Building Longitudinal Datasets From Diverse Historical Data in Australia

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HISTORICAL LIFE COURSE STUDIES

Content, Design and Structure of Major Databases with Historical Longitudinal Population Data

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Building Longitudinal Datasets From Diverse Historical Data in Australia

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ABSTRACT

Australia is rich in population datasets generated to manage convicts, civilians, stock, land and the colonised and displaced First Nations people. It has also preserved all service and pension data from both world wars. Through nominal linkage using volunteers and paid research staff, it has been possible over the past twenty years to build four cradle-to-grave datasets derived from administrative cohorts: poor white babies born in a charity hospital 1858–1900; Aboriginal Victorians from 1855 to 1988; convicts transported to Van Diemen's Land 1818–1853 and servicemen who embarked for World War I from the State of Victoria. The abundance of digitised historical sources from government archives to historical newspapers enables the practice of demographic prosopography, with a wide range of variables that have yielded new insights into Australia's population and social history.

Keywords: Prosopography, Life course, Insults, Early life effects, Race, Class

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1 INTRODUCTION

Australia is a deeply bureaucratic society. Its origins in separate British colonies, some of them penal settlements, established a culture of accounting of people, things and stock. From the first settlement in 1788, convicts, soldiers and naval personnel had to be managed bureaucratically, and the convict records are on the UNESCO World Heritage Register. The best records have survived in Tasmania (originally Van Diemen's Land) where they amounted to a 'paper panopticon' that oversaw every movement and offence against penal discipline in an open island prison colony (Byard & Maxwell-Stewart, 2018). Combined with civil registrations, censuses, musters and the imperial task of controlling both Indigenous people and the invaders, the British brought clarity and efficiency built on their management of slaves, settlers, colonised people, imperial and commercial military forces, and of course, trade around the globe. Government officials included gifted statisticians who would find themselves given a free hand in the new colonies.

The Australian states and the Commonwealth therefore host a wide array of population data assets that can be mined and linked to build longitudinal and intergenerational datasets. Contemporary administrative data is being automatically linked (Harron et al., 2017), but only the State of Western Australian draws on (albeit limited) historical records. Hand linkage and careful triangulation are required to create reliable historical data. With ingenuity, historical knowledge, good funding and willing volunteers, this has proved possible over the past two decades.

This paper reports on four such projects using both funded research assistants and volunteer genealogists, to build longitudinal datasets built on discrete archives and vital registrations. The projects evolved into a prosopographical practice, where data about individuals identified within a defined universe, are collected into a database that illuminates group characteristics through the creation of an historical collective biography (Charle, 2015). While mostly used for pre-modern and classical historical studies, when utilised in the era of bureaucratic surveillance of populations through vital registration or other records, it is possible to build datasets that are framed by a registered life, while adding multiple other variables for analysis (Pasin & Bradley, 2015).

The four datasets have been derived from collections of records created by institutions: births in a lying-in hospital for the poor (1858–1900), the Aboriginal Protection Board of Victoria, the Tasmanian convict records housed in the Tasmanian Archives, and finally service and pension medical records held in the National Archives of Australia of men who embarked from Victoria for service in World War I. The amplification of variables in cradle-to-grave data through prosopographical practice, has enabled the exploration of key questions in population science about changing life expectancies; race, class and gender penalties; early life exposures; cumulative insults; and wider historical questions about the effect of major historical events and interventions in the private and work lives of people. Small Anglophone former Imperial dominions like Australia and New Zealand offer great opportunities for historical demography, matched in the Anglophone northern hemisphere only by Scotland (Digitising Scotland; Weaver, 2014).

2 THE FOUNDATIONS

The consistent records from all domains in Australia are the civil registrations of births, deaths and marriages, and they commenced in Tasmania in 1838, just a year after Dr. William Farr instituted civil registration in England and Wales (Kippen, 2002). Unfortunately, the penal colony did not replicate Farr's methodology, so that the causes of death are not systematised to an official nosology and very little information about the individuals registered has been retained. It is therefore difficult to link common names without external triangulating information such as from Convict permissions to marry. Those with common names, non-convicts or emancipated convicts cannot be traced.

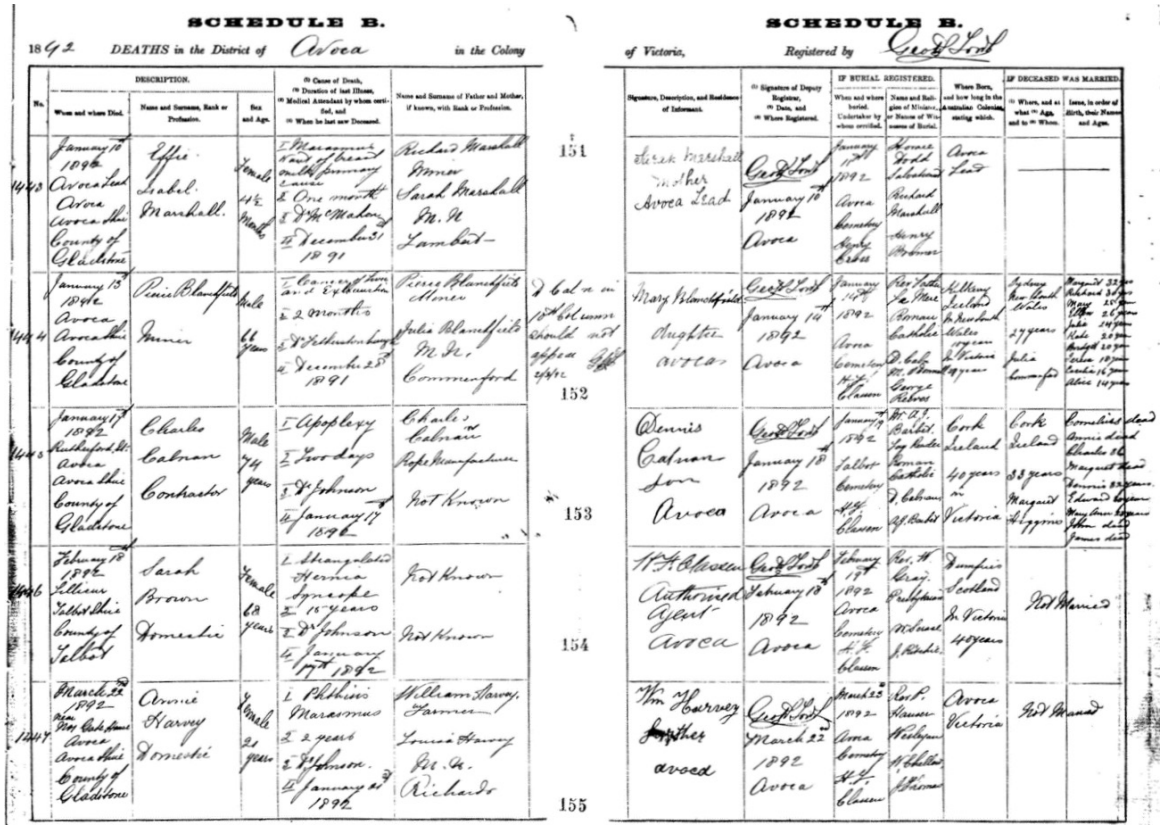
The gold standard was set by the free colony of Victoria which secured the services of a student of Dr. Farr, William Henry Archer in 1853. Archer was given a free hand and, unlike his mentor in Great Britain, was able to implement the full recommendations of the London Statistical Society for an ideal vital registration scheme, the only place in the world to do so (Hopper, 1986). Victoria's regime remains the most detailed in the Anglophone world, recording for all vital events: birth, marriage, family formation and death; records of multiple generations with ages, in birth order, and whether deceased or living; birth places, and if overseas, time in Australia; and occupations including those of past generations. This is most impressive for birth registrations where mothers had to provide details of all previous births, alive or dead, with names and ages

and in birth order — a level of detail not found in England and Wales until the 1911 census, and even there without the names of the children. Parents' marriages were recorded on birth certificates and corrected later by the registry if deceitful.

However, the sources are not without some challenges. The accuracy of family data for death registrations (see Figure 1) depends on the presence of reliable witnesses in possession of the family history. Births before wedlock are often conveniently forgotten, and dead children not recalled by later witnesses. People who died in institutions often could not provide a biography on admission and many during the 19th century died, as they termed it at the time, 'without friends' — that is with no relatives or acquaintances who knew anything about them. I have found correlations between dying 'without friends' — a fate that convicts dreaded, lest there be no-one to make them a coffin (Karskens, 1998) — and premature death (McCalman, 2009). Therefore, a death certificate provides an accounting of an individual's continuing as well as past relationships and indeed of their quality — was this a family that shared their stories or did not communicate or did not care? Almost 40% of the males who died between 1855 and 1888 in the colony of Victoria died as apparently unattached male immigrants, friendless on foreign soil: a toll of colonisation and migration that is insufficiently recognised.

While the other colonies, including the original settlement of New South Wales, also began civil registration from the 1850s, none replicated the full Victorian regime and neither did New Zealand or Canada. Furthermore, Archer was interested in the population as a phenomenon of immigration and settlement, and still today, the place of birth, time in Australia, and full names and occupations of parents of the deceased, have to be included if known to the witness. The Victorian vital registrations therefore contain a history of migration and intergenerational mobility, even if the most detailed death certificates are completed by winners rather than losers. Most 20th-century migration records have survived and could be linked to family formation and deaths; and 19th-century records of shipping arrivals and departures are preserved. It is therefore relatively easy to link back to British and some Irish records, including censuses, when researching individuals.

Figure 1 *Examples of death certificates, Avoca, 1892*



Note: Victorian Death Certificates for the rural town of Avoca in 1892, giving details of the deceased's parents (when known), birthplace, time in the colonies, marriage and family formation.

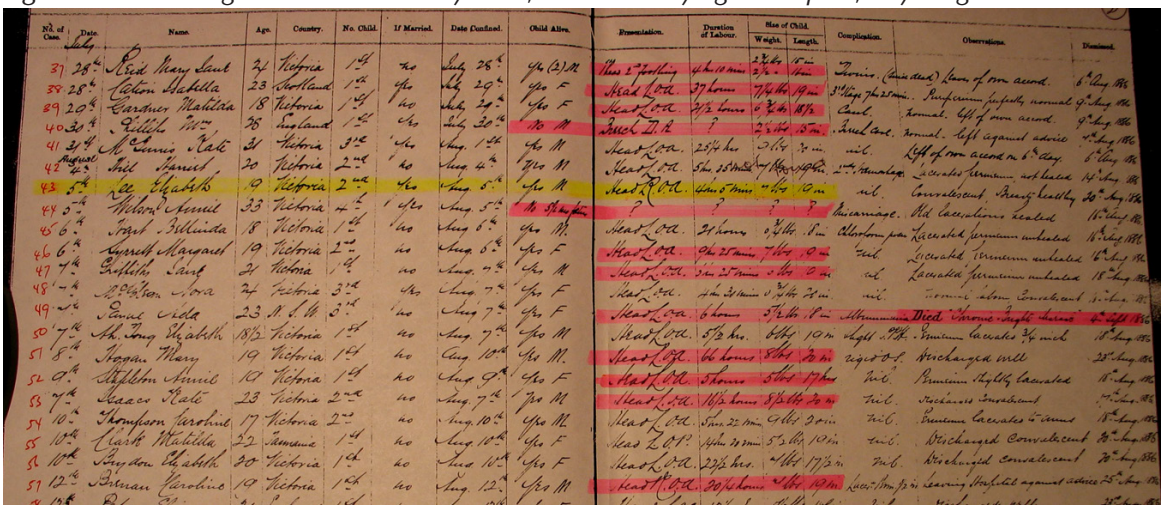
3 MELBOURNE LYING-IN HOSPITAL BIRTH COHORT 1857–1900 (LIH BIRTH COHORT 1857–1900)

In the 1990s the vital certificates were indexed and transferred to searchable CDs. In 1998, on completion of a history of Melbourne's Royal Women's Hospital from 1856, based on a remarkable archive of patient midwifery and gynaecological records (McCalman, 1998), the then Professor of Perinatal Medicine, Sean Brennecke, suggested that a study could be made from the midwifery records (see Figure 2) to test the Barker Hypothesis of the foetal origins of adult health. Now it was possible to trace babies born from 1857–1900 to a recorded birth and death, thereby linking their birth weight to life outcomes.

The project, the Melbourne Lying-In Hospital Birth Cohort 1857–1900, traced the life courses of around 8,602 babies for whom full data had survived and whom we could trace to a registered death. We demonstrated that a cradle-to-grave dataset could be built from an existing archive that captured a discrete population. The midwifery records were of high quality as the founding doctors — an Irishman and an Englishman — had both walked the wards in Paris and were determined to apply statistical analysis to their patients and their practice (Warner, 1998). The record book they used had been developed by the great Scottish obstetrician, Sir James Simpson (Simpson's forceps, etc.). The birth record included the mother's age, marital condition, place of birth, parity and length of hard labour, alongside the baby's condition (alive or stillborn), presentation, sex, weight and length. All interventions such as forceps or destructive instruments were noted, the use of chloroform, manual manipulations, as were complications such as obstructed labour, haemorrhage and rupture of the uterus. Maternal deaths were studied carefully. The population in the hospital was overwhelmingly overseas-born, with Australian-born mothers not predominating until the mid 1870s. Birth weights varied according to maternal place of birth, marital status, parity and age, with Scottish and Irish married women having the biggest babies and Victorian and Tasmanian single women, the smallest (McCalman & Morley, 2003).

Few similar records sets have survived for this period world-wide, but the most notable historical studies have been of the Montreal Lying-In Hospital (Ward & Ward, 1984) and in three Norwegian cities, 1860–1984 (Rosenberg, 1988). Our project proved to be the earliest historical investigation of the Barker hypothesis that birth weight might be an indicator of restricted intra-uterine growth and predicter of later adult health, in particular of cardiovascular disease. Working with an English perinatal epidemiologist, Dr. Ruth Morley, we found no relationship between low birth weight and cardiovascular disease, essentially because most small babies, who may have been 'small for dates' from restricted growth, died well before the age of twelve months. This did not invalidate the Barker Hypothesis, but rather revealed limitations of historical birth weight records as an anthropometric measure of early life influences and the need for wider economic and social variables, epigenetic and environmental effects (Almond & Currie, 2011).

Figure 2 *Page from the midwifery book, Melbourne Lying-In Hospital, July–August 1886*



Note: Pages from the midwifery book for July–August 1886 during an epidemic of Group A Streptococcus. The long pink highlights were maternal deaths; the shorter highlights were of infants traced to a death certificate. The lone yellow highlight is of the only baby who lived to reach adulthood. The birth entries were heavily annotated by a brilliant young medical registrar, Dr. John Dunbar Hooper, who made a detailed study of a hundred consecutive deliveries, nearly all of whom resulted in maternal post-natal infection. He used this evidence to persuade his conservative superiors to adopt antiseptic midwifery, which led to an immediate fall in maternal and neo-natal deaths.

The Melbourne Lying-In Hospital was a charity hospital established for women who did not have a suitable home for their lying in, and around half of the women before the mid-1890s were unmarried, many of them prostitutes. Among the married, desertion and widowhood were common. Hence this was an impoverished population of women who could be divided into varying degrees of being supported or unsupported by a household or a male breadwinner (Morley, McCalman, & Carlin, 2006). Even if there was a father of the child recorded, many of them were, what Jane Humphries has termed 'frail breadwinners': poor providers because of illness, disability, alcoholism or general unemployability (Humphries, 2013).

Birth weight and infant mortality in the LIH Birth Cohort were closely related to the mother's lack of a supporting household of some form. Because we could link the midwifery records to the detailed Victorian birth, marriage and death certificates, as well as later-life records such as military service, criminal offending, divorce and inquests, we had more data for each individual than for those projects in Canada and Norway which had only the hospital birth records (see Table 1 for the basic numbers). We found a steady gradient from those babies whose father was absent from the birth certificate; to those whose father's name was included even though the parents were not yet married; to those whose fathers were married to their mothers but who were unskilled; and finally, skilled fathers. This gradient was in birth weight and in infant mortality, which was extreme among the illegitimate. Likewise, with adult life expectancy, there was a strong class gradient based on geographical location of death, insecure work, family breakdown and criminal activity. Thus, even within a population where all were eligible for admission to a charity hospital, there was a clear gradient of income and life span that was predicated on legitimacy, security of income, housing and stable family life (McCalman, Morley, & Mishra, 2008; McCalman, Morley, Smith, & Anderson, 2011).

Table 1 *Births and death events. Melbourne Lying-In Hospital ,1857–1900*

	Number	Percentage
Registered births	16,290	
Death certificates traces	8,602	52.8
Died < 6 months	4,308	50.1
Died 1–16 years	947	11.0
Died after age 16	3,347	38.9
Lived to age 40	2,958	34.4

4 KOORI HEALTH RESEARCH DATABASE (KHRD)

The potential of this cradle-to-grave life course reconstruction from vital registrations and other records, inspired the leading Indigenous social health academic, Ian Anderson, to suggest a collaboration to reconstitute the Aboriginal population of Victoria. Here the core archival records were those of the Aborigines Protection Board in combination with vital registrations. From these his mother, Sandra Smith, was building genealogies of Victorian Aboriginal people while working at Museum Victoria's Bunjilaka Centre. The number of people discovered by this process was constrained not just by the collapse of the Aboriginal population, but by privacy restrictions on access to vital registrations: deaths can be accessed after thirty years, but marriages only after 70 years and births after a hundred. This left us with the most complete population being from 1870 to 1922, but since we were looking for health transitions, this did capture the critical time period the impact of colonisation on Victorian Aboriginal people. See Table 2 for the final results of the data collection.

The colony of Victoria was the earliest to institute bureaucratic control over Indigenous people in Australia in response to the catastrophic destruction of the Tasmanians and the severity of frontier violence and disease (Boucher & Russell, 2015; Broome, 2005). Working with Dr. Len Smith, who had pioneered the historical demography of Aboriginal Victorians (Smith, 1980), we sought to reconstitute the population from oral genealogy and vital registrations, as the public records rarely noted indigeneity. Aboriginal births, deaths and marriages, were conscientiously recorded by the assistant registrars in each district, even to the extent of naming prominent white settlers who had fathered children with Aboriginal women, but the Aboriginal individuals could only be identified by their family connections (see Figure 3).

Table 2 *Number of reconstituted persons in the KRHD database*

		Males	Females	Unknown
Total KHRD database population	7,900			
Aboriginal	7,405	3,818	3,519	68
Not Aboriginal	495			

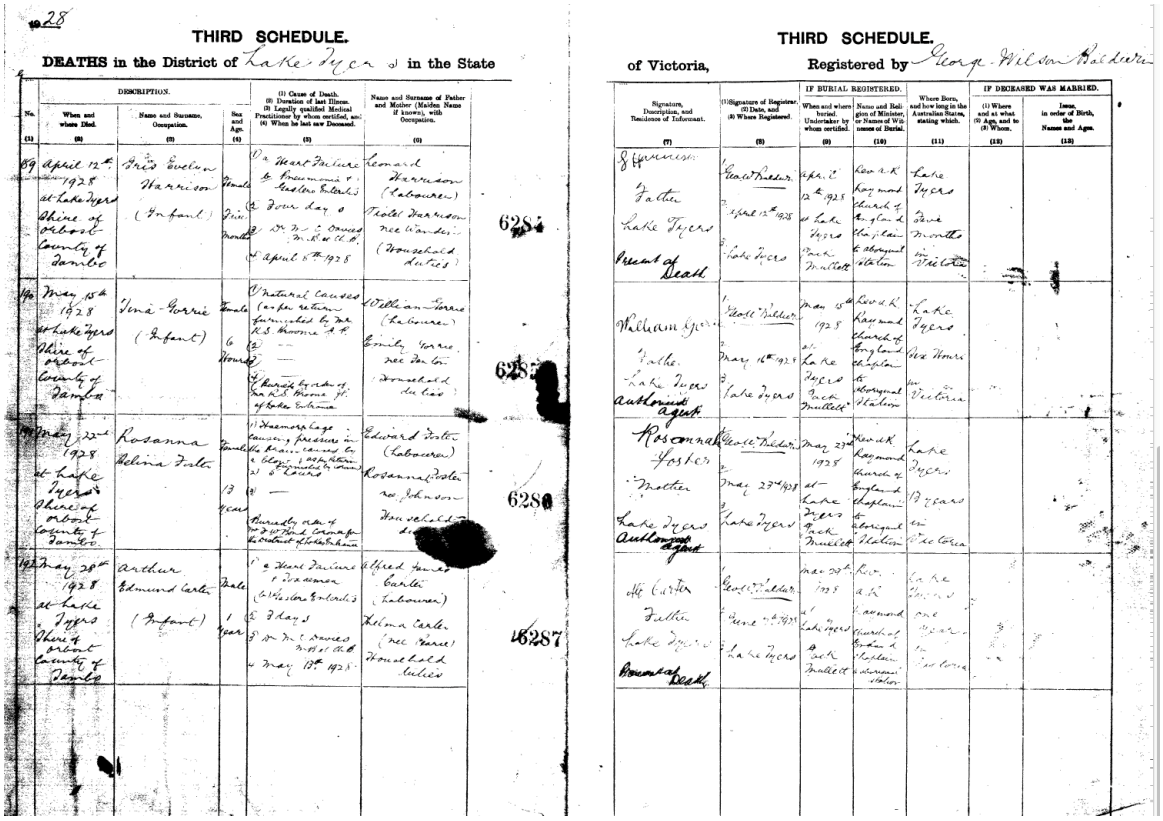
Notes by Len Smith:
'Confirmed' individuals:
'Complete' from 1870 to 1922
'Closed' forward and backward:
All known ancestors and siblings of current population
All known descendants of founder population
Most complete date for those born between 1870 and 1922: the periods when the Victorian Aboriginal population was at its lowest, but beginning to recover.
Numbers are small, and analysis undertaken in decadal birth cohorts.

Here again, we were combining archival records with vital registrations of a discrete population of Aboriginal people and their part-descendants. The key questions that Len Smith wanted answered included the extent of initial population collapse under colonisation; how many Aboriginal people remained visible to the state over time; and how many were invisible. Finally, were these 'invisible Aborigines' the source of Aboriginal Victoria's recent recovery? From the time Captain James Cook first mapped the eastern seaboard of the continent in 1770, the population in what is now known as the state of Victoria, crashed from an estimated 60,000 to 15,000 by the time Europeans permanently settled in 1835, to a nadir of 600 in 1900, to no 'full blood' Victorian Aboriginal people alive today since 1993 (Smith et al., 2011). Today, with around 48,000 disclosing Indigenous descent in the 2016 Census, how did the population recover at such a rate when natural increase would have been insufficient?

Various attempts at control had completely failed to protect people until the 1860s when the Board began moving them on to reserves. Around half of those known to the authorities agreed to go on to the reserves, but they tended to be in poor health. There they were encouraged to start farming and to have an education, until pressure from local farmers coveting their land pushed them into greater concentrations, even further away from their respective country. The assumption by the colonial state was that the indigenous population would quietly fade away, however the mid 1880s, a new part-Aboriginal population was beginning to make unwanted demands on the colonial budget. The 1886 'Half-Castes Act' forced those of part descent to leave the reserves and live as 'legal whites': except that the rest of society continued to discriminate against them as 'black'. 'We were too white to be black and too black to be white', they would say (Broome, 2005; McCalman & Smith, 2016).

Through family reconstitution we found a population of 'invisible Aborigines' living outside the surveillance of the Protection Board but remaining connected by kinship to those still living 'under the Board'. Aboriginal women had no entitlement to moral protection against male sexual violence and we found startling evidence of the impact of sexually transmitted infections on fertility: constraining the Aboriginal population from making an early recovery from the impact of colonisation. Likewise, we found similar acquired secondary infertility among convict women (McCalman & Kippen, 2019a). We also found, by comparing the life courses of the poor whites born in the Lying-In Hospital, that the gap between white and black health and survival widened as poor whites made gains with a decline in tuberculosis mortality in particular, while Aboriginal Victorians experienced a rise in tuberculosis and infant mortality that held up until the mid-20th century. Thus, we could demonstrate that the notorious 'gap' that remains a fraught socio-medical and political issue to this day, emerged in response to deliberate government policy of racial management. However, we also found, to our surprise that the known population in Victoria is overwhelmingly descended from those who went on to the reserves in the 1860s and 1870s: that the Board of Protection did save Aboriginal Victoria from complete annihilation. Their concentration in closed reserves at least enabled them to preserve some of their language, their genealogies and their culture (McCalman & Smith, 2016; McCalman, Smith, Anderson, Morley, & Mishra, 2009; McCalman, Smith, Silcot, & Kippen, 2021; Smith et al., 2011).

Figure 3 *Death certificates from an Aboriginal reserve in 1928*



Note: Death certificate from Lake Tyers Aboriginal Reserve (Victoria) covering 46 days in 1928 when four children died in a population of just over 200 people. The first died at five months from heart failure and gastro-enteritis (probably diagnosed today as failure to thrive); the second was premature and died after 6 hours; the third, aged 13 years, died from a blow on the head inflicted by her sister in a fight; the fourth, a boy aged 1 year, died also from heart failure and toxaemia. The children were all buried by a leader in the community, Jack Mullet. The register was kept on site, hence the ink blots.

5 FOUNDERS & SURVIVORS SHIPS PROJECT (FAS SHIPS COHORT), 1818-1853

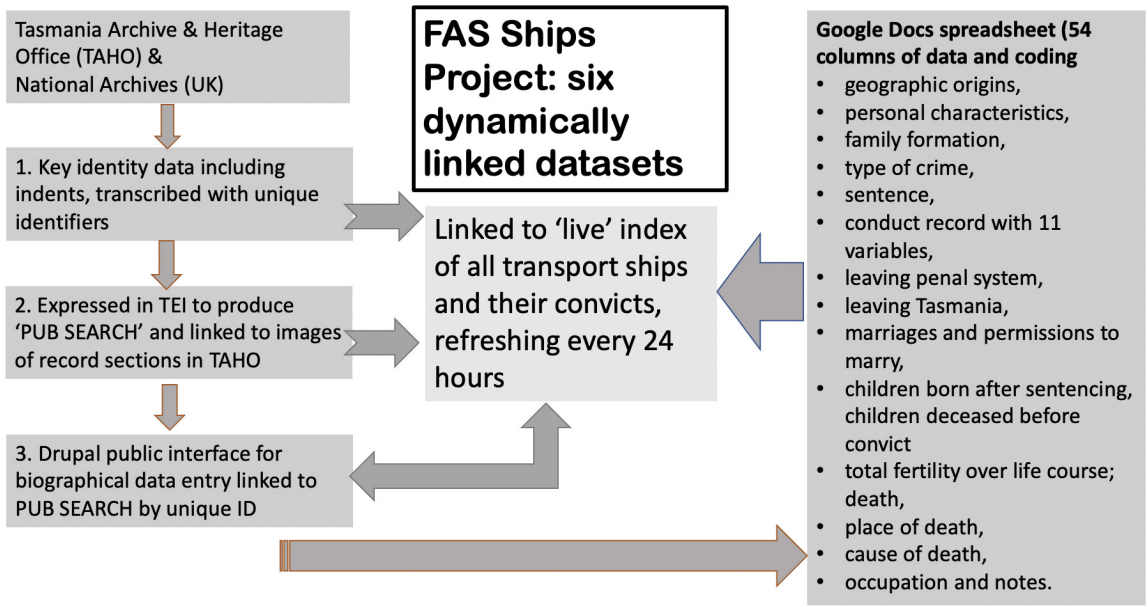
The Melbourne LIH Cohort was enriched by war service records, social welfare case records, criminal records, marriages, electoral rolls and newspaper reports. Likewise, the KHRD dataset was amplified by the addition of every sighting of an individual in the Protection Board archive and newspapers. However, it was with the convict records of Tasmania that it was possible to expand even further the range of research questions and variables.

The seed for 'Founders and Survivors: Australian life courses in historical context' was sown by Rick Steckel of the University of Ohio at a seminar in Columbus in 2005. As an economic historian, his interest in convict records was in any relationship between height, stunting, and vulnerability. The historical demographer Rebecca Kippen now joined the projects and with Hamish Maxwell-Stewart leading from the University of Tasmania, in 2008 a team of demographers, economic historians and social historians, embarked on building a dataset from the about 68,000 individuals who had been transported between 1812 and 1853 and for whom usable records had survived. The technical challenge was the transcribing and structuring of detailed hand-written records of human characteristics and events into a database form that could be used for analysis (see Figure 3). As with LIH and the KHRD, FileMaker Pro supplied the most reliable software for the initial combination of numerical data, coding and text, but to do even that, core records had to be transcribed and allocated to selected categories. This work was undertaken in Tasmania, led by Alison Alexander, and has formed the core data for the complex assemblage of data on those under the Paper Panopticon in combination with the transcriptions donated by Deborah Oxley and David Meredith (Bradley, Kippen, Maxwell-Stewart, McCalman, & Silcot, 2010; McCalman, Smith, Silcot, & Kippen, 2015).

A subsidiary project commenced at the University of Melbourne in 2011 with a systematic reconstruction of convicts' full life courses, including life and family formation, before and after sentence (the FAS Ships Project). Tracing to a recorded death was difficult as so many, particularly Celts, had common names. This project involved a far greater range of data, including the assimilation of full texts of conduct records. The difficult informatics concerned the reconciliation of multiple textual sources for each individual, many of which had small discrepancies with spelling, dates and places. The aim was to use community genealogists as volunteers working on an interactive online platform, and here researchers needed to be able to see all the variants in a given convict's record and to analyse and code their conduct records for later analysis. TEI, or the Text Encoding Initiative (Burnard, 2014), was employed by our system designer, Sandra Silcot, to build a core dataset that amalgamated descriptive data on convicts and then linked that with images from other records in the system: conduct records, description lists, musters, and the indents or embarkation data collected on each convict on arrival, along with physical measurements, and accounts of their crime in their own words and of their families and birth places. Some of these brief flashes of convicts' own speech are very moving, and the descriptions of the families left behind have made it possible to explore the significance of parental or marital loss in offending (Kippen & McCalman, 2016).

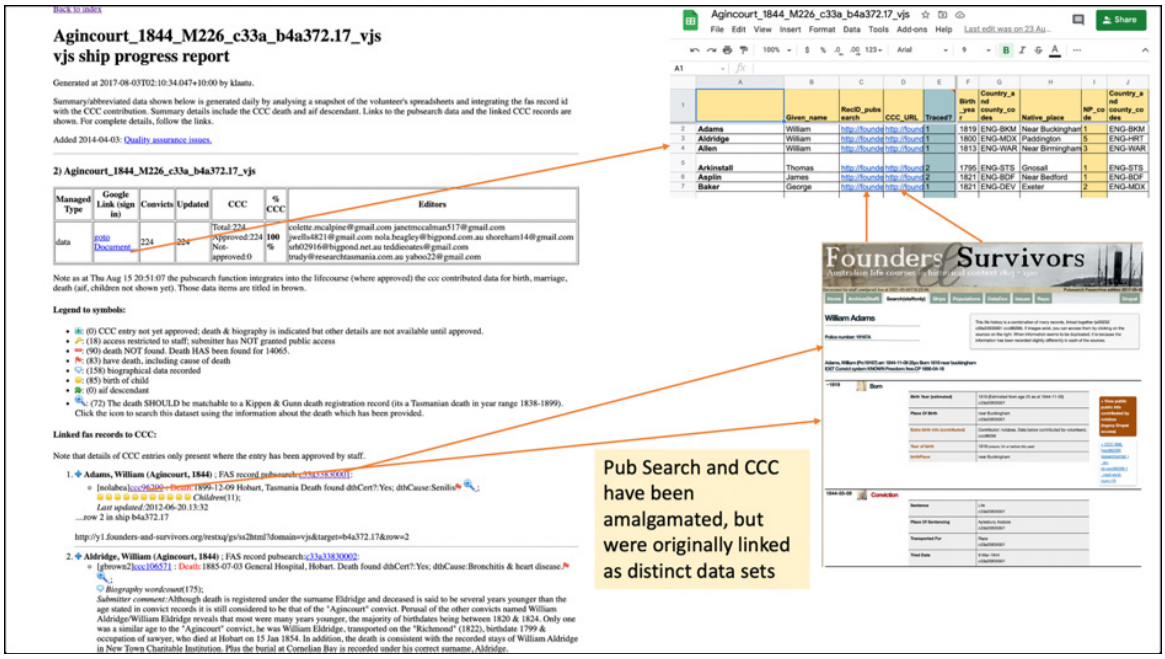
Sandra Silcot's data architecture of the FAS ships project was rich and ingenious (see Figure 4). From four separate datasets, a 'biography' could be assembled 'on the fly', so that the life became the sum of the parts of the archive pertaining to that individual. This was held together by a 'live' index which in turn linked to spreadsheets in Google Docs that were completed by the researchers. Further, each line of data for an individual in the spreadsheet had live links to both the core TEI data from the indents and to the biography contributed by the online researchers via a portal run on Drupal. The TEI data then linked to digital images of the relevant original record held in the Tasmanian Archives and Heritage Office: for many of them, part of a page or a whole page in an archived book. The online workplace therefore aggregated individual records from four independent data sites. Users could move back and forth between individuals and groups, original texts and transcripts, with the TEI data recording their lives under the penal system, and the biographies recording their lives before and after sentence as discovered by the researchers. The Google Docs spreadsheet collected the text, enumeration and coding that was later exported into SPSS for analysis (see Figure 5).

Figure 4 *Schema of the linked datasets of the FAS Ships project*



The project was broken into shiploads of convicts rather than a sample of, for instance, 1:3. The convict voyage had created a mobile community that remained significant in many convicts' personal lives. Each voyage had its own historical context, and most were carefully documented by the ships' surgeons who were required to keep detailed 'sick lists' and were in charge of the convicts both for health and discipline while at sea. Ships surgeons were paid bonuses for landing most of their charges in good condition, and death rates were remarkably low. Moreover, many surgeons were attentive, and most convicts responded with good behaviour. Apart from stormy seas, convict voyages were rather peaceful.

Figure 5 *Pages from the three linked datasets: dynamic index, google docs spreadsheet and an individual biography*

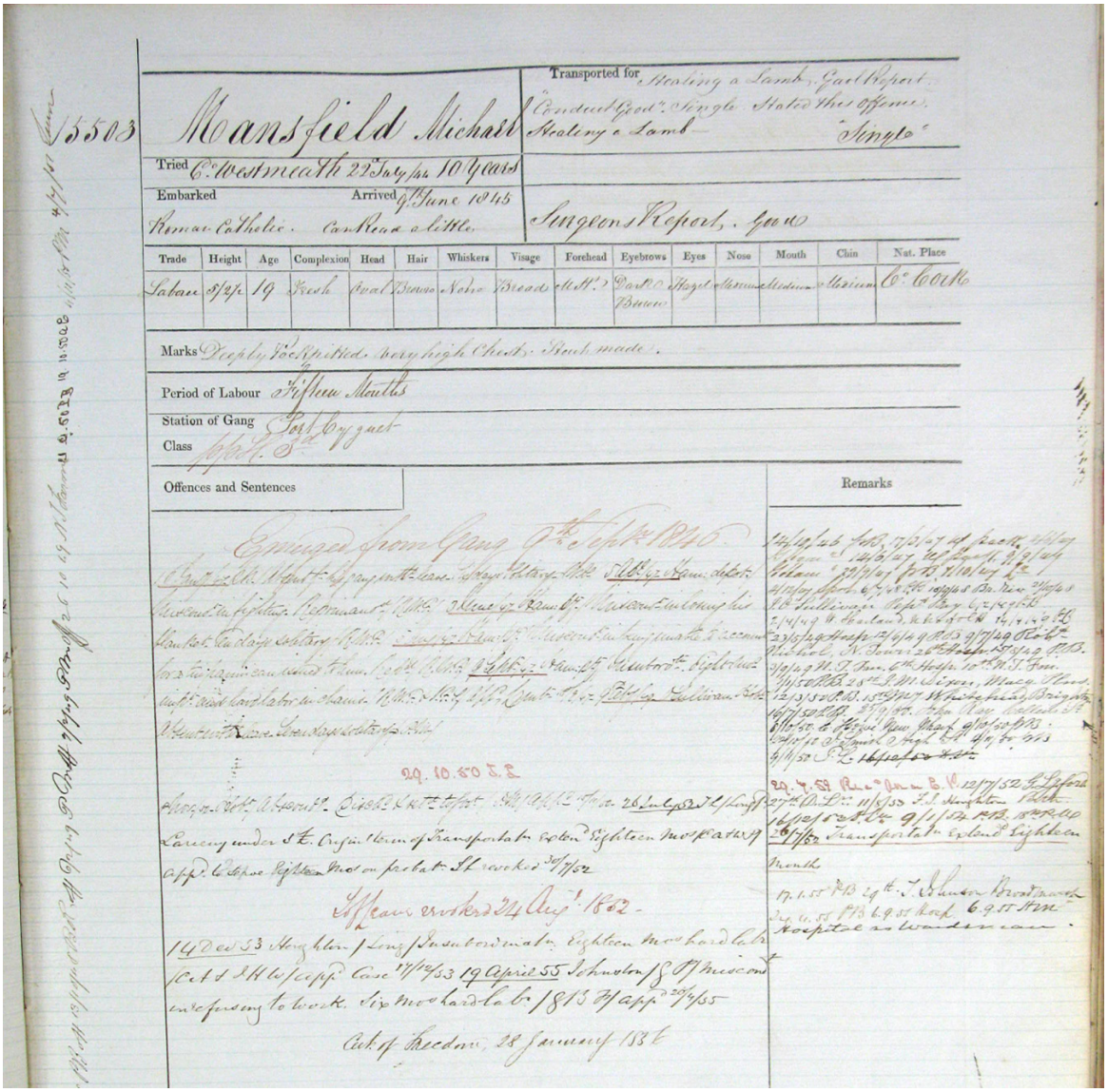


Note: This figure provides screenshots of the main elements of the database: the 'live' index on the left, with its links to the Google Docs spreadsheet (top rights) and the data entry web page for volunteers to upload new information on a convict (bottom right). The red arrows are the links between these three datasets.

Breaking the project into 'ships' also made it easier for the volunteers. Many started with the ship or ships bringing their own ancestors; there was always an end in sight, rather than a pitiless dark tunnel of data collection; and many found additional historical material to add to the voyage's story. Their first task, however, was very demanding, even for the experienced family historians. We needed them to be able to read Copperplate handwriting, so they had to be predominantly older people educated before the 1970s. We required them to record and code every piece of relevant data in a long Google Docs spreadsheet: biological and social characteristics: age, height, places of birth and places of conviction, religion, literacy, marital status, family size with occupations and places. Thus, we had multiple variables on the life condition of convict upon entry (see Figure 6).

For the convict's time under sentence researchers had to decipher densely hand-written notes, full of abbreviations, of the new offences and their punishment. Much work had already been done in Tasmania by the Female Convicts Research Centre and the Port Arthur Centre in the art of transcribing convict records. These detailed records can involve three or more hours of concentrated work to decipher and transcribe, which was humanly impossible if we were to reconstitute a large sample of the population. Moreover, once transcribed, the conduct record still needed to be coded for analysis. Therefore, a method of coding directly from the original text was developed to capture a range of offences, reactive behaviours and punishments conceptualised as 'insults' — lashes, days in solitary confinement, days on the treadwheel, head shaving, time in chains and hard labour or at the washtubs, time at Port Arthur. The 'crimes' ranged from insolence and refusal to work, to violence, destruction of clothing (related to severe mental illness), drunkenness, sexual offences including same-sex offences, violence and theft. It became clear that drawing conclusions about reactive behaviour had to be tempered by knowledge of agricultural cycles (valuable workers were punished less in harvest periods) and by interpersonal conflicts. Under the 'Assignment' system (1803–1840 for men, 1812–1844 for women), convicts were assigned to private masters or mistresses who were their primary disciplinarians for the duration of their sentence; under the succeeding 'Probation' system they underwent two or more years' controlled labour on probation, remaining under official surveillance until deemed sufficiently reformed to obtain a ticket-of-leave where they could work for wages. Punishment in chains, or in a penal station or the crime classes of the Female Factory, was for secondary offences committed under sentence, and overall, around half of all convicts succeeded in avoiding harsh treatment.

Figure 6 *Male conduct record under the Probation system*



This difficult work required extensive training with workshops, backed by online and paper manuals, but the volunteers rose to the challenge and worked with great enthusiasm and accuracy. The university research team included paid research assistants who checked new entries before they were accepted and provided daily support to the wider team. The volunteers' morale was maintained with regular week-end lunches and an illustrated online magazine was produced three times a year for four years, with contributions from the volunteers and the academic staff (see Figure 7).

Around sixty volunteers, many from other states and one from overseas, worked on the project over a period of four years and produced nearly 25,000 biographies out of 68,000 convicts (Kippen & McCalman, 2016). Our work was made far easier by a close collaboration with the Female Convict Research Centre in Hobart, which also uses volunteer labour (FCRC).

The Female Convict Research Centre has been an essential partner in all this work. They pioneered using volunteers for the systematic transcription of the female convict records. However, they were short of resources. By forming a partnership, we were able to resource them with access to paid death certificates and staff time, while we shared records and training. They are now very close to completing the records of all women convicts sent to Tasmania and this is available to all who register with the Centre online.

Given that most former convicts were anxious to become invisible upon release, and many had common names, our volunteers were remarkably successful in tracing enough men and women, before and after sentence (see Table 3).

Figure 7 *No 10., April 2012 of 'Chainletter'*

FOUNDERS & SURVIVORS

Chainletter

News from the Founders & Survivors project at the Universities of Tasmania, Melbourne, Flinders, Monash and the Australian National University

A Tri-annual Newsletter — Issue No. 10 April 2012

Ships Projects
We report on the wonderful progress of the Ships Projects and the plan for the the next twelve months. In particular we now need to start work on the Women's Ships. Page 2

Next Workshops
Our next workshops will be in Hobart & Launceston on 2 & 3 June to launch the women's ships projects.

On 23 June, we plan a day-long workshop at Melbourne University. Page 2

Ships Projects Stories
Steve Rhodes returns with two life stories from the Southworth 1834 . Pages 3 to 5

And Glad Wishart reports on new connections. Page 12

New Book

Surgeon Superintendent
James Bradley discusses new research on the medicine of convict voyages and the role of the surgeon superintendent. Page 7

Research Reports
Claudine Chionh reports on the recent Digital Humanities conferenence and Janet McCalman & Rebecca Kippen on their paper at the European Social Science History Conference in Glasgow. Page 11

Editorial

We are now able to establish some deadlines for our project, as our funding will finish at the end of 2013.

The Australian Research Council has been very generous since 2007, but we know that we cannot expect further funding after the current grants are exhausted.

Sadly this means that the Founders & Survivors website will need to be archived, probably by the National Library of Australia's Pandora. This will keep it open for people to consult, but it will no longer be interactive. This means that new entries will no longer be permitted and communications maintained. December 2013 will mark the end of *Chainletter* as well.

However, it is not all sad news. We will find ways to publish results of the project online, the collection of convict biographies will be available, and we hope that the detailed research database will be accessible to researchers through Monash and Melbourne universities.

We have just received another grant from the Australian National Data Service (ANDS) to enable the data to remain useful to researchers in perpetuity.

We cannot, however, obtain funding that will employ the staff to run the service for the public. Funds for libraries, museums and the arts are tight and are likely to become even tighter in the near future.

In the light of this, we are thinking about online publishing as a means of continuing the research. And we have been approached to provide material that can be used for schools nationwide. Roar Films in Tasmania have been developing film and media using the project and we have contributed to a feature-length movie on Ikey Solomon.

Our research strategy therefore is to try and finish most of the ships by July 2013, so we have time to clean up the data and tidy loose ends.

In Volunteers' Corner we outline the plans for the next stage: women's ships and key men's ships that we need researched to complete the project.

Chainletter No. 10 April 2012

Our prosopographical data collection has enabled us to undertake multivariate analysis with wide range of variables and many of our starting hypotheses, which looked eminently reasonable historically, were not sustained by the analysis: height and literacy, for instance, were not significant in convicts' life outcomes (stunting was expected to reduce lifespan; literacy to extend it). Similarly, the harsh physical punishments inflicted under sentence did not shorten lives whereas days spent in solitary confinement did (Kippen & McCalman, 2015). Women were far less resilient than men, entering the penal system with major psychological and physical vulnerabilities that disposed them to alcoholism, difficulties with trust and intimacy, and a huge burden of acquired infertility from sexually transmitted infections. Convict men who survived sentence in fact lived longer than their social peers in Great Britain and Ireland; convict women did worse than their peers back home. As we traced their lives before and after sentence, the factors that emerged were new to convict historiography: the important push factor was the fracturing of families and households, leaving children and young people without emotional and material support (Kippen & McCalman, 2018). And the most significant determinant of lifespan was the crime economy of the convicts' birthplaces: seaports, being especially dangerous for women — their mothers — were the worst places to be born; rural villages even in Ireland, the best. This resonates with modern research on toxic stress in utero and early life, foetal alcohol syndrome and neglect, damaging children's cognitive and social early development, scarring them for life (McCalman & Kippen, 2019b). Likewise, the higher life expectancy of male emancipists compared to the peers left behind them, suggested that the better diet and climate in Australia conferred biological mid-life benefits, as understood in life course epidemiology (Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003).

Table 3 *Percentages of the sampled persons that could be traced to death. Founders & Survivors Ships Project, 1818–1853*

Sex	%
Male	44.3
Female	49.1
Country of birth	%
England	46.7
Ireland	43.6
Scotland	45.1
Other British	46.0
Other	44.3
Not recorded	61.4
Place of birth	%
Village	46.2
Town	47.4
Industrial urban	44.2
Port cities	41.2
London	40.9
Other country	43.8
Not recorded	61.7

Year of arrival	%
1812–1829	50.6
1830–1839	46.8
1840–1842	44.8
1843–1845	42.8
1846–1849	46.5
1850–1853	45.0
Age at arrival (years)	%
7–19	39.0
20–24	43.6
25–29	46.9
30–39	48.8
40+	56.3
Not recorded	57.8
Offences under sentence (exclude convicts who died within five years of arrival	%
None	47.8
1–2 offences	43.7
3–5 offences	41.6
6+ offences	38.6
Constant	41.0
Not recorded	21.3

Explanation: The Ships Project included 124 ships with 16,953 males and 7,783 females. This is a clustered sample from an estimated number of 68,000 persons that are included in the database of the Founders & Survivors project.

6 DIGGERS TO VETERANS: RISK, RESILIENCE AND RECOVERY IN THE FIRST AUSTRALIAN IMPERIAL FORCE (AIF) IN WORLD WAR I

This final project pulls the cradle-to-grave studies into the 20th century, taking a systematic sample of men who embarked for overseas service in World War I in the State of Victoria as a discrete population for a demographic prosopography. The purpose was to examine the life course effects of war service exposures, and the early life factors that influenced the impact of the insults of war service on individual lives. Australia has retained a wide range of records that makes such a study feasible: military service records have all survived, whereas those for World War I in the United Kingdom and the United States have not. These are digitised and openly available from the National Archives of Australia. The medical examinations for disability pensions have also been preserved and can be accessed on individual request from the same archives. Linkage to civilian birth, marriage and death records is easy in Victoria, and whereas New Zealand and Canada have many comparable records available, in neither case is it currently possible to link to a registered death in

the public domain (Wilson, Clement, Bannister, & Harper, 2014). In Victoria, deaths have only a thirty-year embargo so that virtually all the veterans who died in Victoria could be traced to a detailed death certificate.

We may lack census returns, but once you are reconstructing lives in the 20th century, there are Commonwealth electoral rolls which at least reveal cohabiting adults, nearby relatives and occupations, even if they are often too general to be particularly useful: e.g. 'public servant' could cover anyone from a train driver to a senior administrator. However, the electoral roll gives residential address, which remains the best indicator of socio-economic status in combination with occupation — and since they were created for elections, they were more frequent than the censuses. Those with unstable living arrangements can be easily discerned, whereas automated linkage at least of the US censuses appears to privilege the settled over the unsettled. Voting has been compulsory in Australia since 1922 and from the start of the Federation in 1901, the electoral office has always enrolled people without a fixed address — initially, at the insistence of the Labor Party, because so many rural workers were itinerant yet unionised. Female suffrage also began in the Commonwealth in 1902. These rolls, along with a range of other government records like Government Gazettes and some municipal rate books, have been digitised by Ancestry, while State Government records of criminals, neglected and delinquent children being made Wards of the State, divorces, rural land titles, are online. War Service rural settlers, inquests, probates and wills are also readily available online at no cost. Finally, the National Library of Australia pioneered the digitising of all historical Australian newspapers in its collection: from major metropolitan newspapers, to the provincial and niche — such as German-language newspapers from the Barossa Valley in South Australia. These are also freely searchable online as part of a national 'TROVE' of all known publications and images relating to people, places or events. British and American digitised newspapers are behind paywalls.

These outstanding online resources have revolutionised Australian historical research and vastly expanded the capacity to construct rich genealogies and prosopographies. The Diggers to Veterans project used two teams of volunteers:

(1) an historical team of genealogists who

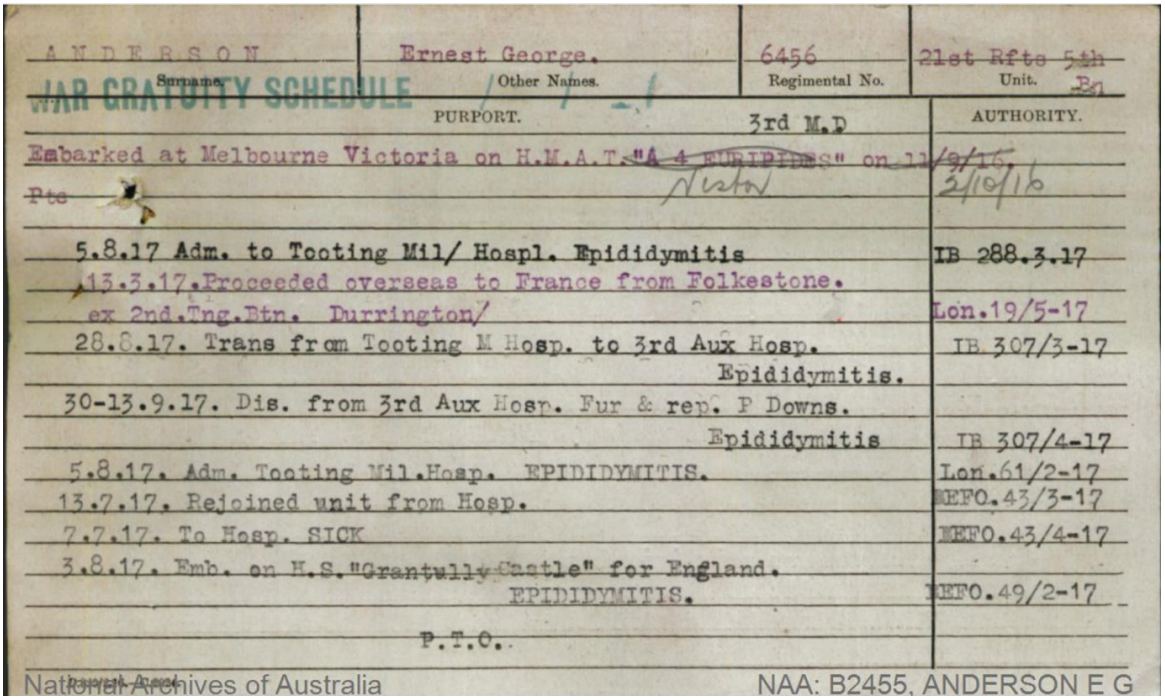
- traced the servicemen's families, often back two or three generations with family sizes, frequency of infant and child mortality;
- used newspaper, inquests, criminal and state ward records to record evidence of family dysfunction, father's occupations, premature deaths of parents; mental illness or suicide — all of which proved to be risk factors for those in military service;
- analysed and coded the soldier's service record for wounds, sickness, conduct offences, valour awards, shell shock, gassing, and actual exposure to combat;
- reconstructed the veterans' life after the war using electoral rolls, marriage and birth records and notices, newspaper records and the death certificate (see Figure 7).

(2) a medical team of retired health personnel: doctors, a former professor of physiotherapy and a psychiatric nurse. All had had clinical experience with veterans of both World Wars.

- This team worked through the medical and pension files of those veterans who engaged with the Department of Repatriation (now Veterans Affairs).
- They assessed the seriousness of the claims, and quality of the diagnosis, the state of the man's health over time, and the treatment. Much of the real story of these men's health after military service was concealed by the fact that no-one asked them about smoking until the 1970s. Alcoholism was common; suicide around the same as the wider community. Largely, however, their health declined in concert with ageing and the wider population.

This project is not finished, and we have published only a preliminary demographic analysis of the first half of the sample, who are the persons with the longest overseas service as the sample proceeds by time of enlistment (see Table 4). The most important determinants of life span were personal characteristics such as early life conditions and socio-economic status, and not war exposures apart from a small number of severe insults (McCalman, Kippen, McMeeken, Hopper, & Reade, 2019). The Union Army data led by Dora L. Costa (Costa, 2012; Costa, DeSomer, Hanss, Roudiez, Wilson, & Yetter, 2017; Costa, Kahn, Roudiez, & Wilson, 2018) over many years has been an inspiration to Diggers to Veterans, and it is hope that the Australian data will be enhanced and utilised by many researchers over the coming years.

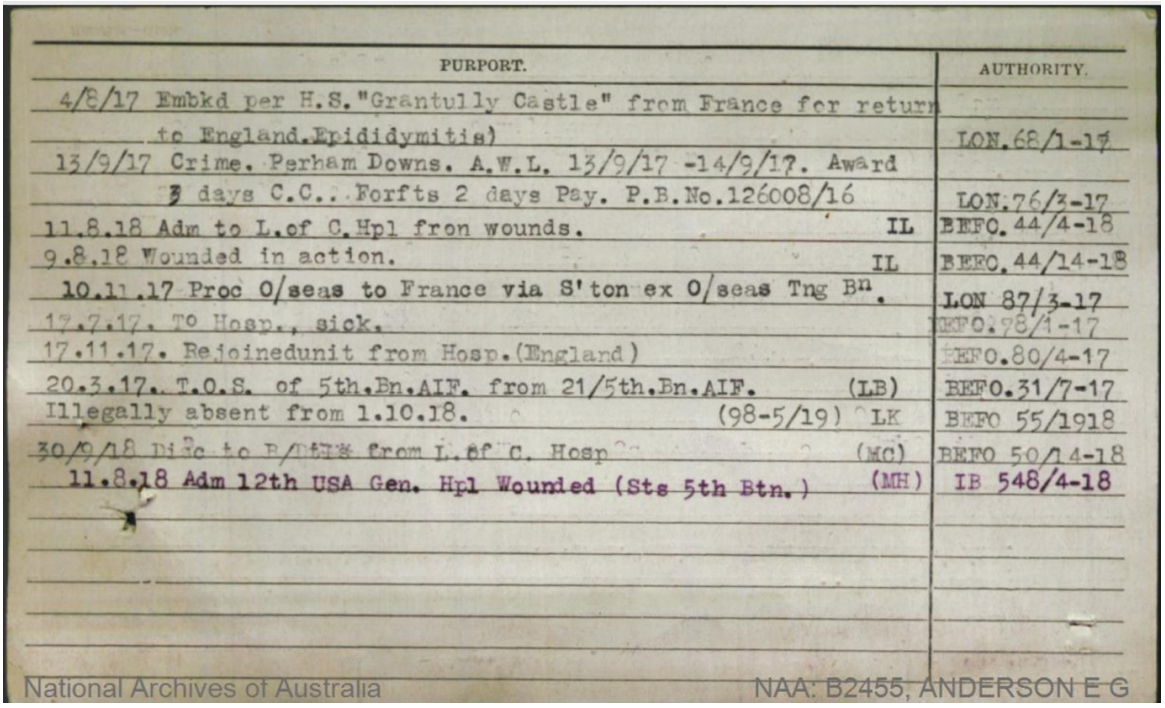
Figure 8 *Example of service record of deployments and medical admissions*



ANDERSON	Ernest George.	6456	21st Rfts 5th Bn
Surname.	Other Names.	Regimental No.	Unit.

WAR GRATUITY SCHEDULE

PURPORT.	AUTHORITY.
3rd M.D	
Embarked at Melbourne Victoria on H.M.A.T. "A 4 EURIPIDES" on 11/9/16. Ptc Austn	2/10/16
5.8.17 Adm. to Tooting Mil/ Hospl. Epididymitis	IB 288.3.17
13.3.17. Proceeded overseas to France from Folkestone. ex 2nd.Tng.Btn. Durrington/	Lon.19/5-17
28.8.17. Trans from Tooting M Hosp. to 3rd Aux Hosp. Epididymitis.	IB 307/3-17
30-13.9.17. Dis. from 3rd Aux Hosp. Fur & rep. P Downs. Epididymitis	IB 307/4-17
5.8.17. Adm. Tooting Mil.Hosp. EPIDIDYMITIS.	Lon.61/2-17
13.7.17. Rejoined unit from Hosp.	BEFO.43/3-17
7.7.17. To Hosp. SICK	BEFO.43/4-17
3.8.17. Emb. on H.S. "Grantully Castle" for England. EPIDIDYMITIS.	BEFO.49/2-17
P.T.O.	



PURPORT.	AUTHORITY.
4/8/17 Embkd per H.S. "Grantully Castle" from France for return to England. Epididymitis)	LON.68/1-17
13/9/17 Crime. Perham Downs. A.W.L. 13/9/17 -14/9/17. Award 3 days C.C.. Forfts 2 days Pay. P.B.No.126008/16	LON.76/3-17
11.8.18 Adm to L.of C.Hpl fron wounds. IL	BEFO.44/4-18
9.8.18 Wounded in action. IL	BEFO.44/14-18
10.11.17 Proc O/seas to France via S'ton ex O/seas Tng Bn.	LON 87/3-17
17.7.17. To Hosp., sick.	BEFO.78/1-17
17.11.17. Rejoinedunit from Hosp.(England)	BEFO.80/4-17
20.3.17. T.O.S. of 5th.Bn.AIF. from 21/5th.Bn.AIF. (LB)	BEFO.31/7-17
Illegally absent from 1.10.18. (98-5/19) LK	BEFO 55/1918
30/9/18 Disc to P/Duty from L. of C. Hosp (MC)	BEFO 50/14-18
11.8.18 Adm 12th USA Gen. Hpl Wounded (Sts 5th Btn.) (MH)	IB 548/4-18

Note: Service record of an infantryman, pianist in civilian life with sexually transmitted medical problems that kept him out of line for most of his service. Wounded in right hand August 1918, which healed. Four times absent without leave, totalling 66 days. In civilian life he became an alcoholic, a heavy smoker, a convicted bigamist and could not keep a stable residential address. Worked intermittently as a barman. Died aged 67 of acute general peritonitis. Last residence was church refuge for homeless men.

Table 4 *Numerical overview of the Diggers to Veterans sample*

Estimated number who embarked from Victoria	85,000	
Digger to Veterans sample total	11,980	
1:4 who embarked October 1914 – March 1915	2,756	
1:8 who embarked April 1915 – 7 November 1918	9,276	
Sample so far analysed and published	6,183	%
Died 1915–1918	1,387	22.4
Deaths not traced for men who survived war service	607	9.8
Post-war mortality traced for	4,189	67.8

6 CONCLUSION

The disciplinary driver of all these projects has been historical rather than demographic and the questions asked of the data have arisen from the wider Australian historiography. The prosopographical method has yielded valuable data that have over-turned long-held assumptions about the extent and impact of childhood deprivation in Australia and in the home countries of transported convicts. It has answered some key population questions about the impact of colonisation on Indigenous people, in particular on their fertility. These datasets, however, are only a start and I hope that other scholars and population scientists will expand and mine them for many years to come, asking more fine-grained questions about the life courses of Australian people.

This integration of historical and demographic expertise has borne fruit in a more nuanced analysis of social class based on historical geography and economic history. The role of insecure work has not been sufficiently acknowledged in the past, especially in Australia where perceptions of poverty have been clouded by ideas of 'the working man's paradise' and high living standards by the end of the 19th century, severe depressions notwithstanding. In convict studies, analysis of birth places was crudely divided between urban and rural, while not allowing for the differences in female employment between port cities, industrialised cities and service economies, regional market towns and villages. These differences were crucial, we found, in the early life conditions of convicts whose mothers were subject to the violence, alcohol and sexual abuse of port cities. Here historical criminology pointed to the significant differences in these early environments.

The other driver in these four projects has been the evolving thinking in historical life-course epidemiology and demography. This work began with James C. Riley who worked on the frailty and insult accumulation hypotheses using the measurement of sickness episodes, arguing in 2003, for instance, that the cumulative health burdens of reproduction compromised women's life course outcomes (Riley, 2003). Earlier his work on cumulative insults stimulated Diana Kuh and George Davey Smith in their early formulation of life course epidemiology (Kuh & Davey Smith, 1993) where they have added chains of risk extending from early life influences to follow people through time, using the big British birth cohorts (Kuh et al., 2003; Wadsworth & Kuh, 1997). While not able to engage with this vast literature, it was none the less intriguing to conceptualise and compare the convicts and the World War I soldiers as cohorts exposed to relatively short-lived stress regimes within closed societies or total institutions: penal servitude and military service. The experience of both cohorts was closely recorded, some of the behaviours were similar such as bolting, violence, insubordination and drunkenness, and both regimes were exacted on younger people who could be expected to display faster recovery from physical trauma. The results, so far, are interesting where psychological insults (solitary confinement, battle stress or neurasthenia and shell shock) were more damaging in the long term than physical insults (flogging, wounds), but in both populations early life experiences remained important in resilience, as did later life social position. Male convicts who married wisely, drank little, found a way to make a living and rear children, did better than if they had not been transported; middle-class veterans who may have had severe wounds and shell shock still did better in life than those who parents were unstable and poverty-stricken. In both populations, personal characteristics proved more significant than their respective exposures to stress and insult. This is only the beginning of this work, and the Diggers to Veterans dataset should yield fine-grained data in future years.

These four projects illustrate the long-term potential of data linkage in Australia based on vital registration. Many of us hope that a change in government attitudes to university funding in general and social sciences research in particular, may one day enable the digitisation and linkage of the states' and territories' vital registrations, and their further linkage to Medicare data (the only nation-wide personal data collection apart from taxation records). They could then be linked to other welfare, economic and historical data. Only the state of Western Australia has embarked on such a task, with its Data Linkage WA (https://www.datalinkage-wa.org.au/) which provides the best socio-medical data in Australia, especially of Indigenous citizens. However, its vital registrations linkage only goes back to 1944. The ambition is to begin with the first vital registrations and build a dataset of a colonising society and its Indigenous people from the 1830s to the present day. The COVID-19 pandemic and its economic impacts, especially on university research incomes, have stalled these plans. The future of historical population data depends now on government support to enable us to surmount the hurdle of transcription and linkage. If we can build a national historical register of the people on this continent, linked to multiple other data from all domains of administration, health, economics and society, we could produce a dataset of international value that is scalable and relevant to a world reshaped by international migration over the past two hundred years.

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ARCHIVED DATASETS

Inquiries about access to the LIH, Ships Cohort, Convicts to Diggers and Diggers to Veterans datasets should be directed to Associate Professor Rebecca Kippen, Monash School of Rural Health, Bendigo, Victoria, 3550, Australia, rebecca.kippen@monash.edu.

Access to the KHRD is controlled by the Indigenous Data Network, University of Melbourne and permission should be sought from Professor Marcia Langton, m.langton@unimelb.edu.au.

The Diggers to Veterans and KHRD data must be de-identified under the original conditions of access.

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