Drones and Emerging Technology National Survey

Executive Report

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Survey Fieldwork: September / October 2021

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Drones and Emerging Tech Survey 2021

Drone Technology – Awareness, Sentiment, Use

- **50%** of respondents were **aware of drone technology and all of its applications**. A further 46% were aware but not fully familiar with all applications.
- **84% felt positive** about drone technology overall.
- **16%** indicated that they had used a drone as a **hobby**.

Drone Technology – Likely to be Part of your Life by 2025

- **68%** of respondents felt it likely that drones will be part of their life by 2025 **"For mail"**. This was followed by **"To get takeaway delivered" (64%), "Online shopping delivery (61%), "To get groceries" (55%)** and **"To use as an air taxi" (18%)**.

Drone Technology – Sentiment Towards Use to Deliver Public Services

- **97%** of respondents felt positive about the use of drone technology for **Emergency Services**. This was followed by **Planning (96%), Environmental Monitoring (95%), Waste Management (94%), Traffic Management (92%)** and **Policing (81%)**.

Concerns About the Use of Drones

- **Privacy Concerns** were a top concern for **75%** of respondents, followed by **Security Threats (54%)** and **Safety Concerns (50%)**.
- **18%** of respondents reported having personally **experienced a concern** when seeing a drone in their local area.
- **61%** of these related to concerns around **privacy.**

Access to Information about Drones

- **11%** of respondents felt it would be **easy to find out about the purpose / ownership of a drone** if they saw one flying n their local area.
- **60%** felt that it would be **essential** that members of the public should be able to get information about drone flights openly.

Awareness of Drones Regulator

- **19%** of respondents indicated that they know who is responsible for regulating drone use in Ireland. When prompted, 78% of these correctly identified the Irish Aviation Authority as the regulator.

E-Scooters – Awareness and Sentiment

- **83%** of respondents were **aware of e-scooters and knew what they were**.
- **72%** felt that e-scooters will have a **positive** impact.

Positive Aspects of e-Scooters

- **64%** of respondents selected **"Easier to get around towns and cities"** as a positive aspect of e-Scooters, followed by **"Less car traffic on the roads" (55%)** and **"More affordable than car transport" (52%).**

Concerns about e-Scooters

- **73%** of respondents selected **"Danger to pedestrians / wheelchair users"** as a concern about e-Scooters, followed by **"Children using e-Scooters" (51%)** and **"No test / training for using e-Scooters" (50%).**

5G – Awareness and Sentiment

- **71%** of respondents were aware of 5G and knew what this meant.
- 90% felt that 5G will have a positive impact.

Positive Aspects of 5G Networks

- **83%** of respondents selected **"Enabling faster data connections on mobile devices"** as a positive aspect of 5G networks, followed by **"Enabling telemedicine" (47%)** and **"Enabling more applications of drone technology" (36%).**

Concerns about of 5G Networks

- 290 respondents cited any concern about 5G. 32% of these related to **concerns about safety / health** (e.g. cancer, radiation).

Autonomous Vehicles - Timeframes

- Respondents predicted that drone delivery will become a reality for members of the public in Ireland by 2027. This was followed by Self-driving Cars (2030), Shared robo-taxis (2031) and Self-driving trucks in convoy (2031)

Concerns and Hopes for how Technology is Evolving

- The most common concern among respondents about how technology is evolving was that it was **evolving too quickly / that it was too hard to understand**.
- The most common hope for how technology will evolve was that it would improve the **quality of life** for all.

Background

- Online survey, 7th September – 19th October 2021

- 902 respondents from various sources

- Global margin of error +/- 3.3%

Age Group

Age	%
18 to 34	29%
35 to 49	30%
50 to 65	24%
Over 65	17%

49%   51%

Dublin 43%
Leinster ex Dublin 26%
Munster 17%
Connacht / Ulster 14%

n=902

Employment Status

Status	Percentage
Working full-time as an employee	49%
Working part-time as an employee	7%
Self employed full or part-time	5%
Currently seeking employment / PUP	4%
Looking after home / family	7%
Student or pupil	5%
Unable to work due to illness / disability	5%
Retired from employment	16%
Other (please specify)	1%

Area of Residence

Area	Percentage
Large town or city	58%
Rural town	21%
Rural village	10%
Countryside	11%

n=902

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Monthly Income After Taxes, Before Bills

Less than €1,000	26%
€1,001 - €2,000	26%
€2,001 - €3,000	25%
€3,001 - €4,000	14%
More than €4,00	9%

€
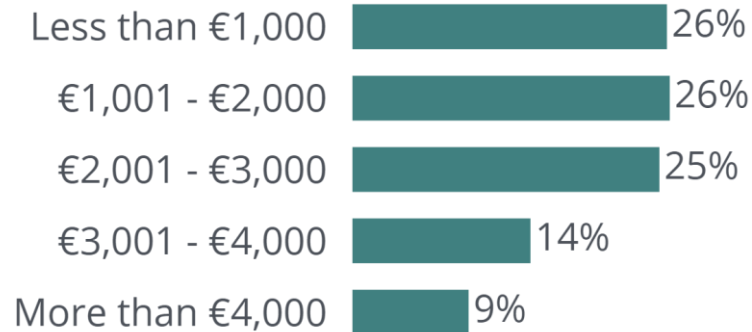
Monthly Disposable Income After Bills Are Paid

Less than €100	34%
€100 - €300	20%
€301 - €500	14%
€501 - €700	9%
€701 - €1,000	11%
More than €1,000	12%

€
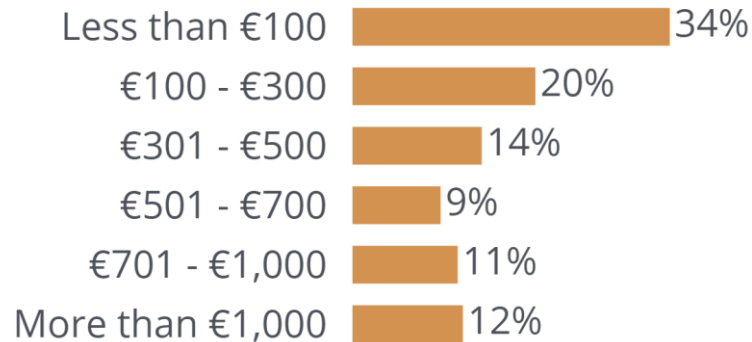
n=884

Working in Related Profession (aviation, emergency services etc.)
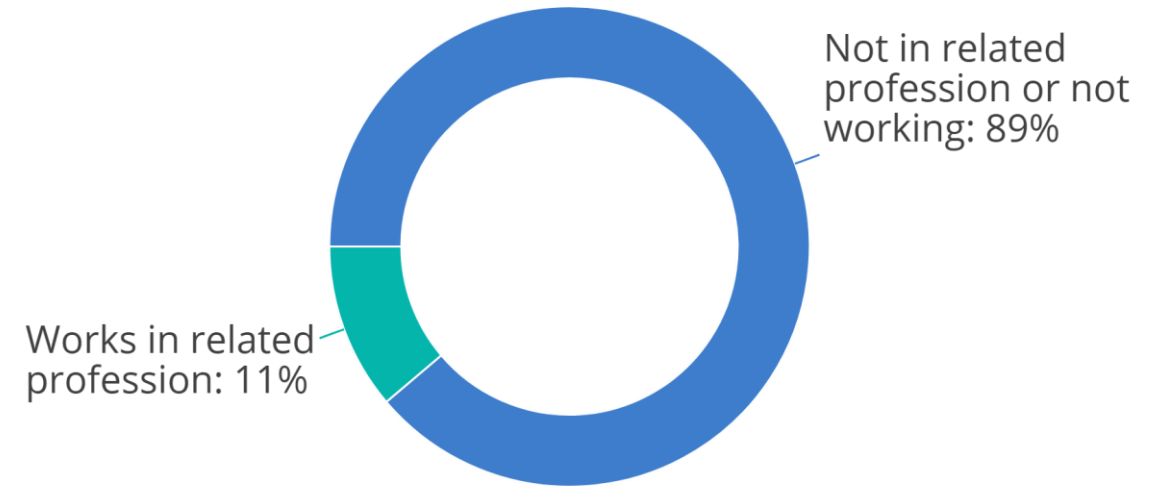
Not in related profession or not working: 89%

Works in related profession: 11%

n=902

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Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

SMART DUBLIN

Before today, were you familiar with drone technology?

Yes, I was aware of drone technology and all of its applications: 50%

No, I was not aware of drone technology before today: 4%

Yes, I was aware of drone technology but not fully familiar with the different applications: 46%
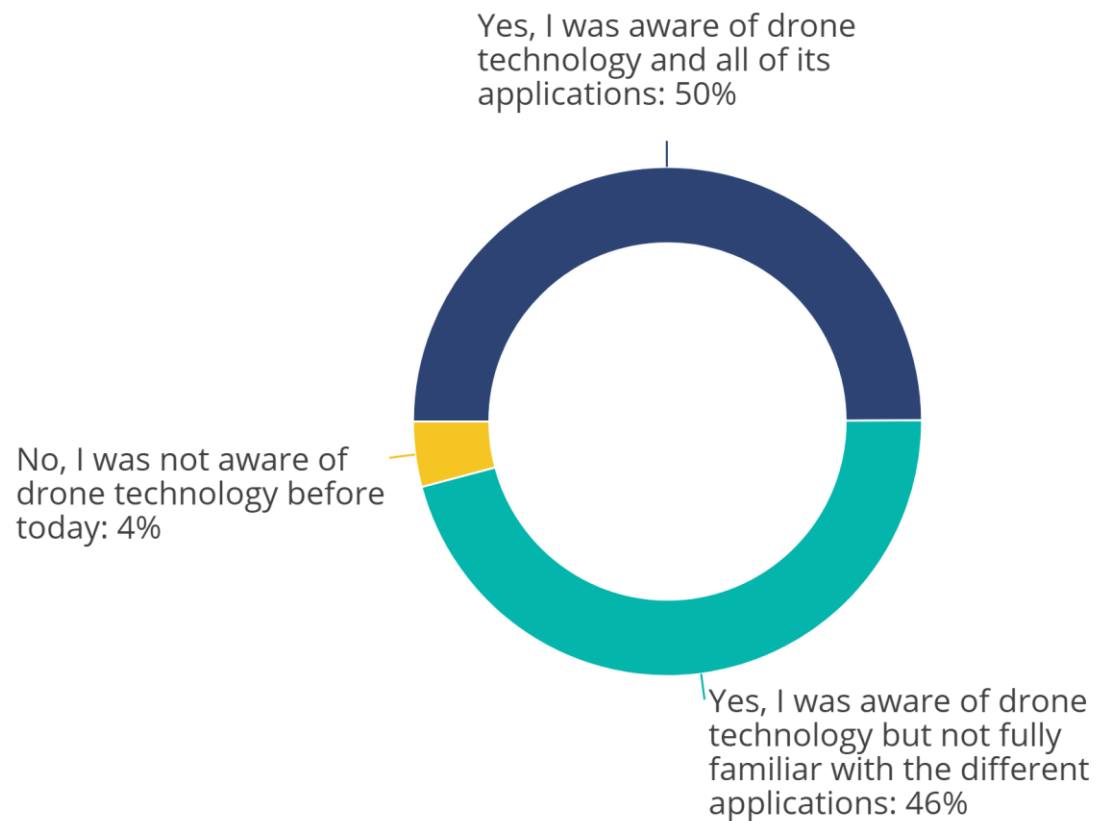
- Familiarity is higher among males, among younger respondents, and among those living in larger towns and cities.

- Familiarity also increases in line with monthly income.

n=902

How do you feel overall about drone technology?

■ Very negative ■ Rather negative ■ Rather positive ■ Very positive

| 2% | 14% | 55% | 29% |
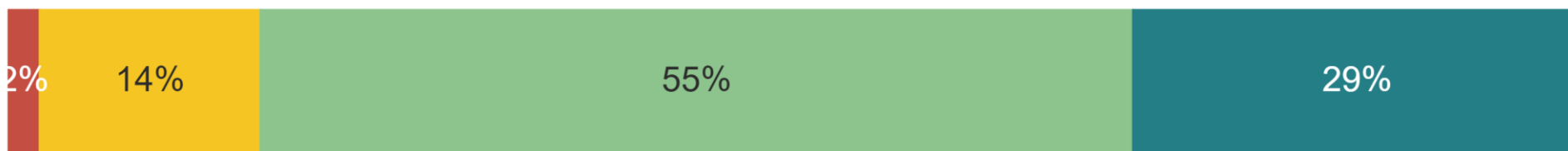
84% feel positive about drone technology

- Positive sentiment is stronger among males (89%) than among females (79%)

- Positive sentiment is lower among over 65s at 76%

n=902

SMART DUBLIN

Do you ever use drones? Please select as many as apply to you.
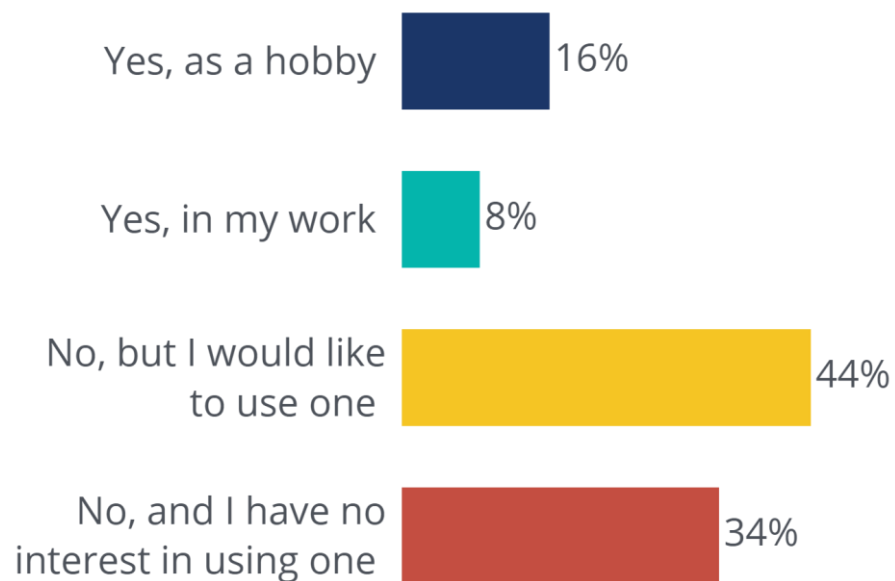
- Use of drones is higher among males, among younger age groups and among those living in large towns and cities.

n=901

Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

SMART DUBLIN

How likely do you think it is that drones will be part of your life **by 2025?**

■ Very unlikely   ■ Rather unlikely   ■ Rather likely   ■ Very likely

	Very unlikely	Rather unlikely	Rather likely	Very likely
For mail (to get letters and parcels)	11%	21%	41%	27%
To get takeaway delivered by drones (e.g. pizza, coffee)	12%	24%	34%	30%
For online shopping delivery	14%	25%	37%	24%
To get groceries (e.g. small grocery items) delivered by drone	17%	28%	32%	23%
To use as an air taxi (i.e. transport passengers)	41%	41%	11%	7%
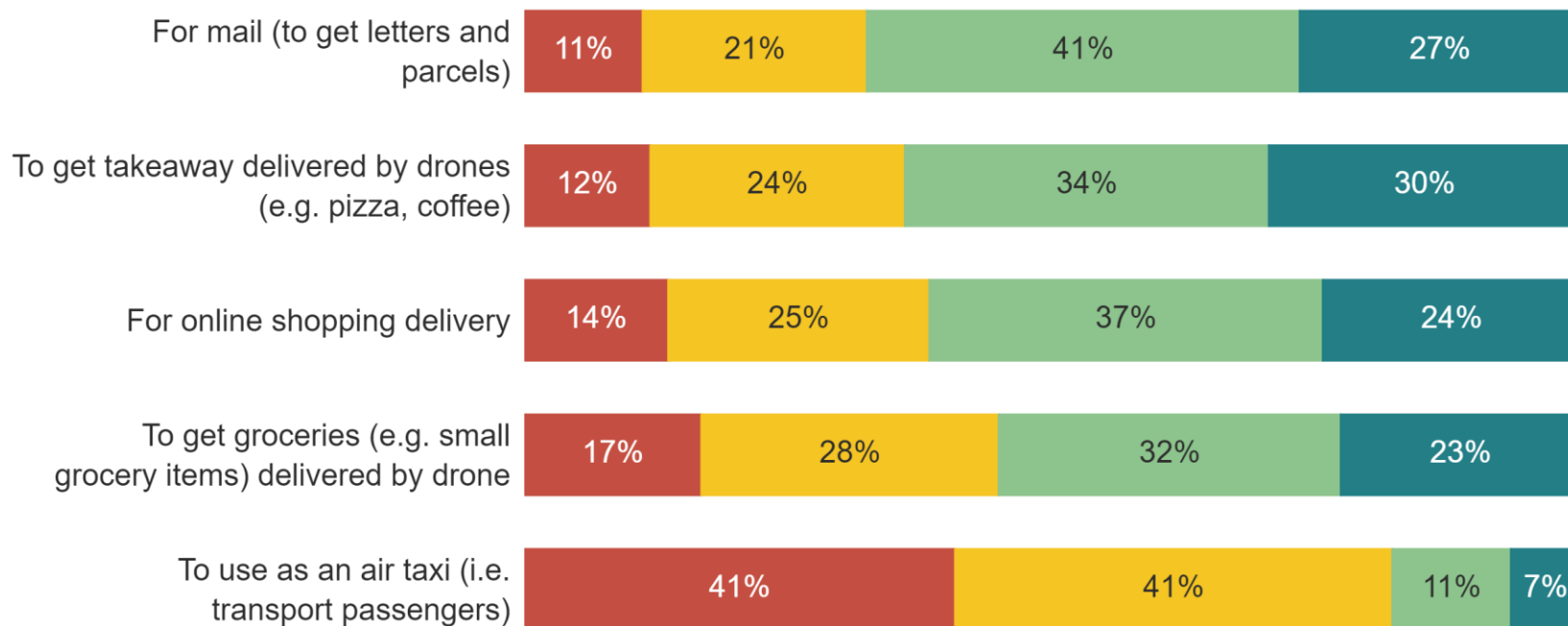
- 18-34s consider online shopping delivery by drone more likely than other age groups.

- Anticipated likelihood tends to be higher among Connacht / Ulster respondents, particularly for mail delivery.

- Likelihood for online shopping delivery and grocery delivery is higher among those living in large towns and cities.

n=902

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Comhairle Cathrach Bhaile Átha Cliath Dublin City Council

SMART DUBLIN

How do you feel about the following applications of drone technology to help deliver **public services**:

- ■ Very negative
- ■ Rather negative
- ■ Rather positive
- ■ Very positive

Application	Very negative	Rather negative	Rather positive	Very positive
Emergency Services			19%	78%
Planning	2%		29%	67%
Environmental Monitoring		3%	27%	68%
Waste Management		5%	27%	66%
Traffic Management	3%	5%	31%	61%
Policing	6%	13%	30%	51%
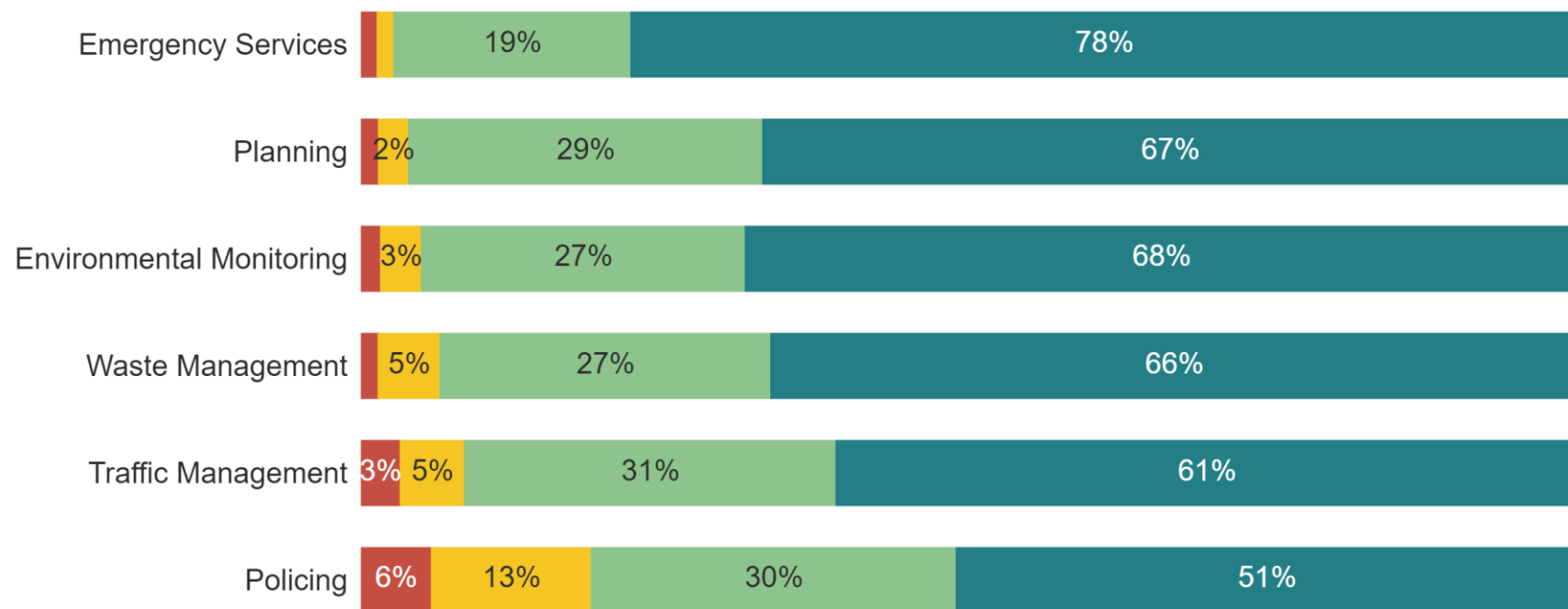
- Higher positive sentiment among males for use for drones for emergency services, planning and traffic management.

- Lower positive sentiment among 18-34 year-olds for the use of drones for emergency services, waste management and policing.

n=893

What are you most concerned about regarding the use of drones? Please consider your own usage of such a service as well as other people using it.

% selecting in top 3

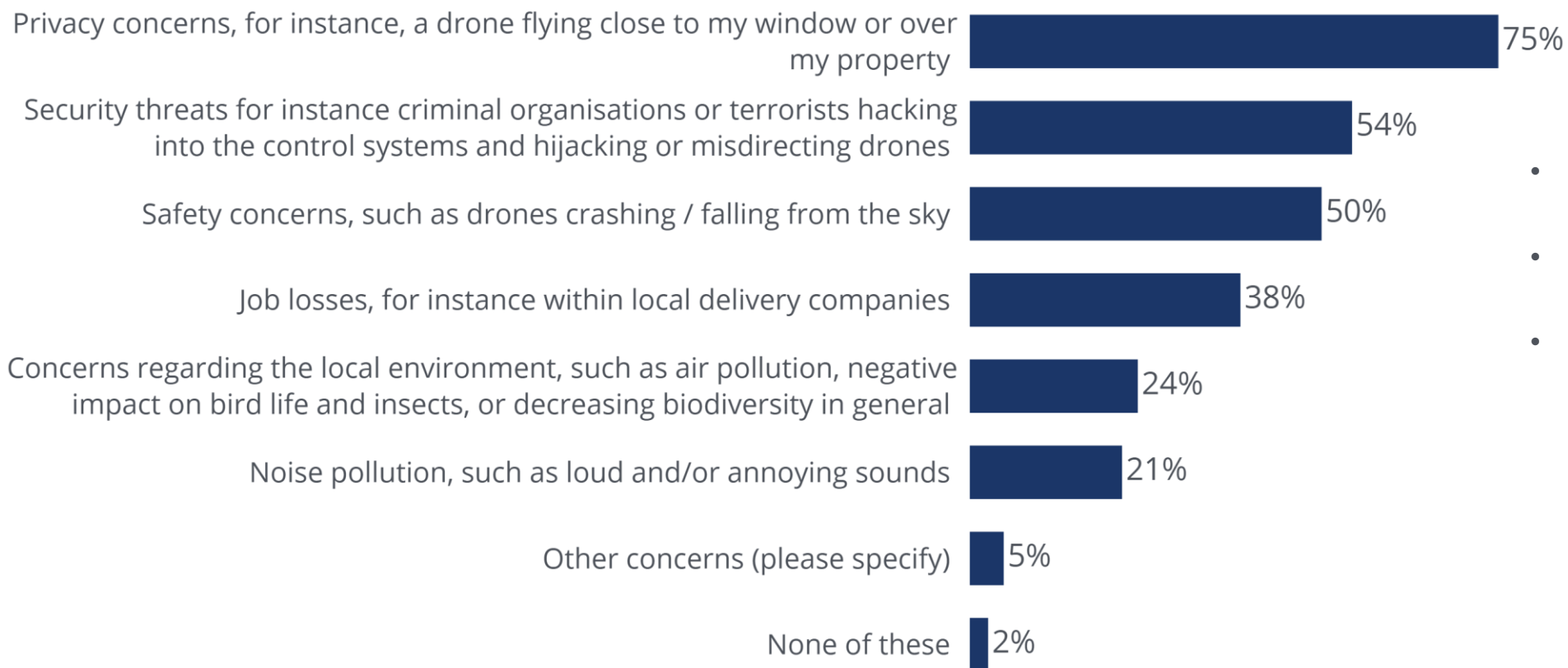| Concern	%
Privacy concerns, for instance, a drone flying close to my window or over my property	75%
Security threats for instance criminal organisations or terrorists hacking into the control systems and hijacking or misdirecting drones	54%
Safety concerns, such as drones crashing / falling from the sky	50%
Job losses, for instance within local delivery companies	38%
Concerns regarding the local environment, such as air pollution, negative impact on bird life and insects, or decreasing biodiversity in general	24%
Noise pollution, such as loud and/or annoying sounds	21%
Other concerns (please specify)	5%
None of these	2%

- Job losses a concern for 52% of female respondents.
- Security threats are a concern for 68% of over 65s.
- Safety concerns were higher among Munster-based respondents (61%) and lower among those living in Dublin (45%).

n=902

Other Concerns Specified
number of mentions

Concern	Mentions
Privacy concern	9
Safety / reliability concern	9
Concern about use of drones by authorities / transparency	7
Use by criminals	6
Risk to goods in transit (damage or theft)	4
Visual or noise pollution in the air	3
Environmental impact on the ground and in manufacture	3
Concern if there is any delay in roll-out	1

n=42

Have you ever had an issue where you saw a drone in your local area and had any concerns?

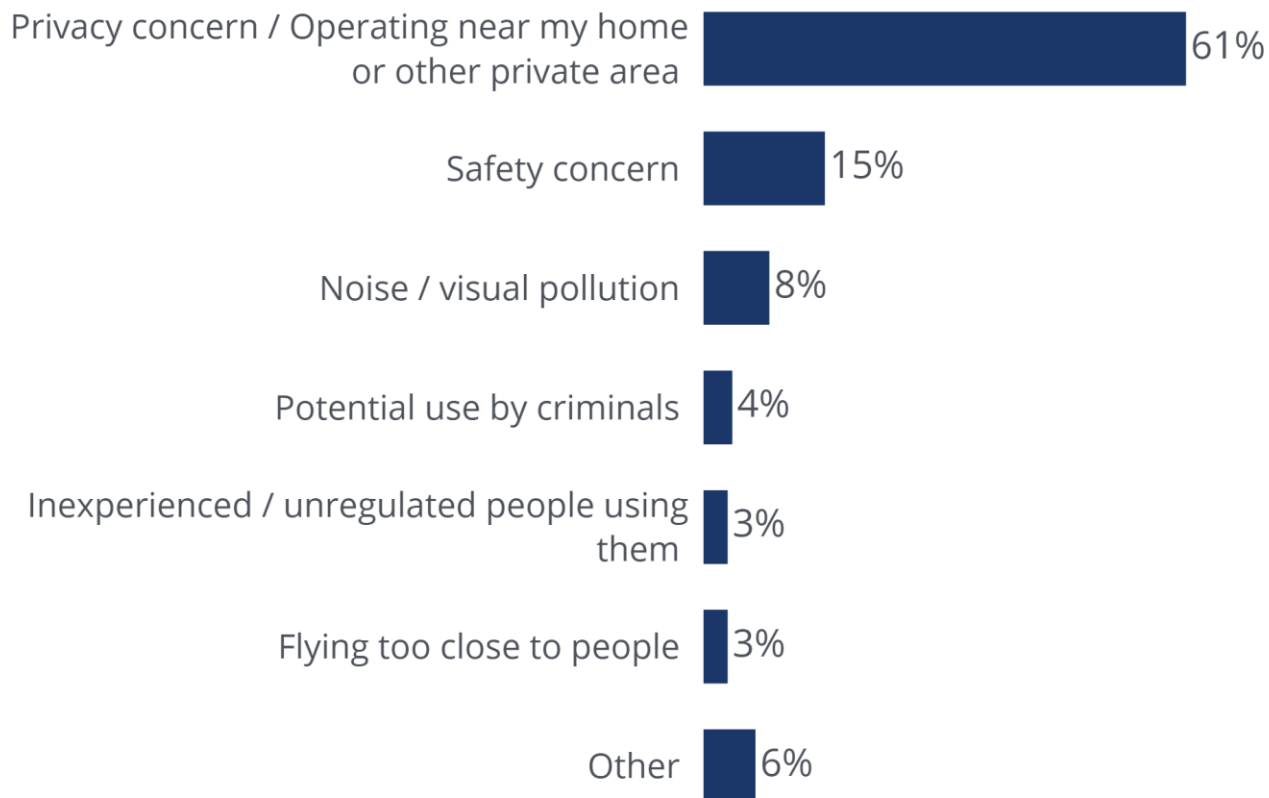
Yes - please describe the concern or issue: 18%

No: 82%
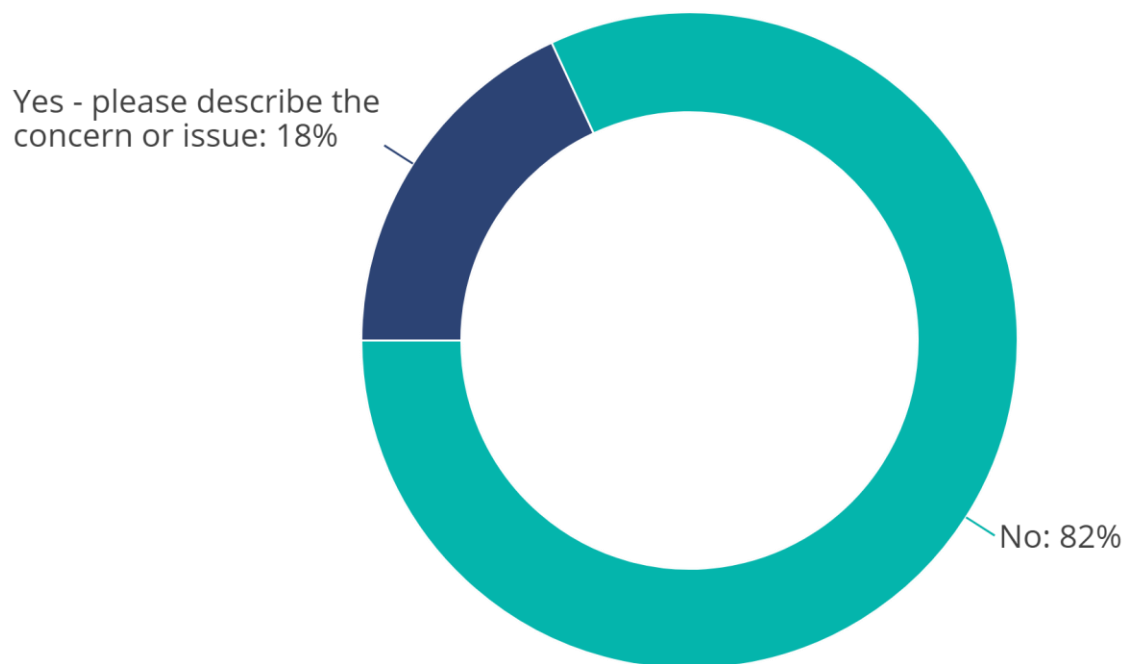
- Younger respondents and those living in Dublin or other large towns / cities were more likely to report experiencing a concern relating to drone use.

n=897

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SMART DUBLIN

Personally Experienced Concerns
(categorised from open-ended comments)

Concern	%
Privacy concern / Operating near my home or other private area	61%
Safety concern	15%
Noise / visual pollution	8%
Potential use by criminals	4%
Inexperienced / unregulated people using them	3%
Flying too close to people	3%
Other	6%

"Hovering and moving up and down outside buildings, focused on the windows. It looked like invasion of privacy."

"Invasion of privacy whilst sunbathing in back garden."

"Safety of the people, if the drone goes out of control."

n=171

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Dublin City Council

SMART DUBLIN

If you saw a drone flying in your local area and you wanted to find out its purpose / ownership, how easy do you think it would be to find this information?

■ Impossible or Don't know ■ Difficult ■ Fairly easy with bit of searching ■ Very easy

| 45% | 45% | 9% | 2% |

11% feel this would be easy

- 18 to 34 year-olds were more likely to feel this would be easy (16%)

n=901

Do you think that members of the public should be able to get information about drone flights openly? For example via a public register of flights showing time and location information for drone flights.

Yes, this would be essential: 60%

Not necessary: 7%

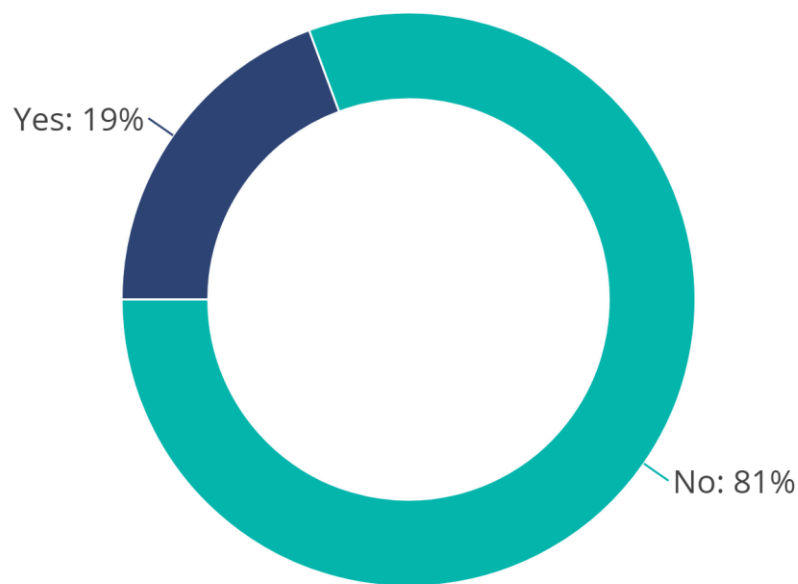Yes, this would be nice to have but not essential: 33%
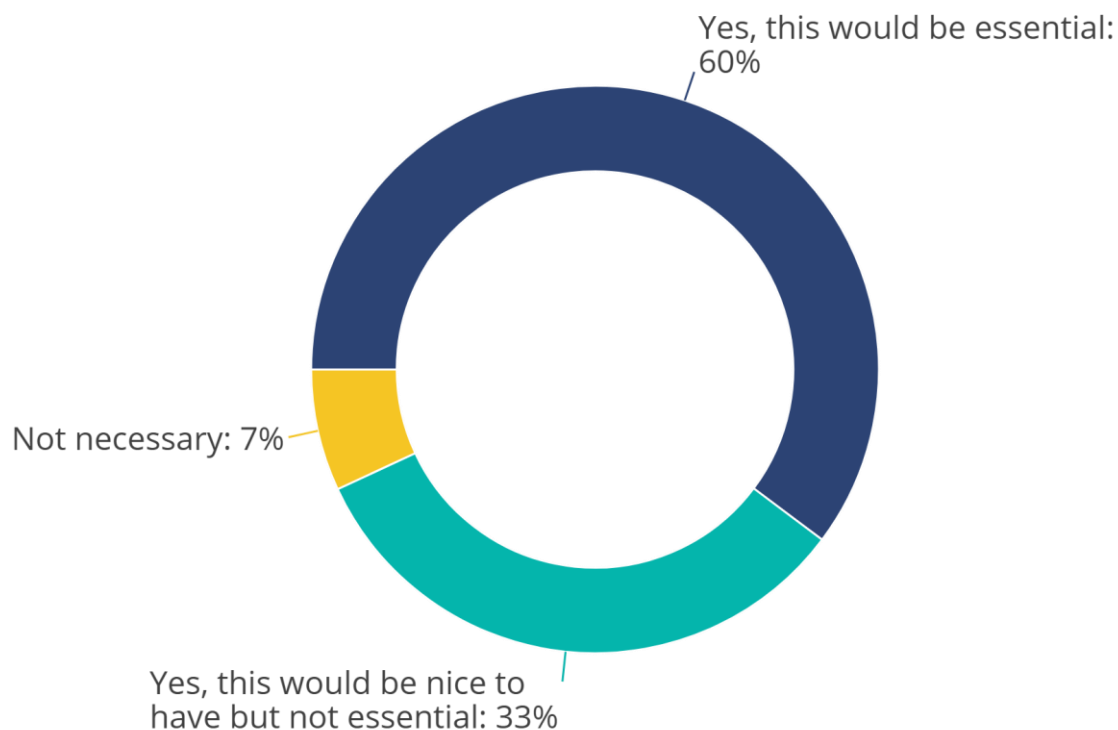
- 65% of females feel that this would be essential.

- Those living in Dublin and other large towns / cities are more likely to feel that this would be essential.

n=902

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Dublin City Council

SMART DUBLIN

Do you know who is responsible for regulating drone use in Ireland?

if yes->

Can you name the body responsible for regulating drone use in Ireland?

Yes: 19%

No: 81%

Irish Aviation Authority (IAA): 78%

Don't know / not sure: 11%

Incorrect answer: 11%
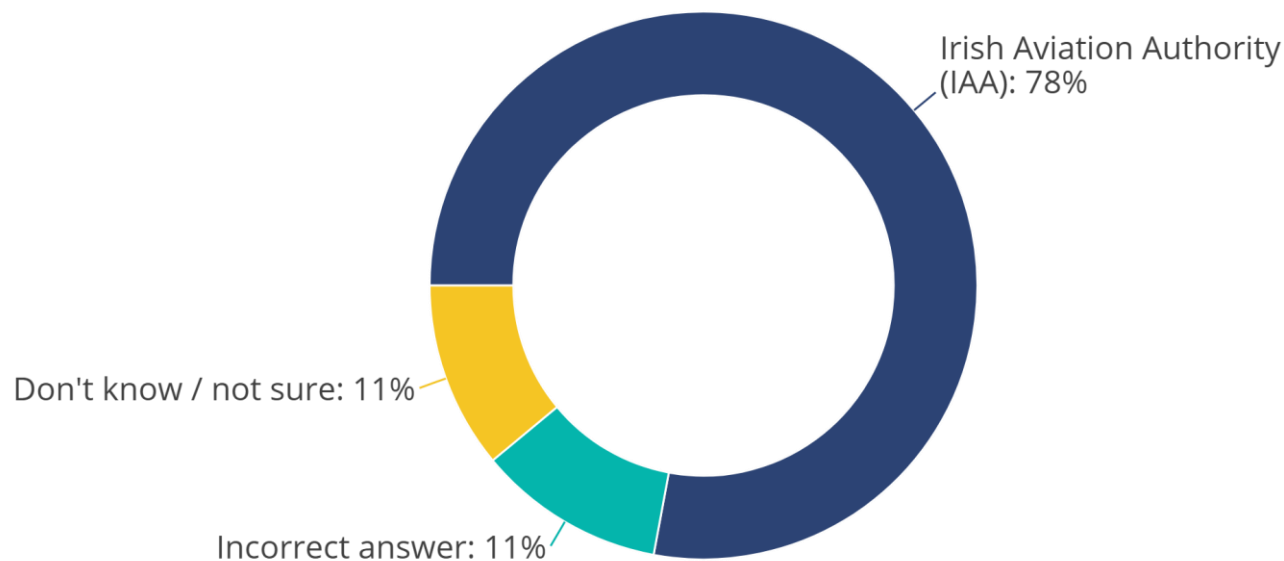
- Males, younger respondents, those living in Dublin / other large towns or cities and those on higher incomes were all more likely than average to know who is responsible for regulating drone use in Ireland.

n=801

Drones and Emerging Tech Survey 2021

Awareness of e-Scooters

Have you heard of e-Scooters before today?

No, I have not heard of these: 7%

Yes, but I am not sure what they are: 10%

Yes, and I know what they are: 83%

- Awareness is higher among males and among those living in Dublin and other large towns / cities

n=901

Overall, do you feel that e-scooters will have a positive or negative impact?

■ Very negative   ■ Rather negative   ■ Rather positive   ■ Very positive

| 8% | 21% | 46% | 26% |
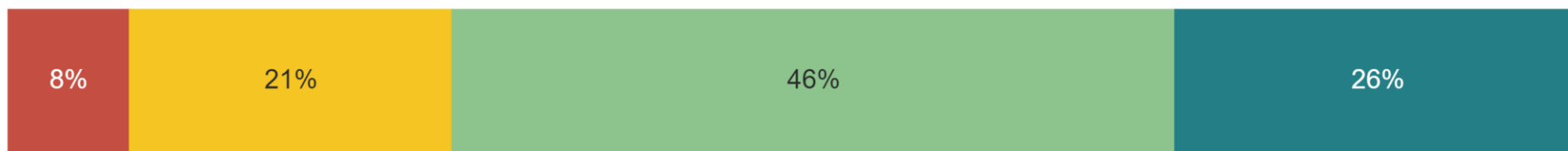
72%   feel that e-scooters will have a positive impact

- Positive sentiment is higher among younger age groups – highest among 18 to 34 year-olds at 85%

n=902

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Dublin City Council

SMART DUBLIN

What are the top positive aspects of e-scooters? Please select your **top 3** from the following list
% selecting in **top 3**

Aspect	%
Easier to get around towns and cities	64%
Less car traffic on the roads	55%
More affordable than car transport	52%
Better air quality	40%
Less noise pollution than car traffic	35%
Low maintenance costs	29%
Other (please specify)	2%
None of the above	4%
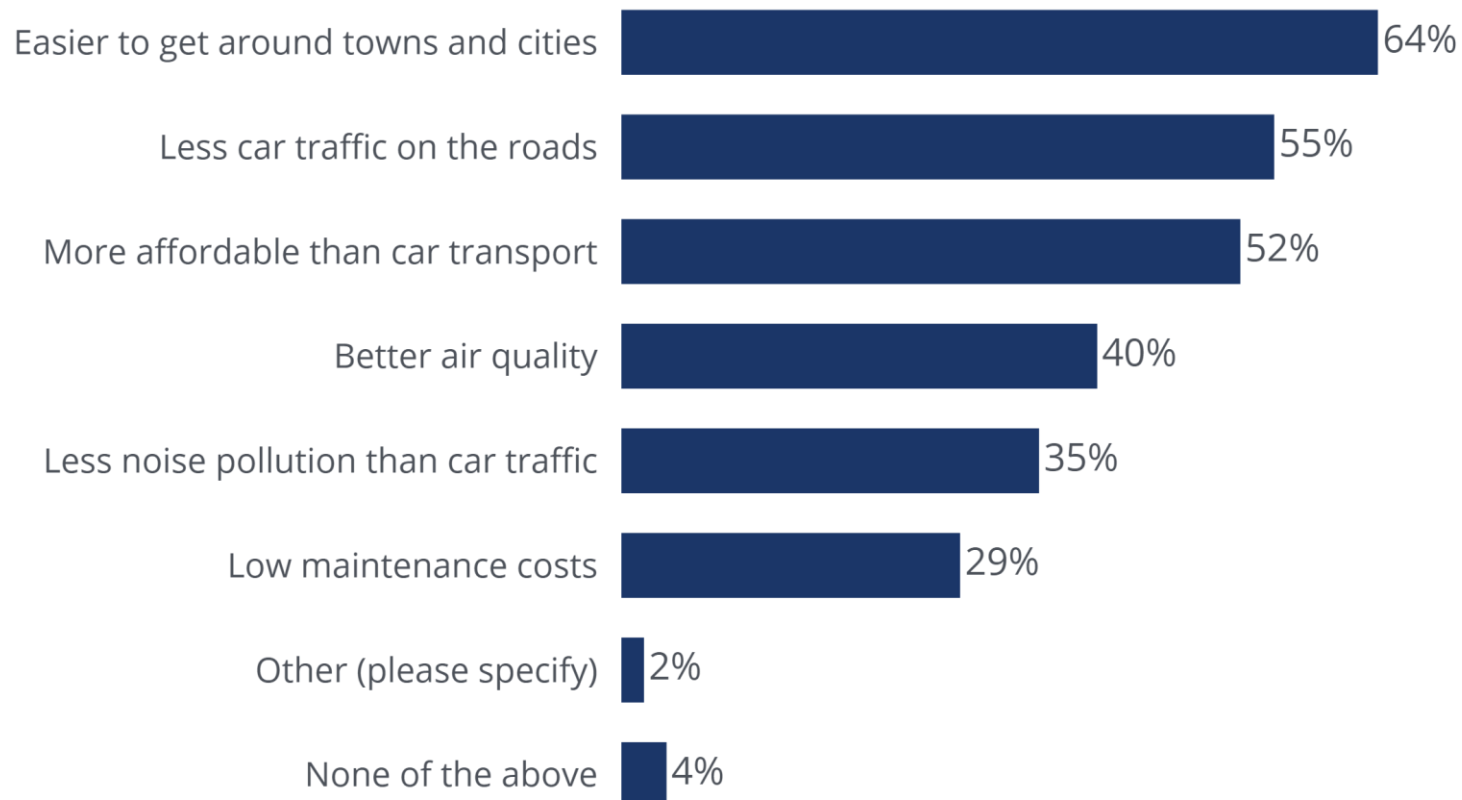
- "Better air quality" is a top positive aspect of e-scooters for 46% of those living in Dublin.

n=901

->All of the above

->An alternative that has potential but does not achieve the benefits listed in this section yet
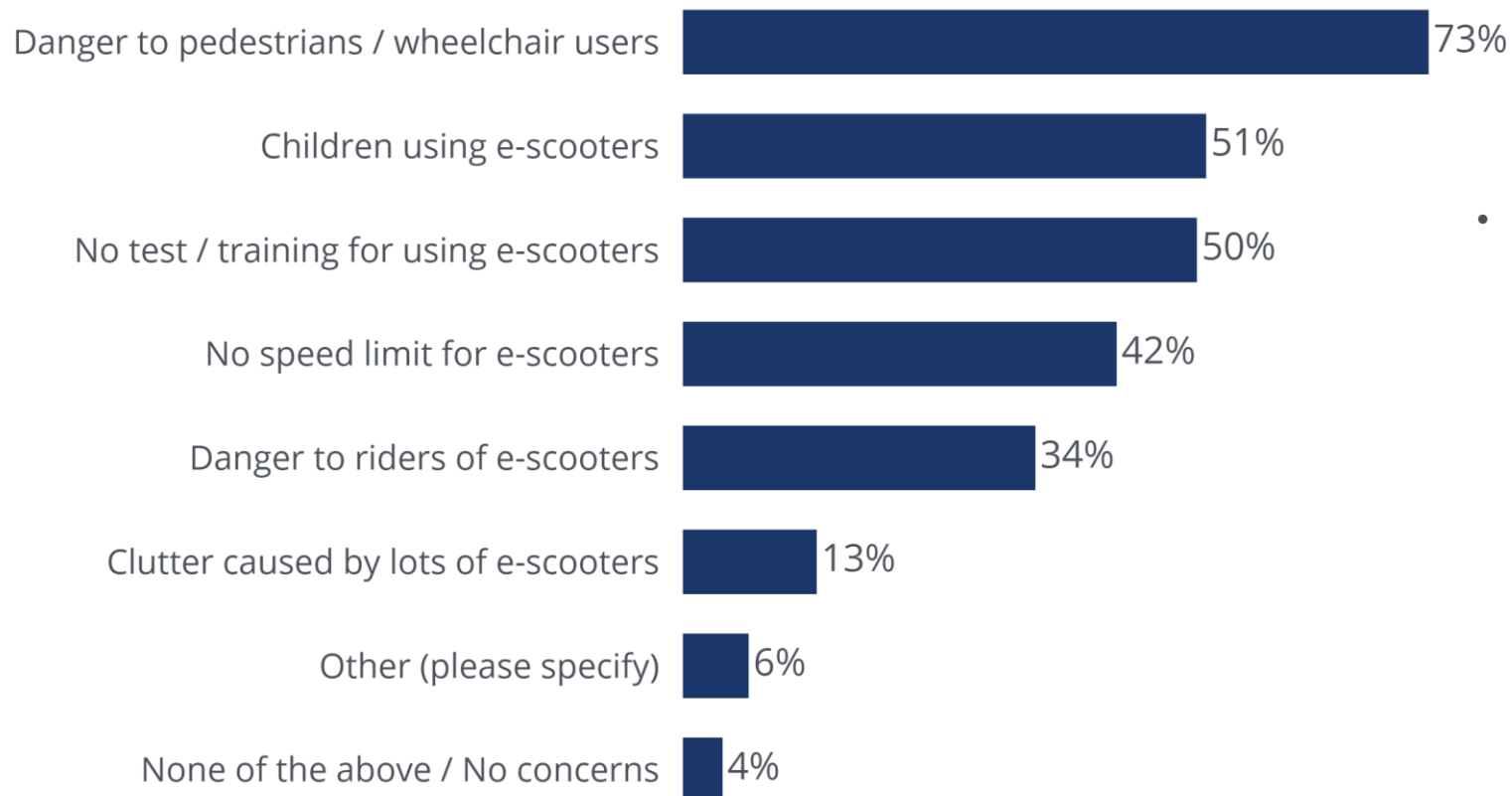
->Better for the environment

->Dangerous

->Dangerous for old people!

->e-scooters are, according to research, attracting people from public transport and walking and not reducing private vehicle use. making the urban area more hazardous.

->I don't use scooters. I believe they are overall positive impacts but the infrastructure is not there for scooter users or cyclists. There have been massive improvements recently with cycle lanes being pushed through. More of the same needs to be done.

->I think in yhe wrong hand they are dangerous and people flying atound on the pavement would easly knock people over and children between the ages of 8to 16 shouldnt be allowed to use them without syrict supervision and they should be made to get insurance as they can become a leathal weapon if not used correctly

->Less school runs

->Low carbon transport means.

->may be dangerous to you

->Safer than cars on our roads

->There are positive aspects but they have no 'right' place in the city infrastructure - they don't belong on the footpath or the road so any interaction I've had one with one has felt dangerous, nor am I convinced they replace a lot of would-be car journeys.

->They are nothing but Public Health Hazard by irresponsible people. The same as irresponsible people walking on footpath

->They prompt better road maintenance as they cannot be used on rough surfaces

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SMART DUBLIN

What concerns, if any, do you have about e-scooters? Please select your **top 3 concerns** from the following list
% selecting in **top 3**

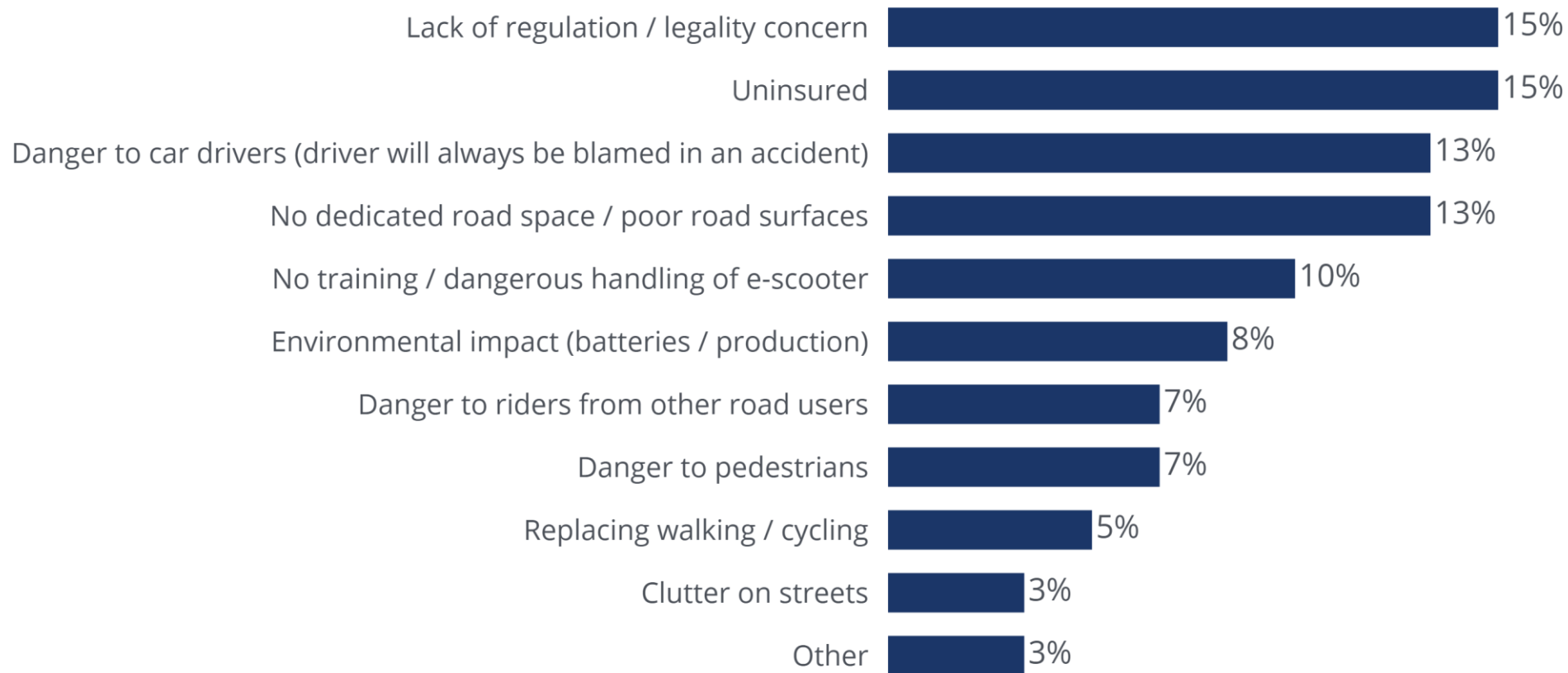| Concern	%
Danger to pedestrians / wheelchair users	73%
Children using e-scooters	51%
No test / training for using e-scooters	50%
No speed limit for e-scooters	42%
Danger to riders of e-scooters	34%
Clutter caused by lots of e-scooters	13%
Other (please specify)	6%
None of the above / No concerns	4%

- "Danger to pedestrians / wheelchair users" is a concern for 85% of over 65s, and "Children using e-scooters" is a concern for 65% of over 65s.

n=901

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Dublin City Council

SMART DUBLIN

Other concerns about e-Scooters specified

Concern	Percentage
Lack of regulation / legality concern	15%
Uninsured	15%
Danger to car drivers (driver will always be blamed in an accident)	13%
No dedicated road space / poor road surfaces	13%
No training / dangerous handling of e-scooter	10%
Environmental impact (batteries / production)	8%
Danger to riders from other road users	7%
Danger to pedestrians	7%
Replacing walking / cycling	5%
Clutter on streets	3%
Other	3%

n=60

Have you heard of 5G networks before today?
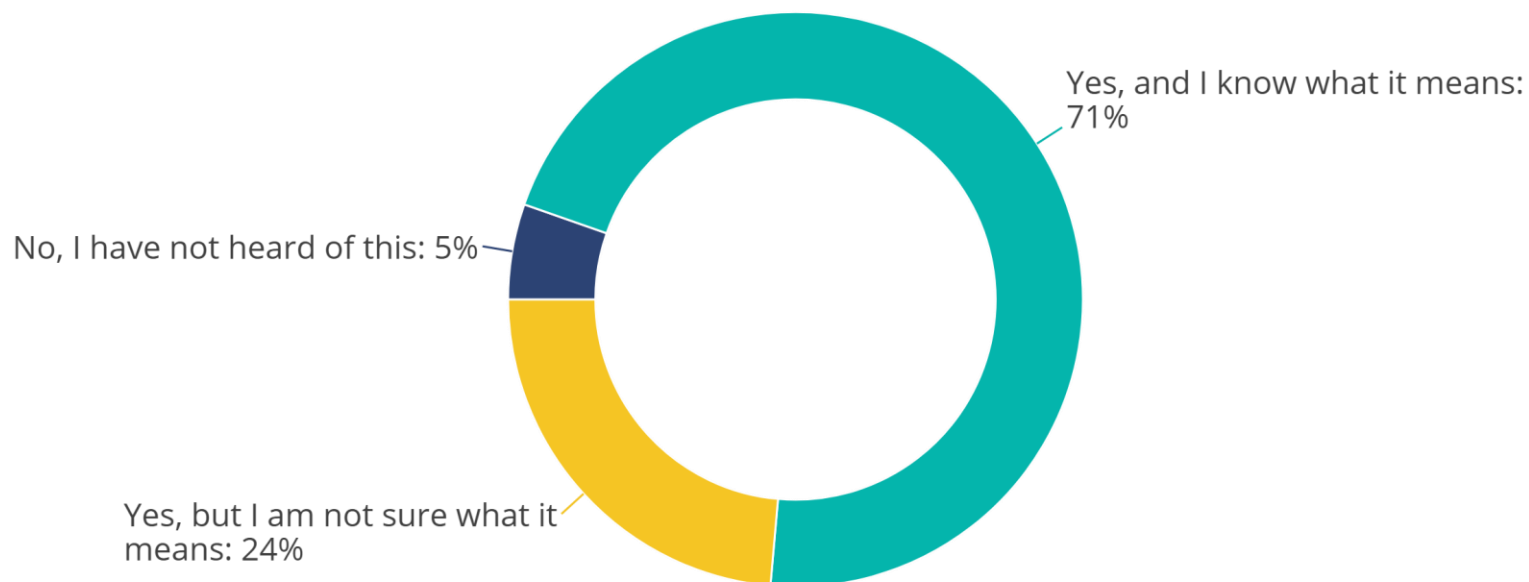
Yes, and I know what it means: 71%

No, I have not heard of this: 5%

Yes, but I am not sure what it means: 24%

- Awareness is higher among males, among younger respondents, and among those living in Dublin.

- Awareness increases as monthly income increases.

n=901

Overall, do you feel that 5G networks will have a positive or negative impact?

■ Very negative   ■ Rather negative   ■ Rather positive   ■ Very positive
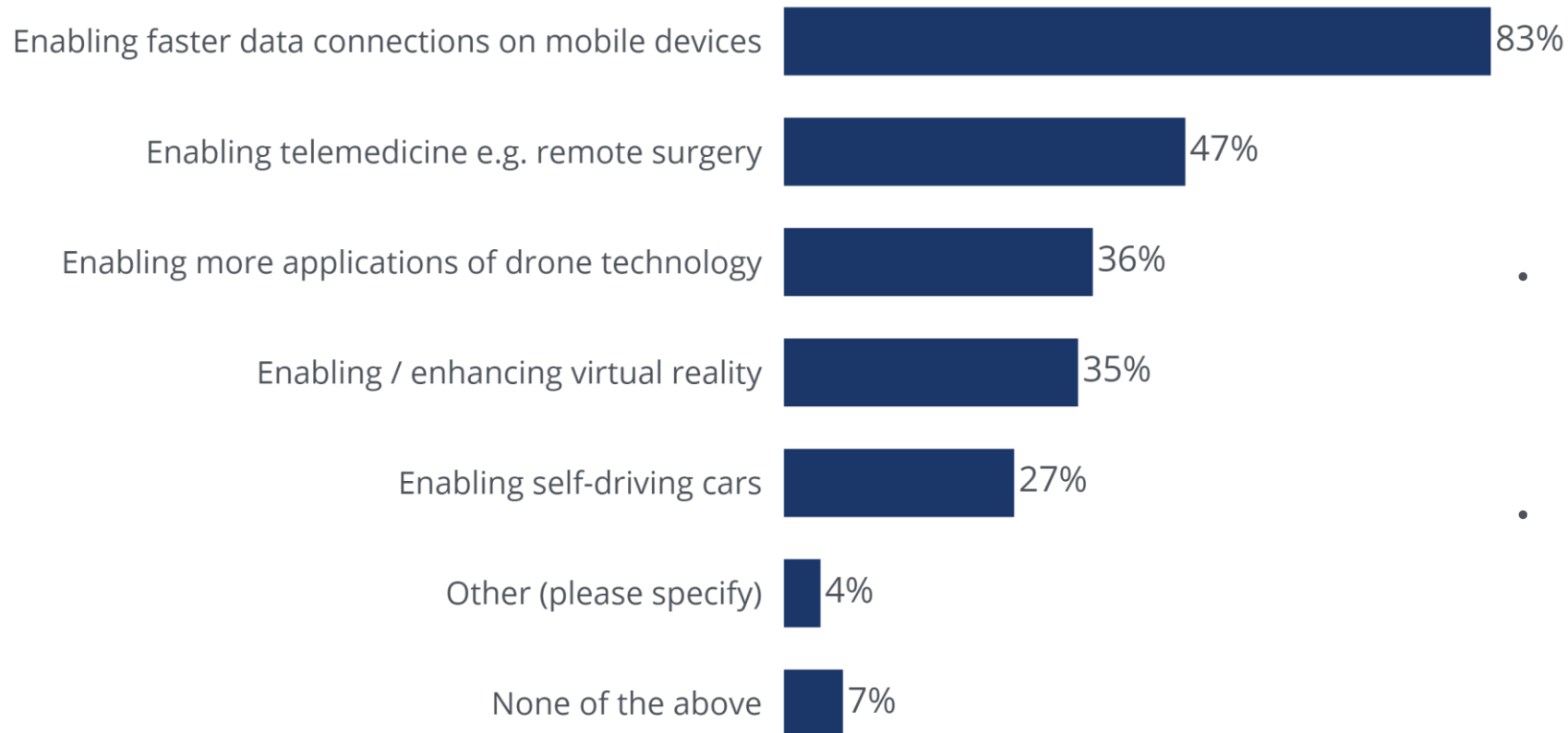
| 2% | 8% | 49% | 41% |

90% feel that 5G networks will have a positive impact

- This is highest among males (94%) and among those living in large towns and cities (94%)

n=901

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SMART DUBLIN

What are the top positive aspects of 5G networks? Please select your **top 3** from the following list
% selecting in **top 3**

Aspect	%
Enabling faster data connections on mobile devices	83%
Enabling telemedicine e.g. remote surgery	47%
Enabling more applications of drone technology	36%
Enabling / enhancing virtual reality	35%
Enabling self-driving cars	27%
Other (please specify)	4%
None of the above	7%

- "Enabling self-driving cars" is a stronger positive among younger respondents while "Enabling telemedicine" is stronger among older respondents.

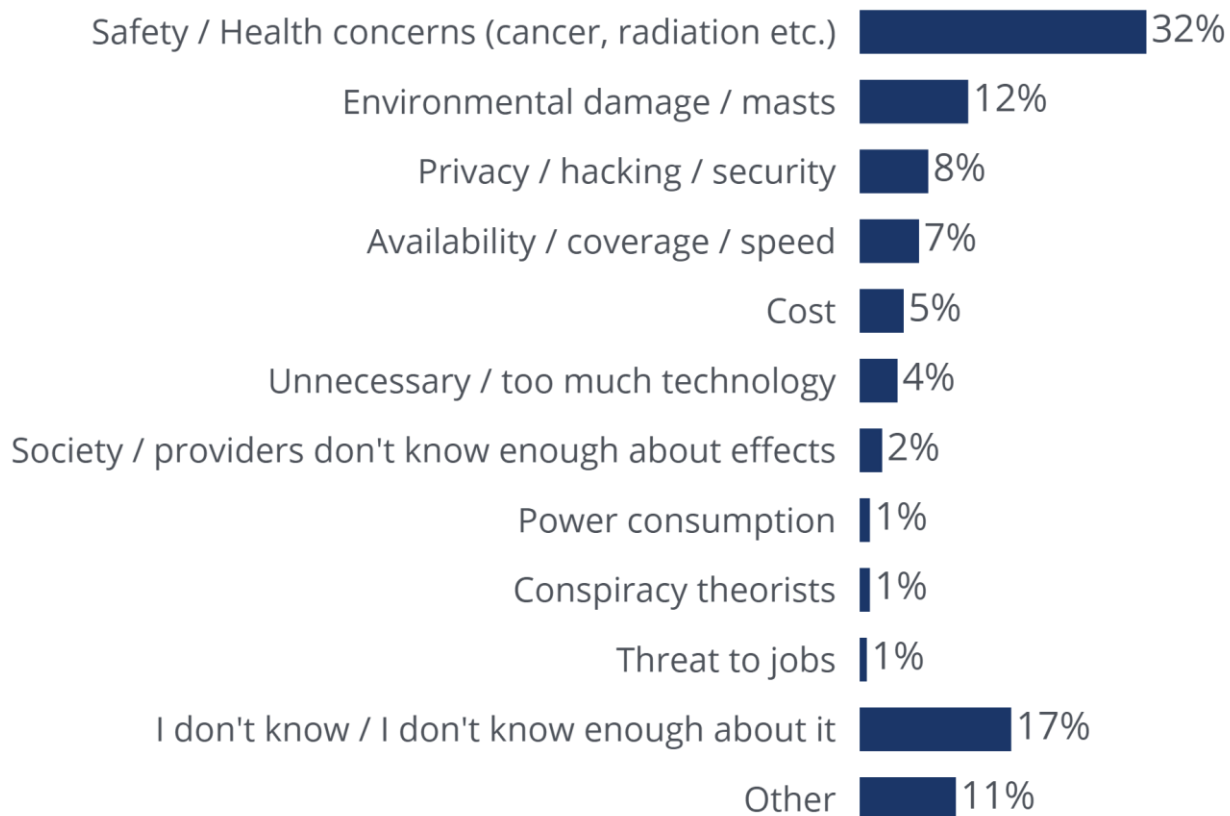- "Enabling telemedicine" is a top positive aspect for 57% of Connacht / Ulster respondents.

n=900

->5g would be great if it was made safe

->Allowing people in rural area have faster speed internet allowing work from home, use of technology in farming etc

->Automation and connectivity for remote IoT devices

->Better competition, reducing prices and increasing access.

->Better connection for IoT medical devices Better connections for remote areas

->Better connectivity could help in rural areas, allow for less concentration of population

->Better internet connection in rural Ireland potentially

->Better more penetrative internet presence

->Driver assisted rather than self drive

->Enables It/ot integration at a nationwide scale

->enabling digital twin technology in smart buildings and cities

->Enabling IoT

->Enhancing online applications, in general

->Faster broadband and phone coverage.

->Faster speeds for hospitals and schools

->General increase in connectivity and in rural areas, where a mast is sited, less dependence on fixed line broadband.

->Hopefully we can share the internet with the developing world

->I believe the biggest benefits of 5G technology will be for enterprise use cases and won't make a huge amount of difference for those of us who already access 4G on our devices.

->I don't feel there are specific benefits beyond allowing telcos to further trade off their spend vs. Service (historically better tech has meant telcos spending less on infrastructure rather than using the improved tech to provide better service).

->I think we don't fully know yet what the best benefits will be

->Improved real time info

->Lower energy comns

->new applications

->phone technology in general would be better and faster

->Pollution/ Emit radiation/ Public Health Hazard

->Providing better rural broadband

->Providing fast, reliable internet speeds not just for mobile devices outside of urban areas.

->Raising the bar for mobile data across the board meaning rural areas have access to faster wireless broadbannd

->Real time information such as traffic congestion or closed roads.

->Reduction of carbon emissions with smart tech based on 5g

->remote working

->The ability to connect rural homes to high speed broadband without physical connection. Empowering rural Ireland and enabling people to work and live outside cities.

->Tracking idiots on e-scooters and tracking drones flown by idiots

What concerns, if any, do you have about 5G networks?

(categorised from open-ended comments)

Concern	Percentage
Safety / Health concerns (cancer, radiation etc.)	32%
Environmental damage / masts	12%
Privacy / hacking / security	8%
Availability / coverage / speed	7%
Cost	5%
Unnecessary / too much technology	4%
Society / providers don't know enough about effects	2%
Power consumption	1%
Conspiracy theorists	1%
Threat to jobs	1%
I don't know / I don't know enough about it	17%
Other	11%

"Cancer causing radiation."

"Danger to health and the environmental impact."
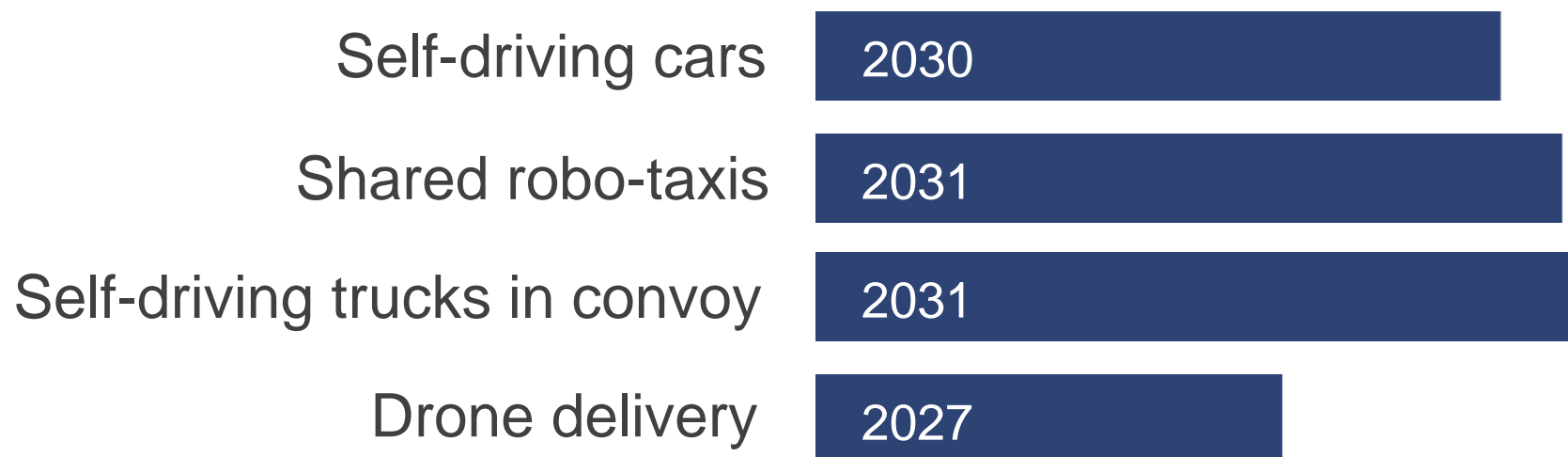
"Energy consumption from network and mast locations."

"Privacy and cyber security."

n=290

When do you think the use of autonomous vehicles will be a reality for members of the public in Ireland? anticipated year

Self-driving cars	2030
Shared robo-taxis	2031
Self-driving trucks in convoy	2031
Drone delivery	2027

- Those living in the countryside or one-off housing had longer timeframes for the realisation of all types of autonomous vehicles.

n=871

What, if any, are your concerns about how technology is evolving?
(categorised from open-ended comments)

Concern	%
Evolving too fast / hard to understand	19%
Will cause job losses / replace human workers	17%
Safety / security / dangerous	16%
Privacy	10%
Concern about rules / regulation / safety	8%
Technology achieving consciousness / taking control	8%
Impact on environment / energy requirements	6%
Over-reliance on technology / trusting technology	5%
Reduces human interaction / lack of personal touch	4%
Risk to road users / Irish roads / fear of self drive vehicles	4%
Hacking	4%
Social divide / lack of consideration for all-round implications	3%
Negative uses / hate / crime	2%
Health effects	2%
Cost of technology	2%
Profit driven	1%
Don't know / not sure	2%
Other	9%

What are your hopes for how technology will evolve?
(categorised from open-ended comments)

Category	Percentage
Improve overall quality of life for all	24%
Positive environmental impact	17%
Improve healthcare / health benefits	14%
It evolves safely / good security / regulation	13%
Accessible to all	9%
Positive/ hopeful / good / with no explanation why	6%
It evolves slowly	5%
Considers employment / peoples' work	5%
Improves transport	5%
Affordable	3%
It evolves quickly	2%
Assist rather than replace humans / maintain balance	2%
Considers privacy	1%
None	6%
Don't know / unsure	5%
Other	9%

Accelerating the Potential of Drones for Local Government

Project Partners