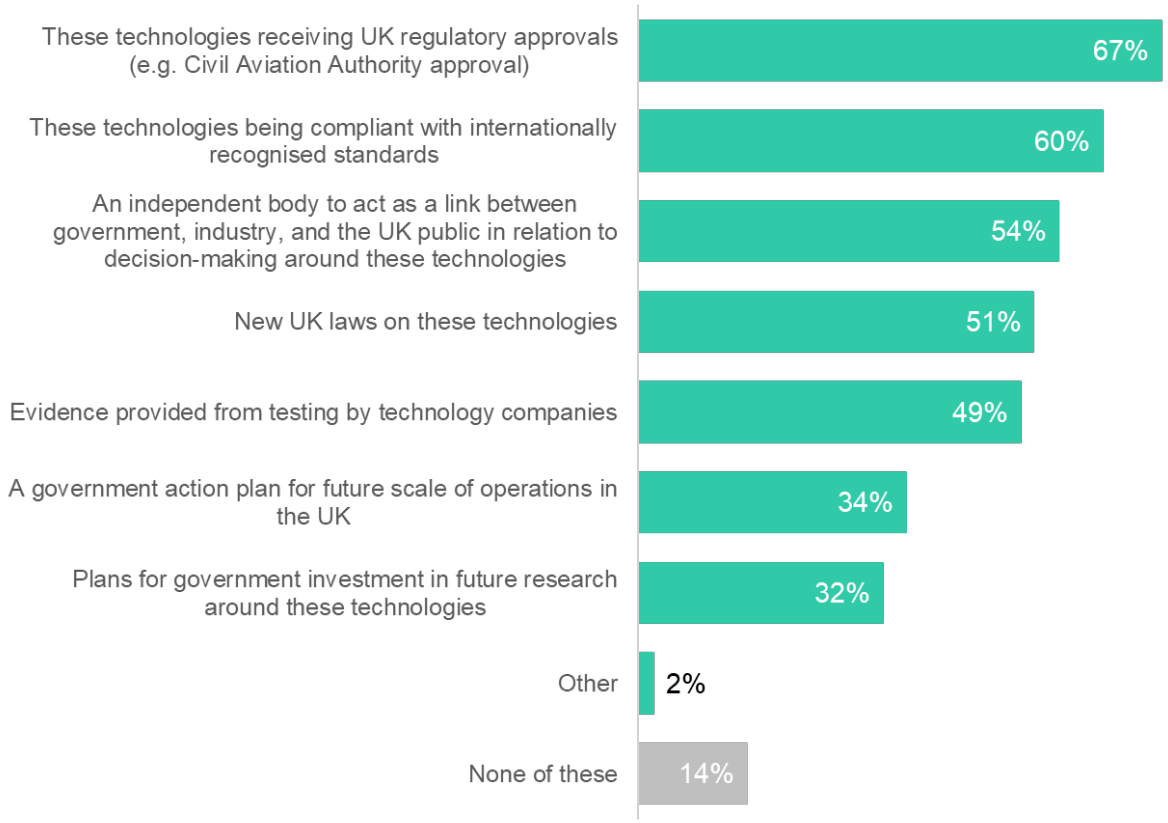
Base: All (n=3,279)

Note: Grey denotes 'don't know'

Governance of future flight technologies

When it comes to governance of future flight technologies, awareness of the entity responsible for the UK's aviation regulation, the Civil Aviation Authority (CAA), is relatively high; seven in ten (71%) say they have heard of it. Moreover, the CAA is seen as an important actor in ensuring that future flight technologies are safe should they be scaled up for commercial use within the UK. Two-thirds (67%) say that they would feel safe if future flight technologies received UK regulatory approval, such as from the CAA, the top factor among those listed (see Figure 11). Future flight technologies being compliant with internationally recognised standards also ranks highly, mentioned by 60%. Over half (54%) say that they would trust an independent body which could act as a link between government, industry and the UK public to help them feel that future flight technologies are safe. In contrast, assurances by industry or government action are seen to be less trustworthy; just under half (49%) say that evidence provided by testing from technology companies would make them feel safe, and only 34% say this about a government action plan for future scale of operations in the UK.

Figure 11. Factors that would ensure the safety of future flight technologies

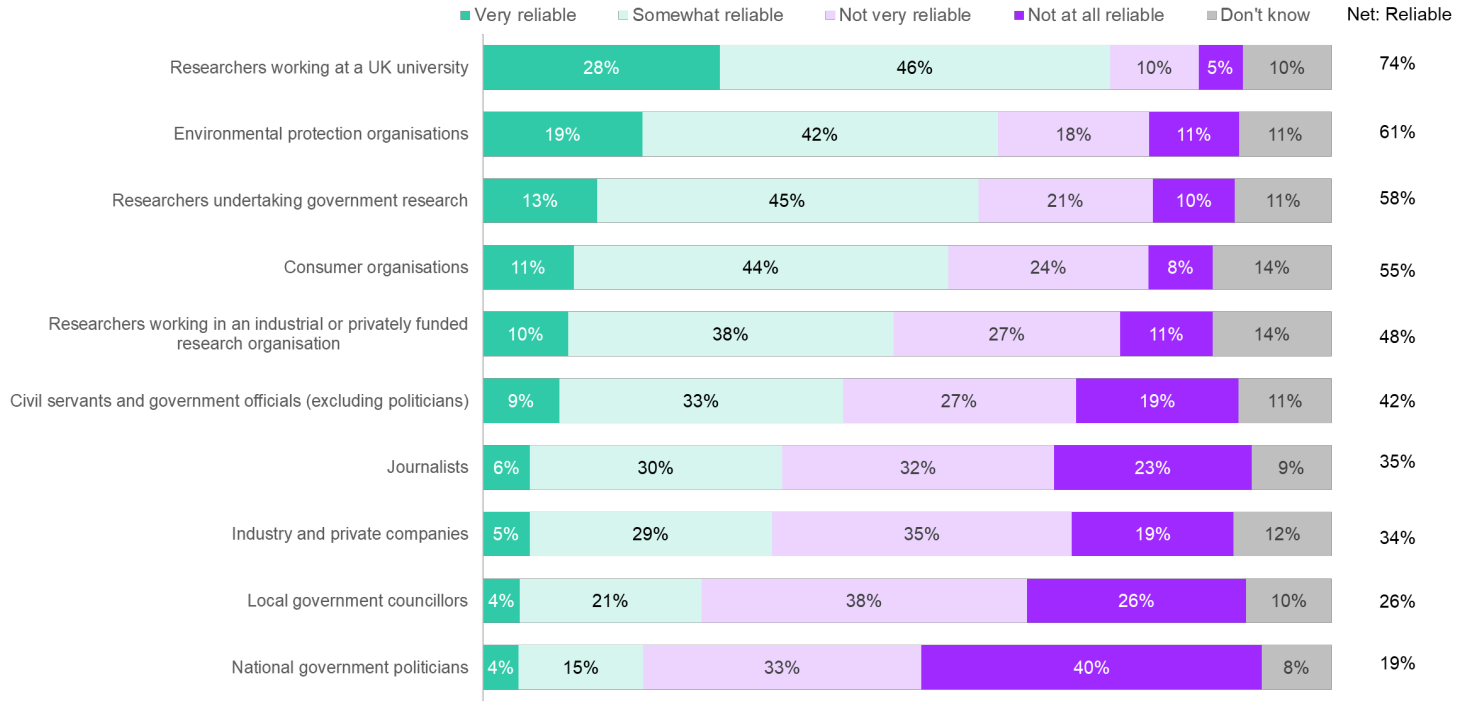


Q36. If the future flight technologies discussed in this survey are used for commercial services and scaled up within the UK, there are a number of different steps which may be taken to ensure these new technologies are safe (e.g. government policies, regulations, international standards). With this in mind, please indicate which, if any, of the following would make you feel that future flight technologies are safe.

Base: All (n=3,279)

These findings are indicative of a general lack of trust in the government among the UK public, including on topics relating to technology and innovation. As Figure 12 below shows, both forms of government sit at the bottom in terms of who people perceive to be reliable in accurately explaining the impacts of technological development on society, whilst bodies that are more independent or act at arm's length from government and industry are perceived to be more reliable (a notable exception to this is researchers undertaking government research which is perceived as reliable by 58% of the public). The government performs equally poorly when it comes to the proportions saying they personally trust them to best serve the needs of the UK public; 61% say they distrust national government here (only 18% trust them), while 45% distrust local government (only 26% trust them).

Figure 12. Who is most reliable for accurately explaining impact of technology on society



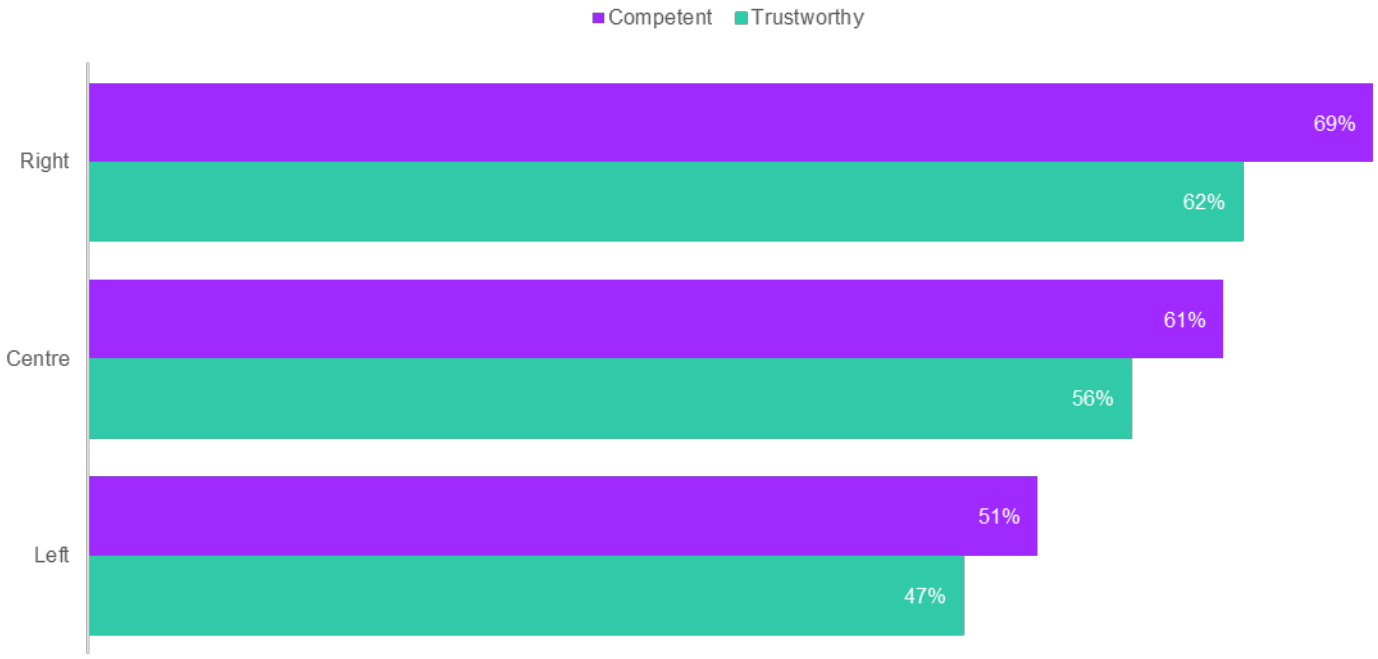
Q13. For each of the following categories of people and organisations, please tell us how reliable or unreliable you believe they are for accurately explaining the impact of technological developments on society?

Base: All (n=3,279)

While the national government performs worse than local government on measures of overall trustworthiness, when it comes to future flight technology there is a slight sway in the opposite direction. Just over half (54%) say that the national government would be most trustworthy in making decisions that would ensure future flight operations are rolled out in a way that best meets the interests of people living in the UK, compared to 46% for local governments. The same is true when asking which of these they think would be more competent at ensuring this, with 58% selecting national government compared to 42% selecting local government.

Perceptions that the national government would be more trustworthy and competent are highest among men and those who self-describe as right wing (see Figure 13). This could be because the national government is currently a right-wing government and thus right-wing individuals tend to have greater favourability of the national government more generally. Furthermore, the further away politically from the national government, the less likely an individual is to say the national government. Three in five (61%) of those who self-describe as a centrist select the national government as the most competent and this drop to 51% who self-describe as left-wing. The figure for those who don't know is 58%, similar to those who self-describe as centrists.

Figure 13. Perception of national government as more trustworthy and competent in making decisions about future flight operations and services by self-described political identity



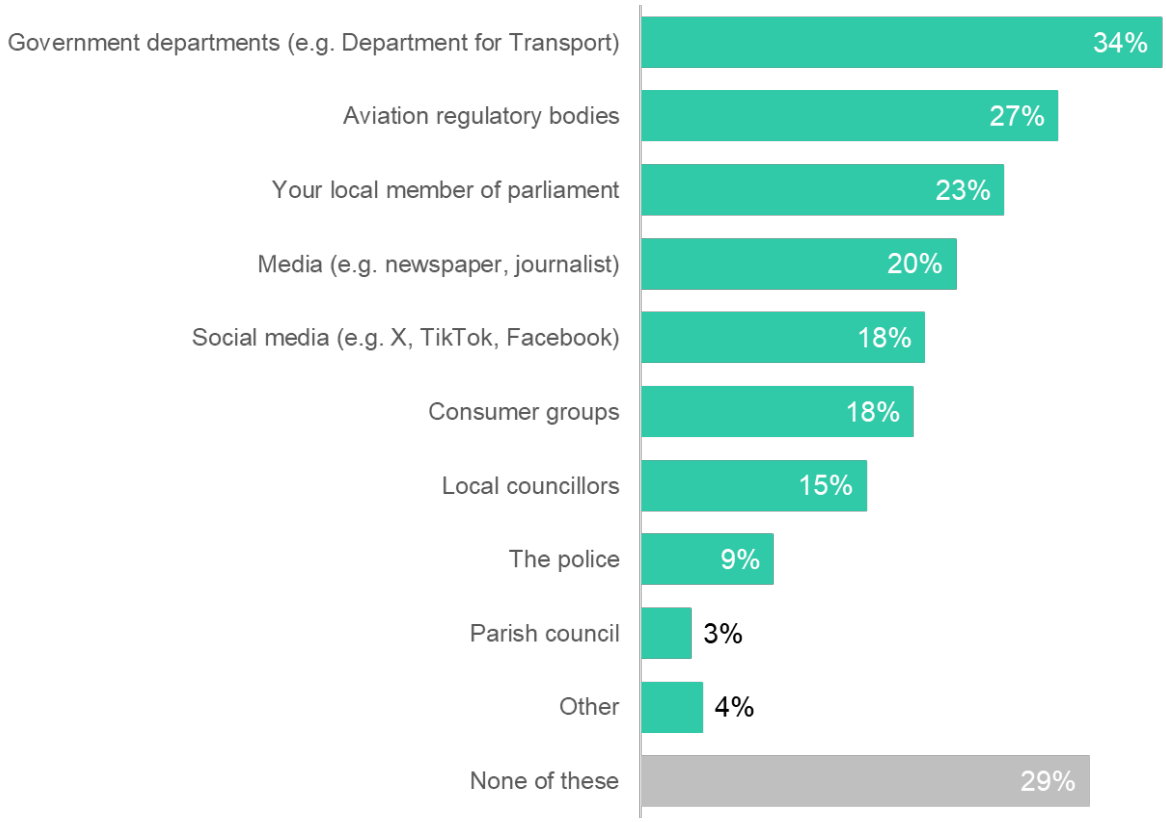
Q27a. Which, if either, of the following do you think would be most trustworthy in making decisions that would ensure future flight operations and services are rolled out in a way that best meet the interests of people living in the UK?

Q27b. And which, if either, of the following do you think would be more competent in implementing decisions to ensure future flight operations and services are rolled out in a way that best meet the interests of people living in the UK?

Base: All (n=3,279)

When it comes to resolving questions, concerns or problems relating to future flight technologies, the government are seen to be mostly responsible (see Figure 14). Around a third (34%) say they would contact government departments (e.g. Department for Transport) if they had an issue, while 23% say they would contact their local MP. Aviation regulatory bodies also rank in the top three (27%). This is reflective of the split between trust in government in the rollout, and trust in private companies or research with innovation. Furthermore, government departments may be the most cited entity due to an individual's desire for government oversight with the industry.

Figure 14. Entities most likely to go to about questions, concerns or problems relating to future flight technologies



Q34. Please indicate which of the following groups you would go to if you had any questions, concerns, or problems around the future flight technologies described previously (drones, eVTOLS, electric or hydrogen regional air mobility)

Base: All (n=3,279)

Expectations for future scale of use of future flight technologies

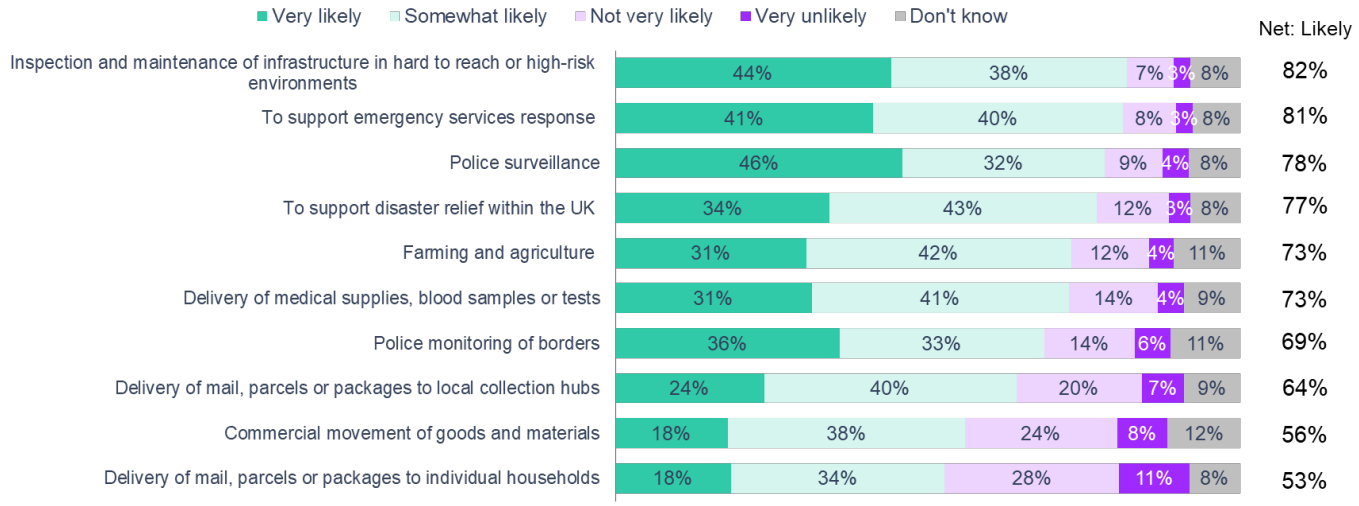
People anticipate non-passenger carrying drones to become a technology that is widespread in the UK in ten years' time, with majorities saying this about all of the different use-types listed. Perceived likelihood of eVTOLs becoming widely used are lower, though a majority do think that they are likely to become widespread in more rural areas. A majority report feeling comfortable taking a journey in an eVTOL, though only after they have been running for a longer period of time (e.g. 5 years).

Future likelihood of future flight in the next 10 years for non-passenger carrying drones

The research indicates that the public see non-passenger carrying drones as likely to become widespread over the next ten years. This is particularly illustrated in the inspection and maintenance of infrastructure in hard to reach or high-risk environments and for the support of emergency services (82% and 81% as likely areas for the future – see Figure 15).

There is also the perception that drones would be widely used for other public services and broader emergency issues, with three in four believing that it is likely that drones would be used for police surveillance (78%) and to support disaster relief (77%). A similar proportion think that drones would be used for farming and agriculture support (73%), which is comparable among those living in rural and urban locations. In contrast, fewer believe that drones are likely to be used in the future for the delivery of mail, parcels or packages (53%) and for the commercial movement of goods and materials (56%), although these views are still shared by over half of respondents.

Figure 15. Likelihood of non-passenger drones becoming widespread in ten years' time



Q6a. Thinking about each of the ways in which the different future flight technologies mentioned previously might be used, please now tell us how likely or unlikely you think it is that these will become widespread in the UK within the next ten years

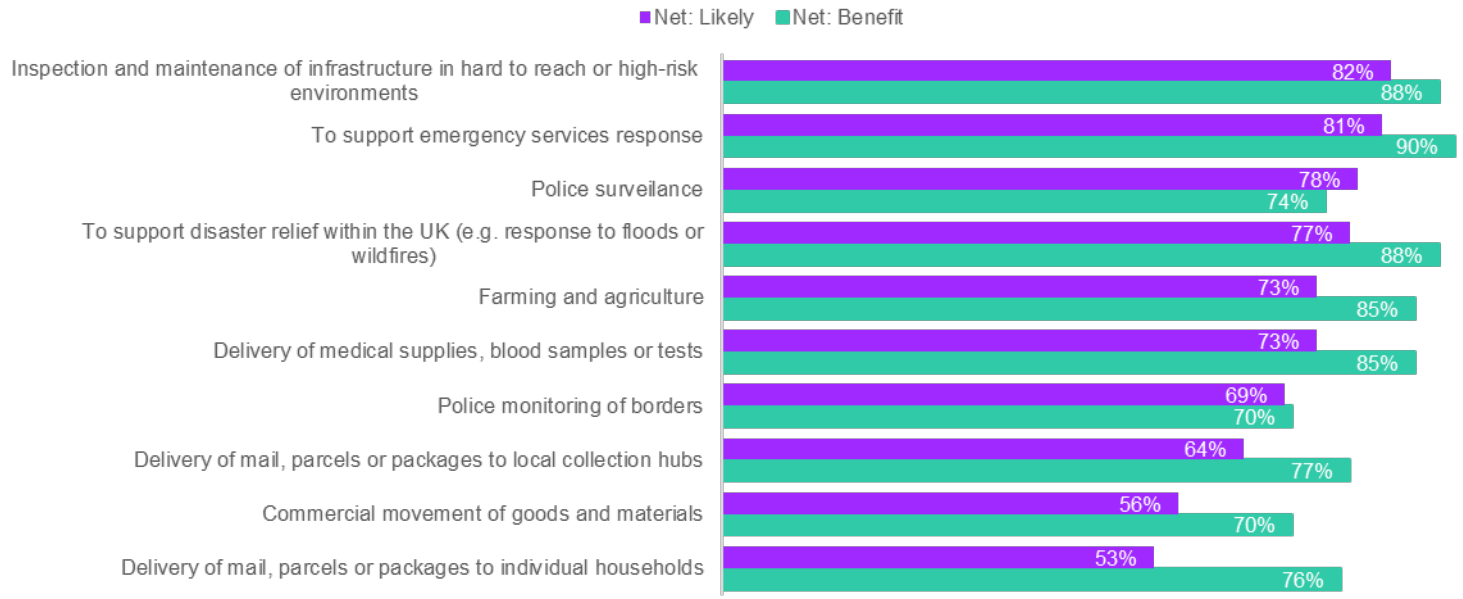
Base: All (n=3,279)

Those in older age groups (55+) are more likely than younger age groups (18-34 year olds) to believe that drone use would be widespread in the future across nearly all uses listed. For example, they are 13

percentage points more likely to say this about drones being used in emergency services response (88%, vs. 75% of those aged 18-34). The only exception is delivery of mail to individual households (50% of 55+ vs. 55% of 18-34 year olds).

Overall, uses of non-passenger drones that the public see as likely to be widespread within 10 years' time are also seen as beneficial to communities (see Figure 16). The largest discrepancies are for the commercial movement of goods and materials and the delivery of mail, parcels or packages to individual households which are more likely to be seen as beneficial, than widespread within 10 years' time.

Figure 16. Perceived likelihood and benefit of non-passenger drones



Q6a. Thinking about each of the ways in which the different future flight technologies mentioned previously might be used, please now tell us how likely or unlikely you think it is that these will become widespread in the UK within the next ten years

Q2a. For each use listed, please indicate whether you think non-passenger carrying drones would be beneficial or not beneficial within different types of community in the UK. Please select all communities, if any, where you think this technology would be beneficial.

Base: All (n=3,279)

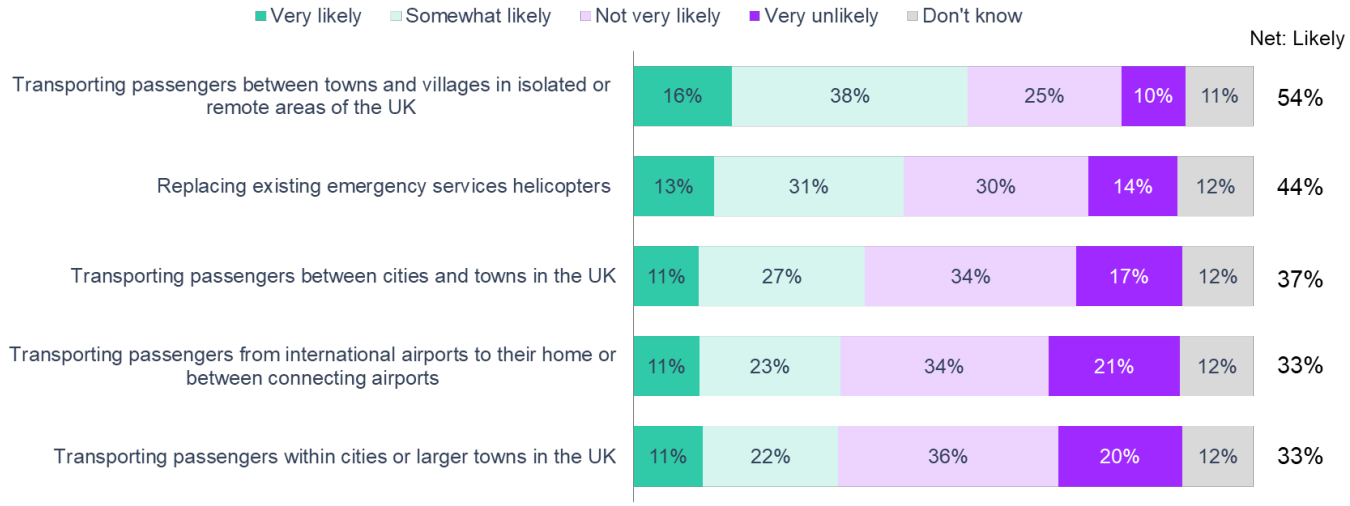
Likelihood of eVTOLs being used in 10 years' time

While the research indicates that a majority think it is likely that non-passenger carrying drones will have widespread usage across the UK in the future, a far smaller proportion think it is likely that eVTOL use will become widespread.

It is most common to think that it is likely eVTOLs will be used to transport passengers between towns and villages (54%) in the future (see Figure 17). Conversely, the public are the least likely to believe that eVTOLs would be used to transport passengers from international airports to their homes or to transport passengers within cities or larger towns, with one in three (33%) indicating this. However, it is worth noting

that those in urban areas are considerably more likely than those in rural areas to believe eVTOLs will be widespread in ten years for both transportation from airports (35% vs. 27%) and within cities or larger towns (35% vs. 23%), which indicates a locational divide in the perceived future usage of eVTOLs.

Figure 17. Likelihood of areas of eVTOLs becoming widespread in ten years' time



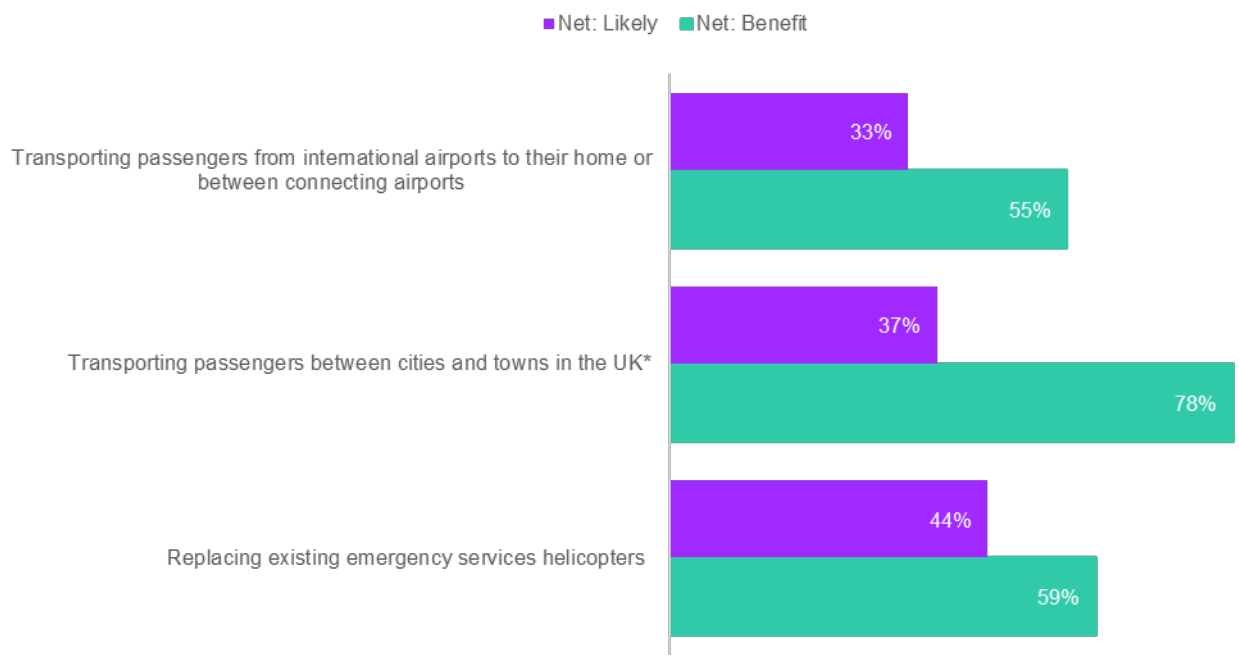
Q6b. Thinking about each of the ways in which the different future flight technologies mentioned previously might be used, please now tell us how likely or unlikely you think it is that these will become widespread in the UK within the next ten years.

Base: All (n=3,279)

Unlike the age trend seen in the previous section, trends by age here are more mixed. While those aged 18-34 are more likely to perceive transporting passengers within cities or larger towns in the UK as being likely in the next ten years (38% vs. 31% of those aged 55+), the opposite is true for passenger transport between towns and villages in isolated and remote areas (59% of those aged 55+ vs. 52% of under 55s saying this is likely). Additionally, there is a difference based on whether someone lives in an urban or rural area when thinking about transporting within cities or larger towns within the UK, with those living in such places (i.e. an urban area) perceiving this to be more likely than those living in rural areas (35% vs. 23%). There is no such difference for passenger transport between towns and villages in isolated and remote areas so the differences by age do not appear to be highly related to where individuals live.

The public are more likely to see uses of eVTOLs as a benefit than they are to think that the uses of eVTOLs are likely to be widespread within ten years (see Figure 18). The perceived benefit and likelihood to use eVTOLs are generally lower than for non-passenger drones.

Figure 18. Perceived likelihood and benefit of eVTOLs



Q6b. Thinking about each of the ways in which the different future flight technologies mentioned previously might be used, please now tell us how likely or unlikely you think it is that these will become widespread in the UK within the next ten years.

Q3b. For each use listed, please indicate whether you think eVTOLs would be beneficial or not beneficial within different types of community in the UK. Please select all communities, if any, where you think this technology would be useful.

*Calculated from all those that selected beneficial for any location in Q3b_2,_3,_4,_5

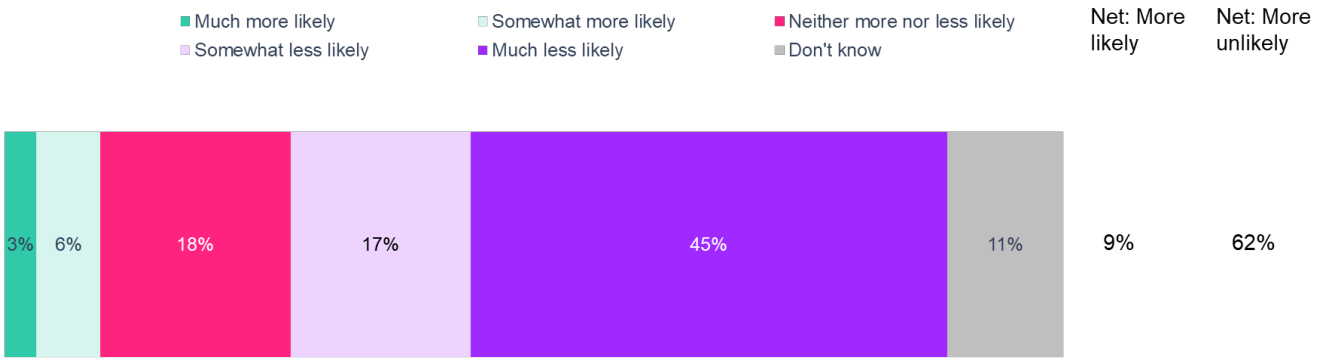
Base: All (n=3,279)

Perceived usage of autonomous eVTOLs

At an overall level, the research indicates that most feel they are unlikely to use autonomous vehicles in the future. Respondents were provided with some information about these, explaining that eVTOLs will likely have a pilot on board at the start, but as technology progresses, they may fly autonomously without a pilot on board.

Having read that information, a majority (62%) report that they would be less likely to fly in an eVTOL if it had no pilot on board, with 45% indicating that they would be much less likely (see Figure 19). Only one in eleven (9%) report that they would be more likely to use these vehicles. This scepticism is also shared with regards to autonomous cars. A greater proportion disagree than agree that they would support their future roll out (26% vs. 47%), suggesting a general lack of support for the use of autonomous vehicles whether this be in the air or on the road.

Figure 19. Likelihood to fly in an eVTOL with no pilot on board



Q22a. Autonomous vehicles are those which are able to operate and navigate with little or no human involvement, through the use of advanced sensors and AI (artificial intelligence). It has been proposed that electric vertical takeoff and landing air vehicles (eVTOLs) will have a pilot onboard in the first instance, but that in future years as technological development progresses, they may fly autonomously without a pilot on board. With this in mind, how much more or less likely would you be to fly in an electric air vehicle as a passenger if it had NO pilot on board.

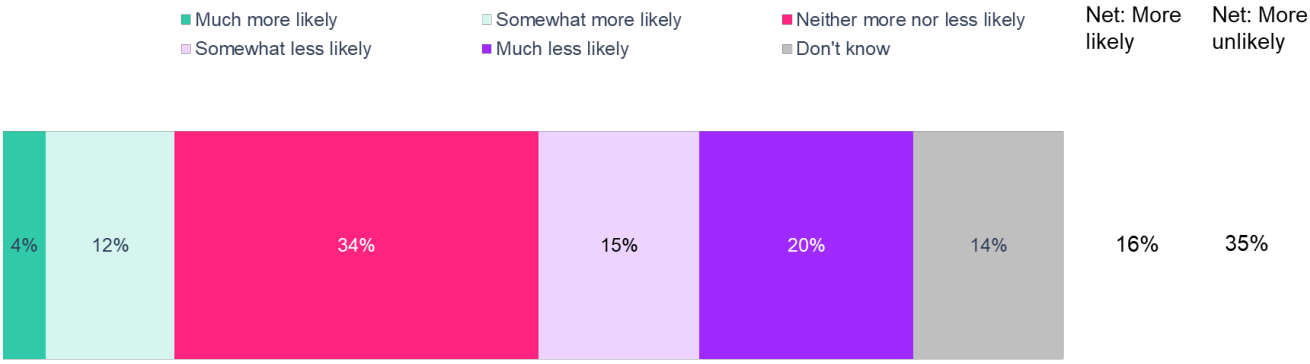
Base: All (n=3,279)

Those aged 55+ are much more likely than those in the youngest age group (18-34) to say that they would be less likely to use eVTOLs in the future (72% of 55+ vs. 52% of 18-34 year olds) if they had no pilot on board. It is worth noting that for all age groups, a majority say they would be less likely. It is also more common for women to say that they would be less likely to use eVTOLs without a pilot on board (69% vs. 54% of men). There were no notable differences in perceptions by social grade.

Perceptions of drone operations beyond the visual line of sight

A similar, but less stark, view is held when thinking about drones which are piloted from the ground, and whether or not they are in the operator's sight (see Figure 20). Around one in three say they would be less likely (35%) to support drone use if they operated outside the visual line of sight of their operators with a similar proportion feeling neutral (34%). A much smaller proportion (16%) say they would be more likely to support this. Consistent with sentiment towards the likelihood to use eVTOLs for future passenger transport, there is a gender and age divide. Older age groups (43% of those aged 55+ vs. 28% of those aged 18-34) and women (41% vs. 29% of men) are less likely to support the wider use of drones outside of the user's sight.

Figure 20. Likelihood to support the use of drones that operate outside the sight of their operators



Q22b_new. It has been proposed that drones which are piloted from the ground will operate where ground operators can see them in the first instance, but that in future years as technological development progresses, they may fly autonomously, outside of the visual line of sight of their on-ground operators. On a scale from much more likely to much less likely, how more or less likely would you be to support the wider scale usage of drones in the UK if they operated OUTSIDE of the visual line of sight of their operators.

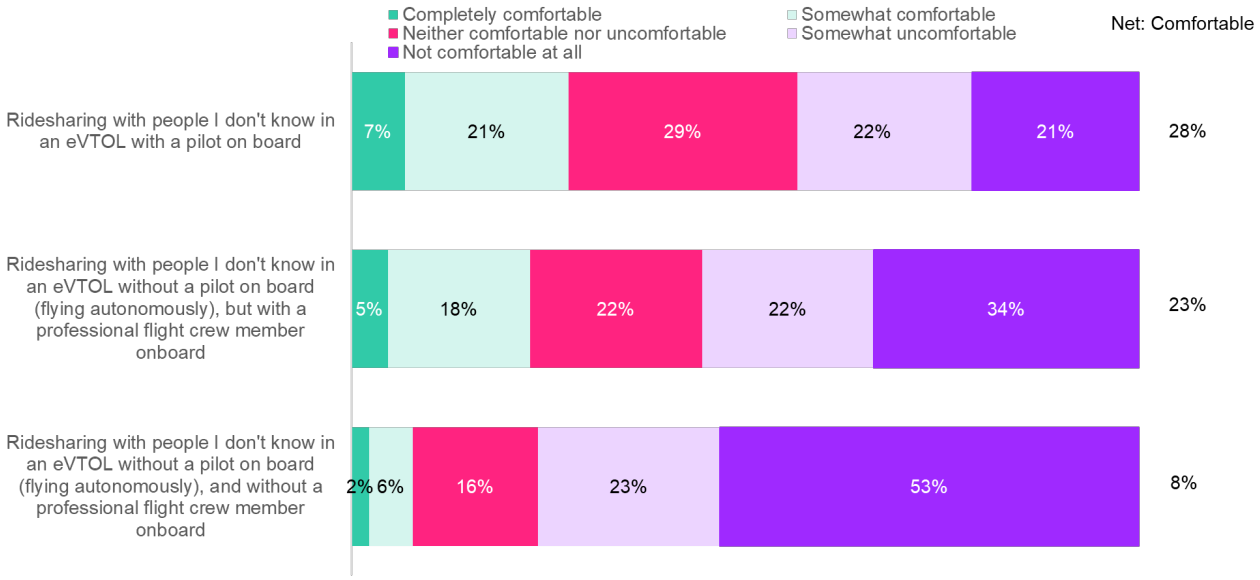
Base: All (n=3,279)

Comfortability with eVTOL ride sharing

Respondents were told that in certain instances, eVTOLs could potentially provide ridesharing services, for example carrying up to 6 passengers onboard, which could include people who don't know each other. Knowing this, they were asked how comfortable they would be ridesharing in an eVTOL under a variety of circumstances. While the presence of a pilot and/or professional flight crew member does have a positive impact on people's levels of comfortability, overall perceptions of ridesharing in eVTOLs are quite negative.

Just over one in four (28%) say they would feel comfortable ridesharing with people they don't know in an eVTOL with a pilot on board, compared to 43% who would be uncomfortable (see Figure 21). The corresponding figures if there only a professional flight crew member on board and no pilot are 23% comfortable vs. 55% uncomfortable. However, under a scenario where neither of these personnel were on board, only 8% say they would feel comfortable, compared to 76% feeling comfortable. In comparison, only 20% say they would feel comfortable ridesharing in a motor vehicle with people they don't know, marginally lower than the percentages reported for eVTOLs with a pilot/crew member on board. This indicates that levels of comfort are more strongly driven by ridesharing as a concept, as opposed to the specific type of vehicle people are travelling in.

Figure 21. Comfortability with ridesharing in an eVTOL



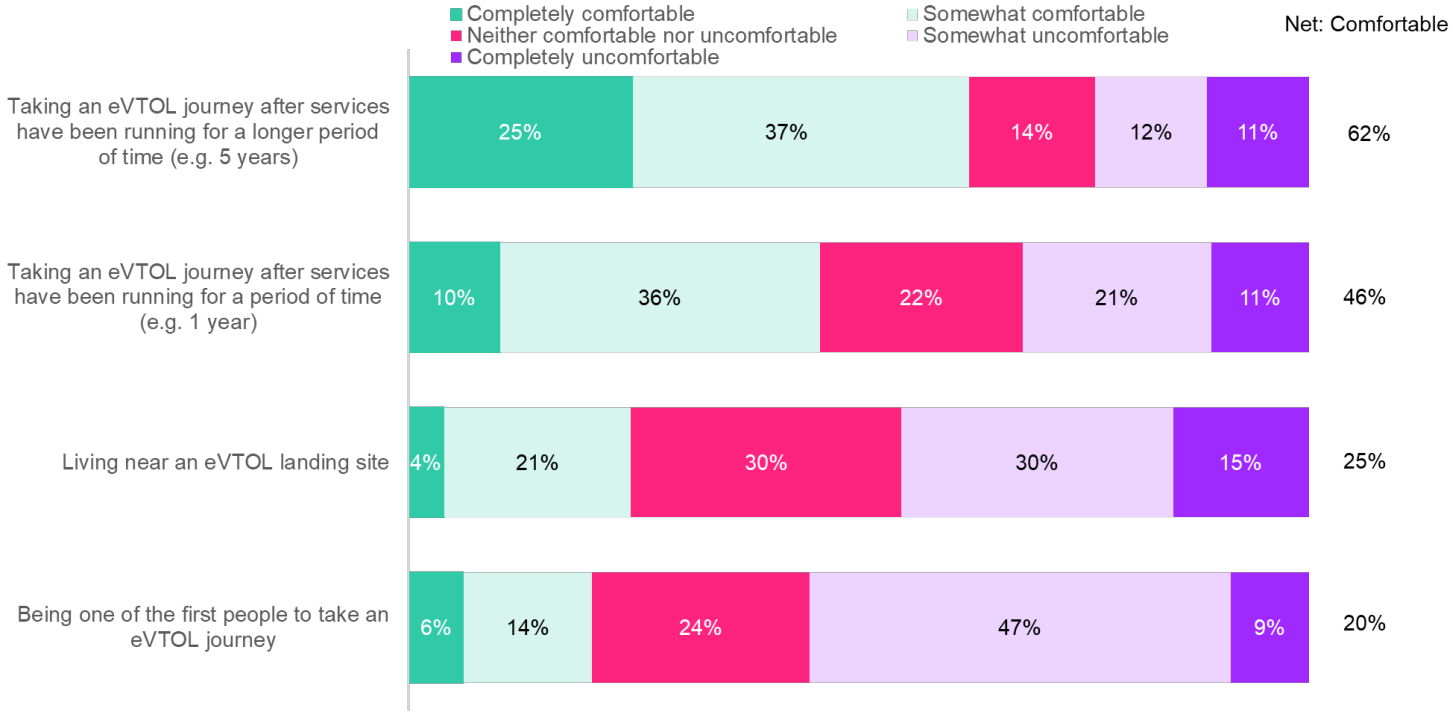
Q25a. In some instances, eVTOLS, which could carry up to 6 passengers, might provide ridesharing services. In other words, individuals would be sharing rides in eVTOLS with others, including people they don't already know. Please indicate how comfortable or uncomfortable you would be with the following.

Base: All (n=3,279)

Differences in level of comfortability for ridesharing in an eVTOL between scenarios are lower among women, with the largest gaps seen when looking at the proportion who say they would feel uncomfortable. Just under half (46%) of women say they would feel uncomfortable even when there is a pilot on board (men: 41%), rising to 60% with a crew member but no pilot (men: 51%) and 82% with neither of these on board (men: 71%).

As Figure 22 shows people would generally be more comfortable taking a journey in an eVTOL only after they have been running for a number of years. Only one in five (20%) report that they would be comfortable being one of the first to take an eVTOL journey. This increases to 46% reporting they might be comfortable taking an eVTOL journey after they had been running for a slightly longer period of time (e.g. 1 year which rises to three in five (62%) after services have been running for a longer period of time (e.g. 5 years).

Figure 22. Comfortability with various aspects of future flight technologies



Q28. Please indicate how comfortable or uncomfortable you would be with each of the following.

Base: All (n=3,279)

Men are more likely than women to report feeling comfortable with all aspects of future flight technologies listed, with gaps of between 10 and 18 percentage points depending on the statement. Approximately three in ten (29%) men say they would feel comfortable being one of the first people to take an eVTOL journey, higher than for women (13%). However, it is worth noting that the majority of both men and women would be uncomfortable doing this (men: 62% and women: 79%). The same pattern is true when thinking about taking an eVTOL journey after services have been running for a period of time (e.g. 1 year) (55% of men would be comfortable vs. 37% of women), though the gap narrows when eVTOL use is more established and they have been running for around 5 years (67% of men would be comfortable vs. 57% of women).

There is also an age divide, with those aged 18-34 more likely to be comfortable with almost all of the above, though the differences are less pronounced than by gender. For example, those aged 18-34 are more likely to say they would be comfortable being one of the first people to take an eVTOL journey (25%) in comparison to those aged 35-54 (19%) or 55+ (17%).

Those saying they are concerned about invasions of privacy linked to drone and eVTOL use are less likely than those who are not concerned to say that they would be comfortable living near an eVTOL landing site (45% vs. 21%).

Relatively low proportions say they would be comfortable with drones flying over their home or street (30%) or living near a drone hub (25%) – see Figure 23.

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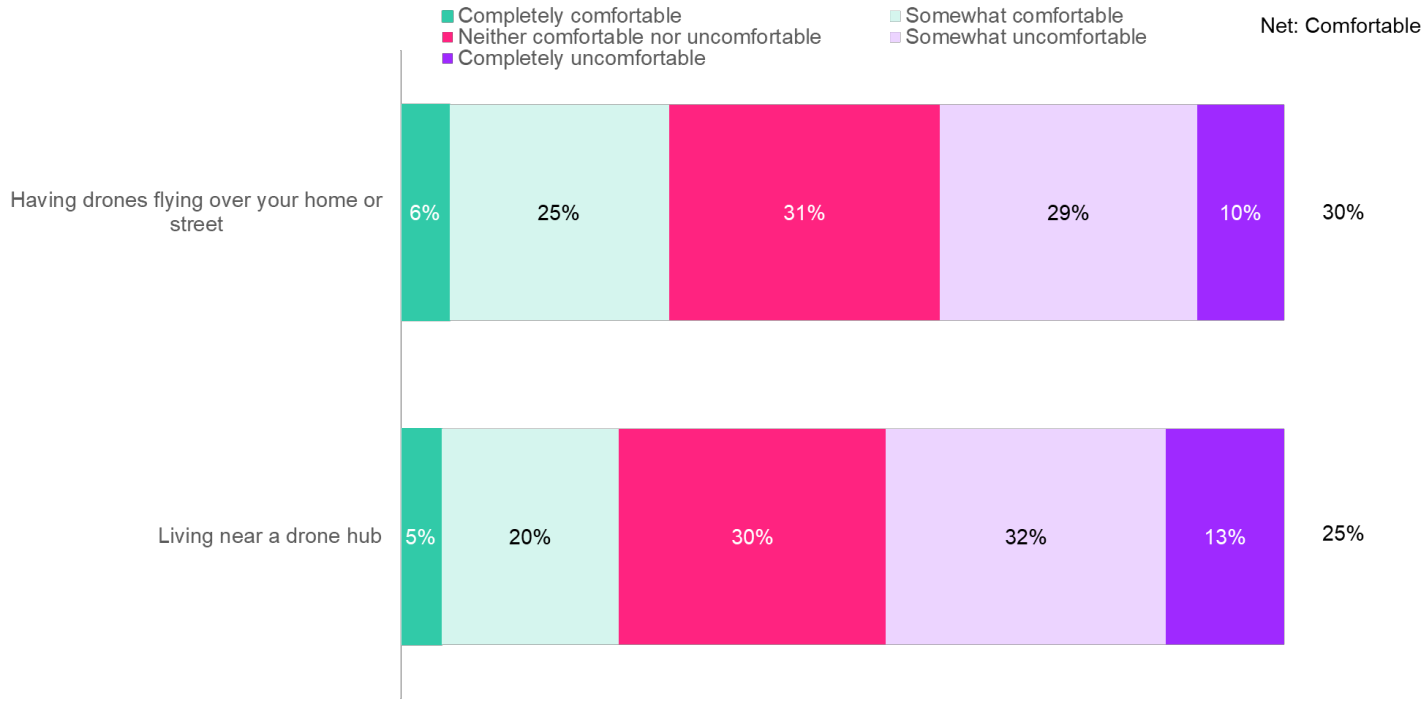
Figure 23. Comfortability with various aspects of future flight technologies



Q28. Please indicate how comfortable or uncomfortable you would be with each of the following.

Base: All (n=3,279)

The same gender patterns exist, with men more likely than women to say that they would feel comfortable with drones flying over their home or street (38% vs. 23%) or living near a drone hub (32% vs. 17%). Those saying they are concerned about invasions of privacy are again less likely than those who are not concerned to say that they would be comfortable living near an eVTOL landing site (45% vs. 21%).