

# Victorian Allied Health Workforce Research Program

## Medical Laboratory Science Workforce Report

March 2018



**VICTORIA**  
State  
Government

Health  
and Human  
Services

# Medical Laboratory Science Workforce Report

Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

© State of Victoria, Department of Health and Human Services, March 2018

Except where otherwise indicated, the images in this publication show models and illustrative settings only, and do not necessarily depict actual services, facilities or recipients of services. Where the term 'Aboriginal' is used, it refers to both Aboriginal and Torres Strait Islander people. Indigenous is retained when it is part of the title of a report, program or quotation.

# Contents

<b>Contents</b> .....	<b>4</b>
Abbreviations and acronyms .....	6
<b>Executive summary</b> .....	<b>7</b>
Overview .....	7
Key findings .....	7
Conclusions .....	9
<b>Introduction</b> .....	<b>10</b>
Who are medical laboratory scientists? .....	11
<b>Method</b> .....	<b>12</b>
Macro .....	12
Environmental scan .....	12
Meso and micro level data .....	12
Focus groups .....	13
Research governance .....	13
Distribution approaches .....	13
Analyses .....	14
Data limitations .....	14
<b>Results</b> .....	<b>15</b>
Responses and respondents .....	15
Allied health workforce questionnaire 2 .....	15
Capacity .....	19
Key findings .....	20
Workforce distribution .....	21
Demand .....	27
Supply .....	28
Organisation of the workforce .....	39
Scope of practice .....	45
Workforce movement .....	46
Capability .....	52
Key findings .....	53
Evidence / knowledge base .....	54
Training and continuing professional development .....	54
Clinician knowledge and skills .....	61
Support contexts to enhance capability .....	63
Engagement .....	68
Key findings .....	69
Individual role engagement .....	69
Intra-professional engagement .....	74
Inter-professional engagement .....	74
Engagement with the community and society .....	75

**Conclusion ..... 77**  
**References ..... 78**  
**Appendix ..... 79**

## Abbreviations and acronyms

ABS	Australian Bureau of Statistics
AH	Allied health
AHPRA	Australian Health Practitioner Regulation Agency
AHWQ2	Allied Health Workforce Questionnaire – 2
AIMS	Australian Institute of Medical Scientists
APACE	Australasian Professional Acknowledgement of Continuing Education
CPD	Continuing professional development
DET	Department of Education and Training
EBA	Enterprise bargaining agreement
EFT	Equivalent full time
MLS	Medical Laboratory Scientist
NATA	National Association of Testing Authorities
NFP	Not for profit
NPACC	National Pathology Accreditation Advisory Council
VPSC	Victoria Public Service Commission

# Executive summary

## Overview

This report provides an overview of the medical laboratory science workforce in Victoria in 2017. It is based on survey responses from 523 individual medical laboratory scientists (approximately 50% of estimated number of medical laboratory scientists in Victoria<sup>1</sup>), three focus groups involving 13 participants, and surveys from 160 employers and managers of organisations that provide pathology services in Victoria.

Membership by medical laboratory scientists in any state or national professional organisation is voluntary; therefore it is very difficult to obtain accurate comparative statistics on the number, gender and geographical distribution of the workforce in Victoria. The peak professional body for medical laboratory scientists is the Australian Institute of Medical Scientists (AIMS); however they acknowledge that their Victorian membership is not comprehensive and only 45% of survey respondents were members.

To determine the representativeness of these findings, comparison with the 2017 AIMS Victoria membership database and the 2010 Urbis survey (a national voluntary survey of the pathology workforce) findings were undertaken, however neither of these provide comprehensive data. When contrasted with these datasets, the respondents were slightly older and there were more females.

## Key findings

Medical lab science	AHWQ2 survey	AIMS, 2017 <sup>a</sup>	Urbis, 2010 <sup>b</sup>
Victorian population	523	353	629
Female	73%	67%	67%
Aboriginal and / or Torres Strait Islander	0%		<1%
Age 35 years and under	26%	26%	20% <sup>c</sup>
55 years and older	28%	22%	32% <sup>c</sup>
Median age (years)	48		
Median income	\$60,000 to \$69,999		
Public sector	66%		
Not for profit sector	3%		
Private sector	27%		
Principal areas of practice	Haematology -15% Transfusion science – 13% Microbiology -11% Anatomical pathology – 10% Clinical biochemistry – 10% Multi-disciplinary core lab – 11%	-	
Reporting advanced practice role	54%	-	
Work with allied health assistants	N/A	-	
Reported use of telehealth	N/A		
First qualification to practise	MLS Bachelor degree – 64%		
Hold PhD	6%	-	
Intention to stay in profession for more than five years	60%	-	
Work for two or more employers	6%		
Of those with a clinical supervisor, medical lab scientist as supervisor	57%	-	
% of workforce in rural areas	2%		

<sup>a</sup> Source: AIMS membership data, 2017

<sup>b</sup> Source: Urbis, 2011

<sup>1</sup> See *Responses and respondents* for information as to how this estimate was determined.

The medical laboratory science workforce in Victoria is older and female-dominated. Respondents predominately worked in either the public sector (66%) (State, Commonwealth and jointly funded) or with large multi-sited private laboratories (24%); a small number worked for small specialised laboratories and not-for-profit laboratories. The majority were employed in hospital-based laboratories (81%). The majority of respondents (72%) worked in one of the five core areas of laboratory science: haematology, transfusion science, microbiology, anatomical pathology and clinical biochemistry, or in a multidisciplinary core laboratory. Advanced roles were carried out by 54% with the most common roles being in blood banking, identifying new developments, the clinical scientist role and molecular genetics interpretation. The majority of respondents were permanent employees, worked for one employer and in a laboratory that provided 24 hour/ seven day a week services. Formal multi-disciplinary team structures were common and very few respondents were sole practitioners.

Participants in this research reported a low level of job satisfaction with only slightly more than half reporting somewhat or extremely satisfied. Higher levels of dissatisfaction were reported by employees of private large multi-sited pathology laboratories than by those in the public sector. Career advancement opportunities, opportunities to do research, income and work / life balance were all factors in this dissatisfaction. Almost 2/3 of respondents (64%) indicated they intended to stay in the profession for less than 10 years. These figures were also disproportionately higher for private sector employees.

Key areas of concern were under staffing, lack of jobs for new graduates and low morale. These have been longstanding concerns having been identified more than 15 years ago. While there has been a steady increase in new graduates, there are few and potentially reducing numbers of jobs available to these graduates, as well as for intermediate and more senior professionals. Advancements in technology have changed the way many medical laboratory scientists roles function, but understanding from those outside of the profession of the limitations of this technology is a concerning problem for the profession.

The main issues facing the profession included a high level of dissatisfaction with income level, career development opportunities, job prospects and career pathways; the need for some form of registration, certification or accreditation to ensure appropriate levels of education and quality are maintained in the workforce, particularly with an increasingly privatised world where saving money appeared to be the main objective; and the impending 'brain drain' that is likely to occur with the retirement of many senior scientists and few people coming up through the ranks to replace them. When these issues are matched to the concerns that new graduates are having difficulty getting jobs, it provides for a somewhat dismal view of the future of the profession.

Concerns that senior scientists were spending an increasing amount of time on administrative tasks that could be done by others at less cost, and not being able to support, educate and mentor younger scientists added to both the dissatisfaction and concerns relating to the future of the profession.

The medical laboratory scientists contributing to this research demonstrated a strong commitment to trying to ensure the highest quality services are maintained across the profession and to the public. However, their concerns that medical laboratory science is becoming a dying profession and may be unable to provide quality services to the patients of the future need greater exploration and action.

It was acknowledged by many sources that 70 or more per cent of medical diagnoses now rely on the results of laboratory testing. The concerns raised by participants in this research confirm that the research findings of 10 to 15 years ago, which identified an impending crisis in the medical laboratory science workforce, are still relevant and need considerable attention before further demise and deterioration occurs.



## Conclusions

Key areas of consideration for the medical laboratory science workforce going forward include:

- Review the impacts of privatisation on the medical laboratory science workforce with particular emphasis on the effect on quality of service, standards and available depth of skills.
- Review the increased creation of technologist versus scientist positions, and the need to ensure there are knowledgeable, experienced scientists in the workforce for quality service provision and to support, mentor and educate new young scientists.
- Provide more opportunities for career development and a clear career progression pathway, taking into consideration the need for secure employment.
- Review the staffing levels in laboratories and the concerns associated with lack of jobs for new graduates
- Review the supply and demand for the profession in light of the technological changes that are occurring. Producing an increasing number of new graduates who are unable to find employment is problematic for the graduates and the future of the profession.
- Encourage the development of a stronger voice for the profession to improve the professional recognition and understanding of the medical scientist role.
- Consider of the need for some form of registration or certification to protect both the profession and the public, particularly with the diverse educational pathways to employment
- Explore with the profession, additional ways to address the 'impending brain drain', concerns that the profession is 'dying', and low morale given the increasing importance that is being placed on the pathology testing within medical diagnoses.

# Introduction

The Victorian Allied Health Workforce Research Program (the program) aims to contribute to the evidence base of 26<sup>2</sup> selected Victorian allied health (AH) professions in the public, private and not-for-profit (NFP) sectors in Victoria. The data will be used to inform the policies and programs of the Department of Health and Human Services, provide a platform of evidence on which to build further understanding and development of the AH workforce, as well as guide any improvements to the associated education and training system.

This report presents the data arising from research on the medical laboratory science workforce in Victoria.

**Please note:** Terminology used in this report reflects that used in the survey process by Southern Cross University, rather than standard Department of Health and Human Services terminology.

The 11 profession specific reports which form the meso and micro levels of this research (as described in the methods section) are based on similar but not identical surveys varied to meet the individual requirements of each investigated profession. Comparative data reflecting the Victorian state context is included wherever possible. While significant effort has been made to make each of these reports as consistent as possible in its presentation of material, differences in available comparative data and other profession specific differences have resulted in some variations in the material included and its presentation.

Throughout these reports the terms *grade* (e.g. 1, 2, 3 etc.) or *level* (junior, intermediate, senior) are used in both the text and quotes from research participants. The term grade refers to the different employment classifications used in the enterprise bargaining agreements (EBA) that individuals may be employed under. These EBAs (awards) generally cover the public sector employees and larger private sector organisations. These grades determine pay rates and benefits, and in some cases job responsibilities and job titles. The exact description and meaning of each grade will vary with the different awards. For individuals who were not employed under these awards (e.g. private business owners, contractors etc.) the term level was used to try and equate their job responsibilities and pay to those employed under the formal EBA structure. These terms were also used to determine the breakdown and specific issues relating to junior, intermediate and more senior members of the specific professions in Victoria.

---

<sup>2</sup> In the earlier reports from this project (2016 and 2017), the Department of Health and Human Services (Victoria) recognised 27 allied health professions in Victoria. In 2017 the Department of Health and Human Services combined the two aspects of medical physics (diagnostic imaging and radiation oncology) into one profession – medical physics, resulting in 26 allied health professions being recognised in the State.

# Background

## Who are medical laboratory scientists?

A medical laboratory scientist (also referred to as a clinical laboratory scientist or medical scientist) is a healthcare professional who performs chemical, haematological, immunologic, microscopic, and bacteriological diagnostic analyses on body fluids and specimens.

In Australia, medical laboratory scientists work in clinical laboratories located in hospitals, community-based settings including physician offices and large privately run organisations, reference laboratories, biotechnology laboratories, and non-clinical industrial laboratories. These laboratories must be registered with the *National Association of Testing Authorities* (NATA) which is the independent accreditation body for laboratories, inspection bodies, calibration services, producers of certified reference materials and proficiency testing scheme providers in Australia. At the time of the data collection for this research there were 50 NATA registered medical testing laboratories in Victoria covering the following areas:

- Anatomical pathology
- Assisted reproduction procedures
- Autopsy facilities and services
- Bacteriology
- Biochemical genetics
- Blood transfusion services
- Chemical pathology
- Cytogenetics and cytopathology
- Examination by electron microscope
- General chemistry
- Genetic testing
- Haematology
- Immunology
- Medical practice pathology
- Medical-legal drug testing
- Microbiology
- Newborn screening
- Parasitology
- Screening tests
- Serology
- Virology

Qualification as a medical laboratory scientist requires a three or four year undergraduate degree in medical laboratory science or laboratory medicine, or a graduate entry two year full time masters degree in laboratory medicine. In the final year of these programs, most students specialise in one or more medical science disciplines. Currently only one university in Victoria, RMIT University, offers this program.

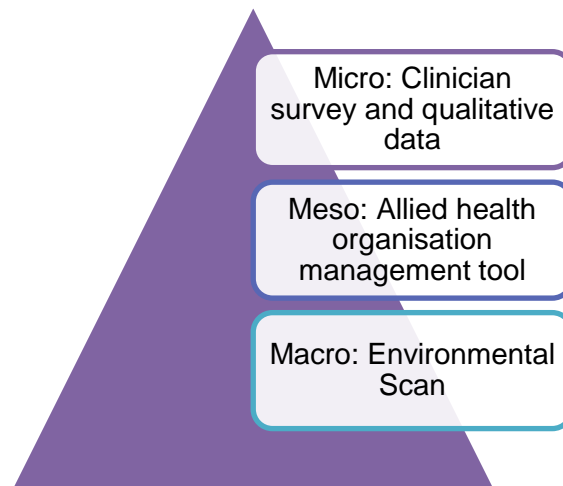
The *Australian Institute of Medical Scientists* (AIMS) accredits medical laboratory scientist university programs and currently 13 programs across Australian and New Zealand are accredited. Graduates of AIMS accredited degree programs can be admitted to AIMS as a *Graduate* member and after two years of professional medical laboratory science experience are eligible to be full *Members of AIMS* (MAIMS). Individuals who have other science, biomedical science, biomedicine and biotechnology degrees can, after two years of professional medical laboratory science experience, undertake examinations to become full members of AIMS.

Medical laboratory science is not a registrable profession under the *National Registration and Accreditation Scheme / Australian Health Practitioner Regulation Agency* (AHPRA). Medical laboratory science is effectively an unregistered profession. AIMS is the peak professional body for medical laboratory scientists in Australia, it is not a member of the *National Alliance of Self Regulating Health Professions*, and membership with AIMS is voluntary.

# Method

A three-tiered approach was used to capture workforce data at macro, meso and micro levels (Figure 1).

**Figure 1: Three-tiered research approach**



## Macro

### Environmental scan

The environmental scan examined 26 AH professions in Victoria during the first six months of the research program. The process involved engagement with each of the professional associations regarding workforce trends and issues alongside an analysis of a range of existing data sources. A 'snapshot' was generated for each profession which included key workforce statistics, workforce trends and issues presently affecting the profession, and those likely to affect the profession in the future. An environmental scan has been produced as a stand-alone document for each profession. Relevant findings from the medical laboratory science environmental scan have been incorporated into this report.

### Meso and micro level data

Subsequent to the environmental scan, four professions (physiotherapy, sonography, speech pathology and allied health assistance) were analysed in-depth in 2015 – 16, and a further three professions (occupational therapy, social work and psychology) were analysed during 2016 – 17. In the final phase of this project (2017) an additional four professions were included in the in-depth analysis (audiology, dietetics, exercise physiology and medical laboratory science). This analysis included organisational and individual level approaches as described below. These professions were selected by the Department of Health and Human Services for further study because they were either high priority professions or they were unregistered professions with limited existing data available. The in-depth analysis involved the use of a standardised survey and focus groups with both standardised and profession specific questions.

In year one of the research program, three separate Qualtrics surveys were used to access data at an individual (Allied Health Workforce Questionnaire), team (Allied Health Organisation Mapping Tool) and organisation level (Allied Health Human Resources Tool). For years two and three of the program, the questions from the three surveys were combined into a single tool (Allied Health Workforce Questionnaire 2 (AHWQ2)), and internal survey logic was used to direct respondents to the appropriate questions according to their role/s or perspective within an organisation.

The AHWQ2 collected the following information:

At the organisational level, team leaders, managers or directors of human resources were asked to provide information about the geographic location, numbers and grades of staff, skill set, recruitment and retention issues, and organisational contexts of the profession. It was completed at a regional or organisational level, typically by a team leader or human resources department, to provide detailed information about the workforce structure and organisation.

Individual clinician data captured information about education and training, the nature of work, location of work, job satisfaction and career development opportunities, as well as open ended questions exploring issues that the profession specifically identified as being important.

Participants who completed the AHWQ2 were invited to provide their contact details for future follow-up.

## Focus groups

Survey respondents who agreed to be followed-up via email were invited to participate in one of four focus groups. One group was specifically for early career professionals, while the remainder were heterogeneous, but designed to include a mixture of participants according to rurality and public, private and NFP sectors. The focus groups explored issues that were highlighted in the survey responses. The questions were developed in consultation with the reference groups and Department of Health and Human Services. Each focus group was held via teleconference using Zoom and was approximately 90 minutes. The focus groups were recorded and detailed contemporaneous notes were taken and used as the basis for analysis. Where necessary the recordings were accessed for clarity or confirmation.

## Research governance

The research was overseen by an overarching research advisory group comprising experts from many health disciplines and sectors. In addition, each of the four professions had a discipline specific reference group comprising members of the profession who represented specific sectors or subgroups (such as new graduates, public, private and NFP sectors, and academics). The advisory group and the reference groups were consulted about the research approach, survey distribution methods and engagement strategies, as well as providing substantial input into the survey content and piloting. The discipline specific reference groups also advised on the content of the focus group questions, aided the interpretation and verification of the final reports, and provided feedback on the penultimate drafts of the discipline specific reports.

## Distribution approaches

Surveys were initially distributed through the reference groups, the professional associations and Department of Health and Human Services contact lists. In addition, a communications database was developed comprising employers, professional networks and associations, individual professionals and relevant contacts for each profession. This database has continued to be developed throughout the research program.

At the launch of the survey, the research project team distributed over 2,000 emails to employers of medical laboratory scientists. These emails provided information about the research program and a link to the survey. The following organisations received emails:

- Public hospitals (94) and private hospitals (61), as listed by the Victorian Government
- Relevant National Disability Insurance Scheme providers in Victoria (357), as listed on the National Disability Insurance Agency website
- Community services (138) as listed by the Victorian Government
- Aboriginal Community Controlled Health Organisations (23)
- Relevant Comcare providers (35), as listed at <https://www.comcare.gov.au/>
- Victorian City and Shire Councils (79)
- Rural Workforce Agency of Victoria

- Services for Australian Rural and Remote Allied Health
- Indigenous Allied Health Australia
- Victorian Primary Health Networks (5)
- Victorian Primary Health Network Alliance

In addition, emails containing the survey link and information about the survey were sent to professional groups associated with medical laboratory science including AIMS, 12 specialty specific professional associations and societies, all NATA service providers that were prepared to provide an email address, the Medical Scientist Association of Victoria, and Victorian universities that offered medical laboratory science courses.

A reminder email was sent to all relevant organisations two weeks prior to the close of the survey.

Although the intention was to send a third and final email to all organisations in the final days of the survey, the strategy was changed to specifically focus on use of social media and direct communication to members through professional associations. This change was made due to feedback that stakeholders were frustrated by the repeated communication in the context of high expectations to contribute to a range of research that also involved survey completion.

Other methods of distribution and marketing included Department of Health and Human Services newsletters, marketing on social media (e.g. Facebook and Twitter), a presentation at the Victorian Allied Health Research Conference, regional conference presentations, and presentations to individual professions.

The survey was circulated between 7 September 2017 and 30 October 2017.

During the time the survey was open the program's Facebook page made 160 posts, had 292 new followers, received 50 comments, 121 shares, 411 clicks on the link and 12 inbound messages. The Twitter account made 108 tweets, had 20 followers, and made 40 points of engagement.

## Analyses

The Qualtrics survey tool generates descriptive statistics (frequencies, means, standard deviations, etc.) for all appropriate questions which are downloadable in Microsoft Word and Microsoft Excel formats. Further analyses were undertaken using cross tabulations of specific questions results, and comparisons with other available data from the Australian Bureau of Statistics (ABS) Census, Department of Health and Human Services, and profession specific associations and reports.

## Data limitations

- The challenge of distributing and marketing a survey commissioned by a single government department to distributed health services, non-government services and private providers means that the data may not be representative of the profession.
- It was difficult to engage with the NFP and private medical laboratory science providers. As a result, it is not possible to determine the representativeness of the data for these groups.
- The focus group participants were invited from the AHWQ2 respondents who agreed to be followed-up. This may have resulted in selection bias as only 24% of all survey respondents agreed to further follow-up.
-

# Results

The source of data in the tables and figures going forward is the AHWQ2 survey data unless otherwise stated.

## Responses and respondents

Respondent numbers for each of the different data collection methods are presented in Table 1 below.

**Table 1: Responses and respondents**

<b>AHWQ2 (individual respondents)</b>	<b>AHWQ2 (organisational respondents)</b>	<b>Focus groups</b>
523	160	Group 1 – 4 participants Group 2 – 0 participants (early career) Group 3 – 4 participants Group 4 – 5 participants

### Allied health workforce questionnaire 2

The AHWQ2 survey was completed at both the organisational and individual practitioner level. The respondents to the organisational / managerial level questions were presented with 12 questions, plus four questions that were conditional on answers to previous questions; the individual clinicians were presented with 66 questions plus seven questions that were conditional on the answers from previous questions. Completion of the survey was voluntary and respondents, both organisational and individual, had the opportunity to choose if they wished to answer a question or not. Some questions allowed for multiple answers. As a result, the number of responses for each question varied and is included in the presentation of the data for each question.

Membership by medical laboratory scientists in any state or national professional organisation is voluntary; therefore it is very difficult to obtain accurate statistics of the number of medical laboratory scientists in Victoria. Data relating to numbers of medical laboratory scientists were obtained from a number of different organisations and data collections and are shown in Table 2.

- The Victorian membership of AIMS at the time of this study was 353. This figure is acknowledged by AIMS to not include all medical laboratory scientists working in Victoria and only 45% (177/390) of survey recipients who answered this question identified as belonging to AIMS.
- A national voluntary survey of the pathology workforce was undertaken in 2010 (Urbis, 2011) which estimated Victoria to have 629 scientists and senior scientists.
- Data supplied by the Victorian state-wide pathology workforce working group (2017)<sup>3</sup> identified 653 equivalent fulltime positions (EFT) for scientists and senior scientists.
- The 2016 ABS Census identified 5,157 medical laboratory scientists in Victoria; however this number is based on self-identification of occupation and then allocation to ABS occupational groups. This occupational group is not defined in the same manner as is used by the medical

<sup>3</sup> This data includes only the following institutions: Alfred (including Sandringham), Austin, Eastern Health, Goulburn Valley Health, Melbourne Health (including clinical trials lab), Monash Health, Peter MacCallum Cancer Centre, Royal Children's and Women's, and St Vincent's Health and Wellness Centre.



laboratory science profession and the figure is acknowledged to be too high, and not an accurate representation of the actual number of medical laboratory scientists.

- The Victoria Public Service Commission (VPSC) public health services workforce data identified 8,196 employees in the payroll classification 'Medical Support Services'. This category includes medical laboratory scientists, but it also includes many other types of employees. As a result this is also not an accurate representation of the medical laboratory scientist workforce.

As a result of the large discrepancies in these numbers, and that it is unknown how many of these figures include private sector employed medical laboratory scientists, it was recommended by the medical laboratory science advisory group to use the figure of 1,000 medical laboratory scientists as a reasonable estimate of the current total workforce in Victoria. The only comparative data sets that are confirmed to be exclusively medical laboratory scientists are the AIMS data (2017), Urbis survey (2011) and the State-wide pathology workforce working group (2017). Both the AIMS data (2017) and the Urbis survey (2011) provide some breakdown of the demographic information; this data will be used as the comparison as appropriate.

A total of 523 medical laboratory scientists completed at least one question on the AHWQ2 survey and submitted their survey. This represented 52% of the estimated number of individuals working in Victoria in 2017. The survey was completed<sup>4</sup> by 264 individual medical laboratory scientists. The range of responses to an individual question was from 17 to 745<sup>5</sup>. Responses from all persons who answered an individual question have been included, irrespective of whether they completed the entire survey or not (Figure 2).

A total of 160 employers or managers of medical laboratory scientists completed the AHWQ2. All but two of these employers / managers were also qualified medical laboratory scientists. The organisations they represented employed a range of one to 140 FTE medical laboratory scientists. The vast majority of these people were team leaders of a single or multiple teams, and four per cent (4%) were CEOs or human resources representatives of a large organisation.

**Table 2: AHWQ2 respondents compared to other data sources**

Demographics	AHWQ2		AIMS Victoria Members (2017)		State-wide Laboratory Working Group (2017)		VPSC (2016)		Urbis Survey (Victoria) (2011)		ABS Census (Victoria) (2016)	
	n	%	n	%	n	%	n	%	n	%	n	%
Total	523		353		653		8196		629		5157	
Female	286 <sup>a</sup>	73		67				71		67		71
Aboriginal and / or Torres Strait Islander	0	0	-	-			-	-		<1	-	-
Australian citizen / permanent resident	385	98	-	-			-	-		99	-	-
Age 55 and over	109	28	-	22				17		32 <sup>c</sup>		14

<sup>4</sup> A survey was considered complete if the respondent answered the last survey question and submitted the survey, even if they did not provide answers to every survey question.

<sup>5</sup> Some questions allowed for multiple responses



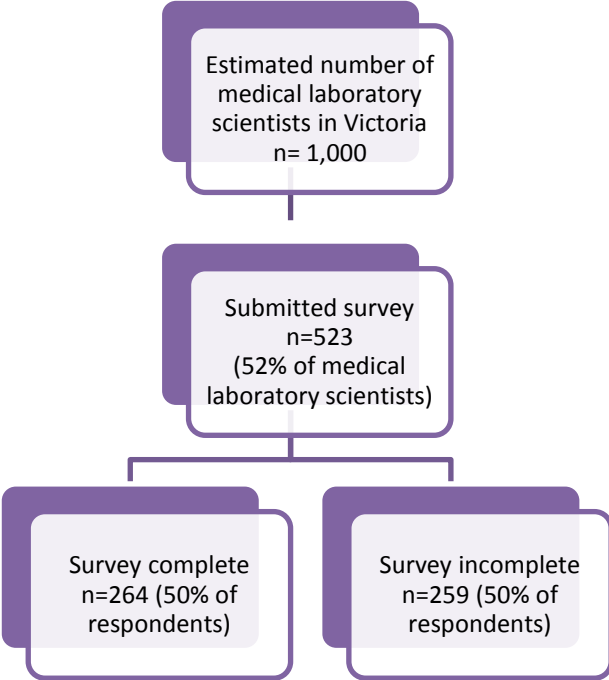
Age 35 and under	101	26	-	26				37		20 <sup>c</sup>		39
Median age (years)	48	-	-	-			42 <sup>b</sup>	-			-	41 <sup>b</sup>

<sup>a</sup> based on the number of respondents to the demographics section of the survey

<sup>b</sup> VPSC and ABS census report average age rather than median age

<sup>c</sup> Urbis survey reports >50 years and < 30 years; no 'n' is provided, only %

Figure 2: Survey responses



# Capacity

Capacity refers to the ability of the profession to meet the needs of the community in terms of workforce numbers and allocation of staff, skill mix, ratios, geographic distribution, organisation of the workforce, and their ability to influence these factors at a political, professional and organisational level (Figure 3).

**Figure 3: Workforce capacity framework**



## Key findings

- Twenty six per cent (26%) of respondents were 35 years and under, with the age range being from 22 to >75 years.
- The majority of respondents (71%) were from metropolitan regions, with 12% from regional, rural and remote regions of Victoria, and 17% from outside the state of Victoria.
- Approximately 2/3 of respondents were employed in the public sector (66%) with 26% working in the private sector. The majority were in permanent employment (88%), and worked Monday to Friday during the day (55%).
- Forty one per cent (41%) of respondents were employed at a junior grade or level, with 40% at the intermediate level, and 19% at the senior level.
- The most prevalent service delivery setting was a hospital-based laboratory (81%), with small numbers of respondents working in community-based settings, universities, research institutes or other settings.
- The majority of respondents (72%) had their principle area of practice in one of the five core areas of laboratory science: haematology, transfusion science, microbiology, anatomical pathology and clinical biochemistry, or in a multidisciplinary core laboratory.
- Slightly more than half (54%) of respondents reported an advanced practice role. The most common advanced roles were blood banking, and identifying and responding to new developments (both 17%); the clinical scientist role, and molecular genetics interpretation and reporting (both 11%); flow cytometry interpretation and reporting, and anatomical pathology - simple and complex surgical cutup (both 9%).
- Across their careers, the setting of service showed a trend towards metropolitan areas and hospital-based laboratories.
- Slightly more than half of respondents (60%) intend to stay in medical laboratory science for six (6) years or more. Of those intending to leave in the next 12 months, 40% had no intention to return to the profession. The most common reason given for this was conflict with manager, other employees or the workplace culture.
- Two thirds of organisations reported not having any unfilled positions, however for those with unfilled positions lack of funding for a previously funded position was the main reason (73%).
- Of the organisations that advertised junior positions, 61% reported receiving more than 50 applications for these positions. Intermediate level positions had fewer applicants and were predominantly filled within 10 weeks. Senior positions had notably fewer applicants and took longer to fill, in some cases more than 52 weeks.
- Understaffing of laboratories and lack of jobs were identified as main issues facing the profession. Demand for services was reported to be high with frequent reports of increased overtime, high levels of stress, fatigue and burn out. There was significant recognition, by both managers and professionals, that new graduates and more experienced practitioners were not able to find jobs and if they did find jobs they were often at the technician level.

## Workforce distribution

### Demographics

Based on the best estimates from the medical laboratory science advisory group it is expected that there are approximately 1,000 medical laboratory scientists currently working in Victoria.

Of the total cohort of 523 AHWQ2 respondents, 83% (n=402) were employed as a medical laboratory scientist in Victoria at the time of completing the survey. Of the 17% (n=68) who were currently not working as a medical laboratory scientist, 12% (n=47) had worked in this role in the past and 5% (n=21) were qualified as a medical laboratory scientist but had never worked in a role that required this qualification.

To clarify whether the medical laboratory scientist respondents to the AHWQ2 were employed as a scientist versus a laboratory technician or assistant they were asked a specific question addressing this issue. Three per cent (3%, n=12/406) of respondents to this question were resident in Victoria and did work requiring the qualifications of a scientist but were currently employed as either a medical laboratory technician or medical laboratory assistant. The majority of these respondents indicated that there was either no job available in their local area or no jobs that they felt qualified to do. (See Appendix Table 1 for reasons why respondents were not working as a medical laboratory scientist).

As detailed in Table 2, almost three quarters of the medical laboratory scientist respondents were female (73%, n=286). This proportion is slightly higher than the current AIMS membership for Victoria (2017) and findings of the Urbis survey (2011), both of which reported 67%.

One quarter (26%, n=101) of the AHWQ2 respondents were age 35 years and under. This is the same per cent as the current AIMS membership. If compared to the data from the Urbis survey which reports less than 30 years, 14% of AHWQ2 respondents were less than 30 years versus 20% of Urbis survey respondents (Urbis, 2011). Individuals age 55 years and over constituted 28% (n=109) of respondents versus 22% of the AIMS membership. The Urbis survey reported 32% being over 50 years (Urbis 2011) compared to 40% of the AHWQ2 respondents. Overall, the AHWQ2 respondents reflect a population of the medical laboratory scientists who were slightly older than the comparative groups.

The mean age of AHWQ2 respondents was 45 years (range 22 – > 75 years) and the median age was 48 years (Table 3 and Figure 4).

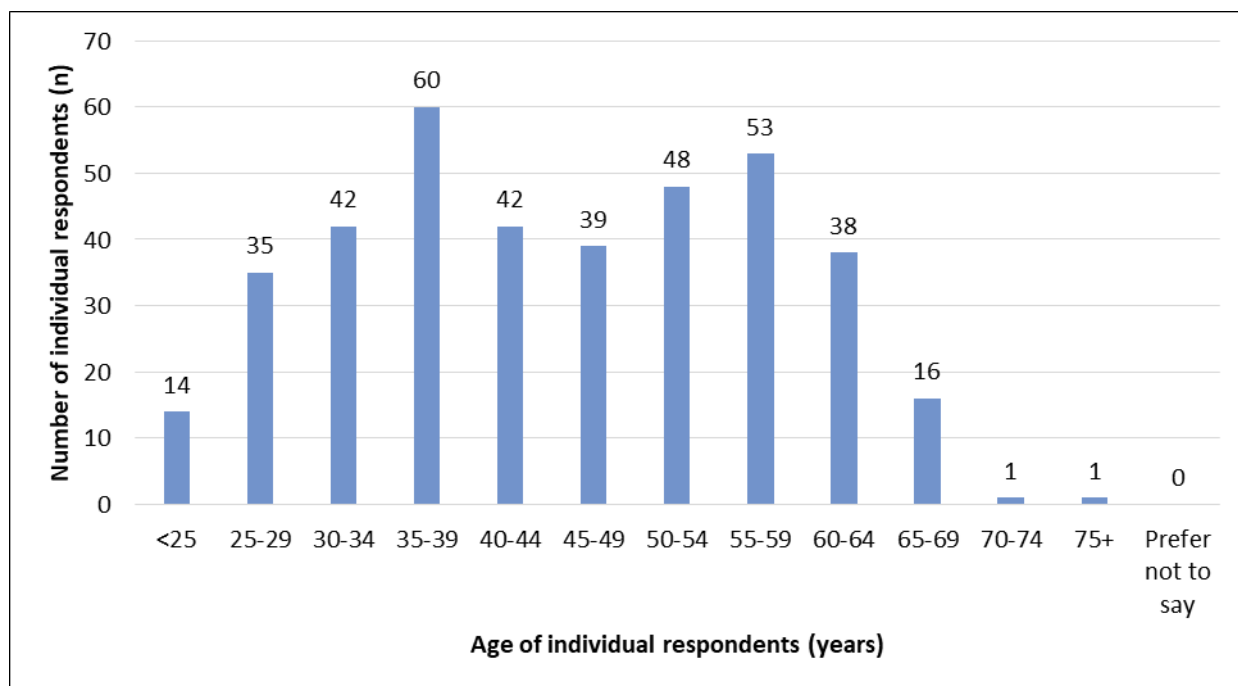
**Table 3: AHWQ2 respondent demographics (n=393) compared with AIMS membership (2017) and Urbis survey (2011)**

Demographics	AHWQ2		AIMS 2017		Urbis 2011 <sup>a</sup>	
	n	%	n	%	n	%
Female	286	73	239	67	-	67
Aboriginal and / or Torres Strait Islander	0	0			-	<1
Australian citizen / permanent resident	385	98			-	99
Age 55 and over	109	28	77	22	-	32 <sup>b</sup>
Age 35 and under	101	26	91	26	-	20 <sup>b</sup>
Median age (years)	48				-	

<sup>a</sup> Urbis survey reported % only, no 'n' provided

<sup>b</sup> Urbis survey reported age by age 50 and over, and < age 30,

**Figure 4: Age in 2017 (n=389)**



### Geography

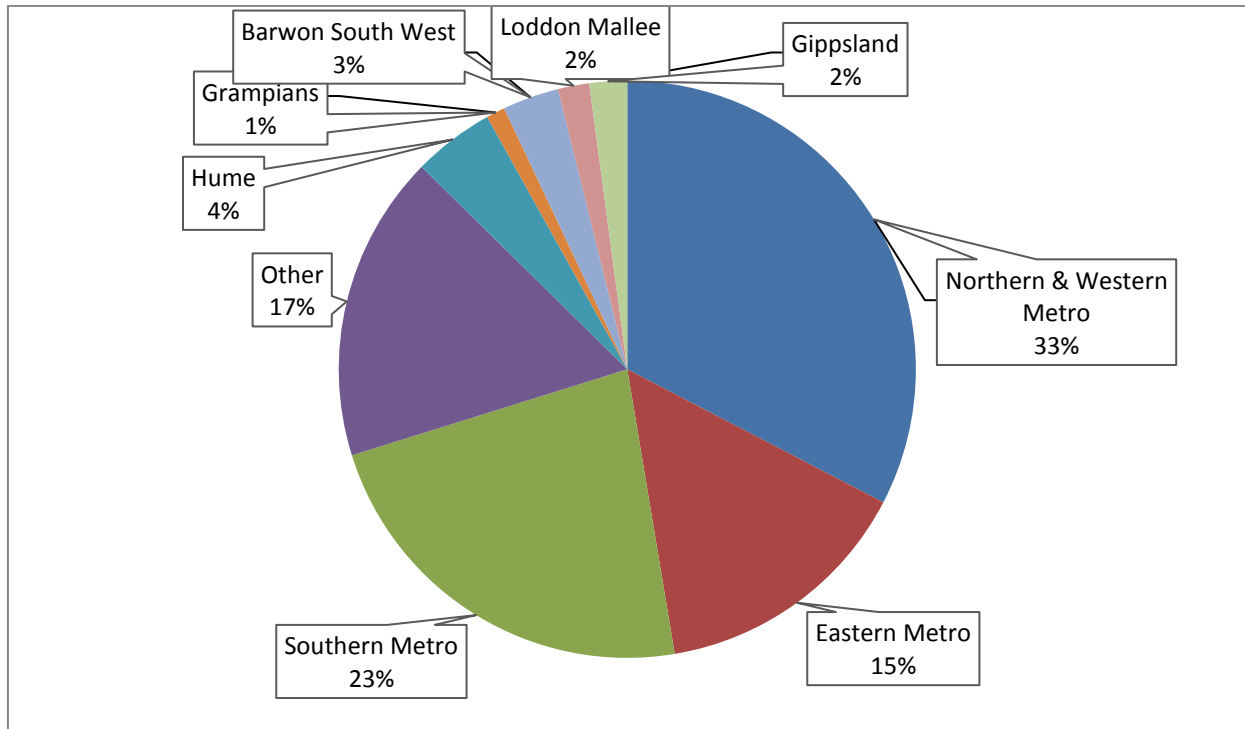
The majority of medical laboratory scientist AHWQ2 respondents were from metropolitan areas (75%, n=195), including 60% (n=157) who described their main region of work as inner-metro and 15% (n=38) as outer-metro. This is not surprising as the majority of the NATA registered medical laboratories are located in the inner metro area, with the next largest group being in larger regional centres in the state. There was no similar data available from any of the other data sources to use as a comparison in this area (Table 4).

**Table 4: Region of work (n=261)**

AHWQ2		
Region	%	Count
Inner-metro	60	157
Outer-metro	15	38
Inner-regional	20	52
Outer-regional	3	7
Rural	2	6
Remote	<1	1
<b>Total</b>	<b>100</b>	<b>261</b>

The AHWQ2 survey results show 1/3 of respondents worked in the Northern & Western Metropolitan region, 23% in the Southern Metropolitan region and 15% in the Eastern Metropolitan region. Only 12% reported working in all the other regions of the state; however, responses were received from medical laboratory scientists working in each Department of Health and Human Services region. Seventeen per cent (17%) reported working outside of the state of Victoria (Figure 5).

**Figure 5: Main place of work by Department of Health and Human Services' region (n=285)**

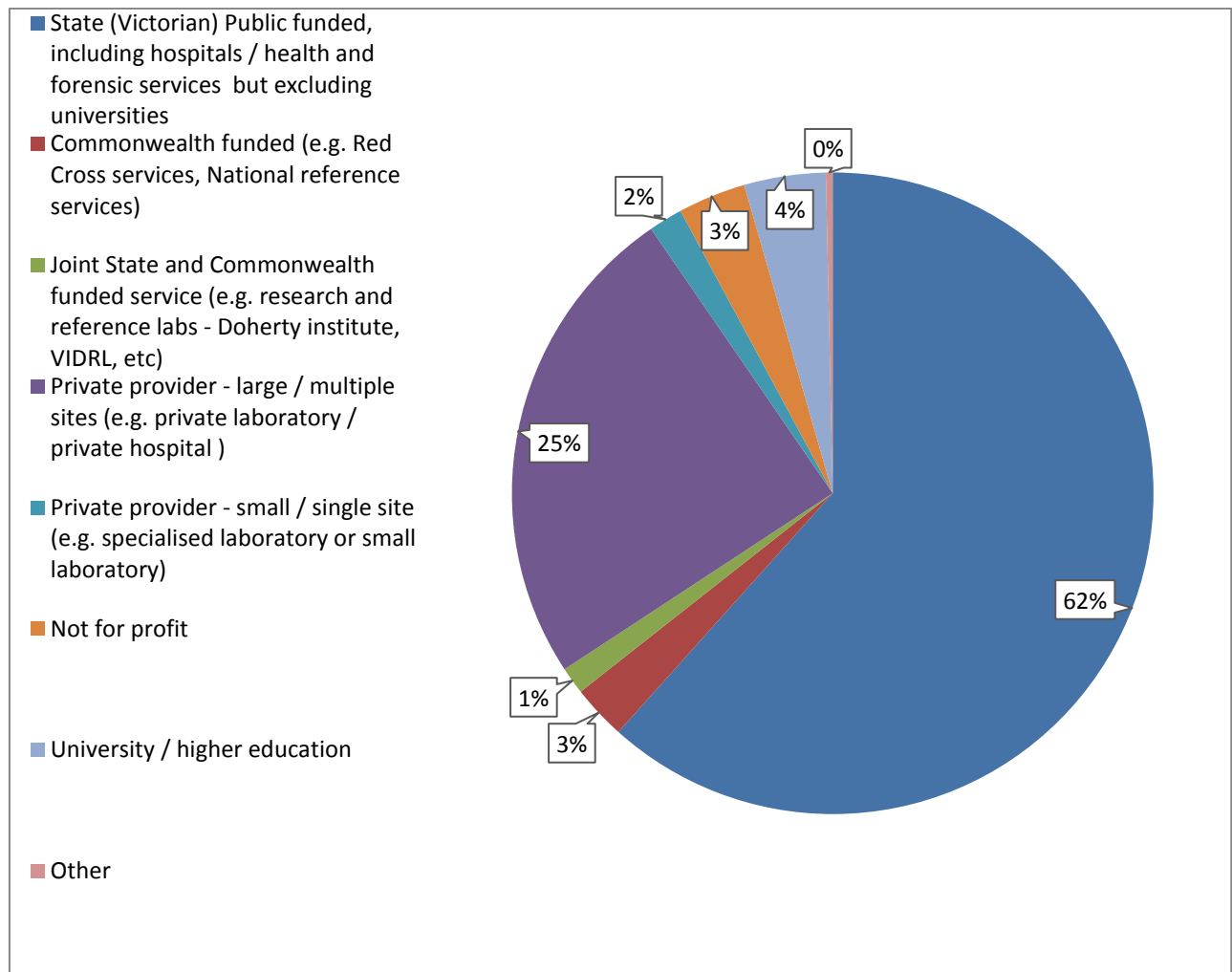


### Sector

A total of 66% of AHWQ2 medical laboratory scientist respondents reported working in the public sector, including 62% (n=180) in the Victorian public sector and 3% (n=8) in the Commonwealth public sector and 1% (n=4) in the jointly funded Victoria / Commonwealth sector. The private sector accounted for 26% (n=79) of respondents of which the majority (n=72) worked for large, multi-sited private laboratories and 2% (n = 5) worked for small, single-sited specialised laboratories. The next largest sector was the university / higher education (n=12) and then NFP laboratories (n=10). One individual indicated they worked in a differently funded sector (Figure 6). While no one reported being funded by a research institution, three of the 12 university funded respondents reported working at a research facility (Figure 7).

Given that there is no comparative data available it is difficult to determine whether this sample is an over-representation of the public sector. It has been acknowledged that there has been a recent move to increased participation by large multi-sited private pathology companies in Victoria, particularly in hospital-based laboratories, however there is no data available that identifies how many scientists and senior scientists are actually working in the private sector.

**Figure 6: Employment sector of current main employer (n=292)**

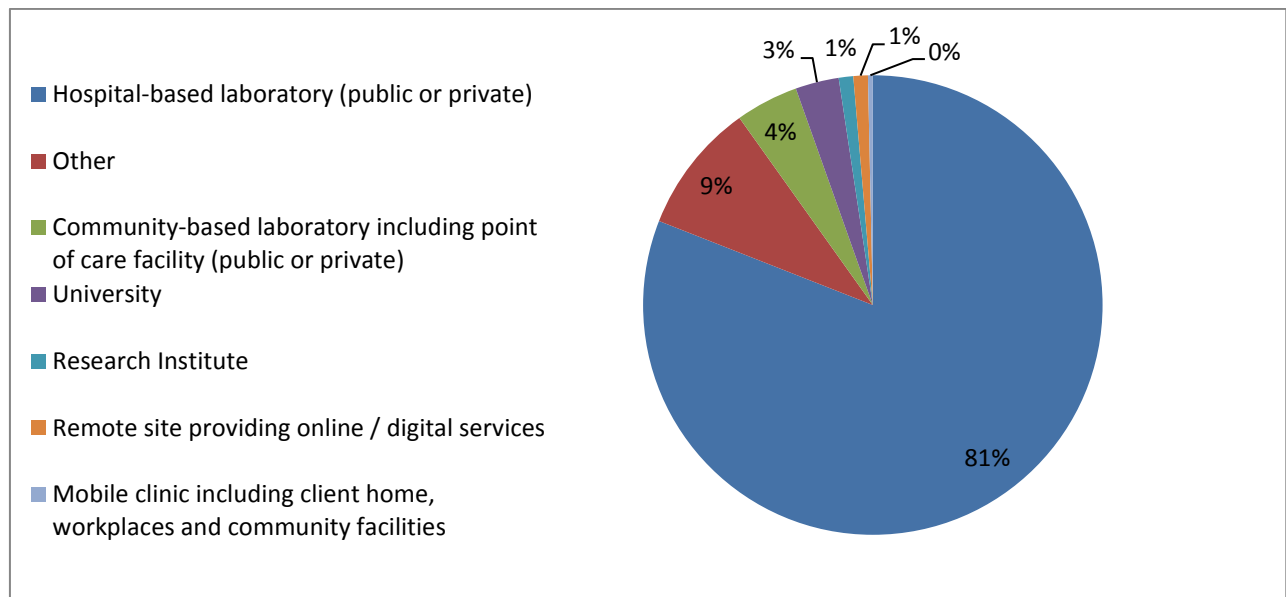


**Settings**

The majority of respondents (81%, n=238) reported working in a hospital-based laboratory, in either a public or private facility. The next most prevalent work settings were other (9%, n=27), community-based laboratory or point of care testing facility (public or private) (4%, n = 13), university setting (3%, n = 9), research institute (1%, n = 3) and remote site providing online or digital services (1%, n = 3). One individual worked in a mobile clinic (Figure 7).



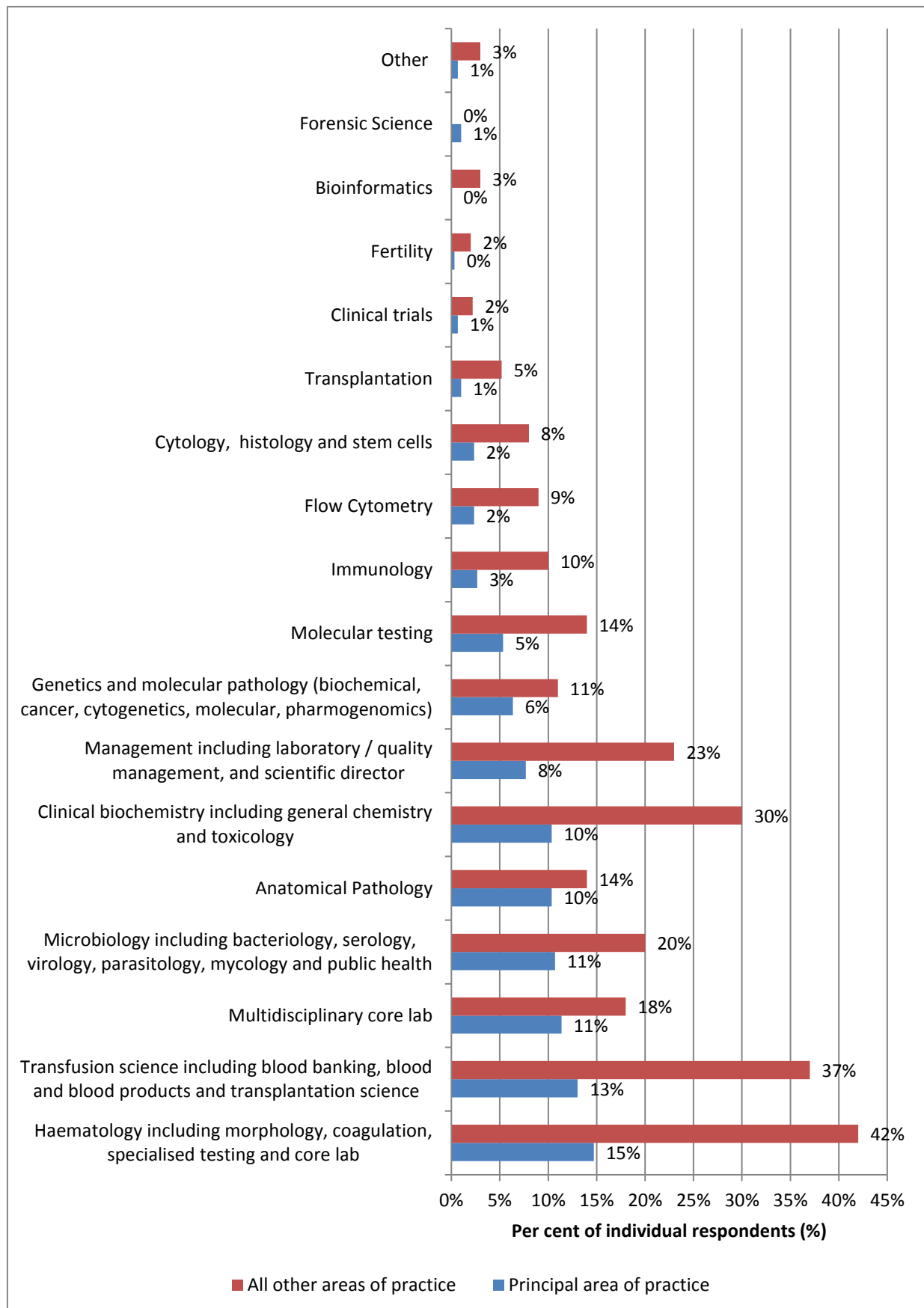
**Figure 7: Setting for service delivery of current main employer (n=294)**



### Area of practice

The areas of practice reported by medical laboratory scientists in the AHWQ2 covered almost all the areas identified in the NATA medical testing categories. The majority of respondents (72%) had their principle area of practice in one of the five core areas of laboratory science: haematology, transfusion science, microbiology, anatomical pathology and clinical biochemistry, or in a multidisciplinary core laboratory. Management was the next largest area (8%); the remaining 20% of respondents worked across a range of more specialised areas of laboratory science (Figure 8 and Appendix Table 2).

**Figure 8: Areas of practice (n=299) <sup>a</sup>**



<sup>a</sup> Respondents could select more than one response to signify 'all other areas of practice'

## Funding sources

Questions relating to the source of funding for pathology services were not included in the medical laboratory science survey as it was felt that individual scientists would not know whether the funding for the individual tests or studies that they were conducting came from Medicare or a private source.

## Demand

The organisational and individual respondents to the AHWQ2 did not provide any quantifiable measures of demand for medical laboratory scientists. However, respondents consistently described understaffing, staff shortages, increased workload and an increasing need to contribute unpaid overtime to respond to service demand. This was found with respondents from both public and private sectors.

The Australian Government, Department of Employment's *Job Outlook* initiative does not include medical laboratory science.

When asked what was the single most important issue needing to be addressed by the profession both understaffing and lack of jobs were in the top five issues raised. Understaffing was identified by 12% (n=39/321) of respondents while lack of jobs was identified by 6% (n=19/321), however these issues are two sides of the same issue and when combined they were raised by 18% (n= 57/321) of respondents.

*"Require more fully qualified staff to cover the ever increasing workload."*

*"The workforce is under pressure from lack of staff. We do more with the same staffing levels of the 1980's."*

*"Understaffing, I work for a private pathology provider and I am juggling many important things at once, crossmatches, fixing analyser problems, QC [quality control], many abnormal results to phone, phone calls to answer, fetching specimens, fixing many mistakes. I feel like a goalkeeper who has ten people firing shots all at once, I am so stressed and worry what have I missed and could get through, all because private pathology cuts costs by over-cutting its biggest cost, staff."*

*"Understaffing. We are funded by government but they don't fund enough positions. We have a big backlog, our turnaround time is unacceptable and we are working hard to keep up."*

*"Workload is far too great and increases every year. It is exhausting."*

*"Last public hospital position, the paid working hours were 40 hours a week and the actual working hours were actually closer to 55 hours per week (every week)."*

*"Increasing privatisation leading to businesses being dollar driven rather than patient driven. Translates to increased workload and reduced turnaround times with fewer staff."*

*"Labs are understaffed and cannot afford to employ more people due to funding but there are many qualified scientists looking for work."*

Concerns relating to shortages of medical laboratory scientists have been documented in the literature for more than 10 years. The report, *The Australian Pathology Workforce Crisis* (Legg, 2008) acknowledges this in its section 4.1:

*"No-one spoken to in the consultations believes that there is not an immediate problem with workforce shortage in pathology, nor did anyone suggest that it will not be a much bigger problem if action is not taken soon. All those consulted agree that there are workforce shortages in all parts of the pathology workforce. The critical shortages are best documented for specialist pathologists but*

*there is also good evidence of a critical shortage of scientists. All also agree that too little is known about the workforce as a whole, or in its component parts, to manage it properly.”*

These shortages continued to be identified in more recent literature (Milburn et al., 2014) which discusses ways to redesigning workflows to deal with staff shortages.

## **Supply**

There are a number of factors that interact with and influence the supply of medical laboratory scientists. These include the size of the existing professional workforce, the number of graduating medical laboratory scientists, the age and gender profile of the workforce, changes in the relationship with the medical profession (pathologists), privatisation of services, employment grades, technology changes, remuneration and local approaches to recruitment.

### **Medical laboratory science workforce**

As has been previously identified, there is no clear indication of the number of medical laboratory scientists in Victoria, particularly in relation to the private sector employers.

### **Student completions**

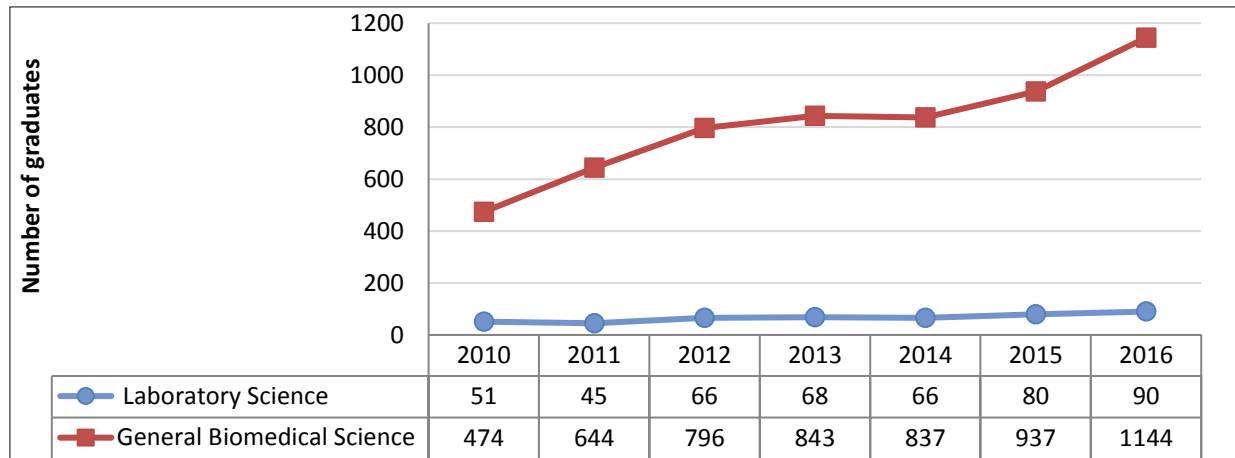
It is difficult to obtain a clear picture of the numbers of graduating students who may enter the medical laboratory science profession. There are two accredited laboratory medicine university programs in Victoria that provide direct entry into the profession. However there are also many science, biomedical science, biomedicine and biotechnology graduates who may be able to work as medical laboratory scientists if they choose. There is no requirement for employers to limit their employment to only graduates from the accredited degree programs, or to professional members of AIMS. Currently 17% of all Victorian AIMS members are individuals who have not graduated from an accredited program and have not undertaken the examination necessary to become a professional member. It is unknown how many of the Victorian AIMS professional members and fellows came through the non-accredited degree route to obtain their professional membership.

Between 2010 and 2016 the number of domestic graduates from accredited programs in Victoria increased from 51 per year to 90 per year, this is a 44% increase in graduates over this seven year period (unpublished data, Department of Education and Training<sup>6</sup>) (Figure 9).

---

<sup>6</sup> The Department of Education and Training (DET) conducts the Higher Education Statistics Collection, which provides information on the number of student commencements and completions in higher education courses. While DET data does not identify those courses that lead to professional-entry for most disciplines, using information supplied by DET (in a particular field of education and course name), the Victorian Department of Health and Human Services has estimated the number of domestic and overseas students completing professional-entry courses for selected disciplines. Given this is an estimate; caution should be used in interpreting these data.

**Figure 9: Victorian university domestic course completions (medical laboratory science and general biomedical science) 2010 - 2016**

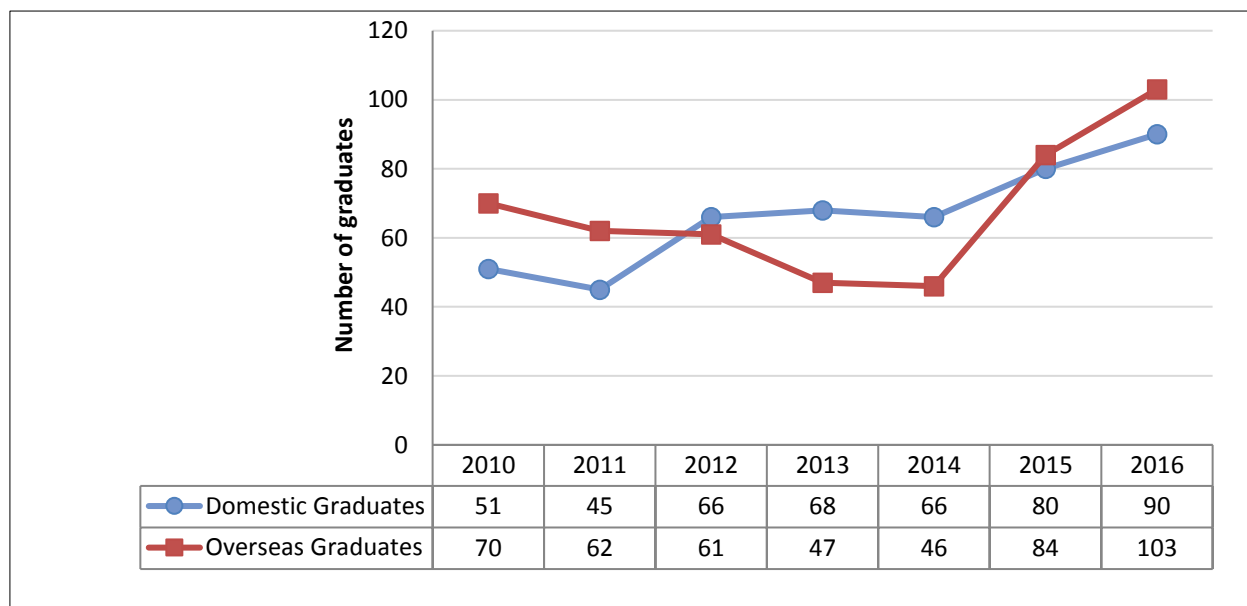


Source: Department of Education and Training

In addition to the domestic graduates, there are a large number of overseas students completing accredited laboratory medicine degree programs in Victoria. The number of overseas completions is often larger than the number of domestic student completions (Figure 10). While it is expected that the majority of these students are returning to their home countries after degree completion, some may be obtaining residency status and looking for employment in Australia and more specifically Victoria.

*“The medical laboratory science course is one that can be used to immigrate to Australia, that is a huge issue as people use it for that purpose and it is definitely a profiteering exercise for some universities. The students pay \$16,000 to the university and then come and spend 16 weeks with us, none of that {\$16,000} comes to the hospital, it all goes to the university.”*

**Figure 10: Victorian university domestic and overseas medical laboratory science course completions 2010 - 2016**



Source: Department of Education and Training

Focus group participants and survey comments also indicated that there was considerable support for medical laboratory scientists to have a consistent educational approach, preferably through directed medical laboratory science degrees. This was also expressed in the need for some form of accreditation, certification or registration for the profession to ensure common standards.

*“Medical lab science is far more diverse than other allied health science disciplines and suffers from too much variation in quality of practice because a general science degree can be point of entry.”*

*“People working as laboratory medical scientists should have relevant medical science degrees, not just generalised science degrees.”*

*“There are too many degrees in biomedicine available that are non-specific and misleading for students. The industry is changing with more point of care testing and more automation. There are limited roles available for scientists and more jobs for lab techs and assistants. The education opportunities should reflect this.”*

*“Not all science degrees should qualify people to be medical scientists. Courses covered should be relevant to the field of employment.”*

### **Workforce oversupply / job shortages**

As noted above, feedback from medical laboratory scientists and service managers consistently reported a range of indicators of demand for services exceeding the capacity of the current workforce size. These included increased overtime, high levels of reported stress, fatigue and burn out.

*“Fatigue and burn out is a serious problem. Absenteeism is a huge problem. Our work place has an average of 20% of rostered staff off on sick leave every day. No kidding - every day!”*

At the same time there was significant recognition, by both managers and professionals that new graduates and more experienced practitioners were not able to find jobs and if they did find jobs they were often at the technician level. However only 3% (n = 12/406) of survey respondents indicated they were qualified medical laboratory scientists working as either a medical laboratory technician or assistant.

The changing of positions that had traditionally been classified as scientist roles to technician roles was identified as one of the top five issues needing to be addressed by the profession. When asked what was the single most important issue to be addressed, six per cent of responses related to this issue (n = 20/321).

*“Young scientists are being employed as laboratory technicians and assistants, (sometimes for years), while performing many of the duties that scientists perform, as it seems there are not enough scientist positions available for all the new graduates. Meanwhile, there is a concerted effort to reduce the number of scientist positions through automation of our work. Often the technology is not advanced enough for the complexities of the tasks, so scientists have to work around it rather than with it. In addition, there can be trade-offs in accuracy versus speed of delivery of results.”*

*“Replacing staff with machines that are unreliable and inaccurate is a concern. The replacement of scientist positions with technicians is another worrying trend.”*

*“There is an oversupply of graduates who could provide adequate staffing, but this is today’s society, employ inadequate numbers and overstress and underpay staff and deny work to those who want it, greed for the shareholder of private companies, leads to unhappiness all round.”*

*“There are so many scientists being churned out and insufficient jobs to absorb them all. Consequently, many graduates feel disillusioned when they can only obtain employment as a technician or getting 'a foot-in-the-door' doing specimen reception work.”*

*“Most organisations are saying that medical scientists are no longer needed and they are offering technician’s positions. If they can they fill these with scientists, but the lower grades are people off the street and this is a worrying trend. Machines aren’t perfect and you still need scientists to pick up the errors and understand the implications.”*

*“I have worked as a qualified medical scientist in a lab for 6 years and do the same work as a scientist every day; however I am employed as a technician 3 days a week and as a scientist 2 days. There are other staff members in the same situation in this lab and others around the state.”*

*“More local jobs for less experienced medical scientists. Cannot find work as a medical scientist, so I am currently a laboratory technician which does not require the scientist degree.”*

It was also noted that the trend towards short term contracting and under employing was have significant negative consequences for both organisations and the profession.

*“It’s a dying profession. Unless the constant under employing stops, nobody will want to go into this field and it will die, like the patients we will fail to service.”*

*“Casualisation and limited tenure (short term) contracts result in dissatisfied employees and takes up managers time to re-employ / renegotiate contract terms or recruit new staff. For example; a new employee on a 12 month contract can take 2-3 months to train in their role. By the 9th month, the employee is looking for another job, if their job is not guaranteed to continue. It is not uncommon for staff on a 12 month contract to leave, before their contract has completed, thus creating a staff shortage.”*

*“We are funded by the State government. Last time we had an increase in staffing numbers was three fulltime staff in 2009 in response to increasing specimen numbers. Our specimen numbers have doubled since then yet we’ve been given no extra staff. Needless to say our turnaround times have blown out. We are continually looking for ways to work more efficiently without sacrificing accuracy. We have little time for professional development anymore and when we do that our turnaround times blow out some more.”*

Another concern that was noted was the lack of jobs in regional areas and this was attributed to the increased privatisation of services in country areas and the subsequent centralisation of these services by these private companies to metropolitan areas.

*“The privatisation of the pathology sector and the monopoly by a small number of providers has drastically impacted the local service provision even to large regional hospitals. Everything is about centralising the work to metropolitan laboratories and profits for shareholders.”*

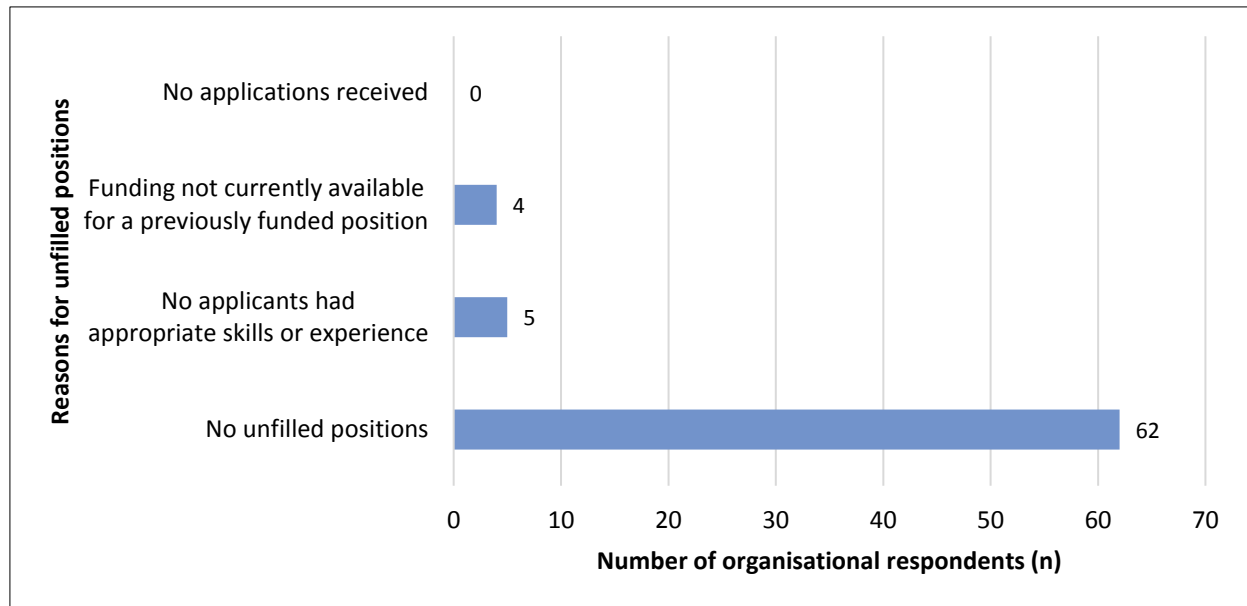
*“The continuous ‘centralisation’ of pathology services to city/inner city areas away from regional/rural areas where there is population growth and an ever increasing need for these ‘timely’ services. Patients living outside of metropolitan areas are becoming more and more geographically discriminated against.”*

### **Unfilled positions**

Of the 92 organisational respondents to the AHWQ2 that employed medical laboratory scientists, 60 indicated they currently had no unfilled positions. Of those that did report having unfilled positions, funding not currently being available for a previously funded position (n=27) was the predominant reason, an inability to recruit due to lack of applicants with appropriate skills or experience was the second most common reason (n=8), followed by a lack of applicants (n=2) (Figure 11).



**Figure 11: Reasons for unfilled positions (n=92)<sup>a</sup>**



<sup>a</sup> Respondents could select more than one response.

## Recruitment

### Number of applicants

Organisational respondents to the AHWQ2 were asked about the size of the applicant pool for positions advertised at different grades in the preceding year. A high proportion of the responding organisations had not advertised any positions.

Of the 61 organisations that reported having advertised junior positions, 61% (n=37) received more than 50 applications for the position. Of interest regarding this issue was that only 35% (n=274) of individual respondents indicated agreement with the statement that ‘there are too many new graduates in my profession’. Qualitative findings demonstrated a concern regarding the capacity for the numbers of new graduates to secure employment. Unfortunately no new graduates participated in the focus groups to obtain their perspective on this issue.

*“It breaks my heart to see the number of biomedical science and related medical and forensic science of such high calibre that are graduating compared to the limited number of career positions available. The number of qualified scientists working in laboratory data entry, specimen reception/processing, laboratory assistant or low level technical positions both in private and public pathology is an indictment on the tertiary education system. It annoys me that I get 100 -150 applications from science graduates for even a lab assistant/unqualified role.”*

*“Students who graduate from their related bachelor degree should have opportunities for a graduate position available to them. From my experience, I graduated last year in December [nine months ago] and only found a job as a part-time medical laboratory scientist in [location] three months ago. I have attended several interviews regarding medical laboratory scientist, assistant or technician positions in Melbourne and not one organisation offered me a job due to the lack of work experience; yet I have done forty weeks of work placement while studying six years at university. I had also applied for many jobs in various locations away from home, which offered full-time, part-time, casual or temporary positions. I consider myself very lucky to have found a job when I did, otherwise no matter how hard I tried I would have faced the risk of not being employed in the relevant profession and hence not gaining any experience needed for the positions mentioned. I have worked very hard to be where I am today and I am absolutely grateful for the opportunities given to me. However,*



many students such as myself who have worked endlessly only to find a limited job prospect are forced to increase their debt, do further study and still not gain any work experience needed to land them a job they are qualified for.”

“It is very hard to get a job as a medical scientist as a new graduate. I am extremely happy and fortunate to be working in an environment where I feel valued as part of a team however this wasn't the case in my previous hospital job.”

“Problem with medical scientist is that it is hard to find work as a medical scientist. It is easier to become a laboratory technician and be overqualified for the job. I am a bit jealous that some people can do the same job as me without a large HECs debt and a qualification.”

“We want people to have experience but then we are not willing to give them experience.”

Intermediate positions were also sought after with 11 organisations reporting that they received > 50 applications for a small number of positions.

“Availability of work [is the problem]; I have been on multiple short-term contracts ranging from 4 months to a year at most and have spent the past year and a half looking for work (though I am currently employed on a 4 month contract)”

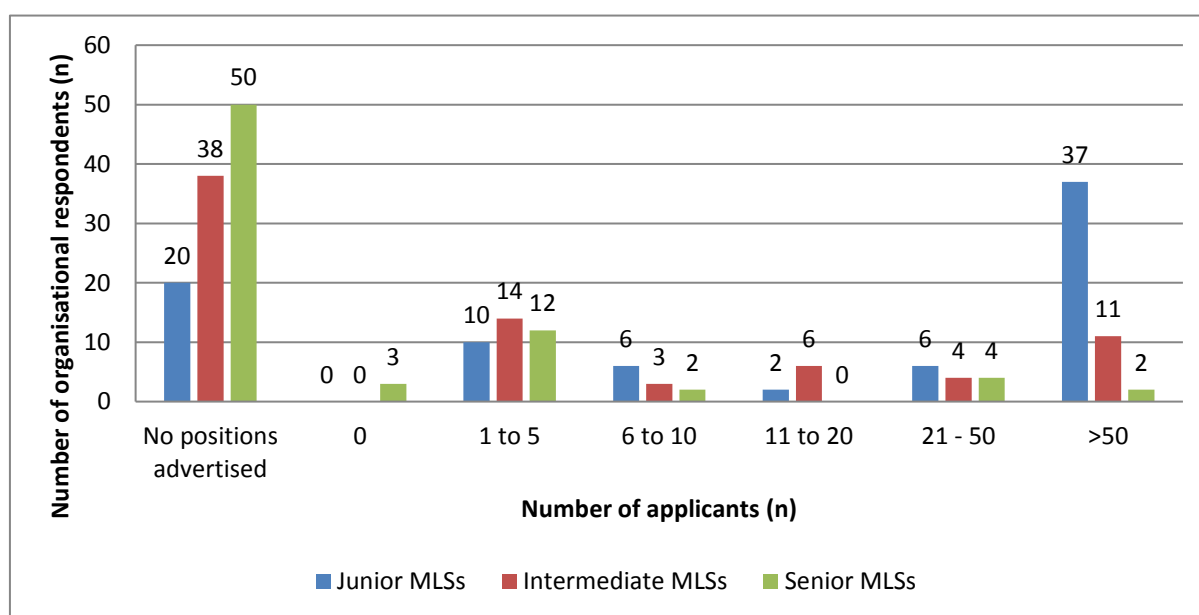
In contrast, filling senior positions was more difficult. Of the 24 organisations that advertised senior grade positions, 50% (n=12) received between one and five applications and 3 (12.5%) organisations received none (Figure 12). However these findings were in contrast to qualitative findings which highlighted that there were few vacancies at senior levels.

“Higher roles do not exist or are rarely vacant. Higher management responsibilities do not often go to scientists.”

“Lack of senior positions to apply for.”

**Figure 12: Number of applications received for positions advertised in the past year by grade (n = 73 – 85 depending on the level of position) <sup>a</sup>**

MLS – Medical laboratory scientist



<sup>a</sup> Respondents could select more than one response.

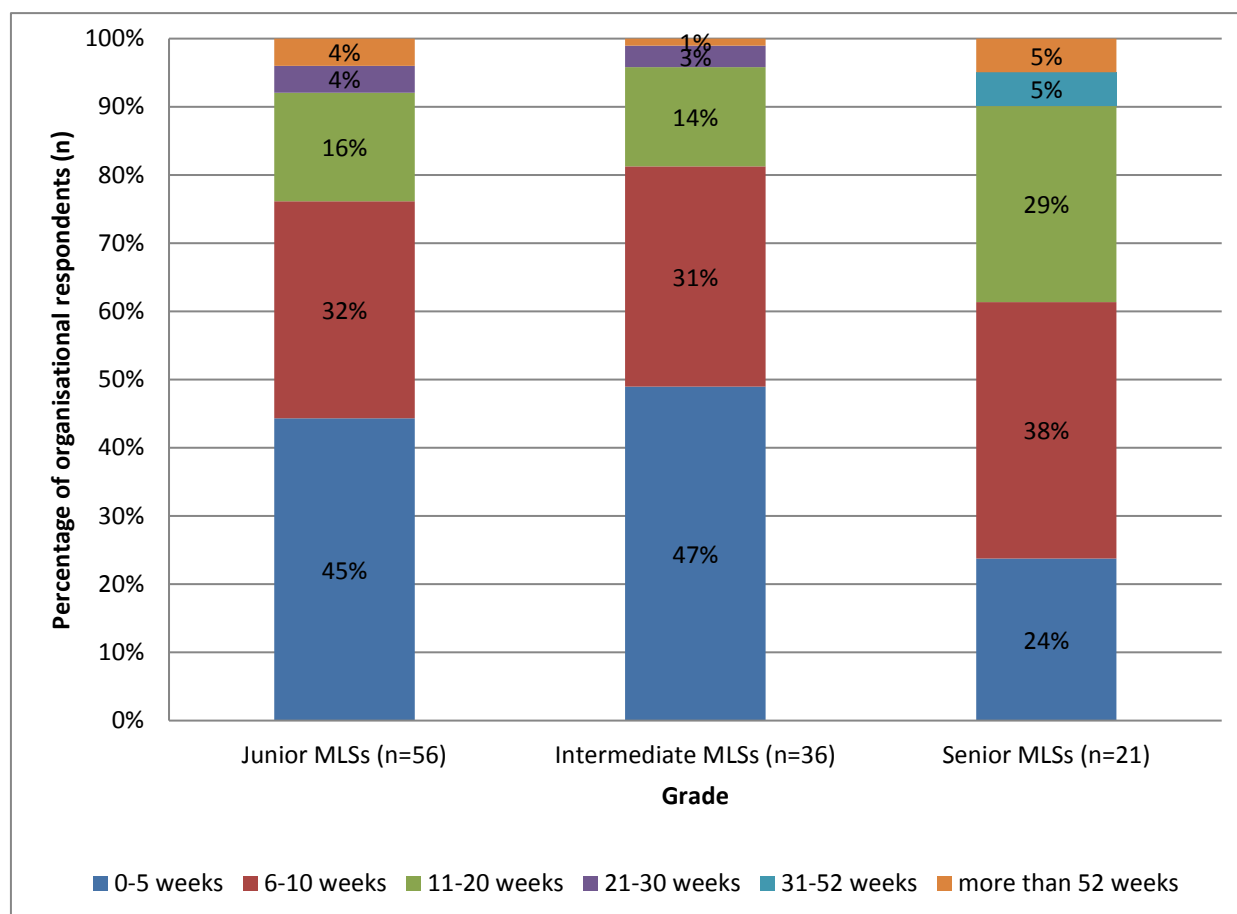
### Time to recruit

Of the organisations that responded to the AHWQ2 and had advertised medical laboratory scientist positions in the preceding twelve months, 77% (n=43) filled junior grade positions within 10 weeks and 78% (n=28) filled intermediate grade positions within 10 weeks. Although this suggests that these positions are being filled with relative ease, two organisations took longer than 52 weeks to fill both junior and intermediate positions (Figure 13).

Interestingly the issue of not backfilling positions while staff were on maternity leave, which has been an issue for other professions, was not raised as a concern with medical laboratory scientists.

The time to fill senior positions was longer than the junior and intermediate grades. Although 62% (n=13) of organisations reported filling positions within 10 weeks, seven organisations (34%) indicated a recruitment period of between 11 and 52 weeks, and one organisation took longer than 52 weeks (Figure 13).

**Figure 13: Time to fill vacancies (n=76) <sup>a</sup>**



<sup>a</sup> Although 76 organisations responded to this question, data is only included for organisations that indicated they had vacancies in the prior 12 months.

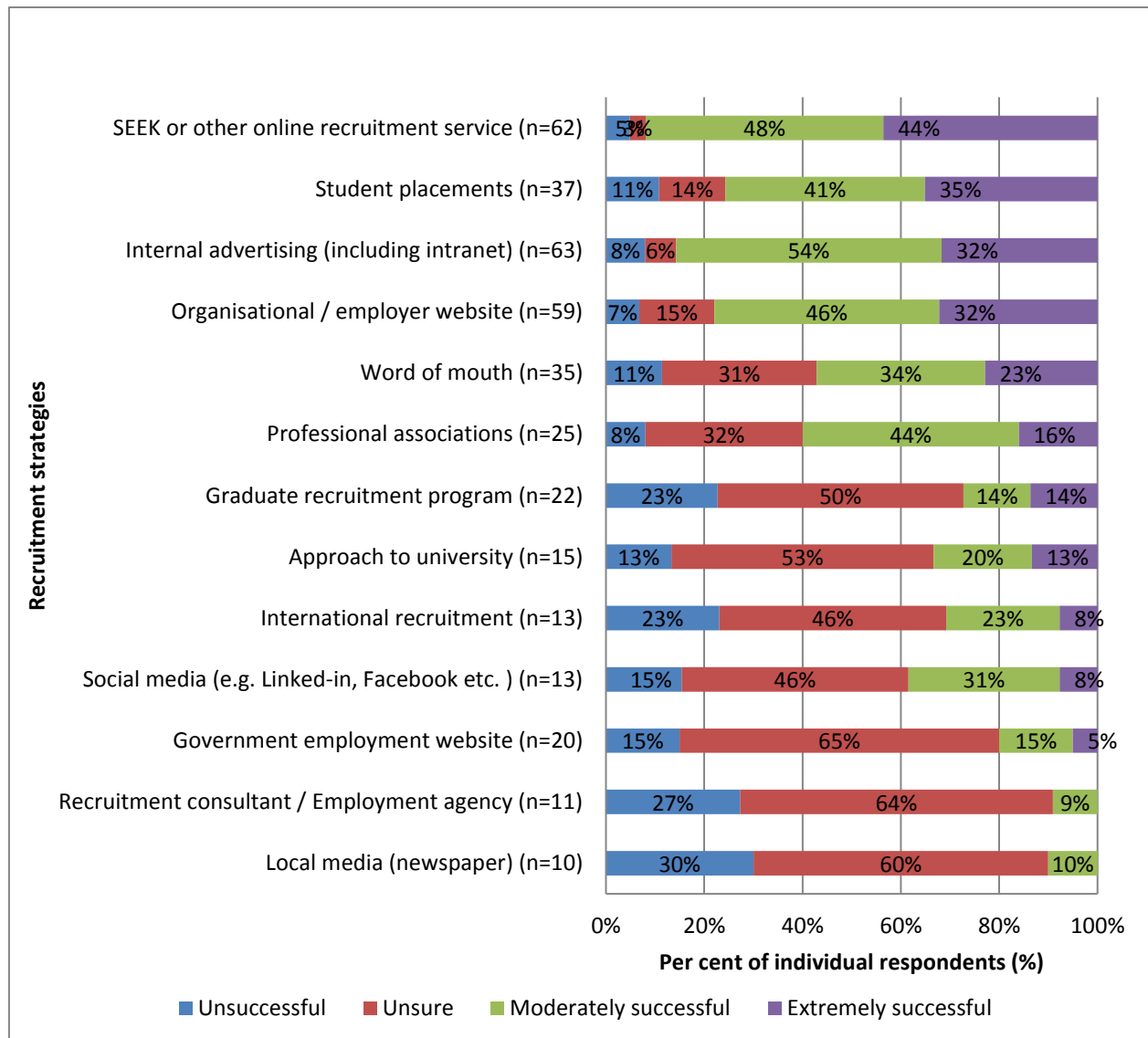
### Recruitment strategies

Sixty-eight (68) organisational respondents answered the AHWQ2 questions relating to the different recruitment strategies they use. Internal advertising (n=63), SEEK (n=62), the organisational website (n=59) were the strategies used by the greatest number of respondents. Student placements (n=37), word of mouth (n=35), professional associations (n=25) and graduate recruitment program (n=22) were also commonly used. Only a small proportion of organisations reported use of approaches to

university (n=15), social media (n=13), international recruitment (n=13), recruitment consultant (n=11) or local media (n=10).

Strategies most likely to be identified as extremely successful were SEEK (44%, n=27), student placements (35%, n=13), internal advertising (32%, n=20) and employer websites (32%, n=19). Strategies reported to be unsuccessful or unsure by the greatest proportion of respondents that used the specific strategy were employment agency (91%, n=10), local media (90%, n=9), government employment website (80%, n=16) and social media (61%, n=8) (Figure 14).

**Figure 14: Relative success of strategies used to recruit medical laboratory scientists (n=68) <sup>a</sup>**



<sup>a</sup> Although 68 organisations responded to this question, for each recruitment strategy data is presented based on the number of organisations that reported that they used the strategy.

### Retention

Medical laboratory science respondents to the AHWQ2 were asked about their intention to remain in their current work situation. Ten per cent (10%, n=30) indicated an intention to remain in their current role for less than one year; 7% (n=19) indicated an intention to remain in their current sector for less than one year; and 6% (n=16) indicated an intention to remain in their current profession for less than

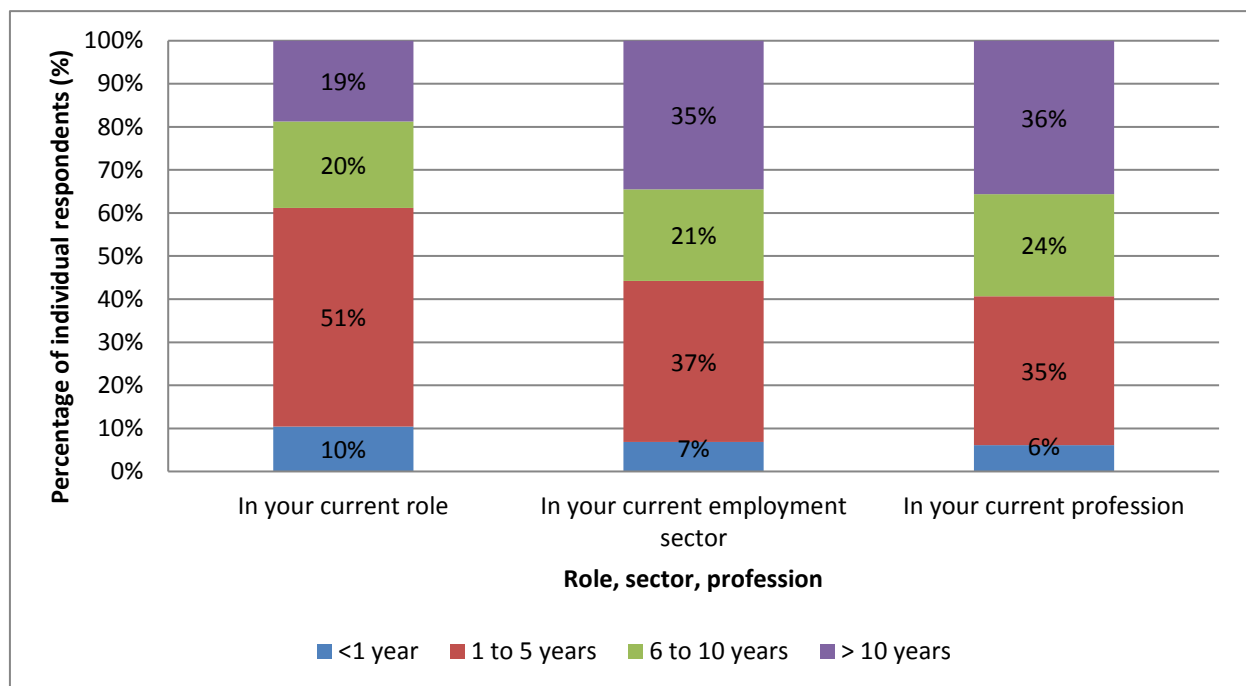
one year. These results suggested a degree of intended mobility in the roles respondents were employed in, which is not unusual.

When considering the longer term, most medical laboratory scientists respondents indicated an intention to remain in the profession for less than 10 years (64%, n=179), within this time frame most expected to have changed employment role (81%, n=226) and sector (64%, n=182). This is a higher than expected proportion who intend to leave their current employment sector and the profession when compared to other professions that have participated in this survey (Figure 15).

When intention to remain in the profession was correlated to age, only 24% of those 50 years and under (40/169) intended to still be in the profession in 10 years' time.

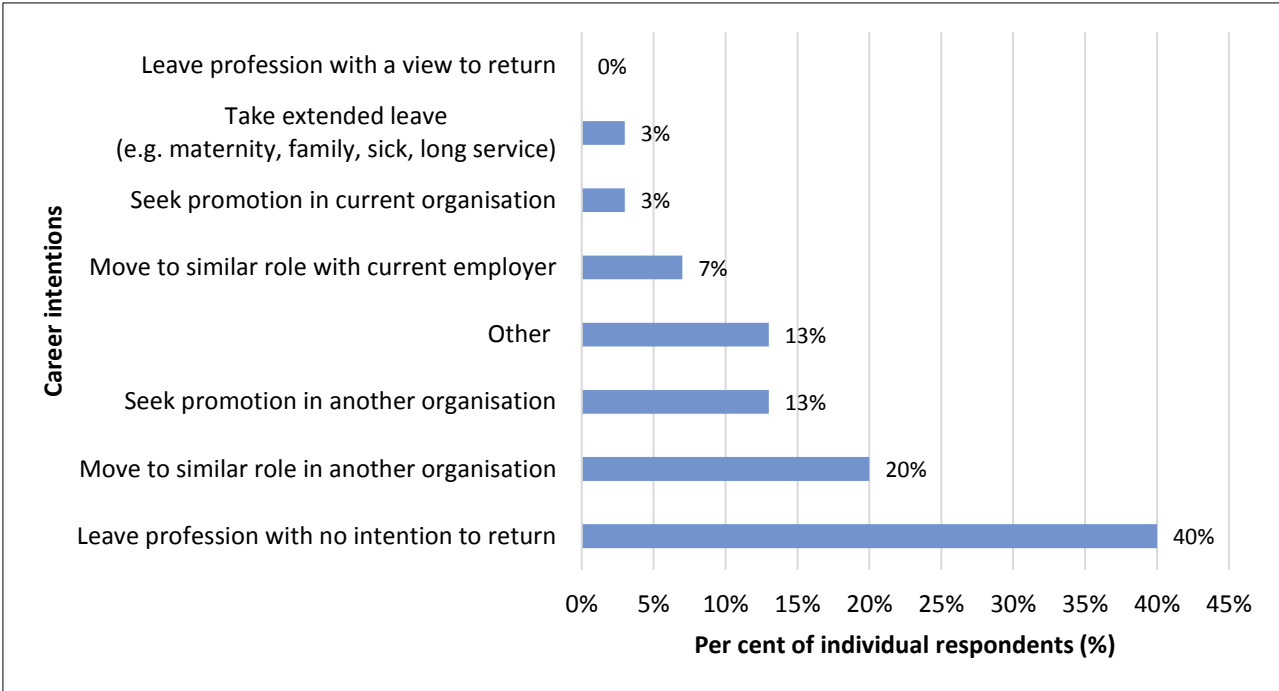
Of these individuals who intended to leave their current work situation, in each case more than 1/3 were currently employed in the private sector (33% of those intending to change their role, 39% intending to change their sector, and 38% who intended to leave the profession). These figures are disproportionately higher than the 26% of the overall respondents who were from the private sector.

**Figure 15: Intention to stay in current role, sector and profession (n=278)**



Of those who intended to change their role in the next 12 months (10%, n=30), the largest number reported an intention to leave the profession with no intention to return (40%, n=12), 20% (n=6) intended to move to a similar role in another organisation, or seek a promotion in another organisation (13%, n=4). Very few respondents were seeking a similar role (n=2) or promotion with their current employer (n=1) (Figure 16).

**Figure 16: Career intentions of respondents indicating an intention to stay in their current role for 12 months or less (n=30)**



When asked about the reasons for changing roles, AHWQ2 individual respondents were offered the opportunity to select more than one possible reason. The most prevalent reason was conflict with manager, other employees and or the workplace culture (33%, n=10). Other key reasons included better job opportunity (30%, n=9), burn out (27%, n=8), their current role was not challenging (27%, n=8), and looking for a change / broadening my experience (27%, n=8) (Figure 17).

When intention to leave in the next 12 months was correlated to age, 66% of those intending to leave were 50 years and under.

*“I left to work in the UK due to poor working conditions and job prospects in Australia”*

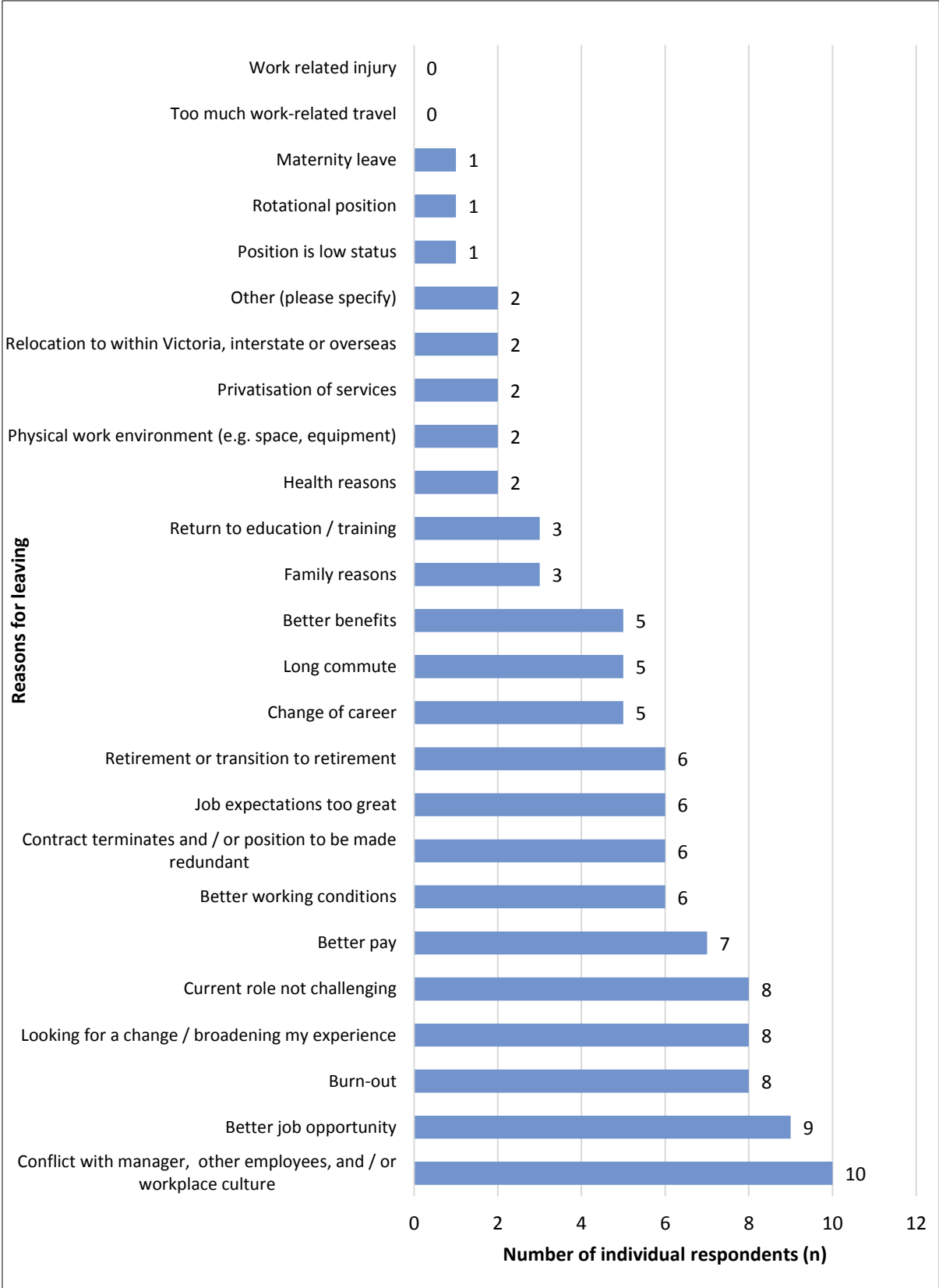
*“I’ve left the industry to retrain because I want to work in the country and there are no jobs!”*

*“Too many scientists are leaving the profession due to shift work, understaffing, stress and excessive workloads and unrealistic expectations.”*

At the organisational level, 67 respondents reported specific barriers to staff recruitment and retention. Most of their responses reflected industry changes and workforce reforms that meant they hired more technicians and less scientists and that most applicants wanted to work more hours than are available. The lack of career progression opportunities was sighted as the most prevalent reason why staff were not retained (72%, n= 48), this was followed by lack of professional development opportunities (49%, n=33), applicants not experienced enough for the role (48%, n=32), burnout (43%, n= 29), pay levels (39%, n=26) and lack of respect for the profession within the organisation (36%, n=24) (Figure 18).

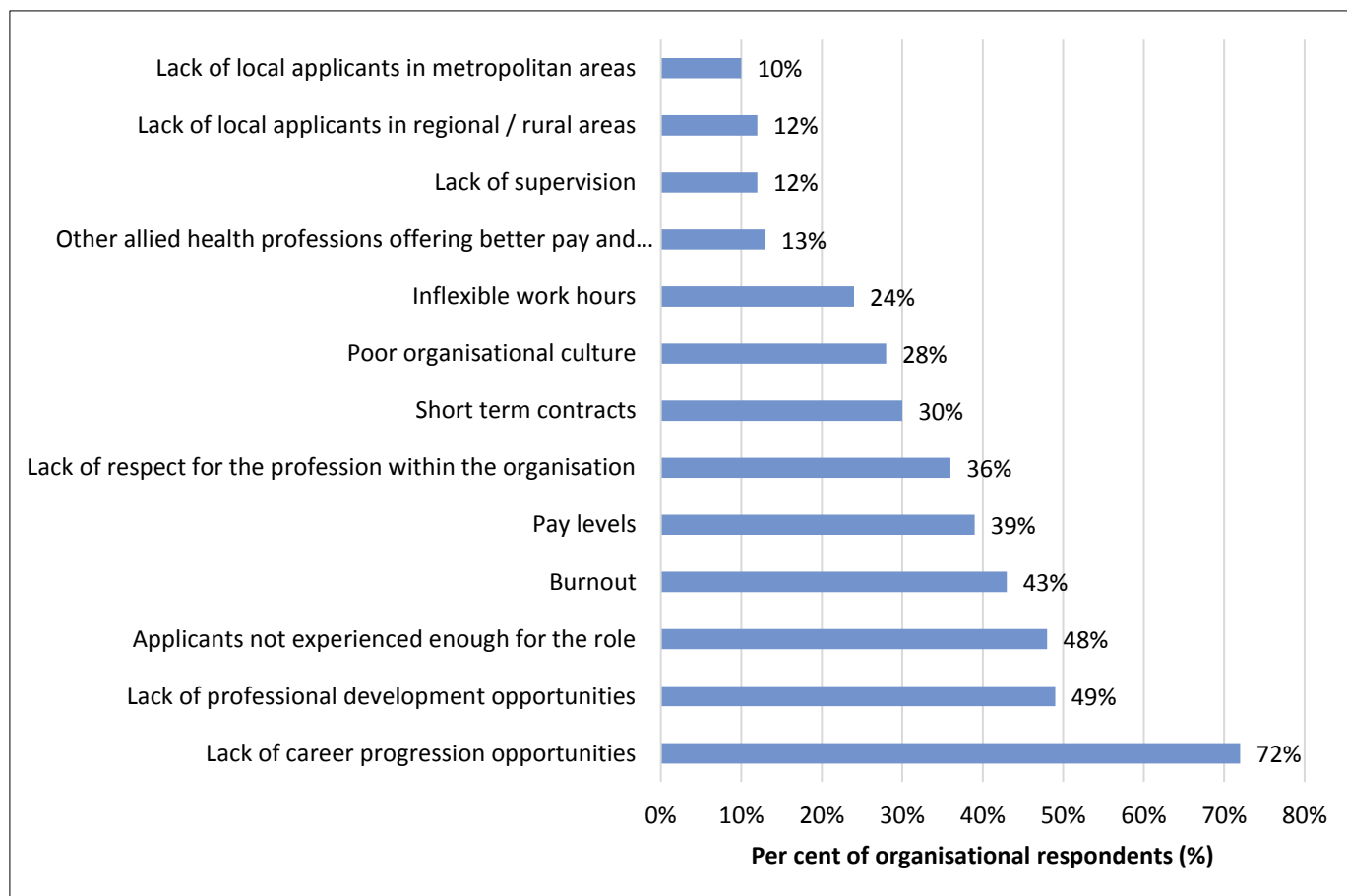
Lack of career development and progression opportunities was also the third most commonly identified issue in the question relating to the most important issue needing to be addressed by the profession. Twelve per cent (12%) of respondents (n = 38/321) made comments relating to this issue.

**Figure 17: Reasons for leaving (for respondents indicating intention to change roles within 12 months) (n=30) <sup>a</sup>**



<sup>a</sup> Respondents could select more than one response.

**Figure 18: Employer reasons for recruitment and retention difficulties (n=67) <sup>a</sup>**



<sup>a</sup>Respondents could select more than one response.

## Organisation of the workforce

### Pay level

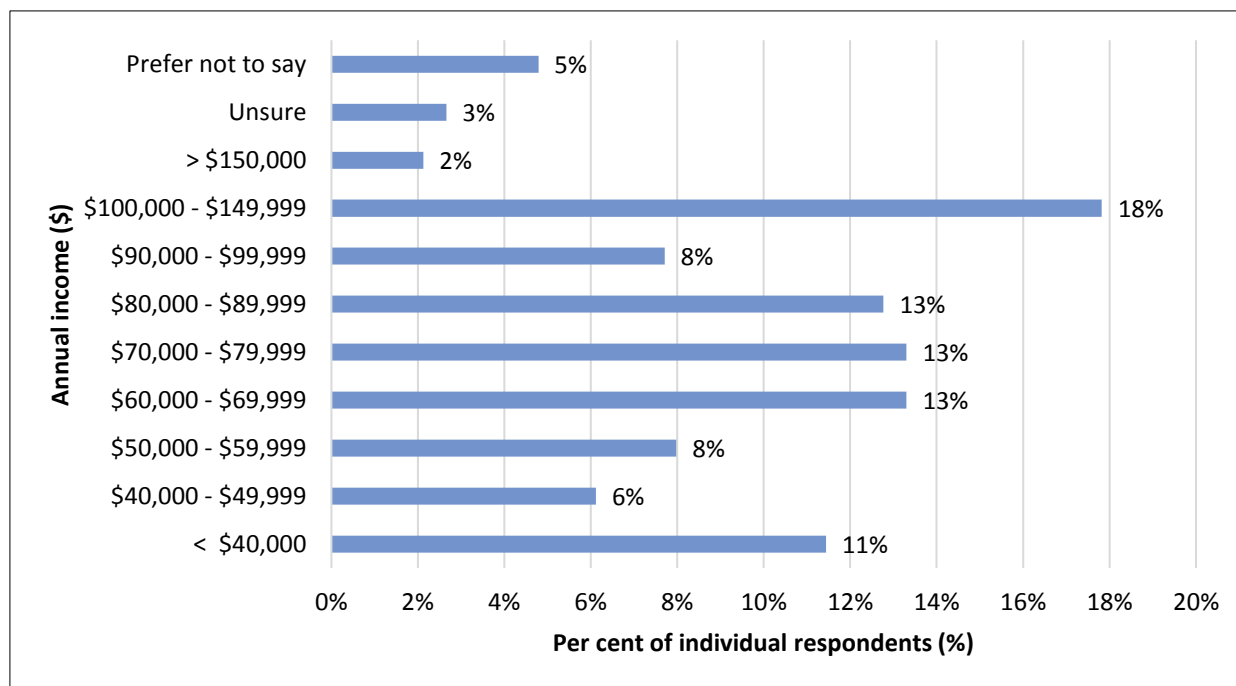
The median annual earnings for medical laboratory scientists responding to the AHWQ2 were between \$60,000 and \$69,000. Nearly half (47%, n=177) of all respondents had earned between \$60,000 and \$99,000 in the prior year, with the largest single grouping (18%, n= 67) earning between \$100,000 - \$149,000 and 25% (n=96) earning less than \$60,000 (Figure 19).

When considered by employment sector, overall state public sector employees had higher earnings than employees of private large multi-sited providers<sup>7</sup> with 78% of employees from the large private providers earning < \$90,000 compared to 66% of state public employees (Table 5).

When asked what was the single most important issue needing to be addressed by the profession pay was the most common response with 19% (n=60/321) of respondents raising this issue. This research was conducted at the same time as many of the Enterprise Bargaining Agreements (EBA) (public and private sector) for medical laboratory scientists in Victoria were being renegotiated and it is not known whether this played a role in this issue being identified as the most important issue.

<sup>7</sup> Only state public sector and large multi-sited private providers were included in this comparison due to the small number of responses to this question from the other sectors.

**Figure 19: Total annual income last year, before tax (n=376)**



**Table 5: Annual income based on employment sector (current main employer) (n=226)**

Annual income	State public sector (n=158)	Private provider – large / multiple sites / private hospital (n=68)
<\$60,000	20% (n=32)	28% (n=19)
\$60,000 – 90,000	46% (n=73)	50% (n=34)
\$90,000 – 99,000	8% (n=13)	12% (n=8)
> \$100,000	25% (n=40)	12% (n=7)

However the majority of respondents felt they were underpaid for the level and responsibility of their work

*“The pay in regional, private labs is well under what I would consider fair compensation for the amount of study needed to excel in this career.”*

*“Fair wage for our skilled work. Most of our income comes from on call and weekend on call which generally takes a toll on our health when done over long periods.”*

*“Remuneration needs to be addressed. I am a grade 2 scientist and my hourly rate is just \$37.65. For the responsibility I have it is woeful.”*

*“Companies allowed to pay employees as lab assistants, while doing scientist work and having degree qualifications.”*

*“Poor pay and conditions in large private pathology providers leads to many medical scientists leaving the profession. This means there is a shortage of experienced (as opposed to qualified) medical scientists within the profession making it hard to fill gaps.”*

*“Private sector has not had a pay increase in years. [Name removed] 10 years since pay increase, [name removed] just got one though it has been 13 years.”*



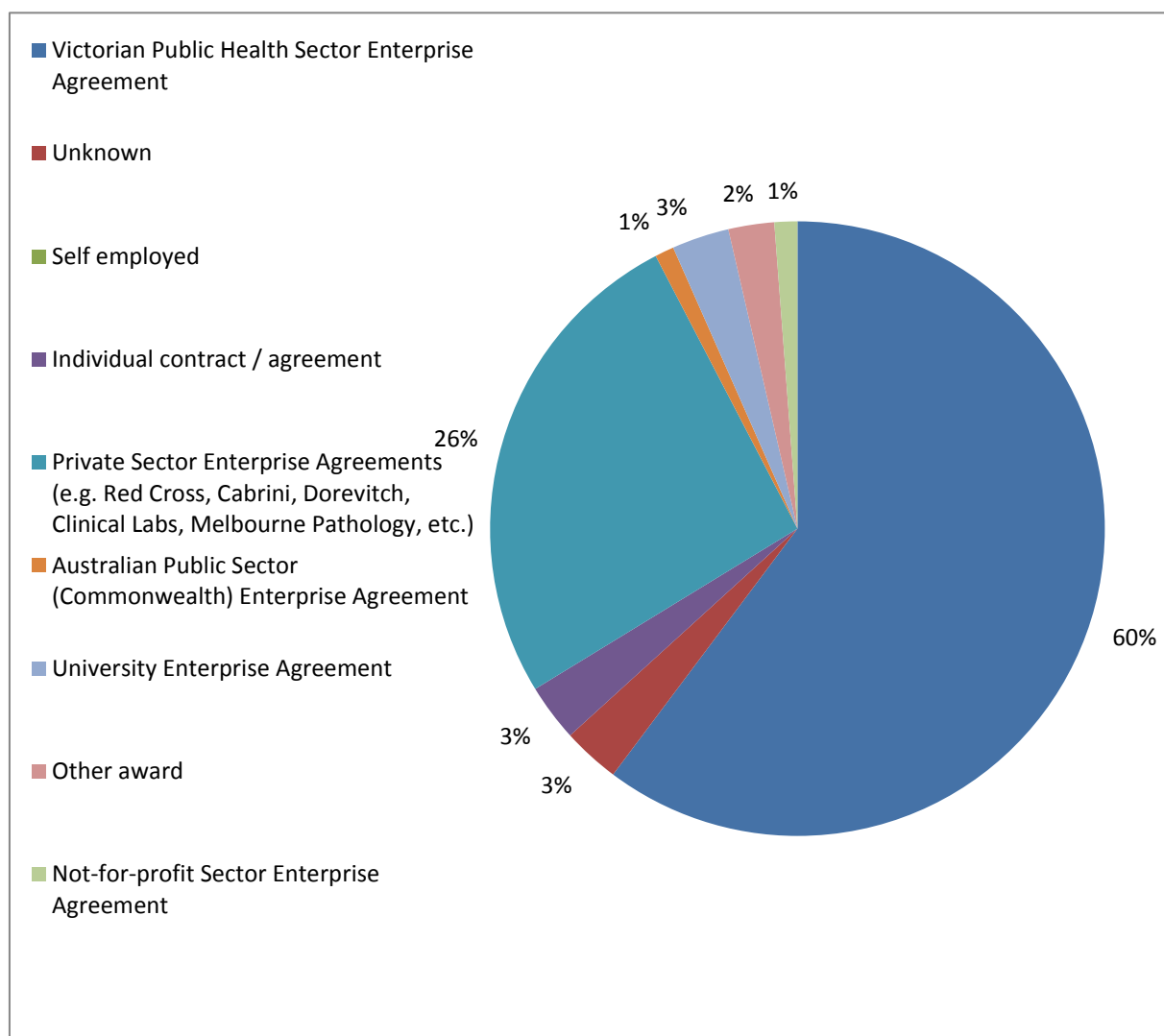
*“People are paid at a lower level; grade 4 duties are paid at grade 3 in the public sector.”*

### Awards

The Victorian Public Health Sector Enterprise Agreement was the most common employment award with 60% (n=174) of the AHWQ2 respondents. A further 26% (n=274) were employed under the Private Sector Enterprise Agreements that cover the large private pathology labs such as Cabrini, Dorevitch, Australian Clinical Labs, Melbourne Pathology, and the Red Cross. The remaining respondents were employed against a range of other awards and employment arrangements. Examples include the Commonwealth Enterprise Agreement, the NFP Enterprise Agreement, the University Enterprise Agreement, individual contracts, and self-employment.

Three per cent (3%, n=9) of respondents did not know what award they were employed under (Figure 20).

**Figure 20: Current award or employment agreement (n=285)**

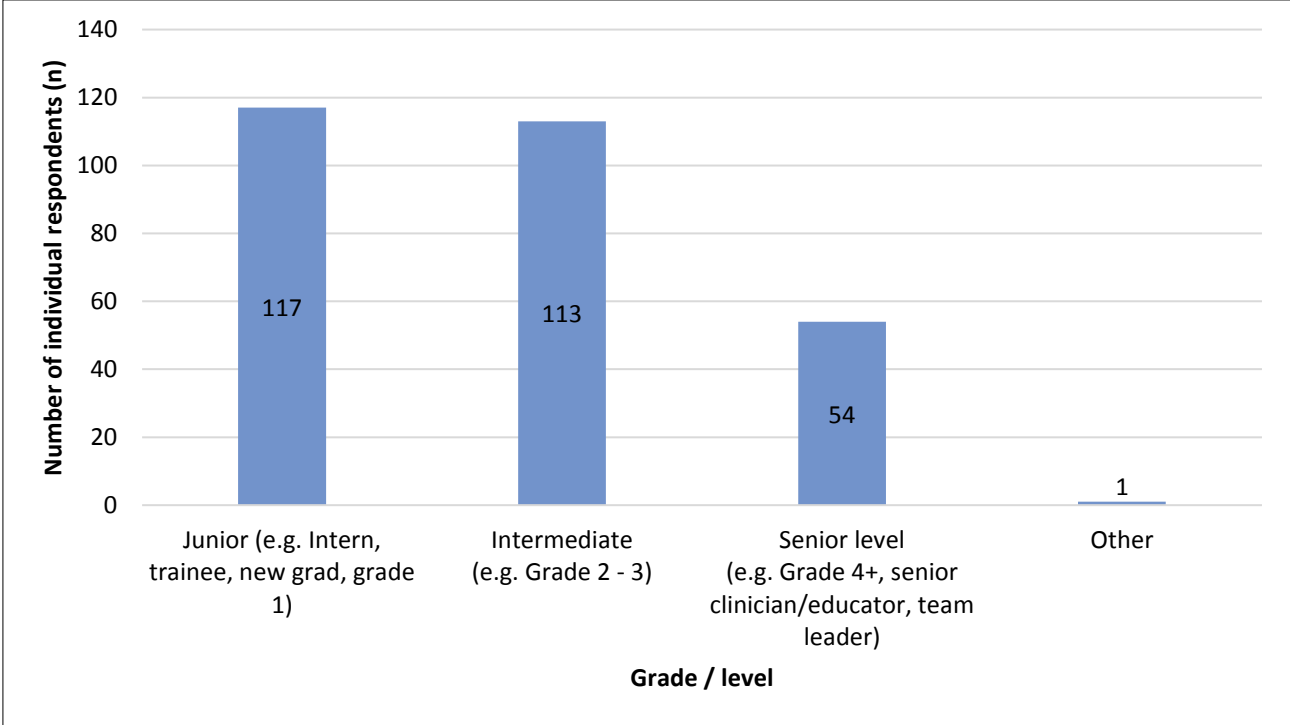


### Employment grade / level

The largest number of AHWQ2 respondents (41%, n=117) reported being employed at the junior level, while 40% (n=113) were employed at the intermediate level. Senior level employees accounted for 19% (n=54). One respondent reported being paid only when business circumstances allowed

(Figures 21). Although the number of university-employed respondents was low (n=12), a similar pattern was evident, with the majority employed at level B (67%, n=8).

**Figure 21: Current grade (non-academic) (n=285)**



**Employment status**

The majority of medical laboratory scientists responding to the AHWQ2 indicated they were currently employed in permanent roles (88%, n=256) (Table 6).

**Table 6: Nature of employment with current main employer (n=292)**

Employment status	%	Count
Permanent	88	256
Temporary	1	4
Contract	8	24
Voluntary	0	0
Casual	2	7
Other	<1	1
<b>Total</b>	<b>100</b>	<b>292</b>

**Number of employers**

The vast majority of medical laboratory scientists (93%, n=277) had just one employer, while 7% (n=20) had two or more employers, and less than 1% (n=2) were fully self-employed (Table 7).

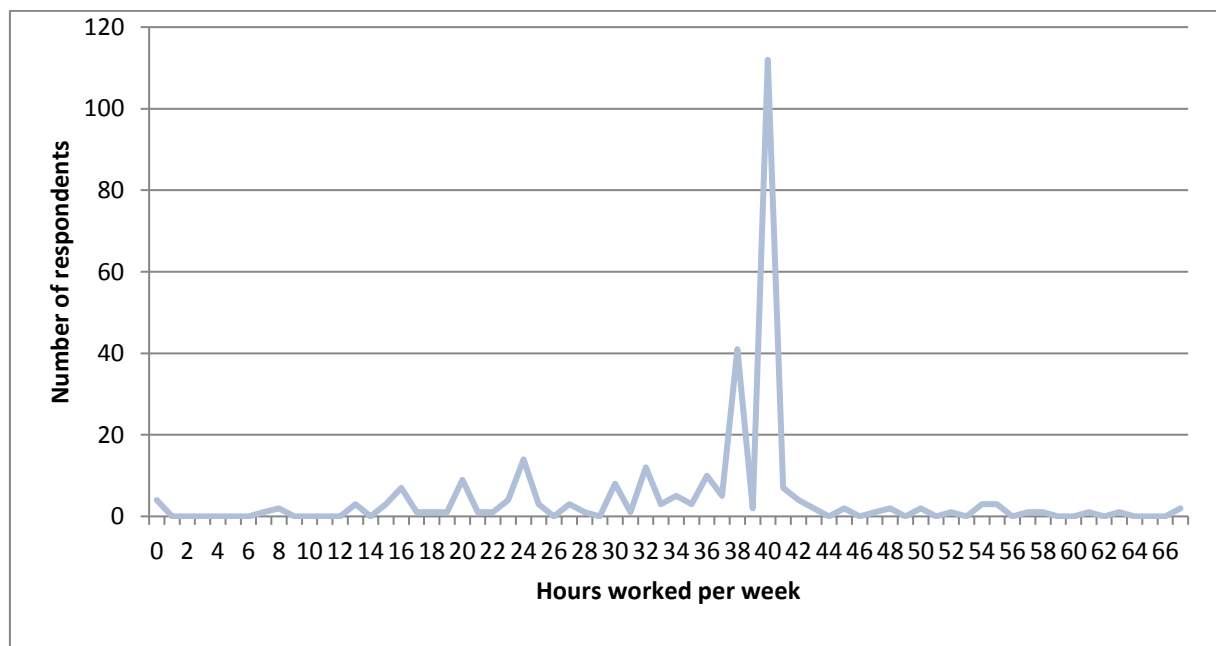
**Table 7: Current number of employers (n=299)**

Number of employers	%	Count
1	93	277
2	5	15
3	0	0
4	0	0
5 or more	2	5
I am fully self-employed	<1	2
<b>Total</b>	<b>100</b>	<b>299</b>

**Hours of work**

On average, medical laboratory scientist respondents to the AHWQ2 reported working 35.5 hours per week in their main role (n=294), with a range of zero to 67 hours worked per week. The largest number of respondents (n=112) worked 40 hours per week. Eleven per cent (11%, n = 33/294) reported working more than 40 hours per week on a regular basis and for these people the average number of hours worked per week was 49.5 hours (Figure 22). The average total hours of paid work may be a little higher than this as 7% (n=20) of respondents reported being employed by more than one employer (Table 7).

**Figure 22: Number of hours worked per week (n=294)**



Slightly more than half medical laboratory scientist respondents indicated they worked Monday to Friday, mostly during the day (55%, n=197). Twenty-two per cent (22%, n=79) indicated they worked shifts, 10% (n=37) worked on Saturdays, 9% (n=31) worked on Sundays, and 5% (n=17) worked weekdays at night (Table 8).

**Table 8: Working pattern during a normal working week (n=361)**

Working pattern	%	Count
Monday to Friday (mostly day time)	55	197
Monday to Friday (mostly night time)	5	17
Saturday	10	37
Sunday	9	31
Shifts that change from day to day, or week to week	22	79
<b>Total</b>	<b>101<sup>a</sup></b>	<b>361</b>

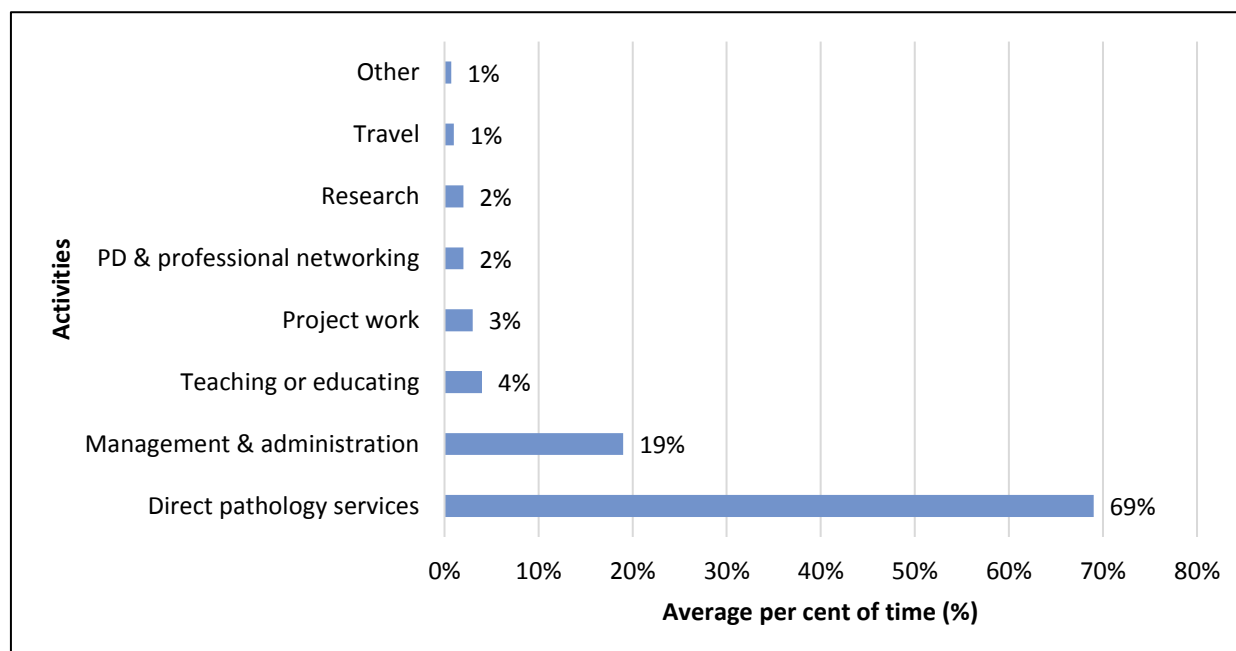
<sup>a</sup> Due to rounding

The majority of medical laboratory scientist respondents (59%) worked in laboratories that provided service 24 hours per day, seven days per week, the remaining 41% worked in facilities with restricted hours.

### Roles

On average, AHWQ2 respondents spent a little over two thirds of their time (69%) providing direct pathology services. The next largest amount of time, 19%, was spent on management and administration including attending meetings. When averaged across the workforce, teaching, research, project work, professional development and travel accounted for only a small proportion of time (Figure 23).

**Figure 23: Average per cent of time spent on work activities (n=283)**



## Scope of practice

### Advanced practice

The Department of Health and Human Services defines advanced practice roles as:

*Work that is currently within the recognised scope for a profession, but through custom and practice are performed by other professions.*

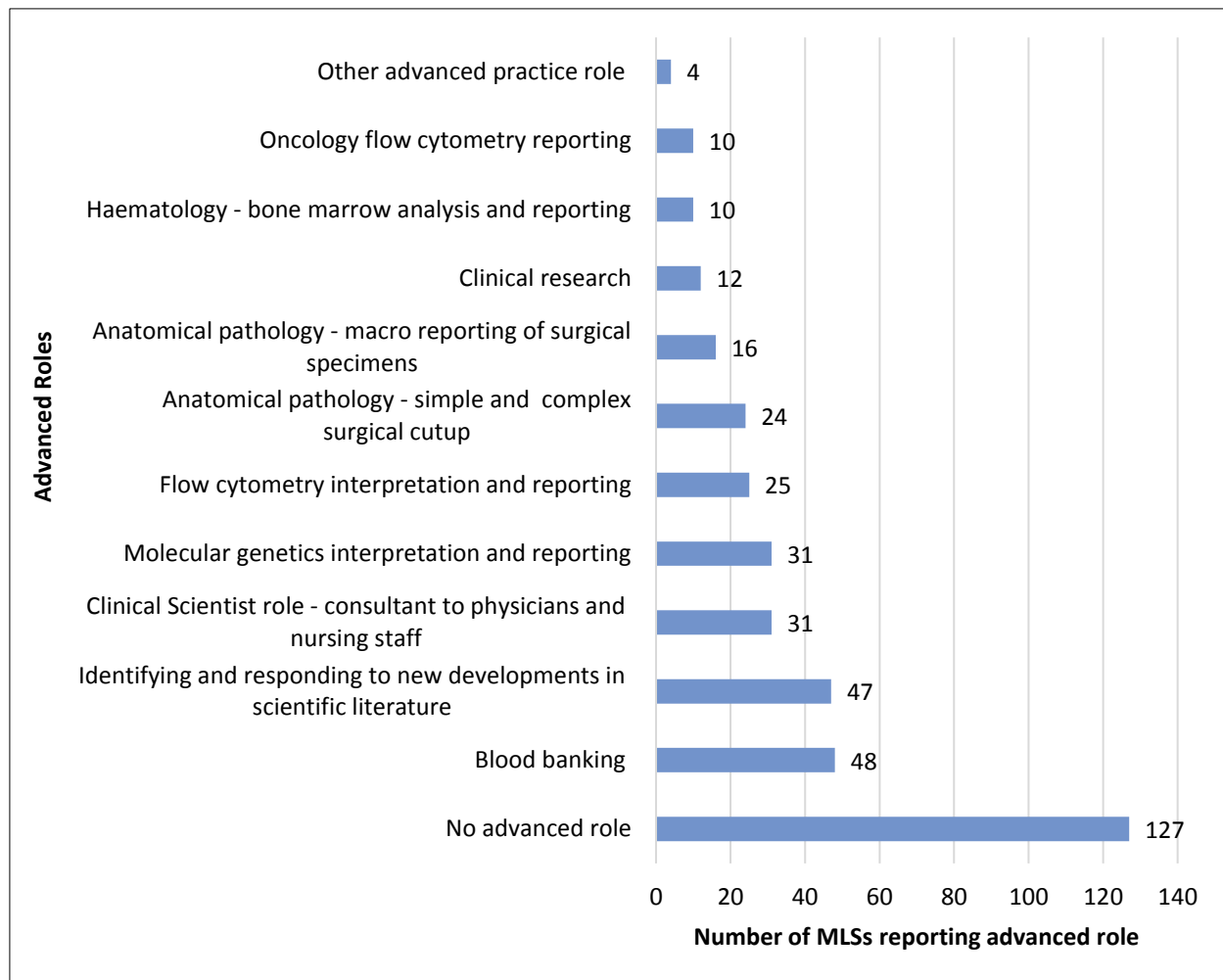
The following advanced roles are recognised for medical laboratory scientists in Victoria.

- Anatomical pathology - macro reporting of surgical specimens
- Anatomical pathology - simple and complex surgical cutup
- Blood banking - patient blood management, artificial blood substitutes
- Clinical research
- Clinical Scientist role - consultant to physicians and nursing staff - managing under / over utilisation of testing, proper use of clinical testing in chronic disease management, eliminating tests of little clinical value
- Flow cytometry interpretation and reporting
- Haematology - bone marrow analysis and reporting
- Identifying and responding to new developments in scientific literature including new tests, methods, equipment, staffing, policies and education
- Molecular genetics interpretation and reporting
- Oncology flow cytometry reporting

Respondents to the AHWQ2 were asked if their current role involved any of these roles.

Slightly more than half (54%, n=152) of respondents reported that they have an advanced practice role. The most common advanced role involved blood banking (17%, n=48), followed by identifying and responding to new developments (17%, n=47), the clinical scientist role, and molecular genetics interpretation and reporting, both reported 11% (n=31), then flow cytometry interpretation and reporting, and anatomical pathology simple and complex surgical cutup, both reported at 9% (n=25 / 24) (Figure 24).

**Figure 24: Advanced practice roles (n=279) <sup>a</sup>**



<sup>a</sup>Respondents could select more than one response.

## Workforce movement

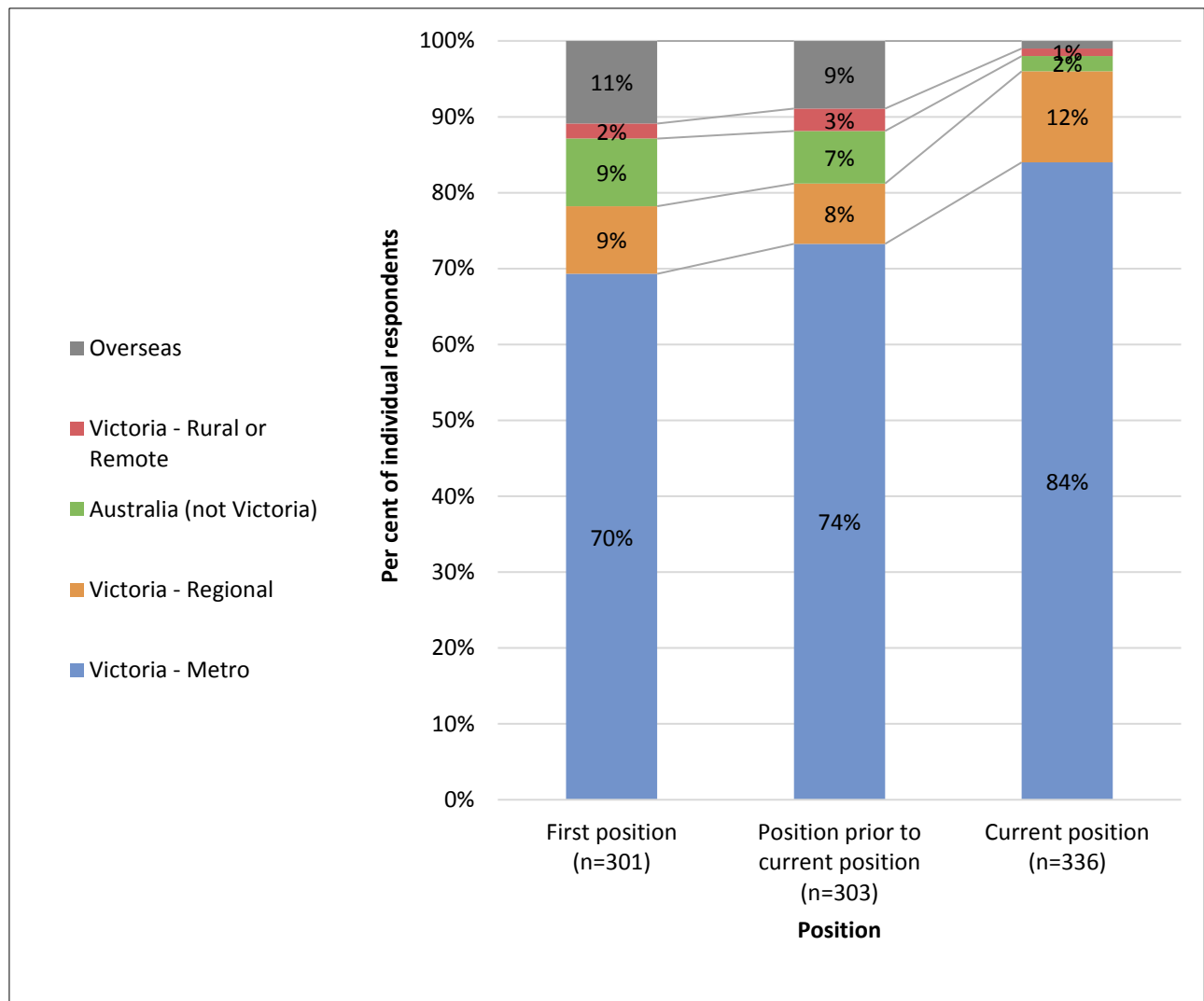
To identify patterns in the career pathway of medical laboratory scientists, participants were asked to provide details regarding their first position, their position prior to their current position, and their current position/s. Questions focused on position locations, roles, settings, and sectors. They were also asked about the number of years they had worked in each role. The results are presented as percentages as not all respondents had worked in three roles. The numbers of respondents for each position and each question are presented in the relevant figures, which illustrate the broad trends across respondents' careers to date.

### Changes in location

The AHWQ2 data shows that the proportion of respondents working in metropolitan areas steadily increased from 70% (210/301 respondents) in their first position to 74% (223/303 respondents) in their position immediately prior to their current position, and then to 84% (281/336 respondents) in their current role (Figure 25).

Interestingly, respondent employment increased in regional areas from 9% (26/301) to 12% (41/336) between respondents' first positions and their current position at the time of the survey. Nearly 1/8 of respondents (34/301) began their careers overseas.

**Figure 25: Changes in location across career path (n=301–336)**



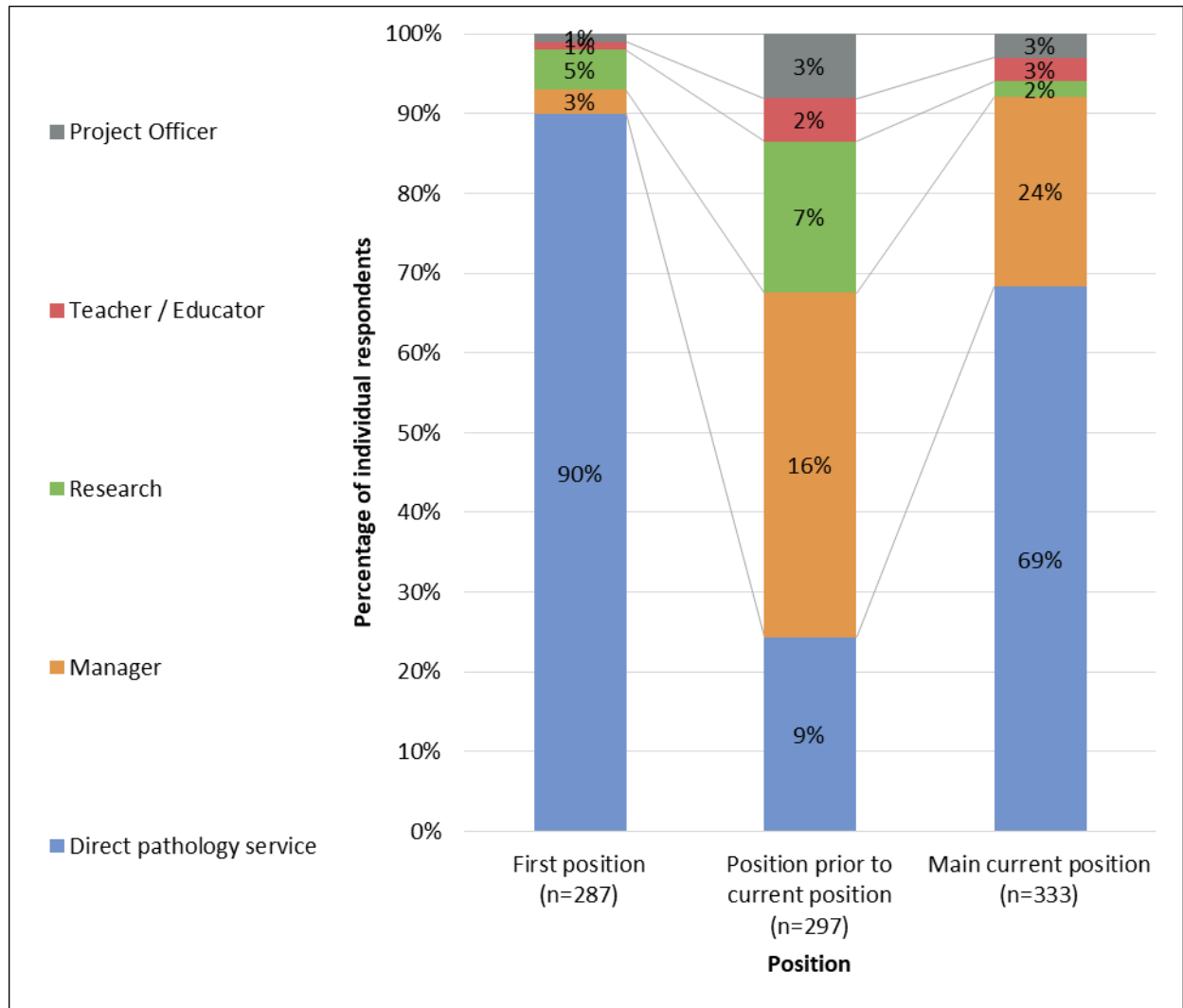
### Changes in role

When employed in their first role as a medical laboratory scientist, 90% (n=259/287) were employed in roles providing direct pathology services. This proportion shifted to 69% (n=204/229) for respondents' immediate prior position, with 16% (n=47) of respondents being employed in management positions and 7% (n=21) being employed as researchers; a very low number were employed in a range of other role types such as project officers, and teachers / educators. The proportion employed in direct pathology services remained stable at 69% (n=229/333) in their current position, with an increase in the proportion of respondents being employed in management positions (24%, n=79/333) and a decrease in the proportion being employed as researchers (2%, n=6/333) (Figure 26).

### Changes in setting

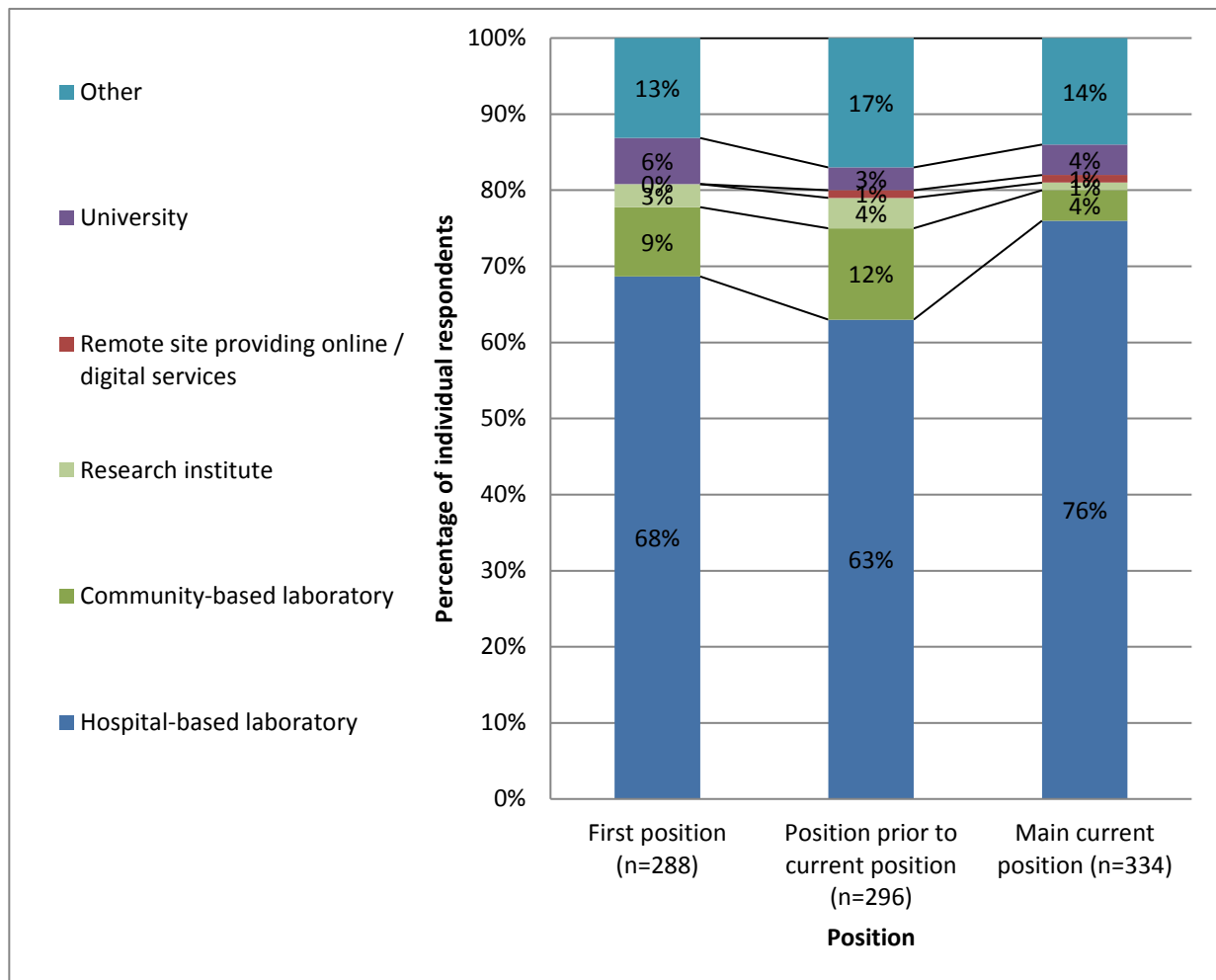
Figure 27 shows there a few changes in the work setting of medical laboratory scientists across their first position, their position prior to their current position, and their current positions. Respondents' roles were predominantly in the hospital inpatient setting (68 - 76%), the proportion in community-based laboratories has decreased from 9% to 4%, and the remainder of the other work settings has remained relatively stable (Figure 27).

**Figure 26: Changes in role across career path (n=287 - 333)**





**Figure 27: Changes in setting of service across career path (n=288 - 334)**



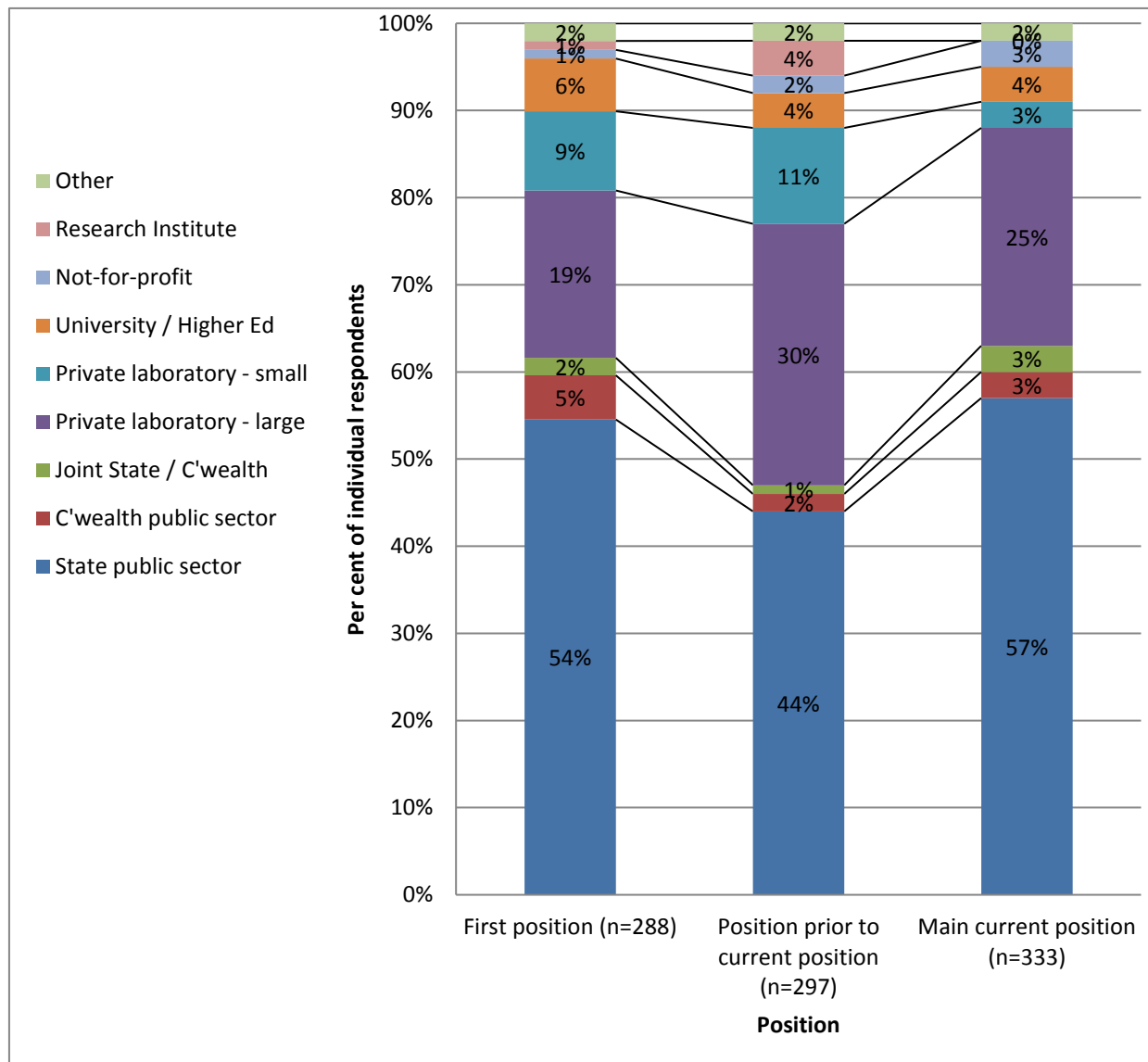
### Changes in sector

Figure 28 summarises the changes in the funding sector of the respondents to the AHWQ2 between their first, prior and current position. These trending shows that the proportion of public sector funded positions (either state or commonwealth) has remained fairly consistent between the respondents' first position and their current position (60%), however this did drop to 47% with the immediately prior position. The increase in the role of the large private sector laboratories was expected with the shift in service provision to the private sector; however the decrease in the proportion in the current position may be due to a number of factors. These include:

- As noted previously, it is not possible to know whether this is an accurate representation of the level of involvement in this survey by the medical laboratory scientists employed in the private sector laboratories.
- This survey was only for medical laboratory scientists. As was noted in the qualitative data many of the positions in the laboratories have been changed to medical laboratory technologists so the medical laboratory scientist positions may now be more concentrated in positions in the public sector.

*"In blood bank you can retain scientists because you need the skill set, blood bank is valued, seen as saving people. Micro[biology] is the same, you will kill someone if you don't tell someone they have meningitis; in other specialities it is much harder to retain scientists."*

**Figure 28: Changes in sector across career path (n=288 – 333)**

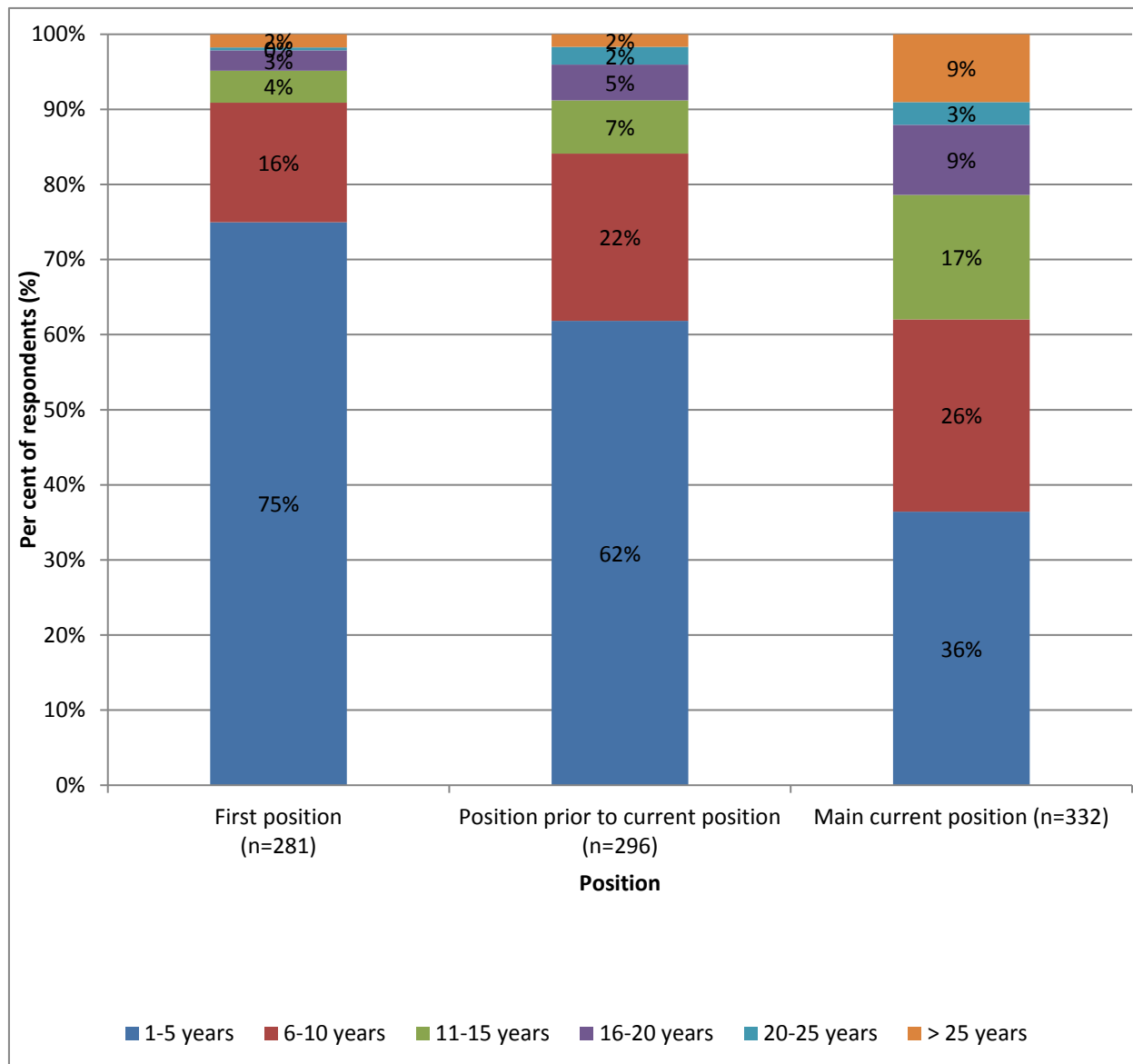


Additional information relating to changes in employment location, sector and setting is in Appendix Tables 5, 6, 7 and 8.

### Years in role

Over time, the number of years that respondents work in a role was shown to increase. The average time in first role was five years and while the average time respondents had worked in their current role was 10 years (Figure 29 and Table 9). When time in role was considered based on sector of employment, the public sector (state and commonwealth combined) had the longest average duration of employment in their current role (10.6 years), followed by those employed in private sector (9.8 years), the NFP sector (8.7 years) and university / higher education (6.6 years). However, it should be noted that both the NFP and university sectors had only a small number of respondents (n= 10 and 12 respectively).

**Figure 29: Years in each role over career path (n=281 - 332)**



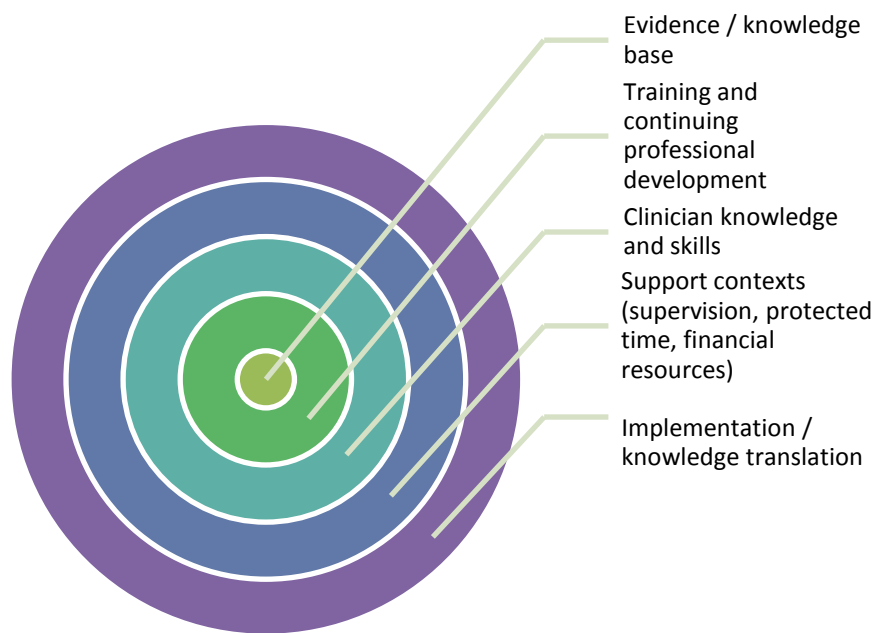
**Table 9: Years in each role over the career path**

	Mean	Range	Count
Years in current role	10	0 - >25	332
Years in prior role	5	0 - >25	296
Years in first role	5	0 - >25	281

## Capability

Capability refers to the strength of the evidence underpinning relevant medical laboratory scientist professional activities, access to training and continuing professional development (CPD) to develop the appropriate skills, the standard of skills practitioners have to deliver evidence-based services, the contextual supports available (supervision, mentoring, dedicated time and appropriate funding models), and opportunities for change in practice to occur (i.e. knowledge translation and implementation) (Figure 30).

**Figure 30: Workforce capability framework**



## Key findings

- Research participants identified the need for continuing development of the knowledge base within the medical laboratory science profession to keep pace with changing technology and new and emerging areas of practice particularly associated with the impacts of workforce reform. However they noted that employers, particularly in the private sector, were less prepared to support continuing education and professional development
- The majority of respondents (69%) had entered the profession with a directed medical laboratory science degree, at either the bachelor or masters level. Eighteen per cent (18%) held another higher degree (other master's degrees, doctorates and PhDs); this is higher than was found in many other allied health professions.
- Forty two per cent (42%) respondents have entered the profession since 2000.
- Fellowships were held by 121 respondents with the most common fellowships being in anatomical pathology / histopathology, haematology and microbiology (all 18.33%), clinical biochemistry and transfusion science (15.8%), and general including core laboratory (15%).
- Forty five per cent (45%) of respondents belonged to AIMS, while 28% did not belong to any professional association or society.
- Most respondents (89%) said they have the skills needed to complete their work, but only 72% said they had the tools needed to perform their role safely.
- Respondents were concerned about under qualification, de-skilling and the impacts of replacing scientists with technicians.
- Majority of respondents felt they did not have career development opportunities (56%) or a clear career progression pathway within the profession (65%). Seventy two per cent (72%) of managers identified lack of career development opportunities as a major concern.
- Barriers to career progression focused on lack of higher grade positions and scientists being paid at lower levels for work that they perceived should be recognised and paid at a higher level. The majority of respondents (52%) felt their grade or salary was not appropriate for the work they undertook.
- The most commonly identified gaps in clinical skills were in analytical skills (51% of organisational respondents), medical informatics and laboratory information systems (49%) and accreditation (43%).
- The most commonly identified gaps in management, business or other professional skills were in career and professional development (66%), management and administration skills (66%), lean management (46%), and workplace communication (43%).
- Eighty seven per cent (87%) of respondents reported having a clinical supervisor and 83% an administrative supervisor. In most instances supervisors were medical laboratory scientists (clinical 57%, administrative 61%) with the next largest group being supervised by a medical professional. Thirteen per cent (13%) had no clinical supervisor despite working in a clinical role.
- The majority of respondents worked in collaborative, multi-disciplinary teams that was either co-located or not co-located (57%), 1/3 worked in a formal collaborative structure but it was not multi-disciplinary.
- Privatisation of the pathology sector was a concern for many. Comments relating to privatisation addressed the pay disparity between the public and private sector, concerns with quality of services, staffing levels, effect on the standards of practice, and the philosophy underpinning these businesses.

## Evidence / knowledge base

Research participants identified the need for continuing development of the knowledge base within medical laboratory science to keep pace with changing technology, and new and emerging areas of practice particularly associated with the impacts of workforce reform.

*“Lack of recognition for the high level of skill needed for the role, particularly in areas such as morphology and transfusion medicine.”*

*“Recognition that medical scientists need to acquire higher levels of competency including roles traditionally undertaken by Pathologists/Registrars and the necessity for workforce reform in the public sector in Victoria.”*

However they noted that employers, particularly in the private sector, were less prepared to support continuing education and development.

*“The pace of change is fast but employers, particularly private employers refused to acknowledge their responsibility for continual ongoing education.”*

*“Private pathology companies cannot spare time for staff to go on courses.”*

*“When you work for big company you feel like you are a machine. No career development or continuous education. Only things that they have to do are for NATA.”*

## Training and continuing professional development

### Prior work experience

The majority of respondents (72%, n = 245/341) had no prior profession or role before becoming qualified as a medical laboratory scientist. The remaining respondents (28%, n = 96/341) had worked in a variety of professions and roles with more than half (51%, n 49/96) having previously worked as a laboratory technician, laboratory assistant or as scientist. For those that had worked in another role or profession before becoming a medical laboratory scientist, the average number of years worked in their previous role was six years.

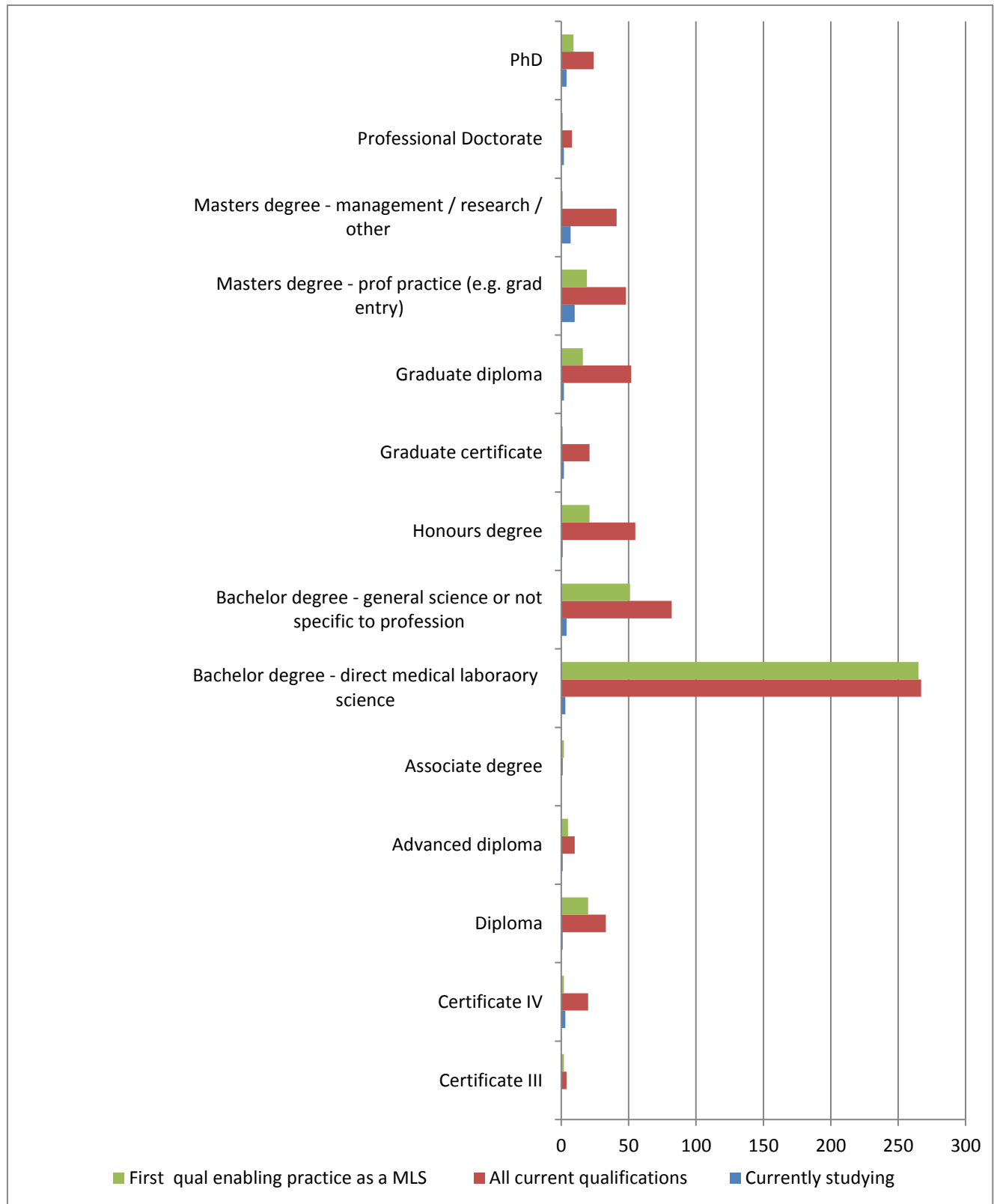
### Qualifications

The predominant first qualification that enabled respondents to practise as a medical laboratory scientist was a directed medical laboratory science bachelor degree (64%, n=265). A further 5% (n=19) entered the profession with a graduate entry medical laboratory science master's degree.

Respondents also reported having a range of other post-graduate qualifications including graduate certificates (n=21), graduate diplomas (n=51), masters degrees (management, research or other (n=41), professional doctorates (n=8), and PhDs (n=24) (Figure 31).

A further 40 respondents reported that they were currently undertaking post-graduate studies. See Appendix Table 9 for detailed breakdown by respondent numbers to different qualifications.

**Figure 31: Qualifications held or currently studying (n=415) <sup>a</sup>**

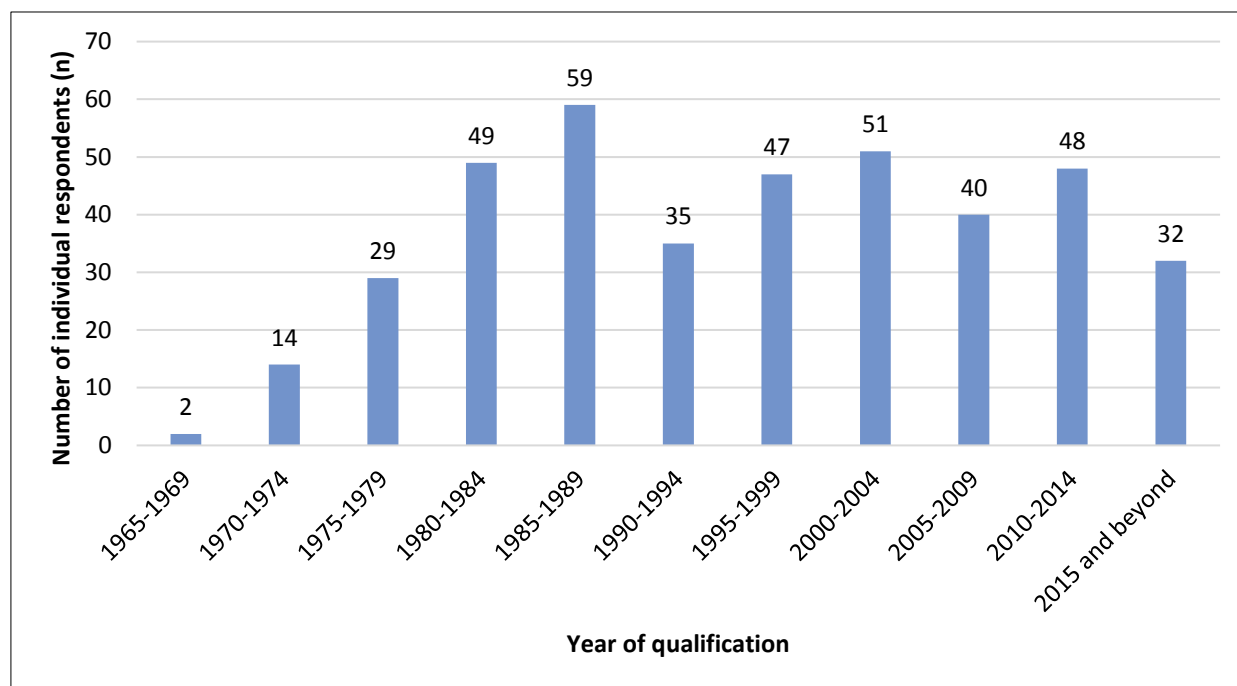


<sup>a</sup> Respondents could select more than one response to 'all current qualifications' and 'currently studying'

When considering the total respondent cohort, the mean length of time since completing their first qualification allowing them to practise as a medical laboratory scientist was 22 years.

Forty two per cent (42%) of respondents have received their professional qualifications since 2000, 20% in the 1990's, and 38% prior to 1989 (Figure 32).

**Figure 32: Year of qualification (n=406)**



Most respondents qualified to practise as a medical laboratory scientist in Victoria (76%, n=310), or another Australian state (10%, n=41), predominantly New South Wales (n=14) or Queensland (n=10). The majority trained in a metropolitan area (91%, n=371). Overseas trained medical laboratory scientists accounted for 14% (n=55) of respondents (Appendix Table 3 and Table 4).

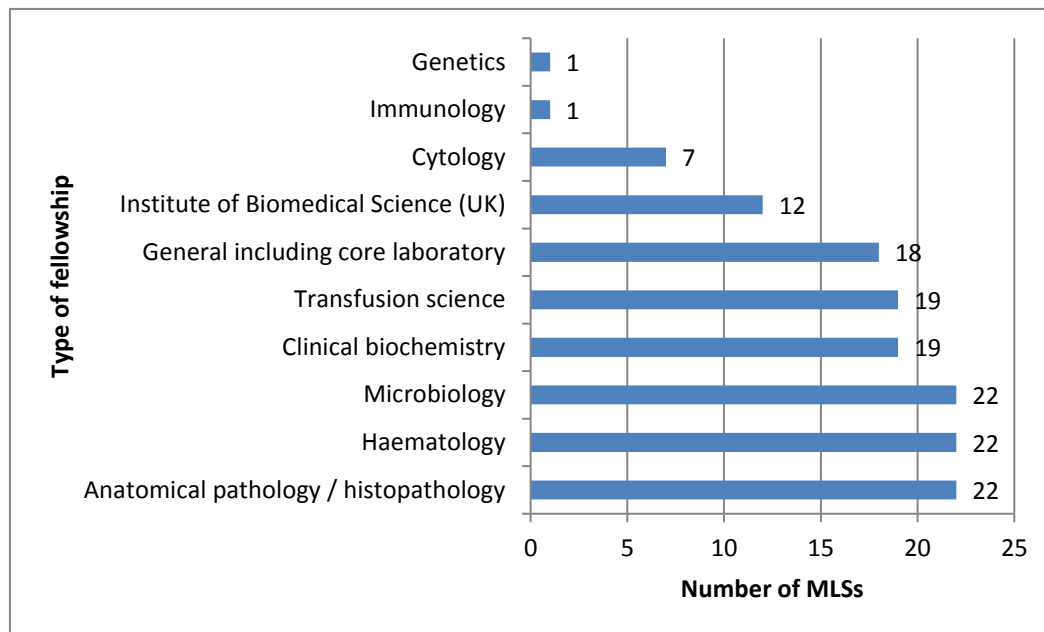
### **Fellowships**

Medical laboratory scientist respondents were asked if they currently held or were enrolled in a fellowship program: 121 respondents indicated they held or were enrolled in a total of 143 fellowships. The most common fellowships were in anatomical pathology / histopathology, haematology and microbiology, all with 18.33% (n=22). Clinical biochemistry, and transfusion science were the next most common with 15.8% (n=19), then general including core laboratory (15%, n= 18) (Figure 33).

Studying for and obtaining their fellowship was noted as one of the most commonly stated factors that enhanced career progression.



**Figure 33: Fellowships held or studying (n=121)**

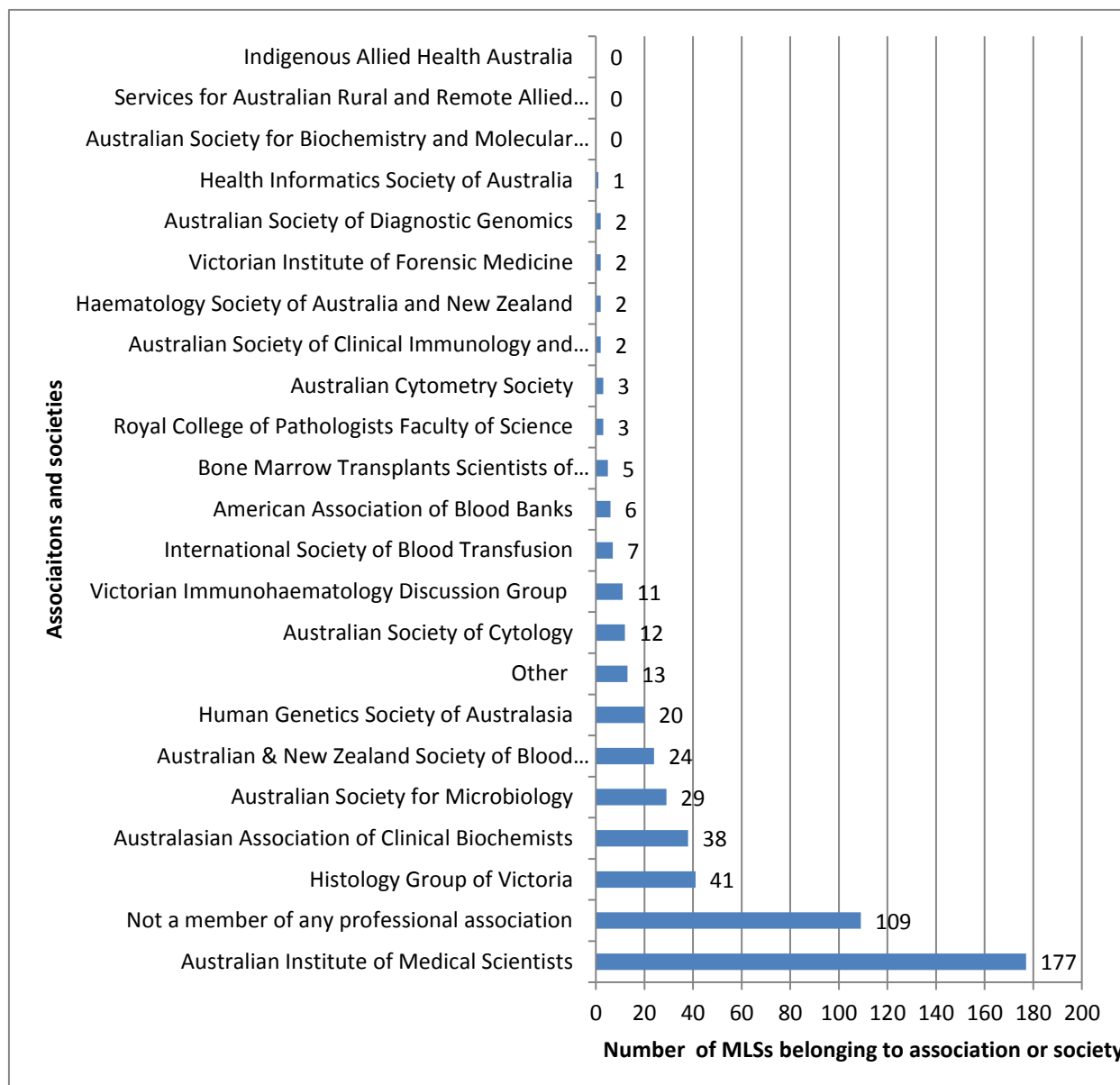


### Continuing professional development

Medical laboratory scientist respondents were asked about their participation in continuing education, whether they belonged to professional associations and societies, and if they felt they had adequate access to professional development and training. AIMS administer a program for the continuing professional development entitled APACE (Australasian Professional Acknowledgement of Continuing Education). Respondents were asked if they participated in this program: 25% (n=102) indicated they did while 75% (n=299) said they did not. However if this question was limited only to those respondents who were stated that they were members of AIMS, 58% participated in APACE.

Respondents were asked if they belonged to any professional associations or societies, and if so what organisations. The largest proportion (45%, n=177/390) were members of AIMS, while 28% (n=109/390) indicated that they did not belong to any association or society. Of the specialty clinical associations the *Histology Group of Victoria* had the largest number of members (n=41), followed by the *Australasian Association of Clinical Biochemists* (n=38), the *Australian Society for Microbiology* (n=29) and the *Australian & New Zealand Society of Blood Transfusion* (n=24) (Figure 34).

**Figure 34: Professional associations and societies MLs belonged to (n=390)**



### Career development and progression

With respect to career development and progression, the overall response from respondents was not positive. Only 23% (n=64/274) agreed they had local career development opportunities and 11% (n=29/274) felt that they had a clear career progression pathway within the profession. The majority (56%, n=153/274) felt they did not have clear career development opportunities with their current employer, and 65% (n=179/274) felt there was no clear career progression pathway within the profession (Figure 35).

Only 22% of respondents agreed they had access to adequate training to progress their career (n=60/274) and 19% (n=51/274) felt they had access to mentorship to support their career growth. The largest proportion of respondents disagreed with these statements, 47% (n=128/274) felt they did not have adequate access to training and 53% (n=144/274) felt they did not have access to mentorship. Only 31% and 29% respectively indicated a neutral answer to these statements (Figure 35).

These themes were also expressed very strongly within the qualitative survey responses and focus groups.

When asked about the factors that had supported their career progression, respondents provided the following responses:

- personal commitment and investment, particularly in the private sector where there is less opportunity and time for continuing education
- participation in professional development and formal study, particularly the AIMS fellowship program
- supportive senior scientists that explicitly supported and created new opportunities
- having a supportive supervisor who is able to mentor

However the majority of respondents, including 72% of managers and employers and 65% of medical laboratory scientists, identified lack of career progression opportunities as a major concern. Lack of career development and progression opportunities was also the third most commonly identified issue in the question relating to the most important issue needing to be addressed by the profession. Twelve per cent of respondents (n = 38/321) made comments relating to this issue.

Barriers to career progression were noted to predominantly focus on lack of higher grade positions and scientists being paid at lower levels for work that they perceived should be recognised and paid at a higher level. This was also noted by the majority of respondents (52%) who felt their grade or salary was not appropriate for the work they undertook (Figure 40 and Appendix Table 11).

*“An industry that flatly doesn't support progression. Budgets only allow one grade 2, one grade 3 and these positions are held by people for over 20 yrs. So grade 1s stagnate. There is no career progression.”*

*“No progression in wages in private sector (still a Grade 1 even though do tasks, responsibilities for a higher level) and most public sector jobs are in metro Melbourne- pathology in the country has been tendered out to private providers, whose profit etc. comes first. “*

*“There is a very flat structure. Not much opportunity to progress, only a couple of senior scientist roles available which have no turn-over. No continuing education or development to learn new things or to progress.”*

*“Maternity leave and people retiring - only way to progress upwards.”*

*“None [career development opportunities] as I am still a Grade 1 after 34 years.”*

*“Not much career progression. Still in same role and same level as was 10 years ago.”*

*“I haven't progressed much in the 15 years since I graduated. Changing jobs in different countries has allowed me different experiences, but I have less responsibility now than I did as a new graduate.”*

*“I am still a grade 1 scientist after 27 years in the same job- I train new scientists and supervise, and have further qualifications- however no recognition.”*

*“My company has zero interest in staff or staff progression.”*

*“There has been no progression since I started, No matter how much I work or do for the lab.”*

*“Private pathology only interested in saving money, so not promoting anyone. Employing cheaper technicians not scientists.”*

Some respondents had the view that not specialising was a barrier to their career.

*“Being a core lab scientist means you can't specialise, so a jack of all trades and a master of none.”*

But more saw this as a facilitating their career progression.

*“Working in a multidisciplinary laboratory, self-directed learning.”*

*“I travelled and gained experience in a variety of laboratories.”*

*“My multidisciplinary training early years has facilitated my career.”*

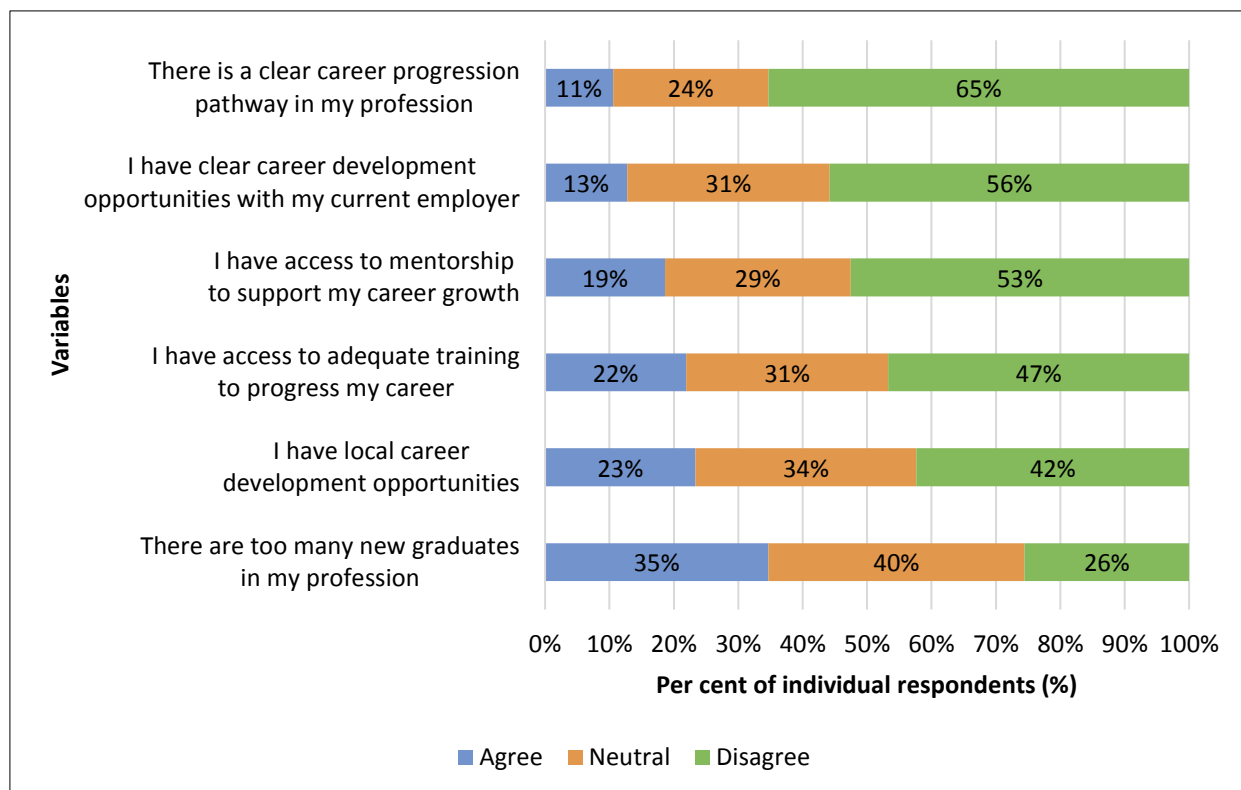
A number of respondents also commented on the how changes in the new EBA may impact on career progression.

*“The current EBA will have a dramatic impact with the change to Grade 2 classifications that this will be an easier transition from Grade 1. It will impact on those that are currently a Grade 2 as they have earned their role rather than an easier upgrade due to years worked. It will also impact on the budget for the area and I fear that scientist will be targeted and replaced with technicians.”*

*“Some of us worked hard and applied for merit reclassification to Grade 2. Now anyone who hangs around long enough will automatically become a Grade 2. It’s hard enough to get anywhere in this profession as a part time female, and now the biggest step I’ve ever had the opportunity to take is being completely devalued.”*

*“With the new EBA, it is going to make us an incredibly expensive pathology service so a private provider will be able to come in and rip out all the mid-level positions, all the knowledge, and all they then need is one higher grade and a lot of low grade positions.”*

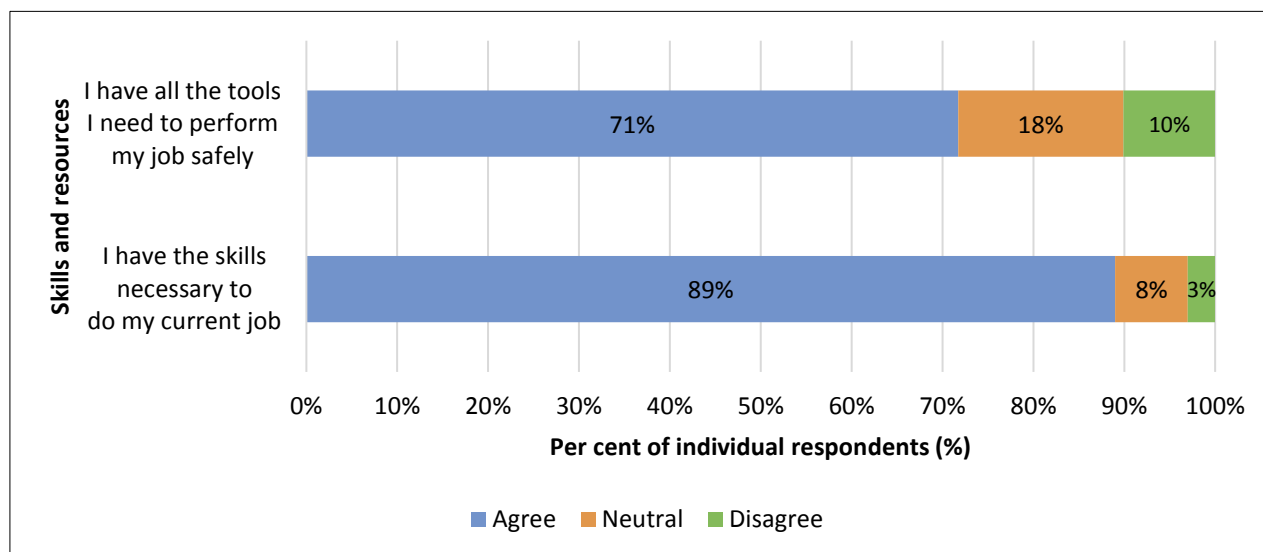
**Figure 35: Career development opportunities (n=274)**



## Clinician knowledge and skills

The vast majority of medical laboratory scientist respondents (89%, n=240) stated they have the skills necessary to perform their job. Only 3% (n=7) indicated this was not the case. Somewhat lower than this was the finding that just under three quarters (72%, n=191) of respondents agreed that they have the tools needed to perform their role safely. Although a high proportion, this finding does not diminish the importance of the fact that 10% (n=28) stated they do not have the tools to perform their job safely and 18% (n=49) gave a neutral response to this question (Figure 36).

**Figure 36: Clinician skills and resources (n=269)**



Despite these positive findings, a number of survey and focus group respondents were concerned about under qualification, de-skilling and the impacts of replacing scientists with technicians.

*“De-skilling of staff due to inadequate management to allow staff to rotate through all areas in the lab to maintain complete competency.”*

*“Deskilling / replacement by lab techs.”*

*“I am worried about the deskilling of our workforce due to budget concerns at a time when demand for our testing is increasing many fold.”*

*“Many people are underqualified with no formal exams etc. required for the titles we hold. Returning to a system such as that based on the UK HCPC [United Kingdom Health and Care Professions Council] registration could possibly be of benefit.”*

*“Degradation of the level of qualification required to work in the area. As this is not a registered profession, financial pressures have seen a decrease in the quality of individuals working in labs. More labs are employing cheaper technicians and the level of service provided is suffering as a consequence. The only resolution would be to require labs to employ a minimum number of scientists and pay them accordingly.”*

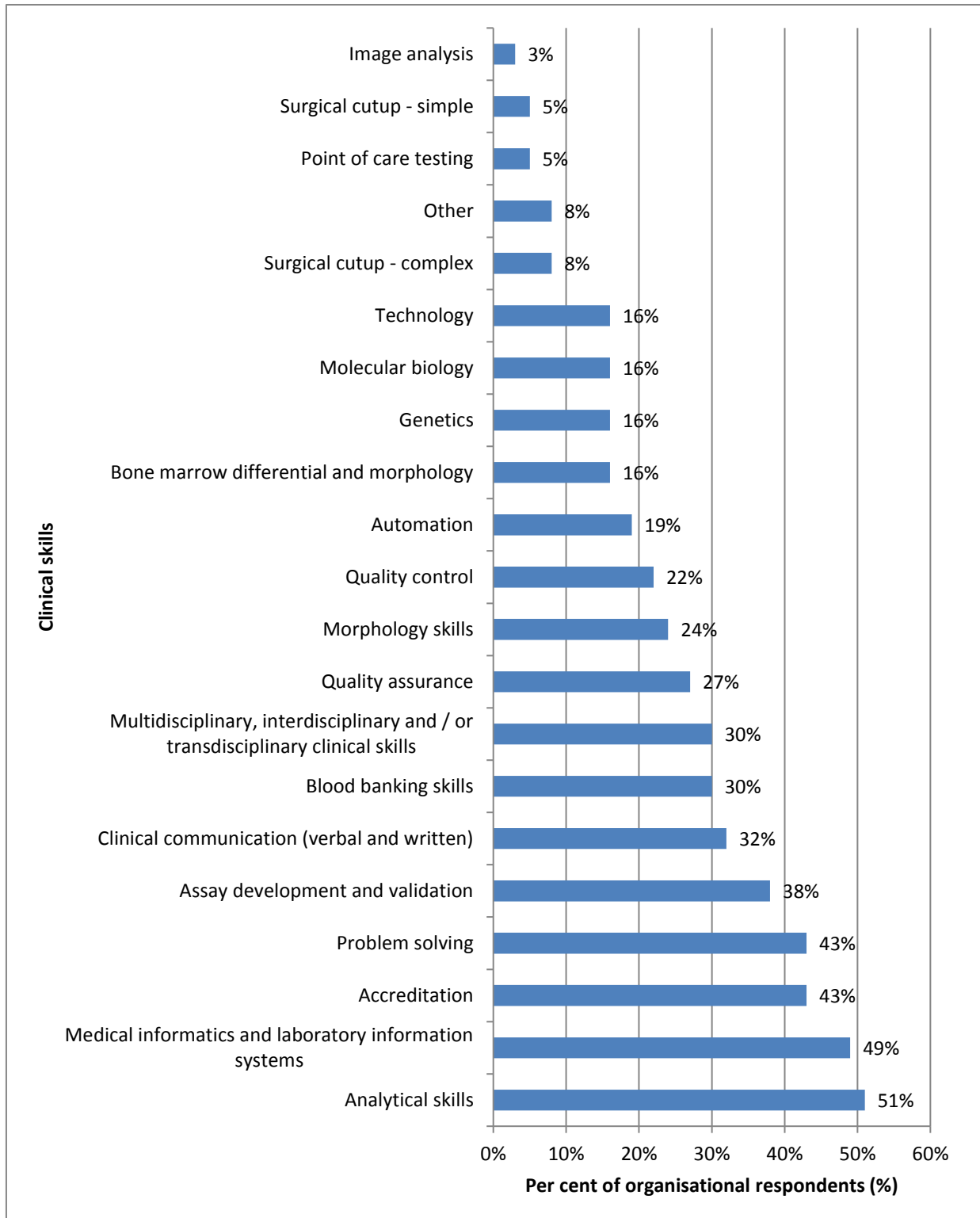
### Skill gaps

Sixty one (61) organisational respondents answered the question about skill gaps for medical laboratory scientists. Of these respondents, 10/61 stated they had experienced no gaps in skills, while 37/61 identified gaps in clinical skills and 35/61 identified gaps in management, business or other professional skills.

### Gaps in clinical skills

The most commonly identified gaps in clinical skills were in analytical skills with 51% of organisational respondents (n=19), followed by medical informatics and laboratory information systems (49%, n=18), and accreditation (43%, n=16) (Figure 37).

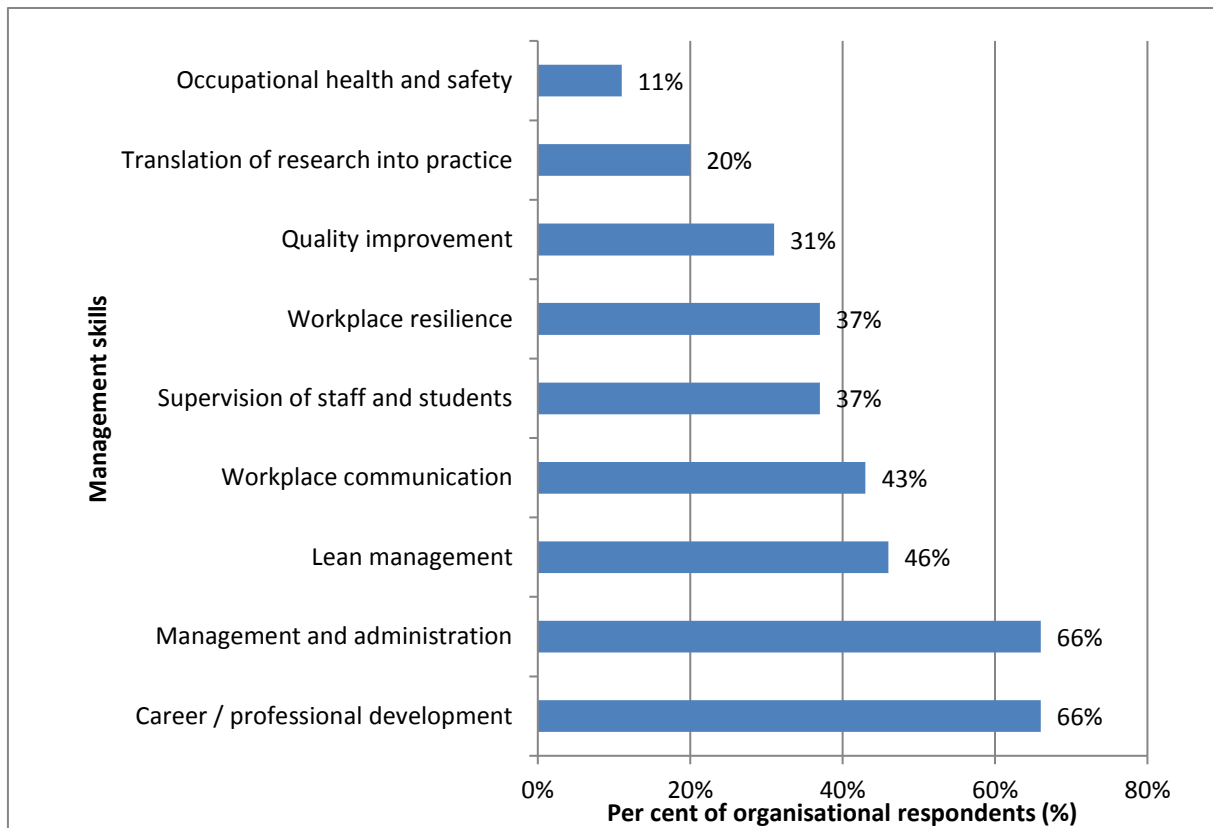
Figure 37: Gaps in clinician skills identified by organisational respondents (n=37)



### **Gaps in management, business or other professional skills**

The most commonly identified gaps in management, business or other professional skills were in career and professional development (66%, n=23/35), management and administration skills (66%, n=23/35), lean management (46%, n=16/35), and workplace communication (43%, n=15/35) (Figure 38).

**Figure 38: Gaps in management skills identified by organisational respondents (n= 35)**



### **Support contexts to enhance capability**

#### **Supervision and support**

The medical laboratory scientists that responded to the AHWQ2 and contributed to the focus groups emphasised the importance of good quality supervision and support. When asked an open-ended question about the contributors to their career progression opportunities, supervision, mentoring, and supportive management were identified as the most important factors.

#### **Clinical supervision**

The AHWQ2 responses showed that 87% (n=245) of medical laboratory scientists had a clinical supervisor, while 13% (n=36) indicated they worked clinically but did not have a supervisor.

The majority of medical laboratory scientists (57%, n=160) were supervised by other medical laboratory scientists and a further 30% (n=83) were supervised by a medical professional. A very small proportion were supervised by either another AH professional (<1%, n=1) or a professional from a non-clinical background (<1%, n=1) (Figure 39).

#### **Administrative supervision**

The survey responses showed that 83% (n=234) of medical laboratory scientists had an administrative supervisor, while 17% (n=47) stated they did not have an administrative supervisor.

The majority of medical laboratory scientists (61%, n=170) were administratively supervised by other medical laboratory scientists and a further 11% (n=30) were supervised by a medical professional. A small proportion were supervised by either another AH professional (4%, n=12) or a professional from a non-clinical background (7%, n=20) (Figure 39).

**Figure 39: Professional background of clinical and administrative supervisor (n=281)**

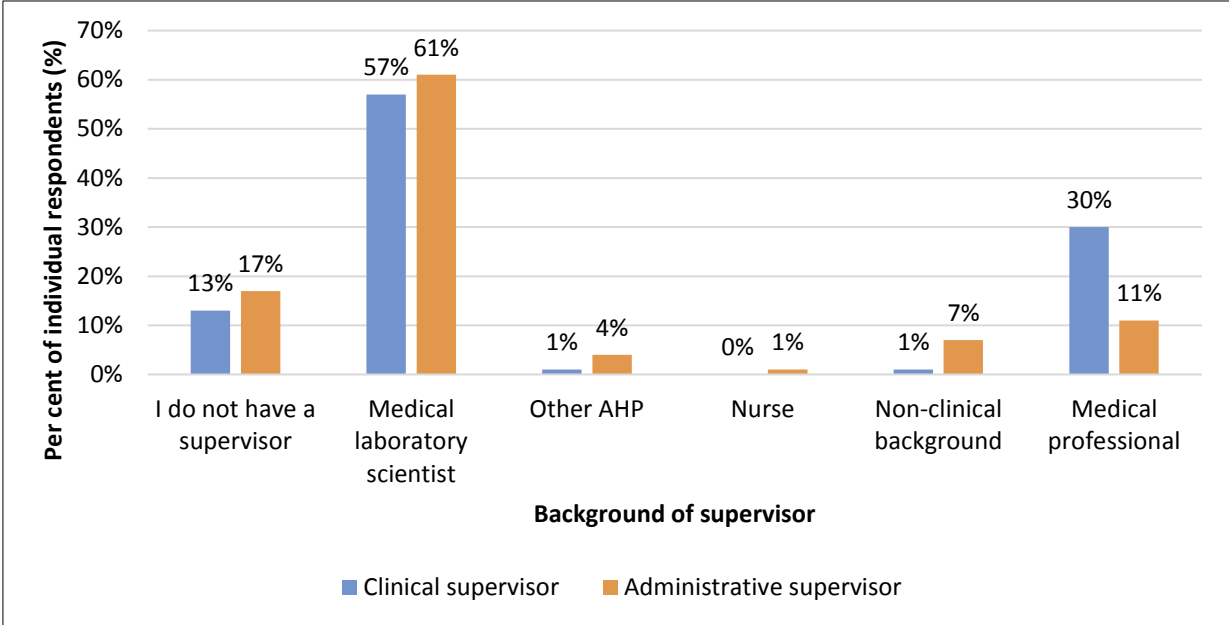
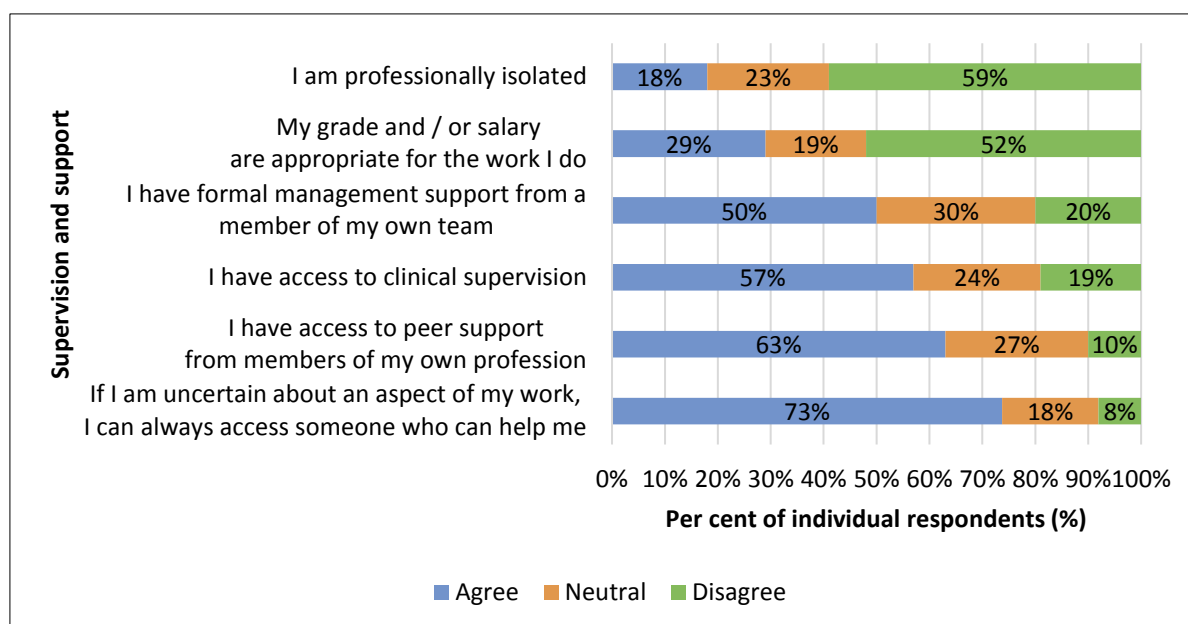


Figure 40 provides further information on the support experienced by medical laboratory scientist respondents. Most respondents reported that they had access to peer support within their profession, were not professionally isolated, could access assistance if they were uncertain about their work, and had access to clinical supervision. However 50% of respondents disagreed or were neutral on having formal management support from a member of their own team and 37% reported the same for access to peer support from members of their own team. As identified earlier, only 29% felt their grade and / or salary were appropriate for the work they do.

It is also of interest that although in Figure 39 (above) only 13% of respondents indicated they do not have a clinical supervisor, in Figure 40 (below) 43% (n=105) disagreed or were neutral on the point of having access to clinical supervision. This suggests that although a professional may have an appointed clinical supervisor, this may not reflect the extent to which they receive clinical supervision.



**Figure 40: Access to supervision and support**



When these findings were considered based on the employment sector of respondents<sup>8</sup>, those employed in the state public sector were most likely to report having access to someone who can help (76%, n = 124), the tools they need to perform their job safely (71%, n = 116), peer support (64%, n=103) and clinical supervision (63%, n = 95). Respondents from the private provider – large multi-sited laboratories sector had higher proportion with formal management support (52% (n = 33) versus 48% (n = 79) in the state public sector, but slightly lower levels of access to someone who can help (69%, n = 44), the tools they need to perform their job safely (63%, n = 41), peer support (58%, n = 38) and clinical supervision (48%, n = 29). Both groups reported low levels of agreement with the statements that their grade or salary was appropriate for the work they did, 31% (n = 50) in the state public sector and 15% (n = 10) with a private provider (Appendix Table 10).

While having supportive manager and mentorship were seen as important facilitators of career development and progression, it was acknowledged that there was a lack of supervision available to more junior level professionals and staff.

*“Having a supportive supervisor, boss, and haematopathologists who support ongoing education.”*

*“Excellent mentors in the early years.”*

*“Strong encouragement and support from my managers.”*

*“Badly in need of supervision for trainees and new graduates.”*

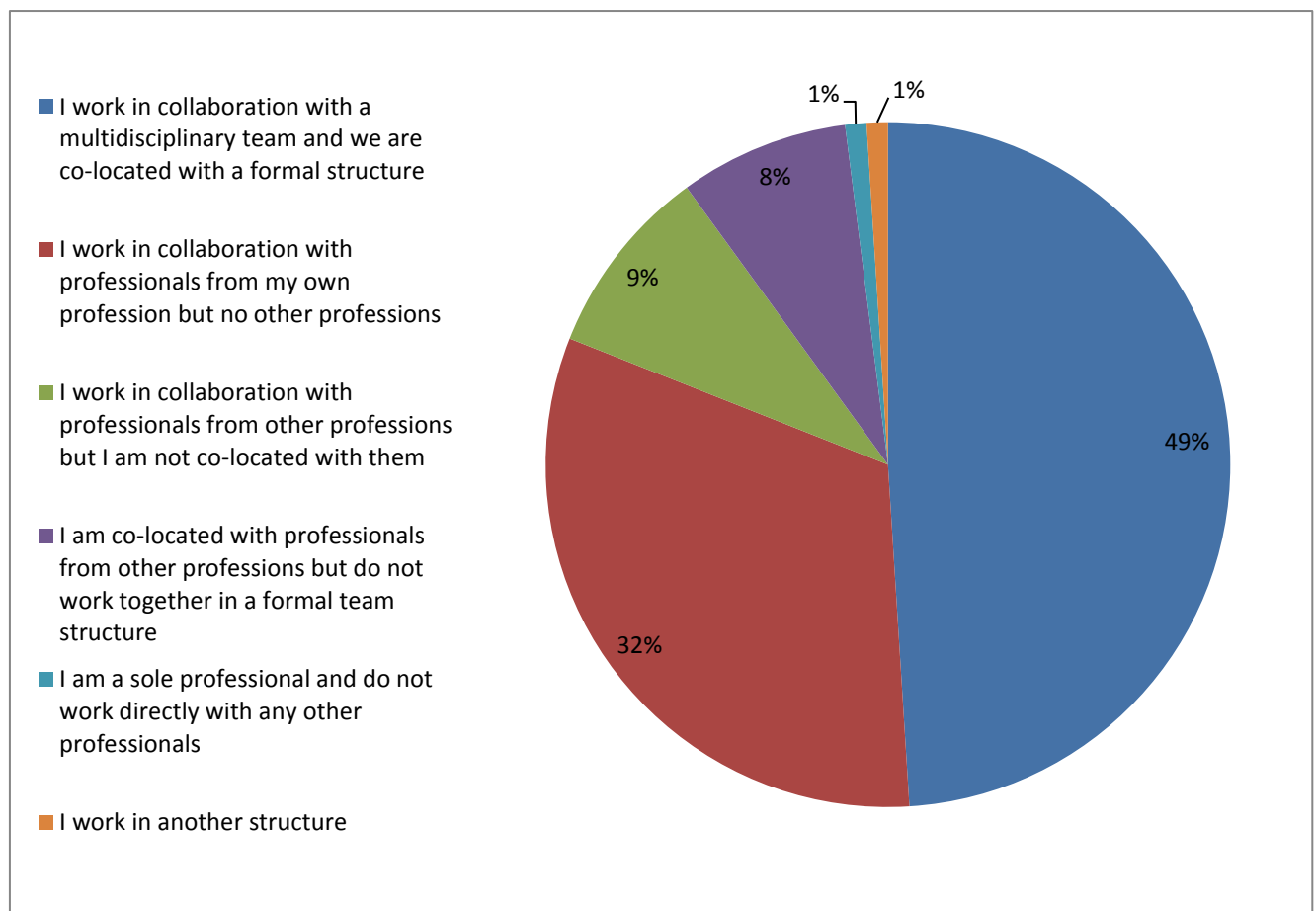
*“There has been an erosion of junior scientist career opportunities due to employment of lab assistants or technicians who then work under supervised.”*

<sup>8</sup> For this comparison, only the state public sector (n = 163) and the private provider – large multiple sites (n = 65) are included as their response rates were large enough to provide meaningful results. Appendix Table 10 provides further information in this area for the following sectors: state public, commonwealth funded, private provider – large, NFP, and university higher education. No data is provide for joint state and commonwealth funded services and private providers – specialised or small laboratories as the ‘n’ was <5 and too small to maintain anonymity.

## Team structure

The majority of medical laboratory scientists worked closely with both professionals from their own profession and other professions. Approximately half (49%, n= 137/279) worked in a formal, collaborative, multi-disciplinary team which was co-located, and 8% (n = 22) worked in the same manner but were not co-located together. One third (32%, n = 88/279) worked in a collaborative structure which included only other medical laboratory scientists. A small number (9%, n= 24) were co-located with other professionals but did not work with them, and an even smaller number 1% (n = 4) were sole practitioners who do not work directly with any other practitioners (Figure 41).

**Figure 41: Practice structure (n=279)**



## Privatisation of pathology services

The increasing privatisation of pathology services in Victoria was raised as one of the single most important issue for the profession by as an issue by a number of medical laboratory scientists (n = 17). It was also raised numerous times in every other comment section included in the survey. Comments relating to privatisation addressed the pay disparity between the public and private sector, concerns with quality of services, staffing levels, effect on the standards of practice, and the philosophy underpinning these businesses.

*“There is a massive gulf in quality between public and private laboratories. Having worked in both, I am very worried about the trend of outsourcing laboratories in public hospitals to private operators. The lack of qualified staff and resources in general in private laboratories is dangerous to patient outcomes.”*

*“Need an emphasis on quality / expertise rather than profit. Privatisation has had a significant negative effect on standards and in depth skills in specific disciplines.”*

*“Need private ownership of pathology services [to] cease or at least be regulated to provide a minimum level of service to regional areas and in particular large hospitals.”*

*“Privatisation of pathology in public health is leading to reduced staff numbers (despite increasing specimen numbers), increased staff workload and stress, and large disparities in pay and conditions between public and private sector scientists / lab staff.”*

*“The privatisation of the pathology sector and the monopoly by a small number of providers has drastically impacted the local service provision even to large regional hospitals. Everything is about centralising the work to metropolitan laboratories and profits for shareholders. It has become a wealth industry not a health industry. These large private companies do not support continuing education and workplace development.”*

*“When you work for a big company you feel like you are a machine .No career development or continuous education .Only things that they have to do are for NATA.”*

*“Poor pay and conditions in large private pathology providers leads to many medical scientists leaving the profession. This means there is a shortage of experienced (as opposed to qualified) medical scientists within the profession making it hard to fill gaps.”*

*“Grossly let down by the very large private companies.”*

*“Private laboratories need to be stopped from flattening organisational structures and employing technicians instead of scientists to save money.”*

*“While there is such a large gap between the \$\$ and conditions of the public and private sectors, it is difficult to recruit and retain experienced staff to the private sector. Applicants for jobs are usually straight out of uni, or have degrees not relevant to the pathology laboratory. Then when we do employ staff, many leave as soon as they are trained enough to get a job in the public sector.”*

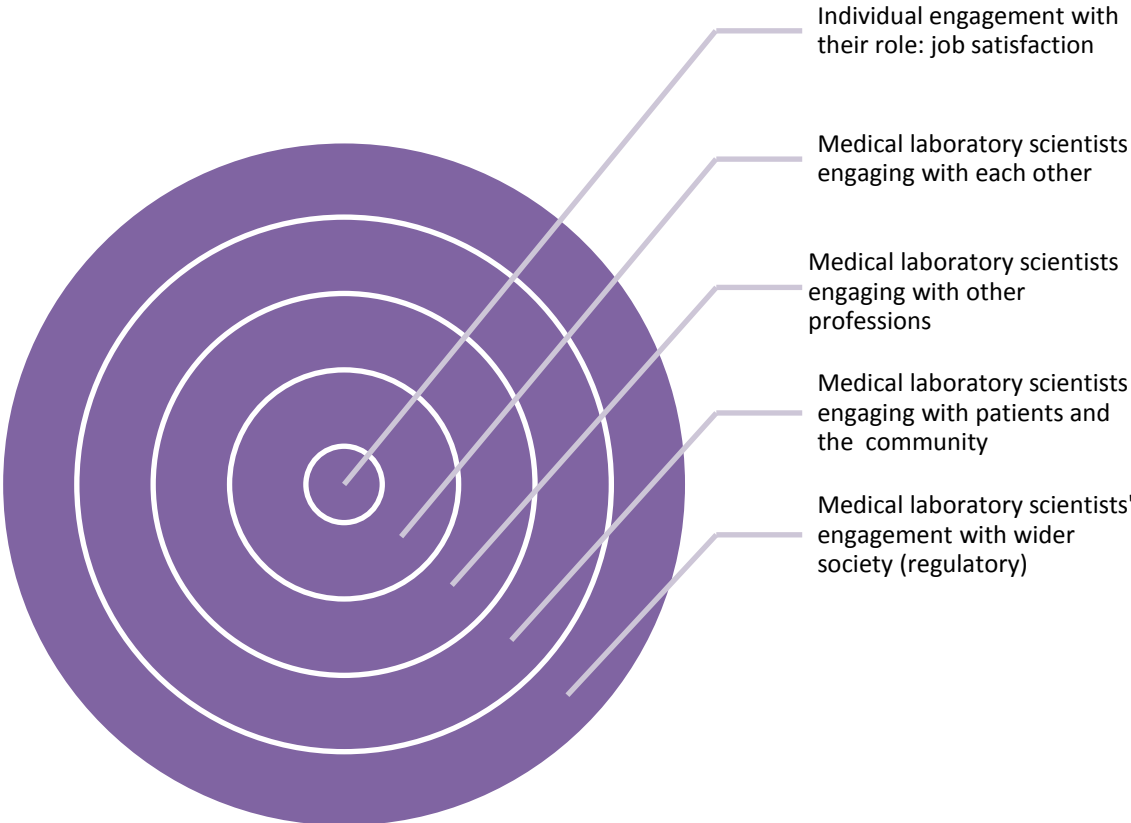
*“Private pathology only interested in saving money, so not promoting anyone. Employing cheaper technicians not scientists.”*

*“No progression in wages in private sector (still a Grade 1 even though do tasks, responsibilities for a higher level) and most public sector jobs are in metro Melbourne- pathology in country has been tendered out to private providers, whose profit etc. comes first.”*

# Engagement

Engagement involves a continuum from the individual practitioner's engagement with their role to the wider engagement of the profession with society through regulatory mechanisms. Within this continuum there is engagement with the profession, engagement with other professions, and engagement with patients and the community (Figure 42).

**Figure 42: Model of engagement**



## Key findings

- Only slightly more than half (58%) reported being satisfied with their current careers, while nearly 1/3 (32%) were either somewhat or extremely dissatisfied.
- Across employment sectors, 29% of state public sector employees expressed dissatisfaction compared to 46% of employees of private large multi-sited companies, while 60% of state public sector employees were satisfied versus 41% of employees of private large multi-sited providers. The highest level of job satisfaction was in the university sector (75%); however the number of respondents in this sector was small.
- In relation to the components of job satisfaction, only 23% were very satisfied with their work-life balance, and 15% with their income. Forty seven per cent (47%) rated career advancement opportunities as very important, however only 8% were very satisfied with their current situation.
- There was a concerning level of disillusionment and frustration within the profession, and a major concern relating to low morale.
- A high level of concern was expressed about the future particularly relating to the 'brain drain' and availability of experienced senior scientists in the next decade.
- AIMS was recognised as needing to be a key facilitator and reference point for intra-professional engagement and discipline-specific change at a systems level both within and beyond the profession.
- There was a consistent theme of lack of recognition for what medical laboratory scientist do, and a lack of community and public understanding relating to the role.
- Respondents wanted the profession to have some form of registration, certification or accreditation. This was the most important issue for survey respondents with 56% of all comments making some reference to this issue. 'Registration' was felt to not only increase their professional recognition, but to also address concerns with less qualified people working in roles that should be filled by scientists and using qualified scientists in technician and assistant roles without paying for their knowledge and skills.

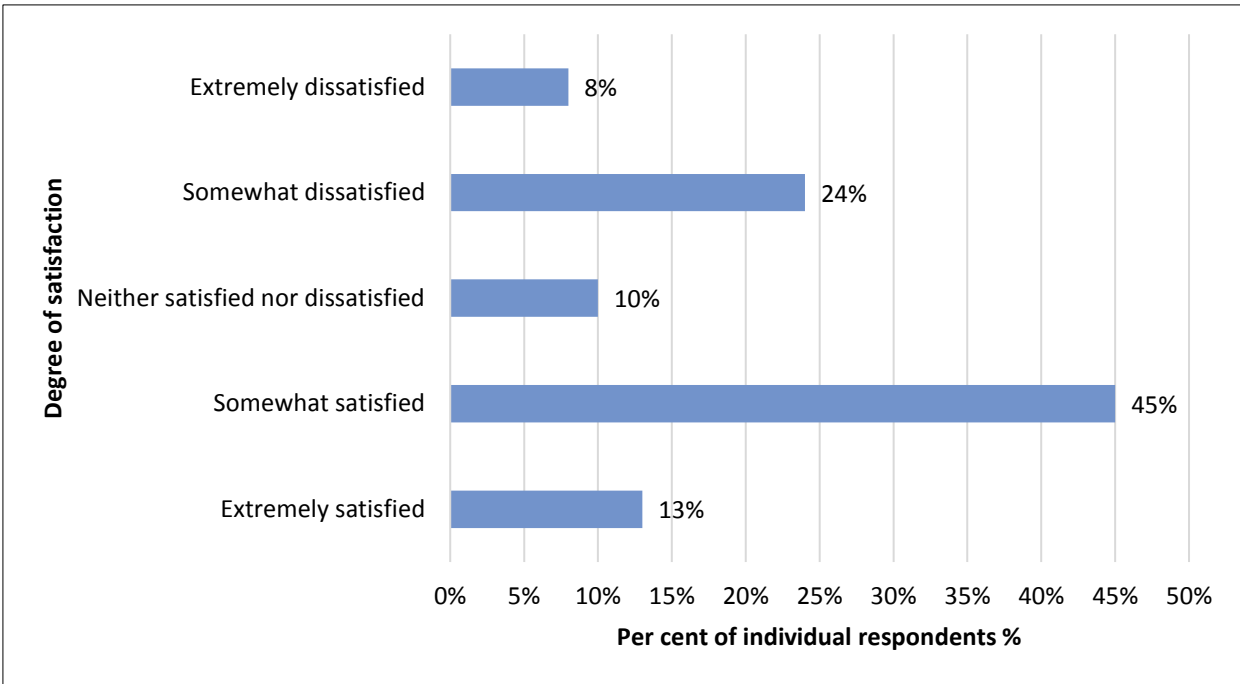
## Individual role engagement

While slightly more than half (58%, n = 162/279) of all medical laboratory scientist respondents reported being satisfied with their current work situation, the majority of these experiencing job satisfaction were only somewhat satisfied (77%, n = 125/162). Overall 45% (n = 125/279) of respondents were somewhat satisfied and 13% (n = 37/279) extremely satisfied. Ten per cent (n = 28/279) were ambivalent regarding their satisfaction, and nearly 1/3 (32%, n = 89/279) were either somewhat or extremely dissatisfied. The majority of the dissatisfied respondents (75%, n = 68/89) were somewhat dissatisfied, while 25% (n = 21/89) were extremely dissatisfied (Figure 43).

When compared across employment sectors, 29% (n = 49/170) of state public sector employees expressed dissatisfaction compared to 46% (n = 31/65) of private large multi-sited providers' employees, and 60% (n = 103/170) of state public sector employees were satisfied versus 41% (n = 28/65) of private large multi-sited providers' employees. The highest level of job satisfaction was in the university sector (75%), however the number of respondents in this sector was small (n = 9/12) (Appendix Table 11).

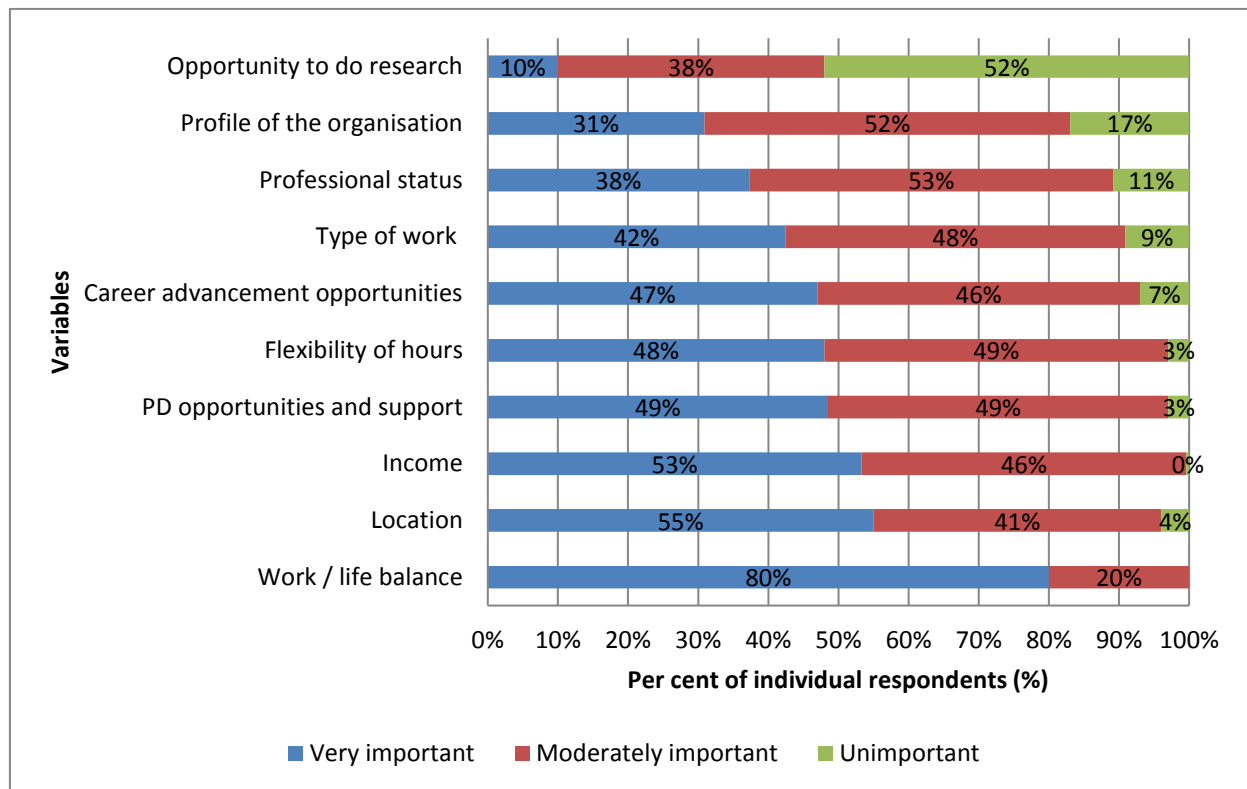
Overall satisfaction was also compared to age groups to determine if age was a factor in this result. Sixty per cent of respondents were 50 years of age and under and this correlated with 60% of respondents that were experiencing job satisfaction, so there was no age factor associated with job satisfaction.

**Figure 43: Overall satisfaction (n=279)**



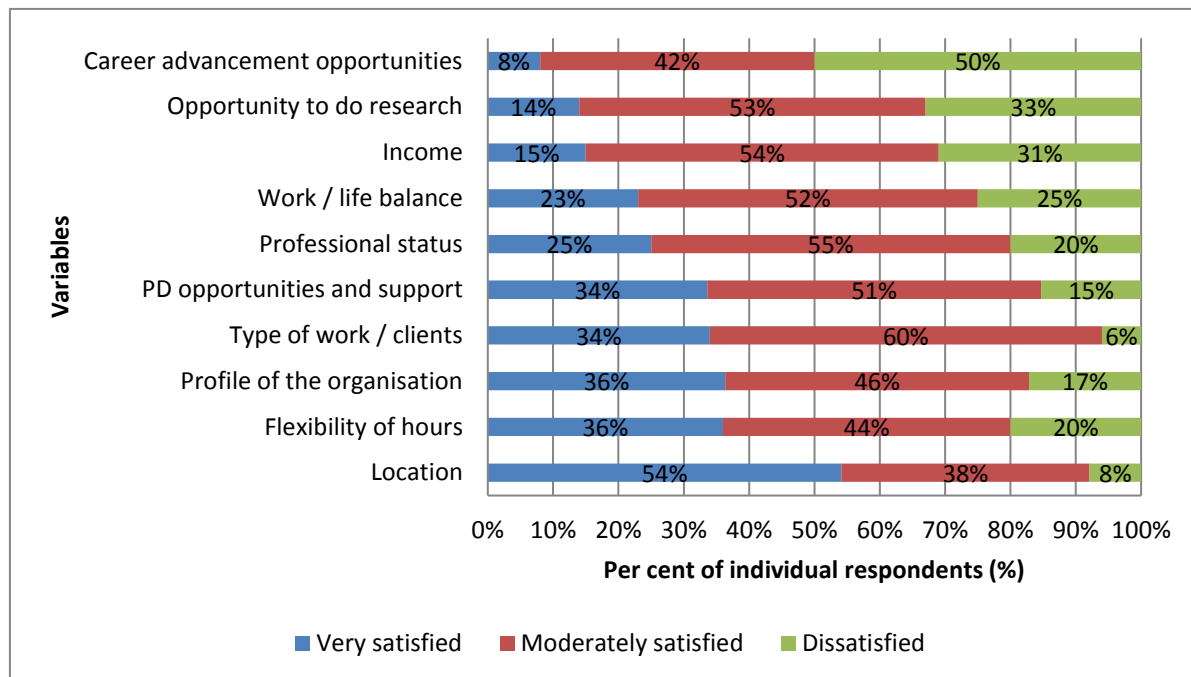
The research participants were asked about the relative importance of different features of their employment. The three features identified as being very important to the greatest proportion of respondents were work-life balance (80%, n=211), location of work (55%, n=145), and income (53%, n=141) (Figure 44).

**Figure 44: Importance of factors affecting employment choices (n=264)**



However, with the exception of location of work where 54% were very satisfied (n = 143), the proportion of those who indicated they were currently very satisfied with these top features was markedly lower. Only 23% (n=62) were very satisfied with their work-life balance, and 15% (n= 39) with their income. Forty seven per cent (47%, n = 125) rated career advancement opportunities as very important, however only 8% (n = 22) were very satisfied with their current situation (Figure 45).

**Figure 45: Current satisfaction with factors affecting employment choices (n=264)**



The comments from both the survey respondents and the focus group participants relating to job satisfaction demonstrated a concerning level of disillusionment and frustration within the profession. The focus group participants also identified a major concern relating to low morale within the profession.

*“Would discourage anyone from joining this profession. Technology and privatisation have decreased the satisfaction I once found in this job.”*

*“Many people in this industry are increasingly becoming frustrated with being underappreciated, under recognized and overworked. There is less harmony by the day.”*

*“I would never encourage a young person to train for this profession. It's hard on the body, with standing all day and shift work, you get no appreciation, either from management or the public, and not in remuneration either.”*

*“I would not be encouraging anyone to enter this profession for the future as I see little change and career path available. It is all about getting the work done for the least pay by the management. Too many scientists are leaving the profession due to shift work, understaffing, stress and excessive workloads and unrealistic expectations.”*

*“Medical scientists in particular have a lot to be concerned with increasing automation and health sectors always looking to decrease costs. Hearing stories about private laboratories and other public labs hiring technicians in place of scientists is incredibly disheartening particular when individuals qualified as scientists have no choice but to take these underpaid jobs. Salary of medical scientists is too low given the level of expertise many have.”*

*“We have a major issue with morale in the industry. People feel like there is not much available for them to do, that they are going to be superseded by instrumentation, they are not valued. Part of the problem is leadership. You get someone who is a good scientist, principal scientist and they have never done any leadership training and managerial training, might be a really good scientist but not a very good leader, not able to keep up morale. This has been 20 to 30 years in the making, this lack of morale in labs.”*



*“You feel more valued in the regional centres where you need to be more of a multi-disciplinary scientist and it is more focused on skills building. In the large centres it is a production line, just about getting things done. People’s interests are not being nurtured, recognised. There is poor leadership, they have not focused on the management side enough and there is no focus on junior staff to keep them interested.”*

*“The culture in the grade 1’s is low so they don’t take the opportunities available.”*

*“There is a whole lot of unhappiness out there. I would struggle to name a place that is not unhappy. Private sector is generally all unhappy, Public [sector] is definitely happier than the private [sector] and the specialised labs maybe more happy.”*

Concerns were also raised about the increasing managerial components of senior roles and the impact this has on job satisfaction, laboratory functioning and burn out.

*“As you move up the system you spend a significant amount of time doing managerial functions rather than being a scientist. If we had a structure that supported managerial roles then we could be scientists. People burn out because they did not train to be managers, they wanted to be scientists, and instead of doing managerial functions we should be used to support and train other scientists. The manager does not need to be a scientist, but to acknowledge and respect the knowledge of scientists.”*

*“We need to get people in senior scientist roles to have management and business acumen. We are taught and encouraged to get more science degrees and specialisation but that does not provide you with the skills you need to fulfil these higher roles.”*

*“Much of what we do in management, stores, ordering, paperwork, could be done by someone at a much lower pay rate, then we could do our scientific role instead of something we are not good at and does not give us satisfaction. We are thrown in the deep end without the skills we need.”*

There was also a high level of concern expressed about the future, particularly relating to what they described as the ‘brain drain’ and availability of experienced senior scientists in the next decade.

*“This workforce is often forgotten about in the health debate. The services we provide are increasingly central to successful healthcare, yet the industry is being slowly allowed to degrade. When the cohort of workers of my generation leave the industry over the next 5-10 years, it will be difficult to maintain the current level of service and expertise. Succession is a major issue in many labs as far as I am aware.”*

*“The brain drain is coming. Within five years it will be worse. That is why we have senior positions that cannot be filled. Filling mid-level jobs is becoming more difficult, we have people but not quality people who can pick up the tricky stuff. How do we get that knowledge disseminated?”*

*“When I retire in less than 10 years’ time it would be nice to know that there are people out there that can follow in our footsteps.”*

*“No one is coming up behind us; younger scientists don’t see that there is ever going to be a job in a more senior role, no mentoring, no encouragement, no time to show them interesting things, no opportunities to broaden their experience.”*

Dissatisfaction within the medical laboratory scientist workforce is not new and has been a concern for at least 15 years. A study of medical laboratory scientists in Australia undertaken in 2003 reported that “46% of medical scientists were found to have low perceived professional status while 28% were found to have low occupational satisfaction” (McGregor and Moriarty, 2003 p.140). The findings from this research indicate that this situation has worsened over the past 15 years.

## Intra-professional engagement

In addition to respondents' relationships with their medical laboratory scientist colleagues through their employment, feedback from the participants reflected that involvement with professional associations and societies was also important. Slightly more than one quarter of respondents (28%, n = 109/390) indicated that they did not belong to any professional organisation and only 45% (n = 177/390) belonged to AIMS, the national association representing medical laboratory scientists in Australia.

*"AIMS, people can't see the benefits, not aware of the resources, students don't maintain their membership."*

However, AIMS was recognised as needing to be a key facilitator and reference point for intra-professional engagement and discipline-specific change at a systems level both within and beyond the profession.

*"In Australia there is not much of a professional identity. We need to increase our standing and with the public. We are not seen as independent health professionals because of the pathologist's role. We need to do more than we are doing. It may come down to AIMS, we need one overarching professional body who can help with this."*

*"Don't have one overarching body, we need that"*

*AIMS is not as cohesive or inclusive as they need to be. There are too many groups, there needs to be one group representing all our interests."*

The AIMS fellowship program and participation in their chapters and committees was identified as being important for both professional engagement and career progression. Many respondents indicated that obtaining their fellowship was one of the most important and satisfying things they had done, and that it was important for career advancement. Other respondents felt that this program should be partnered with universities. However, this appeared to be a double edged sword as some thought this would increase the cost of a program that was already "too expensive, costs \$25,000".

## Inter-professional engagement

There was a consistent theme of lack of recognition for what medical laboratory scientist do.

*"Lack of support and recognition in our value for the role we play in the primary health care of patients and lack of understanding from other health professions about what we do and why we are so passionate and enforce rules such as labelling upon them."*

*"More recognition. Majority of doctors' decisions are based on pathology results."*

*"I feel like laboratory science is not respected in the hospital community, there is little understanding of the work we actually do."*

*"Lab scientists often don't have a place where they belong in the hospital; we are not recognised as a part of any group, allied health or anything. All you have to do is have to fill out one of the allied health forms to realise that. It is all about physios and OTs [occupational therapists] etc."*

The new guidelines for pathology services being proposed by the National Pathology Accreditation Advisory Council (NPAAC) were also the subject of a considerable number of comments.

*"The medical laboratory science workforce has been suppressed by the medical profession for years in Australia. They need to be recognised as independent allied health professionals that have a clear career pathway. The recent NPAAC document that requires someone with a medical qualification to run a GX [general] pathology service, this is a backward step for senior medical laboratory scientists who have been running labs for years and signing off pathology reports (exception is Anatomical Pathology)."*

*With the degree of automation, quality control systems and academic development, senior medical laboratory scientists can be directors of pathology services, responsible for operating laboratory services and releasing of pathology results. New areas of point of care testing, stem cell technology, molecular pathology and flow cytometry are areas that medical laboratory scientists are performing at a very high level.”*

*“There are fundamental changes happening at a national level with the introduction of the next NPAAC guidelines on supervision which, as the guidelines currently stand, will limit the career pathways of scientists because of the mandatory ruling that medical practitioners should be in charge of laboratories. This will limit laboratory and testing flexibility and increase the cost of testing, placing further restrictions on the number of medical scientist positions available. Does the Victorian Government workforce group have any influence over federal changes that affect Victorian employees?”*

*“The new guidelines are a retrograde step. The oversupply of pathologists is the cause. Scientists have a better idea of what happens in the labs and how to trouble shoot an issue. It is not the pathologist who can do the things that are necessary, we have different skill sets.”*

*“It is supposed to be about risk management but it should be about quality control.”*

Point of care testing was also a concern for many medical laboratory scientists particularly around the maintenance of the machines, quality and reliability of the results, and the responsibility that others think that medical laboratory scientists have for this type of pathology result.

*“Patients are misdiagnosed because of this, need to have the results confirmed. The machines are not maintained and therefore not accurate.”*

*“It can be convenient, but not sure about the quality of the results.”*

*“We are expected to take responsibility but do not have any input into the testing and the maintenance that is done.”*

*“Point of care testing is a big issue in testing for transfusion. Results will depend on the machine and they vary from day to day. It is really hard to get the hospital to understand that these results are not coming from a lab. The State government needs to mandate that point of care test results are feedback into pathology results and filed in the patient’s record so there is a record of the results because they are being used to make clinical decisions.”*

*“The results are not being checked with pathology to see if they are accurate.”*

## **Engagement with the community and society**

As was the case for many of their professional colleagues, many medical laboratory scientists reinforced the importance of improving community and the public understanding of the role of the profession.

*“The perception of what we do is far from what we actually do. Perception is that we push a button and get a result, but in reality what we do is far, far, from that, highly labour intensive, high level of knowledge required, it just can’t be treated the same.”*

*“[we need] recognition of the role and responsibilities exercised by medical laboratory scientists in the overall provision of diagnostic laboratory services. This includes their roles in the leadership and management of laboratories and the provision of world-class scientific and technical investigations that are conducted in a quality framework designed to ensure the optimum patient outcomes.”*

*“Being suppressed by the medical profession. Need to be recognised as an independent allied health professional. Medical laboratory scientists don’t have a high public profile as they work behind the scenes so they don’t get credit for their work by general public.”*

*“Because it is a role behind the scenes the general public is not aware of who a medical lab scientist is and what they do. Because there is this overarching pathologist there is even less likelihood that the med lab scientist is going to get any recognition for their role.”*

*“There is a lack of understanding and appreciation from the community on the importance of the roles that laboratory scientist play in patient diagnosis, treatment and ongoing management.”*

*“Pathology is used in 70% of all diagnoses, doctors are ordering many more tests; they are trained to do that.”*

*“Increased knowledge and appreciation for what we do. Doctors, nurses etc. are all well known to be part of the medical field and are always receiving praise / appreciation for what they do, however the majority of people don't know what we do or that we exist even though the health care industry wouldn't be able to function without us.”*

This lack of recognition for what medical laboratory scientists do is not a new finding. The 2003 national study reported similar findings:

*“By investigating various indicators of professional status it was established that medical scientists perceive themselves and / or their occupation to have low recognition, respect, professional autonomy and pay, weak power base, lack of opportunities to advance and of resources for continuing education and / or research. Results from the general public and selected occupations samples confirmed that recognition of medical scientists was low, with only 3% and 11% respectively aware that “medical scientists” conduct tests on blood, body fluids and tissues. “Pathologists” were believed to perform that work by 19% of the general public sample (n=58) and 48% of the health occupation sample (n=128).” (McGregor and Moriarty, 2003 p.140)*

There was a strong push from the respondents for the profession to be registered. Some form of registration, certification or accreditation of medical laboratory scientists was the most important issue for survey respondents with 56% of all comments making some reference to this issue. ‘Registration’ was felt to not only increase their professional recognition, but to also address concerns with less qualified people working in roles that should be filled by scientists and using qualified scientists in technician and assistant roles without paying for their knowledge and skills.

*“Unlike most of the other countries, there is no registration in Australia for medical laboratory scientist. This resulted in highly competitive environment in the job and everyone can work in the medical laboratory. Even if you study a master degree in medical laboratory medicine, you can only work as a laboratory assistant with low salary.”*

*“Need to register medical scientists, train and develop medical scientists to be able to perform advanced roles and be excellent managers (in the same way training is provided for medical registrars and trainee specialists).”*

*“Medical scientists should be registered to work in this vocation. Medical scientists have very low recognition in the community - most “lay-people” have no idea what a medical scientist does.”*

It was acknowledged that there had been a move years ago to get registration but it had failed on the basis that there was

*“No evidence that patients were at risk and it was felt that NATA was sufficient.”*

AIMS is currently undertaking a process to develop a certification model that will cover all practitioner groups, however the outcome of this process is still unclear.

# Conclusion

The medical laboratory scientist workforce is continuing to experience the low morale, understaffing and dissatisfaction that were identified more than 15 years ago. While there has been an increase in new graduates, there are few and potentially reducing numbers of jobs available to these graduates, as well as for intermediate and more senior professionals. Advancements in technology have changed the way many medical laboratory scientists roles function, but understanding from those outside of the profession of the limitations of this technology is a concerning problem for the profession.

The main issues facing the profession included a high level of dissatisfaction with income level, career development opportunities, job prospects and career pathways; the need for some form of registration, certification or accreditation to ensure appropriate levels of education and quality are maintained in the workforce, particularly with an increasingly privatised world where saving money appeared to be the main objective; and the impending 'brain drain' that is likely to occur with the retirement of many senior scientists and few people coming up through the ranks to replace them. When these issues are matched to the concerns that new graduates are having difficulty getting jobs, it provides for a somewhat dismal view of the future of the profession.

Concerns that senior scientists were spending an increasing amount of time on administrative tasks that could be done by others at less cost, and not being able to support, educate and mentor younger scientists added to both the dissatisfaction and concerns relating to the future of the profession.

The medical laboratory scientists contributing to this research demonstrated a strong commitment to trying to ensure the highest quality services are maintained across the profession and to the public. However, their concerns that medical laboratory science is becoming a dying profession and may be unable to provide quality services to the patients of the future need greater exploration and action.

It was acknowledged by many sources that 70 or more per cent of medical diagnoses now rely on the results of laboratory testing. The concerns raised by participants in this research confirm that the research findings of 10 to 15 years ago, identifying an impending crisis in the medical laboratory science workforce, are still relevant and need considerable attention before further demise and deterioration occurs.

# References

- Australian Institute of Medical Scientists (2017). *Membership database*. (Unpublished)
- Australian Bureau of Statistics. (2011). *Census of Population and Dwellings 2011*. Provided to Southern Cross University by Department of Health and Human Services.
- Legg, M. (2008). *The Australian Pathology Workforce Crisis*. Department of Health and Ageing, Diagnostic Services Branch, Pathology Section. Canberra: Commonwealth of Australia.
- McGregor, L. & Moriarty, H. (2003). The professional status of medical scientists in Australia: a nationwide survey of medical scientists, other health professionals and the general public. *Australian Journal of Medical Science*, 24, 140-155.
- Milburn, J., Turner, P., Kehrer, S. & Badrick, T. (2014). Redesigning workflow and staff competencies to deal with staff shortages in a regional laboratory. *Australian Journal of Medical Science*, 35, 16-21.
- Urbis (2011). *Survey of the pathology workforce: Final report*. Urbis Social Planning and Social Research.

# Appendix

The following section contains additional data, figures and tables referred to in the main report relating to the data collected through the AHWQ2 medical laboratory scientist survey.

## Responses and respondents

The AHWQ2 survey was completed at both the organisational and individual practitioner level. The respondents to the organisational / managerial level questions were presented with 12 questions, plus four questions that were conditional on answers to previous questions; the individual clinicians were presented with 66 questions plus seven questions that were conditional on the answers from previous questions. Completion of the survey was voluntary and respondents, both organisational and individual, had the opportunity to choose if they wished to answer a question or not. Some questions allowed for multiple answers. As a result, the number of responses for each question varied and is included in the presentation of the data for each question.

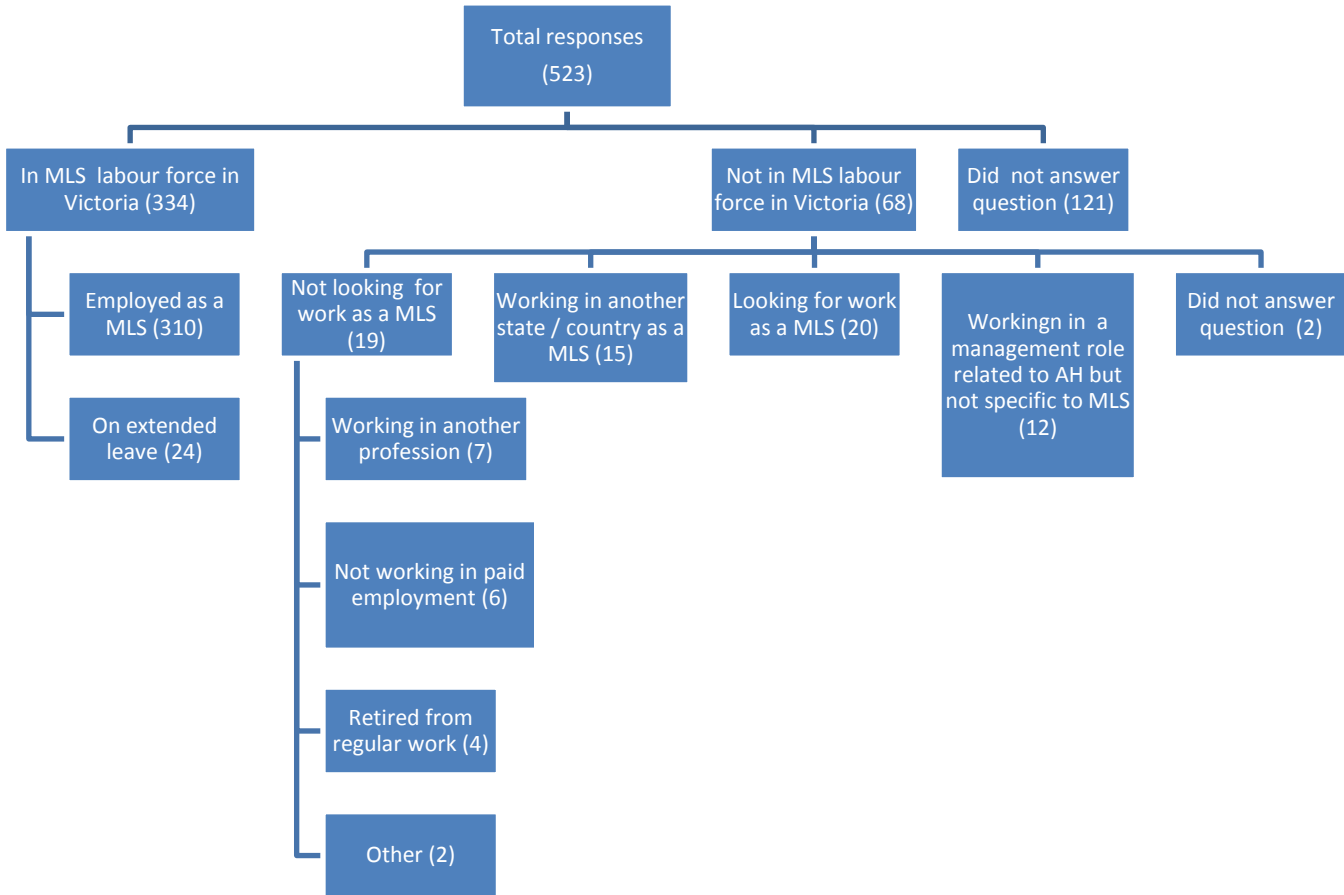
A total of 523 medical laboratory scientists completed at least one question on the survey and submitted their survey. The range of respondents to an individual question ranged from 17 to 745. Responses from all persons who answered an individual question have been included, irrespective of whether they completed the entire survey or not.

A total of 125 respondents (24%) provided their email address and agreed to be followed up for further research.

Most respondents (83%) were employed in the medical laboratory science workforce in Victoria at the time of completing the survey. Of the 17% (n=68) who were currently not working as a medical laboratory scientist, 12% (n=47) had worked in this role in the past and 5% (n=21) were qualified as a medical laboratory scientist but had never worked in a role that required this qualification.



**Figure 1: Current employment status<sup>9</sup>**



<sup>9</sup> All data in Figure 1 and Tables 1 – 14 comes from AHWQ2 survey



**Table 1: Reason for not currently working as a medical laboratory scientist <sup>a</sup> (n=20)**

Reason for not working	%	Count
No medical laboratory science jobs available in my area	20	4
No medical laboratory science jobs available that interest me	10	2
No medical laboratory science jobs available that I feel qualified to do	25	5
No medical laboratory science jobs available at the appropriate level/pay rate	10	2
I don't work in a medical laboratory science professional role but still identify with the profession	10	2
I want to leave/have left clinical work	24	9
Illness	0	0
Family reasons	5	1
Other	25	5

<sup>a</sup> Respondents could select more than one response.

**Table 2: Principal area of practice and all other areas of practice <sup>a</sup>**

Areas of practice	Principal area of practice	All other areas of practice
	Count	Count
Haematology including morphology, coagulation, specialised testing and core lab	44	125
Transfusion science including blood banking, blood and blood products and transplantation science	42	115
Multidisciplinary core lab	34	53
Microbiology including bacteriology, serology, virology, parasitology, mycology and public health	32	60
Anatomical pathology	31	41
Clinical biochemistry including general chemistry and toxicology	31	91
Management including laboratory / quality management, and scientific director	23	68
Genetics and molecular pathology including biochemical, cancer, cytogenetics, molecular and pharmogenomics	19	34
Molecular testing	16	42
Immunology	8	31
Flow Cytometry	7	27
Cytology, histology and stem cells	7	25
Clinical trials	2	7
Fertility	1	5
Bioinformatics	0	8
Forensic Science	0	1
Other	2	9

<sup>a</sup> Respondents could select more than one response to signify 'all other areas of practice'.

**Table 3: Location where Australian qualified respondents gained their first qualification as a medical laboratory scientist, for those who did not qualify in Victoria (n=41)**

<b>Location</b>	<b>%</b>	<b>Count</b>
New South Wales	34	14
Queensland	24	10
Western Australia	15	6
South Australia	12	5
Tasmania	10	4
Northern Territory	5	2
Australian Capital Territory	0	0
<b>Total</b>	<b>100</b>	<b>41</b>

**Table 4: Location where all respondents gained their first qualification as a medical laboratory scientist (n=406)**

<b>Country</b>	<b>%</b>	<b>Count</b>
Victoria, Australia	76	310
Other Australian state or territory (not Victoria)	10	41
New Zealand	2	10
United Kingdom	2	8
Canada	.25	1
United States of America	0	0
Ireland	.5	2
India	2	8
Other overseas country	6	26
<b>Total</b>	<b>100</b>	<b>406</b>

**Table 5: Employment location – first position, position prior to current position, current main position (n=301- 336)**

Location	First position		Position prior to current position		Current main position	
	%	Count	%	Count	%	Count
Victoria - Metropolitan	70	210	74	223	84	281
Victoria - Regional	9	26	8	23	12	41
Victoria - Rural / remote	2	5	3	9	1	5
Australia - Metropolitan	5	15	4	11	<1	2
Australia - Regional	3	8	2	6	<1	2
Australia - Rural / remote	1	3	2	5	1	3
Overseas	11	34	9	26	<1	2
<b>Total</b>	<b>100</b>	<b>301</b>	<b>100</b>	<b>303</b>	<b>100</b>	<b>336</b>

**Table 6: Employment sector – first position, position prior to current position, current main position, current second position (n=17 - 333)**

Setting	First position		Position prior to current position		Current main position		Current second position	
	%	Count	%	Count	%	Count	%	Count
State (public hospital / health / forensic service)	54	156	44	131	57	190	41	7
Commonwealth (e.g. Red Cross, National Reference Labs)	5	14	2	7	3	11	0	0
Commonwealth / State funded (e.g. Jointly funded labs - Doherty Institute, VIDRL, etc.)	2	7	1	4	3	9	0	0
Private provider - large, multi-site (e.g. private laboratory / hospital / large company)	19	55	30	88	25	82	18	3
Private provider - small, single site (e.g. specialised service / small company)	9	25	11	34	3	9	24	4
Not-for-profit	1	3	2	7	3	11	6	1
Research institute - independent	1	4	3	10	<1	1	0	0
University / higher education	6	18	4	11	2	14	12	2
Other	2	6	2	5	2	6	0	0
<b>Total</b>	<b>100</b>	<b>288</b>	<b>100</b>	<b>297</b>	<b>100</b>	<b>333</b>	<b>100</b>	<b>17</b>

**Table 7: Employment setting – first position, position prior to current position, current main position, current second position (n=770-1,022)**

Sector	First position		Position prior to current position		Current main position		Current second position	
	%	Count	%	Count	%	Count	%	Count
Hospital-based laboratory (public or private)	68	196	63	187	76	253	65	11
Community-based laboratory including point of care facility (public or private)	9	27	12	35	4	15	24	4
Mobile clinic including client home, workplaces and community facilities	0	0	0	0	0	0	0	0
Research Institute	3	9	4	12	1	4	0	0
Remote site providing online / digital services	<1	1	<1	2	<1	2	6	1
University	6	18	3	9	4	14	6	1
Other	13	37	17	51	14	46	0	0
<b>Total</b>	<b>100</b>	<b>288</b>	<b>100</b>	<b>296</b>	<b>100</b>	<b>334</b>	<b>100</b>	<b>17</b>

**Table 8: Number of jobs held as a medical laboratory scientist across the career path (n=360)**

Number of jobs	%	Count
One / this is my first and only job as a medical laboratory scientist	19	70
2	21	74
3	20	71
4	12	42
5	12	44
6	14	51
7 - 10	2	8
<b>Total</b>	<b>100</b>	<b>360</b>

**Table 9: Qualifications held or currently studying (n=415)**

<b>Qualification</b>	<b>Current qualifications</b>	<b>Currently studying</b>	<b>First qualification enabling practice as medical laboratory scientist (n=415)</b>
Certificate III	4	0	2
Certificate IV	20	3	2
Diploma	33	1	20
Advanced diploma	10	1	5
Associate degree	1	0	2
Bachelor degree – directed MLS	267	3	265
Bachelor degree – general science or not specific to MLS	82	4	51
Honours degree	55	1	21
Graduate certificate	21	2	1
Graduate diploma	52	2	16
Master's degree – Professional practice (e.g. Graduate entry)	48	10	19
Master's degree – Management / research	41	7	1
Professional doctorate	8	2	1
PhD	24	4	9

**Table 10: Proportion of respondents indicating they ‘agree’ with statements about their current experiences of professional support and development opportunities**

For each of the sub-questions the number of responses varied, therefore the number of individuals who agreed with each statement is included and the per cent of the respondents this represents.

If there were 5 or fewer respondents in any category data is not included to maintain anonymity (e.g. joint state and Commonwealth funded services, private providers – specialised or small laboratories, or individual statements with too few responses)

	State public sector (n=163)	Cwlth funded (Red Cross, National Reference Services (n=8)	Private provider – large / multiple sites / private hospital (n=65)	Not for profit (n=10)	University / higher education (n=12)
I have access to clinical supervision	63% (n=95/152)	Data withheld (n=<5)	48% (n=29/61)	75% (n=6/8)	33% (n=4/12)
If I am uncertain about an aspect of my work, I can always access someone who can help me	76% (n=124/163)	85% (n=6/7)	69% (n=44/64)	60% (n=6/10)	64% (n=7/11)
I am professionally isolated	18% (n=29/160)	0% (n=0/8)	19% (n=12/64)	10% (n=1/10)	36% (n=4/11)
I have formal management support from a member of my own team	48% (n=79/162)	75% (n=6/8)	52% (n=33/64)	50% (n=5/10)	42% (n=5/12)
I have access to peer support from members of my own profession	64% (n=103/162)	71% (n=5/7)	58% (n=38/65)	70% (n=7/10)	75% (n=9/12)
My grade and / or salary is appropriate for the work I do	31% (n=50/163)	12.5% (n=1/8)	15% (n=10/65)	50% (n=5/10)	50% (n=6/12)
I have the skills necessary to do my current job	91% (n=149/163)	100% (n=8/8)	82% (n=53/65)	100% (n=10/10)	92% (n=11/12)

	State public sector (n=163)	Cwlth funded (Red Cross, National Reference Services (n=8)	Private provider – large / multiple sites / private hospital (n=65)	Not for profit (n=10)	University / higher education (n=12)
I have all the tools I need to perform my job safely	71% (n=116/163)	100% (n=8)	63% (n=41/65)	90% (n=9/10)	91% (n=10/11)

**Table 11: Overall job satisfaction by sector**

For each the sub-questions the number of responses varied, therefore the number of individuals who actually agreed with the particular statement has been included and the % they represent.

	State public sector (n=170)	Cwlth funded (Red Cross, National Reference Services (n=8)	Private provider – large / multiple sites / private hospital (n=65)	Not for profit (n=10)	University / higher education (n=12)
Extremely satisfied	13% (n=22)	0% (n=0)	6% (n=4)	10% (n=1)	42% (n=5)
Somewhat satisfied	47% (n=81)	63% (n=5)	35% (n=24)	70% (n=7)	33% (n=4)
Neither satisfied nor dissatisfied	11% (n=18)	0% (n=0)	13% (n=9)	0% (n=0)	8% (n=1)
Somewhat dissatisfied	23% (n=39)	25% (n=2)	31% (n=21)	20% (n=2)	17% (n=2)
Extremely dissatisfied	6% (n=10)	13% (n=1)	15% (n=10)	0% (n=0)	0% (n=0)