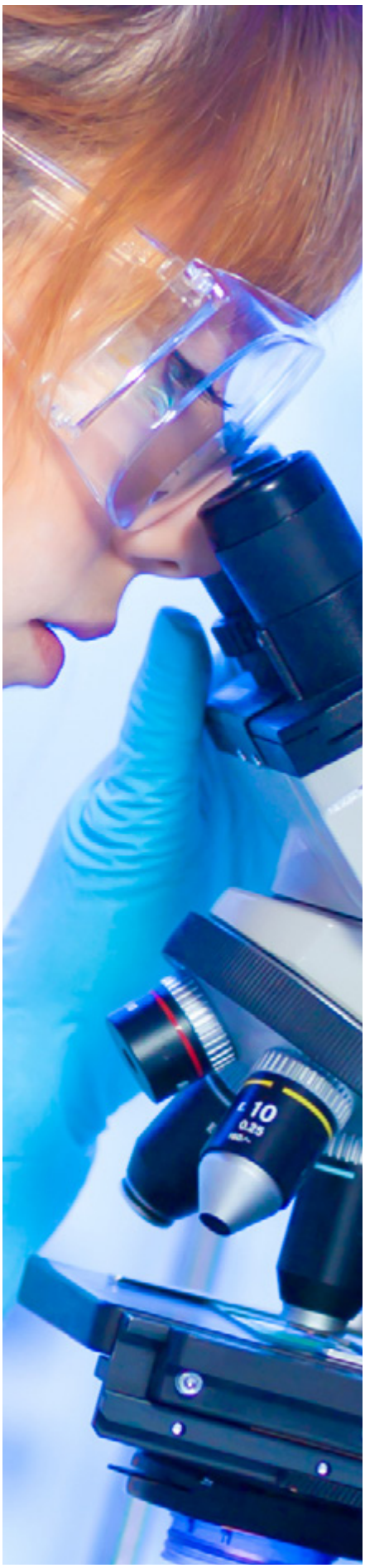
PROFESSIONAL SCIENTISTS EMPLOYMENT AND REMUNERATION REPORT

2021-22

Professionals Australia

Professional Scientists Australia

Science & Technology AUSTRALIA



ABOUT SCIENCE & TECHNOLOGY AUSTRALIA

Science & Technology Australia is the peak body representing more than 90,000 scientists and technologists across Australia.

Our mission is to advance the public good and strengthen civil society through education, outreach, and programs by bringing together scientists, technologists, governments, industry and the broader community.

We do so to advance the role and impact of science and technology to help solve some of humanity's greatest challenges.

The organisation contributes to discussions at the highest levels in policy-making in Australia and communicates with the highest level of Government.

To amplify the voices of STEM professionals, STA runs major events and programs including:

- **Science meets Parliament -** STA's annual flagship event, connects hundreds of scientists and technologists directly with Federal Parliamentarians each year;
- **Superstars of STEM -** A program that smashes society's gender assumptions about scientists and boosts the public visibility of women in STEM. Designed to create a critical mass of visible role models for young women and girls, it is helping achieve equal representation in the media of women and men in all fields in STEM; and
- **STEM Ambassador Program -** linking STEM professionals with their local federal Member of Parliament or Senator, participants act as a conduit between local STEM communities and the decision-makers.

Science & Technology Australia

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ABOUT PROFESSIONAL SCIENTISTS AUSTRALIA

Professional Scientists Australia represents several thousand professional scientists from a broad range of specialisations including health science, biomedical science, ecology, veterinary science, neuroscience, mental health, genetics and genomics, astronomy, biochemistry, mineral processing, environmental science, fertility science, defence research, synchrotron science, environmental science, immunology, water science and automotive design.

Professional Scientists Australia is a division of Professionals Australia (formerly the Association of Professional Engineers, Scientists and Managers, Australia) which is an organisation registered under the Fair Work Act 2009 representing over 25,000 Professional Engineers, Professional Scientists, Veterinarians, Architects, Pharmacists, Information Technology Professionals, Managers, Transport Industry Professionals and Translating and Interpreting Professionals throughout Australia. Professionals Australia is the only industrial association representing exclusively the industrial and professional interests of these groups.

Professional Scientists Australia has four key objectives:

- to ensure members' interests are protected when government policies, outsourcing and offshoring, management decisions, new technologies or large-scale social or health crises lead to workplace change;
- to provide a strong voice for professional scientists. This involves considering the kind of support, policies and practices at the enterprise and structural levels needed to create a sustainable and diverse science workforce capable of realising optimal levels of innovation and productivity;
- to play a leading role in encouraging dialogue between industry, government and the higher education sector. This means advocating for investment and structural reforms, building the platforms for cooperation and change and initiating and leading projects to foster collaboration; and
- to promote public understanding of science and the key role professional scientists play in ensuring Australia's future. This involves influencing public policy and resource allocation decisions and promoting the value of science to decision-makers and the wider community. We seek to highlight the critical role science plays in enabling productivity and innovation, promoting economic prosperity, protecting the environment, improving human welfare and quality of life, preventing, diagnosing and treating human disease and protecting national security. In doing so, we raise the status of the profession and the professionals who work in it.

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FOREWORD

"Never has it been more obvious that trusting science and good data can help us make good decisions that keep us safe."

Survey respondent

SCIENCE HAS SAVED LIVES - NOW WE NEED TO SAFEGUARD SCIENTISTS

As the COVID-19 pandemic continues, it is taking an alarming toll on our scientists.

At every stage in this pandemic, the value of science has been front and centre.

Our scientists have worked around the clock to design public safety measures, develop vaccines and rapid tests, advise on mask safety, model interventions to stop the spread of the virus to save lives, run hundreds of thousands of COVID tests each day and shield our frontline hospital staff. Their brilliance and selfless public service has been inspiring. We owe them a vast debt for guiding us through this crisis.

Yet, as this year's professional scientists survey clearly demonstrates, this herculean effort is taking an alarming toll on our scientific workforce.

The data is stark. This year's survey reveals rising levels of fatigue among Australia's scientists and a bleak drop in morale. There is widespread job insecurity - especially among our early career scientists, who are the future of the profession. Modelling from Universities Australia highlights at least 17,000 jobs lost at universities in the first year of the pandemic - and more to come - with many scientists, technologists, engineers and mathematicians among them. And this year's scientists' survey confirms many of our nation's scientists are employed on hourly rate arrangements or short-term contracts without job security.

To chart a course out of a pandemic, we need science as our guide. A stressed, overworked, and perilously-employed workforce is not a strong foundation for a science-led recovery.

Being a scientist is an exciting, engaging, interesting job. It can give you a chance to change the world. It's the frontier of discovery, the foundation of good policy and a calling to work on the most complex challenges facing humanity and the planet. We need to ensure current and future generations of scientists continue to see the value of a career in science, just as society sees the immense value of science.

Professional Scientists Australia and Science & Technology Australia will continue to advocate for our scientists in the year ahead. This survey and feedback from our members will be our guides. We will pursue stronger investment in science and greater job security for our scientists - and we will advocate for safe, inclusive and diverse workplaces so Australian science can draw on the talents of our whole community in environments that nurture and retain our scientists.

JILL MCCABE
CEO, Professionals Australia

KATIE HAVELBERG
President, Professional Scientists Australia

MISHA SCHUBERT
CEO, Science & Technology Australia

JEREMY BROWNLIE
President, Science & Technology Australia

INTRODUCTION

"I agree that the COVID-19 pandemic has placed a greater emphasis on the importance and role of science for the development and prosperity of our nation but how long will this last? We need to continue to advocate on the critical ongoing role of science in developing sensible, sustainable policies."

Survey respondent

Over the last 18 months, the COVID-19 pandemic has brought into sharp focus the value of science and our scientists. From vaccines developed at record-breaking speed to epidemiological modelling and mask safety, science has been our salvation.

But the herculean effort by Australia's scientific community has come at a cost. As this year's report highlights, after more than a year of the pandemic, Australia's scientists feel overworked, underpaid and under stress.

It is crucial that the value scientists give to society is matched in the way we value scientists - and their pay and workplace conditions. This report offers an evidence-base of current and comprehensive data on remuneration to help scientists to negotiate salaries at review time. It is a reference point for those considering a job offer and can assist to make an informed judgement about whether or not to move on to another role.

It is vital that science and technology employers understand the value of attracting and retaining STEM professionals. This includes properly recognising the skills employees have acquired in graduate and post-graduate qualifications. It also includes respecting the value of the work done by STEM professionals and paying them in line with relevant market salaries.

Professional Scientists Australia and Science & Technology Australia conduct this broad-ranging annual survey to provide accurate and up-to-date information on salaries and workplace conditions. It is a snapshot of pay including base salary and other benefits across sectors, responsibility levels, years of experience, job functions, industries and fields of science.

For the 1,275 professional scientists who completed the 2021-22 survey, the report analyses:

- current base salaries and total remuneration packages;
- annual salary movements;
- employment intentions;
- variable pay;
- the general morale of scientists;
- the difference in reported male and female earnings; and
- working hours and how additional hours are compensated.

This is comprehensive, detailed and independent research you won't find elsewhere.

"Only now do I think the government and the public are developing an appreciation for how much we are needed."

Survey respondent

KEY FINDINGS

Wages growth

- Base salaries for full-time professional scientists surveyed grew by 1.6 per cent on average over the 12 months to June 2021. This is a marked drop from the 2.2 per cent average increase in last year's survey.
- Around two in five respondents (39.4 per cent) had not had a pay increase in the previous 12 months, up from 27.8 per cent in last year's survey.

Average salaries

- Across all sectors employing scientists, a full-time professional scientist took home a median annual base salary of $118,920 and received a total package worth $135,198.

Satisfaction with remuneration

- Just under half the scientists surveyed (46.7 per cent) reported being satisfied with their current level of remuneration; over one-third (35.5 per cent) were dissatisfied.
- Almost half of scientists surveyed (46.6 per cent) perceived their remuneration as falling behind market rates, up from 37.3 per cent last year.
- 42.7 per cent did not see their remuneration as appropriately reflecting their level of responsibility - up on 36.3 per cent in last year's survey.

Gender pay gap

- Women scientists in the survey earned on average 82.8 per cent of male respondents' earnings – a gender pay gap of 17.2 per cent. This gap has not moved from a year before.
- The gender pay gap was attributable to a combination of factors including women's concentration in roles that are less senior and require fewer years of experience - and having fewer women than men over the age of 45 in the science workforce.
- Women feel significantly less comfortable negotiating their salary (58.2 per cent) than men (73.6 per cent).

Leaving the profession

- One in five scientists surveyed (19.9 per cent) indicated they intended to leave the profession permanently - a slight rise on last year's figure of 18.3 per cent.
- Just under one in five (17.8 per cent) of the women scientists surveyed said they were planning to leave the science workforce permanently compared to just over one in five (21.7 per cent) of the men surveyed. Female respondents were twice as likely to cite a lack of flexible work options and parenthood, while male respondents were more likely to cite retirement.

Employment intentions

- 1 in 10 scientists surveyed (10.0 per cent) had changed jobs in the previous 12 months.
- Of those, one in three (36.7 per cent) had moved for a pay increase and half (50.0 per cent) had moved for greater professional development opportunities.

Workplace morale and fatigue and job insecurity

- Almost two in three scientists surveyed (62.5 per cent) said staff morale had declined in their organisation over the previous 12 months. This is an alarming rise from last year's survey, where 45.8 per cent reported declining organisational morale.
- Over two-thirds (70.6 per cent) of respondents said worker fatigue had increased. This, too, is a large jump on last year's survey result of 54.6 per cent.
- Almost one in four scientists surveyed were employed on a fixed-term contract. The average fixed-term contract was only 18 months offering minimal job security.

Value of post-graduate qualifications

- Having a post-graduate qualification - Graduate Diploma, Masters and PhD - delivered earnings premiums on median total package figures of 24.9 per cent, 18.4 per cent and 39.8 per cent respectively over holding a Bachelor degree alone.

Working hours

- Respondents worked on average 44.6 hours per week including 7.5 hours of overtime. In last year's survey these figures were 43.8 hours per week and 6.1 hours of overtime.
- 12.7 per cent of respondents reported they were expected to work longer hours in the past year compared to the previous one.
- More than half of the scientists surveyed (58.9 per cent) said they received no compensation for working additional hours either financially or in time off, and this was particularly acute in the education sector - such as at universities (79.4 per cent).
- 6.4 per cent of scientists surveyed said they received extra pay for their additional hours, 14.2 per cent reported compensation for additional hours was already built into their base salary and 20.7 per cent received time off in lieu of payment.

Skills development

- One in three respondents (42.4 per cent) said there was insufficient opportunity (or support) for skills development in their workplace over the previous 12 months. This is a big jump from last year's survey result of 32.7 per cent.

Deprofessionalisation and cost-cutting

- Around one-third of the scientists who completed the survey (33.8 per cent) reported a reduction in the number of scientists in decision-maker roles over the previous 12 months.
- Almost two-thirds of the scientists surveyed (63.5 per cent) said cost-cutting was an issue in their organisation.

Decline in service quality and professional standards

- 15.6 and 27.6 per cent of respondents respectively said reduced adherence to professional standards and reduced service quality were evident in their organisation over the last 12 months.

Science capability and innovation

- 15.5 per cent said scientific capability was not seen as a source of innovation in their organisation.

Discrimination and sexual harassment

- Two in five female respondents (41.8 per cent) said they had experienced gender bias or discrimination on the basis of gender in the previous three years.
- One in five women (17.3 per cent) had experienced sexual harassment at least once in their careers compared to around one in 25 men (4.1 per cent).

Impact of COVID-19

- One in 14 (7.1 per cent) had taken a pay cut as a result of the COVID-19 pandemic.
- One in 20 scientists in the survey (5.1 per cent) said their paid work hours had fallen - with full-time salaried employees the least affected.
- More than one in three (36.0 per cent) had opted to work from home and 58.2 per cent had been directed to work from home. Some surveyed scientists said they were not permitted to work from home, even though they thought it was feasible.
- One in five (21.4 per cent) said physical distancing was limiting their work.
- One in five (22.8 per cent) said they had restricted access to research facilities during the pandemic.
- One in eight (12.1 per cent) had their role or responsibilities at work changed.
- One in five scientists surveyed (21.5 per cent) said anxiety or mental distress due to the pandemic was affecting their ability to work.
- Around one in six (13.9 per cent) said caring for children/home schooling had curbed their ability to work.

REMUNERATION

"I love working as a science professional but it is very difficult to find appropriate funding and/or remuneration and job security."

Survey respondent

01 EMPLOYMENT SECTOR

Base salaries for full-time professional scientists in the survey grew by 1.6 per cent on average over the 12 months to June 2021 - a stark fall from average wage growth of 2.2 per cent the year before.

The cost of living rose by 3.8 per cent over the 12 months to June 2021, as recorded by the ABS Consumer Price Index (6401.0).

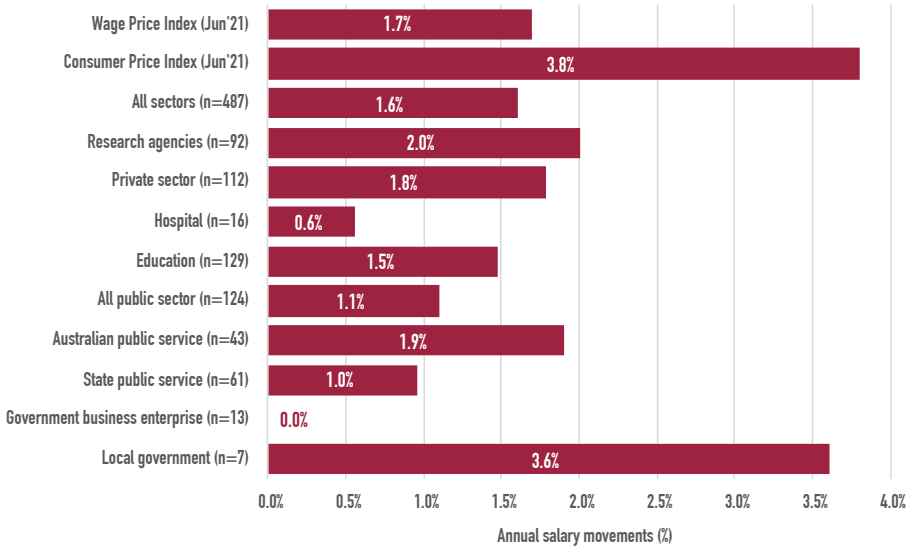
Wages for all Australian workers grew by 1.7 per cent for the 12 months to June 2021, as measured by the ABS Wage Price Index (6345.0). Although wage movements for scientists are underwhelming over the last 12 months, the experience of scientists has reflected the very limited wage growth experienced by many Australians over the previous 12 months.

On average, the wages of professional scientists in the private sector grew by 1.8 per cent - around half the rate of inflation. Scientist salaries in the education sector (at universities) grew by 1.5 per cent (less than half the rate of inflation) while the wages of scientists working in the public service rose by just 1.1 per cent, well behind wage increases across the broader Australian workforce.

The highest average increase by sector was in local government – where scientists reported wage growth of 3.6 per cent (although the small number of survey responses invites caution). Scientists working in Australia's research agencies reported average increases of 2.0 per cent.

The lowest reported average growth for scientists surveyed was in Government Business Enterprises at 0.0 per cent.

Figure 1 - Median annual percentage base salary movements by employment sector



Note: All public sector figure combines Australian Public Service, State Public Service, Local Government and Government Business Enterprises.

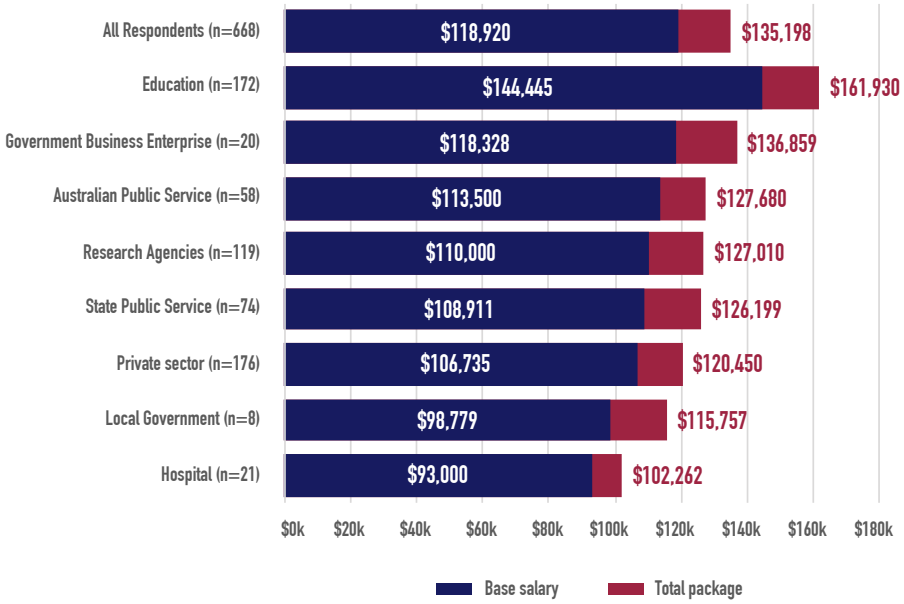
"The type and quality of work I perform within the public service is not remunerated anywhere near the level the same work would be in the private or tertiary sectors. Although I have resisted moving jobs, this situation can lead to a loss of quality workers (i.e. a brain drain) from government departments."

Survey respondent

Across all sectors employing scientists, a full-time professional scientist took home an average annual base salary of $118,920 and received a total package worth an average $135,198.

The median annual base salary was greatest in the Education sector at $144,445, compared with $118,328 in Government business enterprises (GBE) and $113,500 in the Australian Public Service (APS). The highest median total package was in the Education sector as well at $161,930, compared with $136,859 in GBEs and $127,680 in the APS.

Figure 2 - Median annual base salaries and total package by employment sector



Incidence of zero pay increase by sector

Around 2 in 5 (39.4 per cent) scientists in the survey reported they had received no pay increase in the previous 12 months.

Table 1 - Incidence of zero pay increase by sector

SECTOR	PERCENTAGE
Private (n=125)	41.1%
Public (n=105)	41.1%
Education (n=187)	39.5%
Other sectors (n=57)	35.9%
All (n=478)	39.4%

02 RESPONSIBILITY LEVEL[1]

The median annual base salary reported in the survey for a Level 1 scientist was $68,874 with a median total package of $78,200. As expected, total packages were greatest at Level 5 and above – where median packages ranged from $201,371 to $286,302. Average annual movements in base salary ranged from 0.0 to 1.9 per cent. Pay rises were greatest for those in middle levels of responsibility, commonly a senior scientist, technical expert or team manager level.

"It is life-consuming and often overwhelming work but it is also meaningful, impactful, interesting, autonomous and privileged."

Survey respondent

Figure 3 - Median annual annual base salaries and total package by responsibility level

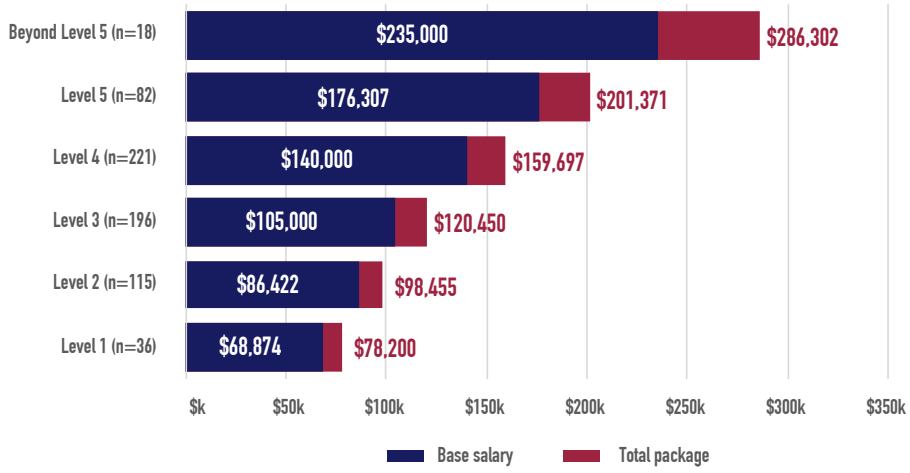
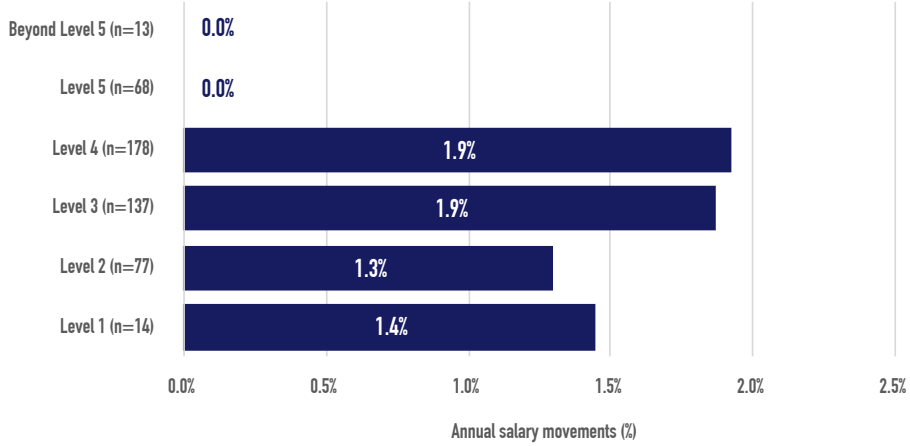


Figure 4 - Median annual percentage base salary movements by responsibility level



1 The responsibility level definitions used in this survey reflect those in the Professional Employees Award 2010 (available at http://awardviewer.fwo.gov.au/award/show/MA000065). For a summary of Responsibility Level Definitions, refer to the About the Survey section.

Table 2 - Base salary and total package by responsibility level

	BASE SALARY					TOTAL PACKAGE			
	N	LOWER QUARTILE	MEDIAN	UPPER QUARTILE	MEAN	LOWER QUARTILE	MEDIAN	UPPER QUARTILE	MEAN
LEVEL 1	36	$61,236	$68,874	$77,092	$70,770	$66,216	$78,200	$87,437	$79,121
LEVEL 2	115	$78,000	$86,422	$98,000	$88,460	$86,505	$98,455	$111,690	$101,160
LEVEL 3	196	$95,000	$105,000	$126,500	$109,851	$105,120	$120,450	$141,820	$124,977
LEVEL 4	221	$119,398	$140,000	$157,000	$140,636	$133,930	$159,697	$184,154	$161,186
LEVEL 5	82	$150,000	$176,307	$200,000	$179,372	$169,650	$201,371	$234,000	$208,656
BEYOND LEVEL 5	18	$183,564	$235,000	$300,000	$249,211	$219,000	$286,302	$373,500	$303,221
ALL RESPONDENTS	668	$94,000	$118,920	$150,000	$126,536	$105,120	$135,198	$173,250	$145,478

03 INDUSTRY

Amongst industries with good representation in the survey the highest salaries were in the Education and training, Mining and Defence industries. Median total salary packages were $161,061, $148,093 and $141,475 respectively.

The highest median base salary movements were recorded in Forestry at 3.1 per cent, followed by Defence at 2.9 per cent and Consulting and technical services and Agriculture at 2.0 per cent each.

Figure 5 - Median annual annual base salaries and total packages by industry

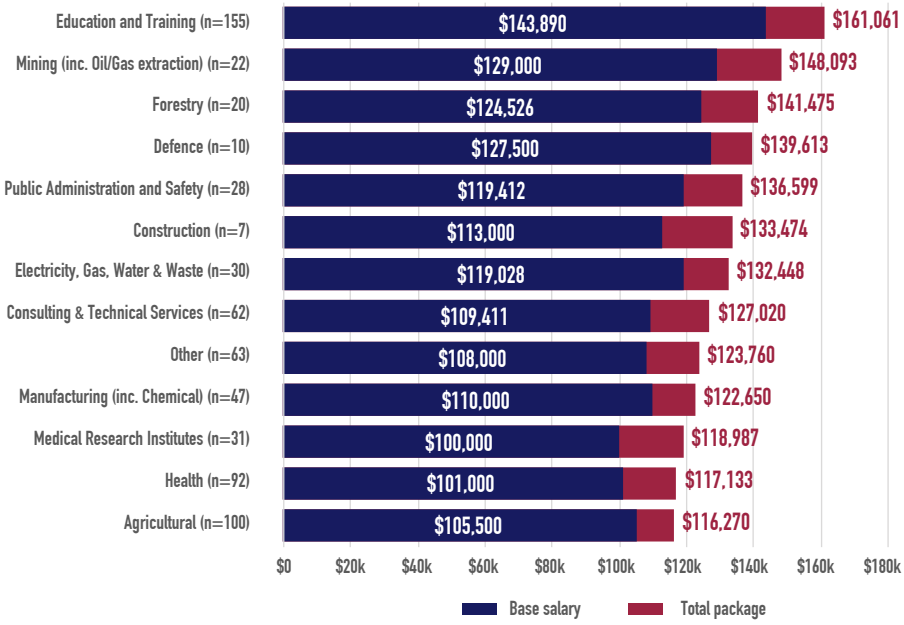
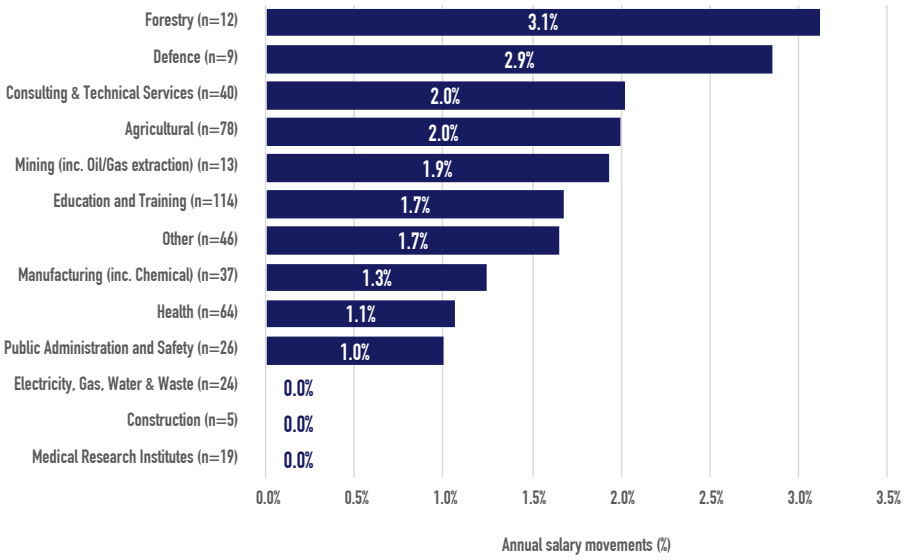


Figure 6 - Median annual percentage base salary movements by industry



"We need better government support across the industry reflecting our positive impact on both Australian society and the economy. We are at grave risk of losing a generation of potential scientists through a lack of investment, a situation that does not bode well for the future of science in this country."

Survey respondent

"[There is] no shortage of challenges and ample job satisfaction and recognition even if it is highly demanding at times."

Survey respondent

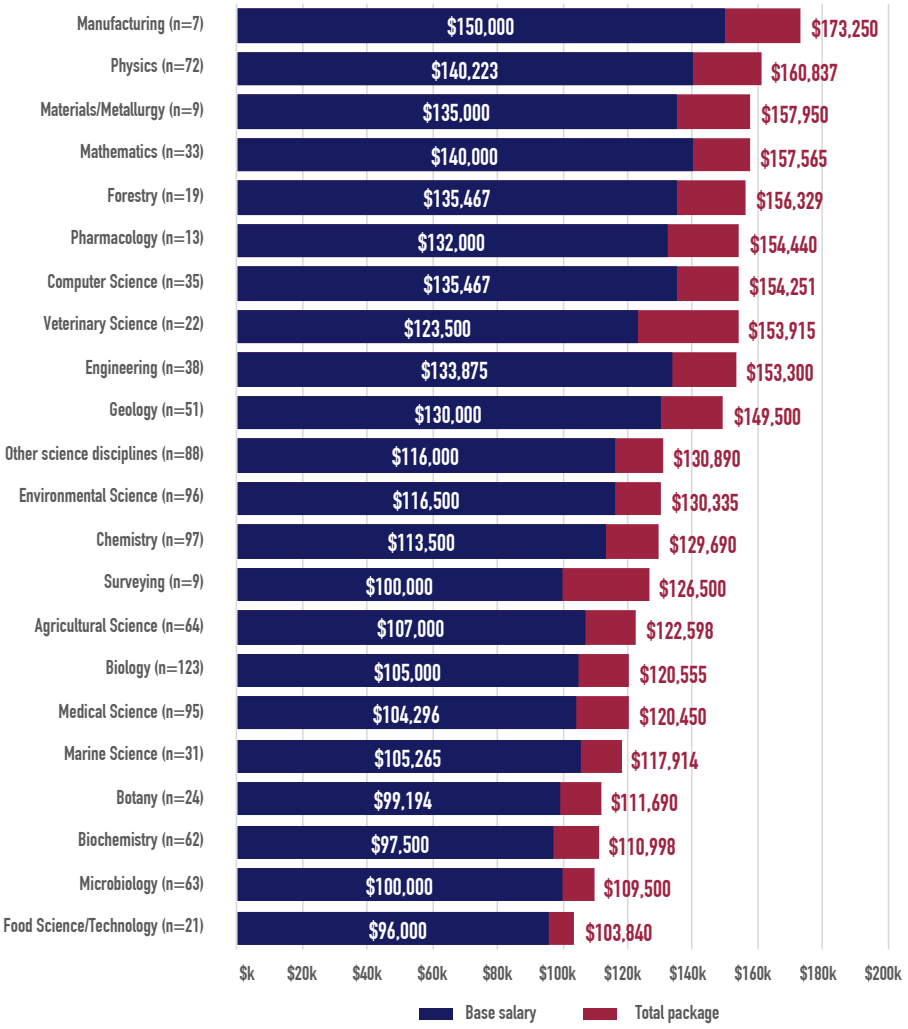
04 BRANCH OF SCIENCE

In fields of science with more than ten respondents, median total packages were highest for Physics, Mathematics and Forestry at $160,837, $157,565, and $156,329 respectively.

Median annual salary movements were greatest in the Materials/metallurgy field at 3.4 per cent. Manufacturing, Forestry and Marine science followed with increases of 3.0, 2.6 and 2.6 per cent growth on the previous 12 months.

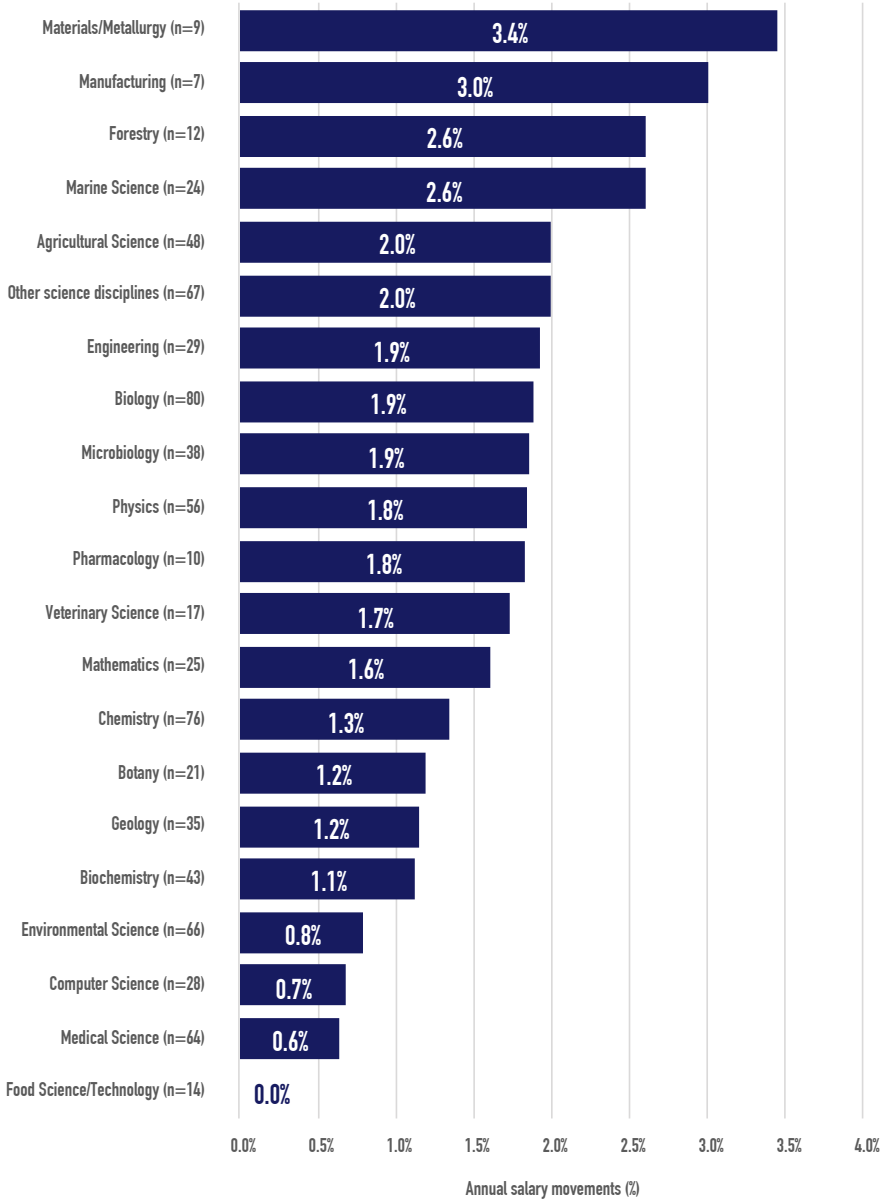
Movements were lowest in Food science and technology, Medical science, Computer science and Environmental science with movements of 0.0, 0.6, 0.7 and 0.8 per cent respectively. Notably, base salary and salary movement were modest in the Biological science discipline (1.9 per cent) where there is a high output of annual graduates but limited demand from employers.[2]

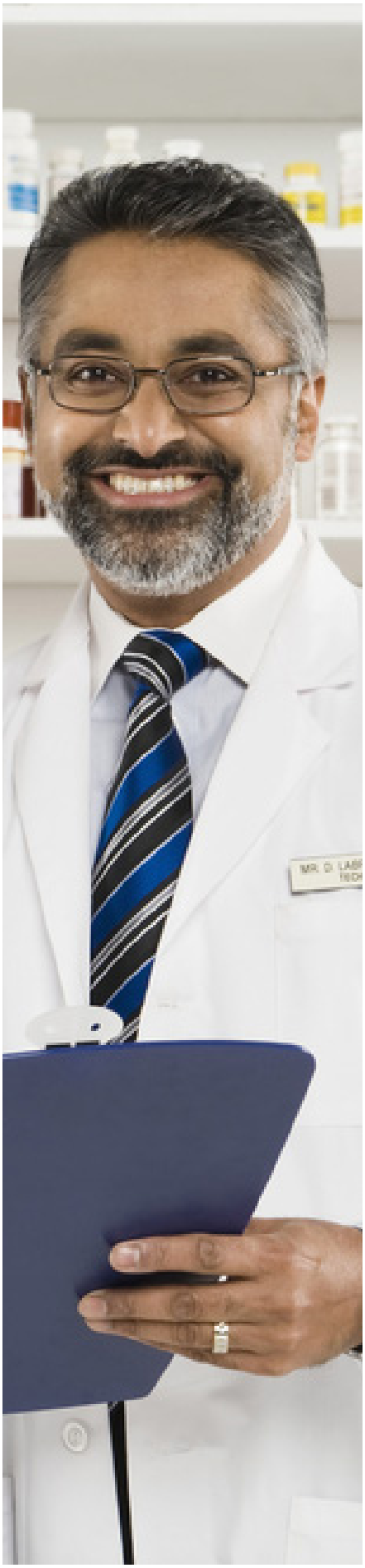
Figure 7 - Median annual base salaries and total package by branch of science



2 Patty, A. Not enough jobs for science graduates challenges STEM hype. Available at https://www.smh.com.au/business/workplace/glut-in-demand-for-science-graduates-challenges-stem-hype-20190327-p517zj.html.

Figure 8 - Median annual percentage base salary movements by branch of science





"Far too much trained talent is forced to leave the sector as grants come and go - a giant waste of training and valuable experience. Retention is a chronic problem compared to attracting more people to the sector only to leave 10 years later."

Survey respondent

05 YEARS OF EXPERIENCE

Typically, scientists with a greater number of years of experience received larger remuneration packages. Median base salaries by years of experience ranged from $86,000 to $152,000. Salary movements were greater for scientists with less than 20 years of experience, peaking for those with between 10 and 15 years of experience at 2.1 per cent.

Figure 9 - Median base salary and total package by years of experience

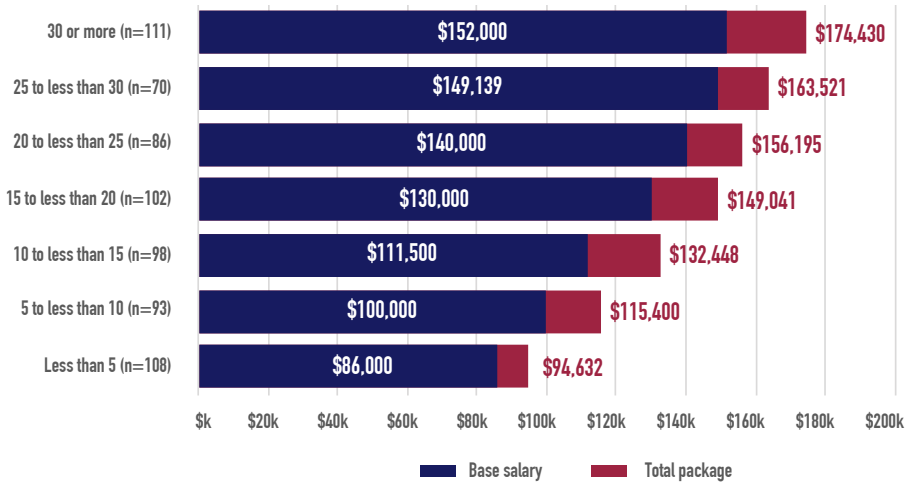
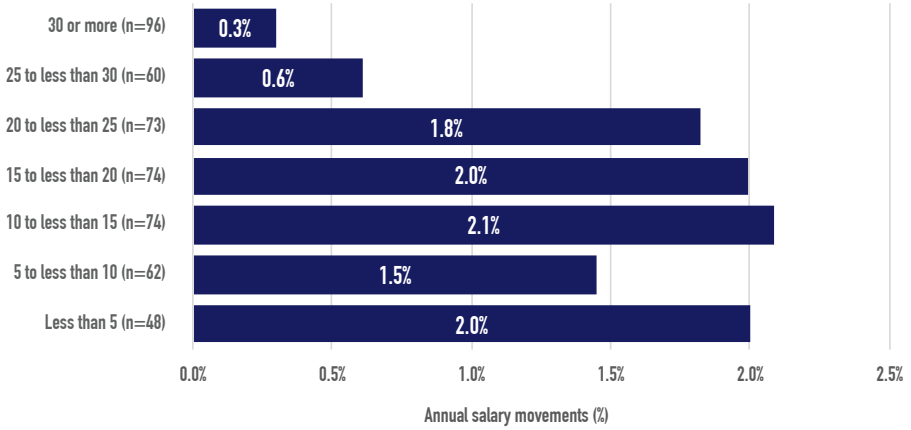


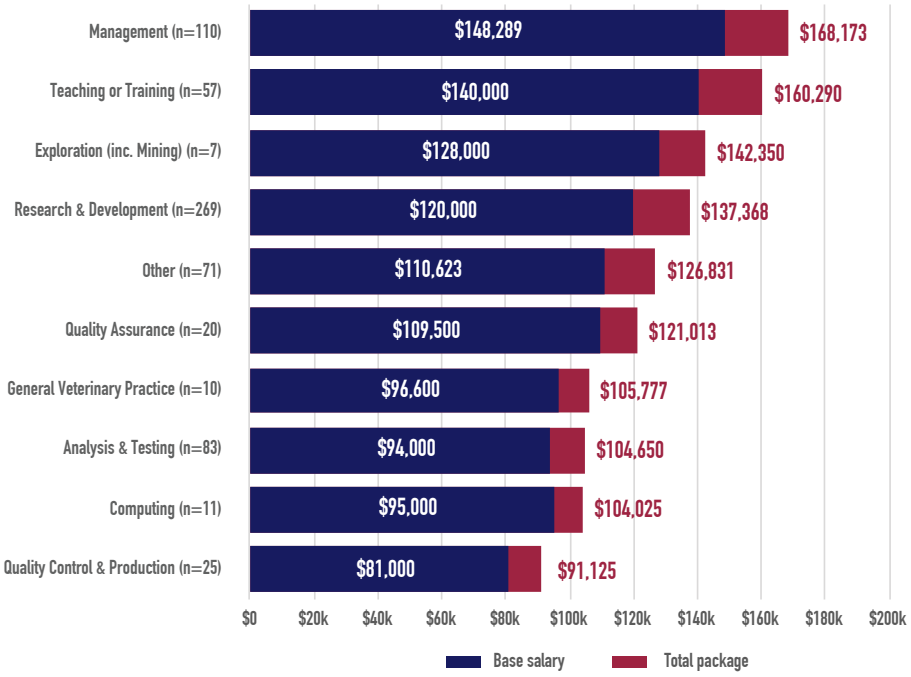
Figure 10 - Median annual percentage salary movements by years of professional experience



06 JOB FUNCTION

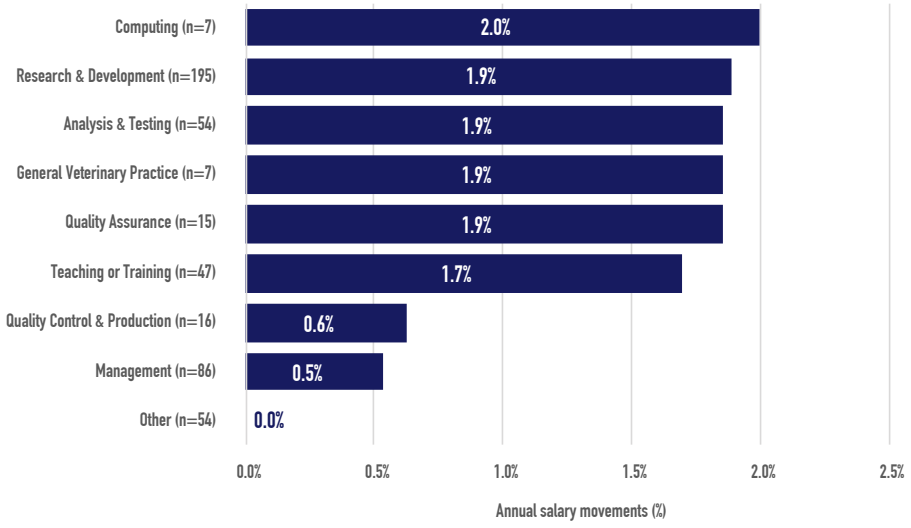
The highest base salaries by job function were in Management, Teaching or training and Exploration roles with median base salaries of $148,289, $140,000 and $128,000 respectively. The highest total packages were amongst the same job functions.

Figure 11 - Median annual base salaries and total packages by job function



Jobs in Computing reported the highest median annual salary movement at 2.0 per cent. Conversely, other than those employed in 'other' roles, respondents identifying themselves as employed in Management reported the lowest median annual salary movement at 0.5 per cent.

Figure 12 - Median annual percentage base salary movements by job function



"I think the pandemic has been polarising in terms of how Australian's view scientists. Many have become more reliant and encouraging but others are rejecting scientific outcomes."

Survey respondent

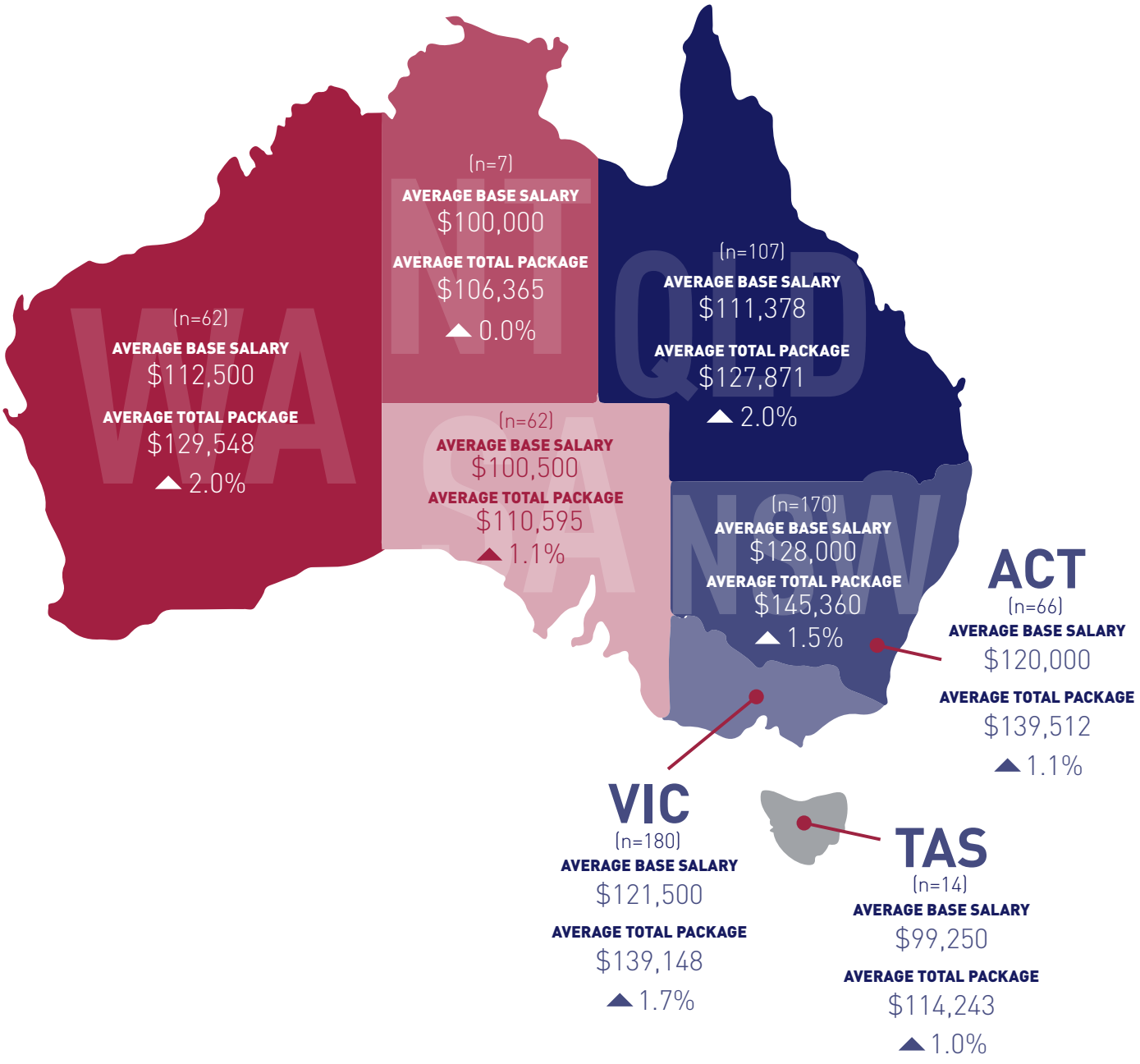
"[As a result of COVID restrictions] I cannot travel to locations with better job markets and hotel quarantine imposes a costly disincentive ($3,000)."

Survey respondent

07 STATE/TERRITORY

Growth in salaries in the national science labour market continues to be modest. The picture is varied for each state and territory depending on their particular economic and labour market conditions. Queensland and Western Australia led with the highest average salary movements of 2.0 per cent. Other than the Northern Territory which has limited response rates in the survey, Tasmania and South Australia recorded the lowest rate of growth at 1.0 and 1.1 per cent respectively.

Figure 13 - Median annual base salaries, total packages and annual percentage base salary movements by state/territory



08 HIGHEST SCIENCE QUALIFICATION

"Skills and qualifications should be recognised and remunerated."

Survey respondent

Median annual base salaries by highest qualification ranged from $133,346 for those with a PhD, down to $95,000 for those with a Bachelor degree. Salary movements were greatest for those with a Doctorate/PhD with median base salary movement of 1.8 per cent. The completion of post-graduate qualifications - Graduate Diploma, Masters and PhD - delivered average earnings premiums based on total package figures of 24.9, 18.4 and 39.8 per cent respectively over holding a Bachelor degree alone.

Figure 14 - Median annual base salaries by highest science qualification

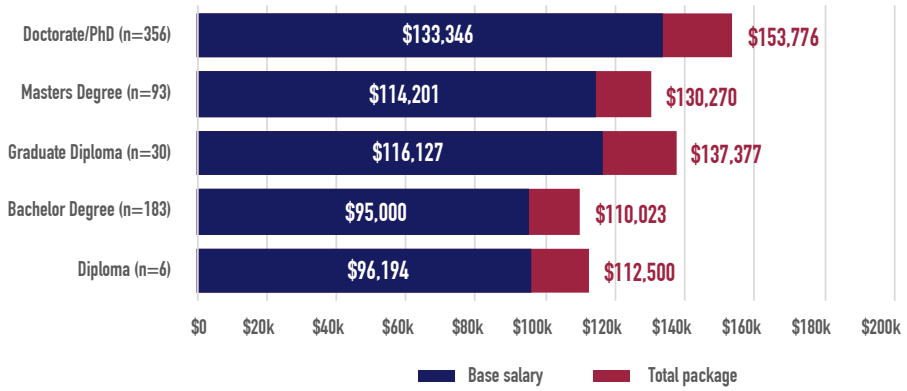


Figure 15 - Median annual base salary percentage movement by highest qualification

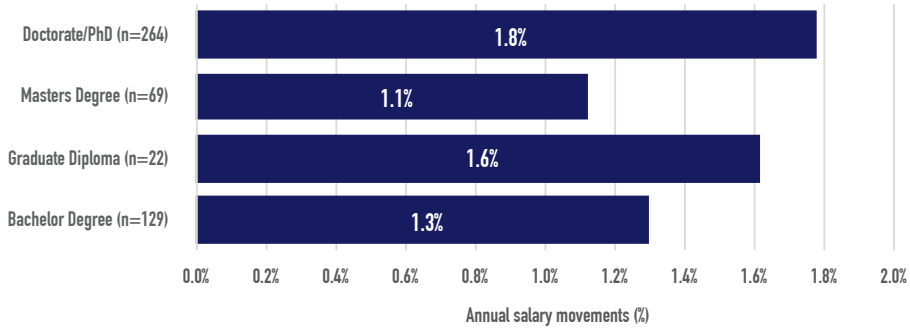


Table 3 - Earnings premiums by post-graduate qualification

QUALIFICATION	MEDIAN TOTAL PACKAGE	EARNINGS PREMIUM (%)
BACHELOR DEGREE	$110,023	-
GRADUATE DIPLOMA	$137,377	24.9
MASTERS DEGREE	$130,270	18.4
DOCTORATE/PHD	$153,776	39.8

"I love my career as a scientist but within my organisation there is a severe imbalance of women in higher level roles and leadership positions."

Survey respondent

09 GENDER

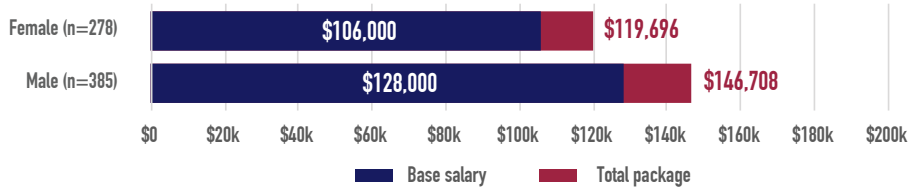
The greater our understanding of gender pay gaps in science, the better placed we are to address them. Strategies and a commitment on the part of employers and policy-makers are required to address the complex range of factors that contribute to the gender pay gap. Doing so will ensure employers have access to a diverse, high-quality pool of science talent.

Gender pay gap

The survey found a pay differential for the total survey sample with a median base salary of $106,000 for women professional scientists compared to $128,000 for men. Women in the survey earned on average 82.8 per cent of the salaries reported by men in the survey – a gender pay gap of 17.2 per cent.

In the analysis to follow, the survey looked at salary levels by a range of criteria including responsibility level, age, qualification and job function to deepen understanding of the gender pay gap in science. While there was some evidence of differences in pay by responsibility level, age and experience, these differences should be treated with caution given the size of the differences relative to the size of the sample.

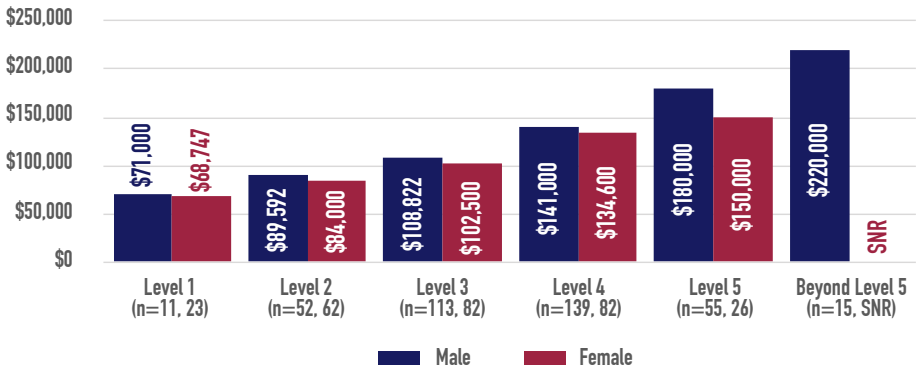
Figure 16 - Median male and female base salary and total package – all full-time respondents



Salaries by responsibility level and gender

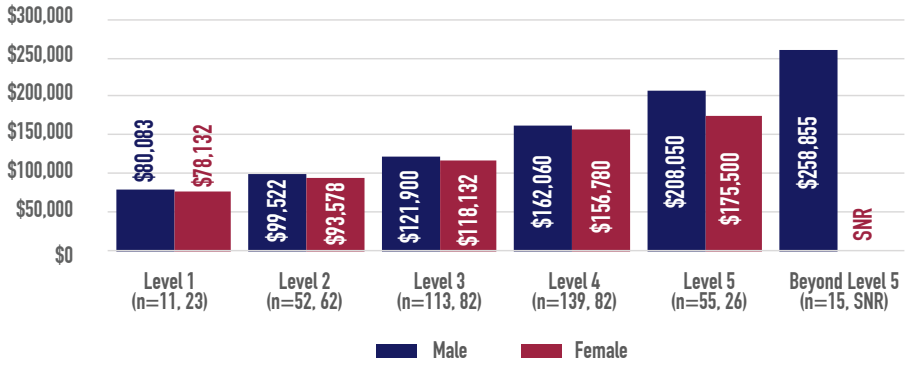
Average base salaries were lower for female respondents than their male counterparts at all levels as were total packages. The data suggests a level of pay disparity in like-for-like roles across these responsibility levels (n values are specified in brackets in the form: male n, female n). The disparity between male and female earnings widened at higher levels of responsibility.

Figure 17 - Median annual base salary by responsibility level and gender



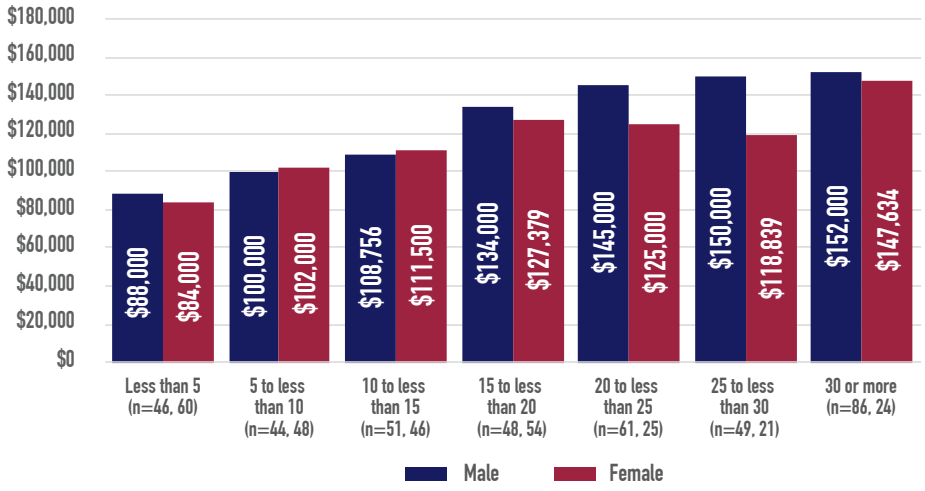
SNR: Sample not representative

Figure 18 - Median annual total package by responsibility level and gender



SNR: Sample not representative

Figure 19 - Median annual base salary by years of experience and gender



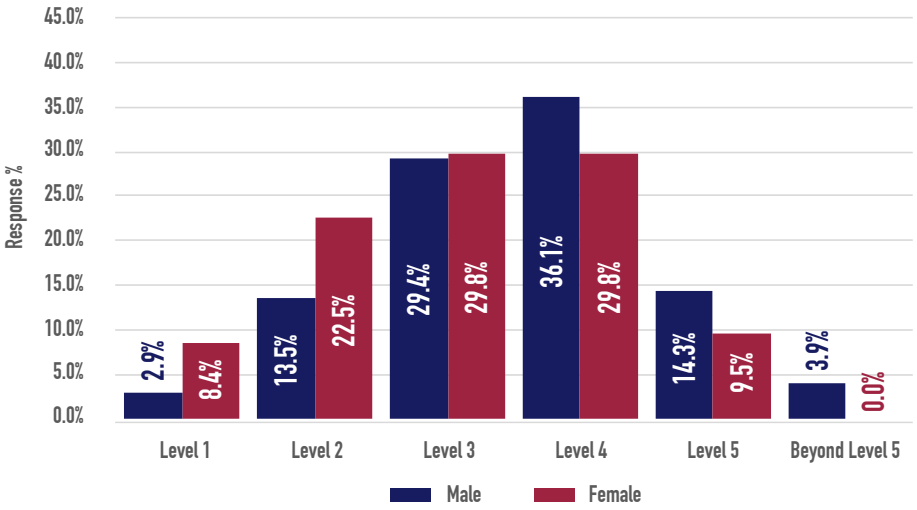
"The misalignment between policies on gender discrimination and the ongoing discrimination continues to drive women from the STEM workforce. Recruiting is not the problem - the loss of females at mid and senior levels means we cannot get parity even with 50-50 hiring at junior levels."

Survey respondent

Workforce distribution by gender

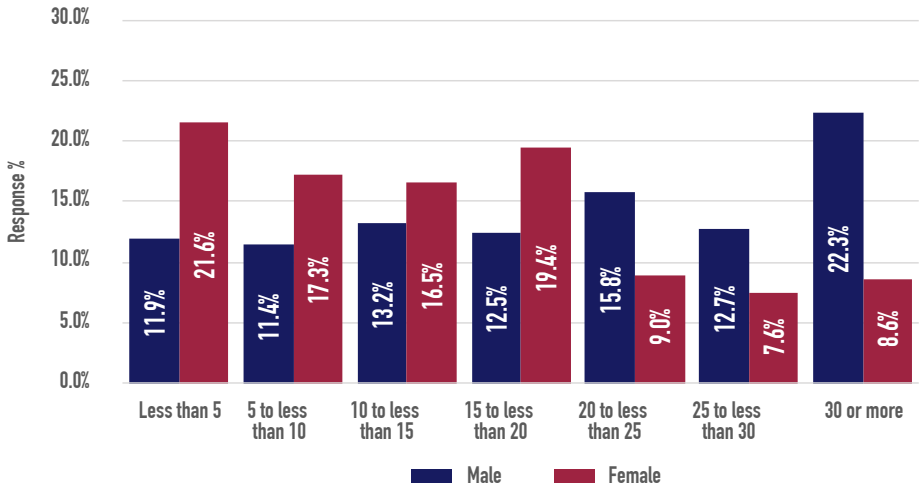
The analysis considered the distribution of respondents across responsibility level, years of experience and age to assess any concentration of women in roles with less responsibility, in roles with fewer years of experience and/or attrition of women at any key points.

Figure 20 - Workforce distribution by responsibility level and gender



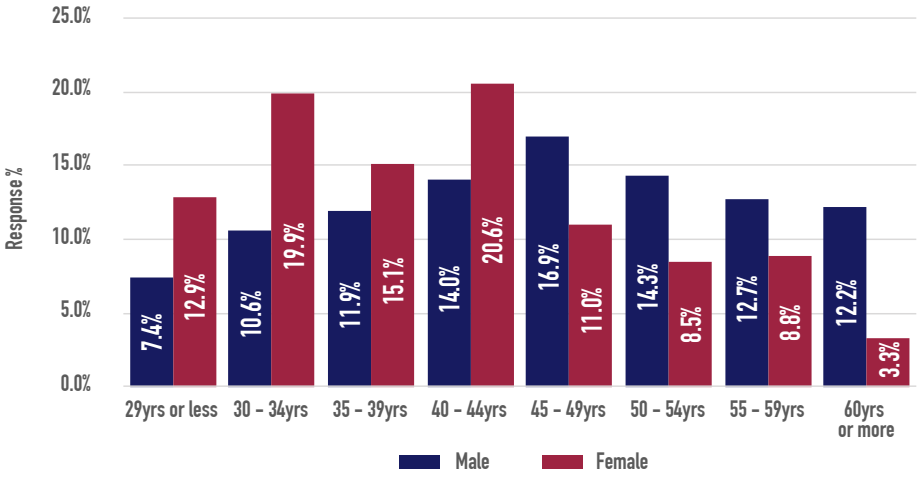
Women scientists who completed the survey were at Levels 1 and 2 in greater proportions than men who completed the survey, and in comparatively lower proportions at Levels 4 to above Level 5. This suggests women remain under-represented in senior leadership roles in science - and are over-represented in less senior roles.

Figure 21 - Workforce distribution by years of experience and gender



Women scientists who completed the survey were more likely to have fewer than 20 years' experience than men in the survey. One in four women in the survey said they had been working as a scientist for more than 20 years, compared to almost one in two men in the survey.

Figure 22 - Workforce distribution by age and gender



The survey analysis considered the age profile of respondents by gender to assess whether there was any evidence of the attrition of women from the science workforce by age. The survey found a difference in the age profiles of female and male respondents. After peaking at 20.6 per cent in the 40 to 44 years age bracket, the age profile of women surveyed fell markedly. In contrast, the age profile of male respondents was much more evenly distributed across the age brackets, peaking at 16.3 per cent in the 45 to 49 years age bracket. 31.6 per cent of female respondents compared with 56.1 percent of male respondents were 45 years of age or older.

Taking into account workforce distribution by responsibility level, years of experience and age, much of the gender pay gap can be attributed to a combination of factors including concentration of female respondents in less senior roles, in roles requiring fewer years of experience and fewer females in the science workforce beyond age 45.

Benefits, promotion and salary negotiations

Overall, 12.7 per cent of the median male total salary package (n=385) was comprised of benefits in addition to base salary, while the figure for female respondents (n=278) was 10.7 per cent - suggesting no clear difference between the structures of packages by gender.

Some 14.2 per cent of scientists surveyed (n=753) had been promoted in the past year. Around two in three women scientists surveyed - 65.0 per cent (n=60) said they were encouraged to apply for the promotion by their employer/manager compared with around one in two - 52.3 per cent - of male respondents (n=44) (see also section on variable pay for further analysis).

The survey also found that around one in four - 22.2 per cent - of male scientists surveyed (n=415) had negotiated their own salary, compared with one in seven - 16.7 per cent - of women scientists surveyed (n=323). Of those respondents, 73.6 per cent of male respondents (n=91) felt comfortable negotiating their salary compared with 58.2 per cent of their female counterparts (n=55).

Gender discrimination

Women scientists were much more likely to report having experienced discrimination of any type in the workplace than their male counterparts over the previous three years. Discrimination based on gender was most commonly reported. Two in five women scientists surveyed (41.8 per cent) said they had experienced bias or discrimination based on gender compared with 8.3 per cent of male respondents.

Women were also more likely to report age-based discrimination. 18.5 per cent of female respondents and 13.0 per cent of male respondents had experienced age-based discrimination. The next most common form of discrimination reported was based on race, reported by 4.6 per cent of respondents.

Table 4 - Forms of discrimination experienced in the workplace over the last 3 years

	GENDER	AGE	DISABILITY	RACE	RELIGION	SEXUAL IDENTITY	NONE OF THE ABOVE
MALE (N=386)	8.3%	13.0%	0.5%	4.4%	0.3%	1.0%	79.0%
FEMALE (N=287)	41.8%	18.5%	2.4%	4.9%	1.4%	0.7%	54.0%
ALL RESPONDENTS (N=677)	22.5%	15.2%	1.3%	4.6%	0.7%	0.9%	68.5%

Diversity and discrimination policy and implementation

The survey found a gap between policy and practice in the area of gender diversity and a lack of awareness around the potential differential gendered impact of workplace policies.

Two in three scientists surveyed (67.9 per cent) reported their employer had formal policies in place to promote diversity and 72.2 per cent had policies to deal with discrimination (n=683). Yet one in four (25.6 per cent) of respondents however said their employer did not have strategies in place to actually implement policies on diversity and discrimination (n=699).

"Lots of talk, no meaningful action. My employer is gaining accreditation as an 'employer of choice for women' while at the same time introducing policies that greatly reduce women's (but not men's) participation in science."

Survey respondent

"I dropped out of the research project in which the harasser was involved."

Survey respondent

"I wanted to put in a formal complaint, but the process involved confrontation with the aggressor, which I was not prepared to do. Therefore the records are on the person's profile but no further action could be taken."

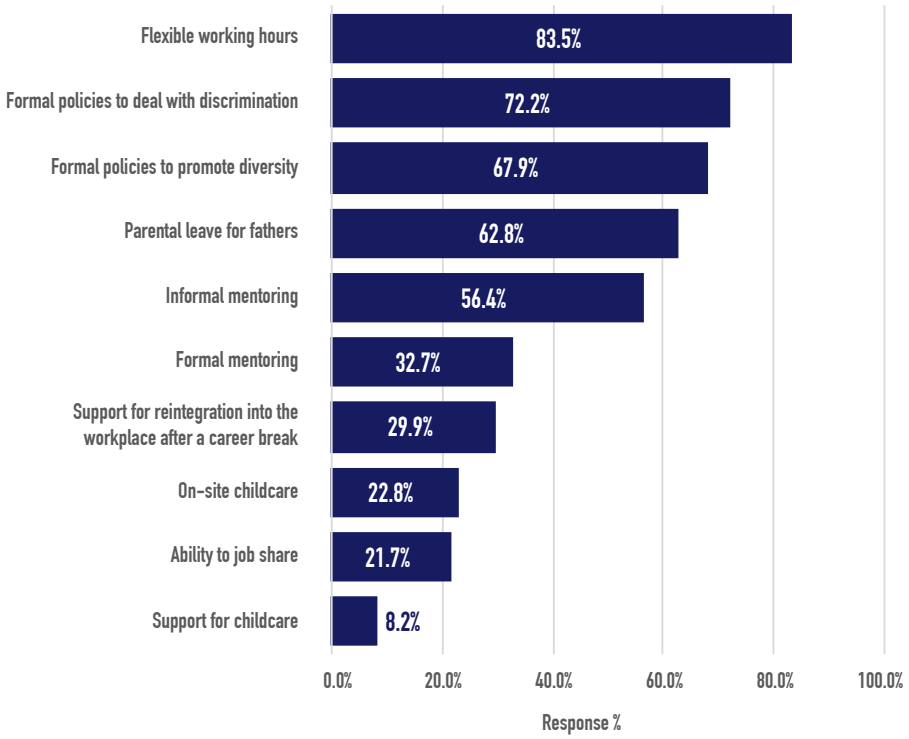
Survey respondent

Flexibility and career support

32.7 per cent of scientists surveyed (n=683) had access to formal mentoring in their workplace and 56.4 per cent had access to informal mentoring. 83.5 per cent had access to flexible working hours, 21.7 per cent had access to job-sharing arrangements and 62.8 per cent worked for an employer offering parental leave for fathers.

However, only around three in ten scientists surveyed (29.9 per cent) reported that their employer provided support for reintegration into the workplace after a career break, 22.8 per cent offered on-site childcare and 8.2 per cent offered support for childcare.

Figure 23 - Employer-provided support and conditions (n=724)



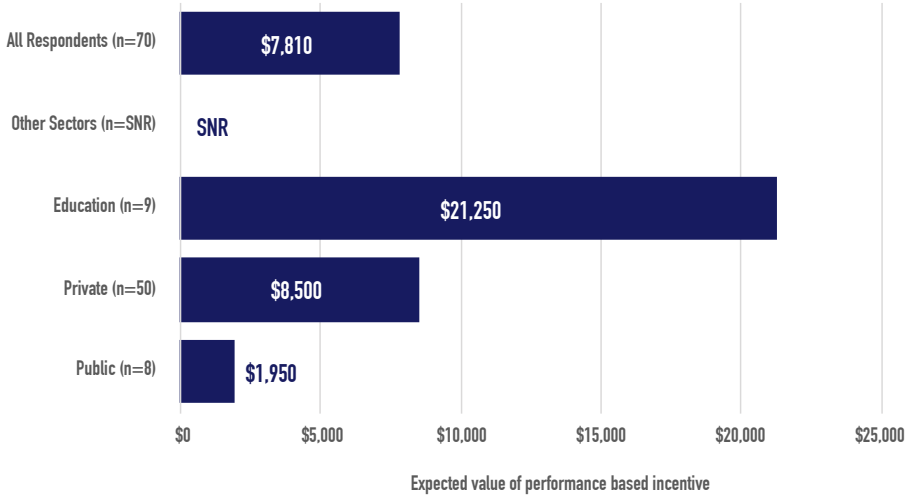
Sexual harassment

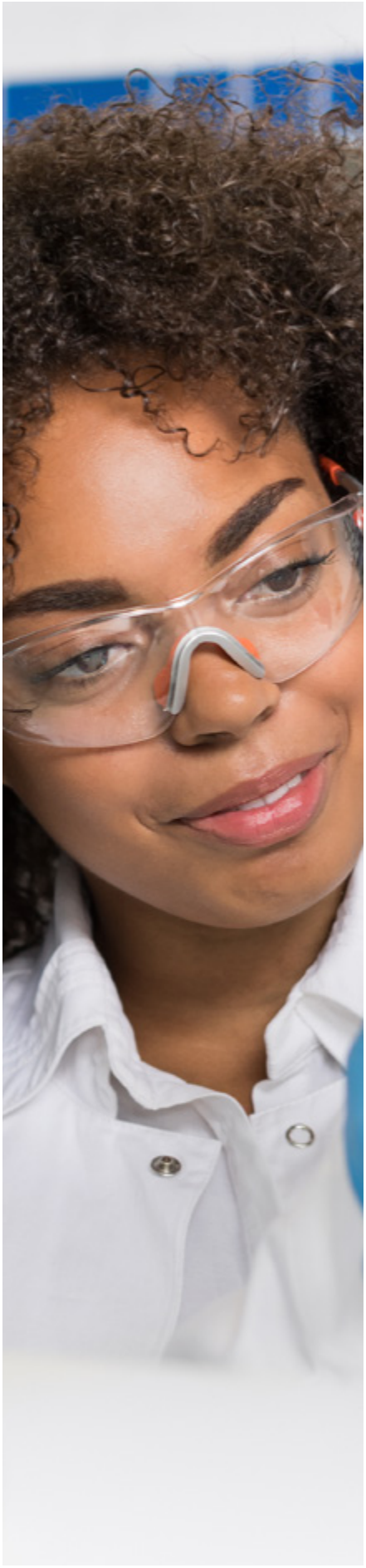
One in five women scientists surveyed - 17.3 per cent (n=300) - said they had been subjected to sexual harassment in the course of their career compared to 4.1 per cent of male scientists surveyed (n=411).

10 VARIABLE PAY

Professionals often receive additional benefits as parts of their remuneration package beyond their regular salary and superannuation, including cars and variable pay or bonuses. 14.4 per cent of scientists surveyed across all sectors (n=720) were paid performance bonuses in the previous year with the highest average bonuses in the Education sector.

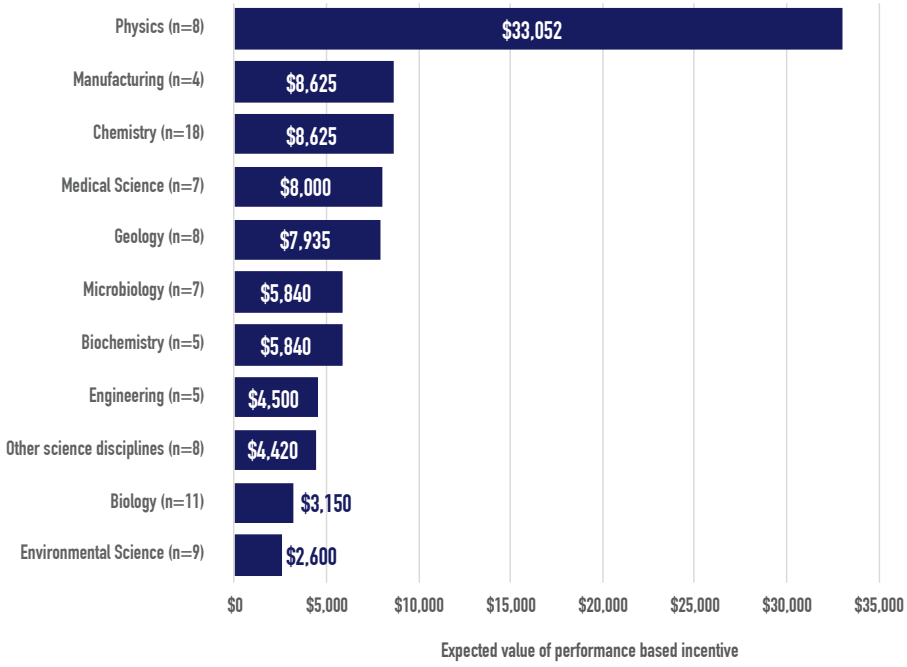
Figure 24 - Median bonus by employment sector ($)





By discipline, scientists qualified in Physics that had access to variable pay reported the highest median bonuses by a large margin, while those qualified in Biology and Environmental science had the lowest bonuses.

Figure 25 - Median benefits by branch of science as a proportion of total package



Salary packaging – cars

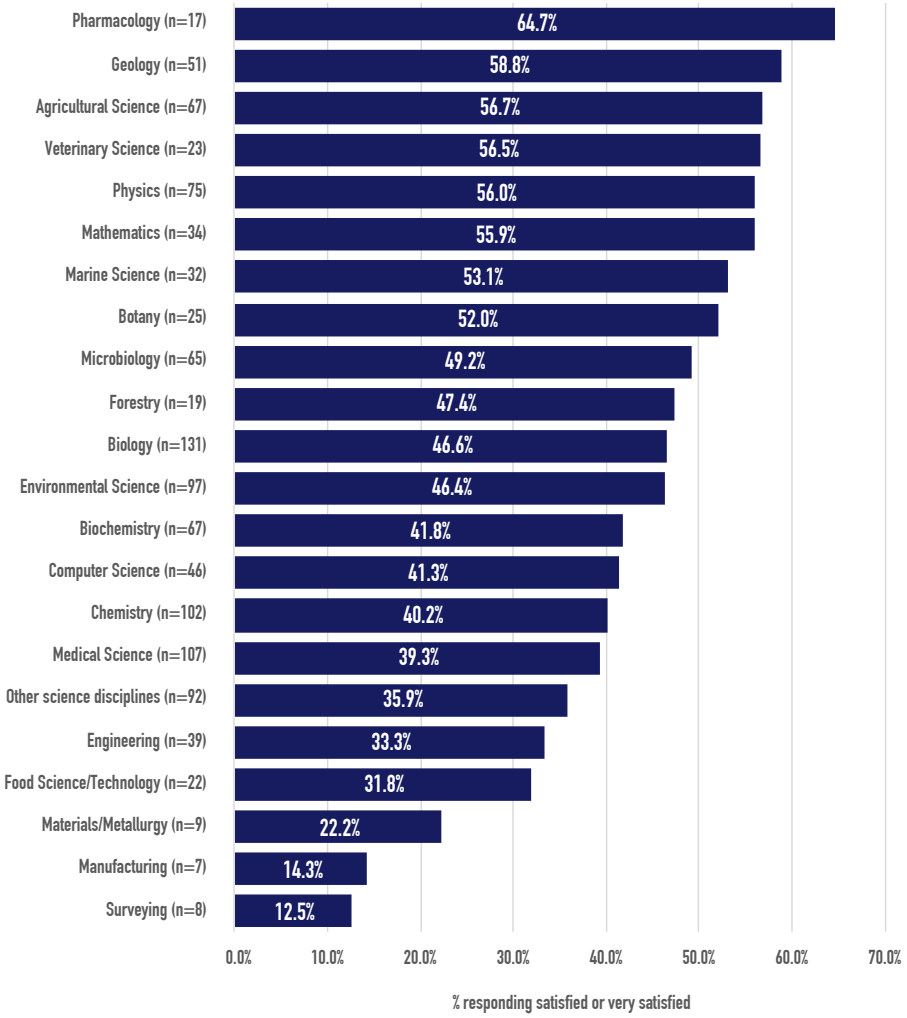
8.3 per cent of respondents (n=713) had a car included as part of their package.

11 SATISFACTION WITH CURRENT LEVEL OF REMUNERATION

Overall satisfaction levels declined in this year's survey. 46.7 per cent of scientists surveyed (n=713) reported being satisfied or very satisfied with their current level of remuneration - down on last year's figure of 53.4 per cent. Meanwhile, more than one in three scientists in the survey - 35.5 per cent - were dissatisfied or very dissatisfied with their current pay level, up from 28.7 per cent in 2019. Results in 2021 were similar to those of 2019.

The highest levels of satisfaction with remuneration were found in the Pharmacology, Geology, Agricultural Science, Veterinary Science, Physics and Mathematics fields.

Figure 26 - Reported levels of satisfaction with current remuneration by branch of science

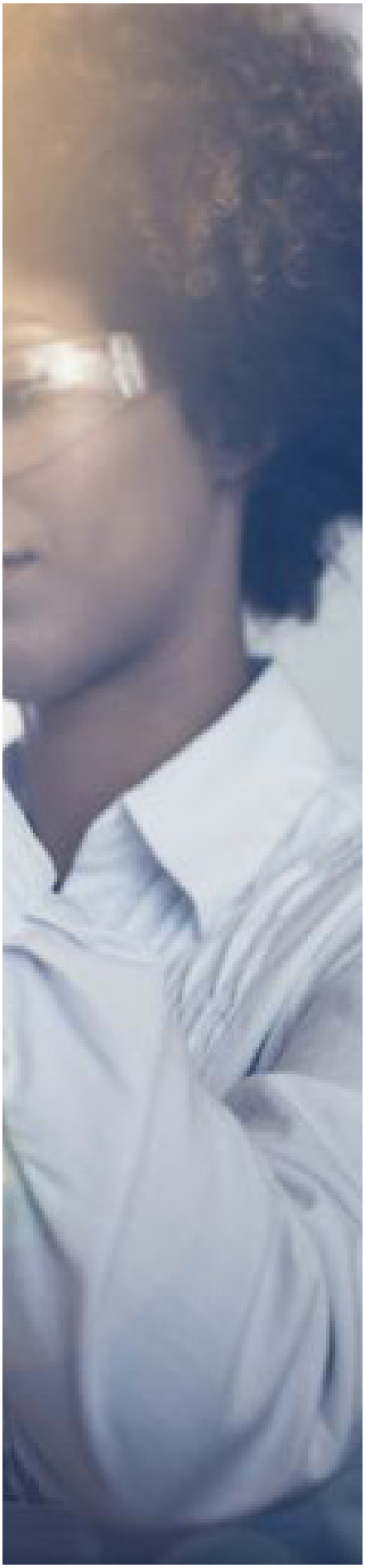


"Working as a scientist in Australia is not worth the difficulties you face during your study years. The pay is not that great and does not reflect the amount of labour and time scientists usually invest to obtain a university degree."

Survey respondent

"Our pay is not going up in line with CPI."

Survey respondent



Just under half of the scientists surveyed (46.6 per cent) (n=710) perceived their remuneration as falling behind market rates, up on 37.3 per cent last year.

Two in five scientists surveyed (42.7 per cent) did not see their remuneration as appropriately reflecting their level of responsibility (n=710) - a jump up from 36.3 per cent in last year's survey.

Figure 27 - Responses to statement "My remuneration package is falling behind market rates" (n=710)

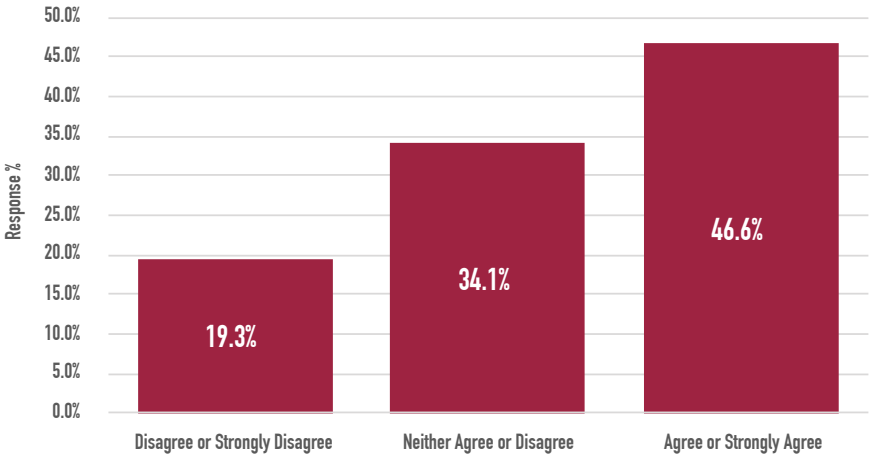
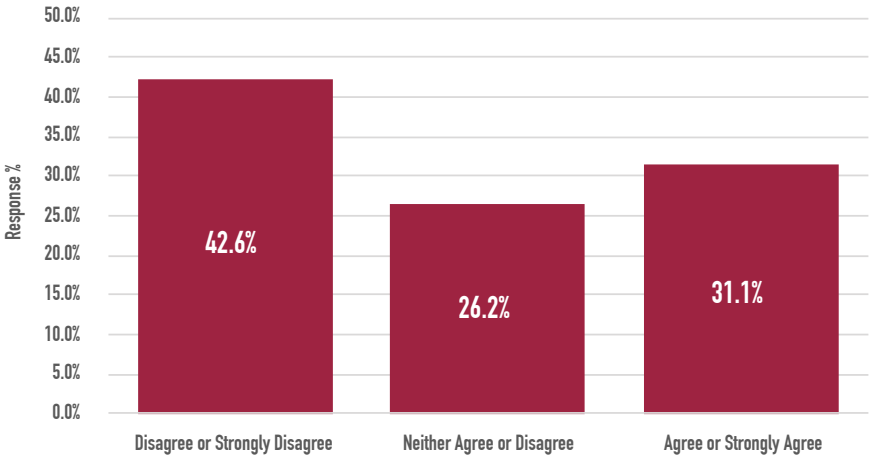


Figure 28 - Responses to statement "My remuneration package appropriately reflects my level of responsibility" (n=710)



WORKPLACE ISSUES

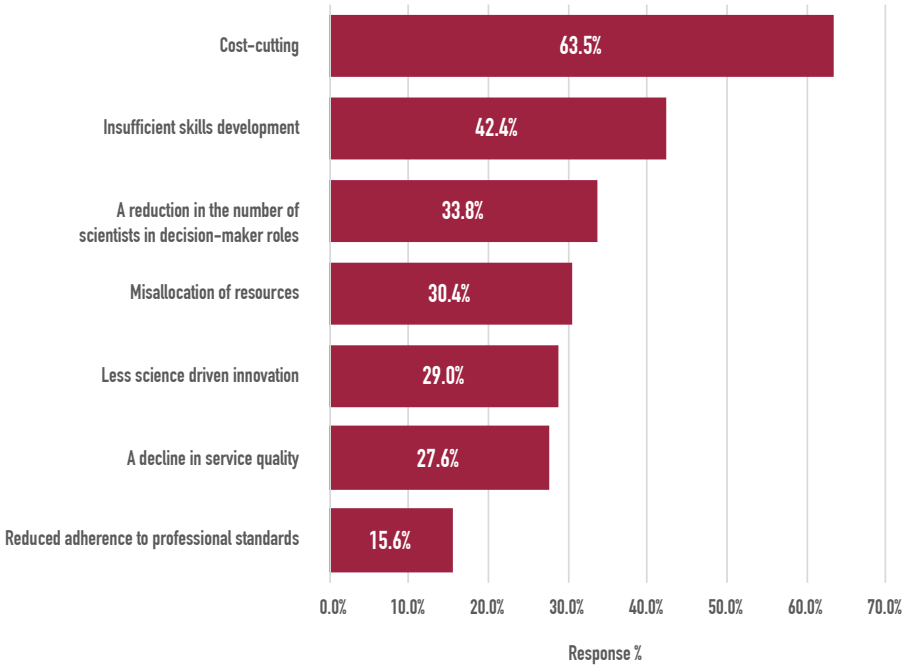
"I am still, despite deteriorating conditions and skewed priorities, wonderfully fortunate to be able to engage every day in basic research."

Survey respondent

Workplace issues

The survey asked respondents whether they had seen one or more of various common changes or challenges in their workplace over the previous 12 months.

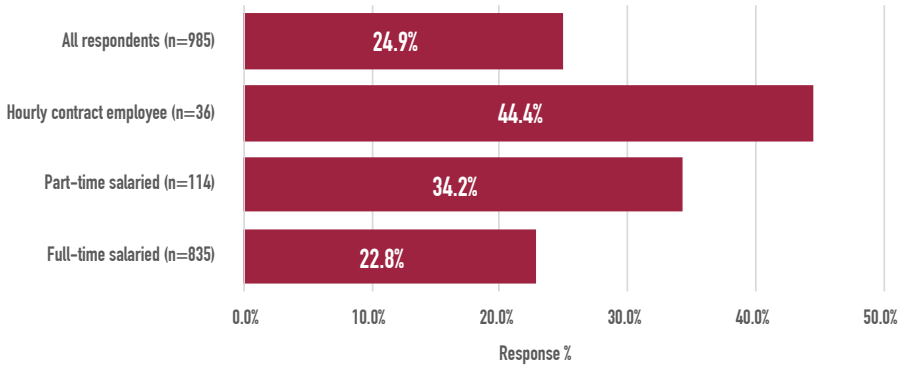
Figure 29 - Issues evident in the workplace over the last 12 months (n=742)



12 EMPLOYMENT INSECURITY

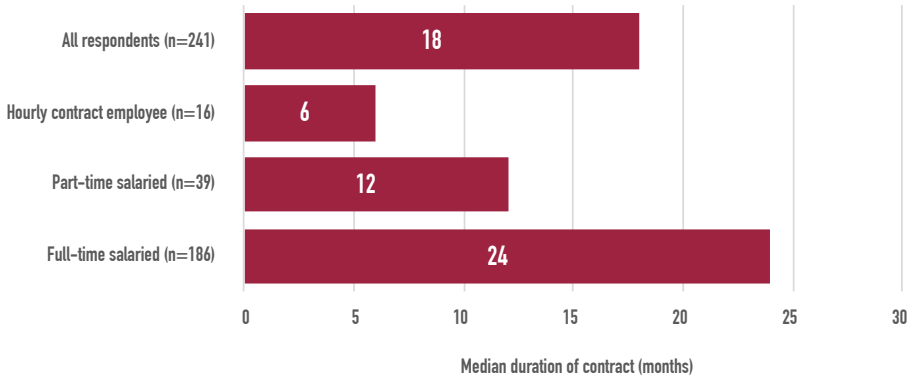
There is widespread concern in the science and research sector about the pandemic exacerbating existing employment insecurity in research roles. This has been a long-standing issue in research where there is a high prevalence of fixed-term contracts and lack of job security despite being some of the most qualified professionals in Australia. Almost one in four scientists surveyed were currently employed on a fixed-term contract. Fixed term contracts were most common for those working as hourly contract employees.

Figure 30 - Prevalence of fixed-term contracts by employment status



The average fixed-term contract only ran for 18 months - offering minimal job security. The situation is even worse for those working as 'hourly contract' employees, with the average contract only running for six months.

Figure 31 - Median duration of fixed term contracts by employment status



"I think having short term contracts for post-doctoral researchers is not helping the research community and ECRs. The lack of job security during these early years is really stressful and I believe reduces our abilities to be creative in our research projects and scope. I would like to see more support for providing long-term full-time contracts for ECRs and not just fixed-term contracts."

Survey respondent

"10 years on fixed term contracts and I still can't transition to a continuing position."

Survey respondent

"Services are continually being cut back or discontinued."

Survey respondent

13 COST-CUTTING, MISALLOCATION OF RESOURCES AND LESS INNOVATION

Cost-cutting was by far the most common challenge in the workplace over the last 12 months - nominated by 63.5 per cent of scientists surveyed.

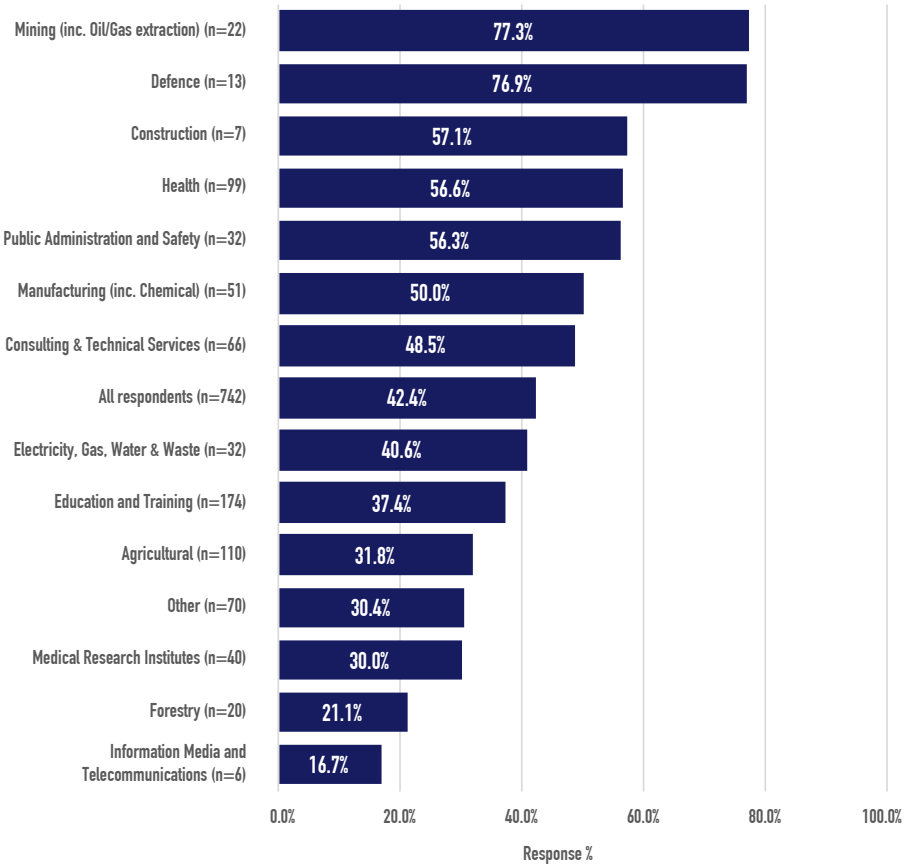
Cost-cutting was most cited by scientists employed in the Education and training industry which includes universities and tertiary education (91.4 per cent of respondents), most likely arising as a direct result of job losses arising from the pandemic.

14 SKILLS DEVELOPMENT AND TRAINING

While the pandemic has enhanced access to training and development for some, for others it has limited opportunities for professional development. Two in five scientists surveyed (42.4 per cent) said there was insufficient skills development in their workplace over the previous 12 months.

Concerns were most commonly reported by professional scientists employed in the Mining and Defence industries, cited by over 75.0 per cent of respondents in both of those industries.

Figure 32 - Level of concern about insufficient skills development by industry



"I have been able to attend more international conferences because they have been held online."

Survey respondent

"There is ZERO professional development and no external training of any kind."

Survey respondent

"The university is using COVID as an excuse to restructure and remove senior staff and replace us with juniors."

Survey respondent

15 DEPROFESSIONALISATION

Deprofessionalisation - defined as the diminution of science capability across responsibility levels, industries and/or job functions - was reported by scientists. More than a quarter of the scientists who completed the survey - 28.6 per cent - reported a drop in the number of scientists in decision-maker roles over the previous 12 months. This was greatest in the Public administration and safety and Agricultural industries with 53.3 and 41.2 per cent of respondents respectively reporting fewer scientists in such roles.

"[My workplace] gets more and more broken with every change or 'innovation'."

Survey respondent

16 DECLINE IN SERVICE QUALITY AND PROFESSIONAL STANDARDS

One in six scientists surveyed (15.6 per cent) said less adherence to professional standards was evident in their organisation over the past year.

One in four scientists surveyed (27.6 per cent) said service quality had fallen in their employing organisation this year.

17 WORKPLACE AND STEM WORKFORCE PRIORITIES

Workplace priorities

Survey participants were asked to rank the list of work priorities below from most important to least important (n=680). On average, job satisfaction ranked highest in surveyed scientists' work priorities, followed by job security and remuneration. The ranking of priorities was:

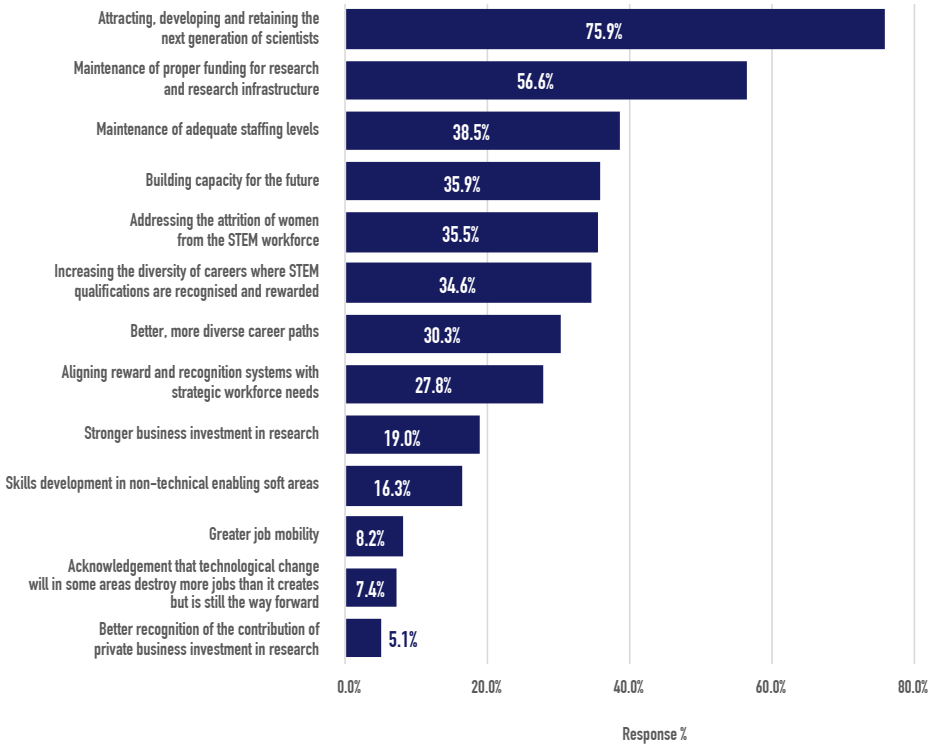
1. Job satisfaction;
2. Job security;
3. Remuneration;
4/5. Work/life balance;
4/5. Positive workplace culture;
6. Flexible work arrangements;
7. Career progression;
8. Continuing professional development;
9. A challenging workload;
10. Option to work remotely; and
11. Occupational health and safety.

> "Working and having a career in STEM feels less rewarded in comparison to other fields of work. Lower pay with high workloads and increased stress in comparison to other fields is a big issue."
>
> **Survey respondent**

STEM workforce priorities

Attracting, developing and retaining the next generation of scientists was seen as the top priority for developing a sustainable STEM workforce by three in four scientists surveyed (75.9 per cent of n=693). This was followed by maintaining proper funding for research and research infrastructure (56.6 per cent). Maintaining adequate staffing levels in organisations employing STEM professionals was another top priority.

Figure 33 - Most important approaches to developing a sustainable STEM workforce (n=729)



"My workload has increased but my hours remained the same."

Survey respondent

"Working in a lab - workloads have been crazy. Many, many extra hours required."

Survey respondent

"I have had shiftwork imposed on me."

Survey respondent

18 WORKING HOURS AND OVERTIME

Scientists surveyed worked a 44.6 hours per week on average including 7.5 additional hours beyond what they were contracted to do. Only 6.4 per cent received monetary payment in recognition of their additional hours.

Last year's survey was taken at the height of the first wave of the pandemic - with high levels of overtime being worked by scientists (12.4 per cent expected to work longer hours compared to the previous 12 months). This year, coming from that high base,12.5 per cent of scientists surveyed reported they were expected to work longer hours in the past year compared to the previous one. The average number of hours worked per week was greatest for those working in Teaching or training and Exploration roles.

Figure 34 - Mean number of hours worked per week plus additional hours by job function

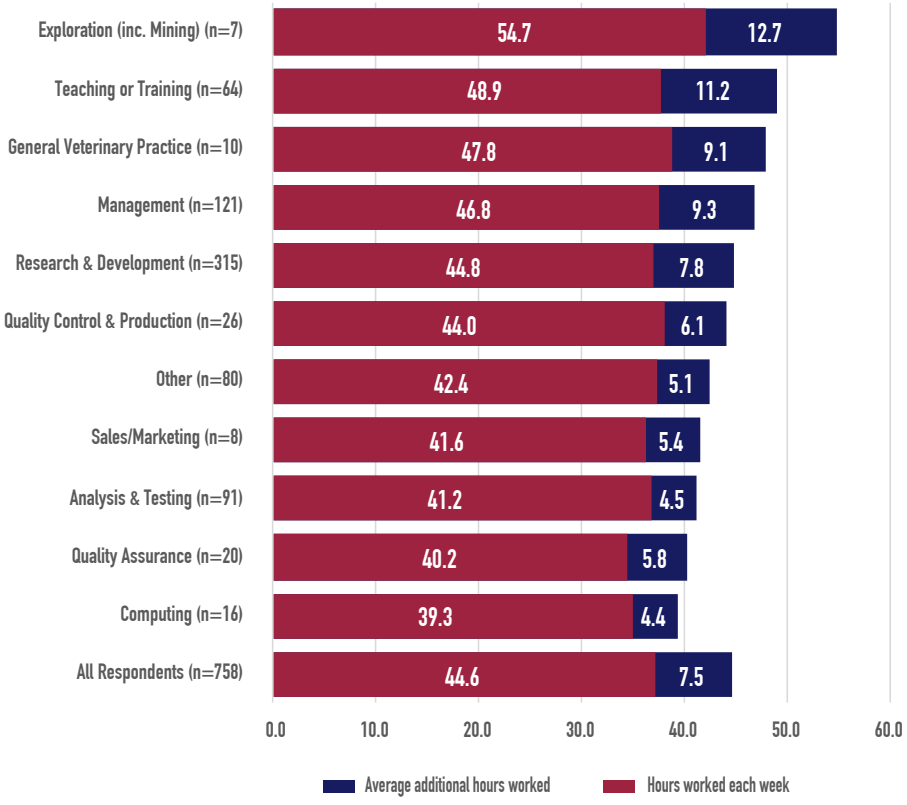
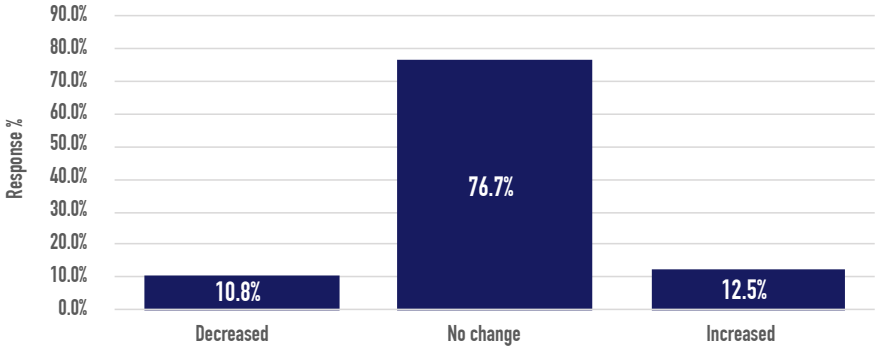


Figure 35 - Change in hours worked per week compared to 12 months ago (n=602)



Compensation for additional hours

Overall nearly six in ten scientists surveyed (58.9 per cent) (n=749) said they received no compensation for extra hours worked. Of those that received compensation, 6.3 per cent were paid extra at an hourly rate, 14.2 per cent reported having compensation for additional hours worked was built into their base salary and 20.7 per cent had received time off in lieu of payment. Compensation for additional hours worked was most common in Local Government, the State Public Service and Hospital sector. 79.4 per cent of those engaged in the Education sector (universities) reported receiving no compensation for additional hours worked.

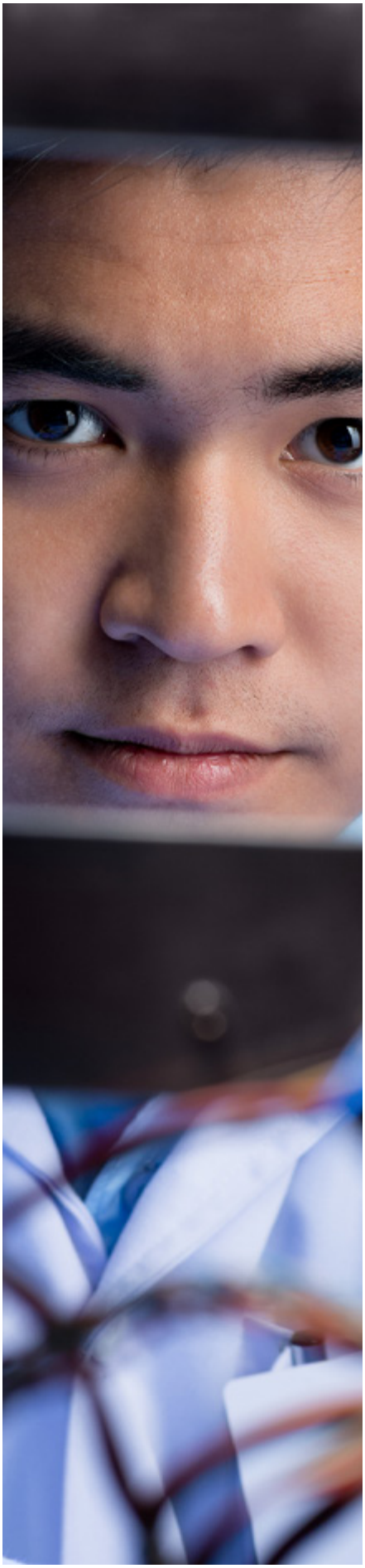


Figure 36 - Method of compensation for additional hours (n=749)

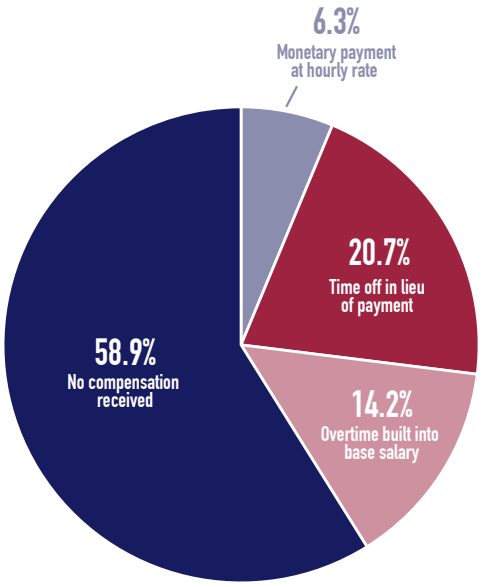
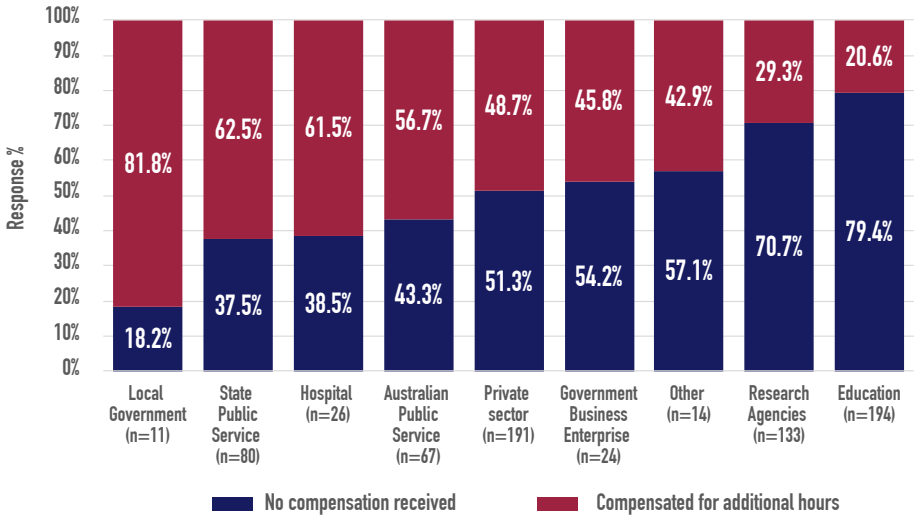


Figure 37 - Prevalence of compensation for additional hours by employment sector



"Ongoing financial stress has resulted in an extended period of budgetary uncertainty and significant job-cuts with a strong decline in morale, job satisfaction and increased stress."

Survey respondent

19 STAFF MORALE, WORKER FATIGUE AND PERCEPTIONS OF PRODUCTIVITY

Almost two in three scientists surveyed (62.5 per cent) said staff morale had declined in their organisation over the past year and seven in ten (70.6 per cent) said staff fatigue had increased.

This highlights the mounting toll on professional scientists from last year, when under half (45.8 per cent) reported morale declining - and just over half (54.6 per cent) reported staff fatigue rising.

Almost one in three scientists (29.4 per cent) said overall productivity in their workplace had fallen in the past year.

Table 5 - Perception of changes in workforce and organisation over previous 12 months (n=777)

	DECREASED	STAYED THE SAME	INCREASED
	% RESPONSE	% RESPONSE	% RESPONSE
WORKER FATIGUE	3.1%	26.3%	70.6%
OVERALL PRODUCTIVITY	29.4%	52.8%	17.9%
STAFF MORALE	62.5%	32.3%	5.1%

20 PROFESSIONAL INTENTIONS

Changing jobs

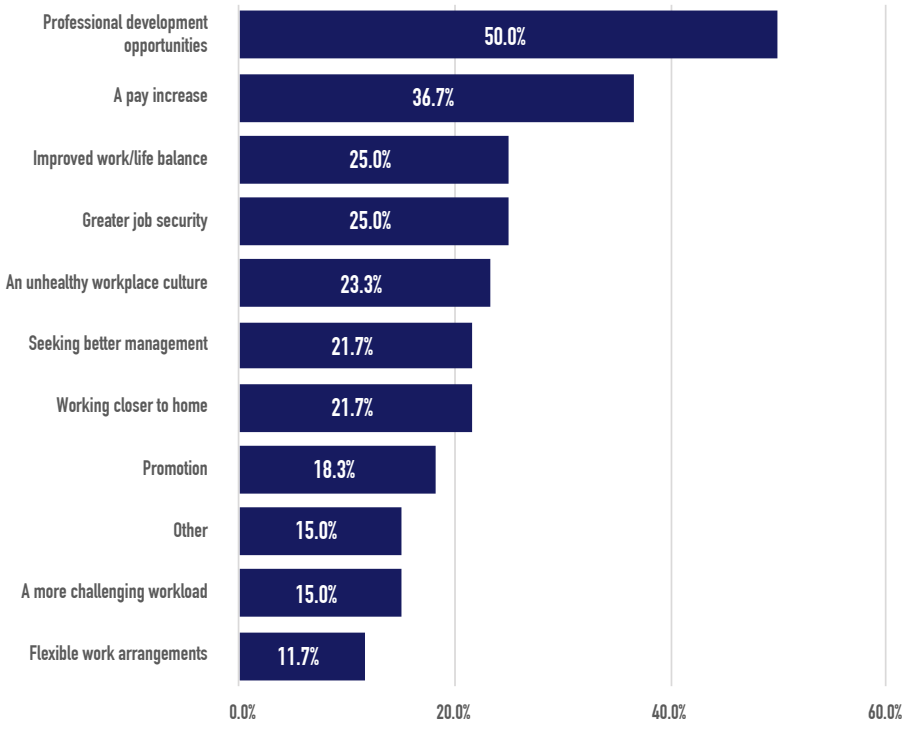
One in ten scientists surveyed (10.0 per cent) had changed jobs in the previous 12 months (n=752).

Of those, one in three (36.7 per cent) had moved for a pay rise, one in four (25.0 per cent) had moved for greater job security and half (50.0 per cent) moved for greater professional development opportunities (respondents could choose more than one option).

Just under one in five scientists surveyed (18.3 per cent) had moved for a promotion and one in five (21.7 per cent) moved seeking better management.

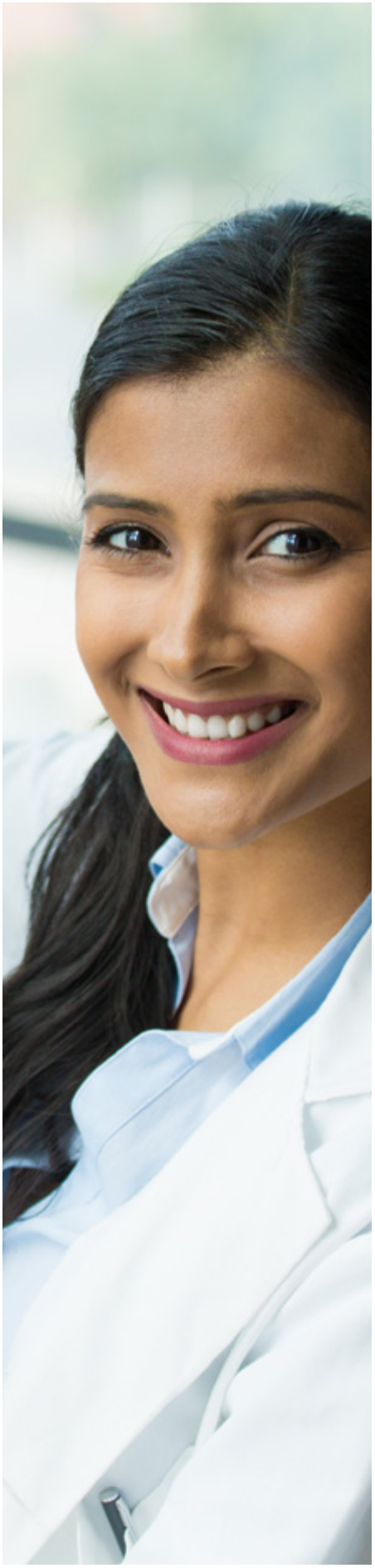
Almost one in four scientists surveyed (23.3 per cent) said they had moved to get away from an unhealthy workplace culture, a clear drop from 12 months ago, when it was cited as a reason for change by 40.6 per cent.

Figure 38 - Reasons for changing jobs (n=73)



"My colleagues are leaving in droves due to lack of job security, one-year contracts, no chance ever of a permanent job and the requirement to do at least 10, if not 20, hours a week of unpaid work."

Survey respondent



Leaving the profession

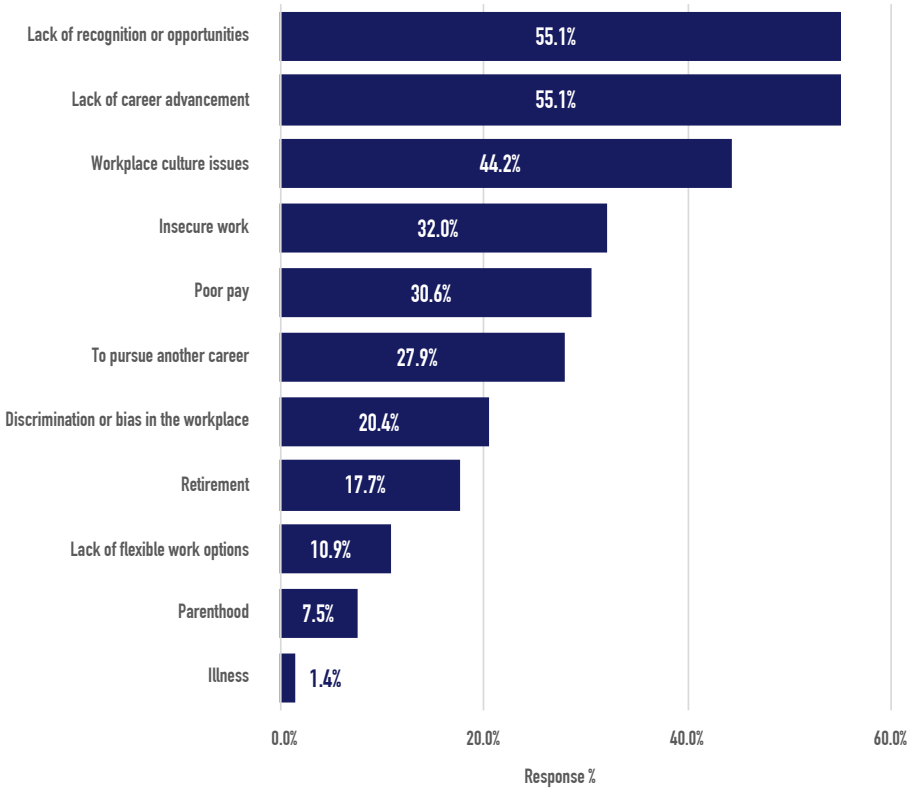
Scientists were asked whether they were considering leaving their chosen scientific profession (n=738).

Almost one in five scientists surveyed - or 19.9 per cent - indicated they intended to leave the profession permanently and 6.8 per cent indicated they intended to leave temporarily.

Those leaving permanently were asked when they intended to leave the profession, and what factors were contributing to that intention.

Two in five of the scientists who intended to leave the profession (42.2 per cent) said they planned to do so in one to three years' time. The biggest factors driving their intention to leave the profession were a lack of recognition or opportunities and a lack of career advancement. Both of these reasons were cited by just under half of the scientists surveyed who said they intended to leave their profession permanently (46.9 per cent).

Figure 39 - Factors influencing intention to leave scientific profession permanently (n=147)



Professional intentions by gender

Just under one in five (17.8 per cent) of the women surveyed said they were planning to leave the science workforce permanently compared to slightly over one in five (21.7 per cent) of the men surveyed.

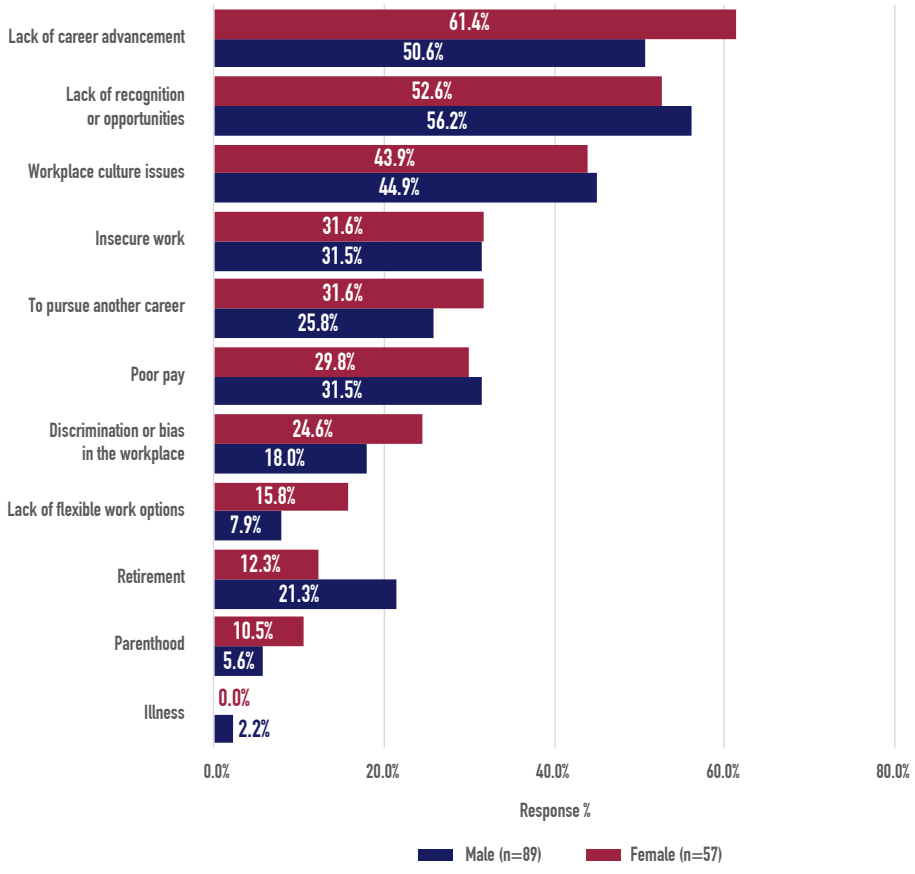
Fewer science professionals were considering leaving the profession temporarily - with 9.3 per cent of women and 4.9 per cent of men with that intention.

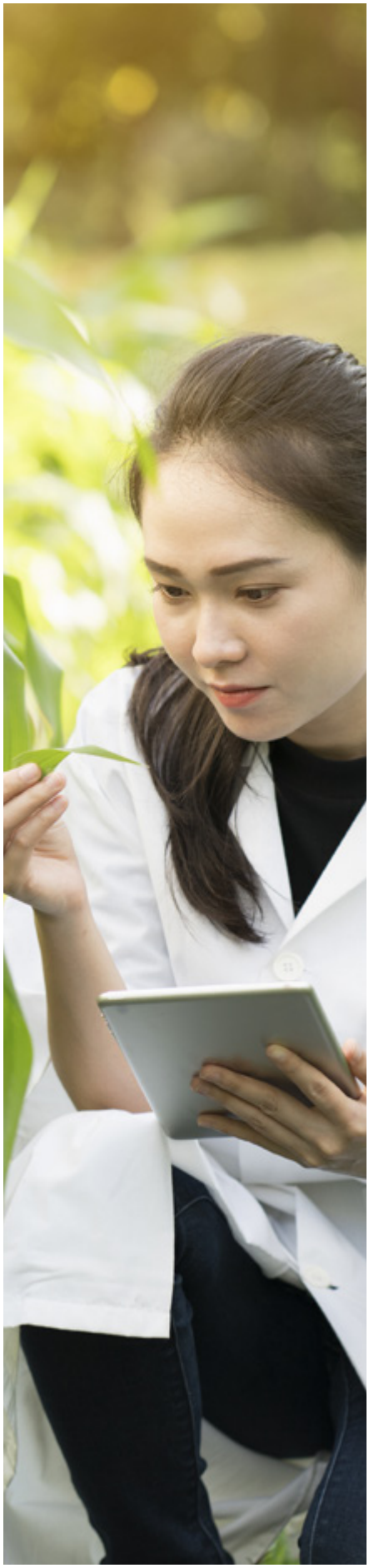
Table 6 – Professional intentions by gender (n=792)

CONSIDERING LEAVING	MALE (N=479)	FEMALE (N=313)
Yes, permanently	21.7%	17.8%
Yes, temporarily	4.9%	9.3%
No	73.5%	72.9%

The factors influencing professional scientists' intentions to leave the profession were similar for men and women, however there were some clear differences in how commonly certain factors were cited. Men were more likely to report intending to leave the profession due to retirement, while women were more likely to intend to leave the profession due to parenthood or a lack of flexible work options.

Figure 40 - Factors influencing intention to leave scientific profession permanently by gender





"There is a push to have more commercialisable research without recognising that basic research is the thing that generates innovation."

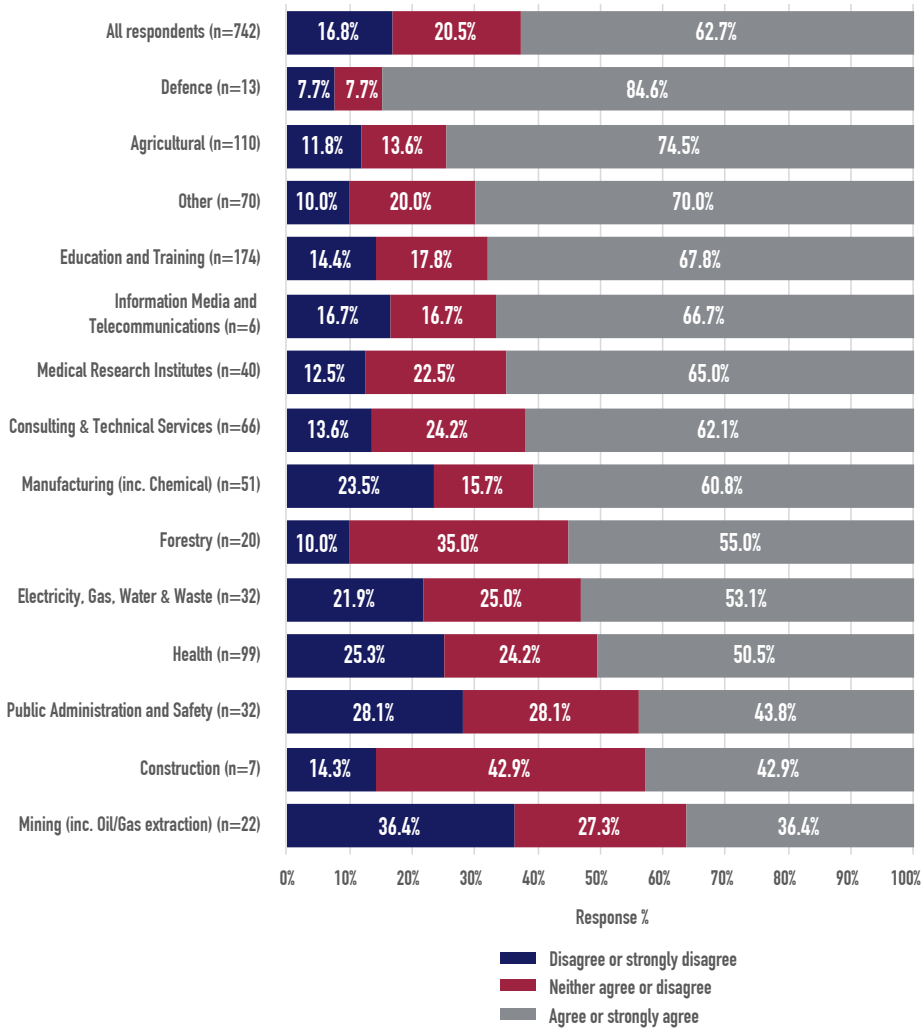
Survey respondent

21 SCIENCE CAPABILITY AND INNOVATION

Science capability as a source of innovation

Almost one in three scientists surveyed (62.7 per cent) reported that scientific capability was seen as a source of innovation in their workplace (n=742). The highest reported levels were in the Defence industry (84.6 per cent agreed or strongly agreed that scientific capability was seen as a source of innovation in the workplace) and the lowest reported levels were in Mining, Public administration and safety and Health industries (36.4, 28.1 and 25.3 per cent respectively disagreed or strongly disagreed that scientific capability was seen as a source of innovation in their workplace). 29.0 per cent of respondents reported less science-driven innovation in their organisation over the previous 12 months (n=742).

Figure 41 - Perception of whether scientific capability can be seen as source of innovation in the workplace by industry



IMPACT OF COVID-19

"A COVID cluster occurred at my company with 30 per cent of workers catching the virus. The company was shut down for two weeks and has slowly regained most of the previous production volume. It has been a difficult time for myself and other employees."

Survey respondent

Impact of COVID-19

The survey asked about the impact of the pandemic on respondents' working lives.

22 CONTRACT NON-RENEWALS, STAND-DOWNS AND JOB TERMINATIONS

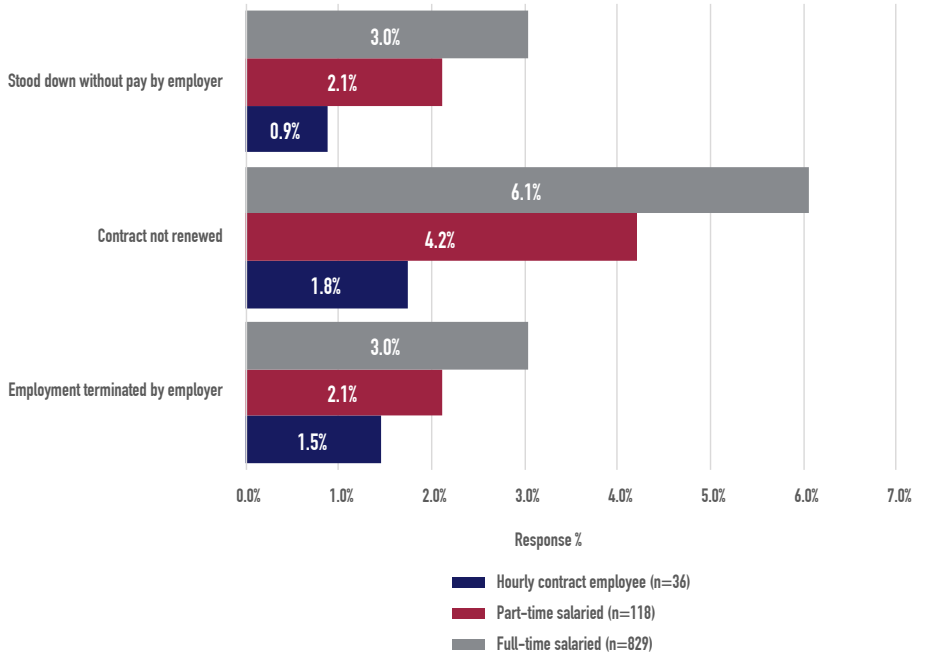
Scientists working as hourly contractors were most vulnerable to job losses over the past year. Scientists working in part-time and full-time jobs also lost their jobs at the end of their contracts but at a lower rate.

In this survey, 2.6 per cent of scientists said they had lost their job when their contract was not renewed or their job was terminated by their employer. 1.2 per cent said they had been stood down without pay at some stage during the past year.

Table 7 - Contract non-renewals, stand-downs and job terminations (n=1003)

NATURE OF STAND-DOWN	% OF SAMPLE WHO HAD EXPERIENCED
My employment was terminated by my employer	2.6%
My contract has not been renewed	2.6%
I have been stood down without pay by my employer	1.2%

Figure 42 - Prevalence of contract non-renewals, stand-downs and job terminations by employment status



23 LOSS OF PAY

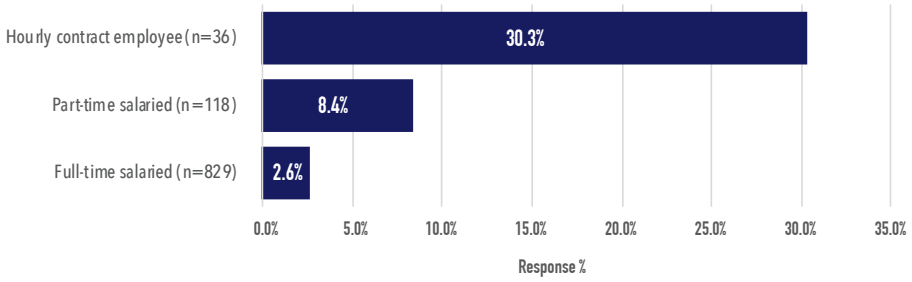
One in 14 scientists surveyed (7.1 per cent) surveyed had taken a pay cut due to the COVID-19 pandemic.

24 WORKING HOURS

One in 20 scientists in the survey (5.1 per cent) said their paid work hours had fallen – with scientists working on an hourly contract rate hardest hit.

Scientists in full-time salaried jobs were less directly hit by a decline in paid work, although some also reported a downturn in paid work hours.

Figure 43 - Prevalence of weekly hours being reduced by employment status



While some scientists had their working hours cut, a bigger proportion had their hours increased, including unpaid working hours. Around one in ten scientists in the survey (12.7 per cent) said their weekly working hours had risen in the past year.

"The rapid adoption of technology solutions has resulted in frustration at times but also improved business efficiency in other cases (e.g. remote meetings)."

Survey respondent

"I really liked working from home - I found the flexibility in movement enabled more productivity and helped with school drop-offs etc. as virtual meeting times could be more flexible around my schedule."

Survey respondent

25 WORKING FROM HOME

One in three scientists in the survey (36.0 per cent) said they had opted to work from home and more than half (58.2 per cent) had been instructed to work from home at some stage during the past year.

The data suggest employers with over 200 staff were more likely to have enforced remote work arrangements than smaller employers. Scientists in the education sector (universities) were most likely to be required to work from home. Scientists working in the private sector were the least likely to be required to work from home.

Figure 44 - Prevalence of being instructed to work from home by number of employees

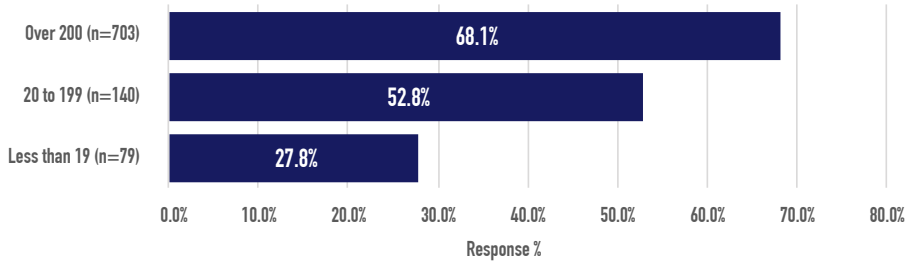
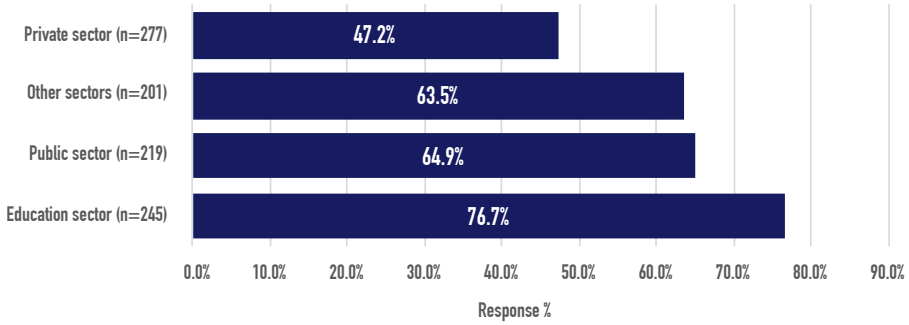


Figure 45 - Prevalence of being instructed to work from home by employment sector



"Overall, the pandemic impacted my employment and well-being very positively. Apart from feeling a bit lonely with respect to my colleagues, I have been unusually healthy, happy, productive and clear-minded. The usual clutter and distractions of working in the office are gone, as are most low-quality social interactions. Some face-to-face interactions have been good to return to but I hope to be able to continue this format of work and life for some time yet."

Survey respondent

"Social distancing has made completion of job tasks slower and more physically difficult but must still be done - and workload has increased greatly."

Survey respondent

26 LOCKDOWNS, SOCIAL DISTANCING AND ACCESS TO RESEARCH FACILITIES

Just over one in five scientists surveyed (21.4 per cent) said physical distancing had limited their work and a similar proportion (22.8 per cent) said they had restricted access to research facilities during the pandemic and under subsequent lockdowns.

"During the period of lockdown, I felt exhausted by continually having to adapt my team's research to achieve outcomes. In addition, my organisation has implemented many new changes which have exacerbated this exhaustion. I worked hard to maintain a positive attitude for my staff but feel like this has been at a high personal cost."

Survey respondent

27 CHANGES TO WORK RESPONSIBILITIES

One in eight scientists surveyed (12.1 per cent) had their role or responsibilities at work changed.

28 MENTAL HEALTH AND WELL-BEING

Just over one in five scientists surveyed (21.5 per cent) said anxiety/mental distress due to the pandemic was affecting their ability to work.

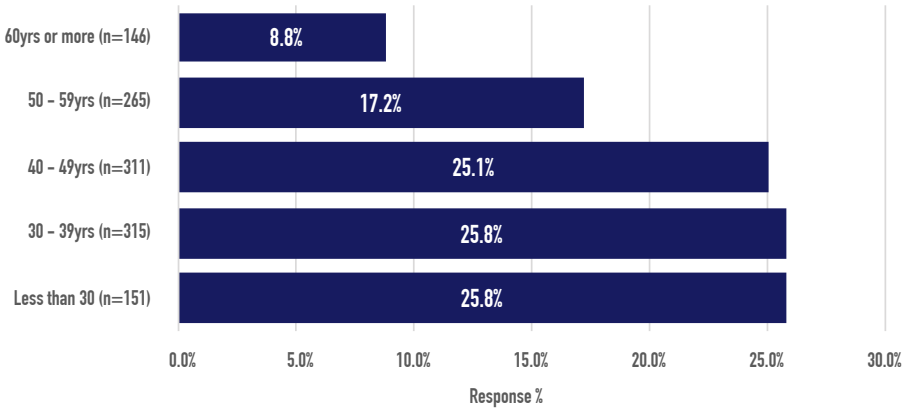
Pandemic-related anxiety or mental distress was substantially higher amongst scientists based in Victoria than other Australian states. At the time of the survey, Victoria had the longest lockdown of any state or territory, with the state in lockdown for five months in 2020 and again in lockdowns during 2021.

Scientists employed in the education sector including universities were more likely to report anxiety or mental distress. The education sector has been one of the hardest hit financially by the pandemic, leading to thousands of job losses across the university sector.

The sector was characterised by high levels of insecure work even prior to the health crisis - and employment insecurity and job losses were exacerbated by the pandemic. These factors have had a clear impact on the wellbeing of scientists employed in the university sector.

Younger scientists - who are more likely to be in roles that are typically less senior and less secure - reported the highest rates of anxiety or mental distress due to the pandemic.

Figure 46 - Prevalence of anxiety/mental distress due to COVID-19 by age



"We've been in crisis mode, just trying to respond to events, for a long time. It's been stressful."

Survey respondent

"For a person working in a pathology lab, work has gone up exponentially. Job cuts have made it harder to find good staff who will stay through the COVID madness. Stress levels have gone up, employees still work because we understand that we are essential workers providing public service, but constant work pressure hasn't helped stress levels."

Survey respondent

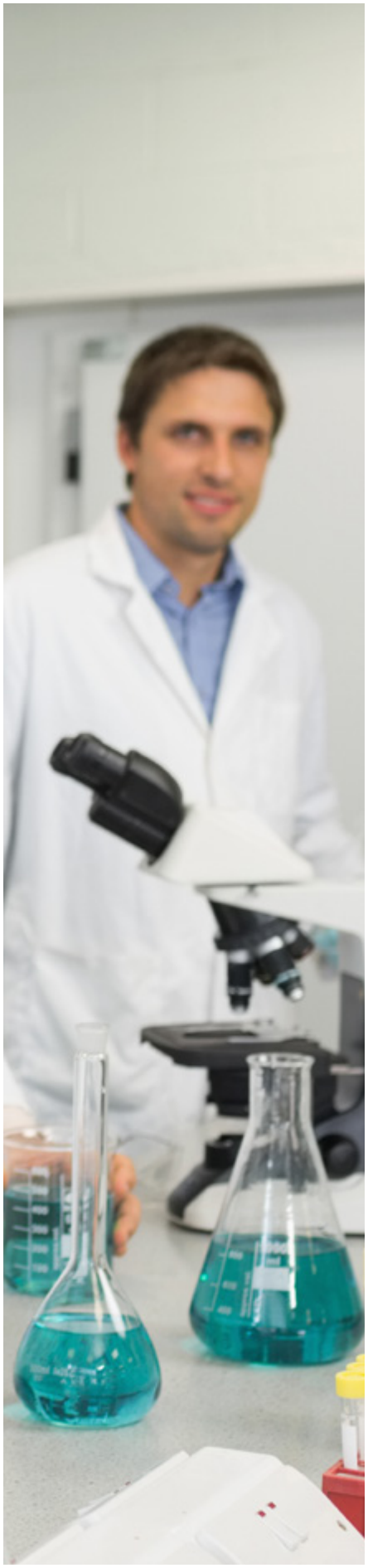


Figure 47 - Prevalence of anxiety/mental distress due to COVID-19 by state

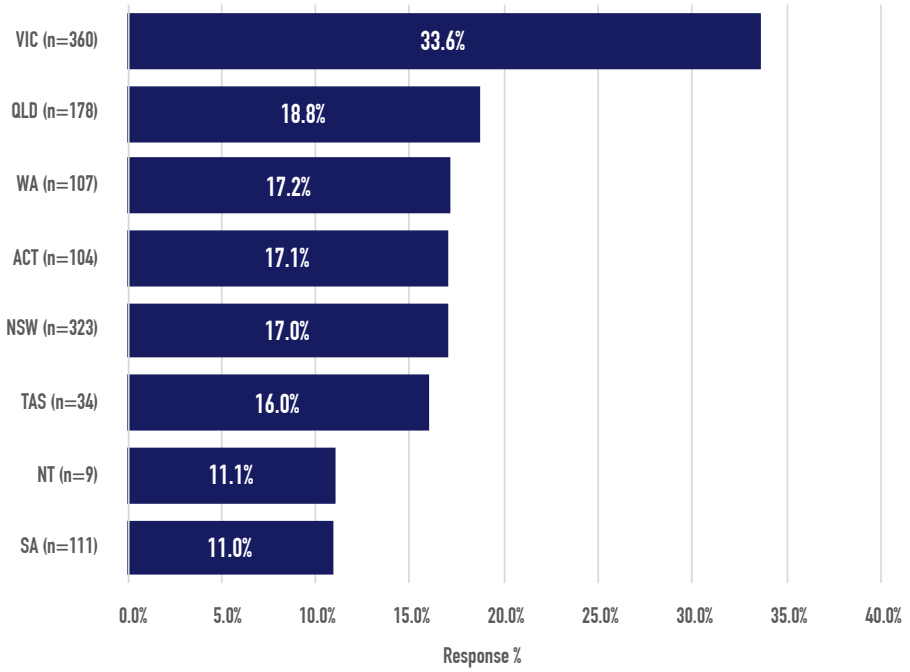
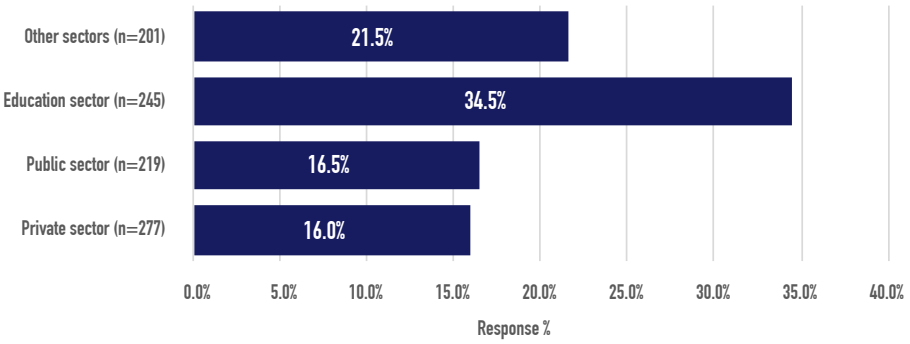


Figure 48 - Prevalence of anxiety/mental distress due to COVID-19 by sector



29 CARER RESPONSIBILITIES AND HOME SCHOOLING

Around one in six scientists surveyed (13.9 per cent) said caring for children/home schooling had curbed their ability to work.

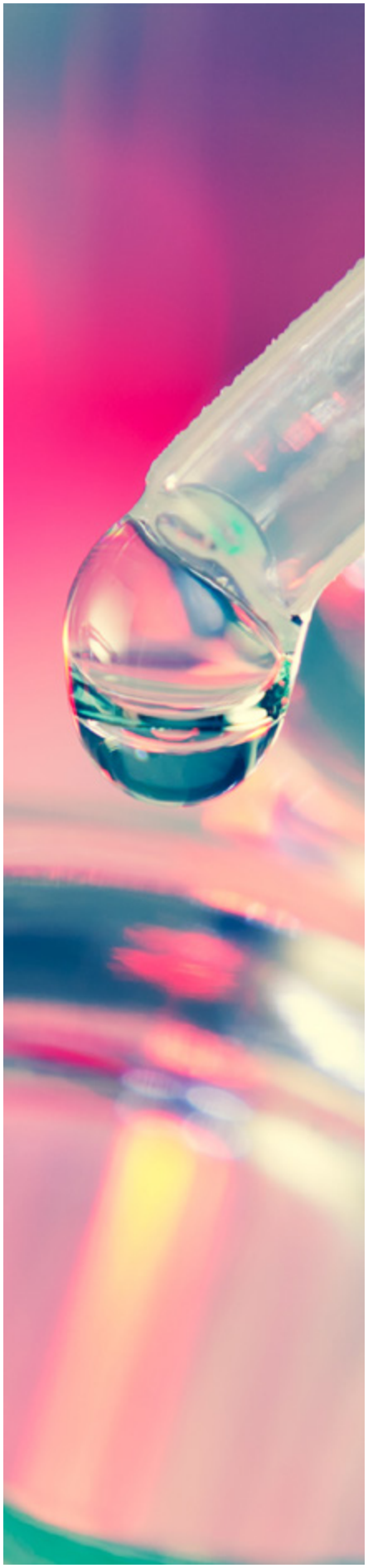
"[My well-being has] improved because I have control over my flexible arrangement: I care for a special needs teenager."

Survey respondent

"Work/life balance has been challenging with remote learning of children and trying to work."

Survey respondent

ABOUT THE SURVEY



Methodology

The Professional Scientists Remuneration Survey tracks annual changes in compensation for full-time professional scientist employees in Australia. In addition to presenting national trends, it includes analysis by separate indices including fields of science, levels of responsibility, years of experience, job function and science qualification.

The survey was conducted online during June 2021. Invitations to participate were forwarded to member societies of Science & Technology Australia and scientist members of Professionals Australia (formerly APESMA). The member societies represent in excess of 90,000 scientific and technical professionals. In addition, non-member professional scientists Professionals Australia had prior contact with were invited to participate through direct e-mail and social media. A number of scientific associations not affiliated with Science & Technology Australia were also asked to invite their members to participate in the survey. Those associations were identified from past participants.

To avoid duplication of data arising from a participant starting multiple survey sessions due to technical difficulties, incomplete questionnaires were discarded where multiple responses had been submitted from a single IP address and responses to the incomplete questionnaires mirrored responses in a completed survey. Duplicates were also discarded where a participant provided sufficient identifying details to be confident two entries were from the same respondent. In these cases, the most complete response is retained.

Incomplete surveys were included in the analysis for any item where respondents provided enough information for that item to be assessed in full.

Completed valid questionnaires were returned by 1,275 respondents and have been used as the basis for the analysis contained in this report.

Whilst the survey represents the responses of scientists from a large array of scientific disciplines, industries, sectors and job functions, the report largely represents the responses volunteered by scientists who are members of scientific organisations under the peak body of Science & Technology Australia and Professional Scientists Australia or who were contacted directly to participate in the survey. Given these channels, their responses can be taken to be representative of their membership and the disciplines in which the respondents qualified.

The task of describing the remuneration of scientists is made more complex by the diverse roles performed by those who have qualified in a scientific discipline. Traditionally, some may consider the role of a scientist to be strictly defined – to be involved in technical roles. It is clear, however, that large numbers of respondents are involved in supervisory and management roles and indeed some are engaged in positions that might not seem related to traditional concepts of science at all.

For the purpose of this survey, the decision was made to leave the respondent to decide this issue. All respondents were asked to supply details relevant to their position if they considered the position they held was one best described as being filled by a science professional.

Terms used

Base salary

Base salary refers to the annual salary component of the contract of employment exclusive of any additional allowances, payments or non-cash benefits.

Total package

The total remuneration package refers to the package received by a participant, including the value of all components of remuneration. Total package includes the following:

- Base salary;
- Annual leave loading;
- Overtime;
- Award allowances;
- Entertainment allowances
- Employer superannuation contributions;
- Motor vehicle;
- Parking;
- Performance pay;
- Fringe Benefits Tax (FBT);
- Other items eligible for FBT; and
- Other items not eligible for FBT.

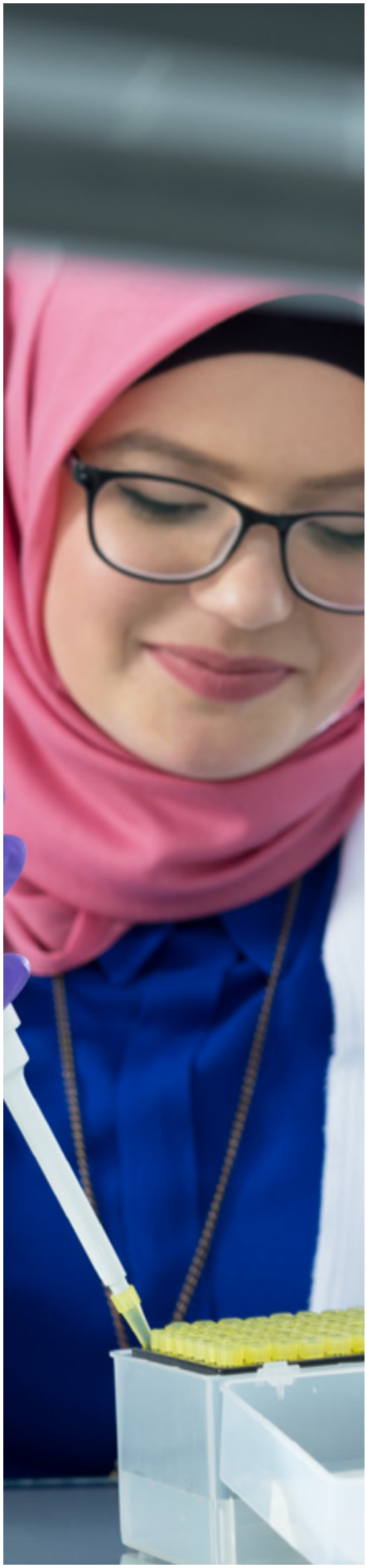
Where a non-cash benefit such as a motor vehicle is provided, an estimate is made of the salary equivalent value of the benefit.

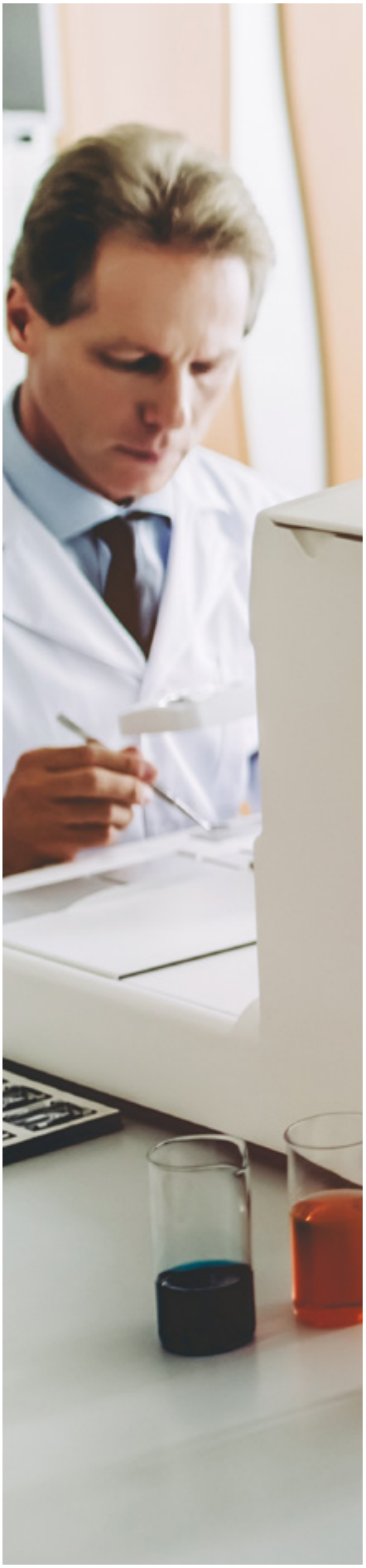
Annual salary movement

The calculation of percentage increases in annual salary is based on a comparison of current base salary to that of twelve months earlier as supplied by the respondent at the time of the survey.

Minimum sample reported

Where the number of respondents in any given category is less than three, the results have not been reported for that single category in order to ensure the anonymity of the respondents are preserved, however the amounts are included in any calculation of the total for the broader category. Similarly, medians are only reported for categories with a minimum of four respondents, and quartiles for categories that have a minimum of five. Response % for a category is typically only reported where there are ten or more respondents, except where otherwise stated.





Valuation of motor vehicle

The value of capital and running costs given to a motor vehicle provided as part of a salary package has been determined based on the formula:

0.225 x Cost of Vehicle + 25 cents per km.

Cost of vehicle is the original cost of the car inclusive of government taxes and charges and dealer delivery fees. Capital costs within the formula are based on 22.5% straight-line depreciation over four years. Vehicle running costs are based on an average derived from the Royal Automobile Club of Victoria annual survey of car running costs. These costs include registration, insurance, fuel and servicing. The Fringe Benefits Tax liability has been calculated using the following formula: FBT = Purchase price x statutory fraction x 1.8868 x 0.47 using the statutory fraction of 20%.

Statistical terms

For the purposes of salary analysis, the following statistical terms were used:

- N - the number of observations recorded for each category. A result of SNR (Sample Not Representative) is given for categories below the reporting threshold.
- Lower quartile - the value below which 25% of observations were recorded.
- Median - the value below which 50% of observations were recorded.
- Upper quartile - the value below which 75% of observations were recorded.
- Mean - the sum of individual salary values divided by the number of observations.
- Response % - the proportion of the survey sample represented by number of observations in the given category.

The calculations for base salary, total cash, total remuneration, total employment cost, total package, annual salary movements and other remuneration components are made separately for each of the sample respondents and then ranked. The median is not therefore a reflection of the middle ranked respondent across all categories, but rather the middle value of the particular component when all values of that component are ranked. As a consequence, the component statistics will not add up to the value given by the overall statistic.

A significant difference between the value of the mean and the median will indicate the following:

- where the mean is higher than the median, a number of high values were recorded, sufficient to skew the mean upwards away from the median;
- conversely, if the mean is lower than the median, a number of low values were recorded, sufficient to skew the mean downwards, away from the median;
- if the mean and median are relatively close, the distribution was symmetric.

Sample size

Not all respondents answered all questions, nor were all respondents in a given discipline employed as full-time employees. As a consequence, some discrepancies may appear to exist in the total number in a given category. In all cases, the sample size will correspond to the number of respondents who fulfilled the criteria described in the relevant heading and who made relevant data available for reporting purposes. This is of particular importance in relation to salary data as this has been restricted to only those respondents who were engaged on a full-time basis and who provided sufficient details of their income for reporting purposes.

Also, as would be expected, results based on smaller sample sizes need to be treated with greater caution. Nevertheless, where the number of responses exceeded three, the information has been reported. (Whilst not statistically reliable, small sample sizes are reported in order to satisfy the demand that some users have for any information that might have been gathered for a particular factor or combination of factors.)

In interpreting the results, the user should take as much care to look at the factors used for analysis as in looking at the statistical data itself. The conclusions drawn rely on the correct interpretation of both.

Sample characteristics

This report presents data collected in the 2021 Professional Scientists Employment and Remuneration Survey. The survey was conducted during June 2021. Participants were recruited from Professional Scientists Australia and Science & Technology Australia's contacts by email and social media with a small incentive offered to complete the survey. Overall, the survey had 1,275 respondents. Participants were slightly more likely to be male (53.0 per cent) and employed in the education and training industry (23.3 per cent). Victoria was the state with the highest proportion of respondents (28.9 per cent), followed by New South Wales (25.9 per cent) and Queensland (14.3 per cent). Participants were most likely to be qualified in biology (18.8 per cent), medical science (14.4 per cent) and/or environmental science (13.2 per cent). In the graphs presented in this report, the sample size (n-value) is included in brackets alongside the category labels to indicate how many responses are included in the analysis. Where a respondent indicated membership of a category but did not provide an answer to the question being analysed, they will not be included in the n reported for that figure.

Demographic information

		N	Response %
Gender	Male	661	53.0%
	Female	577	46.3%
	Non-binary	7	0.6%
Age	29yrs or less	153	12.6%
	30 - 39yrs	326	26.9%
	40 - 49yrs	315	26.0%
	50 - 59yrs	270	22.3%
	60yrs or more	147	12.1%
State	NSW	323	25.9%
	VIC	360	28.9%
	QLD	178	14.3%
	SA	111	8.9%
	WA	107	8.6%
	TAS	34	2.7%
	NT	9	0.7%
	ACT	104	8.3%
	Overseas	21	1.7%
Location	Capital city/suburb	1006	79.1%
	Rural/Regional	266	20.9%
Status	Full-time salaried	865	70.2%
	Part-time salaried	121	9.8%
	Independent contractor/consultant	22	1.8%
	Self-employed	25	2.0%
	Hourly contract employee	36	2.9%
	Studying full-time	62	5.0%
	Unemployed	30	2.4%
	Retired	34	2.8%
	Non-scientific role	31	2.5%
	Other	7	0.6%

		N	Response %
Job Function	Analysis & Testing	123	12.6%
	Quality Control & Production	30	3.1%
	Research & Development	389	39.9%
	Management	148	15.2%
	Sales/Marketing	12	1.2%
	Teaching or Training	88	9.0%
	Exploration (inc. Mining)	10	1.0%
	Quality Assurance	32	3.3%
	Computing	21	2.2%
	General Veterinary Practice	22	2.3%
	Other	101	10.3%
Industry	Consulting & Technical Services	101	10.5%
	Medical Research Institutes	51	5.3%
	Construction	9	0.9%
	Mining (inc. Oil/Gas extraction)	25	2.6%
	Electricity, Gas, Water & Waste	36	3.7%
	Information Media and Telecommunications	11	1.1%
	Defence	16	1.7%
	Public Administration and Safety	44	4.6%
	Health	140	14.5%
	Education and Training	225	23.3%
	Manufacturing (inc. Chemical)	59	6.1%
	Forestry	25	2.6%
	Agricultural	128	13.3%
	Other	94	9.8%
Sector	Private sector - employee	256	26.2%
	Private sector - proprietor	31	3.2%
	Australian Public Service	88	9.0%
	State Public Service	100	10.2%
	Government Business Enterprise	28	2.9%
	Local Government	12	1.2%
	Education	254	26.0%
	Hospital	32	3.3%
	Research Agencies	157	16.1%
	Other	18	1.8%

		N	Response %
Employees at organisation	Less than 19	80	8.4%
	20 to 199	146	15.3%
	Over 200	730	76.4%
Highest Qualifications	Diploma	16	1.3%
	Bachelor Degree	377	29.9%
	Graduate Diploma	60	4.8%
	Masters Degree	205	16.3%
	Doctorate/PhD	592	47.0%
	None	5	0.4%
	Other	4	0.3%
Discipline	Agricultural Science	106	8.4%
	Biology	237	18.8%
	Biochemistry	116	9.2%
	Botany	35	2.8%
	Chemistry	165	13.1%
	Computer Science	86	6.8%
	Engineering	72	5.7%
	Environmental Science	166	13.2%
	Food Science/Technology	44	3.5%
	Forestry	33	2.6%
	Geology	78	6.2%
	Marine Science	64	5.1%
	Materials/Metallurgy	15	1.2%
	Manufacturing	10	0.8%
	Microbiology	101	8.0%
	Medical Science	181	14.4%
	Pharmacology	26	2.1%
	Physics	136	10.8%
	Mathematics	76	6.0%
	Surveying	15	1.2%
	Veterinary Science	49	3.9%
	Nutrition	7	0.6%
	Other science disciplines	176	14.0%

RESPONSIBILITY LEVEL DEFINITIONS

The responsibility level definitions used in this survey reflect those set out in the Professional Employees Award 2010 (available at http://awardviewer.fwo.gov.au/award/show/MA000065). The following is a summary of the definitions.

Level 1 - The professional primarily completes tasks of limited scope & flexibility which form part of larger projects under supervision from higher level professionals. Draws on knowledge gained during undergraduate studies and uses various standard procedures to perform responsibilities. Decisions are largely restricted to tasks at hand and work is regularly reviewed by higher levels. May be required to check the work of technical staff.

Level 2 - Following from Level 1, the experienced professional plans and conducts professional work without detailed supervision but with guidance on unusual features and is usually engaged on more responsible assignments requiring substantial professional experience.

Level 3 - The professional is involved in co-ordination of difficult assignments and resolving problems by modifying established guidelines and devising new approaches. May make novel contributions to the design of equipment, products and procedures. Decisions made at this level are subject to limited review, primarily checked for conformity with broader objectives and priorities. The professional may supervise other technical and professional staff and cooperate with other divisions.

Level 4 - Largely independent with duties assigned in terms of broad objectives, the professional has detailed technical responsibility for products, systems, facilities or functions. A professional at this level will apply ingenuity, originality and knowledge from more than one field to influence long range planning; providing technical advice to management and acting as an organisations authority in a given field. Often supervises a group including other professionals and exercises authority over a large budget.

Level 5 - The professional independently conceives programs, responsible for reaching objectives in the most economical manner. Frequently responsible for scientific administrative functions, a scientist at this level directs several professional groups or acts as a scientific consultant. Makes responsible decisions on all matters, including selection, training, rating and remuneration of staff, subject only to overall policy and financial controls.

Report preparation

This report is a collaboration between Professional Scientists Australia and Science & Technology Australia. It was compiled by Professional Scientists Australia's Kim Rickard and Alex Crowther with assistance from STA's Misha Schubert, Peter Derbyshire and Martyn Pearce.

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EMPLOYMENT FRAMEWORK

Individual employment contracts

The market rates information in this survey report provides a snapshot of remuneration for scientists and the current science employment market. The information contained in this report is a good starting point for those looking to negotiate or renegotiate their package and understand their position in the market. Where individuals are engaged under an individual employment contract, the remuneration information contained in this report can provide a basis for negotiating a base salary and total remuneration package to be included in the contract. The rates set out in the report are a reliable snapshot of market rates and salary movements across the profession over the previous 12 months. For more detailed information suitable for benchmarking, the full report is available for purchase from Professionals Australia. This report contains comprehensive tables analysing remuneration by all demographics discussed in this report.

Employment conditions

Employment conditions to be included and referred to in a contract can be negotiated and agreed so long as employers observe the National Employment Standards (NES) or the relevant underpinning Award which must apply (see below). Some enterprise agreements also provide for employees to enter into individual agreement/contracts in relation to some aspects of their employment so in these cases the employment conditions set out in the enterprise agreement underpin the employment conditions set out in the employment contract.

National Employment Standards

The NES are 10 minimum employment entitlements that must be provided to all employees. The national minimum wage and the NES make up the minimum entitlements for employees in Australia. An Award, employment contract, enterprise agreement or other registered agreement can't provide for conditions that are less than the national minimum wage or the NES. They cannot exclude the NES.

The 10 minimum entitlements of the NES are:

- maximum weekly hours;
- requests for flexible working arrangements;
- parental leave and related entitlements;
- annual leave;
- personal/carer's leave, compassionate leave and unpaid family and domestic violence leave;
- community service leave;
- long service leave;
- public holidays;
- notice of termination and redundancy pay; and
- Fair Work Information Statement.

All full-time and part-time employees in the national workplace relations system are covered by the NES regardless of the award, registered agreement or employment contract that applies. For further information on the National Employment Standards and their application, visit the Employee entitlements section of the Fair Work Ombudsman's website at https://www.fairwork.gov.au/employee-entitlements.

Modern Awards

Professional employees are covered by a range of Modern Awards and particular Awards underpin Enterprise Agreements. The major Award covering Professional Engineers in the Private sector is the Professional Employees Award 2010.

The major provisions of a modern award will most commonly relate to:

- rates of pay;
- classification levels;
- working hours and public holidays;
- overtime and penalty rates;
- allowances;
- annual leave;
- personal leave;
- rest breaks;
- engagement and termination of employment;
- superannuation; and
- dispute settlement procedures.

For a list of relevant Awards and links to the Awards, visit the Modern Awards section on the Professionals Australia website at https://www.fairwork.gov.au/how-we-will-help/templates-and-guides/fact-sheets/minimum-workplace-entitlements/modern-awards

HOW TO ORDER THE EXTENDED SCIENTISTS EMPLOYMENT AND REMUNERATION REPORT

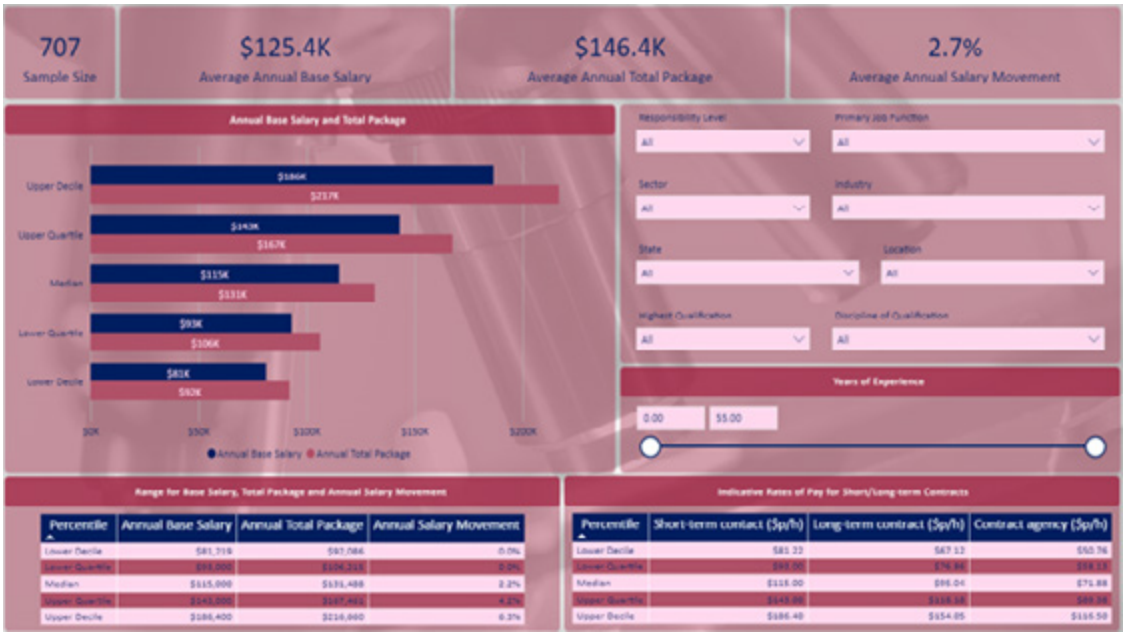
If you're an employer, you can gain access to more detailed data to benchmark remuneration for your science workforce for only $330 (inc. GST).

Professionals Australia has been conducting regular surveys of professional scientists' remuneration for over 20 years. Our reports are the most detailed source of information available when it comes to pay and conditions for Australia's science workforce.

The extended version of the Professionals Scientists Employment & Remuneration Report gives you access to detailed breakdowns for scientists pay across industry, discipline, levels of experience and more.

Purchase a copy of the extended report here: https://scientists.professionalsaustralia.org.au/Scientists/What_we_do/Our_Services/Remuneration/Scientists/Content/Services_Content/Pay.aspx

By purchasing the full report you get access to our scientists salary calculator. This tool allows you to perform custom analysis of scientist remuneration by filtering for various key demographics. Professionals Australia members have immediate access to the calculator through the member portal: https://members.professionalsaustralia.org.au/PSA/Calculator_Page.aspx



Professional Scientists Australia members can purchase the report for the discounted price of $99.00 (inc. GST). Not a member? Look at the benefits of joining here! https://scientists.professionalsaustralia.org.au/Scientists/Content/why_join.aspx

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