Looking Up from Down Under: Australian Attitudes to National Space Activities

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The Australian Centre for Space Governance advocates for Australia's interests in space in the 21st century and advances the agenda for responsible space governance. We bring together the nation's leading experts in fields such as space law, governance, policy, science and technology studies, security, property, history, ethics, political, and social sciences from across six different universities in Australia (Australian National University, Flinders University, RMIT University, University of Adelaide, UNSW Canberra, and Western Sydney University).

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Executive Summary

Space-based activity and technology underpin the daily lives of Australians, the national and global economy, and national security. In turn, public support is vital in determining how and to what extent the nation engages in space activities. To build an understanding of Australians' attitudes towards national space activities and technologies, the authors conducted the first comprehensive examination of public opinion on the nation's current involvement in space. The nationally representative survey focused on public engagement with space, attitudes towards national space activities, space security and challenges, and the country's future direction in space.

The findings show that the public is interested in space but lacks awareness about what Australia does there. Australians view development in space favourably, but do not necessarily support all national space activities or initiatives. For many, space is closely associated with national security with many Australians concerned about space debris, planetary impacts by space objects and conflicts in space. At the same time, Australians are supportive of blue-sky space research and believe that the nation should prioritise communications technologies and Earth observation in its approach to space. These results show that Australians' views on the nation's future in space are complex, but a deeper understanding of the place of space in the national consciousness is a vital foundation for Australia's future space efforts.

Introduction

This report represents the first ever comprehensive examination of Australian public opinion on the nation's space investment and activities. On behalf of the Australian Centre for Space Governance, the authors conducted a nationally representative survey to determine community attitudes towards the space sector, Australia's space priorities, and the role of space technologies in national life. The survey sought to provide a long-overdue evidence base for understanding how the Australian public has perceived space activities in the national context, what they want from it, and the extent of their support for government space initiatives. The results indicate a strong general interest in space, but a more complicated engagement with national space activities and investment decisions.

The survey comes at a time when Australia's space efforts are growing, but also when Australia's engagement with space is, as ever, complex. Space services are a central part of Australia's national infrastructure, providing benefits such as telecommunications which underpin education, businesses and private life; satellite position, navigation and timing for banking and finance, civil and military navigation on land at, sea and in the air; and Earth observation for agriculture, mining, water management, bushfire response, search and rescue, and climate data.

Australia has a long history of involvement in space activities, including supporting the Apollo moon landings, conducting space science research, and rocket testing at Woomera. Space has also played an important role in Australia's security and alliances. In 2018, the Australian government created the Australian Space Agency, followed by the Defence Space Command in 2022. These organisations gave space a focus within Australian civil and military policymaking respectively; however, after sixty years of involvement in humanity's efforts to explore and use space, Australia's national approach to space is still in development.[1]

While there have been great strides in developing space policy and thinking, it is surprising that there are so few scholarly studies on the attitudes of the Australian public towards this area of national endeavour. Space advocates are often quick to point to public support for space in arguments for increased Australian investment and activity, and space is often presented as an important influence on other areas of national life, from generating interest in STEM careers to the economy at large. However, the foundational evidence for this has hitherto not been collected. While government agencies have

[1] For a discussion of Australia's space policy, see Tristan Moss (ed.), *The Foundations of Australia's Space Policy*, Griffith Asia Institute Regional Commentary (2023) https://www.spacegovcentre.org/_files/ugd/cd297f_9445fef3435740329ec6a15c62c6495c.pdf

conducted polling for internal use, the absence of publicly available polling is to the detriment of the ongoing discussion of Australia's space needs and future.

Individual questions on specific space activities have been included in larger, generic polls across the last sixty-six years, but these have offered only a tantalising and brief insight into national attitudes. Shortly after the launch of Sputnik in 1957, the first artificial satellite, 36.9% of Australians surveyed felt as though satellites would have a big effect on their lives, while 41.7% stated that they would not. Meanwhile, 21.3% said they "didn't know".[2] Two years later, around 40% of respondents thought Australia should "stick to earth", while 53% felt the country should "explore space".[3]

In 1966, at the height of the space race—and three years before the moon landing—Australians were asked whether they believed the space race was a worthwhile effort or a waste of money. They were almost evenly split: 48.7% responded that the space race was a waste of money, while 43.9% believed it was worthwhile.[4] This was the clearest question asked of Australians about their view of space activities before this current survey, with later polling focused on specific space programmes, and therefore only giving a narrow indication as to Australian public opinion.

A 1979 survey, for instance, found 90.2% of Australians in support of a communications satellite for Australia.[5] A 2020 Pew Research Survey of twenty different nations on views about science, found that 63% of Australians felt the "Australian Space Agency's space exploration program has been good for society." While a high level of support, this was lower than the average across all countries (72%); the proportion of Australians who felt that its space exploration programme was a "bad thing" (23%) was also higher than all other countries bar one.[6]

These results, while important, are a fragmentary foundation from which to build a deep understanding of the public's attitude towards space activities and their perception of Australia's future direction. To build this foundation, therefore, this report covers three key areas of Australian attitudes: interest and knowledge; national space activities; and space threats, challenges, and risks. Our findings show that the Australian public:

[2] Gallup Poll, Survey 128, 23 November 1957, https://dataverse.ada.edu.au/dataset.xhtml?persistentId=doi:10.26193/H1IZOE

[3] Gallup Poll, Survey 139, 7 August 1959, https://dataverse.ada.edu.au/dataset.xhtml?persistentId=doi:10.26193/BAV9PA

[4] Gallup Poll, Survey 182, 26 February 1966, https://dataverse.ada.edu.au/dataset.xhtml?persistentId=doi:10.26193/1SMIQB

[5] Gallup Poll, July 1979, https://dataverse.ada.edu.au/dataset.xhtml?persistentId=doi:10.26193/8LIU2N

[6] Cary Funk, Alec Tyson, Brian Kennedy and Courtney Johnson, *Science and Scientists Held in High Esteem Across Global Publics*, Pew Research Centre Report (2020), https://www.pewresearch.org/science/2020/09/29/science-and-scientists-held-in-high-esteem-across-global-publics/

1) is interested in space, but feels it lacks knowledge about space activity;
2) views space development and research favourably, but does not necessarily support all space activities or initiatives;
3) associates space with national security; and,
4) is most concerned about space debris and planetary impacts and prioritises communications and Earth observation.

Methodology

To develop a firmer foundation for the discussion of Australian public opinion on space, the authors employed iLink Research Services, which conducted a nationally representative survey of 1,579 adults in Australia. The survey received ethics approval from the UNSW Human Research Advisory Panel (iRECS4327). The survey was fielded over 16 days during September and October 2023 utilising iLink's online panel comprising a nationally representative sample of adults aged 18+ in Australia. As detailed below, our sample was surveyed on three broad themes within space. Our respondents broadly represent the Australian public, in geographic representation, age, and gender (Table 1).[7]

Table 1: Respondents' Demographic Data

Gender	%
Female	49.3%
Male	50.1%
Other	0.3%
Prefer not to say	0.4%

State	%
ACT	1.3%
NSW	33.0%
NT	0.3%
QLD	20.1%
SA	7.2%
TAS	2.3%
VIC	25.9%
WA	10.0%

Education	%
High school (secondary)	28.0%
Less than high school (secondary)	4.6%
Postgraduate	22.2%
Tertiary	45.2%

Age	%
18 to 24	12.1 %
25 to 29	6.0%
30 to 34	8.7%
35 to 39	9.6%
40 to 44	9.6%
45 to 49	9.6%
50 to 54	9.4%
55 to 59	8.3%
60 to 64	7.7%
65 to 69	5.9%
70 to 74	4.6%
75 to 79	3.7%
80 to 84	2.8%
85 to 89	1.8%
90 and over	0.2%

[7] The data was not weighted for this report, and as such there is a slight overrepresentation of Labour voters. As well, quotas for age, gender, and location for the nationally representative sample had a margin of error of +/-5%.

Interest and knowledge of space in Australia

- The Australian public is interested in international and local space activities; however, they reported a low knowledge base concerning Australian-specific events and activities.
- Around twenty percent of Australians had followed the activities of the Australian Space Agency; a similar number had not heard of the Agency.

Given the lack of past polling, the survey aimed first to develop a base of understanding of general Australian attitudes towards space (See Figure 1 in the appendix at the end of the report). What place does space have in the lives of Australians? More Australians responded affirmatively that space impacts their lives in important ways than in the negative, with 35.9 % either "Strongly Agreeing" or "Agreeing" (SA/A) compared to 19.2% "Disagreeing" to "Strongly Disagreeing" (D/SD). However, a large portion of survey respondents (44.9%) were neutral on whether space impacts their daily lives. While further qualitative study would be needed to unpack the reasons for this number, this could suggest either that respondents do not feel strongly that space affects them day to day, or that there is uncertainty as to how space impacts them.

Respondents noted that they are interested in both global space activity (Figure 2) and Australian space activity (Figure 3). Overall, these numbers indicate that there is curiosity for space amongst the respondents, with interest in both global and Australian space activity around 50% SA/A. These higher indications of interest level may reflect several factors, including more extensive media coverage of NASA activity, for example. In turn, interest in global space activities may have influenced enthusiasm for local efforts. Low salience policy areas, like space, can become salient when covered by the media or when the government passes legislation around these issues.[8]

However, the public's self-assessed knowledge about space activity was lower than their interest levels (Figure 4). The percentage of those who reported they felt they were knowledgeable about space activities around the world (27.5% SA/A) was about half of those who reported they were interested in space activity.

While one of the goals of the Australian Space Agency is to engage with the Australian public, the public still reported low engagement levels with this relatively new organisation. When asked whether they had followed the

[8] P. Ehrenfreund, N. Peter, and L. Billings, "Building Long-Term Constituencies for Space Exploration: The Challenge of Raising Public Awareness and Engagement in the United States and in Europe." *Acta Astronautica* 67, (2010), 502-12. doi:10.1016/j.actaastro.2010.03.002

Australian Space Agency's activities over the five years of its existence (Figure 5), respondents who had not followed the ASA were in the majority at 33.4%. Notably, more respondents had not heard of the Agency (20.8%) than had followed it (19.7%). This disconnect could imply that higher volumes or more effective public messaging and engagement may be important for organisations with a space focus in Australia.

Respondents were far more likely to have been aware of events in Australia's space past than they were of the Australian Space Agency (Figure 6). Perhaps unsurprisingly given its cultural cachet, 58.1% of respondents were aware of the 2001 film *The Dish*, which focused on the Parkes Radio Telescope's involvement in the moon landings. Similarly, 48.6% of respondents were aware of Australia's support for the Apollo moon landings (although given *The Dish's* focus on the moon landings, the disparity between the two results will require further analysis).

Roughly similar percentages of Australians had heard of tracking stations in Australia (43.9%), the rocket range at Woomera (41.5%), Skylab's re-entry over Perth (39.5%) and the two Australian-born astronauts, Andrew Thomas and Paul Scully-Power (36.7%). However, while it is often celebrated as a distinctly Australian achievement, relatively few (16.7%) respondents were aware of Australia's first and only locally produced and launched satellite, WRESAT, launched in 1967 from Woomera on an American Redstone rocket.

Australians surveyed also noted that they received their information on space matters from a mix of sources (Figure 7). Most common were local and international news sources (46.9% and 28.9% respectively), while 26.7% noted non-fiction documentaries and books as a source. Almost a quarter of respondents said they did not receive or seek out information about space. Fictional mediums—such as science fiction television and movies—also informed 21.7% of respondents.

That knowledge levels about Australian space activity were self-reported as low while their primary source informing them about space is Australian news, suggests that government media engagement is perhaps not reaching certain sections of the population, or that audiences are not engaged with existing reporting on Australian space.

Given the central, if often less publicised, role of space capabilities that look down at Australia—including weather satellites, mapping, climate data, natural disaster response, urban planning, and national security intelligence— respondents were asked about their understanding of the term 'Earth observation' (EO). Respondents were divided on whether they felt they understood the meaning of the term 'Earth observation' (Figure 8), which the authors define as "the monitoring and analysis of Earth's natural and human-made characteristics through images and other data captured by remote sensing technologies in space".

In terms of the uses for EO, respondents were most aware of EO's commonly characterised applications, such as weather forecasting (72.6%) and mapping and surveying of Earth's surface (53.6%) (Figure 9). However, a majority of respondents were mostly unaware of other applications of EO—such as agricultural management, resource identification and use, property insurance assessments, and cultural heritage site identification—which signals that the public does not fully understand Earth Observation as a critical space-enabled capability. Again, this suggests a critical gap in knowledge around the functions of space activity in Australia.

Australian national space activities

- Around half of respondents agreed that Australia's commercial space sector was important for the economy, although 39.6% were neutral.
- The Australian public views developing its space industry favourably, with satellite capability leading the way as a priority and the development of the launch sector ranked as the lowest priority.
- Despite this, agreement with the cancellation of the National Space Mission for Earth Observation was the more frequent response.
- Funding an astronaut, astronomical sciences, and greater diversity in the Australian space sector are viewed very positively.

Australia's civil space industry has grown in the last decade, spurred on by the expansion of the global space sector more generally and the lowering of costs of access to space. The *Australian Civil Space Strategy 2019–2028* was launched by the Australian Space Agency to fulfil its original mandate to grow a domestic space industry, which was an economic goal, rather than being focused on scientific or other national priorities. At the same time, space services are used extensively by a variety of government agencies, including the Australian Federal Police, the Bureau of Statistics, the Bureau of Meteorology, CSIRO, the Departments of Climate Change, Environment, Energy and Water, Foreign Affairs and Trade, Defence, the national intelligence community, and Geosciences Australia. How do Australians feel about Australia's current use of space for national ends and how do they value specific civil space activities?

When asked whether they agreed that Australia's commercial space sector is important for the economy (Figure 10), 50.9% of the Australian public agreed, while 39.6% were neutral. Satellite technology and ground infrastructure were especially viewed as important for Australia, with 62% of respondents agreeing in some capacity that they are an integral part of national infrastructure (Figure 11). The

perceived value of satellite infrastructure to Australia was reflected in responses to the question of what space activities the space industry should prioritise. Satellite communications and the provision of Earth observation data were identified most often as high priorities, with cleaning up space debris a close third. Meanwhile, the rocket manufacturing and launch sectors were solidly ranked by respondents as least important (Figure 12).

Opinions regarding the 2023 cancellation of the National Space Mission for Earth Observation (NSMEO) were also sought. NSMEO was a government initiative to procure a sovereign owned constellation of Earth observation satellites that had planned launches between 2028 and 2033, to be used for government mapping, climate response, disaster management, and potentially for Defence intelligence. Less than a quarter of respondents disagreed with the cancellation (23.3%). By contrast, 31.6% agreed with the Government's decision to cancel NSMEO, and 45.1% were neutral (Figure 13).

The lack of support for the program may be influenced by several factors beyond public attitudes toward the programme itself. First, as discussed above, only 32% of respondents reported they were familiar with the term 'Earth observation'. Equally, the question posed in the survey included the project's cost ($1.2 billion), whereas no other questions included a cost associated with a project. Respondents are often less supportive of government-funded projects when there is a real cost involved.[9] Government decision-making can sometimes rest upon the cost of an investment rather than its real or perceived benefits. Similarly, the public is less likely to be supportive of government spending once a specific cost is attached. The results might be seen as a litmus test for support for a specific space activity, rather than generalised support for space investment as a whole.

[9] William G. Jacoby," Public attitudes toward government spending". *American Journal of Political Science*, (1994), 336-361. Kathryn Robison, "Funding Science: Searching for a new measure of public opinion on space", presented at the 68th Annual International Astronautical Congress, (2017).

Space threats, challenges and risks

- The Australian public strongly links space to national security, with respondents believing that space should rank alongside other areas of defence interest.
- Out of the main risks associated with space activity, impacts on earth, the accumulation of space debris and conflicts in space ranked highly, with human settlement of other planets lowest.

The growing importance of the space domain to national security and the increased competition in space between nations in the service of their strategic and economic interest are consistent themes in commentaries on space. This is often summarised in the cliché that space is increasingly "congested, contested, and competitive". Additionally, Australia is often perceived as having fallen behind other nations in space, with ramifications for Australia's economy and defence.

Two questions were designed to gauge public opinion on the link between space and Australia's national security and strategic policies. Half of those surveyed believed that the Australian Defence Force should prioritise space alongside other areas of defence, with 34.8% neutral and just 15.1% disagreeing (Figure 14). When placed against the region, 43.9% of respondents felt that the growth in other nations' space programmes presented a risk to Australia's security, with only 14.1% disagreeing (Figure 15). The answers to both questions suggest that space is viewed by Australians as important for national security and that space capabilities are an important potential tool in conflict.

As Australia is often described as a 'middle power', the survey also asked how Australians viewed their country's space program in relation to how they viewed its relative global standing. When asked whether Australia's current activities in space were proportional to its standing on the world stage, 46.7% of respondents were neutral, while 38.5% agreed that this was the case (Figure 16). Only 14.8% believed that Australia's activities in space did not align with its place in the world.

How do Australians perceive and rank the challenges and uncertainties facing Australia in space? When asked to rank these risks in terms of their concern (Figure 17), respondents were most likely to rank the planet being hit by "asteroids, comets or other space objects" first in their rankings. The accumulation of space debris was ranked second, and harm caused by space technologies (such as during launch) and conflicts arising in space were a close third and fourth.

The search for other lifeforms and human settlements outside of our planet—two activities that could be perceived as more abstract or less relevant for today—were viewed as the least worrying risks.

Where Australia should go next

- The Australian public does not have a good sense of Australia's future direction in space.
- Australians place communication and earth observation space assets at the top of their priorities for Australia's space future.
- 31% of Australians feel that the country is spending the right amount on space, but 36% do not know.

The Australian public appears to be uncertain about the country's space trajectory (Figure 18). 42.7% of respondents disagreed with the notion that they had a sense of Australia's future direction in space, with an additional 34.5% responding neutral to the question, leaving 22.7% to agree with the statement. This is a notable reflection of a lack of clarity in how space is discussed and represented more broadly in the national conversation.

Similarly, Australians were split in their answer to the question whether Australia was spending too much, too little or the right amount on space. 31.5% of respondents felt that Australia was spending the right amount, 20.6% felt too little was being expended on space, and 11.5% felt too much was being spent (Figure 19). Reflecting the uncertainty highlighted in other answers, 36.4% of Australians felt they did not know. In comparison, when the American public was asked the same question about the United States' spending on its space exploration program in 2022, 47.2% felt the amount was about right, 20.4% felt it was too little, 28.2% felt it was too much and only 5.1% had no opinion or could not choose.[10] This could reflect the lack of knowledge about, and visibility of, investment in space technologies in Australia, though more data is required.

The survey responses do help provide clues for policymakers about the direction the Australian public feels Australia *should* take. Respondents were presented with the seven national civil space priority areas from the Australian Space Agency's *Civil Space Strategy, 2019–2028* and asked to rank them.[11] As seen in Figure 20, communication satellite technology and

[10] Michael Davern, Rene Bautista, Jeremy Freese, Pamela Herd, and Stephen L. Morgan, "General Social Survey 1972-2022". NORC ed. Chicago: NORC, 2023. Data accessed from the GSS Data Explorer website at .gssdataexplorer.norc.org.

[11] Australian Space Agency, *Advancing Space: Australia's Civil Space Strategy 2019 – 2028*, (2019) https://www.space.gov.au/Advancing%20Space%20Australian%20Civil%20Space%20Strategy%202019%20%E2%80%93%202028

Earth observation are the top two civil space priority areas the Australian public feels Australia should prioritise. Though—as our previous results indicate (Figure 8)—many respondents do not possess a comprehensive awareness of the function of EO, they still appeared to value it and other satellite capabilities highly enough to rank it as a major priority for Australia and its space industry.

Despite much of the current cultural conversation surrounding robotics and automation and a global prioritising of this sector as part of national science and technology strategies, it was ranked last as a space priority. This may reflect low levels of awareness as to how these technologies all intersect.

Furthermore, some issues which have become a critically important part of the space community's conversations and work—such as space debris, exploration, and planetary defence—were ranked as middle priorities for industry or government. This may reflect respondents prioritising space capabilities that they view as servicing society and the planet more directly.

A significant number of respondents agreed with the proposition that Australia should fund an astronaut with either NASA or the European Space Agency (40.8% SA/A), although an equal percentage of respondents felt neutral about this proposition (40.7%) (Figure 21). Only 18.4% disagreed to some extent, signalling that investment in Australian participation in human space exploration along with the other major space agencies is viewed somewhat favourably. Given the centrality of human spaceflight to popular understandings of space, as well as the fact that no cost for this investment was included in this question, this result may simply indicate a general enthusiasm for human spaceflight.

Respondents answered affirmatively that investment in space research should be supported even if it is only to advance scientific knowledge—with 54.9% agreeing with that statement, 35.8% neutral, and just 9.3% disagreeing—suggesting that space as a purely scientific endeavour is largely viewed positively, and indeed more positively than funding human spaceflight (Figure 22). Additionally, Australian space missions were viewed as a catalyst for STEM study and work to roughly the same degree (58.8% SA/A). Only 6.9% disagreed or strongly disagreed with that statement, suggesting general support for space's place in blue-sky research as well as in practical education outcomes (Figure 23).

Finally, like other STEM fields, the space sector has faced challenges regarding diversity, inclusivity, and representation with many women, people of colour and other marginalised groups facing significant barriers to entry and growth in the field.[12] Respondents strongly agreed that

[12] See for instance Department of Industry, Science and Resources, *Diversity in STEM Review: draft recommendations*, (August 2023)

Australian space activity should strive to include a diverse representation of Australians (58.8% SA/A versus 8.3% D/SD) (Figure 24).

Conclusion

What do these results reveal about Australians' attitudes towards space? At the very least, they show that the Australian public sees space with a mix of interest, support, and a degree of ambivalence. There is a general interest in space, both international and local, although Australians felt less knowledgeable than they were interested. However, for questions that focused on more specific Australian space activities—such as the Australian Space Agency or NSMEO—there was less awareness or support demonstrated, respectively. Similarly, more respondents reported they were neutral or disagreed with the idea that space impacted their lives in important ways than had agreed with it.

This tension between interest, knowledge, and support has potentially significant impacts on space policymaking and investment into critical space technologies. While there are differences in opinion among experts, advocates and government as to where Australia should go in the future, it should be relatively uncontroversial to note that space technologies play an important role in both national and individual life in Australia. Yet, for instance, respondents reported a relatively low level of understanding of Earth observation functions, few Australians reported that they had a clear sense of the country's future direction in space, and a large proportion had little sense of whether the country was spending the right amount on space. There is therefore an opportunity for stakeholders from academia, industry and government to be more proactive in providing this information.

Equally, it is important not to treat the figures as simply the result of a general misunderstanding among the Australian public, but to identify the reasons for the lack of support or awareness of Australian dependencies on certain space technologies and applications. The broad agreement among those surveyed for the cancellation of NSMEO may reveal a lack of understanding of the critical functions of Earth observation, but also may simply suggest that the public believes that funding should be directed elsewhere—either in other space technologies or to non-space areas.

There are some indications as to the public's priorities in space, which can be useful when thinking about how to

https://consult.industry.gov.au/diversityinstem2 and Elise Stephenson, Cassandra Steer, Meredith Nash, Jack Hayes, Sarah Furman, Isabella Vacaflores, Kareena Dhillon, and Naomi Hartanto, *Diversity at the Frontier: Gender Equality in Space Conference* (May 2023) https://giwl.anu.edu.au/sites/default/files/Space_Conference_Insights.pdf

provide clearer public facing information and messaging. Respondents rank issues around the space environment and protection of both the space environment and of data in space as top priorities, though these are closely followed by concerns about security and risks from space, both in space and on the ground.

Given the general low knowledge around space, these priorities could reflect the Australian public's ability to associate these areas of activity with more familiar issues such as climate change and regional security.

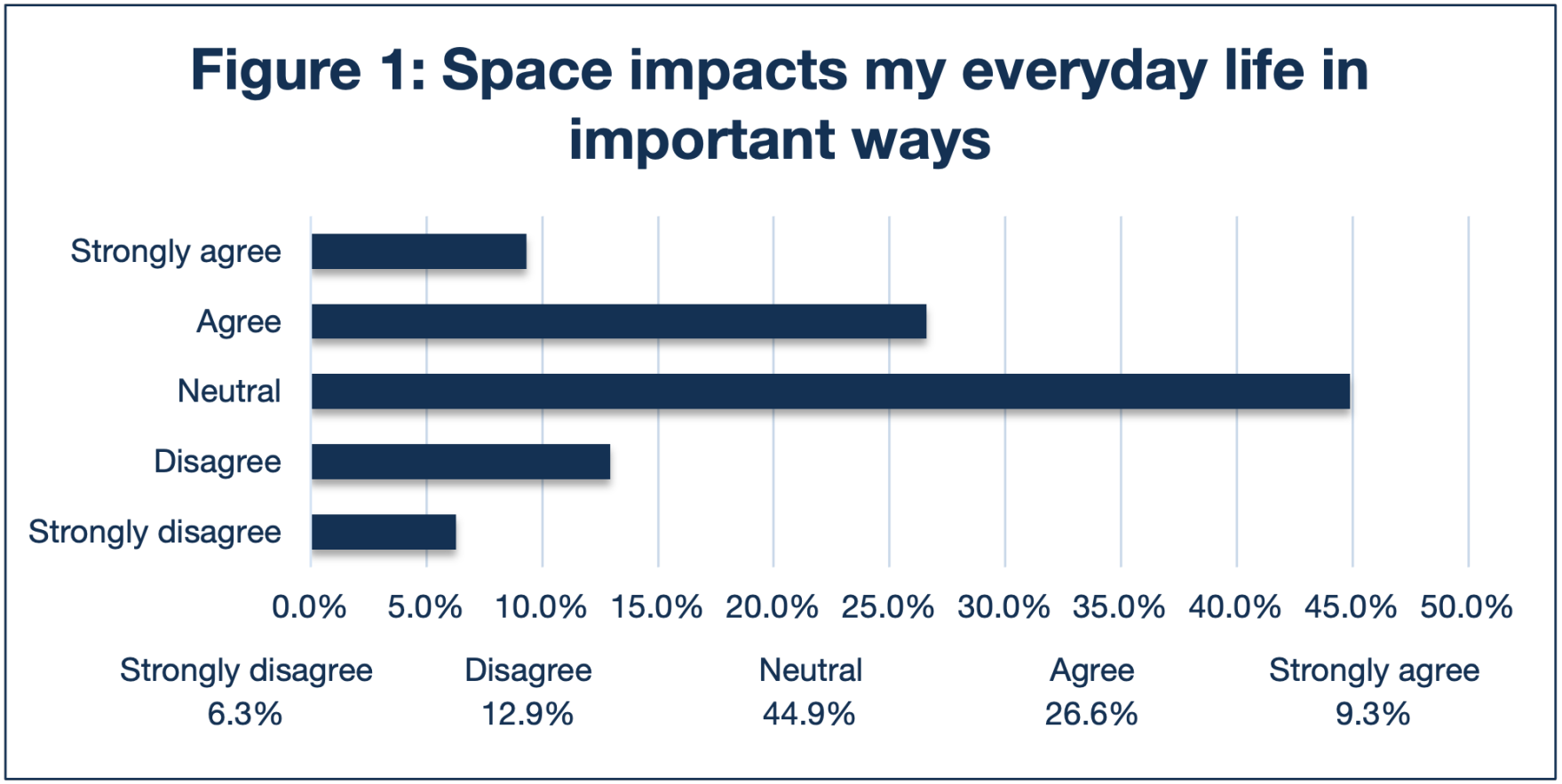
Importantly, respondents were also broadly supportive of diversity in the space sector, the use of space to encourage Australians to study STEM, and blue-sky research. Taken together, these results reflect the complexity of Australia's engagement with space.

As it presents the results of the first-ever publicly available survey specifically on Australian attitudes towards space, this report was always likely to raise as many questions as it answered and is therefore intended as a foundation for future research. Indeed, some of the questions raised in this report will be explored in forthcoming publications. In particular, the relationship between voting preference and support for space activities and the ever-relevant question of public support for funding of space-related activities will be explored in more detail in forthcoming papers by the authors. Further investigation of the interplay between other variables—such as gender, location, education level, and age—will shed additional light on Australians' attitudes towards space.

In addition, there exist other avenues for analysis of questions raised in the data. For example, the tension between general interest in space on the one hand, and a lack of awareness of the Australian Space Agency and of specific programmes such as NSMEO on the other warrants closer examination.

We are inextricably reliant on space technologies in modern society, and while the Australian public is interested in space it feels it lacks knowledge about the Australian space sector. Funding space activity and infrastructure can be costly, and therefore any robust space program—whether civil, commercial, or defence—must have both government and public support and engagement. However, if the public lacks awareness and understanding of the importance of space technologies to their everyday lives and to maintain a secure nation, the necessary consensus cannot be built, either in the public or within the government. This research is an important first step in understanding the landscape of public opinion on space in Australia and working towards an acknowledgement of the importance of the public as a partner in space.

Appendix: Figures



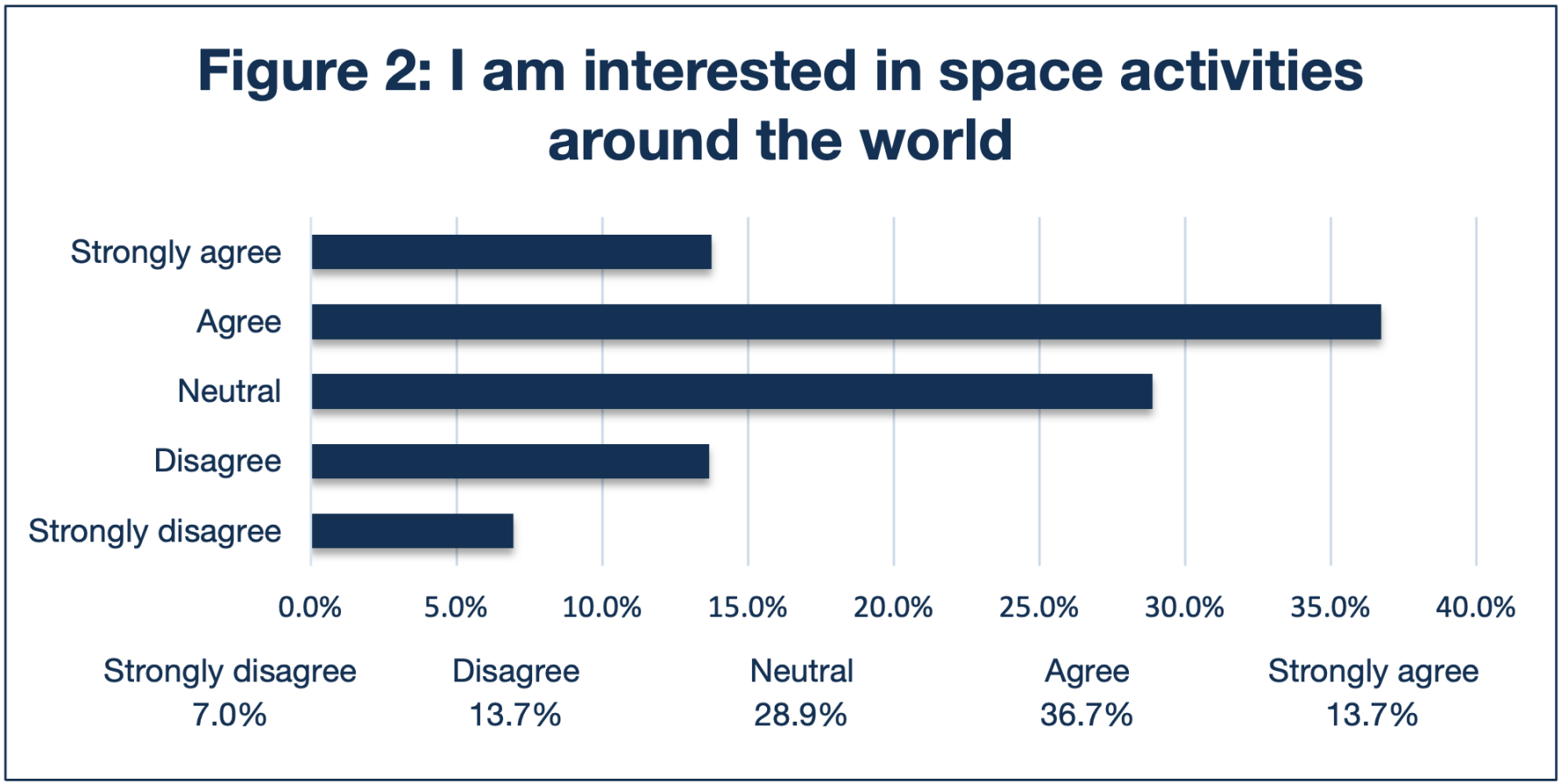
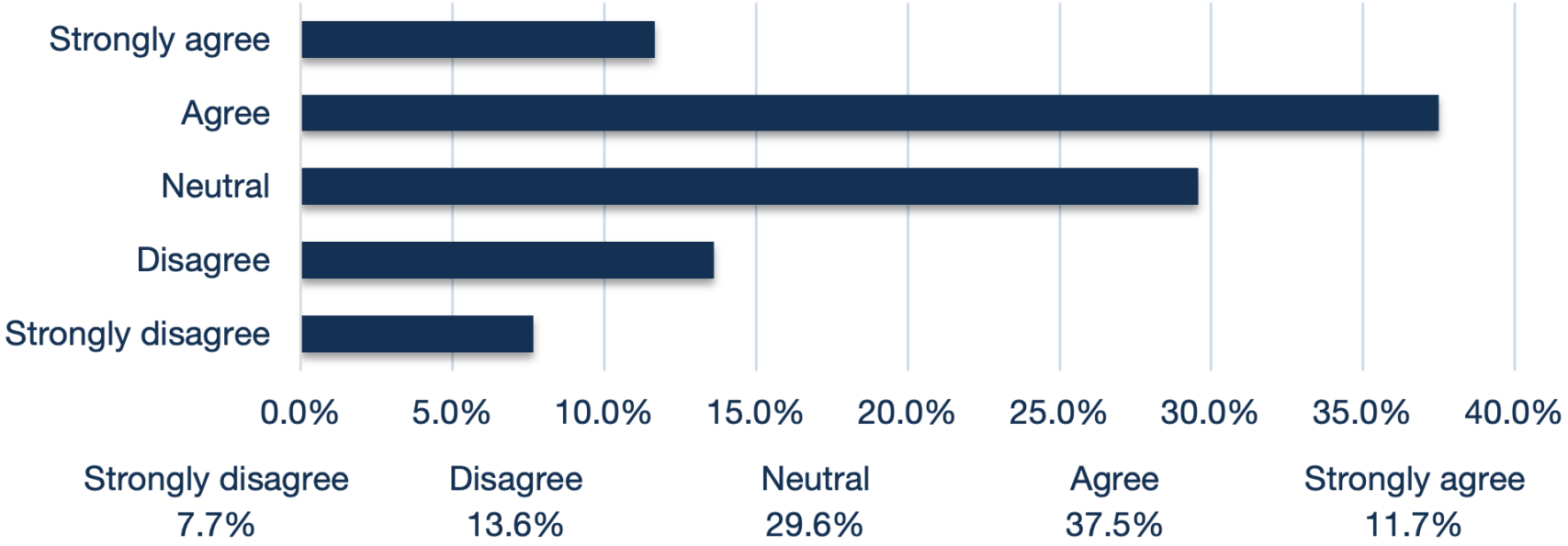


Figure 2: I am interested in space activities around the world
Strongly agree
Agree
Neutral
Disagree
Strongly disagree
0.0%
5.0%
10.0%
15.0%
20.0%
25.0%
30.0%
35.0%
40.0%
Strongly disagree 7.0%
Disagree 13.7%
Neutral 28.9%
Agree 36.7%
Strongly agree 13.7%

Figure 3: I am interested in Australian space activities



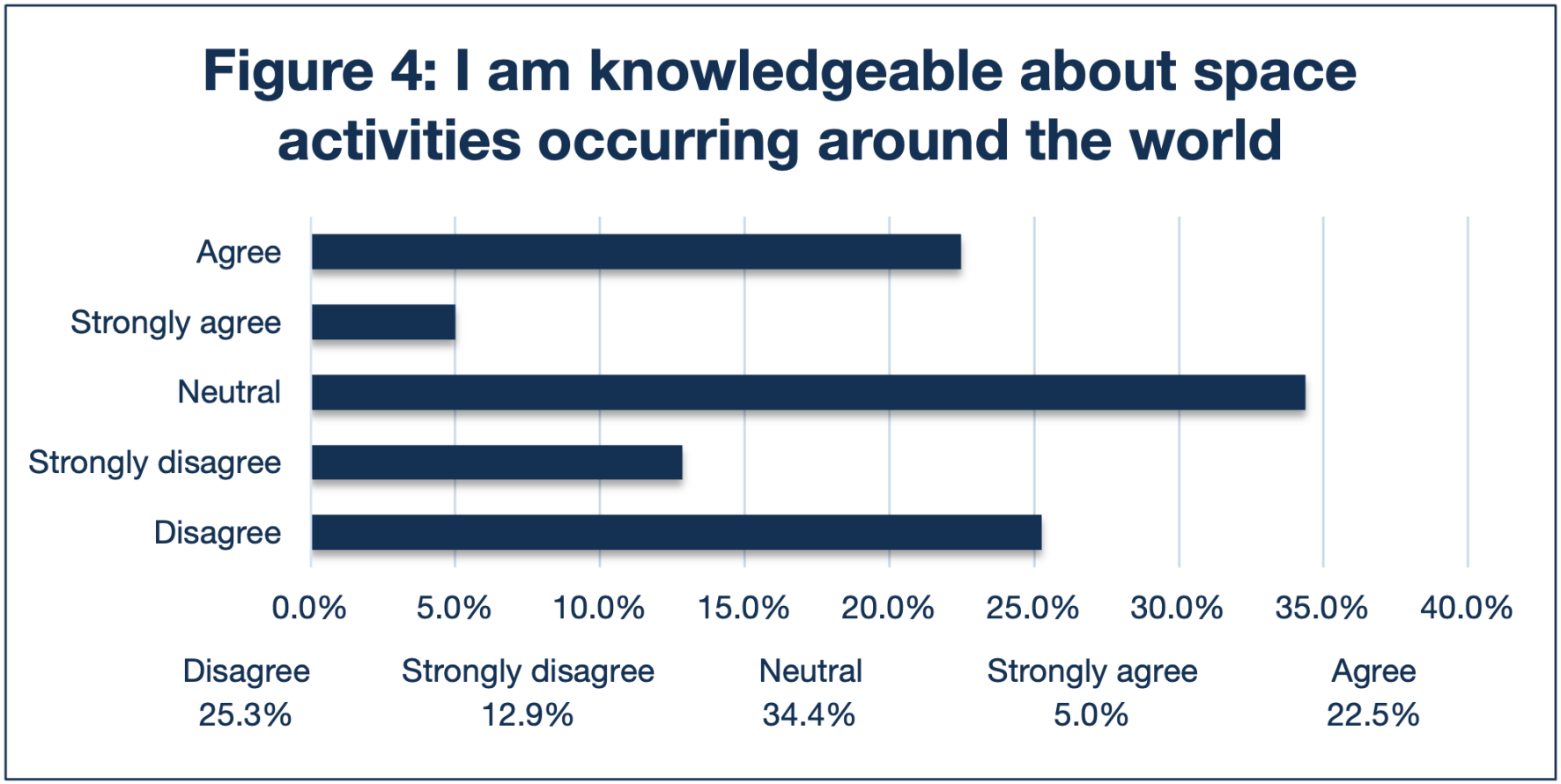
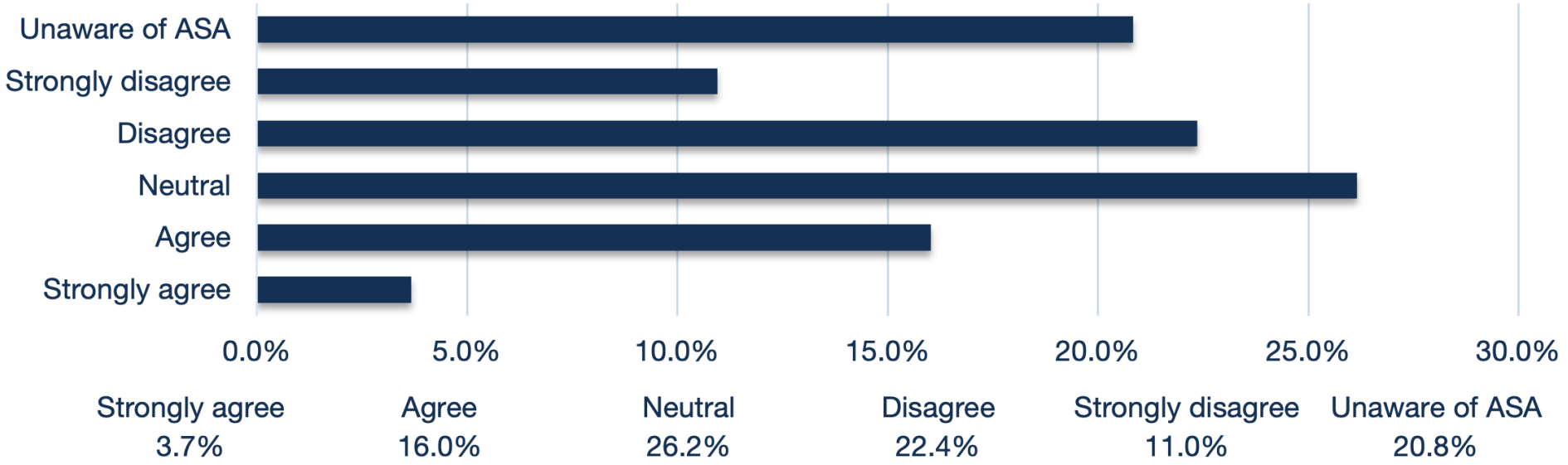


Figure 4: I am knowledgeable about space activities occurring around the world
Agree
Strongly agree
Neutral
Strongly disagree
Disagree
0.0%
5.0%
10.0%
15.0%
20.0%
25.0%
30.0%
35.0%
40.0%
Disagree 25.3%
Strongly disagree 12.9%
Neutral 34.4%
Strongly agree 5.0%
Agree 22.5%

Figure 5: I have followed the Australian Space Agency's activities since its inception in 2018



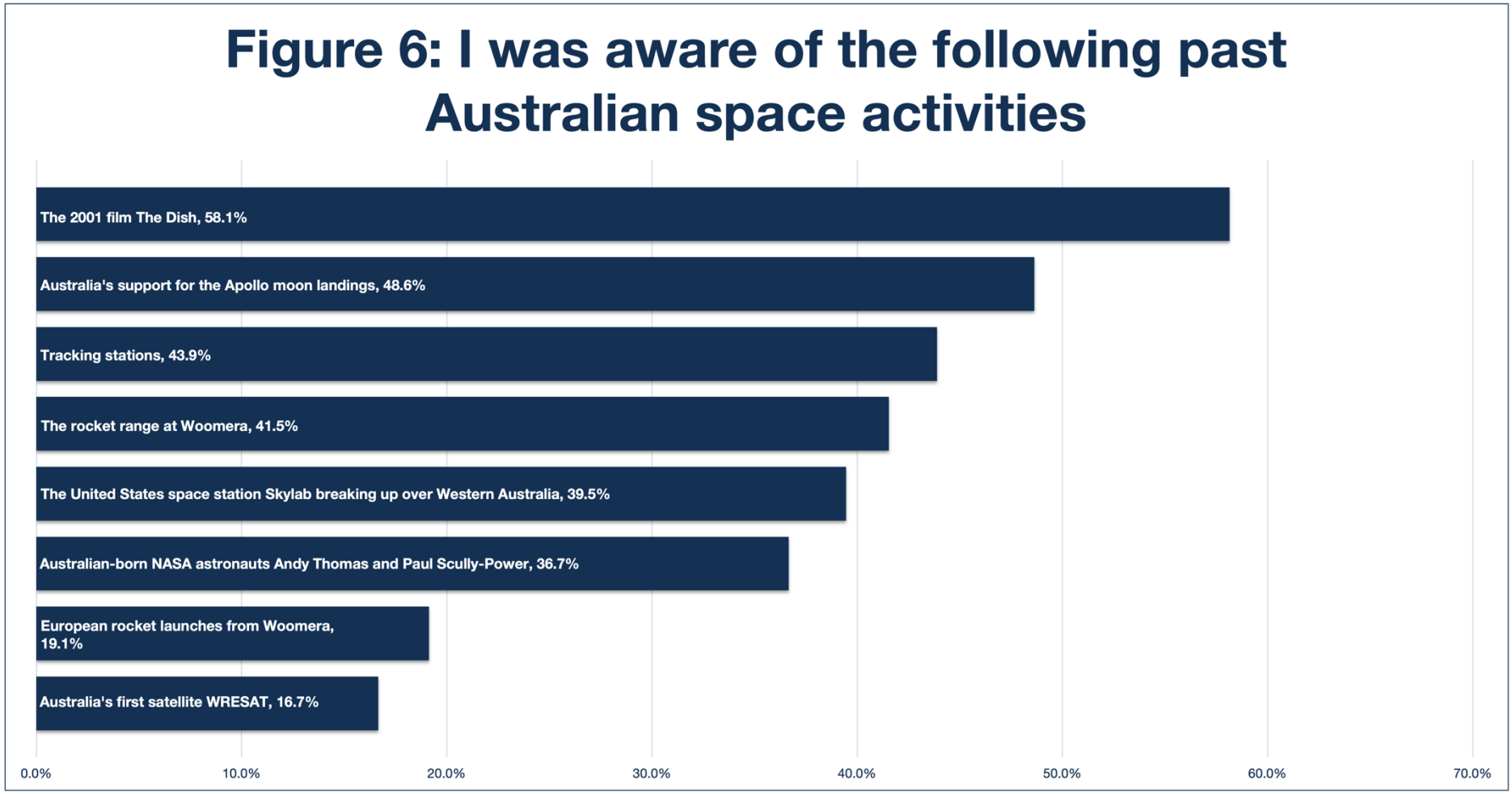


Figure 6: I was aware of the following past Australian space activities
The 2001 film The Dish, 58.1%
Australia's support for the Apollo moon landings, 48.6%
Tracking stations, 43.9%
The rocket range at Woomera, 41.5%
The United States space station Skylab breaking up over Western Australia, 39.5%
Australian-born NASA astronauts Andy Thomas and Paul Scully-Power, 36.7%
European rocket launches from Woomera, 19.1%
Australia's first satellite WRESAT, 16.7%
0.0%
10.0%
20.0%
30.0%
40.0%
50.0%
60.0%
70.0%

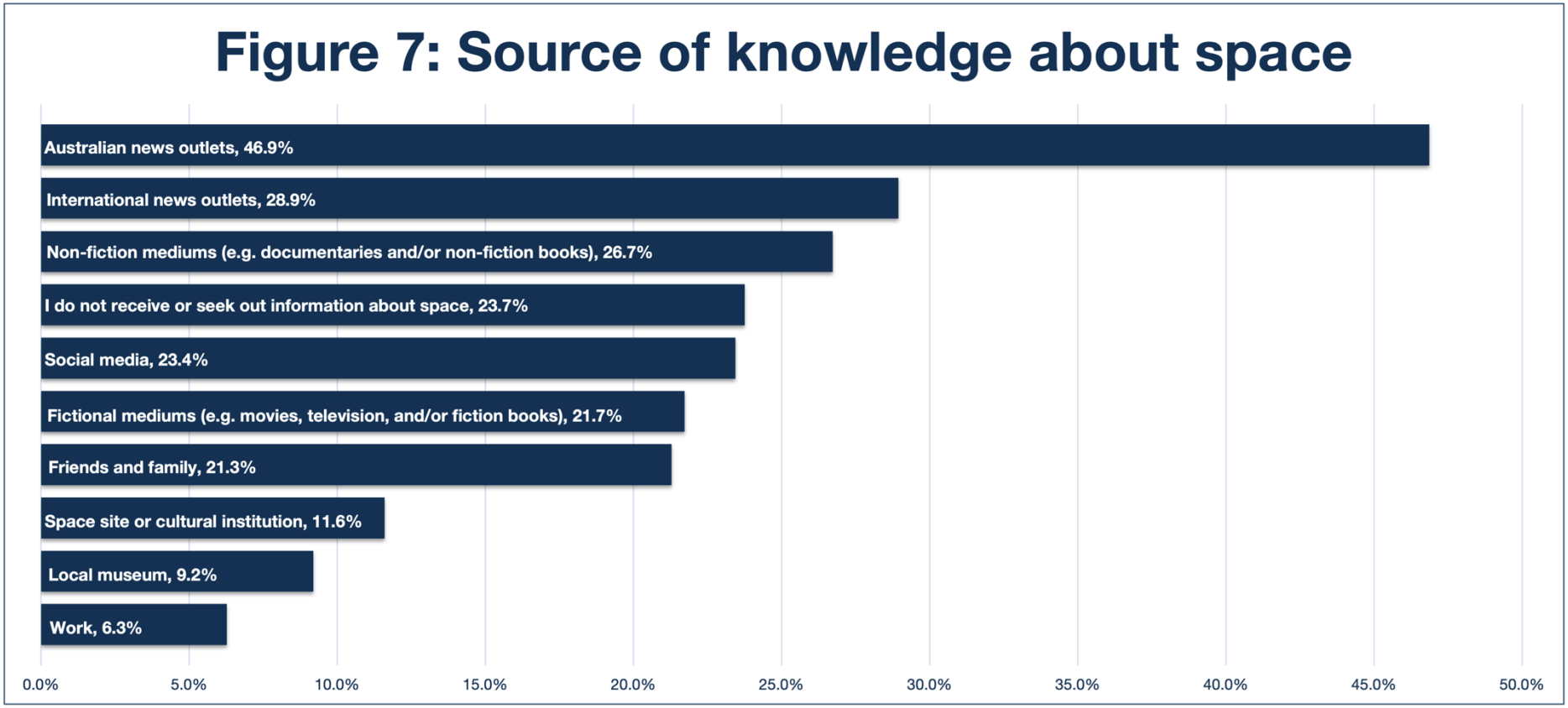


Figure 7: Source of knowledge about space
Australian news outlets, 46.9%
International news outlets, 28.9%
Non-fiction mediums (e.g. documentaries and/or non-fiction books), 26.7%
I do not receive or seek out information about space, 23.7%
Social media, 23.4%
Fictional mediums (e.g. movies, television, and/or fiction books), 21.7%
Friends and family, 21.3%
Space site or cultural institution, 11.6%
Local museum, 9.2%
Work, 6.3%
0.0%
5.0%
10.0%
15.0%
20.0%
25.0%
30.0%
35.0%
40.0%
45.0%
50.0%

Figure 8: I am familiar with the meaning of "Earth Observation"

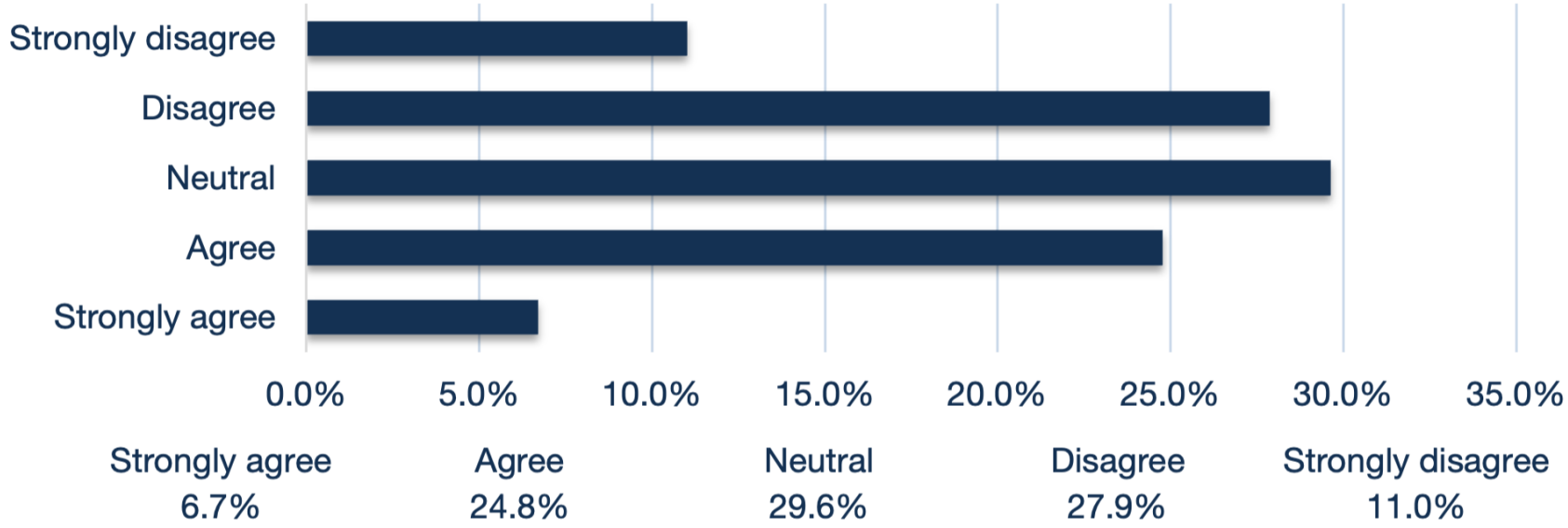


Figure 9: Awareness of Earth Observation applications

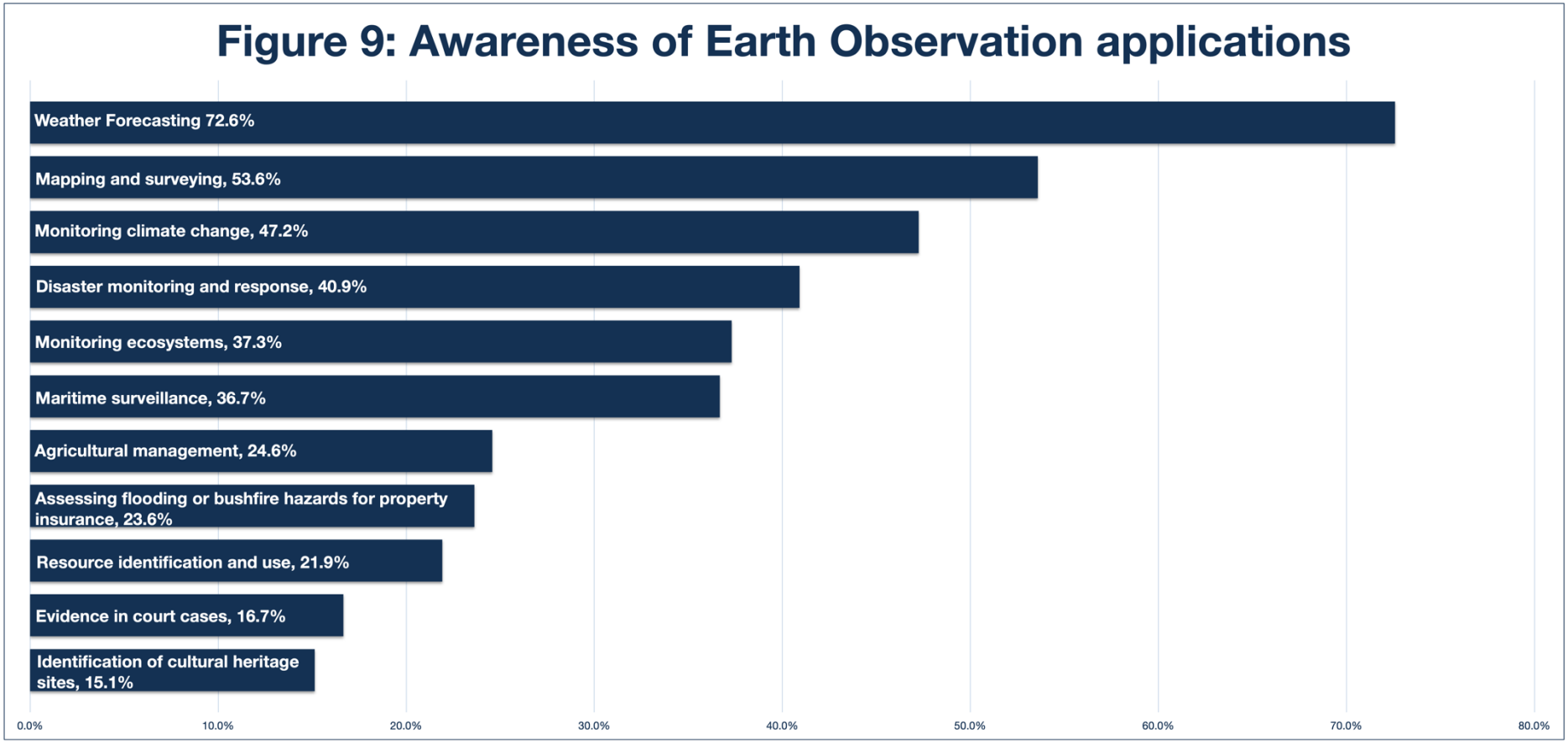


Figure 10: Australia's commercial space sector is important for its economy

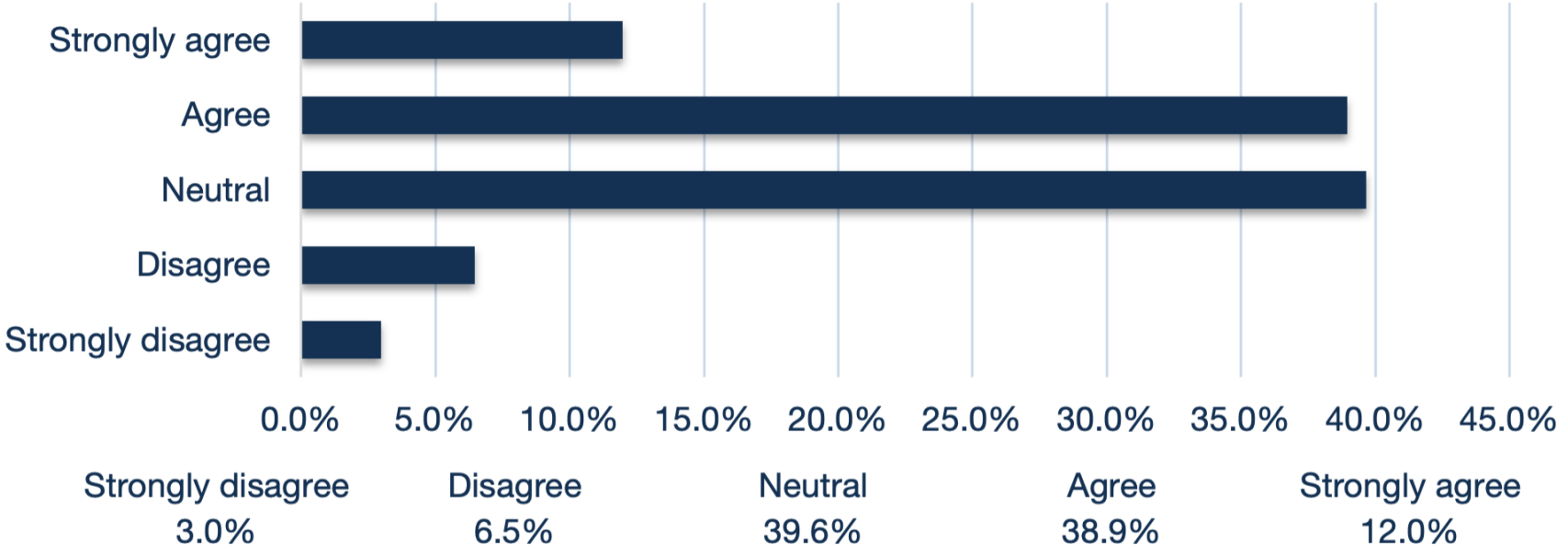
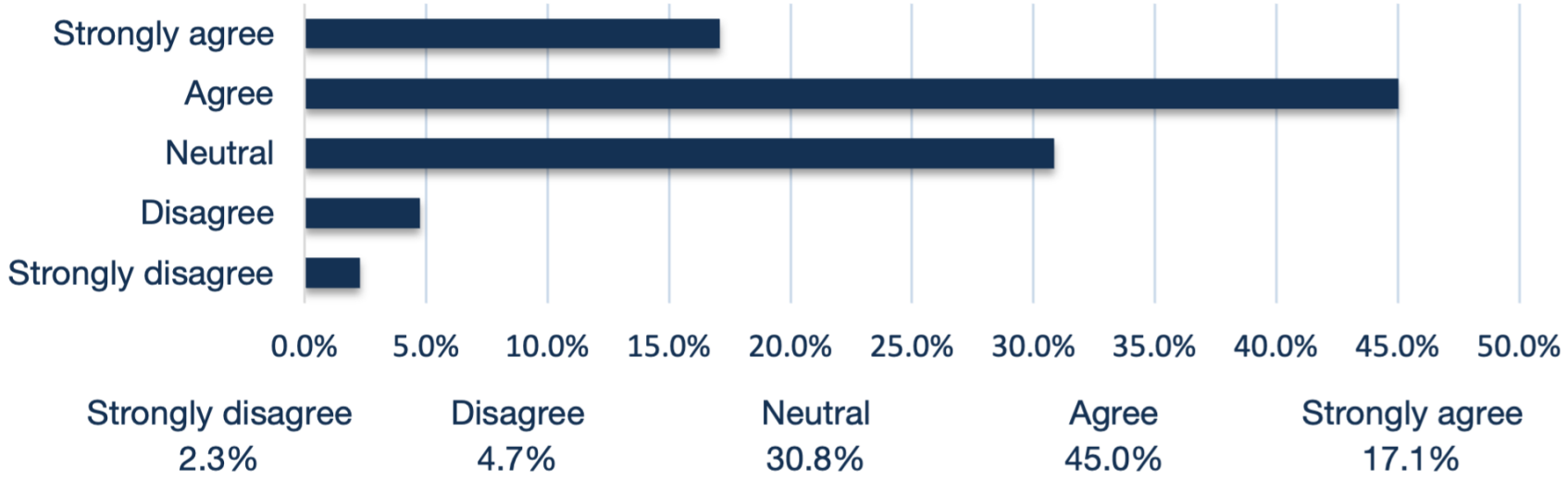


Figure 11: Satellite technology and ground facilities are an integral part of Australia's national infrastructure



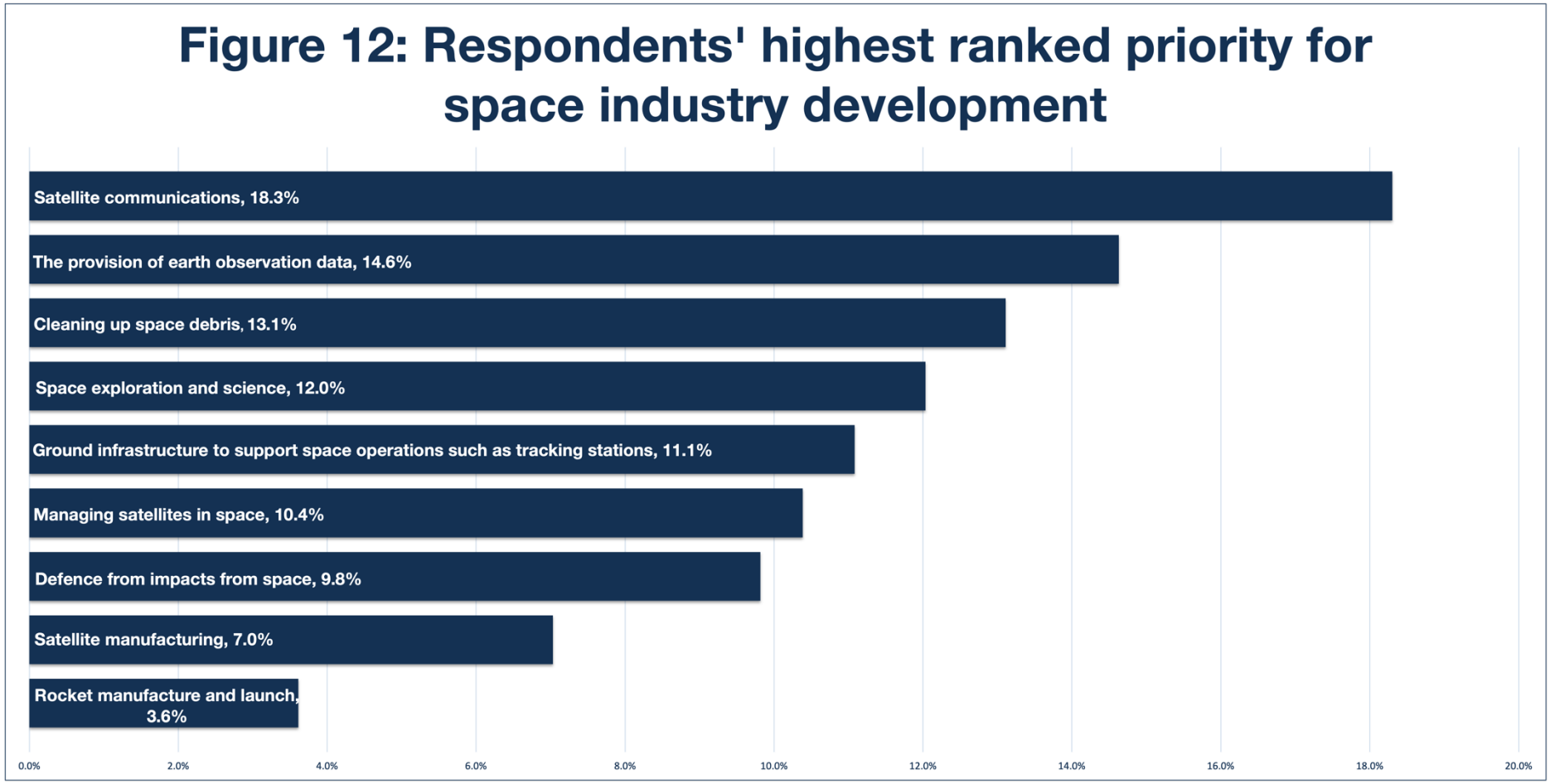


Figure 12: Respondents' highest ranked priority for space industry development
Satellite communications, 18.3%
The provision of earth observation data, 14.6%
Cleaning up space debris, 13.1%
Space exploration and science, 12.0%
Ground infrastructure to support space operations such as tracking stations, 11.1%
Managing satellites in space, 10.4%
Defence from impacts from space, 9.8%
Satellite manufacturing, 7.0%
Rocket manufacture and launch, 3.6%
0.0%
2.0%
4.0%
6.0%
8.0%
10.0%
12.0%
14.0%
16.0%
18.0%
20.0%

Figure 13: Agreement with the cancellation of the National Space Mission for Earth Observation

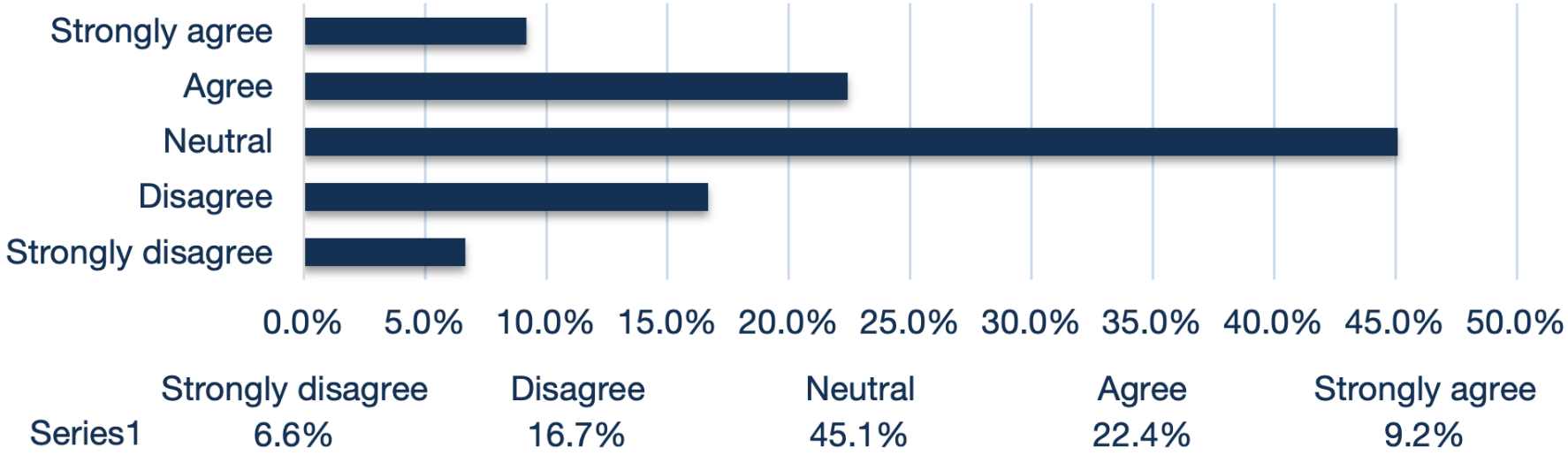


Figure 14: Australian Defence Force should prioritise space alongside other areas of defence

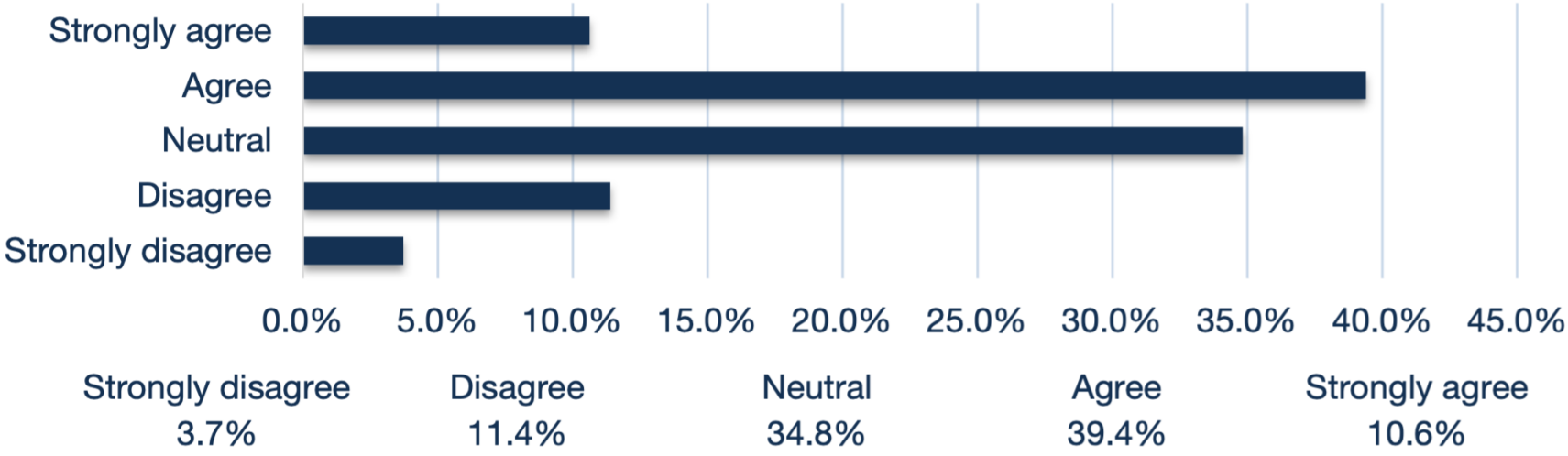
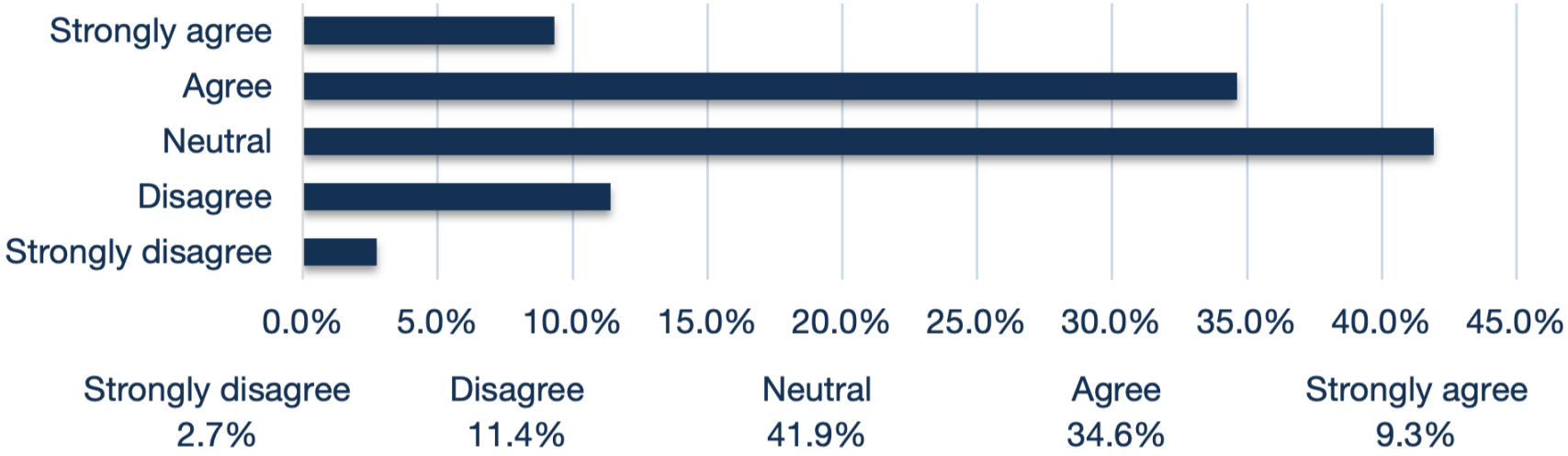


Figure 15: Development of other national space programes in the region present a risk to Australia's security



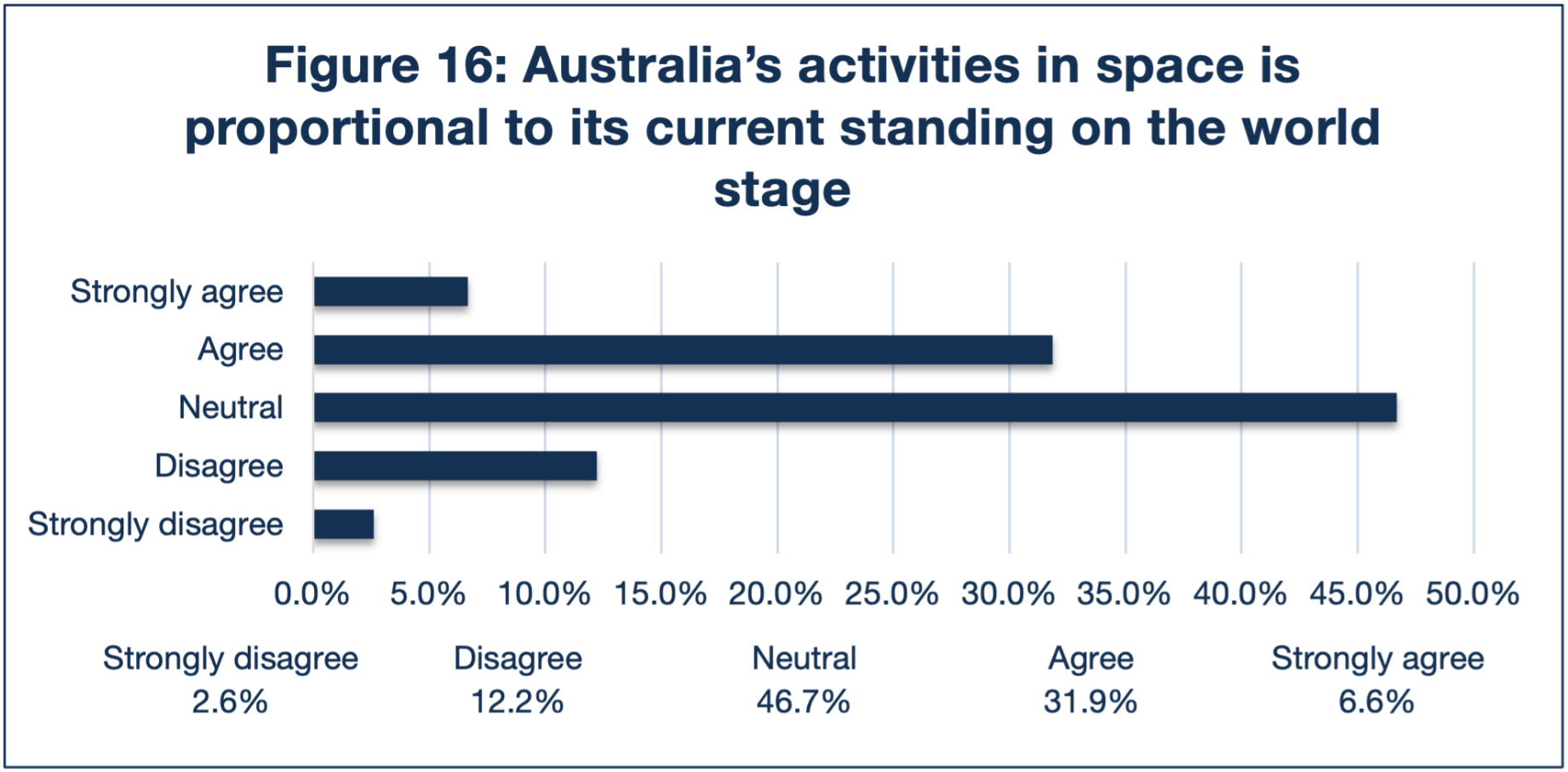


Figure 16: Australia's activities in space is proportional to its current standing on the world stage
Strongly agree
Agree
Neutral
Disagree
Strongly disagree
0.0% 5.0% 10.0% 15.0% 20.0% 25.0% 30.0% 35.0% 40.0% 45.0% 50.0%
Strongly disagree 2.6%
Disagree 12.2%
Neutral 46.7%
Agree 31.9%
Strongly agree 6.6%

Figure 17: Respondents' highest ranked risk or uncertainty related to space

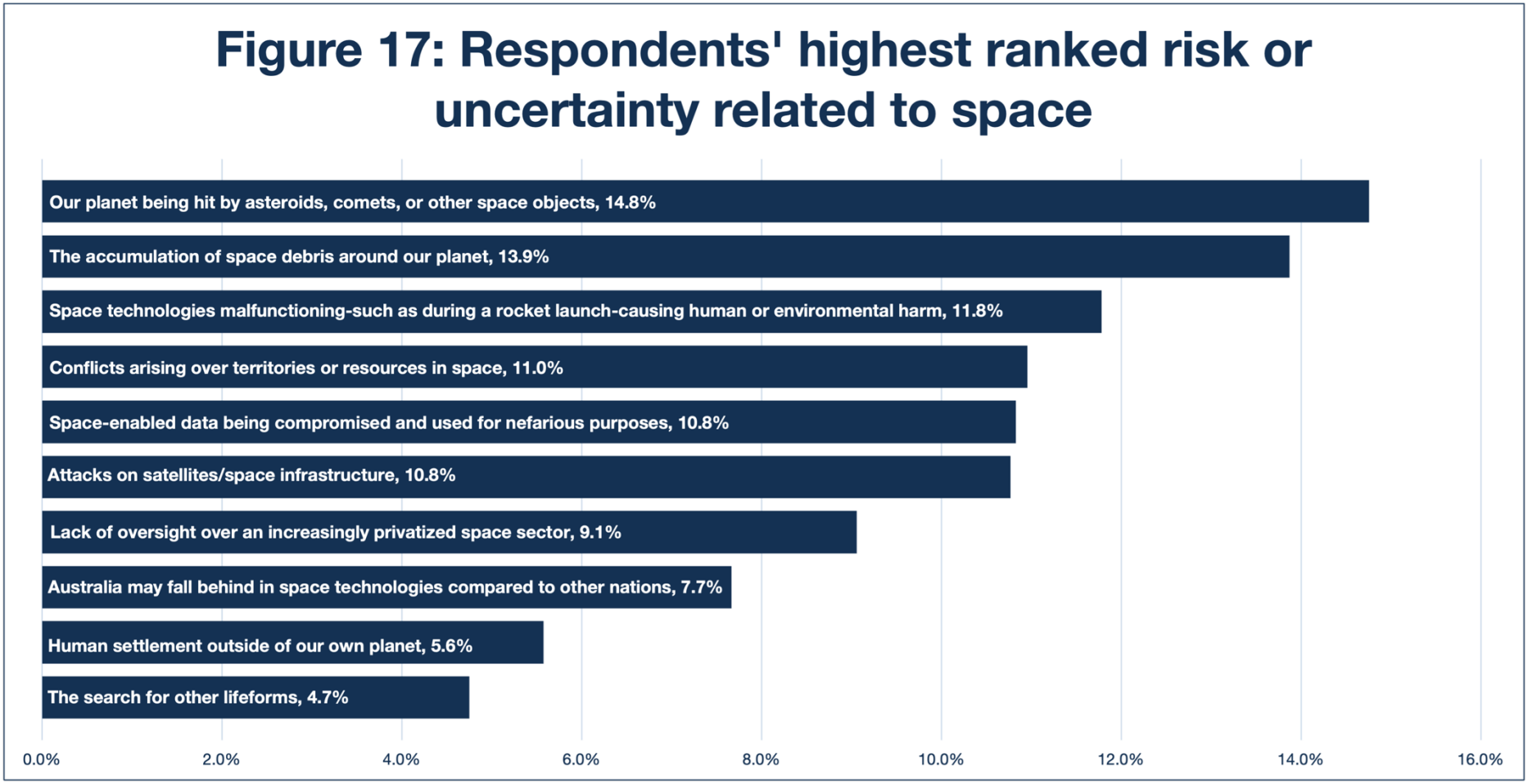


Figure 18: I have a clear sense of Australia's future direction around space

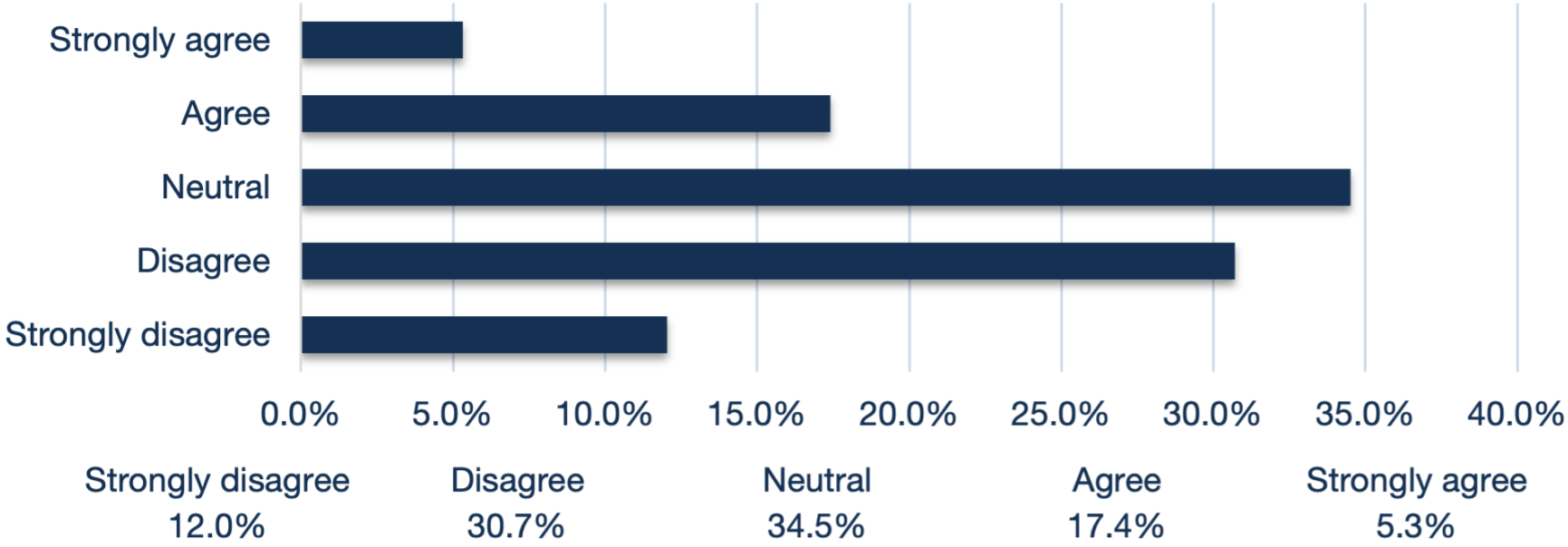
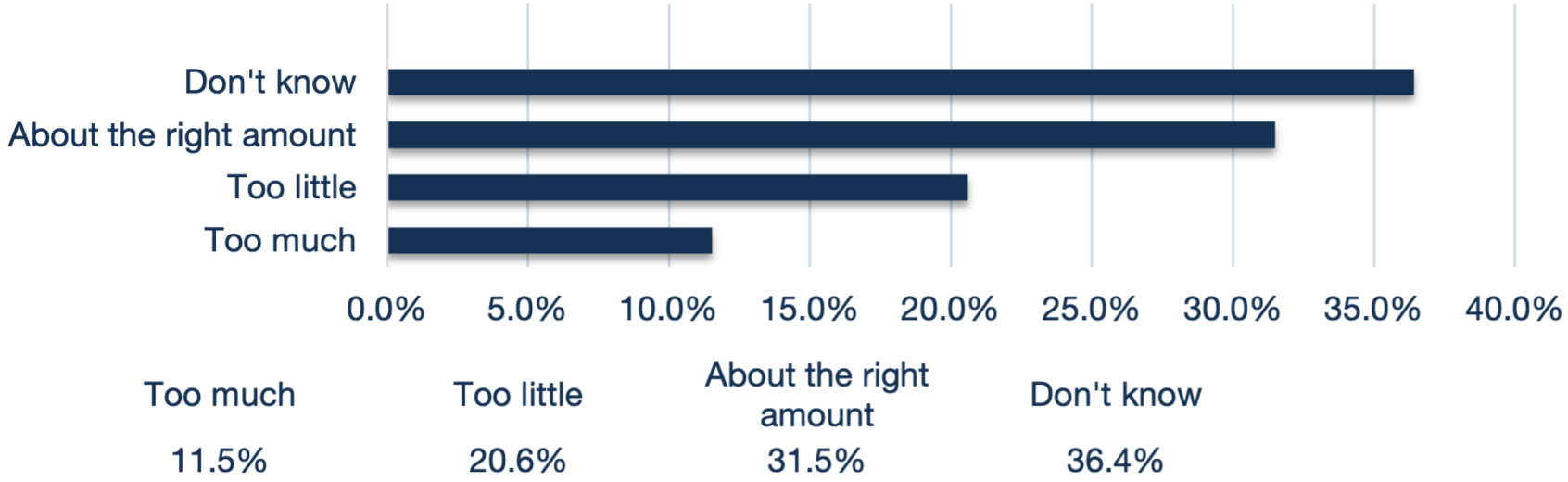


Figure 19: In your opinion, are we spending too much, too little, or about the right amount on our space activities?



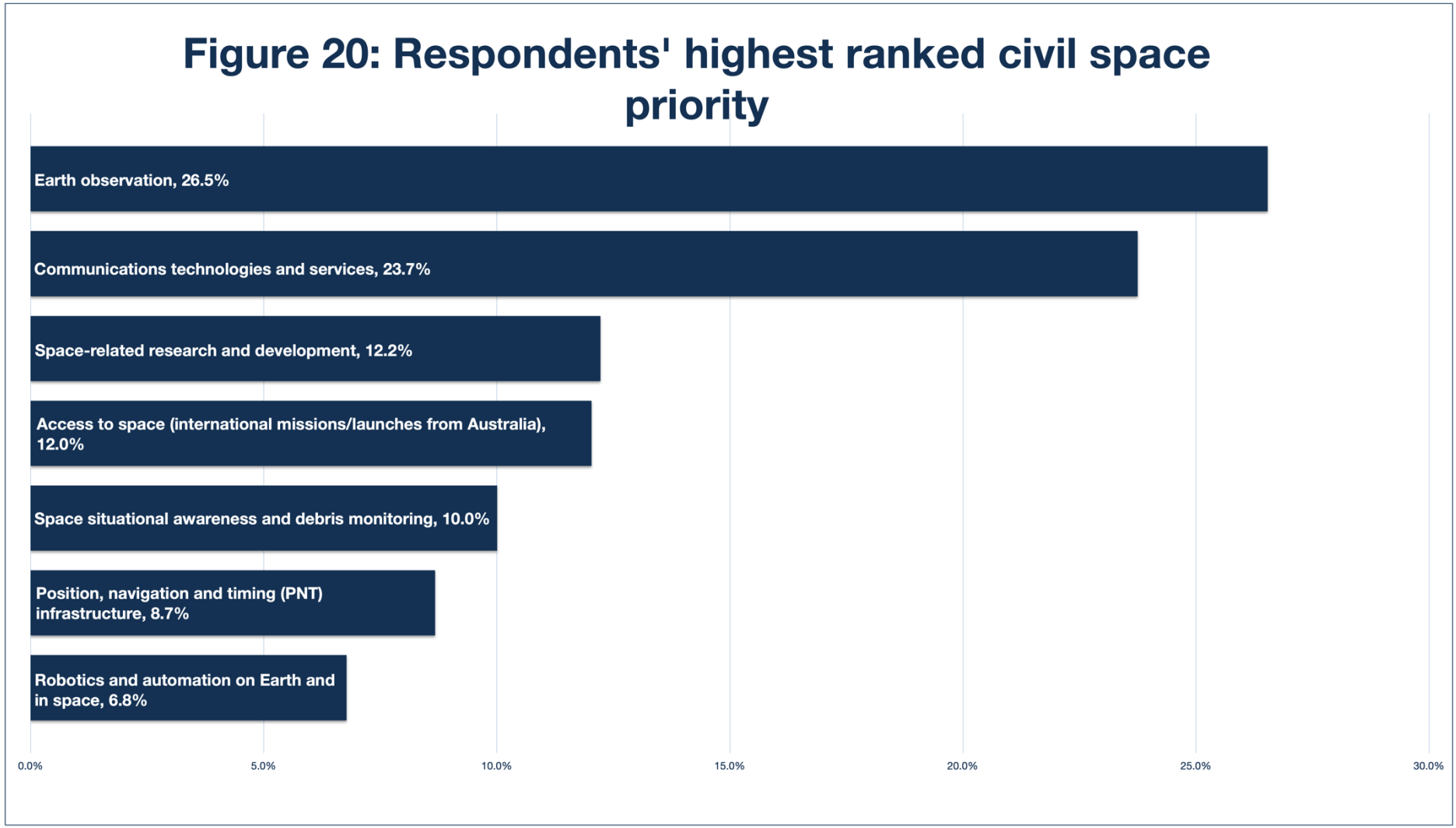


Figure 20: Respondents' highest ranked civil space priority
Earth observation, 26.5%
Communications technologies and services, 23.7%
Space-related research and development, 12.2%
Access to space (international missions/launches from Australia), 12.0%
Space situational awareness and debris monitoring, 10.0%
Position, navigation and timing (PNT) infrastructure, 8.7%
Robotics and automation on Earth and in space, 6.8%
0.0%
5.0%
10.0%
15.0%
20.0%
25.0%
30.0%

Figure 21: Australia should fund an astronaut to fly with NASA or the European Space Agency

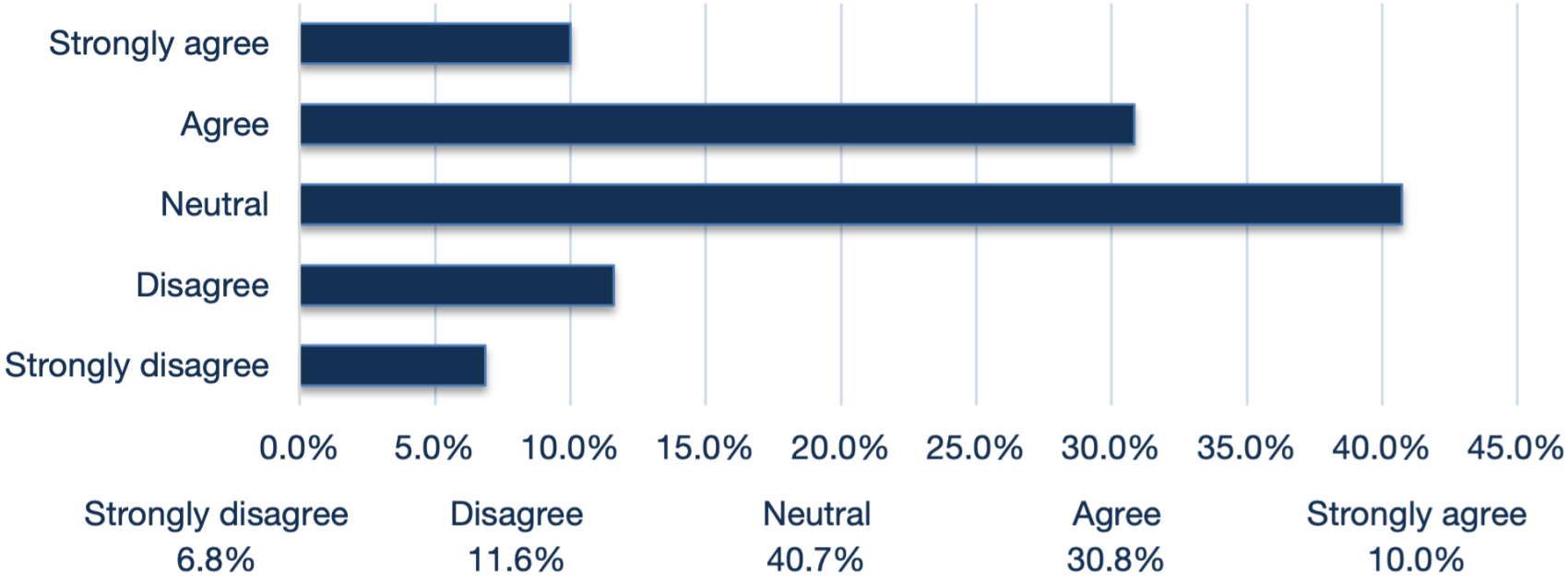


Figure 22: Even if it brings no immediate benefits, space-focused scientific research that advances the frontiers of knowledge should be supported by the Australian government

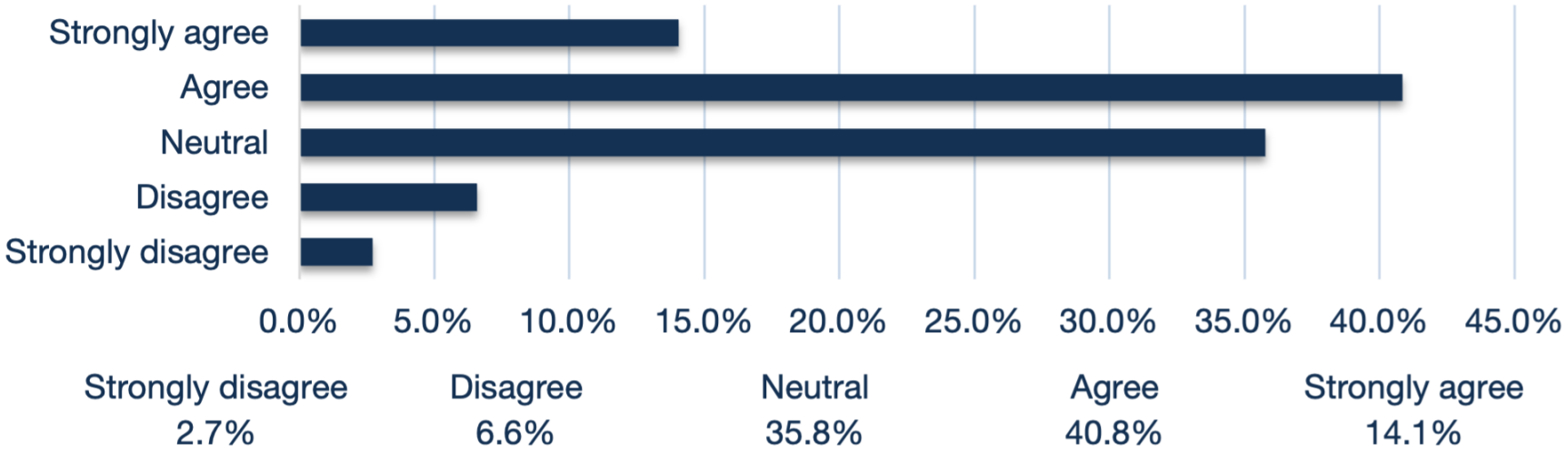


Figure 23: Australian space missions are a useful way to encourage Australians to undertake STEM study and jobs

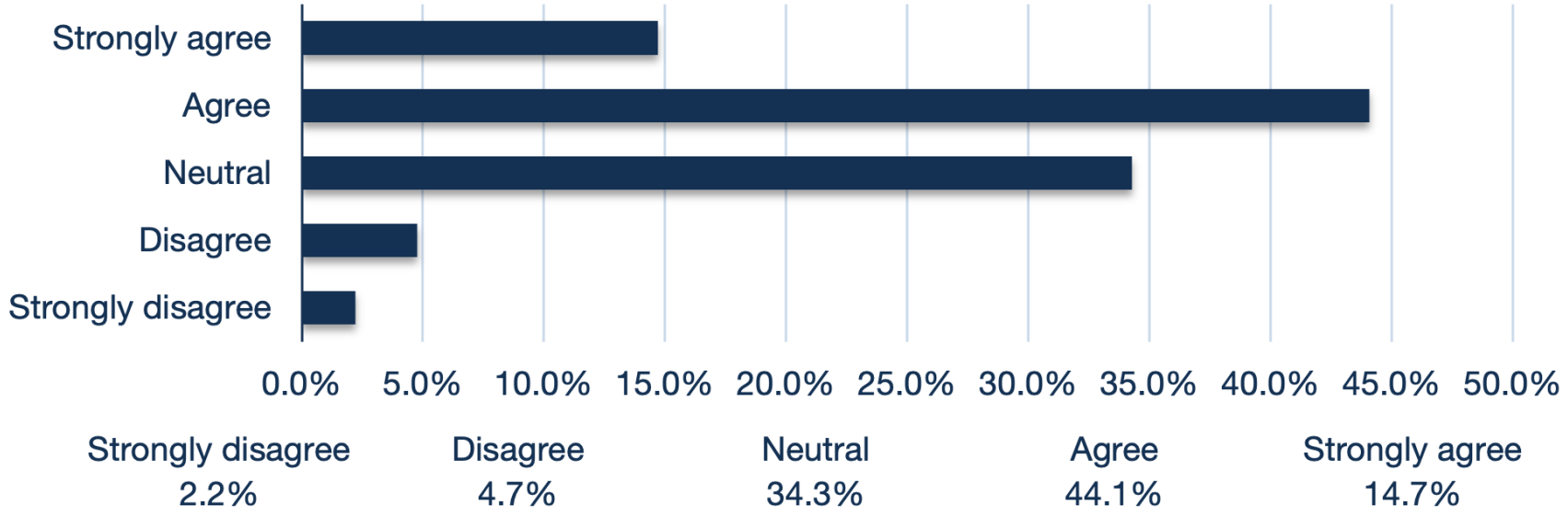
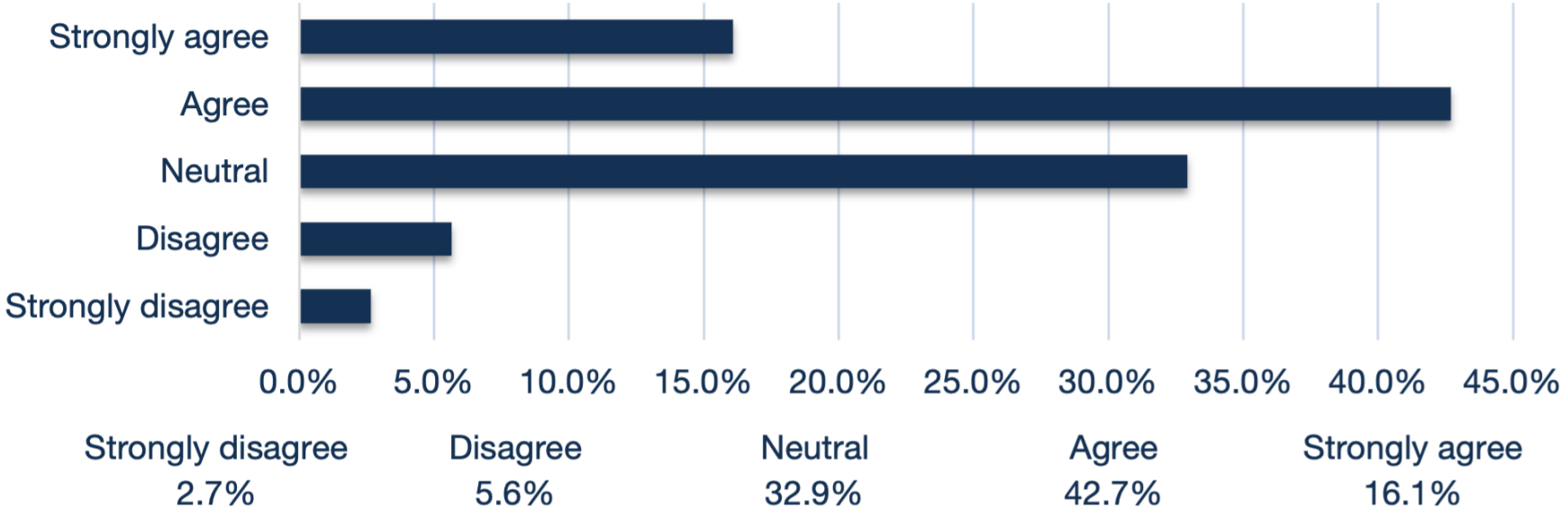


Figure 24: It is important that Australian space activities include a diverse representation of Australians



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