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# HEALTH INFORMATION MANAGEMENT 2025.

What is required to create a sustainable profession in the  
face of digital transformation?

Kerryn Butler-Henderson

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# HEALTH INFORMATION MANAGEMENT 2025.

What is required to create a sustainable  
profession in the face of digital transformation?

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January 2017

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## LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
AHIMA	American Health Information Management Association
AIHW	Australian Institute of Health and Welfare
ANZSCO	Australian and New Zealand Standard Classification of Occupations
CAHIIM	Commission on Accreditation for Health Informatics and Information Management Education
CDI	Clinical documentation improvement
CHIMA	Canadian Health Information Management Association
Ed	Education
EMR	Electronic Medical Record
EHR	Electronic Health Record
HIM	Health Information Manager
HIMAA	Health Information Management Association of Australia
HWA	Health Workforce Australia
IDC	International Data Corporation
IG	Information governance
IGR	Australian Intergenerational Report
IT	Information technology
OTEN	Open Training & Education Network
Pt	Patient
SNOMED-CT	Systematized Nomenclature of Medicine - Clinical Terms
US	United States of America
VET	Vocational education and training



## SUMMARY

The Health Information Management profession has a long history in Australia dating over 70 years. Traditionally, the profession has been associated with the two functions of paper-based medical records management and clinical coding. Now, a time of digital transformation and ongoing health reform requires the profession to strategically position itself from information technicians to information strategists, and demonstrate its ongoing important contribution to improving patient care and outcomes, and the effective management of health care.

The purpose of this report is to identify the major future challenges facing Health Information Management practitioners and academics. Three major questions to be examined are:

1. What are the forecast health reform and technological transformations that will impact on the Health Information Management profession?
2. What are the future responsibilities, skills, and knowledgebase requirements of the Health Information Management profession to contribute to high quality, safe patient care, and efficient organisational functioning?
3. What educational reform is necessary to prepare Health Information Management Practitioners for the future health and human service sectors, and to create sustainable faculties?

To examine each of these, an environmental scan of the literature on the future of health care, digital health, and education was undertaken. This environmental scan provides the support for the considerations raised in this report.

The Health Information Management profession has an ageing workforce, with more than 50% of the workforce aged 45 years and older. There is a need to increase the number of younger Health Information Manager and Clinical Coder graduates to create a sustainable professional cohort to meet industry demand across all areas of health and human service. Role substitution, diversification, and specialisation is forcing an evolution in the profession that needs to be acknowledged and managed.

Forecast health reform will create opportunities for the profession, but to take advantage of these will require changes. In a data-driven system, the Health Information Management profession needs to position itself to be viewed as an enterprise-wide set of functions and skills. The profession needs to be working in more embedded roles in organisations to be an integrated part of the system, partnering with clinical, business, and information technology process owners, and health funders, both public and private. There is an opportunity for the Health Information Management profession to strategically position itself in two areas: information governance and data science.

The transformation required by and in the Health Information Management profession will need to start in the Education sector. There is an opportunity to revise the existing Health Information Management Association of Australia (HIMAA) competencies to align with the

future direction of the profession, and in turn an opportunity for curriculum renewal to strengthen existing courses. Changes are required to increase the number of graduates to meet industry demand, including the consideration of alternative models. Academic faculties need to be strengthened through increased research productivity, higher degree research candidate supervision (e.g. doctoral), and doctoral qualified teaching staff to ensure the sustainability and credibility of courses in Australia.

The environmental scan provided strong evidence that the Health Information Management profession needs to transform to survive into the future. There is a need for the profession to be proactive today to position itself as the leaders in information governance and data science. The grim prediction of the profession's demise if changes are not made by HIMAA and the Education sector is a serious possibility. The mechanism for change needs to come from the Education sector, to ensure HIM and clinical coding graduates are suitably qualified to drive health information reform. But this change needs to be achieved as a whole profession. For this to be successful, HIMAA and the Education sector need to work with industry to ensure everyone is engaged in the journey. The profession needs to decide what our role is in the future of health care, and make the transformation today to create a sustainable profession of the future.

## FRAMEWORK

This report provides the evidence from the environmental scan to address the questions outlined in section 1. The report has been formatted to examine health reform (section 1), digital transformation (section 2), and the Education sector (section 3). Issues raised from the literature are posed to the reader as considerations. Below is a summary of the considerations posed in this report.

Section	Sub-section	Questions
1. Changing health system	Ageing Workforce	<ul style="list-style-type: none"> <li>• What will be the impact on the profession if an ageing workforce results in decreased participation and productivity?</li> <li>• Are there sufficient graduates to meet demand when this workforce retires? What is the potential for role substitution if there is not an adequate graduate workforce?</li> <li>• Is there is a reduction in activities for professional development in aged workers, and in turn is there an impact on operations? How does this reflect on the perception of the profession?</li> <li>• Where middle and senior/executive management positions are occupied for longer periods of time, how does this impact on the opportunities for career progression for HIMs under 45 years?</li> </ul>
	Health reform	<ul style="list-style-type: none"> <li>• What will be the opportunities for Health Information Management professionals? What will set this profession apart from others in the future?</li> <li>• What advocacy and positioning will be required to communicate the profession's role in the future?</li> <li>• Will health reform lead to a greater emphasis on clinical coding? Will this extend not only within the acute care system, but across health and human services to measure outcomes?</li> <li>• Has there been a shift in the areas HIM graduates are gaining employment, away from the traditional roles?</li> <li>• Will there be an increased need for Health Information Management professionals in other areas of health, including primary, community, aged care, mental health, justice, and social services?</li> </ul>
2. Digital transformation	Digital health transformation	<ul style="list-style-type: none"> <li>• What does digital transformation mean in the Australian health context?</li> <li>• How will artificial intelligence and automation impact this profession?</li> <li>• Will HIMs manage the EMR system in the future? Or will the profession's focus shift to information governance (process digitisation, worker enablement) and data science (performance management)?</li> <li>• How will worker enablement impact this profession? Could functions be outsourced or centralised? Is this happening already?</li> </ul>

Section	Sub-section	Question
3. Education	Education	<ul style="list-style-type: none"> <li>• Do we need more courses in Australia, or more graduates from existing courses?</li> <li>• What is the value and benefit of a course being accredited? Is there a need to accredit courses not currently within the scope of HIMAA accreditation?</li> <li>• What will happen to existing courses if research productivity, doctoral degree supervision, and doctoral degree HIM qualified academic staff numbers do not increase?</li> <li>• What is the benefit to increasing the number of qualified HIMs with a doctoral qualification?</li> <li>• What is required to progress Clinical Coding from Clerical and Administrative Workers to a profession in the ANZSCO?</li> </ul>
	Curriculum renewal	<ul style="list-style-type: none"> <li>• Do the current HIMAA graduate entry competencies encourage education providers to produce HIMs who are “jack of all trades and master of none”? Is there a need for greater diversification and specialisation in HIM education?</li> <li>• What will be the graduate entry competencies of the profession in 2025? Is there a need for competency revision, and in turn curriculum renewal?</li> <li>• Is there disconnect between what teaching academics and industry/employers perceive to be the competencies required to produce work ready graduates?</li> <li>• How can we increase the number of fully online course offerings to increase the number of graduates and create more sustainable courses and profession?</li> </ul>
	Postgraduate education	<ul style="list-style-type: none"> <li>• Is there a need for postgraduate (Masters and doctoral) level courses in this profession?</li> <li>• Can postgraduate courses assist in the development of senior managers and executives for industry? How does this reflect on the Health Information Management profession?</li> <li>• Can postgraduate courses strengthen links between industry and academia, and thereby improve both?</li> <li>• Is there a need to accredit these courses?</li> </ul>

# INTRODUCTION

The Health Information Management profession has a long history in Australia dating over 70 years. Traditionally, the profession has been associated with the two functions of paper-based medical records management and clinical coding. Now, a time of digital transformation and ongoing health reform requires the profession to strategically position itself from information technicians to information strategists, and demonstrate its ongoing important contribution to improving patient care and outcomes, and the effective management of health care.

The purpose of this report is to identify the major future challenges facing Health Information Management practitioners and academics. Three major questions to be examined are:

1. What are the forecast health reform and technological transformations that will impact on the Health Information Management profession?
2. What are the future responsibilities, skills, and knowledgebase requirements of the Health Information Management profession to contribute to high quality, safe patient care, and efficient organisational functioning?
3. What educational reform is necessary to prepare Health Information Management Practitioners for the future health and human service sectors, and to create sustainable faculties?

To examine each of these, an environmental scan of the literature on the future of health care, digital health, and education was undertaken. This environmental scan provides the support for the considerations raised in this report.

For the purpose of this report, the following definitions have been adapted from the Health Information Management Association of Australia (HIMAA).[1]

**Health Information Management professional** applies their knowledge and skills to create, acquire, analyse, and/or manage information to meet the medical, legal, ethical, and/or administrative requirements of the health care system. In this report, Health Information Management profession will be used to describe both Health Information Managers and Clinical Coders.

**Health Information Manager (HIM)** plans, develops, implements, and manages health information services, such as patient information systems, and clinical and administrative data, to meet the medical, legal, ethical, and administrative requirements of health care delivery, or who teaches or does research in these areas.

**Clinical Coder** assigns codes to narrative descriptions of patients' diseases, operations and procedures in accordance with recognised classification systems to allow for easy storage, retrieval, and analysis of health data.

# 1. A CHANGING HEALTH SYSTEM

## 1.1 A PICTURE OF THE AUSTRALIAN WORKFORCE IN THE FUTURE

The Australian Intergenerational Report (IGR) 2015 [2] forecasts the Australian population demographic in 40 years, and examines how this will impact government policy, economic growth and impact, and workforce participation and productivity in the future.

Workforce participation consists of three factors: the workforce participation rate (how many people choose to seek work), the unemployment rate (how many of them cannot get jobs when they do seek work), and the average number of hours worked by individuals who have jobs. Workforce productivity is defined as how much is produced (on average) for every hour that is worked. The participation and productivity of the workforce, and the population demographics (such as age, life expectancy, fertility, and net migration) influence the future economy.[2]

By 2055, the Australian population size and structure will change significantly. Whilst the population growth rate and the proportion of the population aged 15-65 year are forecast to continue to decline, the proportion of people aged over 65 years and the average life expectancy are forecast to increase. This will see greater demand for health, social and aged care services. However, improvements in health means the population will remain active and live longer.[2]

As there will be fewer people in the traditional working age group (defined as 15-65 years), it is forecast there will be a decline in participation rates.[2] However, the female employment participation rate is forecast as a continued increase. With the current government policy to change the eligible age for the Age Pension to 70 years by 2035, we will see people remaining in the workforce for longer, yet the forecast average hours worked will decrease. The generally accepted definition of an aged worker is someone aged 45 years and over.[3] Aged workers may be either deliberately or inadvertently restricted in undertaking professional development, on the misconception that they are not worth the investment if close to retirement.[4] A reduction in working hours and workforce participation is also reported in aged workers.[2] An increased demand for health, social and aged care services will become a workforce opportunity, yet the decline in participation rates will result in lower economic growth.

Australia has seen periods of high productivity growth, yet productivity growth under the current policy is forecast to remain the same, or will slightly decrease due to the ageing population. The IGR recognises that technological developments will be the key driver to improve efficiency and increase productivity.[2]

To prepare for the future, government policy change will be the impetus for economic growth to increase workforce participation and productivity. With regards to health, expenditure will need to become sustainable and focused on the efficient provision of services. A focus on enhancing participation and productivity, and creating an efficient and sustainable health system, will see considerable opportunities for the Health Information Management profession.

## 1.2 AN AGEING HEALTH INFORMATION MANAGEMENT WORKFORCE

Available data suggests the Health Information Management profession is an ageing workforce (aged 45 years and over). A study in 2010 by the Australian Institute of Health and Welfare (AIHW) [5] of the Clinical Coder workforce examined the Australian Bureau of Statistics (ABS) data in 2001 and 2006, using the Australian and New Zealand Standard Classification of Occupations (ANZSCO) codes for HIMs and Clinical Coders. This data was compared to the data collected by the AIHW in 2009.[5] As shown in Figure 1.1, the 2009 data indicates the majority of the Clinical Coder workforce were over 45 years, with a noticeable increase across all states except one since 2006. The exception is Victoria (35.7%), but the AIHW reports suggests this may be due to the larger number of HIM graduates working in Clinical Coder roles. Data regarding graduate training is detailed in section 3.2.1.[6, 7]

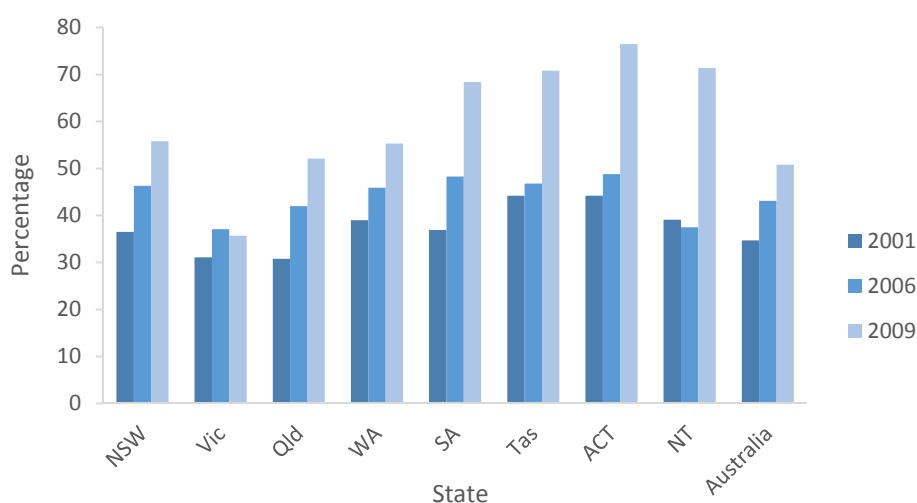


Figure 1.1: Percentage Clinical Coder workforce aged  $\geq 45$ , 2001-2009.[5]

ABS data for HIMs shows a similar trend. Whilst the proportion of HIMs aged 45 years and older was only 30.5% (2006) of the HIM workforce, there was a 115% growth in this population, compared to a 27% growth in those aged under 45 years between 2001 and 2006.[5] It is postulated this percentage will have significantly increased over the past ten years. Figure 1.2 shows the distribution by age group of HIMs. Data published by HIMAA from their 2016 membership survey identified 64.5% of the respondents are aged 40-65 years.[8]. HIMAA concluded that members are remaining in the workforce for longer compared to a previous survey.

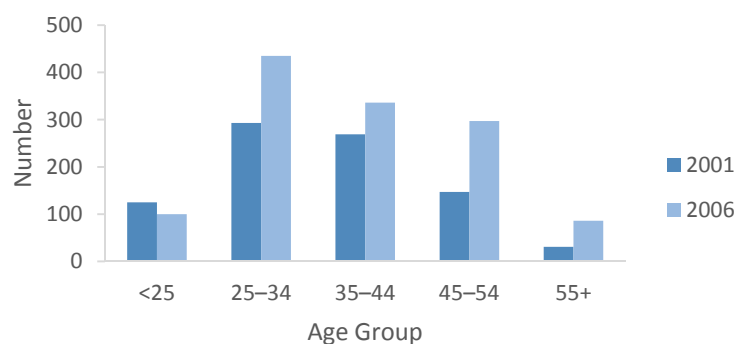


Figure 1.2: Age distribution of HIMs, 2001-2006.

The IGR predicts an increase in females in the workforce over the next 40 years.[2] The ABS data (2006) shows the workforce is already largely composed of females (89.2%).[5] However, the proportion of females to males has decreased since 2001. Data from the 2016 census is required to determine if this trend has continued.

### **SIGNIFICANT ISSUES TO CONSIDER**

What are the implications of an ageing workforce, including:

- What will be the impact on the profession if an ageing workforce results in decreased participation and productivity?
- Are there sufficient graduates to meet demand when this workforce retires? What is the potential for role substitution if there is not an adequate graduate workforce?
- Is there a reduction in activities for professional development in aged workers, and in turn is there an impact on operations? How does this reflect on the perception of the profession?
- Where middle and senior/executive management positions are occupied for longer periods of time, how does this impact on the opportunities for career progression for HIMs under 45 years?

### **1.3 FORECASTING HEALTH REFORM IN AUSTRALIA**

Health care delivery in the future will be consumer-centric as we move to an outcomes- or values-based system.[9, 10] This means healthcare will be personalised, on-demand, and transparent. Data analytics will enable predictive and precise care, with customised care planning, and a focus on quality. Connectivity will bring down the silos, as healthcare becomes integrated across the health care system, and care delivery is incentivised to be delivered at the right time, in the right environment, using the right people. Should the financial base move from funding focused on the efficiency of service throughputs (activity-based) to one focused on the effectiveness of interventions (outcomes-based), it will create a quality, consumer-centric health care system.[9]

Whilst the average Australian is forecast to live longer, we will see an increase in people with multiple chronic health conditions, which require complex, multidisciplinary care. The types of chronic health conditions may change over time, with the promotion of preventative health, and developments in treatment and technology changing the landscape. Therefore, to ensure consumers receive optimal care, there will be a greater need for the healthcare to be integrated, creating an efficient system that is seamless between the various health and human services. To achieve this model, Australia needs to undergo a major reform of the health system, with a change in the funding model potentially being that catalyst.[11]

Activity-based funding is concerned with the efficiency of the throughputs of a system, not the effectiveness of the care provided. With the increased emphasis on quality of care, there is a need to compare service provision not only on activity and costs, but also outcomes and quality of care.[12] An outcomes focused approach will increase cost accountability, enhance information about the efficacy of services, treatments, and technologies, allow the monitoring and measurements of quality of care, and put the consumer at the centre of healthcare.



An outcome is defined as “a change in the health of an individual, or a group of people or population, which is wholly or partially attributable to an intervention or series of interventions”.[13] An outcomes focused performance indicator is “an outcome-related performance indicator in the health and welfare field is a statistic or other unit of information which reflects, directly or indirectly, the performance of a health and welfare intervention, facility, service or system in maintaining or increasing the well-being of its target population.”.[14] Currently an aspect of a process, such as practice variation or unplanned admissions, is measured, but these may not be an effective indicator of outcome as they can be confounded by other factors, such as hospital policy, and difficult to measure if institution specific.[12] Therefore, there will be a greater focus on outcomes across health and human services.

#### **1.4 HEALTH REFORM IMPACTS ON THE HEALTH INFORMATION MANAGEMENT PROFESSION**

With the evolution of the health care system, there are an increasing number of opportunities for Health Information Management professionals, creating a profession that is diverse as well as specialised. The integration of care across the health system and a forecast shift to outcomes-based care will have multiple implications across the for the profession. Within the acute care system, HIMs and Clinical Coders are more integrated with clinical teams to provide knowledge on information management, such as documentation, coding, and information governance. The evolution of technology allows greater flexibility in workspace and working hours, and will create numerous opportunities for the Health Information Management profession.

##### **SIGNIFICANT ISSUES TO CONSIDER**

What are the implications of health reform on the Health Information Management profession, including:

- What will be the opportunities for Health Information Management professionals? What will set this profession apart from others in the future?
- What advocacy and positioning will be required to communicate the profession’s role in the future?
- Will health reform lead to a greater emphasis on clinical coding? Will this extend not only within the acute care system, but across health and human services to measure outcomes?
- Has there been a shift in the areas HIM graduates are gaining employment, away from the traditional roles?
- Will there be an increased need for Health Information Management professionals in other areas of health, including primary, community, aged care, mental health, justice, and social services?

## 2. DIGITAL TRANSFORMATION

### 2.1 DIGITAL HEALTH

Steve Jobs stated “I think the biggest innovations of the 21<sup>st</sup> century will be at the intersection of biology and technology.”[15] An important driver of health care reform will be new technologies,[9] with an estimated 48% of health spending growth in the United States (US) on new technologies.[16] The transformation to consumer centric care has seen a rise in the “Google” patient, whereby consumers research their symptoms, conditions, and treatment, becoming more informed about their care options as the digital availability of information increases. Consumer digital literacy and the understanding of credible information is also improving.[17] A consumer-centric system needs to adopt consumer health technologies, yet many existing technologies do not meet the consumer’s needs or are of poor quality.[18] A recent survey identified more than 75% of respondents would like to use digital healthcare services, and identified these services need to provide a high level of quality. Given up to 70% of future health funding will be investment into digital health, this investment needs to be in the areas of consumer-facing mobile applications, wearables, remote health monitoring, and virtual care to enable consumers to be part of the management of their chronic health conditions.[18] Davies [19] proposes we may still have another 70 years of technological advancement in health, as shown in Figure 2.1, yet will the digital health revolution ever end and if so, what will come next? An understanding of this revolution will be important to understand how it will impact the Health Information Management profession.

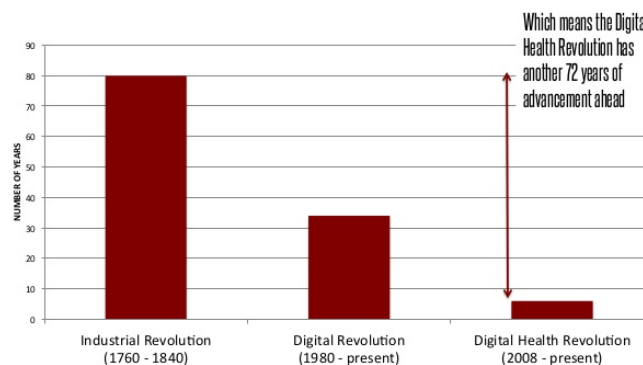


Figure 2.1: The digital revolution.[19]

### 2.2 DIGITAL DISRUPTION, INNOVATION, OPTIMISATION, AND TRANSFORMATION

Recent years has seen an increase in the terms *digital disruption*, *innovation*, *optimisation*, and *transformation*. Whilst some view these terms as interchangeable, each can mean different things. The overarching concept is not new, coined over 20 years ago by Bower and Christensen [20], who suggested new technologies could be purposefully employed to disrupt the status quo and redefine industry best practice. These terms in today’s market can refer to different concepts, and understanding this terminology can assist leaders in identifying the best method for their company’s competitive advantage. Table 2.1 summarises these terms [21, 22]

Table 2.1: Digital disruption, innovation, optimisation, and transformation.[21, 22]

Type of Approach	Description	Tools and Activities	Benefits
Digital Disruption	Having digital at the core of an industry-altering metamorphosis	Big ideas, venture capital, mass distribution and adoption	The publishing, music, and tech industries have no choice but to respond to disruptive forces or perish
Digital Innovation	Using digital strategy to change the market landscape	Ideation/creative strategy, custom solution, development production	Provides company with differentiator and forces competitors to respond from a defensive position
Digital Optimisation	Making the most of existing assets	Digital design, user experience, interactive marketing, content marketing	Multi-channel management, high visibility, business development, customer service support
Digital Transformation	An evolution or re-architecting an organisation from an offline to a digital-centric one	Strategic planning, change management, new leadership	Survival; digital can serve as a cost-effective lever for evolving an organisation

## 2.3 DIGITAL TRANSFORMATION IN HEALTH

To date, we have seen health embrace six transformative core competencies: electronic medical (EMR) and health records (EHR), communication, telemedicine, analytics, data/security, and the virtual point of care.[23] The need for digital transformation in health has been well reported [24] and can be achieved in two ways [25]: 1). Existing and new technologies to support or provide direct patient care, including new diagnostics, robotic surgery, and new methods of pharmaceutical delivery; 2). New technologies to evolve operational processes. As this report is about the impact of digital transformation on the Health Information Management profession, the focus shall be on the evolution of technologies in operational processes.

Westerman, Bonnet, and McAfee [25] describe three operational process areas impacted by digital transformation: process digitisation, worker enablement, and performance management. All three areas have significant impacts on the Health Information Management profession.

### 2.3.1 Process digitisation

Process digitisation refers to the automation of processes to enable companies to refocus their employees on more strategic tasks. Biesdorf and Niedermann [18] state that the third wave of technological adoption will be the full digitisation of an organisation, as well as advanced analytics to enable new operating models.

Digital transformation creates complexities in information management. An examination of the literature about digital health in the next ten years consistently discusses consumer health technologies, wearable and mobile technology, artificial intelligence, and remote healthcare, which all have three common factors: more health data, increased connectivity, and a greater need for information governance.

Commonwealth and State eHealth strategies place an emphasis on the investment of EMR, data, and connectivity [26-32] Adoption of EMRs has increased more than sixfold in the US since 2009.[33] Digital health in primary, community, aged care, mental health, justice, and social services is expanding, but is largely managed by people without information management training, potentially impacting the integrity, security, and quality of health data. Process digitisation will also see an increase in automated coding, with Frey and Osborne [34] estimating there is a 91% probability the coding workforce is at risk of computerisation.

With an increase in digitisation, information governance will be fundamental in health.[35] Consumers are increasingly aware of privacy, particularly in the social media age. Security and compliance with legislation are frequently reported as the greatest concern for consumers and clinicians with regards to EHRs. A survey by the International Data Corporation (IDC) reports only 57% of health data in the US is satisfactorily protected despite governance in privacy and security.[36] A survey about information governance in health identified overwhelmingly that regulatory compliance (80% of respondents strongly agreed) will be the most compelling driver of information governance, with improving patient safety and care (73%) the second most important driver (Figure 2.2).[37]

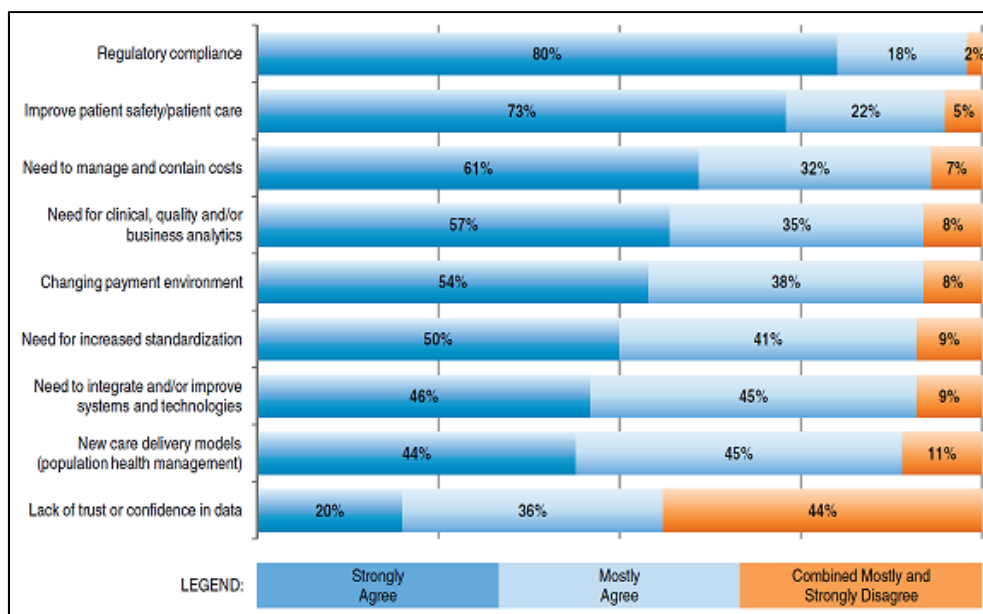


Figure 2.2: Drivers of information governance in health.[37]

### 2.3.2 Worker enablement

Worker enablement separates the work processes from the location of the work, allowing work to be virtualised. This has seen a shift in the workspace, such as coding on the ward or teams located within corporate services. Alternatively, in an effort to create efficient teams, there has been the establishment of service hubs, such as region or area coding teams that service a number of hospital sites within a given region. The digitisation of information creates greater opportunities for flexible workplaces, but may also result in functions being outsourced to external service providers.

### 2.3.3 Performance management

Performance management allows managers access to data to allow decision making on real information and not historical performance or assumption. IBM reports that 90% of the data available today was created in the last two years alone.[38] It is forecast there will be an overall annual growth of 48% of health data, with a predicted 2,314 Exabyte of overall health data by 2020.[36] Davies [19] describes the growth of health data across three fronts (see Figure 2.3): volume, variety, and velocity.

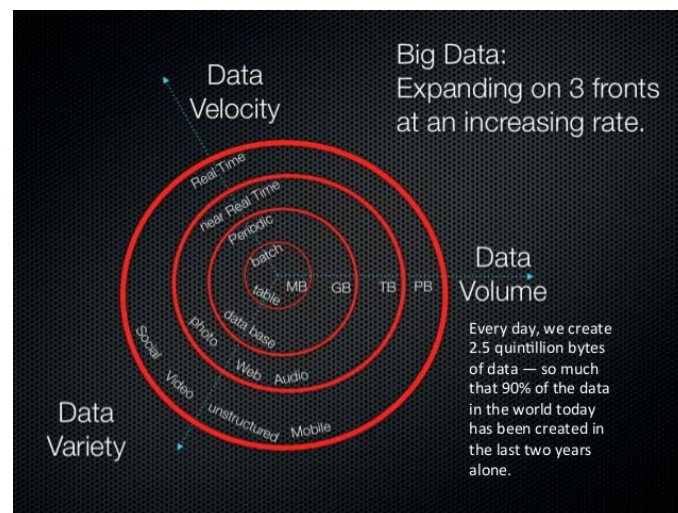


Figure 2.3: Data volume, variety, and velocity.[19]

Health will become data driven enterprises as data becomes the biggest growth area in digital health transformation.[24, 39] Data analytics will play an important role in healthcare planning, as a predictive tool in the management of chronic health, and as a management tool in performance monitoring.[33] In the current system, the majority of health data to support these processes either does not exist, is not available in a timely manner, or is not of the highest quality. Improved data collection and management would assist clinicians, managers, researchers, policy makers, and consumers.[40] The Productivity Commission [40] has identified the stakeholders who will benefit from addressing these gaps in health data, as shown in Figure 2.4.

<i>Type of information</i>	<i>Potential users and benefits</i>	<i>Key gaps</i>
Performance of individual health care organisations and clinicians (quality, safety, outcomes, costs)	<ul style="list-style-type: none"> <li>Helps consumers to choose where to obtain treatment</li> <li>Enables governments, taxpayers and insurers to assess value for money and hold providers to account</li> <li>Encourages providers to compete to improve performance</li> <li>Helps organisations to identify good practices and ways to improve quality or reduce costs (for example, by using technology)</li> </ul>	<ul style="list-style-type: none"> <li>Cost data, and some key quality measures, are not reported for all hospitals</li> <li>Measures of patient experience in hospitals vary across jurisdictions, and are not always timely or comprehensive</li> <li>No performance data currently reported for hospital clinicians, individual general practitioners or other professionals</li> <li>Information on the characteristics of patients treated is not always complete</li> </ul>
Patient health records	<ul style="list-style-type: none"> <li>Allows health professionals to access and share data on individual patients</li> <li>Improves the coordination of care</li> <li>Reduces risk of medical errors or duplicated testing</li> <li>Facilitates clinical and epidemiological research (using de-identified data)</li> </ul>	<ul style="list-style-type: none"> <li>Take up of national electronic health records has been modest, in part due to concerns over quality of included information</li> </ul>
Other administrative data	<ul style="list-style-type: none"> <li>Facilitates clinical and epidemiological research (using de-identified data)</li> <li>Enables research into policy impacts</li> <li>Supports development of an evidence base for improving medical practice, developing clinical guidelines or evaluating health treatments and technologies</li> </ul>	<ul style="list-style-type: none"> <li>Many data are collected, but it has been difficult for researchers to access or link datasets</li> </ul>

<sup>a</sup> This table does not cover surveys of population health, clinical trials and other non-administrative data sources.

Figure 2.4: Who benefits from addressing gaps in health data?[40]

Health data will be the tool to drive policy change for an efficient and effective health system. It will be used to evaluate service efficiencies and to identify the areas for improvement through the elimination of waste and duplication. Health data will be used to provide the evidence base for health reform to address causes of poor performance within the system and identify areas where policy is not working.[40] Health data will connect the different service providers, allowing for improved monitoring of health outcomes, service quality, and impact. Improvements in State and Commonwealth reporting will be required across health and human services. Minimum reporting datasets and data standards will increase, as will data definitions and metadata. This brings a range of technical, governance, and compliance issues and as such, there will be a greater need for data scientists and information governance specialists over the next decade.[36, 41]

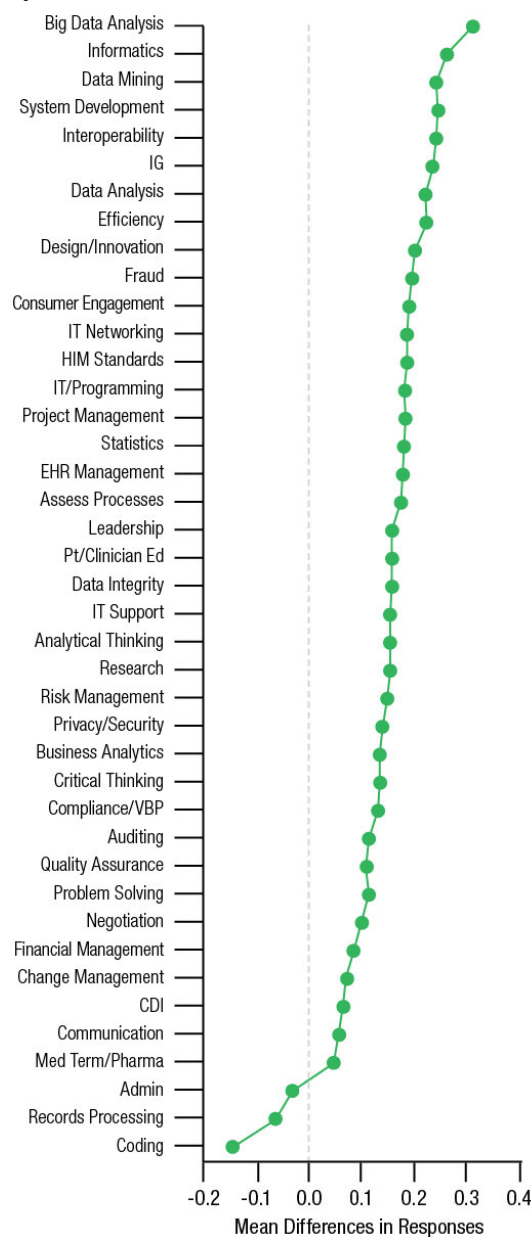
## 2.4 INTERNATIONAL HEALTH INFORMATION MANAGEMENT TRANSFORMATION

Whilst evidence-based published research on the Health Information Management profession in Australia has been minimal, there has been a wealth of information from the US and Canada that can inform the Australian profession's direction.



### 2.4.1 The United States of America

A US survey of HIMs aimed to assess the future needs of the workforce.[42] The results demonstrated the workforce is undergoing significant transformation, largely due to the digitalisation of health information. The survey asked participants to estimate the time they currently spend and how much time they expect to spend in 10 years' time on specific tasks. The most significant finding was the anticipated growth in the areas of leadership, data, and informatics, and the decrease in coding in the future. With regards to competencies, the domains of data analytics/mining, informatics, and information governance make up nine of the top 10 competencies. Coding, records management, and administration rated as the three lowest competencies required in the future of the Health Information Management workforce.[42] Figure 2.5 demonstrates the higher the mean difference, the greater the importance of a competency will be in the future.



CDI, clinical documentation improvement; Ed, education; IG, information governance; IT, information technology; Pt, patient.

Figure 2.5: Competencies that will be more important in the future than today.[42]

Kloss [43] identified the top ten trends impacting the Health Information Management profession in the US, following a focus group with selected leaders in the health systems, as shown in Figure 2.6.

TOP 10 TRENDS IMPACTING HIM IN 2016
1. Clinical and business process leaders increasingly need to own the EHR and other technologies in order for these technologies to be successful.
2. Some level of Information Management is a basic competence for most who work in healthcare.
3. HIM functions are distributed and embedded throughout organizations, with greater focus on support of patient care and population health mission.
4. There is greater recognition of the importance of managing the Records Management/Information Management aspects of digital information through its life cycle. Critical functions will include data integrity, legal health record, e-discovery, privacy and access and authentication management.
5. Plans for broad payment reform are coalescing as a result of risk- and outcomes-based payment pilots and demonstrations under the 5-year-old Affordable Care Act.
6. Health systems continue to work at reducing overall costs by 20% to remain financially viable.
7. The linkage between improvements in quality and improvements in financial performance is well documented.
8. An increasing number of people rely on technology and information to assist in self-management and select providers who deliver cost-effective care.
9. Clinicians require and use tools and information to anticipate the outcomes and cost consequences of their clinical decisions at the point of care.
10. The design of ICD-11 is being evaluated, and planning for implementation is projected for 2020.

Figure 2.6: Top ten trends impacting Health Information Management in 2016.[43]

For the immediate future, there will still be a need to provide archived paper records for historical purposes (clinical, research, management), and the hospital system will need to manage the scanning process for external paper documentation until such time the whole health system connects electronically.[43] HIMs will continue to be the data custodians and information stewards of health if the profession strategically positions itself in the face of digital transformation.[44] Kloss' [43] scenario framework in Figure 2.7 maps the growth in the HIM role with the evolution of data in health in the US.



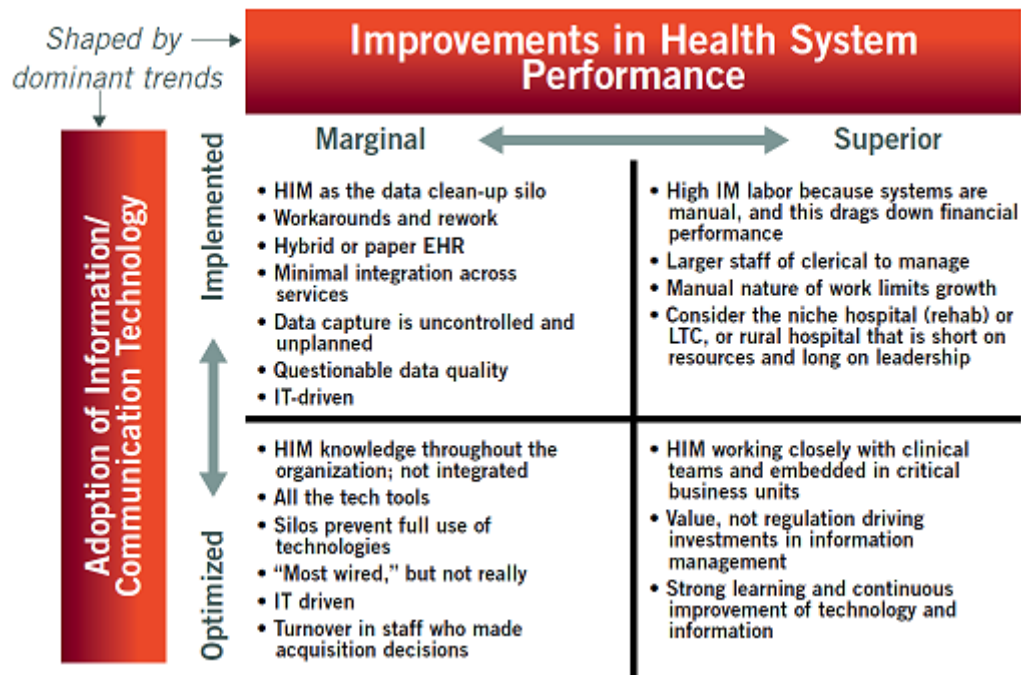


Figure 2.7: Kloss scenario framework for health information services.[43]

As proposed by Kloss [43], the HIM “has a vital role to play to safely and effectively leverage health information technology (IT) to benefit patients and improve system performance.”

The American Health Information Management Association (AHIMA) is taking a proactive stance on the transformation required for the profession, urging HIMs to move beyond the traditional functions into roles that include strategic planning, design and management, or leadership activities.[45, 46] AHIMA warns that “while the EHR hasn’t changed the need or demand for HIM professionals’ skills, it has dramatically changed the way those skills are applied and has accelerated the need for professionals to add new electronic-based abilities”.[47]

#### 2.4.2 Canada

Significant change in the Health Information Management profession is also observed in Canada, again driven by the digitisation of health information.[48] Gibson, Abrams, and Crook [48] identified the impact of emerging trends on Health Information Management, reproduced in Table 2.2.

Table 2.2: Impact of emerging trends on Health Information Management.[48]

<b>Trend</b>	<b>Impact or Implications</b>
Continuing expansion of electronic health record (EHR) repositories	Data standards, data quality, and information governance become more critical
Electronic records in physicians' offices; multidisciplinary, multisite teams; integrated information systems	Data standards (for vocabulary and transmission), information governance (information sharing agreements, information management); client/patient identity and identity management; data linkage
Introduction of SNOMED-CT* coding into point-of-service systems (e.g., EHRs)	Data mapping, maintain data reference sets, monitoring data quality and coding; terminologies
Health system use of data	Data quality, data analysis skills, data mining, data visualization and presentation
Use of mobile applications	Data standards, interoperability, data privacy and confidentiality; data quality
Cloud computing	Privacy, security of data; information governance
Increasingly diverse range of data inputs (e.g., clinical devices directly connected to EHRs for direct data input)	Data standards, data quality, data capture
Involvement of consumers in entering and using their health information	Data quality, privacy, and confidentiality, information governance
Changes in health professions' practices and use of digital records	Expectations of ease of use and interoperability

\*SNOMED-CT, Systematized Nomenclature of Medicine - Clinical Terms

The report identifies that HIMs are increasingly moving away from the traditional roles of record management and clinical coding. HIMs are shifting into roles such as, data management and health information analysts, privacy and security officers, workflow analysts, project and program managers, and educators or trainers.[48] The Canadian Health Information Management Association (CHIMA) has focused their activities on the transformation of the profession through the development of e-health competency profiles. CHIMA has been working with the Alberta Health Services on a HIM workforce transformation. A brainstorming session identified the key domains in the future Health Information Management profession, as reproduced in Table 2.3.

Table 2.3: The key domains in the future Health Information Management profession.[48]

Function/Category	Service Scope	New Roles
Data capture	The data capture service performs all tasks associated with the capture of health data. This includes data coded directly from clinical documentation or auto-coded using systems for that purpose, voice and speech recognition systems, and scanning or creating a digital image of text-based documents. This service will perform audits of the service functions to ensure that best practice and current standards are implemented.	Clinical data specialist Data profiler Concurrent coding specialist Code mapping specialist Data mapping specialist Data quality analyst Standards coordinator/standards specialist Research associate
Information integrity	This service evaluates the integrity of health information holdings, identifies risks, and implements risk mitigation strategies. This service will respond to inquiries into information integrity and complete an auditing role for both internal and external requests.	Health information safety officer (includes hybrid record) Data integrity specialist Risk management analyst Forensic investigation officer Information reconciliation officer Auditor
Identity management	This service manages the systems responsible for the unique identification of consumers, providers, organizations and services.	Identity management coordinators Registry managers (e.g., client, provider, location) Registry data quality specialist
Access and disclosure	This service protects and promotes data and information privacy for consumers, providers, users, and the organization. It manages the access, disclosure, retention, archiving, and destruction of personal health information from organizational systems.	Privacy specialist Data/information steward Release of information analyst Access and disclosure specialist Request coordinator Privacy officer
Information management governance	Using best practices and information management principles, this service develops, maintains, and monitors the accountability framework for information. It includes policies, processes, standards, and metrics to ensure unified data and information, as well as efficient, effective, and secure information assets.	Information management governor Information management liaison Policy analyst
Content compliance	This service is responsible for management of the clinical content to ensure that it meets information management best practices including performing quality assurance audits on the content. This is the bridge between the provider content for clinical need, and the information needs of the organization as well as internal and external stakeholders.	Information brokers Compliance specialists
Information/knowledge asset management	This service is responsible for developing, auditing, evaluating, maintaining, and mapping clinical information and knowledge assets.	Health information/semantics content experts Data modeler Clinical terminology standards specialist
Customer support	This service promotes excellent public relations by fostering and maintaining positive communication with customers in the areas of the personal health record (PHR) and registration systems (registration, booking, registries, self-registration).	Registry agents Portal agents Information broker Customer service agent
Information analysis and business intelligence	Information needs are identified and data is collected and analyzed. Utilization management and quality improvement practices are supported and enhanced via the services offered. Data analytics, clinical trials, and research studies are areas of focus.	Health information and performance analyst Decision support analyst Process improvement specialist Health analyst

Similar to the work and research from the US, the Canadian report identified that digital transformation, and specifically automated coding, will see a shift away from coding activity towards clinical documentation improvement, including providing education to clinicians, auditing, and supporting health professionals at the point of care.[48, 49] Roles for HIMs will be across data analytics, data quality management and integrity, data registries, metadata management, and enterprise data dictionary maintenance, and management.

Planning for the future, CHIMA forecasts the Health Information Management profession needs to become the leaders in the lifecycle management of health information, which includes introduction of Systematized Nomenclature of Medicine - Clinical Terms (SNOMED-CT) coding into point of service systems such as EMRs, increasing the need for maintaining reference sets and maps.[49] With the increasing emphasis on health data and information, skills in analysing, mining, and interpreting data will become fundamental to the profession. CHIMA recognises the need for the profession to evolve from leadership in record management to leadership in information lifecycle management.[48]

In a data-driven system, the Health Information Management profession needs to position itself to be viewed as an enterprise-wide set of functions and skills. With changes due to digital transformation, the profession will need to realign itself in embedded roles in organisations to continue to be an integrated part of the system, partnering with clinical, business and IT process owners, and health funders.[43]

## **2.5 INFORMATION GOVERNANCE**

Given the existing strong skill set of Health Information Management, the natural evolution of the profession in the digital age is towards information governance. The National Archives of Australia defines information governance as “how an organisation's information assets are managed to support organisational outcomes”.[50] It is the policies and processes that enable information to remain fit for its intended purpose and delivers optimal benefits by ensuring the quality, integrity, and reliability of the data. There is a greater need for integrated health information governance roles, allowing clinicians to perform their duties without being distracted by information management.[43, 51]

HIMs oversee processes related to information governance,[52] as summarised in the information governance framework developed by Kloss in Figure 2.8.[35] As the data stewards, HIMs will be responsible for defining data definitions and metadata, developing and enforcing data security and privacy requirements, and maintaining data quality and the flow of information. They will be responsible for monitoring compliance to legislation, policies, and standards, governing the data, and addressing related issues.[53] Information collection design will continue to be a driver of good documentation practice and HIMs will continue to lead in this area through design standards development, implementation, and regulation.[54] As the data custodians, HIMs will implement and manage the control systems related to the integrity, security, and privacy of health data.[53, 55]

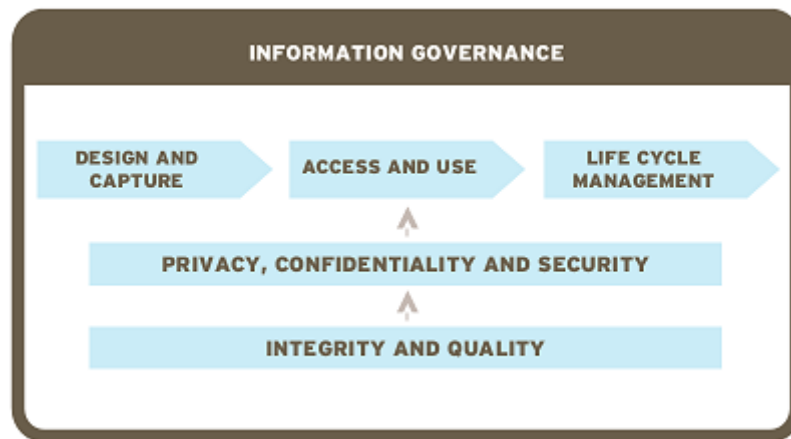


Figure 2.8: A framework for information governance in health.[35]

The knowledge and skill set of staff HIMs will manage will shift from operational management of clerical staff to strategic and operational management of information knowledge workers. The different qualifications, competencies, and skills of this workforce will require advanced qualifications in more senior management positions.[43]

With the future potential of artificial intelligence and automated or computer assisted clinical coding, and the growing emphasis on outcomes-based health care and management, the Health Information Management profession needs to expand into clinical vocabularies and other classification systems.[43] An examination [56] of the job functions and essential qualities of clinical documentation improvement specialists demonstrates Health Information Management professionals, and in particular Clinical Coders, have the ideal skill set to work in clinical documentation improvement.[57]

## 2.6 DATA SCIENCE

Data science is an emerging field, with the Harvard Business Review stating it is the sexiest job of the 21<sup>st</sup> century.[58] However, whilst the term ‘data science’ was only coined in 2008, people have been working in data science roles for as long as there has been data to analyse. Yet, data science is widely misunderstood in health.[42] In Australia, there are few courses offered in data science (all available courses are at the postgraduate level) and currently none in health data science, a complex field that requires an in depth understanding of medical science, health data, and the health care system.

Data science is an evolution of the data analyst/business analyst role and can be defined as the “acquisition and interpretation of data for business intelligence functions within the organization (sic)”. [59] A data scientist is a translator of data into information, but must also be innovative to seek new sources of information from the available data. The role of the data scientist is different to that of the data steward, whereby the latter performs an operational and administrative function, primarily responsible for the information governance of the data. The data scientist seeks to analyse the data, to explore it for new ways to inform the operations and performance of the organisation.[59]

Health Workforce Australia (HWA) [60] identified *data analytics* as one of the five health information workforce roles. The HWA report concluded there are workforce shortages across the health information workforce, including in data science. With minimal educational pathways into the field, people move into this area based on working experience, including a large number of HIMs. The Health Information Management profession has the opportunity to take a leadership role in this domain. With changes in educational training, a data science career structure can be developed for the profession, from graduate entry analysts to Senior Data Scientists.[42]

### **SIGNIFICANT ISSUES TO CONSIDER**

What are the implications of digital health transformation on the Health Information Management profession, and what lessons from other countries can Australia learn, including:

- What does digital transformation mean in the Australian health context?
- How will artificial intelligence and automation impact this profession?
- Will HIMs manage the EMR system in the future? Or will the profession's focus shift to information governance (process digitisation, worker enablement) and data science (performance management)?
- How will worker enablement impact this profession? Could functions be outsourced or centralised? Is this happening already?

### 3. EDUCATION

#### 3.1 THE TERTIARY EDUCATION SECTOR IN AUSTRALIA

*Our belief is that deep, radical and urgent transformation is required in higher education as much as it is in school systems. Our fear is that, perhaps as a result of complacency, caution or anxiety, or a combination of all three, the pace of change is too slow and the nature of change too incremental.[61]*

Barber and colleagues [61] wrote the seminal text *An Avalanche is Coming*, about the transformation that is required in the Australian Higher Education sector to ensure the sustainability of the sector over the next decade. The findings are pertinent to the Health Information Management profession. Workforce transformation needs to start in the Education sector.

As universities move towards business models, the traditional three to four year specialist undergraduate degree model may become obsolete.[61] There have already been changes in curriculum models at a number of Australian universities based on models in the US and Europe (e.g. The Melbourne Curriculum [previously the Melbourne Model], the Bologna Process). Like the consumer-centric model driving health, increasingly the student centric model is creating a new pedagogy that will extend outside of the traditional classrooms, across nations and globally.[61] Technology is changing how content is delivered, how students undertake assessments, and how academics engage with students. Standardised curricula will also need to evolve in order to stay relevant.[61]

#### 3.2 THE CURRENT HEALTH INFORMATION MANAGEMENT EDUCATION SECTOR

HIM has not had a strong history in higher education in Australia, with only one tertiary provider (La Trobe University) offering HIM education dating over 30 years. Over the past 15 years, the University of Sydney and Queensland University of Technology courses were closed, with the latter reopening in recent years. The only other university with a long history in Australia (Curtin University) announced in 2016 it was no longer accepting new students and closing the program.

There are four considerations when examining the Health Information Management Education sector: number of graduates to meet demand, accreditation of these courses to ensure the production of quality graduates, the teaching-research nexus to enhance teaching, and sustainable courses through sustainable faculties.



### 3.2.1 Number of graduates to meet demand

HWA concluded Australia is not producing sufficient graduates to meet industry demand.[60] The Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) lists 59 accredited Health Information Management bachelor programs and 264 accredited Health Information Management associate degree programs in the US.[62]. It is acknowledged there will be a greater demand for the profession in the US due to its population size. For example, the total number of hospital beds in the US in 2013 was 914,513, compared to Australia's 86,510 during the same period.[63] However, the total number of hospital beds per 1,000 population (2013) is lower in the US (2.89) compared to Australia (3.74).[63] Yet the US has 323 HIM tertiary education programs compared to Australia's 8. Statistically, Australia does not have sufficient courses or graduates to meet demand. Furthermore, the AIHW report [5] identified a steady decline in the number of HIM graduates in Australia.

The number of clinical coding training programs in Australia has increased following the introduction of activity-based funding, yet supply still does not meet demand.[60] The number of HIM graduates working in Clinical Coder roles has decreased over time, despite the implementation of activity-based funding. The majority of Clinical Coders today have completed vocational education and training (VET) in clinical coding (e.g. HIMAA, Open Training & Education Network [OTEN] or state-based programs) or received on the job training.[5] For example, historically Victoria has been the largest employer of HIM graduates in Clinical Coder positions, with the 2001 ABS [5] data showing 97.6% of Clinical Coders had a university qualification in HIM. This number has been decreasing: 2002 76.8% [6], 2006 72.9% [5], and 2009 63.7%.[5] Information provided by La Trobe University at the 2015 Health Information Workforce Summit indicates this number has decreased further, with the Course Coordinator reporting 55% of current final year placement students have gained employment in Clinical Coder positions.[7] The number of HIM graduates working in clinical coding roles will continue to decline as more HIM graduates move into other health information roles. Therefore, more graduates from clinical coding registered training organisation courses are required to meet industry demand.

### 3.2.2 Accreditation of courses

There are currently five universities accepting new students into a Health Information Management program (La Trobe University, Queensland University of Technology, RMIT, the University of Tasmania, and Western Sydney University), of which only two are accredited by HIMAA. This means more than half of the universities with a HIM program intake in Australia will be producing graduates without any certification as to the quality of these programs. Table 3.1 provides a summary of Australian health information management courses and accreditation status.[64]



Table 3.1: A summary of Australian health information management courses.

University	Courses	Accepting students	Accredited
Curtin University	Bachelor	×	✓
La Trobe University	Bachelor	✓	✓
	Master (GEM)	✓	✓
	Master	✓	×
Queensland University of Technology	Bachelor	✓	✓
RMIT	Associate Degree	✓	×
University of Tasmania	Master	✓	×
University of Technology Sydney	Master (GEM) x 2	2017/18	×
	Master	2018	×
Western Sydney University	Bachelor	✓	×

GEM, Graduate Entry Masters

Currently, HIMAA only accredits graduate entry tertiary courses. As such, HIM associate and master degrees, and clinical coding courses are not accredited and therefore can produce graduates without a national certification as to the quality of these programs.

### 3.2.3 Teaching-research nexus and sustainable courses through sustainable faculties

A teaching-research nexus enhances student learning and promotes excellence in teaching.[65] Though the concept is more complex than this, in simple terms this refers to where research informs teaching and teaching informs research. Research active academics foster excellence in research and teaching by highlighting their mutual dependence, and establishing standards of excellence.[66-68] Research is important to the economic and social development of society, and in an environment where universities are compared by research output, it is essential for faculty sustainability. A lack of empirical research about HIM academic research in Australia means this analysis is based on academic web profile analysis. An examination of the current five universities producing Bachelor or Master graduates identified the majority of Health Information Management academic staff have minimal or no research activity, and minimal higher degree research candidate (e.g. doctoral) supervisory experience. As research activity is a performance management measure, a lack of research activity potentially risks course sustainability. Higher degree research candidate supervision contributes to this research productivity. Most universities in Australia require academic staff to hold a Doctorate qualification, so there is a greater need for suitably doctoral degree, HIM qualified academic staff to ensure the future sustainability of their courses.

As clinical coding courses are offered through registered training organisations, there is no emphasis on the teaching-research nexus, and sustainability is achieved through business models focused on revenue, not scholarly outputs. Therefore, a research culture is not embedded, potentially influencing the curriculum and the continued classification of this occupation as *Clerical and Administrative Workers* in the ANZSCO. A profession is defined by Professions Australia as “a disciplined group of individuals who adhere to ethical standards and who hold themselves out as, and are accepted by the public as possessing special knowledge and skills in a widely recognised body of learning derived from *research*, education and training at a high level, and who are prepared to apply this knowledge and exercise these skills in the interest of others”.[69]

### **SIGNIFICANT ISSUES TO CONSIDER**

What are the implications of education on the Health Information Management profession, including:

- Do we need more courses in Australia, or more graduates from existing courses?
- What is the value and benefit of a course being accredited? Is there a need to accredit courses not currently within the scope of HIMAA accreditation?
- What will happen to existing courses if research productivity, doctoral degree supervision, and doctoral degree HIM qualified academic staff numbers do not increase?
- What is the benefit to increasing the number of qualified HIMs with a doctoral qualification?
- What is required to progress Clinical Coding from *Clerical and Administrative Workers* to a profession in the ANZSCO?

### **3.3 A NEED FOR CURRICULUM RENEWAL**

AHIMA states that the transformation required in the Health Information Management profession needs to start in the Education sector.[52] HIM leaders identified [43] that many of the US information technology and information management competencies are not preparing graduates for the workforce. A study by Jackson, Lower, and Rudman [70] identified there is a significant difference in the US between educators' and employers' perceptions. The HIMAA graduate entry competency standards [71] were last released in January 2013 after being finalised in 2012. They were reviewed before the introduction of activity-based funding or the Personally Controlled Electronic Health Record.

A common theme from the 2015 Health Information Workforce Summit [7] was the need for greater specialisation and diversification in HIM, in both education and industry, to meet the demands of the transforming workforce.[40, 49] The AHIMA career map may provide the building blocks for future graduate-entry competencies.[72]

Lastly, there needs to be a growth in online courses to increase student participation in HIM education, to meet workforce demand across Australia.[61] With the closure of the Curtin course, the only fully online undergraduate HIM course in Australia, there is no graduate entry training options for people living outside of Sydney, Brisbane, or Melbourne. Online learning is not a thing of the future, it is an essential commodity for viable courses today.[61] There is the opportunity for educators to harness technological advancements to bring in industry experts through online (i.e. via video conference) or blended learning, to allow students to gain the highest quality learning experience. The US Department of Education reported 68% of chief academic officers believe online courses have the same or better quality as face-to-face delivery.[61]

### **SIGNIFICANT ISSUES TO CONSIDER**

What are the implications of curriculum renewal on the Health Information Management profession, including:

- Do the current HIMAA graduate entry competencies encourage education providers to produce HIMs who are “jack of all trades and master of none”? Is there a need for greater diversification and specialisation in HIM education?
- What will be the graduate entry competencies of the profession in 2025? Is there a need for competency revision, and in turn curriculum renewal?
- Is there disconnect between what teaching academics and industry/employers perceive to be the competencies required to produce work ready graduates?
- How can we increase the number of fully online course offerings to increase the number of graduates and create more sustainable courses and profession?

### **3.4 POSTGRADUATE EDUCATION**

The need for advanced tertiary training, instead of professional development and work experience alone, is increasing in Australia and internationally.[73] Postgraduate Health Information Management courses provides industry specific advanced knowledge to enable HIMs to progress their careers, and to advance professionals into senior management roles. Currently in Australia there are only two postgraduate Health Information Management courses (La Trobe University and the University of Tasmania), with another commencing at the University of Technology Sydney in 2017/18. These courses are designed for experienced HIMs to undertake further professional development.

Currently HIMAA does not accredit postgraduate courses. This is in direct contrast to other professional bodies accrediting postgraduate courses for their members in Australia. This includes, for example, health (service) management, accredited by the Australasian College of Health Service Management, or education, accredited by the Australian Institute for Teaching and School Leadership. In Australia, accreditation of postgraduate coursework degrees demonstrates to industry that it meets the advanced level competencies to further a person’s professional development, and establishes a gold standard in postgraduate professional development for that industry. Postgraduate tertiary education strengthens a profession’s standing.[73]

### **SIGNIFICANT ISSUES TO CONSIDER**

What are the implications of postgraduate education on the Health Information Management profession, including:

- Is there a need for postgraduate (Masters and doctoral) level courses in this profession?
- Can postgraduate courses assist in the development of senior managers and executives for industry? How does this reflect on the Health Information Management profession?
- Can postgraduate courses strengthen links between industry and academia, and thereby improve both?
- Is there a need to accredit these courses?

## CONCLUSION

*A failure [of the Health Information Management profession] to adapt... could lead to obsolescence, or at least provide an opportunity for non-HIM professionals to move into traditional and emerging HIM roles and take their place.[47]*

The environmental scan provided strong evidence that the Health Information Management profession needs to transform to survive into the future. There is a need for the profession to be proactive today to position itself as the leaders in information governance and data science. The grim prediction of the profession's demise if changes are not made by HIMAA and the Education sector is a serious possibility. The mechanism for change needs to come from the Education sector, to ensure HIM and clinical coding graduates are suitably qualified to drive health information reform. But this change needs to be achieved as a whole profession. For this to be successful, HIMAA and the Education sector need to work with industry to ensure everyone is engaged in the journey. The profession needs to decide what our role is in the future of health care, and make the transformation today to create a sustainable profession of the future.

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