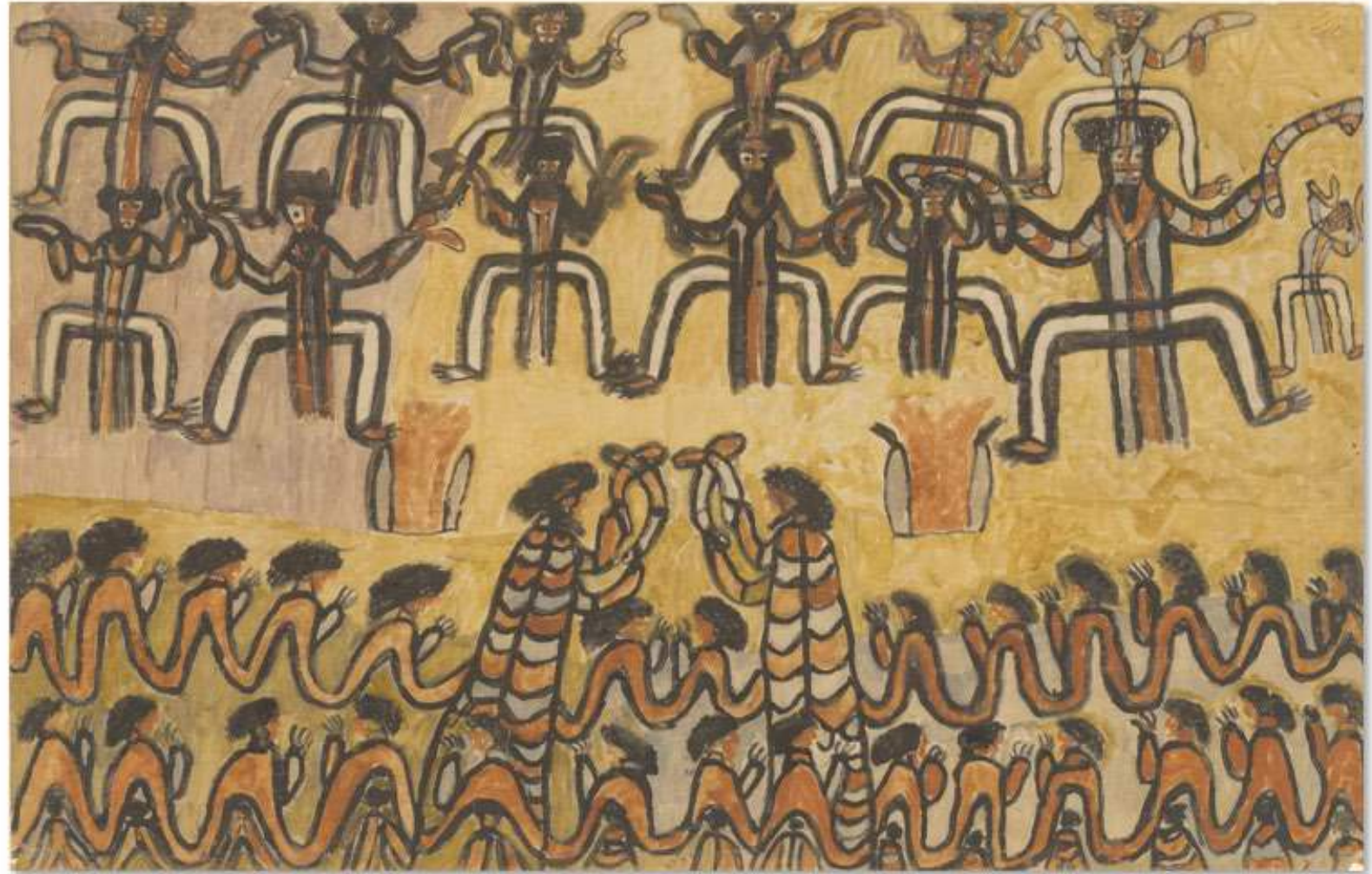# Survey Research

Dave Story

MBBS, MD, BMedSci, DipPOM, FANZCA

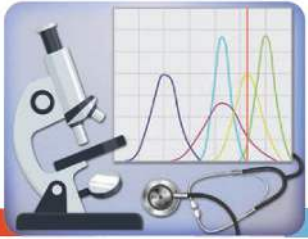Professor and Foundation Chair of Anaesthesia

Head, Department of Critical Care, Melbourne Medical School

Staff Anaesthetist, Austin Health Melbourne

ANZCA Councillor and Vice President

Ceremony [1898], Wurundjeri elder William Barak
National Gallery of Victoria

READERS' TOOLBOX
Understanding Research Methods

Survey Research

David A. Story, M.D., F.A.N.Z.C.A., Alan R. Tait, Ph.D.

ANESTHESIOLOGY 2019; 130:192–202

A survey of Australian and New Zealand anaesthetists' attitudes towards resuscitation orders in the perioperative setting

Z. Keon-Cohen*, P. S. Myles†, D. A. Story‡

ANZCA
FPM

Australian and New Zealand College of Anaesthetists

Fellowship Survey – Summary report

November 2021

Department of Critical Care

"It's always further than it looks. It's always taller than it looks. And it's always harder than it looks."
—The Three Rules of Mountaineering

Is the topic/aim important?

Depends on ''readership''

Who is the survey for?

Overcome: ''Who cares?''

Article

A survey of the choice of general anaesthetic agents in Australia and New Zealand

Forbes McGain[1] (iD), Jason R Bishop[1], Laura M Elliot-Jones[1], David A Story[2] and Georgina LL Imberger[3]

What price quality in aged care? Findings from a national survey of more than 6500 income taxpayers
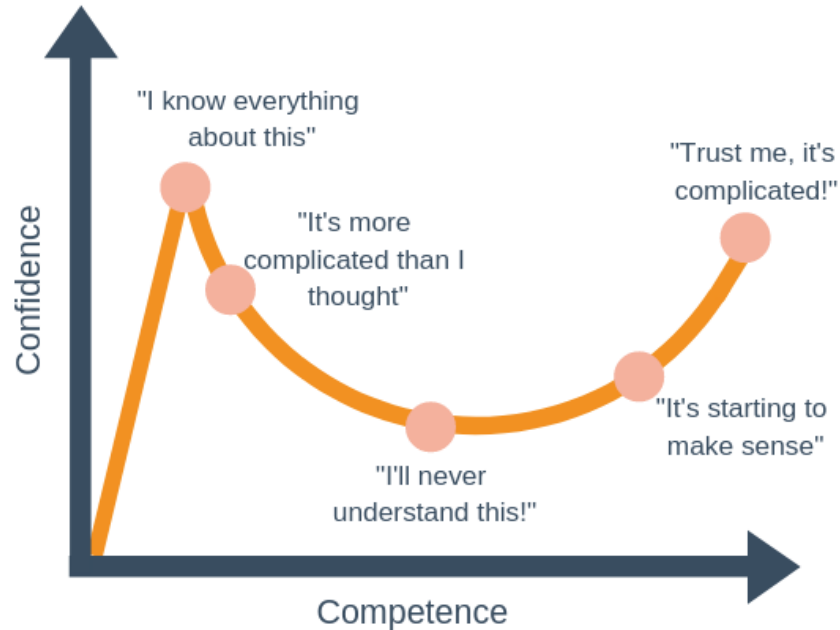
Julie Ratcliffe [1], Jyoti Khadka [1] [2], Sheela Kumaran [1], Billingsley Kaambwa [3]

Analysis: (Bio)Statisticians

"I wouldn't read a first aid book and call myself a doctor."
Sabine Braat, Legendary Biostatistician

The Dunning-Kruger Thought Process

Confidence

"I know everything about this"

"It's more complicated than I thought"

"Trust me, it's complicated!"

"I'll never understand this!"

"It's starting to make sense"

Competence

Where possible, work with a biostatistician colleague from the start.

- Design
- Sample size
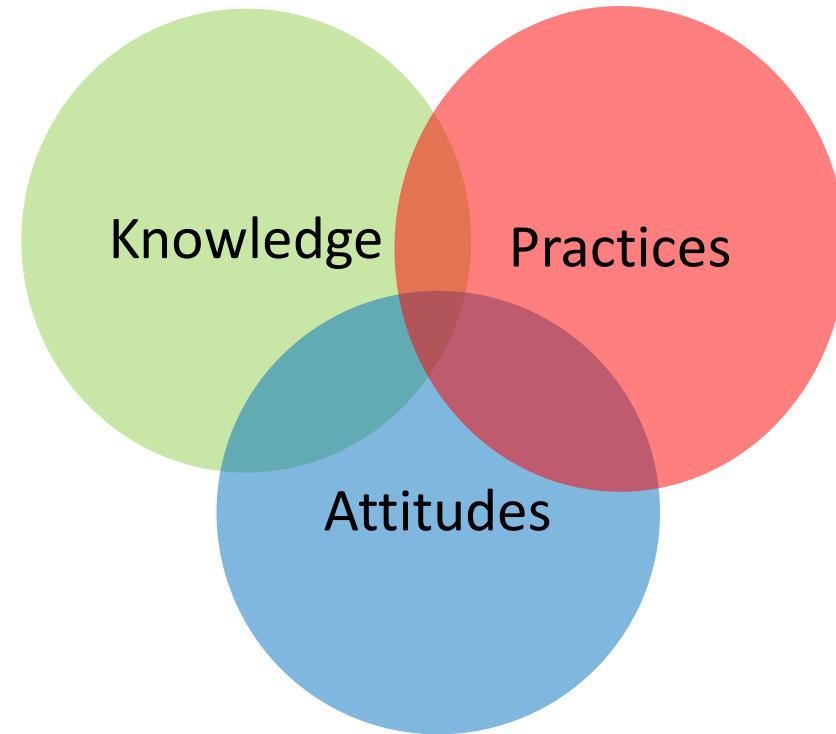- Analysis
- Publication

What is the question?

For any study introduction:
- What is known?
- What is unknown?
- What is the question?
- Why it is important?

Survey research: the big 3
1. Attitudes
2. Knowledge
3. Practices / approaches

Knowledge

Practices

Attitudes

Aim / Question / Hypothesis

Aim: determine anaesthetists' coffee preferences

Hypothesis: Anaesthetists prefer barista coffee

RQ: Do more anaesthetists prefer barista coffee to instant coffee?

More specific is easier to analyse but needs valid survey questions

Prelude to clinical trials

Survey of attitudes towards a randomised trial about sugammadex, neostigmine and pulmonary complications

David A Story[1,2,3], Anna Parker[1] and Kate Leslie[1,4]

A survey of anaesthetists' use of tranexamic acid in noncardiac surgery

Thomas W Painter[1,2], David McIlroy[3,4], Paul S Myles[5] and Kate Leslie[6,7,8]

Population

Type of population

The question will affect the population and vice versa

They must be in tune with each other

Also affects design and interpretation

Accessibility

- Email

- Phone – mobile vs landline

- Post

- F2F

Sample of the population

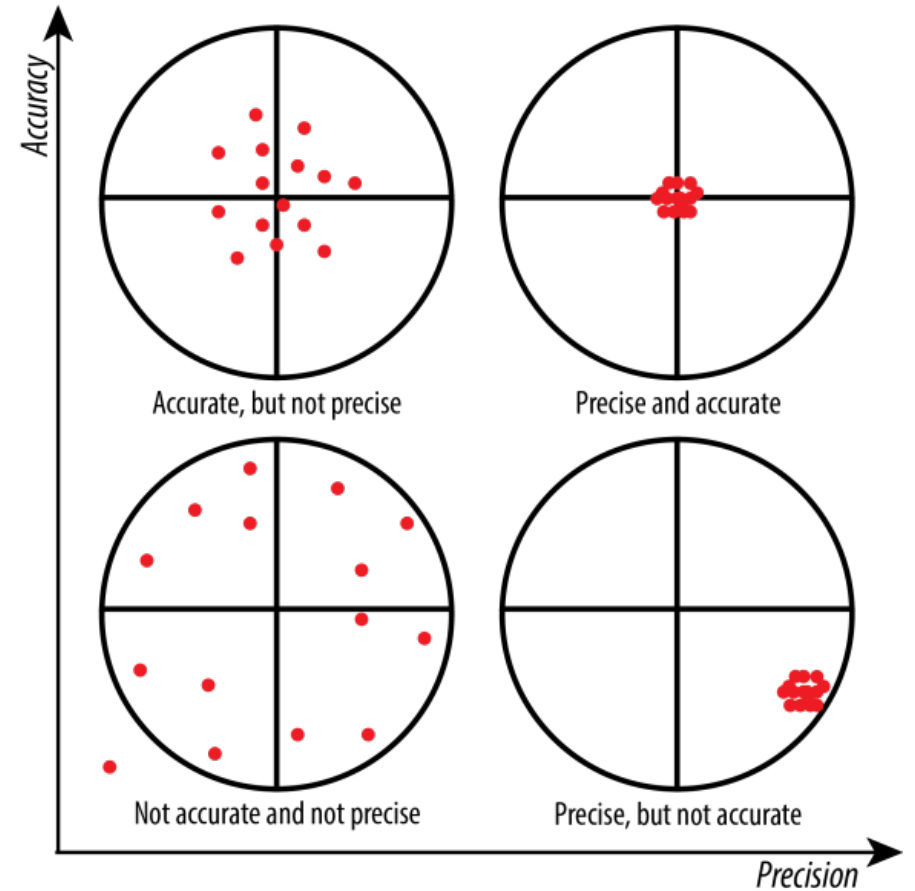It would be nice to ask entire populations

OK if small population: eg all Directors of Anaesthesia in Victoria

Instead usually look for REPRESENTATIVE sample

Want accurate and precise

Increased size affects precision (usually)

However, ultimate precision affected by response rate

https://wp.stolaf.edu/it/gis-precision-accuracy/

The Literary Digest
NEW YORK   OCTOBER 31, 1936

Topics of the day

LANDON, 1,293,669; ROOSEVELT, 972,897

Final Returns in The Digest's Poll of Ten Million Voters

Nominee	Franklin D. Roosevelt	Alf Landon
Party	Democratic	Republican
Home state	New York	Kansas
Running mate	John Nance Garner	Frank Knox
Electoral vote	523	8
States carried	46	2
Popular vote	27,752,648	16,681,862
Percentage	60.8%	36.5%

Problems (errors) with this survey included:

- Unrepresentative sample: affluent Americans with phones

- Low response rate (20%)

- Non-responder bias (Roosevelt voters tended not to respond)

- Precise but not accurate

https://potus-geeks.livejournal.com/

Precise, but not accurate
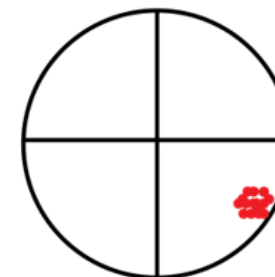
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ACADEMIC EXPERIENCE

Sample size calculator & complete guide

Qualtrics // May 21, 2020 // 11min read
Updated February 3, 2022

Sample Size Calculator

Confidence Level:
95%

Population Size:
25000000

Margin of Error:
3%

Ideal Sample Size:
1067

www.qualtrics.com/blog/calculating-sample-size/

Rule of thumb: +/- less than 5%
Allow for response rate
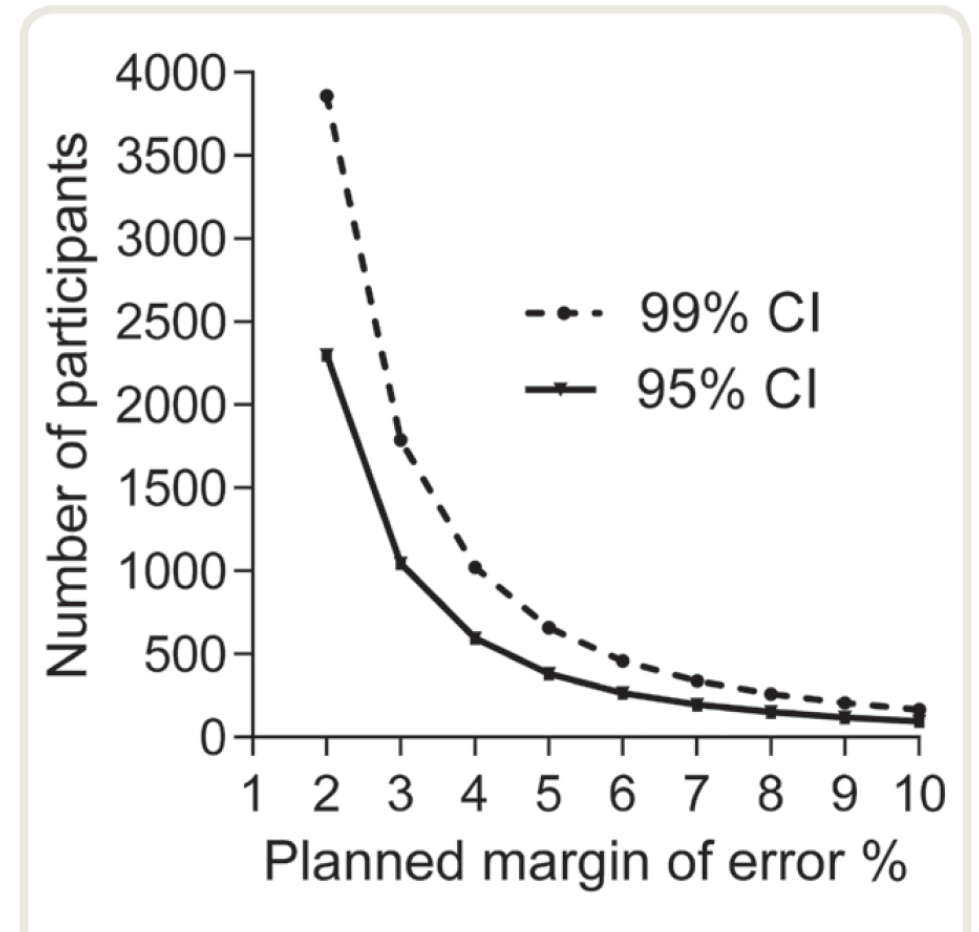
Fig. 2. Effects of different planned margins of error (±%) and the 95% and 99% CIs on sample-size estimations for a survey of the entire membership of the American Society of Anesthesiologists (N = 52,905). Note: The actual required sample size will also be affected by the response rate.

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Ethics and governance

What is human research?

Human research is conducted with or about people, or their data or tissue. Human participation in research is therefore to be understood broadly, to include the involvement of human beings through:

- taking part in surveys, interviews or focus groups;

Tips:
1) Submit surveys to an accredited HREC
2) Submit full survey with ethics application
3) Aim for low risk pathway
4) Hope HREC will allow: responding = informed consent

Australian Government
National Health and Medical Research Council
Australian Research Council

UNIVERSITIES AUSTRALIA

National Statement on Ethical Conduct in Human Research

2007 (Updated 2018)

"need to know" information

"nice to know" information

https://blogs.articulate.com/rapid-elearning/

Too many questions...

Satisficing, portmanteau of satisfy and suffice

Increasing time to complete associated with possible bias

1) Less time spent on questions,

2) Not answering all questions

3) Abandoning the survey

Rule of thumb:

Aim for < 10 mins

+

Demographics at end

Closed format

Pros
Standardized responses,
Take less time to complete,
Easier to analyse.

Cons
Can be more difficult to write
Response options must include all important options
Each option should be distinct.
Including every possible option = excessively long lists

One mitigating strategy: include "other" with free text box

Always include a "Any other comments?" free text box

Closed Format Responses

1. Multiple choice
How many minutes do you usually wait to see a doctor in our clinic?
☐ less than 5   ☐ 5-14   ☐ 15-30   ☐ more than 30

2. Rating scales
How would you rate the waiting time to see a doctor in our clinic?

1   2   3   4
poor   average   good   very good

3. Pictorial scales
How happy are you about the waiting time to see a doctor in our clinic?
☺   ☻   ☹

4. Agreement scales (Likert-type) scales
The waiting times in our medical clinic are acceptable, (please circle one)

strongly disagree   disagree   uncertain   agree   strongly agree

5. Visual analogue scale (10 cm line)
How would you rate the waiting time to see a doctor in our clinic?
very poor ------------X------------------------------- very good

Likert Graphics

Is your job professionally challenging?

Diverging stacked bar chart

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Free text

"What don't you like about Tom Cruise?''

1. Text analytics – eg quantify positive vs negative comments on Tom Cruise (easiest)

2. Coded themes – start with subset of responses

   Attitudes to Tom Cruise: 1. Like him; 2. Hate him; 3. Don't know who he is; and 4. Other.

3. Word clouds

https://www.displayr.com/analyze-free-form-text-data/
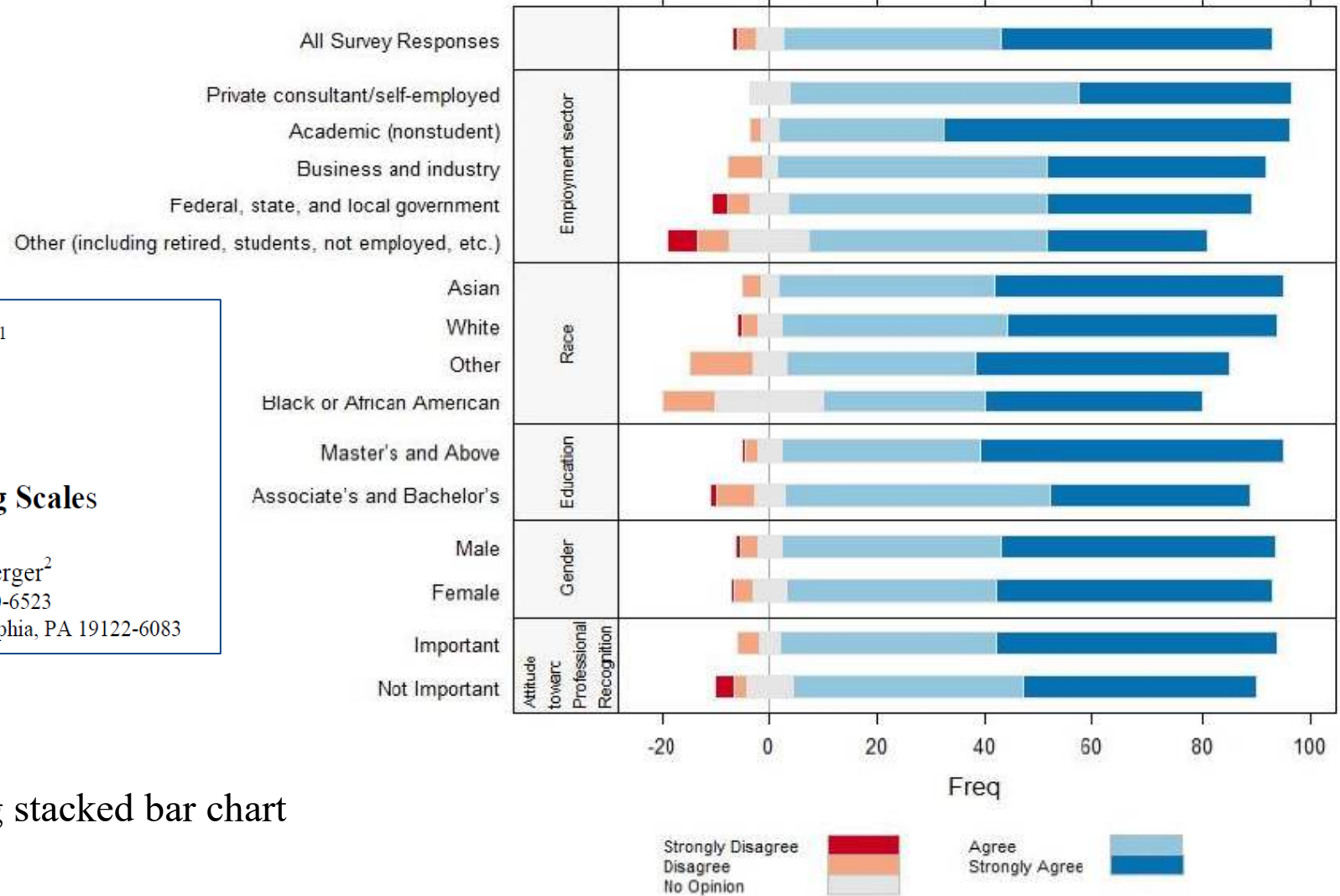
Pretesting (Piloting) the Survey

Pretesting typically conducted in two phases.

1. Research team: reviews all aspects

- Cover email / letter
- Instructions
- Order and flow of questions
- Questions are ambiguous and/or are being consistently missed.
- Time to complete

2. Small subset (5-10) of the intended target group, repeat above.

- Informally or structured focus groups.
- Pretest even validated surveys: may be affected by the context of the survey eg UK vs ANZ

Without piloting, persisting unrecognized biases are more likely.

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Anonymous vs identified

Anonymous:

-encourage responding

-reduce bias; increase honesty in controversial areas

-but reminders go to all

Identified:

-smaller reminder pool

-perceived risks

-may increase non-responder rate (loss of precision)

-may increase responder bias (loss of accuracy)

Identified but with third party handling data

-may reduce perceived risk

ANZCA + KPMG

Response Rate

Australian and New Zealand College of Anaesthetists

Fellowship Survey – Summary report
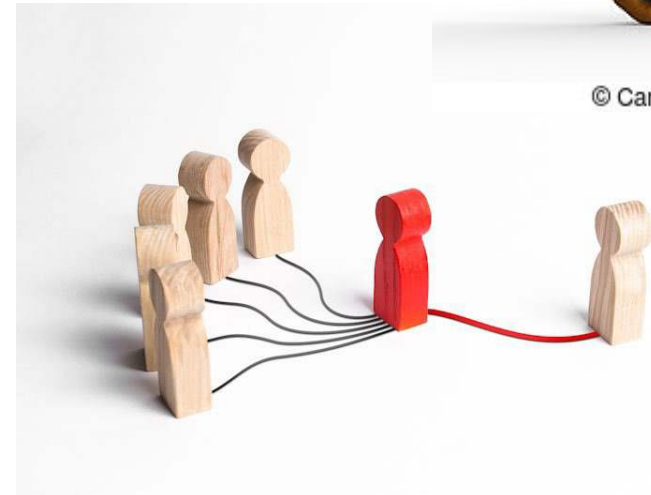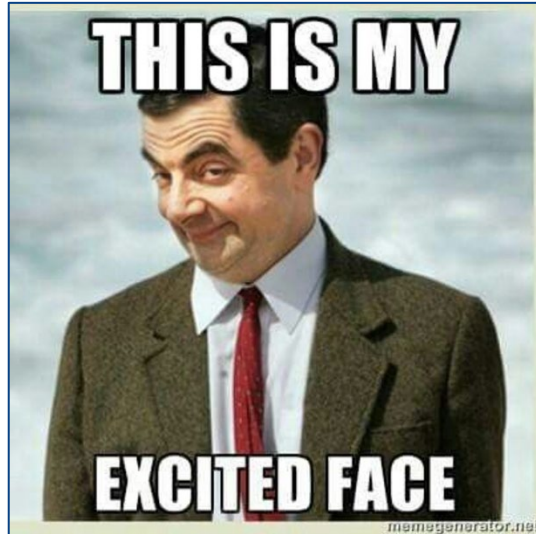
Background

Since 2010 the Australian and New Zealand College of Anaesthetists (ANZCA) has commissioned a regular quantitative research study among Fellows to provide the college with an independent assessment of Fellows' attitudes and perceptions. The primary purpose of this research is to help the College in meeting the changing needs of the Fellowship and to assist with its strategic planning.

In 2021, a priority for ANZCA is to ensure the 2022-2026 strategic plan reflects the opinions of its Fellows.

As such, this year's research, the fourth wave to be commissioned, is required to gauge Fellows' thoughts and opinions on the **future direction** of the college.

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- A total of 7,643 survey links were delivered to Fellows through email invitation. The survey was open between 19 August and 21 September 2021 during which a total of 2,490 fellows responded, resulting in a good response rate of 33%.

Fellowship survey
ANZCA

The Margin of Error oft his study is estimated between +/-0.8% to +/-1.9% at a 95% confidence.

Rule of thumb: +/- less than 5%

11 point: 0 (not at all important) to 10 (essential) scale

To increase response rate: No compulsory Qs, Third Party (KPMG), targeted follow up X 3, 15 $100 gift vouchers

Survey participant profile

How long have you been a fellow of the college?

- Less than 5 years — 20%
- 5-9 years — 18%
- 10-19 years — 27%
- 20-25 years — 13%
- 25+ years — 22%

Age:

30-34	35-39	40-44	45-49	50-54	55-64	65 +	Prefer not to say
3%	15%	16%	16%	13%	21%	13%	2%
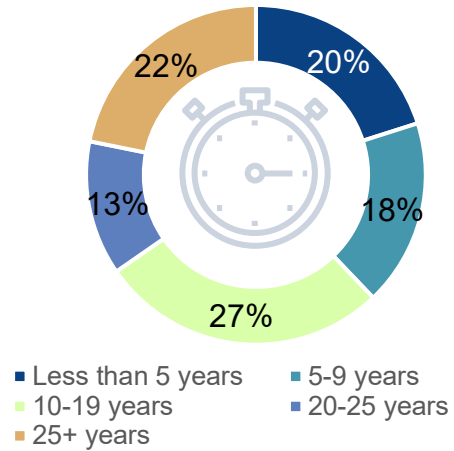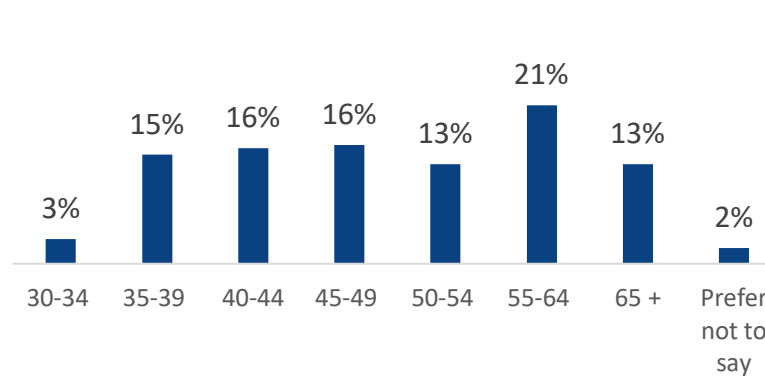
In which country are you currently based?

Australia	New Zealand	Hong Kong	Singapore	Malaysia	Another country
80%	15%	1%	1%	0%	2%

Your location in Australia :

NSW	Vic	Qld	WA	SA	Tas	ACT	NT
28%	26%	21%	10%	9%	3%	2%	1%
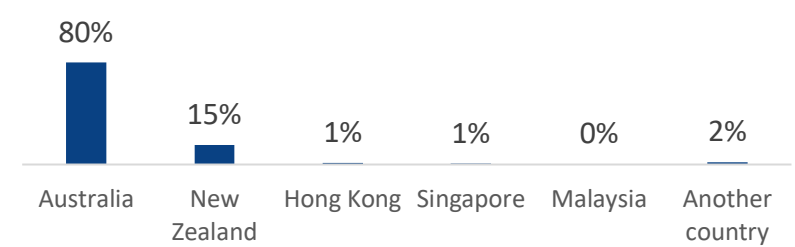
What is your gender identity?

- Man — 62%
- Woman — 34%
- Another gender
- Prefer not to say — 3%
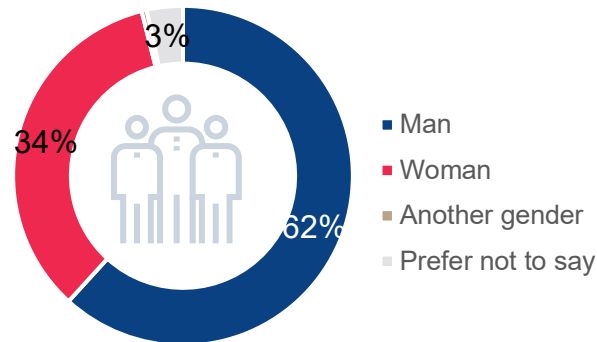
Which of these fellowships do you hold?

Select multiple if applicable

97%
7%

- ANZCA
- FPMANZCA

Do you practice in:

79%
21%

- Metropolitan area
- Outside a main metropolitan area
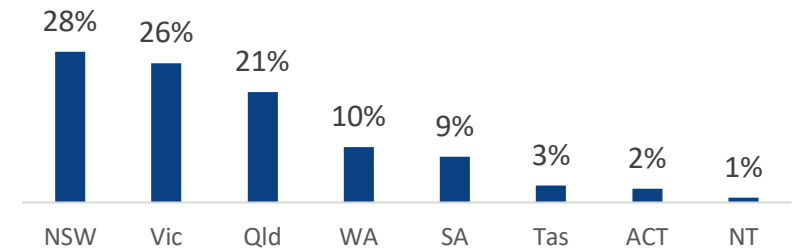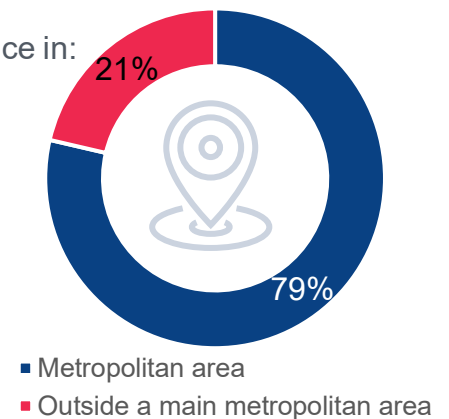
ANZCA Fellowship Survey 2021
Importance to ANZCA future direction: 2,490 responses, 33%

Dispersion of mean scores

Category	Score
Training for fellowship	9.3
Safety and quality	9.2
Continuing professional development	8.8
Professional documents, guidelines and statements	8.6
Representations and submissions to government	8.4
Health & wellbeing of fellows, trainees, and specialist intnl medical graduates	8.4
Clinical workforce planning	8.2
Conferences and events	8.1
Bullying, discrimination, and sexual harassment	7.9
Perioperative medicine	7.9
Pain management service advocacy	7.8
Educational innovation	7.8
Research	7.8
Community profile of anaesthesia, perioperative and pain medicine	7.8
Environmental Sustainability in healthcare	7.5
Indigenous health	7.5
Public health	7.4
Diversity and inclusion	7.2
International partnerships	6.9
Global development and overseas outreach	6.8
Social justice	6.7

Training for Fellowship – in detail

Training for fellowship was rated as the most important aspect of focus for the college – an average score of 9.3 out of 10 was recorded. FPM fellows were significantly more likely to rate this aspect as being essential (10 out of 10 rating), relative to ANZCA fellows, 72% vs 64% respectively).
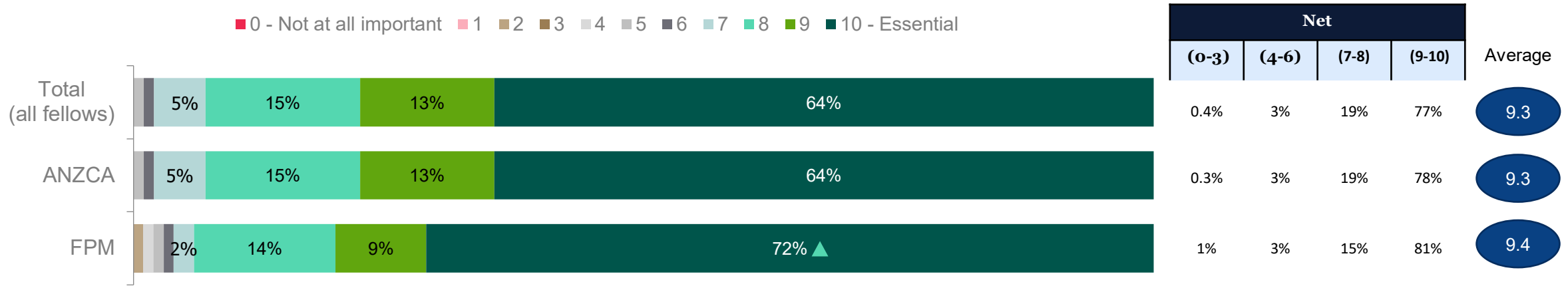
Legend: ■ 0 - Not at all important ■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10 - Essential

	5	6	7	8	9	10 - Essential
Total (all fellows)			5%	15%	13%	64%
ANZCA			5%	15%	13%	64%
FPM	2%		14%	9%		72% ▲

	Net				Average
	(0-3)	**(4-6)**	**(7-8)**	**(9-10)**	
Total (all fellows)	0.4%	3%	19%	77%	9.3
ANZCA	0.3%	3%	19%	78%	9.3
FPM	1%	3%	15%	81%	9.4

Rating score 9+10 (Essential) by Location and Time as a Fellow:

Total result: 77%

Australia	New Zealand	Other Country	NSW/ACT	Vic/Tas	QLD	WA	SA/NT	< 5 years	5-9 years	10-19 years	20+ years	Male	Female	Metro	Regional
78%	78%	68% ▼	78%	78%	78%	71%	81%	75%	73% ▼	78%	81% ▲	77%	79%	78%	77%

▲▼ Statistically significant relative to total
▲▼ Statistically significant ANZCA vs FPM

Perioperative medicine – in detail

Perioperative medicine is important (8 or 9 rating)/ essential (9 or 10 rating) to 82% of fellows. This is consistent across both ANZCA and FPM fellows, as well as geographic areas.

Legend: ■ 0 - Not at all important ■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10 - Essential

	0	2	3	4	5	6	7	8	9	10
Total (all fellows)		2%			6%		7%	14%	26%	14%	27%
ANZCA		2%			6%		7%	14%	26%	14%	27%
FPM		2%			9%		6%	16%	22%	13%	28%

	Net				Average
	(0-3)	(4-6)	(7-8)	(9-10)	
Total (all fellows)	4%	14%	40%	42%	7.9
ANZCA	4%	14%	40%	42%	8.0
FPM	4%	17%	39%	41%	7.8

Rating score 9+10 (Essential) by Location and Time as a Fellow:

Total result: 42%

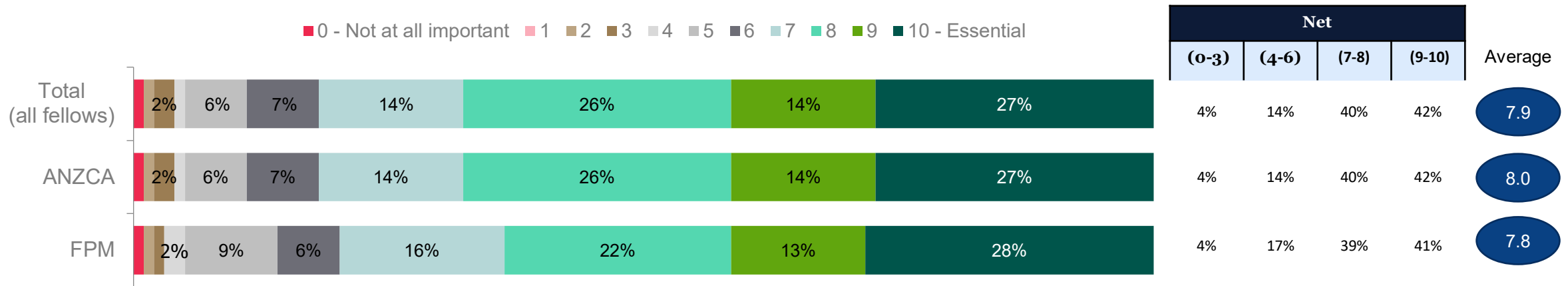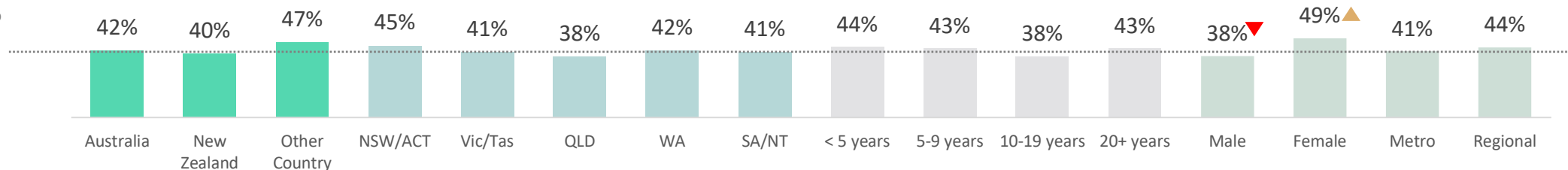| Australia	New Zealand	Other Country	NSW/ACT	Vic/Tas	QLD	WA	SA/NT	< 5 years	5-9 years	10-19 years	20+ years	Male	Female	Metro	Regional
42%	40%	47%	45%	41%	38%	42%	41%	44%	43%	38%	43%	38% ▼	49% ▲	41%	44%

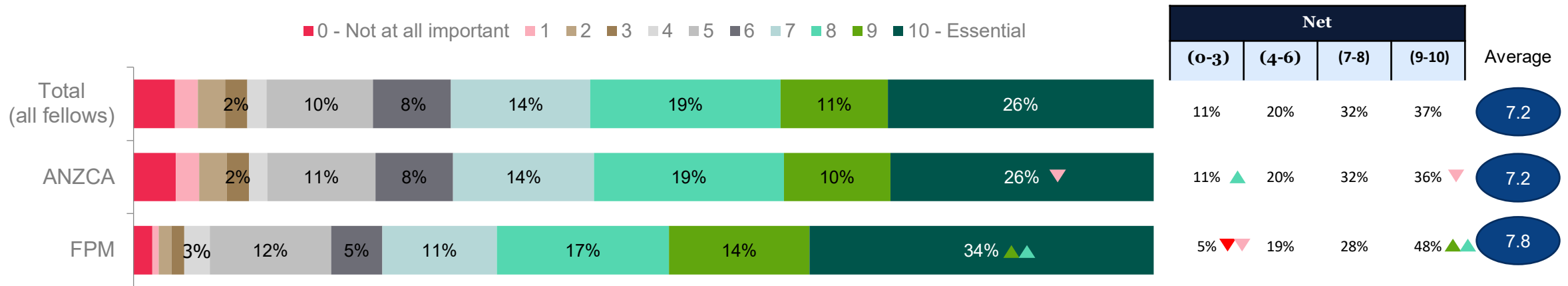**Question:** *To assist in future college strategic planning we wish to understand your view of the importance of the following for the college. How would you rate the importance of the following for the college? Please select a number on the scale below from 0 (Not at all important) to 10 (Essential).* Base, n=2,355

▲▼ Statistically significant relative to total
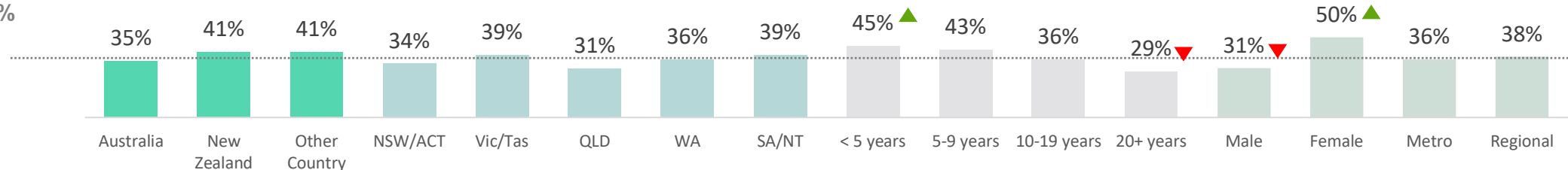▲▼ Statistically significant ANZCA vs FPM

Diversity and inclusion – in detail

Diversity and inclusion is a lower rated future focus area, with two thirds (69%) rating this area as important (7 or 8)/essential (9 or 10). Significantly more FPM fellows rate this area as essential, with 48% of fellows rating *diversity and inclusion* 9 or 10, compared to 36% of ANZCA fellows.

Legend: ■ 0 - Not at all important ■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10 - Essential

								Net				Average
								(0-3)	(4-6)	(7-8)	(9-10)	
Total (all fellows)	2%	10%	8%	14%	19%	11%	26%	11%	20%	32%	37%	7.2
ANZCA	2%	11%	8%	14%	19%	10%	26% ▼	11% ▲	20%	32%	36% ▼	7.2
FPM	3%	12%	5%	11%	17%	14%	34% ▲▲	5% ▼▼	19%	28%	48% ▲▲	7.8

Rating score 9+10 (Essential) by Location and Time as a Fellow:

Total result: 37%

| Australia	New Zealand	Other Country	NSW/ACT	Vic/Tas	QLD	WA	SA/NT	< 5 years	5-9 years	10-19 years	20+ years	Male	Female	Metro	Regional
35%	41%	41%	34%	39%	31%	36%	39%	45% ▲	43%	36%	29% ▼	31% ▼	50% ▲	36%	38%

Question: *To assist in future college strategic planning we wish to understand your view of the importance of the following for the college.*
How would you rate the importance of the following for the college? Please select a number on the scale below from 0 (Not at all important) to 10 (Essential). Base, n=2,356

▲▼ Statistically significant relative to total
▲▼ Statistically significant ANZCA vs FPM

Diverging stacked bar chart
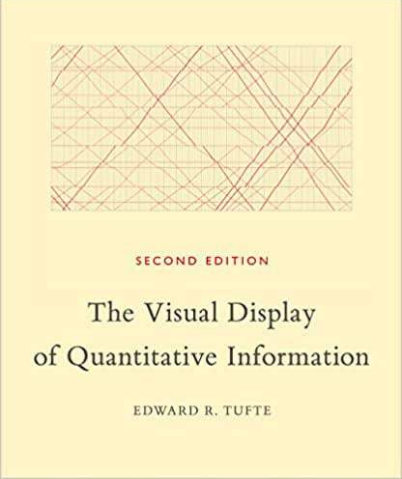
Free-text responses – coded responses

Just over a quarter of survey respondents (688 of 2,490) offered a free text response to **Question:** *Do you have any further comments?*

Category	Response	Value
Core Purposes	No further comments	78%
	Focus on core college matters & not on social issues	5%
	Focus on core purpose - education, training & maintance of standards	3%
Survey Comments	Improvements to training program	2%
	All areas are important	1%
	Comments on survey	1%
General comments regarding the college	Appreciate opportunity to provide feedback	1%
	College is doing a good job	1%
	Improve college website	<1%
	College critiques	1%
Other Issues	Better workforce planning	1%
	Greater support and communication around exams	1%
	Regional and rural issues	1%
	Advocate for and promote the profession	1%
	Prioritise sustainability	1%
	Improvements to CPD courses/requirements	1%
	Lack of support in pain medicine	1%
	International collaboration	<1%
	Procedures to minimize the impacts of COVID-19	<1%
	Play an active role in developing perioperative medicine	<1%
	Continue to work with ASA	<1%
	Advocate on issues pertaining to the health care system	<1%
	High fees/Poor value for money	1%
Wellbeing	Greater focus on health and wellbeing	1%
	Greater commitment to diversity and inclusion	1%
	Address bullying and discrimination	1%
	Other	1%

Table 3. Suggested Minimum Standards for Manuscript Submission

- Clear research question/hypothesis
- Well defined population
- Ethics board approval
- Clear *a priori* sampling and analysis plan
- Piloted survey as an appendix
- $\geq$ 40% response rate
- Precision: 95% CI with no more than ±5% margin of error on the primary question
- Analysis and discussion of potential sources of bias

Thanks!

dastory@unimelb.edu.au