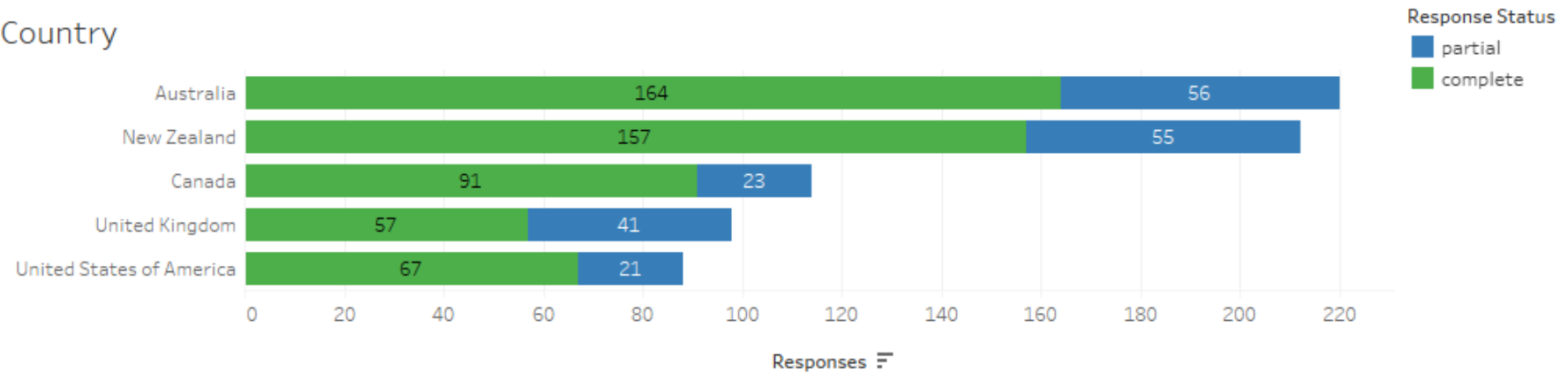


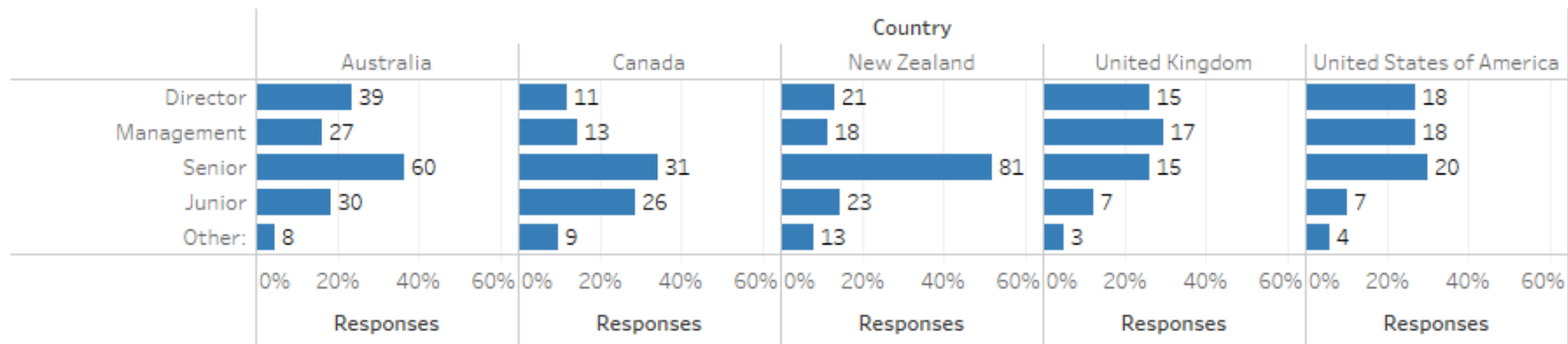
Supplementary Material 1

Demographics of Survey Respondents

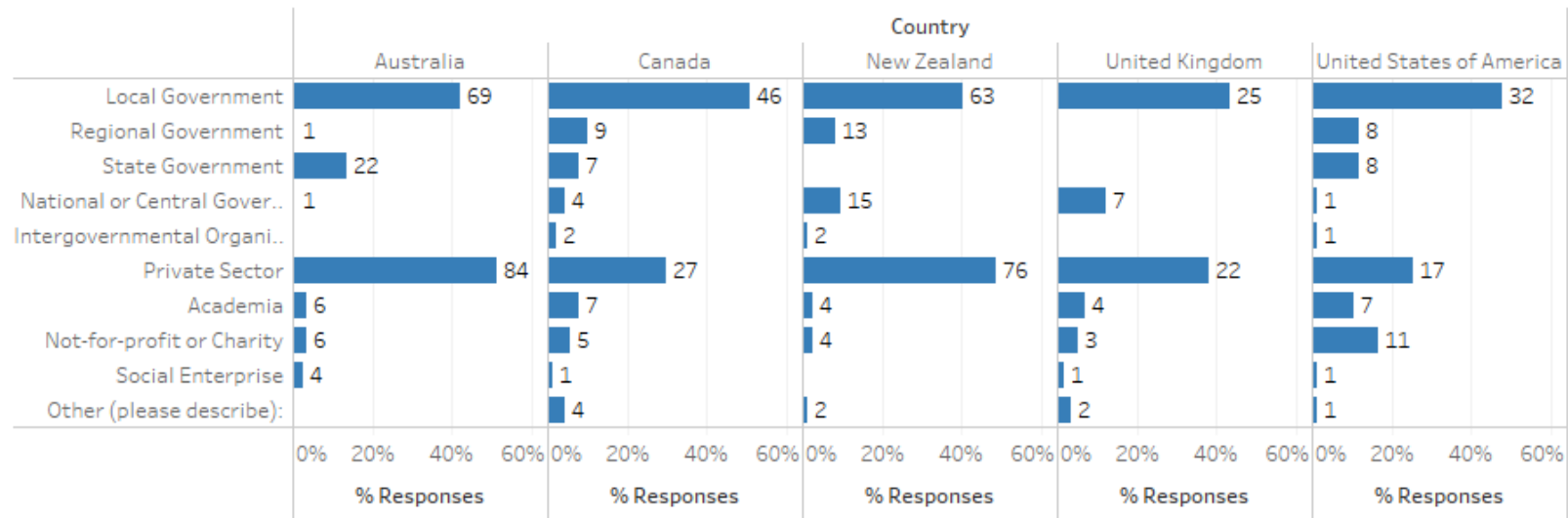
Country



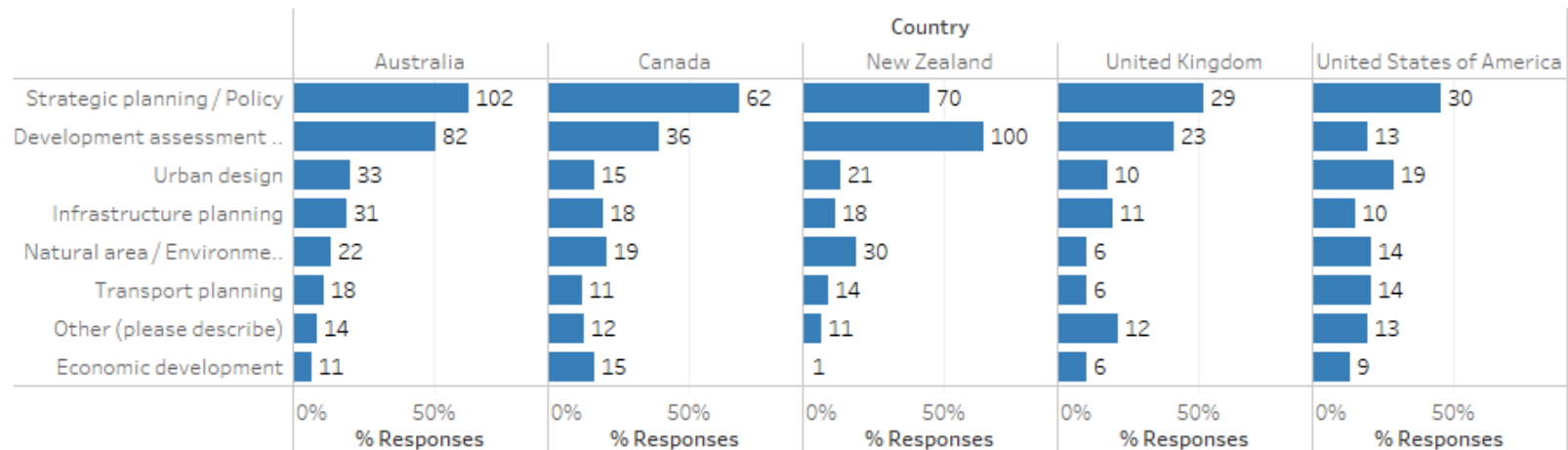
Level



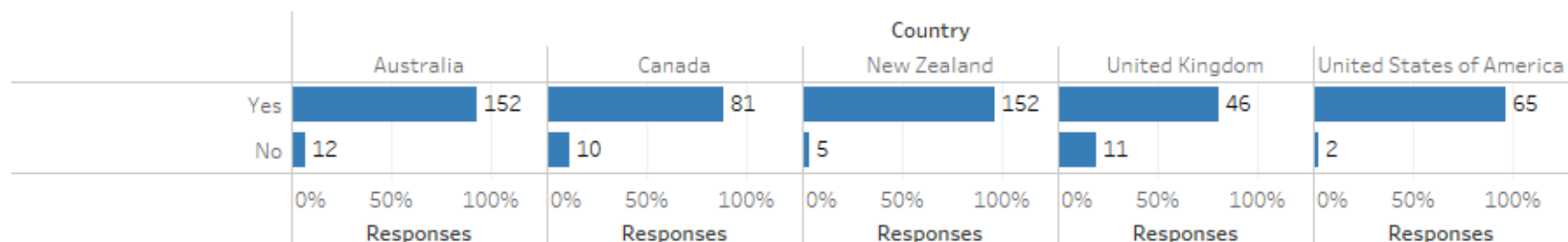
Sector



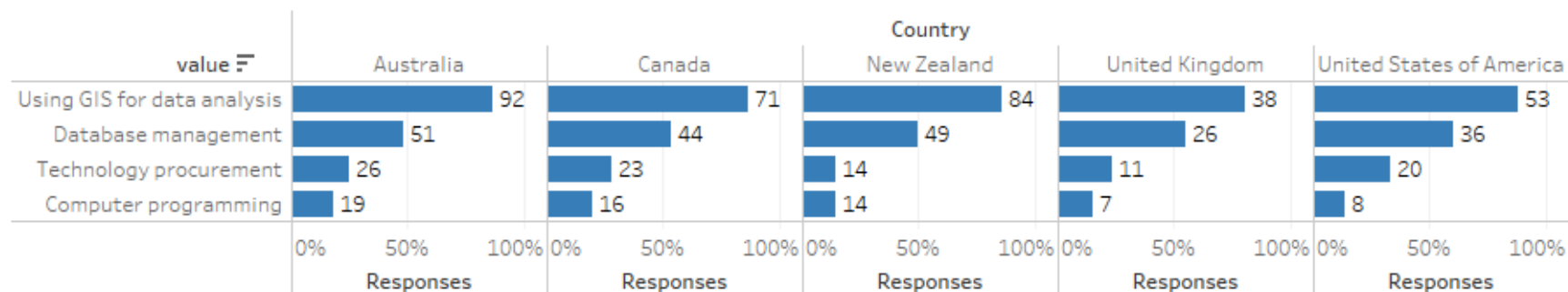
Specialty



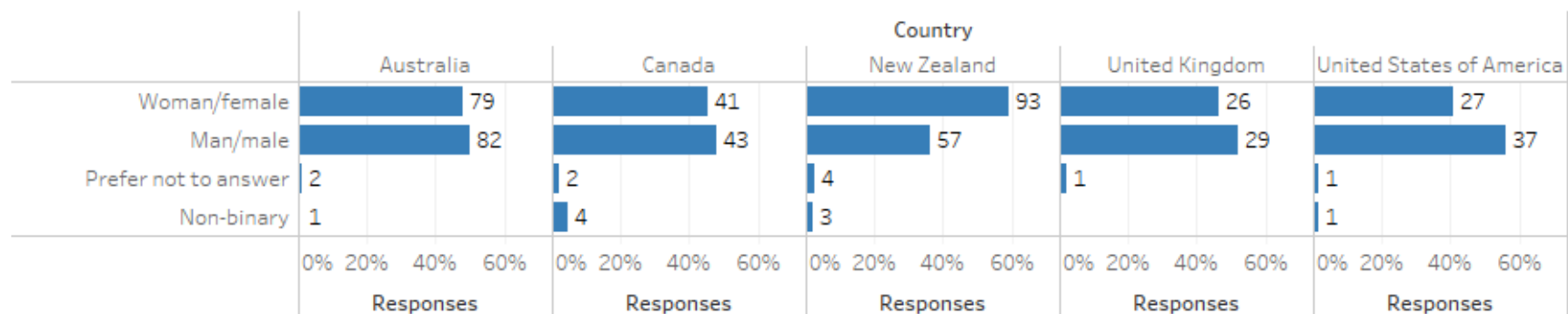
Member of Inst./Assoc.



Tech Experience



Gender



Supplementary Material 2

Survey Instrument

Start of Block: CURRENT TECHNOLOGY USE (1/4)

Q1 Which country do you work in?

- ☐ Australia
- ☐ Canada
- ☐ New Zealand
- ☐ United Kingdom
- ☐ United States of America
- ☐ Other: _____

Q2 What type of software, web or phone applications do you use in your current role?

Q2A General Office Software/Applications (Select all that apply)

- ☐ Word processing (e.g. Microsoft Word)
- ☐ Spreadsheets (e.g. Microsoft Excel)
- ☐ Presentations (e.g. Powerpoint)
- ☐ Video conferencing software (e.g. Zoom, Microsoft Teams)
- ☐ Social media platforms (e.g. Twitter, Facebook, LinkedIn)
- ☐ Administrative systems (e.g. Asset Management, HR Systems)
- ☐ Project management (e.g. Microsoft project, Trello)
- ☐ Online whiteboard and brainstorming software (e.g. Mural, Miro)
- ☐ Website editing (e.g. WordPress, Drupal, HTML)
- ☐ Graphics and Design (e.g. Adobe creative suite)
- ☐ Other: _____

Q2B Maps and GIS Software/Applications (Select all that apply)

- ☐ Online mapping / virtual globe (e.g. Google Earth, Street View, Nearmap)
- ☐ Digital twins / 3D City Viewers (e.g. VU City)
- ☐ Geographic information systems (e.g. ESRI ArcGIS, QGIS)
- ☐ 3D model making (e.g. ESRI City Engine, Revit, SketchUp)
- ☐ Augmented/Virtual reality (e.g. Unreal Engine, Unity)
- ☐ Other: _____

Q2C Planning Specific Software (Select all that apply)

- ☐ Development application management systems/Back office systems
- ☐ ePlans (i.e. planning documents displayed in a digital system)
- ☐ Specialised community engagement applications (e.g. Consultation Manager, Engagement HQ, Jotform, Survey Monkey)
- ☐ Discipline-specific analytical software (e.g. flood modelling, transport modelling)
- ☐ Building Information Modelling
- ☐ Future scenario forecasting, planning and evaluation modelling (e.g. UrbanSim, Raise, What If?)
- ☐ Development feasibility Software (e.g. Estate Master)
- ☐ Automated or semi-automated development approval systems
- ☐ Automated or semi-automated document-preparation software
- ☐ Other: _____

Q2D Data Access and Analysis Software/Applications (Select all that apply)

- ☐ Data portals (e.g. data.gov.uk)
- ☐ Data visualisation (e.g. Tableau, Power BI)
- ☐ Programming languages (e.g. Python, R, Javascript)
- ☐ Machine learning or other artificial intelligence tools
- ☐ Other: _____

Q3 What type of data do you refer to in your current role?

Q3A Planning, Infrastructure and Business Themed Datasets (Select all that apply)

- ☐ Development regulation or policy boundaries (e.g. zoning, overlays)
- ☐ Property and development data (e.g. property boundaries, development approvals)
- ☐ Real estate data (e.g. sale prices, rents, vacancy rates)
- ☐ Employment and business data (e.g. jobs, business location)
- ☐ Infrastructure and utilities usage data (e.g. parks, schools, roads and hospitals)
- ☐ Transport and mobility data (e.g. bike and pedestrian counts)
- ☐ IoT data (real-time data e.g. air quality or pedestrian data)
- ☐ **Other (please separate multiple entries with commas):** _____

Q3B Demographic and Community Themed Datasets (Select all that apply)

- ☐ Demographic data (e.g. census, population projections)
- ☐ Cultural heritage data (e.g. protected buildings)
- ☐ Community consultation data
- ☐ First peoples/indigenous community data
- ☐ Social media data (e.g. tweets)
- ☐ Public health data (e.g. Covid19 cases)
- ☐ **Other (please separate multiple entries with commas):** _____

Q3C Environment Themed Datasets (Select all that apply)

- ☐ Environmental data (e.g. natural habitat areas, water quality)
- ☐ Natural hazards data (e.g. probable flood extents, bushfire hazard, landslip hazard)
- ☐ Climate change data (e.g. emissions amount, predicted temperature change)
- ☐ **Other (please separate multiple entries with commas):** _____

Q4 How do you work with data in your role? (Select all that apply)

- ☐ Through external consultants
- ☐ Through external public agencies
- ☐ Through an internal GIS or data analytics team
- ☐ I view the data through existing websites, maps and dashboards
- ☐ I undertake my own mapping and data analysis
- ☐ **Other:** _____

Start of Block: EXPECTED CHANGES (2/4)

Q5 On a scale from 1 to 5 how much do you think digital technology will change the work you do in your current role within the next 10 years?

- ☐ 1 (not at all)
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 (complete change)

Q6 Please describe any changes you anticipate from digital technology:

Q7 On a scale from 1 to 5 how well prepared do you feel for this change?

- ☐ 1 (not at all prepared)
 - ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ 5 (completely prepared)
-

Q8 On a scale from 1 to 5 how well do you feel your collaborators and community are prepared for changes related to digital technology?

- ☐ 1 (not at all prepared)
 - ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ 5 (completely prepared)
-

Q9 On a scale from 1 to 5 how difficult is it to implement new digital technology in your workplace?

- ☐ 1 (very easy)
 - ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ 5 (very difficult)
-

Q10 On a scale from 1 to 5 please rate the impact of the following common barriers to the adoption of technology in your workplace.

	1 - No impact	2	3	4	5 - Large impact
Costs and resources (e.g. staff training, purchase costs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Change resistance (e.g. cultural inertia, lack of management support)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertainty and risk (e.g. unclear business case, unclear customer demand)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor quality technology (e.g. usability, interoperability issues with existing systems)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 Please describe any specific barriers you would like to share regarding adoption of new technology in your workplace:

Q12 If it was your decision, what changes would you make to technology use in your workplace and why?

Q13 On a scale from 1 to 5 how has COVID19 impacted the use of digital technology in your role?

- ☐ 1 (no change)
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 (complete change)

Q14 Please describe how COVID19 has impacted the use of digital technology in your role.

Start of Block: COMMUNITY ENGAGEMENT (3/4)

Q15 Does your role involve engagement with external collaborators, such as community members and partners?

- ☐ Yes
- ☐ No

IF YES

Q16 On a scale from 1 to 5 please rate how digital tools impact access to engagement and collaboration activities?

- ☐ 1 (much less accessible)
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 (much more accessible)

Q17 Briefly describe the reason for your score

Q18 Do you use digital tools for community engagement?

- ☐ Yes
- ☐ No

IF YES

Q19 What tools do you use for digital community engagement?

Q20 When undertaking digital community engagement, do you or your organization consider people who have less access to digital technology? (e.g. financial, internet or knowledge barriers)

- ☐ Yes
- ☐ No

Q21 When undertaking digital community engagement do or your organization consider people with disabilities? (e.g. people/persons who are deaf or hard of hearing or who have low vision)

- ☐ Yes
- ☐ No

IF YES

Q22 Briefly describe the measures you take to accommodate people who have less access to digital technology (e.g., hybrid meetings, options to call in to video conferences, library tech loan programs, etc.)

IF YES

Q23 Briefly describe the measures you take to accommodate people with disabilities when employing digital community engagement? (e.g. people who are deaf or hard of hearing or who have low vision)

Start of Block: LEARNING AND PROFESSIONAL DEVELOPMENT (4/4)

Q24 Based on your personal usage, drag and drop the following items to rate how important the following sources are for you to keep up with the latest developments in planning.

(Question shows a random selection of 8 items from a larger pool)

- _____ My workplace
- _____ Other peer networks
- _____ Professional newsletters and magazines
- _____ E-mail lists
- _____ Industry reports
- _____ Academic publications
- _____ Web searches
- _____ Seminars and workshops
- _____ Conferences
- _____ Study Tours
- _____ Short courses
- _____ Postgraduate university study
- _____ LinkedIn
- _____ Twitter
- _____ Facebook

Q25 How often do you engage with content about the latest developments in digital technology and planning?

- ☐ Everyday
- ☐ A few times a week
- ☐ Weekly
- ☐ Monthly
- ☐ Less frequently

Q26 Please indicate on a scale from 1 to 5, how strongly you agree with the following statement:

"At work I am given the time and resources I need to keep up with changes to digital technology"

- ☐ 1 - Strongly disagree
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 - Strongly agree

Q27 Your workplace is allocating time and money to improve the digital skills of employees. If it was your decision, what would your team learn and why?

Start of Block: Final Comments

Q28 If you have any additional comments on impact of digital technology on planning work you would like to share, please write them below:

Start of Block: Demographics

Q29 What type of institution/s do you currently work for?

- ☐ Local Government
- ☐ Regional Government
- ☐ State Government
- ☐ National or Central Government
- ☐ Intergovernmental Organisation
- ☐ Private Sector
- ☐ Not-for-profit or Charity
- ☐ Social Enterprise
- ☐ Academia
- ☐ Other (please describe): _____

Q30 What city or region do you work in? _____

Q31 Approximately how many years of professional experience do you have?

Q32 Do you have experience in (select all the apply):

- ☐ Database management
- ☐ Using GIS for data analysis
- ☐ Computer programming
- ☐ Technology procurement

Q33 What category/categories best describes your current role?

- ☐ Development assessment / Resource consenting
 - ☐ Strategic planning / Policy
 - ☐ Natural area / Environmental management
 - ☐ Transport planning
 - ☐ Economic development
 - ☐ Infrastructure planning
 - ☐ Urban design
 - ☐ Other (please describe) _____
-

Q34 What level best describes your role?

- ☐ Junior
 - ☐ Senior
 - ☐ Management
 - ☐ Director
 - ☐ Other: _____
-

Q35 How do you describe your gender?

- ☐ Man/male
 - ☐ Woman/female
 - ☐ Non-binary
 - ☐ I use a different term: _____
 - ☐ Prefer not to answer
-

Q36 Are you currently a member of your professional planning association or institute?

- ☐ Yes
 - ☐ No
-

Start of Block: Extra Questions - yes/no

Q37 We would like to ask you some extra questions about the type of software and data you use in your work to build a more detailed picture of current technology use in the planning profession. Based on your answers at the start of the survey it is estimated that this will take approximately [calculation based on past responses] extra minutes.

- ☐ **Yes, I would like to contribute extra information**
 - ☐ **No thank you, I would like to end the survey now**
-

Start of Block: Extra Questions - Maps and GIS Software

Q38 What is the name of the software or application/s you use for:

[software type based on past responses]

(please separate multiple answers with a comma)

- ☐ Name of software: _____
 - ☐ Don't know
-

Start of Block: Extra questions - Planning Specific Software

Q39 What is the name of the software or application/s you use for:

[software type based on past responses]

(please separate multiple answers with a comma)

- ☐ Name of software: _____
 - ☐ Don't know
-

Start of Block: Extra Questions - Data Access and Visualization Software

Q40 What is the name of the software application/s you use for:

[software type based on past responses]

(please separate multiple answers with a comma and skip if you don't know)

- ☐ Name of software: _____
- ☐ Don't know

Start of Block: Extra Questions - Data (Planning)

Q41 The following questions relate to the following data you use:

[data type based on past responses]

Q42 What is the source/s of this data?

- ☐ Public sector / Government
- ☐ Private sector or social enterprise
- ☐ Non-for-profit / charity / other agency
- ☐ Don't know

Q43 How is the data provided?

(select all that apply)

- ☐ Free and openly available
 - ☐ Free but restricted access / internal use only
 - ☐ Paid
 - ☐ Don't know
-

Thematic Codes for Short Answer Survey Responses

	Name	Files	References
[-]	Combined	0	0
[-]	Q10 - Changes	5	530
[-]	All About Data	5	209
+	Better insights from data	5	54
+	Better access to data	5	43
+	Better data visualisation	5	43
+	More detailed, accurate or precise data	5	37
+	Easier to collect and analyse data	5	24
+	Greater use and reliance on data	4	8
[-]	Automation and Efficiency	5	184
+	Digitisation (general)	5	64
+	Automation (general)	5	26
+	Automated assessments and approvals (part or full)	4	24
+	Digitisation of assessments and approvals (part or full)	5	24
+	Integration	5	22
+	Efficiencies (general)	4	18
+	Remote work	3	6
+	Comments and Concerns	5	89
[-]	Collaboration and Communication	5	48
+	Better and more accessible engagement	5	12
+	More virtual interactions	3	12
+	Improved communication of information	3	9
+	More interactive tools	4	9
+	more collaboration (general)	3	6
[-]	Q31 - Desired Learning	5	334
[-]	Data Analysis	5	120
+	Spatial analysis and visualisation	5	55
+	Data analysis	5	44
+	Coding	4	12
+	Data visualisation	5	9
[-]	General office systems and efficiencies	5	94
+	Other office software	5	33
+	Improved efficiencies and automation (general)	5	18
+	Better understanding of existing systems	5	16

Thematic Codes for Short Answer Survey Responses

Name	Files	References
Other - Planning Specific	4	15
File management and cloud	5	12
Other	5	82
Engagement and Collaboration Platforms	5	38
Effective digital communication (general)	4	19
Using collaboration platforms and tools (specific)	5	19
Q16 - Desired Changes	5	316
General efficiencies	5	141
Other	5	106
Data	5	55
Engagement and communication	2	14
Q15 - Barriers	0	0
Cost and Resources	5	103
Quality and Compatibility	5	78
Change Resistance	5	64
Uncertainty	5	36
Coordination	5	35
Experienced few barriers	1	2
Q18 - Covid Impact	0	0
Virtual meetings	5	176
Faster Digitisation	5	100
Remote work	5	75
Online planning activities	5	42
Problems	5	39
Not much change	5	28
Online Collaboration	4	28
Shared drives and ways of working	4	20
More accessible	4	15
Working arrangement changes (other)	4	14
Q21 - Consultation Access Reasons	0	0
Benefits	5	196
0 - More convenient (time, travel, location) and wider	5	84
0 - Use and expectations of technology increasing in t	4	20
0 - Easy to access and share information online	5	17
0 - Greater options and channels	5	17

Thematic Codes for Short Answer Survey Responses

Name	Files	References
+ 0 - More participation	2	13
+ 0 - Easier communication across large distances	4	12
+ 0 - Better visual presentation	4	11
+ 0 - Quicker to collect and process data	5	10
+ 0 - Technology is getting better	2	8
+ 0 - Meeting format easier to speak and share	2	4
- Drawbacks	5	120
+ 0 - Excludes certain people or groups	5	51
+ 0 - Real world better than digital	4	31
+ 0 - Digital not used, or not used to full potential	5	16
+ 0 - Poorly designed tools	3	10
+ 0 - Training required	3	5
+ 0 - Legislative requirements not up to date	2	3
+ 0 - Not much has changed	1	3
+ 0 - Cost of technology	1	1
- Depends	4	16
+ Different approaches needed for different people or c	3	6
+ Hybrid approach required	3	5
+ Other	3	5
- Q23 - Digital Engagement Tools	0	0
+ 0 - Online meetings and collaboration platforms	5	138
+ 0 - Online surveys	5	76
+ 0 - Website	5	70
+ 0 - Social Media	5	63
+ 0 - Specific Engagement platforms	5	61
+ 0 - Other	5	52
+ 0 - Spatial mapping and 3D	5	36
+ 0 - Virtual whiteboard	5	29
+ 0 - email	4	16
+ 0 - Webinar and video	4	16
+ 0 - Presentations	4	14
+ 0 - Online submission portals	2	13
+ 0 - Online comments and forums	5	12
+ 0 - Interactive Q&A	4	10
- Q26 - Digital access considerations	0	0

Thematic Codes for Short Answer Survey Responses

★	Name	Files	References ▾
+	0 - Other	5	143
+	0 - Hybrid Meetings	5	53
+	0 - In person options	5	47
+	0 - Phone call and call-in	5	45
+	0 - Alternative options (general)	5	30
+	0 - Information or advertising available at public locations	4	28
+	0 - Paper and physical material	4	28
+	0 - Mail out and mail in	5	21
+	0 - Virtual meetings	5	13
-	Q32 - Additional Comments	0	0
+	Barrier related	5	27
+	Purpose or design related	5	16
+	Training and skills related	4	14
+	Insights related	4	9
+	Access related	3	6
+	Efficiency related	3	6
+	Community and engagement related	3	5
-	Q37 - Digital ability considerations	0	0
+	0 - Other	5	37
+	0 - Document and website design considerations	5	28
+	0 - Captions	4	24
+	0 - Multiple formats (generic)	5	16
+	0 - Personal assistance and one-on-one sessions	4	11
+	0 - Few considerations made or unsure	4	9
+	0 - Follow standards	4	9
+	0 - Alt text	3	8
+	0 - Screen readers	3	8
+	0 - Sign Language	3	7
+	0 - Adapt to individuals	1	6
+	0 - Physical media	4	6